HEIDENHAIN

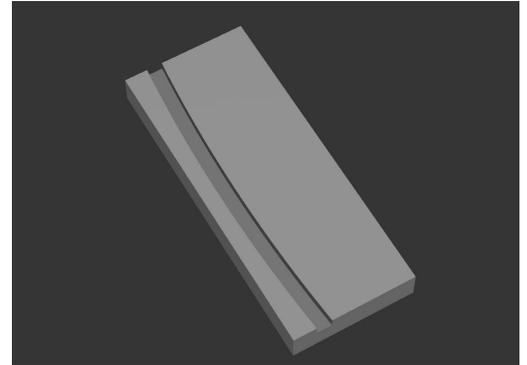# NC solutions

Description of NC program 2080

1 Description of the NC program 2080_en.h

NC program for machining radii larger than the maximum value in the NC block.

Description

With this NC program, the control calculates and machines an arc with a radius larger than the maximum definable value in an NC block. For this purpose, the control divides the tool path into linear paths, which it then moves through. The SPACING parameter allows you to define the number of linear movements and thus influence the accuracy of the arc.

At program start, you define the tool and all of the parameters required for machining.

Then the control moves the tool to a safe position in the Z axis. After this, the control shifts the datum to the starting point of the arc and rotates the coordinate system by the angle of rotation you have defined.

In the following step, the control calls a subprogram. The control first carries out several calculations in this subprogram. The control subsequently pre-positions the tool at the starting point in the X/Y plane and at the set-up clearance in the Z axis. Then the control moves the tool to the milling depth at the programmed feed rate. In a program loop, the control first checks whether the end point of the arc has been reached. If this is not the case, then the control calculates the end point coordinates of the next linear element and approaches this point. The control continues to repeat this loop until the end point of the arc has been reached.

Then the control moves the tool to the set-up clearance, rescinds the radius compensation and ends the subprogram.

Finally, the control resets the coordinate transformations, retracts the tool, and ends the NC program.

ℹ Programming notes:
- You define the end point of the arc via the chord length. In the default setting, the chord is located along the positive Y axis. With the ROTATION parameter, you define the rotation of the coordinate system and can thereby influence the direction of the machining operation.
- When defining the parameter, you specify the radius of the arc by means of two parameters. The radius to be machined is the product of the two values.

Parameter	Name	Meaning
Q16	STARTING COORDINATE IN X	Coordinate of the starting point of the arc in the X axis
Q17	STARTING COORDINATE IN Y	Coordinate of the starting point of the arc in the Y axis
Q7	CHORD LENGTH IN Y	Incremental length of the chord from the starting point of the Y axis
Q3	MILLING DEPTH	Milling depth
Q5	SPACING	The number of linear movements into which the control divides the arc
Q6	RADIUS	Radius of the arc
Q8	RADIUS FACTOR	Factor by which the control multiplies the defined RADIUS (Q6) in order to calculate the radius to be machined
Q10	SAFETY CLEARANCE	Z coordinate that the control approaches in rapid traverse before machining
Q11	FEED RATE FOR PECKING	Traversing speed of the tool in the Z axis
Q12	FEED RATE FOR MILLING	Traversing speed of the tool in the X/Y plane
Q15	RADIUS COMPENSATION	Direction of the radius compensation ■ +40 for a milling path without radius compensation (R0) ■ +41 for a milling path with radius compensation to the left (RL) ■ +42 for a milling path with radius compensation to the right (RR)
Q18	ROTATION	Angle of the coordinate system rotation around

100

R5000

R4986

1000

t= -15

744 650 A4

100

1:5

20

400

		ID number	
Text:		Change No.	C000941-10
		Phase:	Nicht-Serie

	Original drawing	Platte	Werkstoff:
	Scale	Format	Plate	Material:

RoHS	1:1	A4	Plate	

Maße in mm / Dimensions in mm	Einzelteilzeichnung / Component Drawing	⬤blanke Flächen/Blank surfaces

Werkstückkanten nach ISO 13715 Workpiece edges ISO 13715	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
-0.3 +0.3		Oberflächenbehandlung: Surface treatment:	

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Q11

Q12

Q3

Q10

2:5

Q15 40=R0, 41=RL, 42=RR

744 650 A4

Q7

Q6 x Q8

A

Q5

A
1:1

Q17

Y+

X+

1:10

Q18 Rot= 0°

W

Q16

			ID number	
Text:			Change No.	C000941-10
			Phase:	Nicht-Serie
	Original drawing		Werkstoff:	
	Scale	Format	Material:	
RoHS	1:1	A4	Bausatz	
			Assembly kit	
Maße in mm / Dimensions in mm		Montage-ZZ / Assembly Drawing		● blanke Flächen/Blank surfaces
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-0.3 +0.3			Oberflächenbehandlung: Surface treatment:	

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