

CNC 8040/55 TRAINING

The CNC is reading 20 blocks ahead and 50 blocks ahead with CPU TURBO; G4 previous block
Block numbers are not required.

Block labels are needed for making jumps.

Program Block:

ISO
HIGH LEVEL LANGUAGE > Control Sentences.
> Any type of expression
> Parenthesis
> Subroutines

End of block : is optional ; number of repetitions of the block (N0...9999) ; block comment.

Block Skip: /, /1 > BLKSKIP1
/2 > BLKSKIP2
/3 > BLKSKIP3

Programming from CNC, from the Computer > DNC.

Peripheral Device:

```
%FAGOR AUTOMATION,MX, <LF>
G00 X0 <LF>
X1.5 <LF> ; LF> ^J
N100 X2 <LF> ; CR> ^M
M30 <LF> ; EOT> ^D
<EOT>
```

PLANE SELECTION

G16 axis1, axis2 > enables selection of the desired work plane plus the direction. axis1> abscissa.
axis2>ordinate

G17 > XY
G18 > ZX
G19 > YZ

UNITS

G70 > Inches
G71 > Mms
G90 > Absolute
G91 > Incremental

PROGRAMMING OF COORDINATES

Cartesian Coordinates
Polar Coordinates
Cylindrical Coordinates
One Angle and Cartesian Coordinates

ROTARY AXIS.

WORK ZONES: Definition of the work zones; Using work zones.

REFERENCE SYSTEMS:

Machine Reference Zero
Part Zero
Machine Reference Point.

ZERO OFFSETS

Distance between the part zero (point of the origin of the part) and the machine zero (point of the origin of the machine)

G93 > Polar Origin Preset
G92 > Coordinate Preset
G54..G59 > Zero Offsets;
G58, G59 > Additive Zero Offsets.

Programming with respect to Machine Zero (G53)

PROGRAMMING BY ISO CODE

Preparatory Functions (G)
Axis Coordinates (X. . . C)
Feedrate (F)
Spindle Speed (S)
Tool Number (T)
Tool Offset Number (D)
Auxiliary Functions (M)

FEEDRATE FUNCTIONS

G94 > mm/min; inches/min.
G95 > mm/rev; inches/rev.

TOOL NUMBER

A > Available
E > Worn out (life expired)
R > Rejected

CIRCULAR INTERPOLATION

G2, G3 > Cartesian; Polar.
G06 > Center of the arc in absolute coordinates.
G08 > Arc tangent to the previous path.
G09 > Arc defined by three points.
G37 > Tangential entry.
G38 > Tangential exit.
G36 > Radius blend.
G39 > Chamfer blend.
G33 > Threading.

ADDITIONAL PREPARATORY FUNCTIONS

G4 > Interruption of the block preparation.

G4 K? > Dwell

G05 > Round Corner

G07 > Square Corner

G10-11-12-13-14 > Mirror Image.

G72 > Scaling Factor

TOOL COMPENSATION

G41/G42 > (R+I)

G15, G43 > (L+K)

PROGRAMMING IN HIGH LEVEL LANGUAGE

Lexical description > capital letter.

Reserved words.

Numerical Constants > (TIMER = \$5FF5E100)

Symbols > () “ = - * / ,

Variables:

General Purpose Parameters

General Parameters

Local Parameters

Variables associated w/ TOOLS

w/ ZERO OFFSETS

w/ MACHINE PARAMETERS

w/ WORK ZONES

w/ FEED

w/ COORDINATES

w/ SPINDLE

w/ PLC

w/ LOCAL PARAMETERS

w/ OTHERS

Constants, Operators, Expressions: Arithmetic; Relational.

PROGRAM CONTROL STATEMENTS

Assignment Statements

(P102 = FZLOY)

Display Statements

(ERROR #, “Error text”)

(MSG “message”)

Enabling-Disabling Statements

(ESBLK & DSBLK)

(ESTOP & DSTOP)

(EFHOLD & DFHOLD)

Flow Control Statements

(GOTO N expression)

(RPT N expression, N expression)

(IF <action1> ELSE <action2>)

Subroutine Statement

(SUB integer)

(RET)

(PCALL expres., assgn. stat., assign. stat.)

(MCALL expres., assgn. stat., assign. stat.)

(MDOFF)

(PROBE expres., assgn. stat., assign. stat.)

(DIGIT expres., assgn. stat., assign. stat.)

(TRACE expres., assgn. stat., assign. stat.)

Statements for Generating Programs

(OPEN P expres., DNC1/2 AD)

(WRITE)