



HEIDENHAIN



NC Solutions

Description of NC Program 5090

English (en)
9/2017

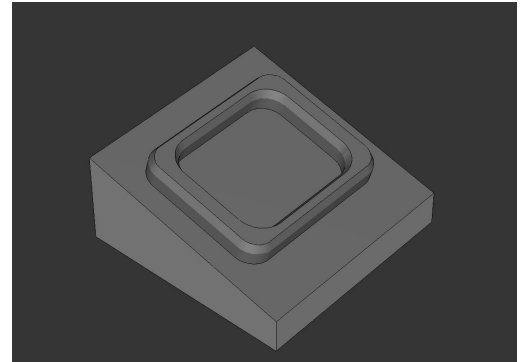
1 Description of NC program 5090

NC program for machining a chamfer on a rectangular contour.



The NC program can be run on the following controls if software option 2 (option 9) is activated:

- TNC 640
- TNC 620 as of NC software number 340 56x-03
- iTNC 530 as of NC software number 340 422-xx



Requirement:

Use an inclined tool to mill a chamfer on a rectangular contour that is machined in a tilted coordinate system.

Description of NC program 5090_en.h

In NC program 5090_en.h, you first define the workpiece blank and the tool. The control subsequently tilts the coordinate system to the spatial angle you defined. Then machining begins. Three machining steps are defined with cycles to prepare the workpiece. A **FACE MILLING** cycle is defined as the first machining step. Then the **RECTANGULAR POCKET** and **RECTANGULAR STUD** cycles follow.

The chamfers are subsequently machined. You first have to define the necessary parameters. After that, a **TOOL CALL** block is defined. Only a **DL** is defined in this tool call. The definition of the **DL** enables you to influence whether and how far the control positions the cutting edge beyond the lower edge of the chamfer.

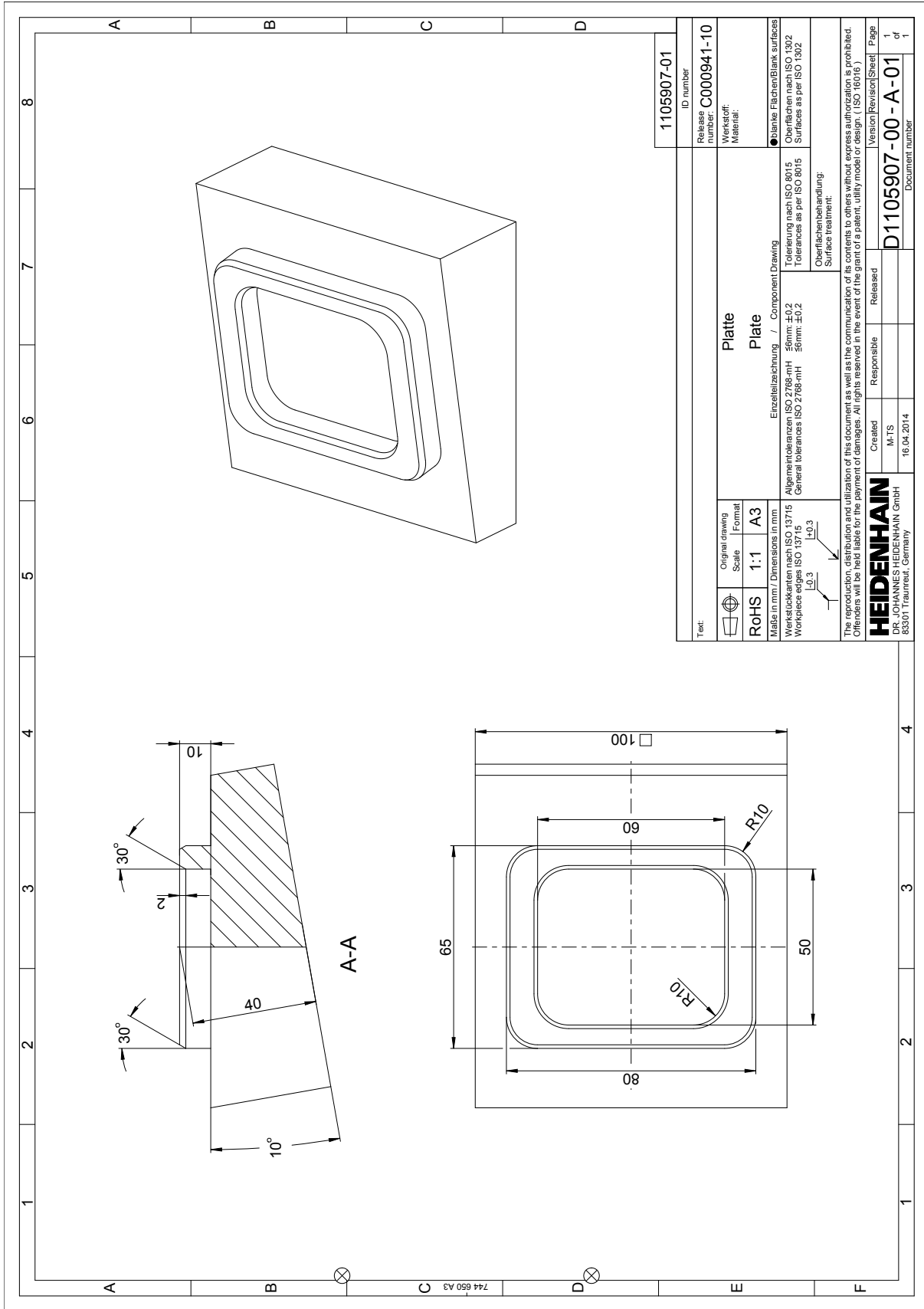
The control then calls a subprogram. In this subprogram, the control jumps to another subprogram—the type of subprogram depends on whether inside machining or outside machining has been defined. In these subprograms, **FUNCTION TCPM** is defined first. The control subsequently carries out a few calculations. It then pre-positions the tool to the calculated starting position. The control subsequently inclines the tool by the defined chamfer angle and approaches the first contour point. The control uses linear paths to create the contour. The control calculates the end points for the straight lines of the rectangle at the beginning of the subprogram. The calculations and positioning movements for the corner radii are carried out by the control in a program section repeat.

After the contour has been completely machined, the control returns the tool to the starting point and retracts it in the Z axis. Then it resets **FUNCTION TCPM**.

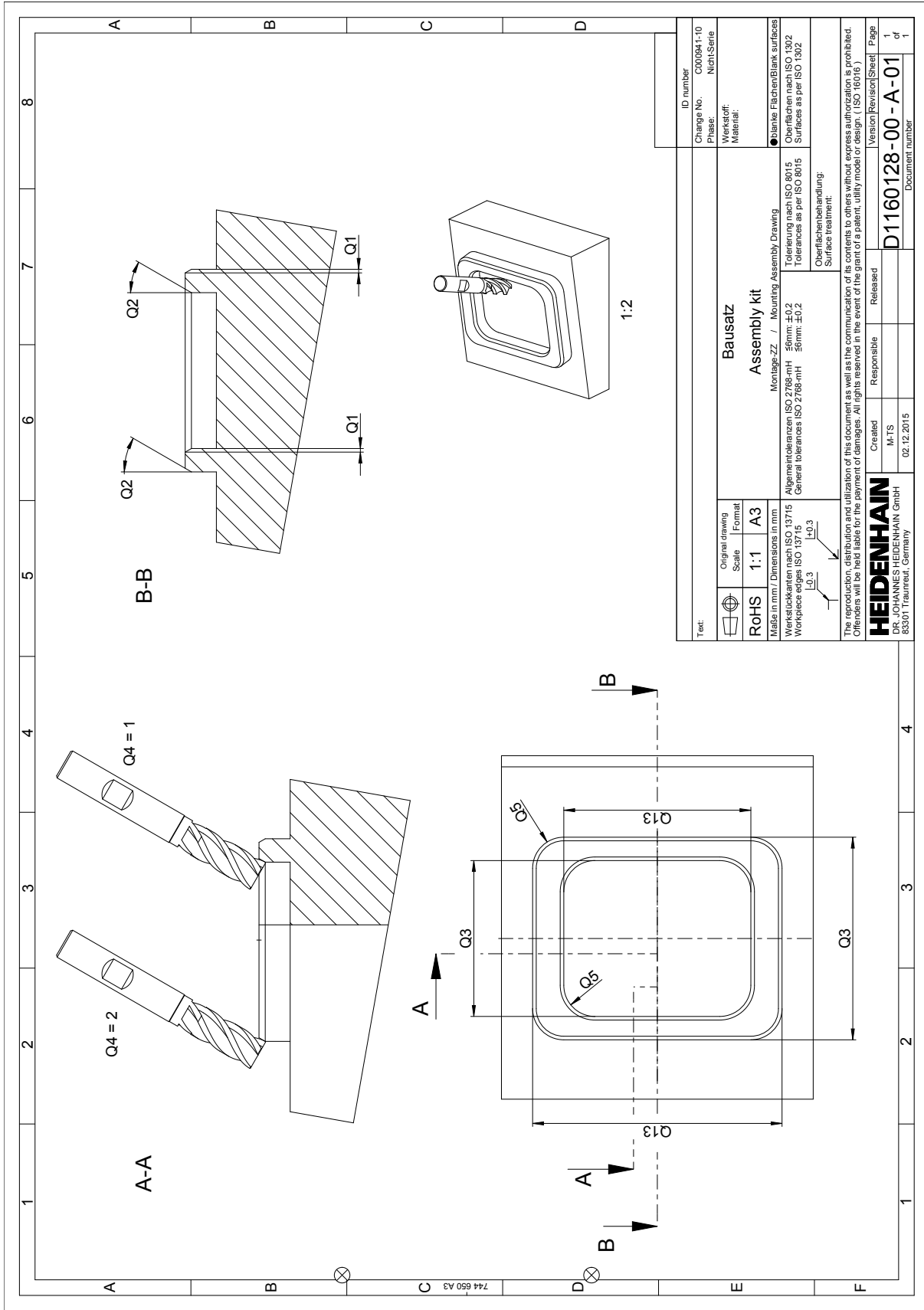
In the example program, a definition of the parameters and call of the subprogram follow again after the return jump to the main program, in order to execute outside machining in addition to inside machining.

After the second chamfer has also been completed, the control moves the tool to a safe position. It subsequently resets the tilting of the working plane and ends the NC program.

Parameter	Name	Meaning
Q1	CHAMFER LENGTH	Length of the chamfer section
Q2	CHAMFER ANGLE	Inclination angle of the tool with respect to the Z axis
Q13	LENGTH X	Length of the rectangle in the X axis
Q3	WIDTH Y	Width of the rectangle in the Y axis
Q5	RADIUS	Corner radius of the rectangle
Q4	1=OUTSIDE 2=INSIDE PROCESSING	Selecting the type of machining <ul style="list-style-type: none"> ■ 1 = Machining on the inside ■ 2 = Machining on the outside



ID number 1105907-01	
Release number: C000941-10	Werkstoff: Material:
●blanke Flächen/Blank surfaces Oberflächen nach ISO 1302 Surfaces as per ISO 1302	
Einzelteilzeichnung / Component Drawing	
Titel Platte	Platte
Maße in mm / Dimensions in mm Werkstückkanten nach ISO 13715 Workpiece edges ISO 13715	Platte Tolerierung nach ISO 8015 Tolerances as per ISO 8015 General tolerances ISO 2768-mH ±0.2
Original drawing Scale 1:1	Format A3
Oberflächenbehandlung: Surface treatment:	
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Created M-TS 16.04.2014	Released
Responsible	Version/Revision/Sheet
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D1105907-00 - A - 01	
Document number	Page 1 of 1



ID number		C000941-10	
Change No.		Nicht-Serie	
Phase:			
Werkstoff:			
Material:		●blanke Flächen/Blank surfaces	
		Oberflächen nach ISO 1302	
		Surfaces as per ISO 1302	
Original drawing		Montage-ZZ / Mounting Assembly Drawing	
Scale		1:1	
Format		A3	
RoHS			
Maße in mm / Dimensions in mm		Tolerieren nach ISO 8015	
Werkstücktoleranzen ISO 13715		±0,2	
Allgemeintoleranzen ISO 2768-mH		±0,2	
Werkstückkanten ISO 13715		±0,3	
Werkstückkanten ISO 13715		±0,3	
Oberflächenbehandlung:			
Surface treatment:			
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HEIDENHAIN		Version/Revision/Sheet	
DR. JOHANNES HEIDENHAIN GmbH		D1160128-00 - A - 01	
83301 Traunreut, Germany		Document number	
Created	Released	Page	1
M-TS		of	1
02.12.2015		Document number	