HEIDENHAIN

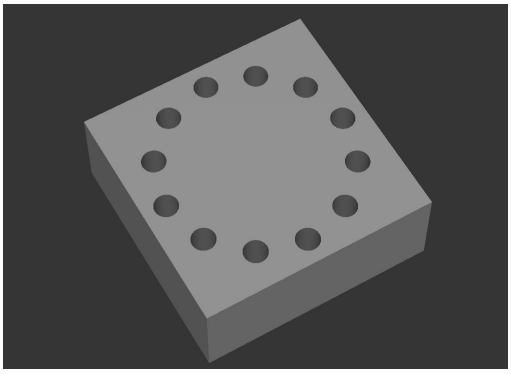
NC Solutions

Description of NC program 1110

English (en)
4/2017

1 Description of NC programs 1110_en.h and 11101_en.h

NC program for defining a point pattern as a circle and generating the holes with bore milling at the machining positions.



Description

With this NC program the control generates a point pattern in the form of a circle. At the calculated positions the control calls the NC program 11101_en.h. With this NC program the control machines holes with a bore-milling strategy.

1110_en.h NC program

In the first part of the NC program you define all parameters required for the calculation. The control then implements three calculations. You define the tool in the next program section, and in Cycle 12 you define the file path of the NC program run by the control at the calculated positions. The control calls a subprogram. The control executes all calculations and positioning movements in this subprogram. The control calculates the positions so that it approaches these positions in a peripheral path and executes machining. After the last machining step the control retracts the tool and terminates the program.

Circular hole pattern parameters

Parameter	Name	Meaning
Q31	CIRCULAR HOLE PATTERN RADIUS	Radius of the circular hole pattern generated by the control
Q32	STARTING ANGLE	Polar angle related to the circular hole pattern center at which the control executes the first machining step
Q33	CENTER OF CIRCULAR HOLE PATTERN IN THE X AXIS	X coordinate of the circular hole pattern center
Q34	CENTER OF CIRCULAR HOLE PATTERN IN THE Y AXIS	Y coordinate of the circular hole pattern center
Q35	STEPPING ANGLE	Incremental angle between two machining steps
Q36	NUMBER OF OPERATIONS	Number of machining steps run by the control

Hole parameters

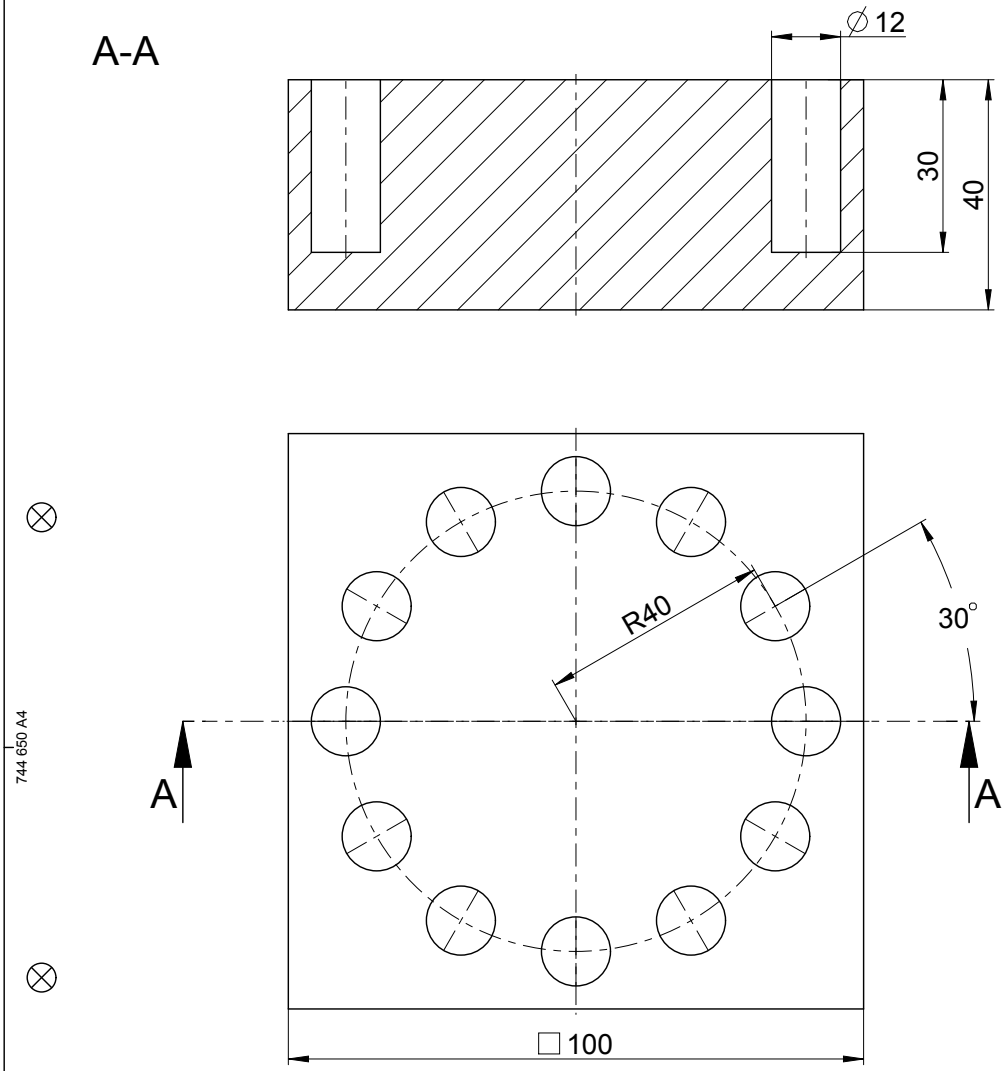
Parameter	Name	Meaning
Q40	HOLE DIAMETER	Outside diameter of the holes
Q41	DEPTH	Absolute depth of the holes
Q42	NUMBER OF HELICAL PATHS	Number of 360° helical paths with each hole
Q43	SAFETY CLEARANCE	Z clearance between the tool and workpiece surface approached by the control in rapid traverse before machining
Q44	FEED RATE FOR MILLING	Traversing speed of the tool during machining

11101_en.h NC program

The control executes all path contours for the bore milling sequence in this NC program. If you do not wish to change the drilling sequence you do not need to edit this program because all required parameters are defined in the main program.

Bore milling sequence

1 The control uses the pre-positioning coordinates for the circle center point
2 The control approaches the starting point of the helical path in the XY plane
3 The control approaches the starting point in the Z plane
4 The tool executes a helical path until the drilling depth is reached
5 At the bottom of the hole the control executes a 360° circular path to generate a face
6 The control positions the tool at the center of the hole
7 The tool retracts to safety clearance
8 Bore milling is complete and the control returns to the main program



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RoHS			●blanke Flächen/Blank surfaces
Maße in mm / Dimensions in mm			
Werkstückkanten nach ISO 13715 Workpiece edges ISO 13715 (-0.3 / +0.3)	Allgemeintoleranzen ISO 2768-mH ≦6mm: ±0,2 General tolerances ISO 2768-mH ≦6mm: ±0,2	Tolerierung nach ISO 8015 Tolerances as per ISO 8015	Oberflächen nach ISO 1302 Surfaces as per ISO 1302
		Oberflächenbehandlung: Surface treatment:	

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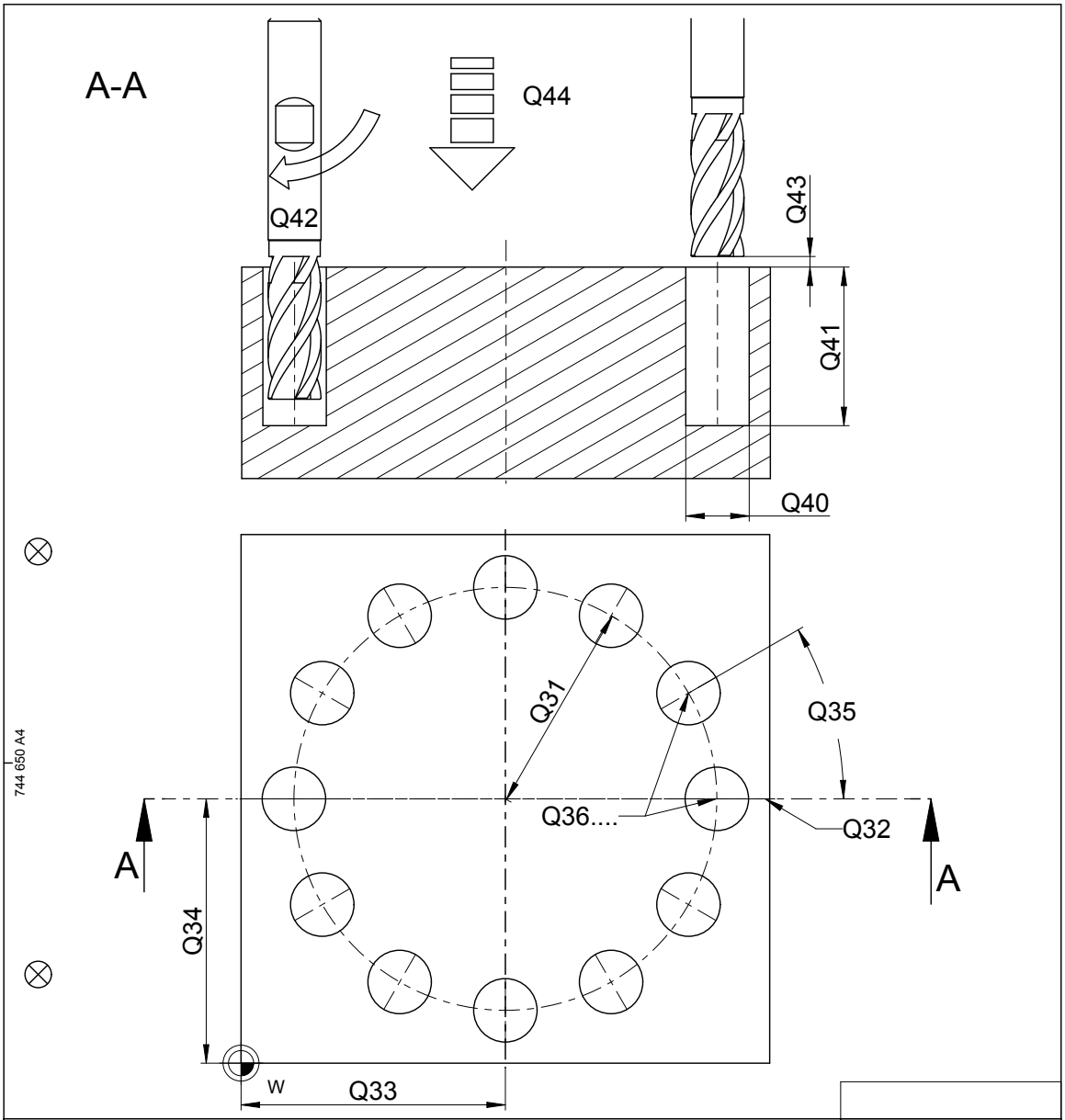

			ID number
Text:			Change No. C000941-10 Phase: Nicht-Serie
	Original drawing Scale / Format	Bausatz Assembly kit Montage-ZZ / Assembly Drawing	Werkstoff: Material:
RoHS	1:1 / A4		●blanke Flächen/Blank surfaces
Maße in mm / Dimensions in mm			
Werkstückkanten nach ISO 13715 Workpiece edges ISO 13715 -0.3 +0.3	Allgemeintoleranzen ISO 2768-mH ≦6mm: ±0,2 General tolerances ISO 2768-mH ≦6mm: ±0,2	Tolerierung nach ISO 8015 Tolerances as per ISO 8015 Oberflächenbehandlung: Surface treatment:	Oberflächen nach ISO 1302 Surfaces as per ISO 1302

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