



# HEIDENHAIN



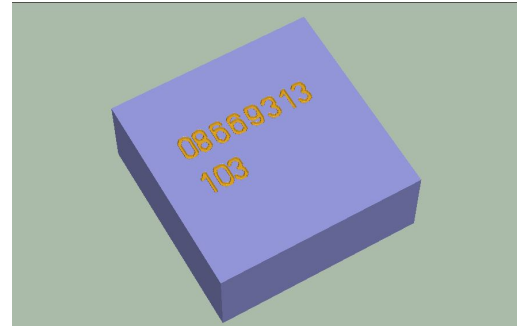
## NC solutions

Description of NC program 9030

English (en)  
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## 1 Description of the NC program 9030\_en.h

NC program for engraving a job number and a serial part number on a workpiece.



### Scenario

You are tasked with engraving the job number on a workpiece. In addition, the serial part number is to be engraved on the workpiece. This part number should also be saved in the event that the control is temporarily switched off, and it must also be incremented.

### Description of NC program 9030\_en.h

In NC program 9030\_en.h, you first define the workpiece blank and the engraving tool. Then the control retracts the tool. After this, you define in the NC program all of the parameters required for engraving the job number. The control then calls NC program 90301\_en.h, in which the engraving operation is programmed. If both NC programs are not saved in the same directory, you must change the program path at this point.

After engraving the job number, you define the parameters for engraving the serial part number. Then the control opens the table 90304\_en.tab. From this table, the control reads the current part number from the column NO. The control then increments the part number that has been read out by one and writes the new value back into the table. Then the control calls NC program 90302\_en.h. In this NC program, the engraving operation for the part number is defined.

In the final step of the NC program, the control retracts the tool and ends the NC program.

**Input parameters**

Parameter	Name	Meaning
Q2	SCALING FACTOR EFFECT	Input 0 or 1 matches the entry in machine parameter 7410; the scaling factor is effective on 2 or 3 axes
Q4	MILLING DEPTH	Depth of the engraving—absolute value from the datum
Q6	MILLING FEED RATE	Traversing speed of the tool during machining
Q7	FEED RATE FOR PLUNGING	Traversing speed of the tool in the Z axis
Q8	SAFETY CLEARANCE	Z clearance between the tool and datum—is approached by the control in rapid traverse prior to machining
Q5	FONT HEIGHT	Character height in mm
Q21	STARTING POINT IN X	X coordinate of the first character relative to the datum
Q22	STARTING POINT IN Y	Y coordinate of the text line relative to the datum
Q29	ROTATION	Absolute rotation angle of the text line relative to the positive X direction

**Description of NC program 90301\_en.h**

This is an NC program for engraving the multi-digit job number. At the beginning of the program, the control opens the table 90303\_en.tab. The control then reads the value in line 0, column 1. After this, the control adds 48 to the read-out value in order to determine the digit's ASCII code. In the next step, the control jumps to the subprogram LBL 1. In this subprogram, the engraving operation for the digit is defined. The control then shifts the datum to the starting point of the second digit. After the control has jumped from the subprogram back to the main program, it reads column 2 in the table. The control adds 48 to this as well and jumps to the subprogram for engraving the digit. This process is repeated by the control until all eight digits have been engraved. If you want to engrave a number containing more or less than eight digits, you must read the block, convert the value to ASCII code, and repeat the subprogram call for each digit. You do not need to make any changes to the subprogram. In NC program 9030\_en.h you have defined all of the parameters needed for the engraving operation.

**Description of NC program 90302\_en.h**

This NC program is for engraving the serial part number. The part number determined in NC program 9030\_en.h is transferred to this NC program by the control in parameter Q80. In the first section of the program, the control divides up the value in parameter Q80 such that the digits for hundreds, tens, and ones are saved in Q parameters Q70 and Q72.

The control adds 48 to the number in the hundreds digit in order to convert it into ASCII code. The control then jumps to subprogram LBL 1. In this subprogram, the control engraves the digit and shifts the datum to the starting point of the second digit. The control then ends the subprogram and jumps back to the main program. The next step in the main program is the conversion of the tens digit into the ASCII code. Then the control jumps back to subprogram LBL 1. The control repeats the same procedure for the ones digit of the part number. In the final program step, the control jumps to the end of program and jumps back to the calling NC program 9030\_en.h .

**Description of table 90303\_en.tab**

In this table, you define the job number to be engraved. The table consists of eight columns and one line. You enter one digit of the job number in each column.

If you want to engrave an job number with a different number of digits, you must change the table accordingly. In NC-Program 90301\_en.h, you must then also adapt the section of the program in which the control reads from the table and processes the result.

**Description of table 90304\_en.tab**

In this table, the control saves the current serial part number so that the value is retained even when the machine is switched off. This table is made up of one line and one column into which the control writes the value.



The workpiece counter also counts program runs in Test Run mode.



Before starting a new series, you must reset the counter in the table to zero.