

## CNC PROGRAMMING EXAMPLE



Machining			
Thread size	G 1/16	Material	1.2379 - 60 HRC
Length	12.00 mm		

Tool		Cutting values			
Description	Carbide thread milling cutter for metric threads, hard machining	Vc	30 m/min	n	1565 U/min
Milling cutter diameter	d1 = 6.1 mm	Vf	138 mm/min	Vm	29 mm/min
Programming radius	3.02 mm	fz	0.022 mm/z	Total time	156 s
Order no.	WZG 175518/28G				

NC - Options			
Machine control	Siemens / Heidenhain	Milling process	Climb milling [counterclockwise]
Milling path	Center point path, incremental	Direction of rotation	left (M4)

**Note**  
CNC program serves as a programming example and should be tested by simulation before use.

CNC - Code Siemens	CNC - Code Heidenhain
; Tool = WZG 175518/28G	; Tool = WZG 175518/28G
; Thread depth = 12 mm	; Thread depth = 12 mm
; Material = 1.2379 - 60 HRC	; Material = 1.2379 - 60 HRC
; Vc=30 m/min	; Vc=30 m/min
; fz=0.022 mm/z	; fz=0.022 mm/z
; Climb milling [counterclockwise]	; Climb milling [counterclockwise]
; One cut	; One cut
; Thread type = G 1/16 Innengewinde rechts	; Thread type = G 1/16 Innengewinde rechts
N10 M6 T1	0 BEGIN PGM 1 MM
N20 G90 G54 G00 X0.000 Y0.000	1 BLK FORM 0.1 Z X-100 Y-100 Z-40
N30 Z2.000 S1565 M4 M8	2 BLK FORM 0.2 X100 Y100 Z0
N40 G00 Z0.500	3 TOOL CALL 1 Z S1565
N50 G91	4 L M14
N60 G42 G01 X0.000 Y3.050 F14 ;(F69)	5 L M51
N70 G02 X0.000 Y-6.912 I0.000 J-3.456 Z-0.136	6 L X0 Y0 R0 F MAX
N80 G02 X0.000 Y0.000 I0.000 J3.862 Z-0.907 F29 ;(F138)	7 L Z2.000 F MAX
N90 G02 X0.000 Y0.000 I0.000 J3.862 Z-0.907	8 L Z0.500 F MAX
N100 G02 X0.000 Y0.000 I0.000 J3.862 Z-0.907	9 L IY-3.050 RR F14 ;(F69)
N110 G02 X0.000 Y0.000 I0.000 J3.862 Z-0.907	10 CC IX0 IY3.456
N120 G02 X0.000 Y0.000 I0.000 J3.862 Z-0.907	11 CP IPA+180 IZ-0.136 DR-
N130 G02 X0.000 Y0.000 I0.000 J3.862 Z-0.907	12 CC IX0 IY-3.862
N140 G02 X0.000 Y0.000 I0.000 J3.862 Z-0.907	13 CP IPA+360 IZ-0.907 DR- F29 ;(F138)
N150 G02 X0.000 Y0.000 I0.000 J3.862 Z-0.907	14 CP IPA+360 IZ-0.907 DR-
N160 G02 X0.000 Y0.000 I0.000 J3.862 Z-0.907	15 CP IPA+360 IZ-0.907 DR-
N170 G02 X0.000 Y0.000 I0.000 J3.862 Z-0.907	16 CP IPA+360 IZ-0.907 DR-
N180 G02 X0.000 Y0.000 I0.000 J3.862 Z-0.907	17 CP IPA+360 IZ-0.907 DR-
N190 G02 X0.000 Y0.000 I0.000 J3.862 Z-0.907	18 CP IPA+360 IZ-0.907 DR-
N200 G02 X0.000 Y0.000 I0.000 J3.862 Z-0.907	19 CP IPA+360 IZ-0.907 DR-
N210 G02 X0.000 Y0.000 I0.000 J3.862 Z-0.907	20 CP IPA+360 IZ-0.907 DR-
N220 G02 X0.000 Y6.912 I0.000 J3.456 Z-0.136	21 CP IPA+360 IZ-0.907 DR-
N230 G40 G01 X0.000 Y-3.050	22 CP IPA+360 IZ-0.907 DR-
N240 G90	23 CP IPA+360 IZ-0.907 DR-
N250 G00 Z2.000 M9	24 CP IPA+360 IZ-0.907 DR-
N260 M30	25 CP IPA+360 IZ-0.907 DR-
	26 CP IPA+360 IZ-0.907 DR-
	27 CC IX0 IY-3.456
	28 CP IPA+180 IZ-0.136 DR-
	29 L IY3.050 R0
	30 L Z2.000 R0 F MAX
	31 L M9
	32 L M52
	33 L M30
	34 END PGM 1 MM

Important! For controls that refer to the feed rate of the outer path, the value in brackets must be used!

## CNC PROGRAMMING EXAMPLE



Machining			
Thread size	G 1/8	Material	1.2379 - 60 HRC
Length	12.00 mm		

Tool		Cutting values			
Description	Carbide thread milling cutter for metric threads, hard machining	Vc	30 m/min	n	1565 U/min
Milling cutter diameter	d1 = 6.1 mm	Vf	175 mm/min	Vm	65 mm/min
Programming radius	3.02 mm	fz	0.028 mm/z	Total time	154 s
Order no.	WZG 175518/28G				

NC - Options			
Machine control	Siemens / Heidenhain	Milling process	Climb milling [counterclockwise]
Milling path	Center point path, incremental	Direction of rotation	left (M4)

**Note**  
CNC program serves as a programming example and should be tested by simulation before use.

CNC - Code Siemens	CNC - Code Heidenhain
; Tool = WZG 175518/28G	; Tool = WZG 175518/28G
; Thread depth = 12 mm	; Thread depth = 12 mm
; Material = 1.2379 - 60 HRC	; Material = 1.2379 - 60 HRC
; Vc=30 m/min	; Vc=30 m/min
; fz=0.028 mm/z	; fz=0.028 mm/z
; Climb milling [counterclockwise]	; Climb milling [counterclockwise]
; One cut	; One cut
; Thread type = G1/8 Innengewinde rechts	; Thread type = G1/8 Innengewinde rechts
N10 M6 T1	0 BEGIN PGM 1 MM
N20 G90 G54 G00 X0.000 Y0.000	1 BLK FORM 0.1 Z X-100 Y-100 Z-40
N30 Z2.000 S151265 M4 M8	2 BLK FORM 0.2 X100 Y100 Z0
N40 G00 Z0.500	3 TOOL CALL 1 Z S1565
N50 G91	4 L M14
N60 G42 G01 X0.000 Y3.050 F33 ;(F88)	5 L M51
N70 G02 X0.000 Y-7.914 I0.000 J-3.957 Z-0.136	6 L X0 Y0 R0 F MAX
N80 G02 X0.000 Y0.000 I0.000 J4.864 Z-0.907 F65 ;(F175)	7 L Z2.000 F MAX
N90 G02 X0.000 Y0.000 I0.000 J4.864 Z-0.907	8 L Z0.500 F MAX
N100 G02 X0.000 Y0.000 I0.000 J4.864 Z-0.907	9 L IY-3.050 RR F33 ;(F88)
N110 G02 X0.000 Y0.000 I0.000 J4.864 Z-0.907	10 CC IX0 IY3.957
N120 G02 X0.000 Y0.000 I0.000 J4.864 Z-0.907	11 CP IPA+180 IZ-0.136 DR-
N130 G02 X0.000 Y0.000 I0.000 J4.864 Z-0.907	12 CC IX0 IY4.864
N140 G02 X0.000 Y0.000 I0.000 J4.864 Z-0.907	13 CP IPA+360 IZ-0.907 DR- F65 ;(F175)
N150 G02 X0.000 Y0.000 I0.000 J4.864 Z-0.907	14 CP IPA+360 IZ-0.907 DR-
N160 G02 X0.000 Y0.000 I0.000 J4.864 Z-0.907	15 CP IPA+360 IZ-0.907 DR-
N170 G02 X0.000 Y0.000 I0.000 J4.864 Z-0.907	16 CP IPA+360 IZ-0.907 DR-
N180 G02 X0.000 Y0.000 I0.000 J4.864 Z-0.907	17 CP IPA+360 IZ-0.907 DR-
N190 G02 X0.000 Y0.000 I0.000 J4.864 Z-0.907	18 CP IPA+360 IZ-0.907 DR-
N200 G02 X0.000 Y0.000 I0.000 J4.864 Z-0.907	19 CP IPA+360 IZ-0.907 DR-
N210 G02 X0.000 Y0.000 I0.000 J4.864 Z-0.907	20 CP IPA+360 IZ-0.907 DR-
N220 G02 X0.000 Y7.914 I0.000 J3.957 Z-0.136	21 CP IPA+360 IZ-0.907 DR-
N230 G40 G01 X0.000 Y-3.050	22 CP IPA+360 IZ-0.907 DR-
N240 G90	23 CP IPA+360 IZ-0.907 DR-
N250 G00 Z2.000 M9	24 CP IPA+360 IZ-0.907 DR-
N260 M30	25 CP IPA+360 IZ-0.907 DR-
	26 CP IPA+360 IZ-0.907 DR-
	27 CC IX0 IY3.957
	28 CP IPA+180 IZ-0.136 DR-
	29 L IY3.050 R0
	30 L Z2.000 R0 F MAX
	31 L M9
	32 L M52
	33 L M30
	34 END PGM 1 MM

Important! For controls that refer to the feed rate of the outer path, the value in brackets must be used!

## CNC PROGRAMMING EXAMPLE



Machining			
Thread size	G 1/4	Material	1.2379 - 60 HRC
Length	18.00 mm		

Tool		Cutting values			
Description	Carbide thread milling cutter for metric threads, hard machining	Vc	30 m/min	n	927 U/min
Milling cutter diameter	d1 = 10.3 mm	Vf	156 mm/min	Vm	34 mm/min
Programming radius	5.11 mm	fz	0.042 mm/z	Total time	234 s
Order no.	WZG 175518/19G				

NC - Options			
Machine control	Siemens / Heidenhain	Milling process	Climb milling [counterclockwise]
Milling path	Center point path, incremental	Direction of rotation	left (M4)

**Note**  
CNC program serves as a programming example and should be tested by simulation before use.

CNC - Code Siemens	CNC - Code Heidenhain
; Tool = WZG 175518/19G	; Tool = WZG 175518/19G
; Thread depth = 18 mm	; Thread depth = 18 mm
; Material = 1.2379 - 60 HRC	; Material = 1.2379 - 60 HRC
; Vc=30 m/min	; Vc=30 m/min
; fz=0.042 mm/z	; fz=0.042 mm/z
; Climb milling [counterclockwise]	; Climb milling [counterclockwise]
; One cut	; One cut
; Thread type = G 1/4 Innengewinde rechts	; Thread type = G 1/4 Innengewinde rechts
N10 M6 T1	0 BEGIN PGM 1 MM
N20 G90 G54 G00 X0.000 Y0.000	1 BLK FORM 0.1 Z X-100 Y-100 Z-40
N30 Z2.000 S927 M4 M8	2 BLK FORM 0.2 X100 Y100 Z0
N40 G00 Z0.500	3 TOOL CALL 1 Z S927
N50 G91	4 L M14
N60 G42 G01 X0.000 Y5.150 F17 ;(F78)	5 L M51
N70 G02 X0.000 Y-11.728 I0.000 J-5.864 Z-0.201	6 L X0 Y0 R0 F MAX
N80 G02 X0.000 Y0.000 I0.000 J6.578 Z-1.337 F34 ;(F156)	7 L Z2.000 F MAX
N90 G02 X0.000 Y0.000 I0.000 J6.578 Z-1.337	8 L Z0.500 F MAX
N100 G02 X0.000 Y0.000 I0.000 J6.578 Z-1.337	9 L IY-5.150 RR F17 ;(F78)
N110 G02 X0.000 Y0.000 I0.000 J6.578 Z-1.337	10 CC IX0 IY5.864
N120 G02 X0.000 Y0.000 I0.000 J6.578 Z-1.337	11 CP IPA+180 IZ-0.201 DR-
N130 G02 X0.000 Y0.000 I0.000 J6.578 Z-1.337	12 CC IX0 IY-6.578
N140 G02 X0.000 Y0.000 I0.000 J6.578 Z-1.337	13 CP IPA+360 IZ-1.337 DR- F34 ;(F156)
N150 G02 X0.000 Y0.000 I0.000 J6.578 Z-1.337	14 CP IPA+360 IZ-1.337 DR-
N160 G02 X0.000 Y0.000 I0.000 J6.578 Z-1.337	15 CP IPA+360 IZ-1.337 DR-
N170 G02 X0.000 Y0.000 I0.000 J6.578 Z-1.337	16 CP IPA+360 IZ-1.337 DR-
N180 G02 X0.000 Y0.000 I0.000 J6.578 Z-1.337	17 CP IPA+360 IZ-1.337 DR-
N190 G02 X0.000 Y0.000 I0.000 J6.578 Z-1.337	18 CP IPA+360 IZ-1.337 DR-
N200 G02 X0.000 Y0.000 I0.000 J6.578 Z-1.337	19 CP IPA+360 IZ-1.337 DR-
N210 G02 X0.000 Y0.000 I0.000 J6.578 Z-1.337	20 CP IPA+360 IZ-1.337 DR-
N220 G02 X0.000 Y11.728 I0.000 J5.864 Z-0.201	21 CP IPA+360 IZ-1.337 DR-
N230 G40 G01 X0.000 Y-5.150	22 CP IPA+360 IZ-1.337 DR-
N240 G90	23 CP IPA+360 IZ-1.337 DR-
N250 G00 Z2.000 M9	24 CP IPA+360 IZ-1.337 DR-
N260 M30	25 CP IPA+360 IZ-1.337 DR-
	26 CP IPA+360 IZ-1.337 DR-
	27 CC IX0 IY-5.864
	28 CP IPA+180 IZ-0.201 DR-
	29 L IY5.150 R0
	30 L Z2.000 R0 F MAX
	31 L M9
	32 L M52
	33 L M30
	34 END PGM 1 MM

Important! For controls that refer to the feed rate of the outer path, the value in brackets must be used!

## CNC PROGRAMMING EXAMPLE



Machining			
Thread size	G 3/8	Material	1.2379 - 60 HRC
Length	18.00 mm		

Tool		Cutting values			
Description	Carbide thread milling cutter for metric threads, hard machining	Vc	30 m/min	n	927 U/min
Milling cutter diameter	d1 = 10.3 mm	Vf	185 mm/min	Vm	71 mm/min
Programming radius	5.11 mm	fz	0.05 mm/z	Total time	250 s
Order no.	WZG 175518/19G				

NC - Options			
Machine control	Siemens / Heidenhain	Milling process	Climb milling [counterclockwise]
Milling path	Center point path, incremental	Direction of rotation	left (M4)

**Note**  
CNC program serves as a programming example and should be tested by simulation before use.

CNC - Code Siemens	CNC - Code Heidenhain
; Tool = WZG 175518/19G	; Tool = WZG 175518/19G
; Thread depth = 18 mm	; Thread depth = 18 mm
; Material = 1.2379 - 60 HRC	; Material = 1.2379 - 60 HRC
; Vc=30 m/min	; Vc=30 m/min
; fz=0.050 mm/z	; fz=0.050 mm/z
; Climb milling [counterclockwise]	; Climb milling [counterclockwise]
; One cut	; One cut
; Thread type = G 3/8 Innengewinde rechts	; Thread type = G 3/8 Innengewinde rechts
N10 M6 T1	0 BEGIN PGM 1 MM
N20 G90 G54 G00 X0.000 Y0.000	1 BLK FORM 0.1 Z X-100 Y-100 Z-40
N30 Z2.000 S927 M4 M8	2 BLK FORM 0.2 X100 Y100 Z0
N40 G00 Z0.500	3 TOOL CALL 1 Z S927
N50 G91	4 L M14
N60 G42 G01 X0.000 Y5.150 F35 ;(F93)	5 L M51
N70 G02 X0.000 Y-13.481 I0.000 J-6.740 Z-0.201	6 L X0 Y0 R0 F MAX
N80 G02 X0.000 Y0.000 I0.000 J8.331 Z-1.337 F71 ;(F185)	7 L Z2.000 F MAX
N90 G02 X0.000 Y0.000 I0.000 J8.331 Z-1.337	8 L Z0.500 F MAX
N100 G02 X0.000 Y0.000 I0.000 J8.331 Z-1.337	9 L IY-5.150 RR F35 ;(F93)
N110 G02 X0.000 Y0.000 I0.000 J8.331 Z-1.337	10 CC IX0 IY6.740
N120 G02 X0.000 Y0.000 I0.000 J8.331 Z-1.337	11 CP IPA+180 IZ-0.201 DR-
N130 G02 X0.000 Y0.000 I0.000 J8.331 Z-1.337	12 CC IX0 IY-8.331
N140 G02 X0.000 Y0.000 I0.000 J8.331 Z-1.337	13 CP IPA+360 IZ-1.337 DR- F71 ;(F185)
N150 G02 X0.000 Y0.000 I0.000 J8.331 Z-1.337	14 CP IPA+360 IZ-1.337 DR-
N160 G02 X0.000 Y0.000 I0.000 J8.331 Z-1.337	15 CP IPA+360 IZ-1.337 DR-
N170 G02 X0.000 Y0.000 I0.000 J8.331 Z-1.337	16 CP IPA+360 IZ-1.337 DR-
N180 G02 X0.000 Y0.000 I0.000 J8.331 Z-1.337	17 CP IPA+360 IZ-1.337 DR-
N190 G02 X0.000 Y0.000 I0.000 J8.331 Z-1.337	18 CP IPA+360 IZ-1.337 DR-
N200 G02 X0.000 Y0.000 I0.000 J8.331 Z-1.337	19 CP IPA+360 IZ-1.337 DR-
N210 G02 X0.000 Y0.000 I0.000 J8.331 Z-1.337	20 CP IPA+360 IZ-1.337 DR-
N220 G02 X0.000 Y13.481 I0.000 J6.740 Z-0.201	21 CP IPA+360 IZ-1.337 DR-
N230 G40 G01 X0.000 Y-5.150	22 CP IPA+360 IZ-1.337 DR-
N240 G90	23 CP IPA+360 IZ-1.337 DR-
N250 G00 Z2.000 M9	24 CP IPA+360 IZ-1.337 DR-
N260 M30	25 CP IPA+360 IZ-1.337 DR-
	26 CP IPA+360 IZ-1.337 DR-
	27 CC IX0 IY-6.740
	28 CP IPA+180 IZ-0.201 DR-
	29 L IY5.150 R0
	30 L Z2.000 R0 F MAX
	31 L M9
	32 L M52
	33 L M30
	34 END PGM 1 MM

Important! For controls that refer to the feed rate of the outer path, the value in brackets must be used!