International Journal of Engineering, Science and Mathematics
Vol. 6 Issue 8, December 2017 (Special Issue)
ISSN: 2320-0294 Impact Factor: 6.765
Journal Homepage: http://www.ijmra.us, Email: editorijmie@gmail.com Double-
Blind Peer Reviewed Refereed Open Access International Journal - Included in the International Serial Directories Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gage as well as in Cabell's Directories of Publishing Opportunities, U.S.A

Engraving letters by CNCMilling

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Abstract

CNC is a machine controlled by a computer with command data code numbers, letters and symbols in accordance to conventional ISO. Computer Numerical Control machine tool systems work similar then the CNC machine tools more accurate, more precise, more flexible and appropriate for the manufacturing. This project describes a programming of letters by CNC milling machine. This project applied working standards of CNC milling device, in which it can flow in 3 axes in particular X, Y and Z. We design to assist engrave the letters of BITS which requires a excessive degree of complexity and might reduce operator intervention throughout machine process. For this project, Master CAM software was used to generate the G & M-codes for milling cutting. Master cam Mill is the next generation popular program, delivering the most comprehensive milling package with powerful new tool paths and techniques. This paper highlights the CNC G-Code Text Engraving on an aluminum work piece.

Keywords:

Computer Numerical Control,Engraving, G & M-codes, CNCmilling,3- axes, Master CAM

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1. Introduction

Computer Numerical Control (CNC) is one in which the functions and motions of a machine tool are controlled by means of a prepared program containing coded alphanumeric data. CNC can control the motions of the workpiece or tool, the input parameters such as feed, depth of

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cut, speed, and the functions such as turning spindle on/off, turning coolant on/off. The benefits of CNC are (a) high accuracy in manufacturing, (b) short production time, (c) greater manufacturing flexibility, (d) simpler fixturing, (e) contour machining (2 to 5 –axis machining), (f)reduced human error. The drawbacks include high cost, maintenance, and the requirement ofskilled part programmer. The applications of CNC include both for machine tool as well as non-machine tool areas. In the machine tool category, CNC is widely used for lathe, drill press, milling machine, grinding unit, laser, sheet-metal press working machine, tube bending machine etc. Highly automated machine tools such as turning center and machining center which change the cutting tools automatically under CNC control have been developed. In the non-machine tool category, CNC applications include welding machines (arc and resistance), coordinate measuring machine, electronic assembly, tape laying and filament winding machines for composites etc.

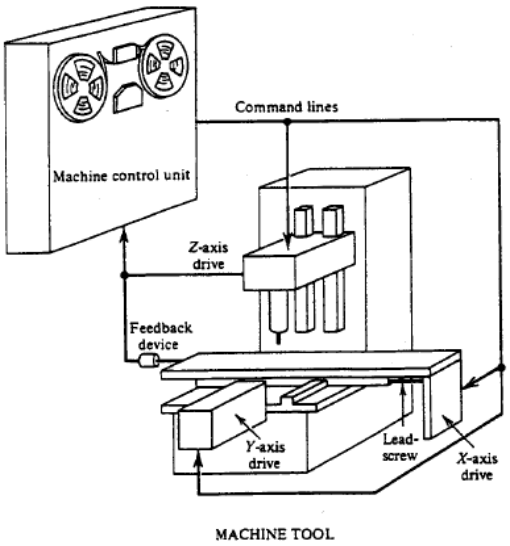


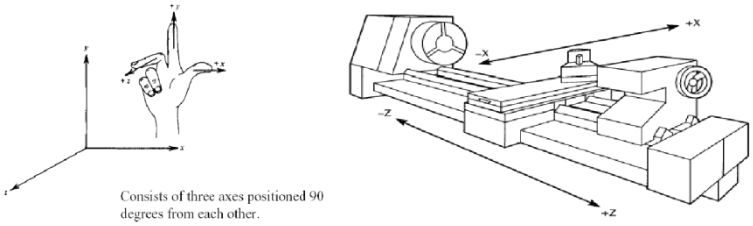
Figure 1.1.1 CNC Milling Machine Operations

1.1 CNC milling history

Milling machines came originally from machine tools called rotary files .They were circular cutters that worked inside of a lathe. This machine was originally developed because hand filing materials was taken too long. The first of the milling machines was between the years 1814 and 1818. There were two armories that used the first milling machines, and they were called Springfield and Harpers ferry. Soon after, various factories begin using these machine tools to quickly produce machined products at a rate much faster than what any number of workers using hand files could do on their own.

1.2 Basic CNC principle

Using a vertical mill machining center as an example,there are typically three linear axes of motion. Each is given an alphabetic designation or address. The machine table motion side to side is called the "X" axis and out is the "Y" axis, while head movement up and down the column is the "Z" axis.Allcomputer controlled machines are able to accurately and repeatedly control motion in various directions. Each of these directions of motion is called an axis. Depending on the machine type there are commonly two to five axes.



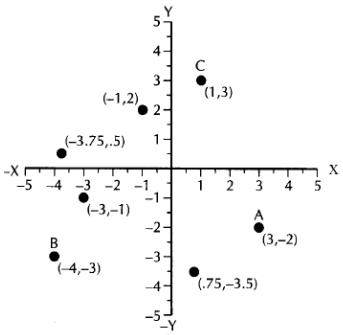
1.3 How CNC works

1. A CNC machine is Controlled by G and M codes.
2. These are number values and co-ordinates. Each number or code is assigned to a particular operation.
3.Typed in manually to CAD by machine operators.
4. G&M codes are automatically generated by the computer software.

1.4 Features of CNC machine

1. In a CNC machine the tool or material moves.
2. Tools can operate in 1-5 axes.
3.Larger machines have a machine control unit (MCU) which manages operations.

1.5 CNC principles for coordinate system



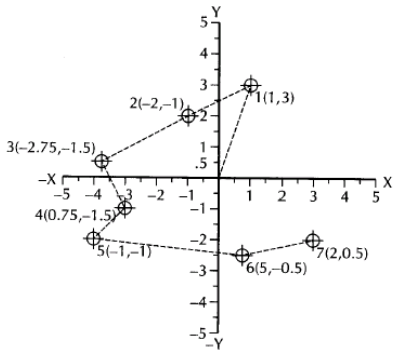


Fig 1.2Absolute Coordinate systemFig 1.3Incremental Coordinate system

All computer controlled machines are able to accurately and repeatedly control motion in various directions. Each of these directions of motion is called an axis. Depending on the machine type there are commonly two to five axes. Additionally, a CNC axis may be either a linear axis in which movement is in a straight line, or a rotary axis with motion following a circular path.

1.6 Milling Process

Processing is the way toward cutting and molding materials into a coveted part. Processing operations are performed on processing machines, outfit cutting machines, and machining focuses. Processing machines are mind boggling gadgets that play out a few operations. The genuine forming of the part is finished with a slicing apparatus joined to a shaft, conveying rotational powers. Processing machines have either on a level plane or vertically adjusted axles. The machines are either physically worked or Computer Numerically Controlled. In complex operations it is much more viable to utilize a CNC machine.

1.7 Economic Considerations in picking aluminum metal

The cost of aluminum is relative, and ought not be dictated by the cost of the base metal alone. Focal points in the preparing of aluminum can substantially add to the decrease of the cost of the end thing. Along these lines, the general cost ought to be judged in connection to the completed item. In the manufacture of aluminum items, the economies influenced might be all that could possibly be needed to beat other cost variations. The simplicity with which the metal can be machined, completed, cleaned, and amassed grants a decrease of the time, material, work, and hardware required for the item. Combined with these benefits are the upsides of light weight, which frequently can be of significant significance in the cost of taking care of, delivery, stockpiling, or get together of the end thing.

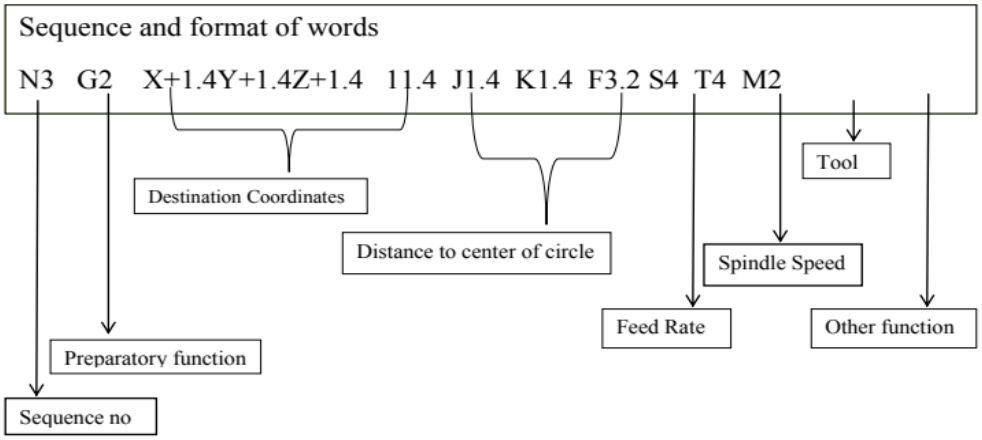
1.8 Mastercam Software

Mastercam is the most generally utilized CAM programming worldwide and remains the program of decision among CNC software engineers. Mastercam Mill is the up and coming age of our famous program, conveying the most complete processing bundle with intense new toolpaths and

systems. Mastercam gives your shop the most ideal establishment for quick and effective processing. From universally useful techniques, for example, streamlined taking to profoundly particular toolpaths like 5-pivot turbine cutting, Mastercam guarantees that you're prepared for any activity. Mastercam conveys: Full 3D CAD displaying, Easy stashing, forming and boring, Powerful multi-pivot cutting and so forth.

2 SEQUENCE AND FORMAT OF WORDS

2.1 Format of words



• O - Program number (Used for program identification)

• N - Sequence number (Used for line identification)

• G - Preparatory function

• X - X axis designation

• Y - Y axis designation

• Z - Z axis designation

• R - Radius designation

• F – Feed rate designation

• S - Spindle speed designation

• H - Tool length offset designation

• D - Tool radius offset designation

• T - Tool Designation

2.2 Rules for programming :

Block Format

N135 G01 X1.0 Y1.0 Z0.125 F5

• Restrictions on CNC blocks
• Each may contain only one tool move
• Each may contain any number of non-tool move G-codes
• Each may contain only one feed rate
• Each may contain only one specified tool or spindle speed
• The block numbers should be sequential
• Both the program start flag and the program number must be independent of all other commands (on separate lines)

• The data within a block should follow the sequence shown in the above sample block.

2.3 Preparatory(G) and M(Miscellaneous)-codes :

Code	Description
G00	Rapid Move
G01	Linear Feed Move
G02	Clockwise Arc Feed Move
G03	Counter Clockwise Arc Feed Move
G04	Dwell
G09	Exact stop
G10	Fixture and Tool Offset Setting
G12	Clockwise Circle
G13	Counter Clockwise Circle
G15	Polar Coordinate Cancel
G16	Polar Coordinate
G17	XY Plane Select
G18	ZX Plane Select
G19	YZ Plane Select
G20	Inch
G21	Millimeter
G28	Zero Return
G30	2^{nd}, 3^{rd}, 4^{th} Zero Return
G31	Probe function
G32	Threading*
G40	Cutter Compensation Cancel
G41	Cutter Compensation Left
G42	Cutter Compensation Right
G43	Tool Length Offset + Enable
G44	Tool Length Offset - Enable
G49	Tool Length Offset Cancel
G50	Cancel Scaling
G51	Scale Axes
G52	Local Coordinate System Shift
G53	Machine Coordinate System
G54	Fixture Offset 1
G54.1	Additional Fixture Offsets
G55	Fixture Offset 2
G56	Fixture Offset 3
G57	Fixture Offset 4
G58	Fixture Offset 5
G59	Fixture Offset 6
G60	Unidirectional Approach
G61	Exact Stop Mode
G64	Cutting Mode (Constant Velocity)
G65	Macro Call
G66	Macro Modal Call
G67	Macro Modal Call Cancel
G68	Coordinate System Rotation
G69	Coordinate System Rotation Cancel
G73	High Speed Peck Drilling
G74	LH Tapping*
G76	Fine Boring*
G80	Canned Cycle Cancel
G81	Hole Drilling
G82	Spot Face
G83	Deep Hole Peck Drilling
G84	RH Tapping*
G84.2	RH Rigid Tapping*
G84.3	LH Rigid Tapping*
G85	Boring, Retract at Feed, Spindle On
G86	Boring, Retract at Rapid, Spindle Off
G87	Back Boring*
G88	Boring, Manual Retract
G89	Boring, Dwell, Retract at Feed, Spindle On
G90	Absolute Position Mode
G90.1	Arc Center Absolute Mode
G91	Incremental Position Mode
G91.1	Arc Center Incremental Mode
G92	Local Coordinate System Setting
G92.1	Local Coordinate System Cancel
G93	Inverse Time Feed
G94	Feed per Minute
G95	Feed per Revolution*

2.4 M (Miscellaneous) Codes

MØØ*	Program Stop
MØ1*	Optional Stop
MØ2*	Program Reset
MØ3	Spindle Forward (clockwise)
MØ4	Spindle Reverse (counter clockwise)
MØ5*	Spindle Stop
MØ6	Automatic Tool Change
MØ8	Coolant On
MØ9*	Coolant Off
M1Ø	Vice/Work Clamp Open
M11	Vice/Work Clamp Close
M13	Spindle Forward and Coolant On
M14	Spindle Reverse and Coolant On
M19	Spindle Orientation
M2Ø	ATC Arm In
M21	ATC Arm Out
M22	ATC Arm Down
M23	ATC Arm Up
M24	ATC Drawbar Unclamp
M25	ATC Drawbar Clamp
M27	Reset Carousel to Pocket One
M3Ø*	Program Reset and Rewind
M32	Carousel CW
M33	Carousel CCW
M38	Door Open
M39	Door Close
M62	Auxiliary Output 1 On
M63	Auxiliary Output 2 On

3. PROGRAM TO ENGRAVE "BITS"

Engraving BITS

Program:

```
%
O0000(BITS)
N110 G0 G17 G40 G49 G80 G90
N120 T4 M6
N130 G0 G90 G54 X-35.04 Y0. S3500 M3
N140 G43 H1 Z25.
N150 Z3.
N160 G1 Z-.05 F30.
N170 Y10.773 F500.
N180 X-30.726
N190 G2 X-25.339 Y5.386 I0. J-5.387
N200 X-30.19 Y.027 I-5.387 J0.
N210 X-29.822 Y.04 I.368 J-5.374
N220 X-24.435 Y-5.347 I0. J-5.387
N230 X-29.822 Y-10.734 I-5.387 J0.
N240 G1 X-35.04
N250 Y0.
N260 X-29.822 Y.039
N270 G0 Z24.95
N280 X-35.04 Y0.
N290 Z2.95
N300 G1 Z-.1 F30.
N310 Y10.773 F500.
N320 X-30.726
N330 G2 X-25.339 Y5.386 I0. J-5.387
N340 X-30.19 Y.027 I-5.387 J0.
N350 X-29.822 Y.04 I.368 J-5.374
N360 X-24.435 Y-5.347 I0. J-5.387
N370 X-29.822 Y-10.734 I-5.387 J0.
N380 G1 X-35.04
N390 Y0.
N400 X-29.822 Y.039
N410 G0 Z24.9
N420 X-35.04 Y0.
N430 Z2.9
N440 G1 Z-.15 F30.
N450 Y10.773 F500.
N460 X-30.726
N470 G2 X-25.339 Y5.386 I0. J-5.387
N480 X-30.19 Y.027 I-5.387 J0.
N490 X-29.822 Y.04 I.368 J-5.374
N500 X-24.435 Y-5.347 I0. J-5.387
N510 X-29.822 Y-10.734 I-5.387 J0.
N520 G1 X-35.04
N530 Y0.
N540 X-29.822 Y.039
N550 G0 Z24.85
N560 X-35.04 Y0.
N570 Z2.85
N580 G1 Z-.2 F30.
N590 Y10.773 F500.
N600 X-30.726
N610 G2 X-25.339 Y5.386 I0. J-5.387
N620 X-30.19 Y.027 I-5.387 J0.
N630 X-29.822 Y.04 I.368 J-5.374
N640 X-24.435 Y-5.347 I0. J-5.387
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N650 X-29.822 Y-10.734 I-5.387 J0.
N660 G1 X-35.04
N670 Y0.
N680 X-29.822 Y.039
N690 G0 Z24.8
N700 X-35.04 Y0.
N710 Z2.8
N720 G1 Z-.25 F30.
N730 Y10.773 F500.
N740 X-30.726
N750 G2 X-25.339 Y5.386 I0. J-5.387
N760 X-30.19 Y.027 I-5.387 J0.
N770 X-29.822 Y.04 I.368 J-5.374
N780 X-24.435 Y-5.347 I0. J-5.387
N790 X-29.822 Y-10.734 I-5.387 J0.
N800 G1 X-35.04
N810 Y0.
N820 X-29.822 Y.039
N830 G0 Z24.75
N840 X-35.04 Y0.
N850 Z2.75
N860 G1 Z-.3 F30.
N870 Y10.773 F500.
N880 X-30.726
N890 G2 X-25.339 Y5.386 I0. J-5.387
N900 X-30.19 Y.027 I-5.387 J0.
N910 X-29.822 Y.04 I.368 J-5.374
N920 X-24.435 Y-5.347 I0. J-5.387
N930 X-29.822 Y-10.734 I-5.387 J0.
N940 G1 X-35.04
N950 Y0.
N960 X-29.822 Y.039
N970 G0 Z24.7
N980 Z25.
N990 X-13.086 Y10.8
N1000 Z3.
N1010 G1 Z-.05 F30.
N1020 X-10. F500.
N1030 G0 Z24.95
N1040 X-13.086
N1050 Z2.95
N1060 G1 Z-.1 F30.
N1070 X-10. F500.
N1080 G0 Z24.9
N1090 X-13.086
N1100 Z2.9
N1110 G1 Z-.15 F30.
N1120 X-10. F500.
N1130 G0 Z24.85
N1140 X-13.086
N1150 Z2.85
N1160 G1 Z-.2 F30.
N1170 X-10. F500.
N1180 G0 Z24.8
N1190 X-13.086
N1200 Z2.8
N1210 G1 Z-.25 F30.
N1220 X-10. F500.
N1230 G0 Z24.75
N1240 X-13.086

N1250 Z2.75
N1260 G1 Z-.3 F30.
N1270 X-10. F500.
N1280 Z-.05 F30.
N1290 X-6.914 F500.
N1300 G0 Z24.95
N1310 X-10.
N1320 Z2.95
N1330 G1 Z-.1 F30.
N1340 X-6.914 F500.
N1350 G0 Z24.9
N1360 X-10.
N1370 Z2.9
N1380 G1 Z-.15 F30.
N1390 X-6.914 F500.
N1400 G0 Z24.85
N1410 X-10.
N1420 Z2.85
N1430 G1 Z-.2 F30.
N1440 X-6.914 F500.
N1450 G0 Z24.8
N1460 X-10.
N1470 Z2.8
N1480 G1 Z-.25 F30.
N1490 X-6.914 F500.
N1500 G0 Z24.75
N1510 X-10.
N1520 Z2.75
N1530 G1 Z-.3 F30.
N1540 X-6.914 F500.
N1550 G0 Z24.7
N1560 Z25.
N1570 X-10.
N1580 Z3.
N1590 G1 Z-.05 F30.
N1600 Y-10.8 F500.
N1610 G0 Z24.95
N1620 Y10.8
N1630 Z2.95
N1640 G1 Z-.1 F30.
N1650 Y-10.8 F500.
N1660 G0 Z24.9
N1670 Y10.8
N1680 Z2.9
N1690 G1 Z-.15 F30.
N1700 Y-10.8 F500.
N1710 G0 Z24.85
N1720 Y10.8
N1730 Z2.85
N1740 G1 Z-.2 F30.
N1750 Y-10.8 F500.
N1760 G0 Z24.8
N1770 Y10.8
N1780 Z2.8
N1790 G1 Z-.25 F30.
N1800 Y-10.8 F500.
N1810 G0 Z24.75
N1820 Y10.8
N1830 Z2.75
N1840 G1 Z-.3 F30.

N1850 Y-10.8 F500.
N1860 G0 Z24.7
N1870 Z25.
N1880 X-6.914
N1890 Z3.
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N1910 X-10. F500.
N1920 G0 Z24.95
N1930 X-6.914
N1940 Z2.95
N1950 G1 Z-.1 F30.
N1960 X-10. F500.
N1970 G0 Z24.9
N1980 X-6.914
N1990 Z2.9
N2000 G1 Z-.15 F30.
N2010 X-10. F500.
N2020 G0 Z24.85
N2030 X-6.914
N2040 Z2.85
N2050 G1 Z-.2 F30.
N2060 X-10. F500.
N2070 G0 Z24.8
N2080 X-6.914
N2090 Z2.8
N2100 G1 Z-.25 F30.
N2110 X-10. F500.
N2120 G0 Z24.75
N2130 X-6.914
N2140 Z2.75
N2150 G1 Z-.3 F30.
N2160 X-10. F500.
N2170 Z-.05 F30.
N2180 X-13.086 F500.
N2190 G0 Z24.95
N2200 X-10.
N2210 Z2.95
N2220 G1 Z-.1 F30.
N2230 X-13.086 F500.
N2240 G0 Z24.9
N2250 X-10.
N2260 Z2.9
N2270 G1 Z-.15 F30.
N2280 X-13.086 F500.
N2290 G0 Z24.85
N2300 X-10.
N2310 Z2.85
N2320 G1 Z-.2 F30.
N2330 X-13.086 F500.
N2340 G0 Z24.8
N2350 X-10.
N2360 Z2.8
N2370 G1 Z-.25 F30.
N2380 X-13.086 F500.
N2390 G0 Z24.75
N2400 X-10.
N2410 Z2.75
N2420 G1 Z-.3 F30.
N2430 X-13.086 F500.
N2440 G0 Z24.7

N2450 Z25.
N2460 X3.1 Y10.8
N2470 Z3.
N2480 G1 Z-.05 F30.
N2490 X10.004 F500.
N2500 G0 Z24.95
N2510 X3.1
N2520 Z2.95
N2530 G1 Z-.1 F30.
N2540 X10.004 F500.
N2550 G0 Z24.9
N2560 X3.1
N2570 Z2.9
N2580 G1 Z-.15 F30.
N2590 X10.004 F500.
N2600 G0 Z24.85
N2610 X3.1
N2620 Z2.85
N2630 G1 Z-.2 F30.
N2640 X10.004 F500.
N2650 G0 Z24.8
N2660 X3.1
N2670 Z2.8
N2680 G1 Z-.25 F30.
N2690 X10.004 F500.
N2700 G0 Z24.75
N2710 X3.1
N2720 Z2.75
N2730 G1 Z-.3 F30.
N2740 X10.004 F500.
N2750 Z-.05 F30.
N2760 X16.909 F500.
N2770 G0 Z24.95
N2780 X10.004
N2790 Z2.95
N2800 G1 Z-.1 F30.
N2810 X16.909 F500.
N2820 G0 Z24.9
N2830 X10.004
N2840 Z2.9
N2850 G1 Z-.15 F30.
N2860 X16.909 F500.
N2870 G0 Z24.85
N2880 X10.004
N2890 Z2.85
N2900 G1 Z-.2 F30.
N2910 X16.909 F500.
N2920 G0 Z24.8
N2930 X10.004
N2940 Z2.8
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N2970 G0 Z24.75
N2980 X10.004
N2990 Z2.75
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N3010 X16.909 F500.
N3020 G0 Z24.7
N3030 Z25.
N3040 X10.004

N3050 Z3.
N3060 G1 Z-.05 F30.
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N3080 G0 Z24.95
N3090 Y10.8
N3100 Z2.95
N3110 G1 Z-.1 F30.
N3120 Y-10.8 F500.
N3130 G0 Z24.9
N3140 Y10.8
N3150 Z2.9
N3160 G1 Z-.15 F30.
N3170 Y-10.8 F500.
N3180 G0 Z24.85
N3190 Y10.8
N3200 Z2.85
N3210 G1 Z-.2 F30.
N3220 Y-10.8 F500.
N3230 G0 Z24.8
N3240 Y10.8
N3250 Z2.8
N3260 G1 Z-.25 F30.
N3270 Y-10.8 F500.
N3280 G0 Z24.75
N3290 Y10.8
N3300 Z2.75
N3310 G1 Z-.3 F30.
N3320 Y-10.8 F500.
N3330 G0 Z24.7
N3340 Z25.
N3350 X35.821 Y7.378
N3360 Z3.
N3370 G1 Z-.05 F30.
N3380 G3 X30.534 Y10.442 I-5.364 J-3.162 F500.
N3390 G1 X28.778 Y10.463
N3400 X28.709
N3410 G3 X23.031 Y5.042 I0. J-5.683
N3420 X25.287 Y1.468 I4.623 J.42
N3430 G1 X33.788 Y-2.183
N3440 G2 X36.045 Y-5.758 I-2.367 J-3.994
N3450 X30.367 Y-11.179 I-5.678 J.263
N3460 G1 X30.311
N3470 X28.11 Y-11.157
N3480 G2 X22.807 Y-8.093 I.061 J6.226
N3490 G0 Z24.95
N3500 X35.821 Y7.378
N3510 Z2.95
N3520 G1 Z-.1 F30.
N3530 G3 X30.534 Y10.442 I-5.364 J-3.162 F500.
N3540 G1 X28.778 Y10.463
N3550 X28.709
N3560 G3 X23.031 Y5.042 I0. J-5.683
N3570 X25.287 Y1.468 I4.623 J.42
N3580 G1 X33.788 Y-2.183
N3590 G2 X36.045 Y-5.758 I-2.367 J-3.994
N3600 X30.367 Y-11.179 I-5.678 J.263
N3610 G1 X30.311
N3620 X28.11 Y-11.157
N3630 G2 X22.807 Y-8.093 I.061 J6.226
N3640 G0 Z24.9

N3650 X35.821 Y7.378
N3660 Z2.9
N3670 G1 Z-.15 F30.
N3680 G3 X30.534 Y10.442 I-5.364 J-3.162 F500.
N3690 G1 X28.778 Y10.463
N3700 X28.709
N3710 G3 X23.031 Y5.042 I0. J-5.683
N3720 X25.287 Y1.468 I4.623 J.42
N3730 G1 X33.788 Y-2.183
N3740 G2 X36.045 Y-5.758 I-2.367 J-3.994
N3750 X30.367 Y-11.179 I-5.678 J.263
N3760 G1 X30.311
N3770 X28.11 Y-11.157
N3780 G2 X22.807 Y-8.093 I.061 J6.226
N3790 G0 Z24.85
N3800 X35.821 Y7.378
N3810 Z2.85
N3820 G1 Z-.2 F30.
N3830 G3 X30.534 Y10.442 I-5.364 J-3.162 F500.
N3840 G1 X28.778 Y10.463
N3850 X28.709
N3860 G3 X23.031 Y5.042 I0. J-5.683
N3870 X25.287 Y1.468 I4.623 J.42
N3880 G1 X33.788 Y-2.183
N3890 G2 X36.045 Y-5.758 I-2.367 J-3.994
N3900 X30.367 Y-11.179 I-5.678 J.263
SN3910 G1 X30.311
N3920 X28.11 Y-11.157
N3930 G2 X22.807 Y-8.093 I.061 J6.226
N3940 G0 Z24.8
N3950 X35.821 Y7.378
N3960 Z2.8
N3970 G1 Z-.25 F30.
N3980 G3 X30.534 Y10.442 I-5.364 J-3.162 F500.
N3990 G1 X28.778 Y10.463
N4000 X28.709
N4010 G3 X23.031 Y5.042 I0. J-5.683
N4020 X25.287 Y1.468 I4.623 J.42
N4030 G1 X33.788 Y-2.183
N4040 G2 X36.045 Y-5.758 I-2.367 J-3.994
N4050 X30.367 Y-11.179 I-5.678 J.263
N4060 G1 X30.311
N4070 X28.11 Y-11.157
N4080 G2 X22.807 Y-8.093 I.061 J6.226
N4090 G0 Z24.75
N4100 X35.821 Y7.378
N4110 Z2.75
N4120 G1 Z-.3 F30.
N4130 G3 X30.534 Y10.442 I-5.364 J-3.162 F500.
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N4150 X28.709
N4160 G3 X23.031 Y5.042 I0. J-5.683
N4170 X25.287 Y1.468 I4.623 J.42
N4180 G1 X33.788 Y-2.183
N4190 G2 X36.045 Y-5.758 I-2.367 J-3.994
N4200 X30.367 Y-11.179 I-5.678 J.263
N4210 G1 X30.311
N4220 X28.11 Y-11.157
N4230 G2 X22.807 Y-8.093 I.061 J6.226
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N4270 G28 Y0.
N4280 M30
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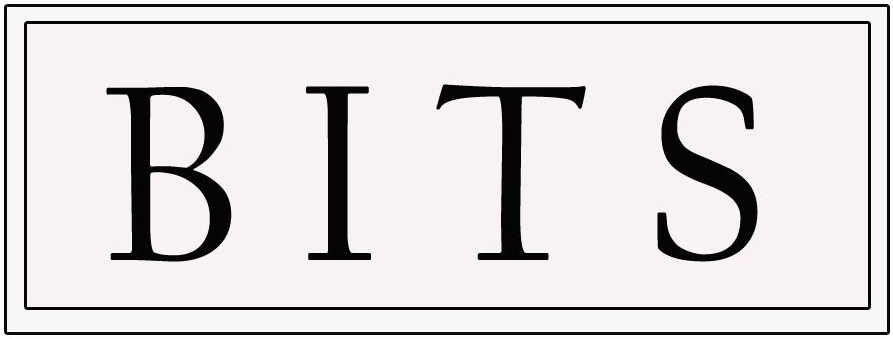

4 Result & Conclusion

On the basis of experimental work of engraving **BITS** on mild steel work piece, the performance measures such as feed, speed, depth of cut, M.R.R, machining time and operations are taken care by the part program. The input to the program is the graphic representation of the part(a drawing), and user-defined items such as tool details, material type, and so on. The program has an initial state, the shape of the raw material, and a final engraving of **BITS** on the work piece, that is the finished shape of the part by using machining moves was achieved by using CNC Milling machine.

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