



HEIDENHAIN



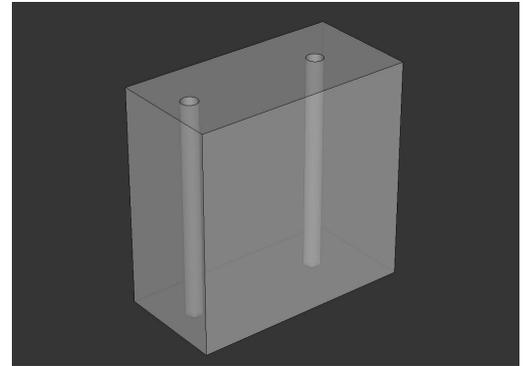
NC Solutions

Description of NC program 1035

English (en)
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1 Description of NC programs 1035_en.h and 10351_en.h

NC programs for drilling sequences in which chip breaking and a receding plunging depth can be defined.



Description

You define parameters and the tool required for the sequence in a main program (1035_en.h). With Cycle 12 the control then calls a further NC program (10351_en.h) at the hole position. The actual drilling sequence is contained in this NC program. Because this process is executed with a cycle call, the drilling sequence can be performed at various positions. The parameters must not be re-entered for this purpose.

Drilling sequence

- 1 The control positions the tool in rapid traverse at the position defined in the main program at safety clearance above the surface coordinate.
- 2 The control infeeds the tool into the workpiece at the defined feed rate until the first plunging depth is reached.
- 3 When the tool reaches the first plunging depth the control checks the following two possibilities:
 - Number of feeds reached until retraction for chip removal: The control retracts the tool to safety clearance above the workpiece surface and then positions to safety clearance above the momentary hole depth.
 - Number of feeds not yet reached until retraction for chip removal: The control retracts the tool to safety clearance above the momentary hole depth.
- 4 The tool drills the next infeed. The depth of this infeed is the result of multiplying the last plunging depth with the degression factor. If the calculated plunging depth is less than the minimum plunging depth, the control uses the minimum plunging depth.
- 5 When the tool reaches the plunging depth the program again offers the two retraction options described above.
- 6 The control repeats the infeed until the complete depth is reached.
- 7 The control then retracts the tool again to safety distance above the plane.

1035_en.h NC program

You define all parameters and the tool call required for the drilling sequence in the 1035_en.h main program. The subsequent 12 PGM CALL cycle is programmed in which the NC program 10351_en.h is defined. This enables a simple call via CYCL CALL or M99.

The control then approaches the first hole position and calls Cycle 12 in which the NC program for the drilling sequence is defined. This could be followed by further positions with a cycle call. In the example, the control traverses to a second position and executes the drilling sequence. The control then retracts the tool and terminates the program.

Parameter	Name	Meaning
Q1	SAFETY CLEARANCE	Z clearance between the tool and workpiece surface approached by the control in rapid traverse before machining is executed
Q2	DEPTH	Depth from the workpiece plane to the deepest point of the hole
Q3	1. PLUNGING DEPTH	Path drilled by the tool from the workpiece plane to initial chip breaking or chip removal
Q4	DWELL TIME AT TOP	Time in seconds in which the tool dwells during chip removal outside the hole
Q5	FEED RATE FOR PECKING	Tool traversing speed during drilling
Q6	SURFACE COORDINATE	Z coordinate of the workpiece plane
Q7	2ND SAFETY CLEARANCE	Z clearance between the tool and workpiece plane approached by the control after machining
Q8	DEGRESSION FACTOR	Factor by which the control multiplies the plunging depth after each infeed so that the plunging depth reduces with increasing drilling depth
Q9	NUMBER OF INFEEDES UNTIL RETRACTION FOR CHIP REMOVAL	Number of downfeeds after which the tool retracts completely from the hole. If this number is not reached the control executes only one chip breaking step after each downfeed
Q10	MINIMUM PLUNGING DEPTH	Minimum value for plunging depth— if this is reached the degression is no longer effective
Q11	DWELL TIME AT DEPTH	Time in seconds in which the tool dwells when the drilling depth is reached

10351_en.h NC program

In the 10351_en.h NC program the control executes all calculations and path contours required for the drilling sequence.

Do not change this NC program if you do not wish to modify the drilling sequence. All required parameters are defined in the main program.

