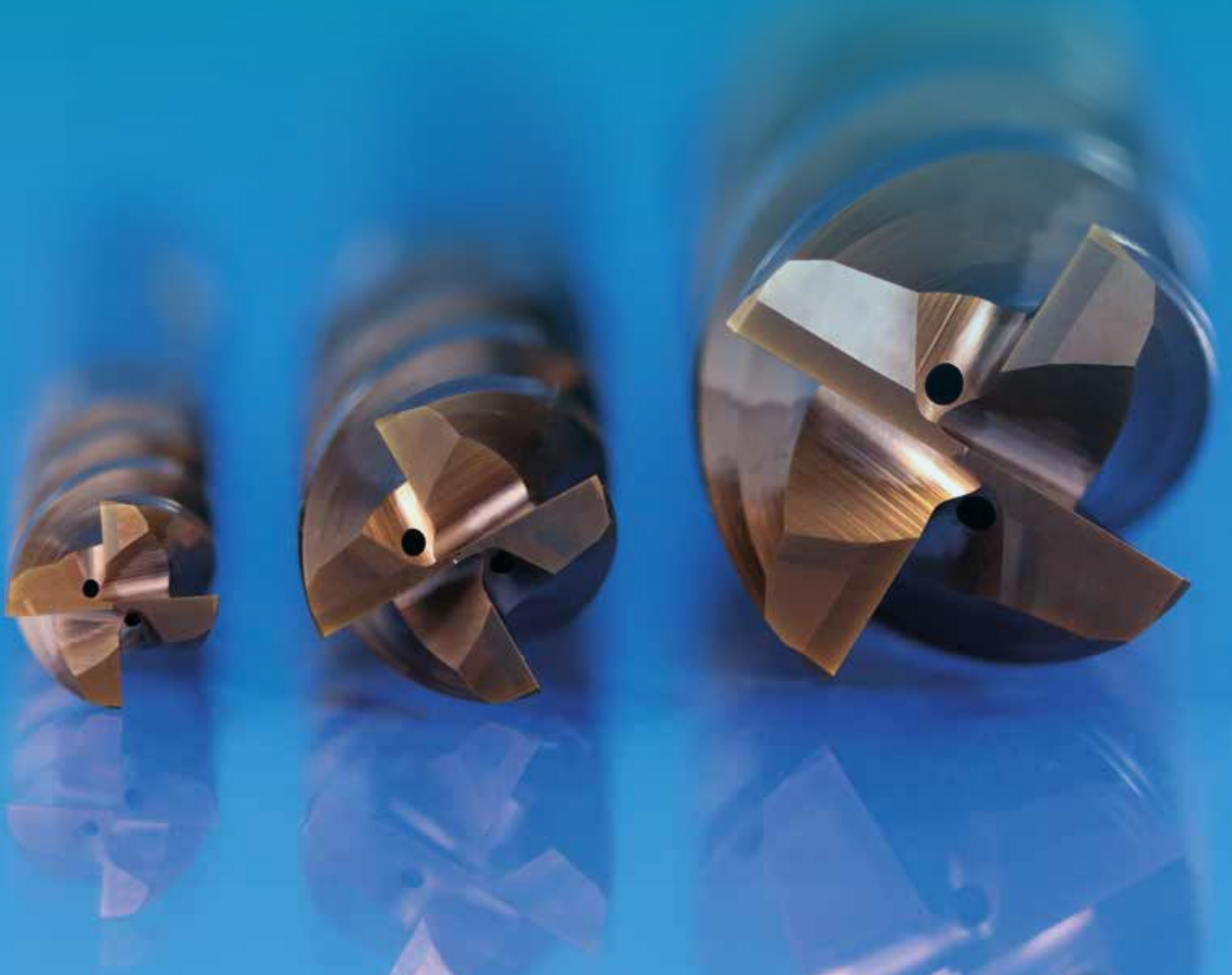




Jongen Werkzeugtechnik



VHM 479W HD08



Products from



Willich



North-Rhine
Westphalia



Germany



Europe

for



Europe

and the



The Tool

Many materials with high ductility and tendency to stick are always a challenge in machining. Problems with the chip flow are in most cases the performance-limiting criteria.

To generate process reliability and machining performance for this application area, Jongen Werkzeugtechnik GmbH has developed the 4-edged solid carbide milling cutter type VHM 479W HD08.

Geometry

Four generously dimensioned profile grooves in combination with a stable basic construction and a positive cutting edge geometry with a special cutting edge preparation are the properties that make this tool type so powerful and resilient.

The tool has a special groove geometry for machining inox, difficult-to-machine materials such as nickel-based alloys and titanium, as well as the machining of steel materials up to medium strength values.

The carbide with a grain size of 1.0µm and the silicon-doped HiPiMS coating form the composite of high flexural strength and wear resistance at high process temperatures required for machining these materials.

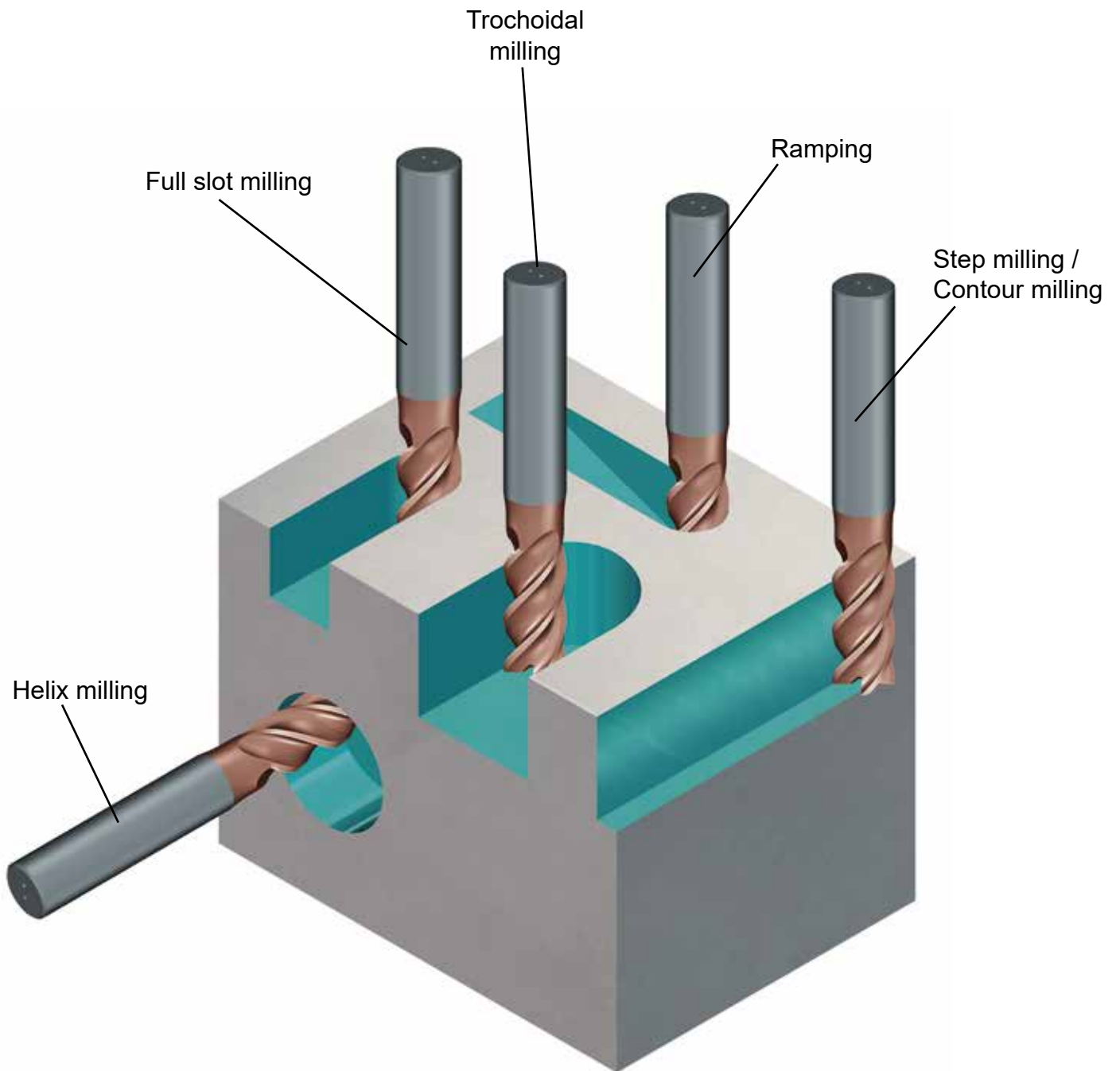
Due to the stable but still open, 4-edged construction, this tool type is particularly suitable for the economical processing of materials that cause problems due to poor chip evacuation, when using traditional tool designs.

Enlarged chip spaces in the front surface area ensure optimized chip flow for full slot milling operations with axial depth of cut 1xD depth.

In addition, the internal cooling with front side exit ensures better cooling results and chip flow when full slot milling, ramping, helix and pocket milling operations are applied.

The optimized undercut shank with soft transitions to the shank results in improved tool rigidity with increased tolerance against vibrations.

Application Areas



Characteristics

Characteristic	Advantages
High performance shank tool	- Highest Productivity
Multifunctional application areas	<ul style="list-style-type: none"> - Helix milling - Ramping with a ramping angle up to 29° - Slot milling - Contour milling - Trochoidal milling, especially of closed cavities (pocket milling) - Roughing and finishing
Internal cooling channels	- Better cooling and chip flow for full slot milling, ramping, helix- and pocket milling
Edge chamfer	- High edge stability
Coupling made to DIN 6535-HB (Weldon)	- Safe pull out protection of the tool holder
Toric cut with soft transitions	<ul style="list-style-type: none"> - Increment of the utility length up to the DIN-clamping length - Improved tool stiffness with higher tolerance against vibrations
Optimized macro geometry	<ul style="list-style-type: none"> - Large chip spaces allow a very high chip flow → High chip removal rate → Low power consumption by lower cutting forces
Optimized micro geometry	<ul style="list-style-type: none"> - Better layer adhesion - Avoid high-frequency vibrations - Improved surface quality of the cutting edge → High wear resistance → Highest tool lives and at the same time highest feed rates

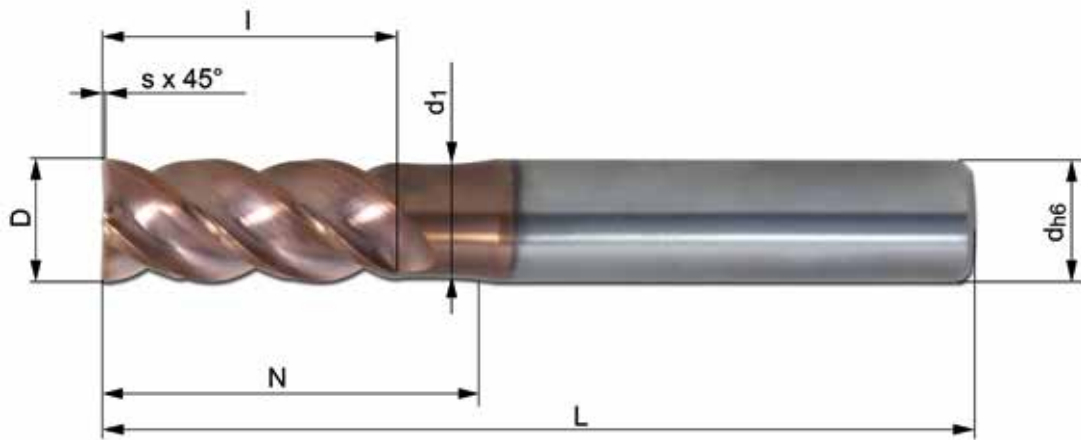
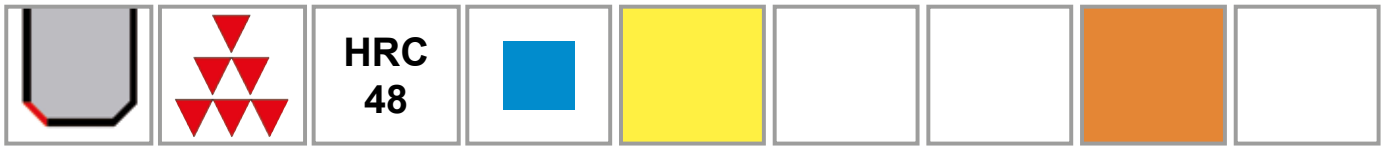
Characteristics

Characteristic	Advantages
The carbide	Special finest grain quality (1,0µm grain size) in the field of K10-K20 with middle hardness, very good wear resistance and edge stability with extraordinary high flexural strength. Developed for high-performance machining of steel, inox, difficult-to-machine materials such as titanium and nickel-based alloys.
The coating	TiAlSiN based HiPIMS-layer of latest development step - High level of hardness and temperature stability thanks to Silicon-doping - Due to the HiPIMS technology extremely homogenous and high performance layer structure - Max. operating temperature up to 1.100°C
Carbide + Coating = Quality HD08	- Perfectly matched to one another - Suitable for wet milling, dry milling and minimal lubrication
Regrinding capability	- High cost-benefit factor

* HiPIMS = **H**igh **P**ower **I**mpulse **M**agnetron **S**puttering



Technical Data VHM 479W HD08



Tolerance D
 $\varnothing 4,0-25,0 = \begin{matrix} -0,02 \\ -0,04 \end{matrix}$



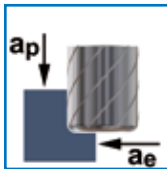
Order-No.	D	s	l	N	d ₁	d	L	Z	IC
VHM 479W-04 HD08	4	0,100	8	13	3,7	6	58	4	✗
VHM 479W-05 HD08	5	0,125	10	13	4,6	6	58	4	✗
VHM 479W-06 HD08	6	0,150	13	19	5,5	6	58	4	✓
VHM 479W-08 HD08	8	0,200	18	26	7,3	8	64	4	✓
VHM 479W-10 HD08	10	0,250	22	30	9,3	10	73	4	✓
VHM 479W-12 HD08	12	0,300	26	36	11,2	12	84	4	✓
VHM 479W-14 HD08	14	0,350	30	38	13,2	14	84	4	✓
VHM 479W-16 HD08	16	0,400	34	45	15,0	16	93	4	✓
VHM 479W-20 HD08	20	0,500	42	54	19,0	20	104	4	✓
VHM 479W-25 HD08	25	0,630	54	70	24,0	25	130	4	✓

IC = Internal Cooling

Key to symbols

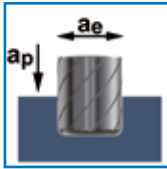
	Roughing		Pre-Finishing		Finishing
	Steel		High Grade Steel		Highly heat-resistant materials
	Edge chamfer		Rounded cutting edge		Spiral angle
	Milling cutter with special slot geometry		Stable tool core		Chip space enlargement
	The tool has multiple internal channels with front side exit		Submersible milling tool		Shaft shape made to DIN 6535-HB (Weldon)

Cutting Data Recommendations VHM 479W HD08 - STEP MILLING



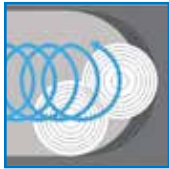
Material	D [mm]	Z	V _c [m/min]	f _z [mm]	a _p [mm]	a _e [mm]	n [min ⁻¹]	V _f [mm/min]	Q [cm ³ /min]
General structural steel, unalloyed steel	4	4	185 (155-200)	0,027 (0,024-0,032)	6,8	1,9	14.800	1.600	20,63
	5	4	185 (155-200)	0,033 (0,029-0,039)	8,5	2,3	11.820	1.560	30,50
	6	4	185 (155-200)	0,039 (0,034-0,046)	11,1	2,8	9.850	1.540	47,74
	8	4	185 (155-200)	0,052 (0,046-0,061)	15,3	3,7	7.380	1.530	86,84
	10	4	185 (155-200)	0,065 (0,057-0,076)	19,8	4,6	5.900	1.530	139,72
	12	4	185 (155-200)	0,080 (0,070-0,094)	23,4	5,5	4.920	1.570	202,32
	14	4	185 (155-200)	0,093 (0,081-0,109)	27,0	6,4	4.210	1.570	270,60
	16	4	185 (155-200)	0,106 (0,093-0,125)	30,6	7,3	3.690	1.560	348,92
Low alloyed steel	4	4	155 (125-170)	0,019 (0,017-0,022)	6,8	1,7	12.400	940	10,89
	5	4	155 (125-170)	0,024 (0,021-0,028)	8,5	2,1	9.910	950	16,98
	6	4	155 (125-170)	0,028 (0,025-0,033)	11,1	2,5	8.250	920	25,64
	8	4	155 (125-170)	0,037 (0,032-0,043)	15,3	3,3	6.180	910	46,15
	10	4	155 (125-170)	0,047 (0,041-0,055)	19,8	4,1	4.940	930	75,42
	12	4	155 (125-170)	0,058 (0,051-0,068)	23,4	4,9	4.120	960	109,50
	14	4	155 (125-170)	0,066 (0,058-0,078)	27,0	5,7	3.530	930	143,28
	16	4	155 (125-170)	0,076 (0,067-0,089)	30,6	6,5	3.090	940	186,57
INOX, ferritic, sulphurised	4	4	135 (105-150)	0,019 (0,017-0,022)	6,8	1,9	10.800	820	10,59
	5	4	135 (105-150)	0,023 (0,020-0,027)	8,5	2,3	8.630	790	15,50
	6	4	135 (105-150)	0,028 (0,025-0,033)	11,1	2,8	7.190	800	24,99
	8	4	135 (105-150)	0,037 (0,032-0,043)	15,3	3,7	5.380	800	45,06
	10	4	135 (105-150)	0,046 (0,040-0,054)	19,8	4,6	4.310	790	72,14
	12	4	135 (105-150)	0,057 (0,050-0,067)	23,4	5,5	3.590	820	105,15
	14	4	135 (105-150)	0,065 (0,057-0,076)	27,0	6,4	3.070	800	137,89
	16	4	135 (105-150)	0,075 (0,066-0,088)	30,6	7,3	2.690	810	180,04
INOX, martensitic	4	4	90 (60-105)	0,019 (0,017-0,022)	6,8	1,9	7.200	550	7,05
	5	4	90 (60-105)	0,023 (0,020-0,027)	8,5	2,3	5.750	530	10,34
	6	4	90 (60-105)	0,028 (0,025-0,033)	11,1	2,8	4.790	540	16,66
	8	4	90 (60-105)	0,037 (0,032-0,043)	15,3	3,7	3.590	530	30,06
	10	4	90 (60-105)	0,046 (0,040-0,054)	19,8	4,6	2.870	530	48,09
	12	4	90 (60-105)	0,057 (0,050-0,067)	23,4	5,5	2.390	550	70,14
	14	4	90 (60-105)	0,065 (0,057-0,076)	27,0	6,4	2.050	530	91,93
	16	4	90 (60-105)	0,075 (0,066-0,088)	30,6	7,3	1.790	540	119,96
INOX, austenitic	4	4	105 (75-120)	0,019 (0,017-0,022)	6,8	1,7	8.400	640	7,38
	5	4	105 (75-120)	0,024 (0,021-0,028)	8,5	2,1	6.710	640	11,50
	6	4	105 (75-120)	0,028 (0,025-0,033)	11,1	2,5	5.590	630	17,34
	8	4	105 (75-120)	0,037 (0,032-0,043)	15,3	3,3	4.190	620	31,25
	10	4	105 (75-120)	0,046 (0,040-0,054)	19,8	4,1	3.350	620	50,01
	12	4	105 (75-120)	0,057 (0,050-0,067)	23,4	4,9	2.790	640	72,81
	14	4	105 (75-120)	0,065 (0,057-0,076)	27,0	5,7	2.390	620	95,57
	16	4	105 (75-120)	0,075 (0,066-0,088)	30,6	6,5	2.090	630	124,71
High-heat resistant steel	4	4	49,5 (20-60)	0,013 (0,011-0,015)	6,8	1,5	3.960	210	2,09
	5	4	49,5 (20-60)	0,017 (0,015-0,020)	8,5	1,8	3.160	220	3,29
	6	4	49,5 (20-60)	0,019 (0,017-0,022)	11,1	2,2	2.630	200	4,88
	8	4	49,5 (20-60)	0,026 (0,023-0,031)	15,3	2,9	1.970	210	9,10
	10	4	49,5 (20-60)	0,032 (0,028-0,038)	19,8	3,6	1.580	200	14,33
	12	4	49,5 (20-60)	0,040 (0,035-0,047)	23,4	4,3	1.320	210	21,13
	14	4	49,5 (20-60)	0,047 (0,041-0,055)	27,0	5,0	1.130	210	28,49
	16	4	49,5 (20-60)	0,053 (0,046-0,062)	30,6	5,7	990	210	36,45
20	4	49,5 (20-60)	0,065 (0,057-0,076)	37,8	7,1	790	200	54,75	
25	4	49,5 (20-60)	0,082 (0,072-0,096)	48,6	8,9	630	210	89,10	

Cutting Data Recommendations VHM 479W HD08 - FULL SLOT MILLING



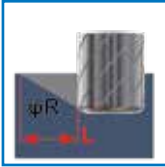
Material	D [mm]	Z	Vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min ⁻¹]	Vf [mm/min]	Q [cm ³ /min]
General structural steel, unalloyed steel	4	4	160 (130-175)	0,023 (0,020-0,027)	4,3	4,0	12.800	1.180	20,24
	5	4	160 (130-175)	0,028 (0,025-0,033)	5,4	5,0	10.230	1.150	30,92
	6	4	160 (130-175)	0,033 (0,029-0,039)	6,4	6,0	8.520	1.120	43,16
	8	4	160 (130-175)	0,044 (0,039-0,052)	8,6	8,0	6.380	1.120	77,26
	10	4	160 (130-175)	0,055 (0,048-0,065)	10,8	10,0	5.100	1.120	121,18
	12	4	160 (130-175)	0,068 (0,060-0,080)	12,9	12,0	4.250	1.160	178,95
	14	4	160 (130-175)	0,079 (0,069-0,093)	15,1	14,0	3.640	1.150	243,32
	16	4	160 (130-175)	0,090 (0,079-0,106)	17,2	16,0	3.190	1.150	315,65
	20	4	160 (130-175)	0,112 (0,098-0,132)	21,6	20,0	2.550	1.140	492,91
	25	4	160 (130-175)	0,139 (0,122-0,163)	27,0	25,0	2.040	1.130	764,78
Low alloyed steel	4	4	125 (95-140)	0,016 (0,014-0,019)	3,9	4,0	10.000	640	9,97
	5	4	125 (95-140)	0,020 (0,018-0,024)	4,9	5,0	7.990	640	15,66
	6	4	125 (95-140)	0,024 (0,021-0,028)	5,9	6,0	6.650	640	22,59
	8	4	125 (95-140)	0,031 (0,027-0,036)	7,9	8,0	4.990	620	39,06
	10	4	125 (95-140)	0,039 (0,034-0,046)	9,9	10,0	3.990	620	61,48
	12	4	125 (95-140)	0,048 (0,042-0,056)	11,8	12,0	3.320	640	90,20
	14	4	125 (95-140)	0,055 (0,048-0,065)	13,8	14,0	2.850	630	120,94
	16	4	125 (95-140)	0,063 (0,055-0,074)	15,8	16,0	2.490	630	158,51
	20	4	125 (95-140)	0,080 (0,070-0,094)	19,8	20,0	1.990	640	252,25
	25	4	125 (95-140)	0,099 (0,087-0,116)	24,7	25,0	1.590	630	389,03
INOX, ferritic, sulphurised	4	4	90 (60-105)	0,016 (0,014-0,019)	3,9	4,0	7.200	460	7,18
	5	4	90 (60-105)	0,020 (0,018-0,024)	4,9	5,0	5.750	460	11,27
	6	4	90 (60-105)	0,024 (0,021-0,028)	5,9	6,0	4.790	460	16,25
	8	4	90 (60-105)	0,031 (0,027-0,036)	7,9	8,0	3.590	450	28,12
	10	4	90 (60-105)	0,039 (0,034-0,046)	9,9	10,0	2.870	450	44,25
	12	4	90 (60-105)	0,048 (0,042-0,056)	11,8	12,0	2.390	460	64,99
	14	4	90 (60-105)	0,055 (0,048-0,065)	13,8	14,0	2.050	450	86,94
	16	4	90 (60-105)	0,063 (0,055-0,074)	15,8	16,0	1.790	450	114,01
	20	4	90 (60-105)	0,080 (0,070-0,094)	19,8	20,0	1.430	460	181,37
	25	4	90 (60-105)	0,099 (0,087-0,116)	24,7	25,0	1.150	450	279,73
INOX, martensitic	4	4	60 (30-75)	0,016 (0,014-0,019)	3,9	4,0	4.800	310	4,79
	5	4	60 (30-75)	0,020 (0,018-0,024)	4,9	5,0	3.840	310	7,50
	6	4	60 (30-75)	0,024 (0,021-0,028)	5,9	6,0	3.190	310	10,83
	8	4	60 (30-75)	0,031 (0,027-0,036)	7,9	8,0	2.390	300	18,71
	10	4	60 (30-75)	0,039 (0,034-0,046)	9,9	10,0	1.910	300	29,50
	12	4	60 (30-75)	0,048 (0,042-0,056)	11,8	12,0	1.590	310	43,33
	14	4	60 (30-75)	0,055 (0,048-0,065)	13,8	14,0	1.370	300	57,96
	16	4	60 (30-75)	0,063 (0,055-0,074)	15,8	16,0	1.200	300	76,09
	20	4	60 (30-75)	0,080 (0,070-0,094)	19,8	20,0	960	310	120,78
	25	4	60 (30-75)	0,099 (0,087-0,116)	24,7	25,0	760	300	186,49
INOX, austenitic	4	4	75 (45-90)	0,016 (0,014-0,019)	3,9	4,0	6.000	380	5,97
	5	4	75 (45-90)	0,020 (0,018-0,024)	4,9	5,0	4.790	380	9,38
	6	4	75 (45-90)	0,024 (0,021-0,028)	5,9	6,0	3.990	380	13,56
	8	4	75 (45-90)	0,031 (0,027-0,036)	7,9	8,0	2.990	370	23,38
	10	4	75 (45-90)	0,039 (0,034-0,046)	9,9	10,0	2.390	370	36,93
	12	4	75 (45-90)	0,048 (0,042-0,056)	11,8	12,0	1.990	380	54,09
	14	4	75 (45-90)	0,055 (0,048-0,065)	13,8	14,0	1.710	380	72,45
	16	4	75 (45-90)	0,063 (0,055-0,074)	15,8	16,0	1.490	380	95,05
	20	4	75 (45-90)	0,080 (0,070-0,094)	19,8	20,0	1.190	380	151,27
	25	4	75 (45-90)	0,099 (0,087-0,116)	24,7	25,0	960	380	233,42
High-heat resistant steel	4	4	35 (10-50)	0,011 (0,010-0,013)	3,0	4,0	2.800	120	1,48
	5	4	35 (10-50)	0,014 (0,012-0,016)	3,8	5,0	2.240	130	2,38
	6	4	35 (10-50)	0,016 (0,014-0,019)	4,5	6,0	1.860	120	3,21
	8	4	35 (10-50)	0,021 (0,018-0,025)	6,1	8,0	1.400	120	5,71
	10	4	35 (10-50)	0,027 (0,024-0,032)	7,6	10,0	1.120	120	9,12
	12	4	35 (10-50)	0,033 (0,029-0,039)	9,1	12,0	930	120	13,32
	14	4	35 (10-50)	0,039 (0,034-0,046)	10,7	14,0	800	120	18,58
	16	4	35 (10-50)	0,044 (0,039-0,052)	12,2	16,0	700	120	23,81
	20	4	35 (10-50)	0,055 (0,048-0,065)	15,3	20,0	560	120	37,33
	25	4	35 (10-50)	0,069 (0,060-0,081)	19,1	25,0	450	120	58,26

Cutting Data Recommendations VHM 479W HD08 - TROCHOIDAL MILLING



Material	D [mm]	Z	V _c [m/min]	f _z [mm]	h _m max [mm]	a _p [mm]	a _e [mm]	n [min-1]	V _f [mm/min]	Q [cm ³ /min]
General structural steel, unalloyed steel	4	4	210 (180-225)	0,023 (0,020-0,025)	0,022	7,2	0,79	16.800	1.480	8,44
	5	4	210 (180-225)	0,026 (0,023-0,029)	0,025	9,0	0,99	13.420	1.340	11,98
	6	4	210 (180-225)	0,030 (0,026-0,033)	0,029	11,7	1,19	11.180	1.300	18,04
	8	4	210 (180-225)	0,040 (0,035-0,045)	0,039	16,2	1,59	8.380	1.310	33,64
	10	4	210 (180-225)	0,050 (0,044-0,056)	0,049	20,9	1,99	6.700	1.310	54,57
	12	4	210 (180-225)	0,062 (0,054-0,069)	0,060	24,7	2,40	5.580	1.340	79,32
	14	4	210 (180-225)	0,072 (0,063-0,081)	0,070	28,5	2,80	4.780	1.340	106,77
	16	4	210 (180-225)	0,082 (0,072-0,092)	0,080	32,3	3,20	4.180	1.340	138,30
Low alloyed steel	20	4	210 (180-225)	0,101 (0,089-0,114)	0,099	39,9	4,00	3.350	1.320	211,31
	25	4	210 (180-225)	0,127 (0,112-0,143)	0,124	51,3	5,00	2.680	1.330	340,12
	4	4	190 (160-205)	0,016 (0,014-0,018)	0,016	7,2	0,76	15.200	970	5,32
	5	4	190 (160-205)	0,021 (0,018-0,023)	0,020	9,0	0,95	12.140	970	8,30
	6	4	190 (160-205)	0,025 (0,022-0,028)	0,024	11,7	1,14	10.110	970	12,94
	8	4	190 (160-205)	0,033 (0,029-0,037)	0,032	16,2	1,52	7.580	970	23,86
	10	4	190 (160-205)	0,041 (0,036-0,046)	0,040	20,9	1,90	6.060	970	38,48
	12	4	190 (160-205)	0,050 (0,044-0,056)	0,049	24,7	2,29	5.050	990	55,94
INOX, ferritic, sulphurised	14	4	190 (160-205)	0,058 (0,051-0,066)	0,057	28,5	2,68	4.330	990	75,31
	16	4	190 (160-205)	0,067 (0,059-0,075)	0,065	32,3	3,06	3.780	980	97,16
	20	4	190 (160-205)	0,083 (0,073-0,093)	0,081	39,9	3,82	3.030	980	149,37
	25	4	190 (160-205)	0,104 (0,091-0,116)	0,101	51,3	4,78	2.420	980	239,82
	4	4	140 (110-155)	0,016 (0,014-0,018)	0,016	7,2	0,71	11.200	720	3,68
	5	4	140 (110-155)	0,021 (0,018-0,023)	0,020	9,0	0,89	8.950	720	5,74
	6	4	140 (110-155)	0,025 (0,022-0,028)	0,024	11,7	1,07	7.450	720	8,95
	8	4	140 (110-155)	0,033 (0,029-0,037)	0,032	16,2	1,43	5.580	710	16,54
INOX, martensitic	10	4	140 (110-155)	0,041 (0,036-0,046)	0,040	20,9	1,79	4.470	710	26,71
	12	4	140 (110-155)	0,050 (0,044-0,056)	0,049	24,7	2,16	3.720	730	38,84
	14	4	140 (110-155)	0,058 (0,051-0,066)	0,057	28,5	2,52	3.190	730	52,14
	16	4	140 (110-155)	0,067 (0,059-0,075)	0,065	32,3	2,88	2.790	720	67,35
	20	4	140 (110-155)	0,083 (0,073-0,093)	0,081	39,9	3,60	2.230	720	103,71
	25	4	140 (110-155)	0,104 (0,091-0,116)	0,101	51,3	4,50	1.780	720	166,21
	4	4	90 (60-105)	0,016 (0,014-0,018)	0,016	7,2	0,67	7.200	460	2,23
	5	4	90 (60-105)	0,021 (0,018-0,023)	0,020	9,0	0,84	5.750	460	3,48
INOX, austenitic	6	4	90 (60-105)	0,025 (0,022-0,028)	0,024	11,7	1,01	4.790	460	5,42
	8	4	90 (60-105)	0,033 (0,029-0,037)	0,032	16,2	1,35	3.590	460	10,04
	10	4	90 (60-105)	0,041 (0,036-0,046)	0,040	20,9	1,69	2.870	460	16,21
	12	4	90 (60-105)	0,050 (0,044-0,056)	0,049	24,7	2,04	2.390	470	23,58
	14	4	90 (60-105)	0,058 (0,051-0,066)	0,057	28,5	2,38	2.050	470	31,68
	16	4	90 (60-105)	0,067 (0,059-0,075)	0,065	32,3	2,72	1.790	470	40,85
	20	4	90 (60-105)	0,083 (0,073-0,093)	0,081	39,9	3,40	1.430	460	62,95
	25	4	90 (60-105)	0,104 (0,091-0,116)	0,101	51,3	4,25	1.150	460	100,73
High-heat resistant steel	4	4	105 (75-120)	0,013 (0,012-0,015)	0,013	7,2	0,65	8.400	440	2,05
	5	4	105 (75-120)	0,016 (0,014-0,018)	0,016	9,0	0,82	6.710	430	3,15
	6	4	105 (75-120)	0,019 (0,017-0,022)	0,019	11,7	0,98	5.590	420	4,86
	8	4	105 (75-120)	0,026 (0,023-0,029)	0,025	16,2	1,31	4.190	420	8,87
	10	4	105 (75-120)	0,033 (0,029-0,037)	0,032	20,9	1,64	3.350	430	14,67
	12	4	105 (75-120)	0,040 (0,035-0,045)	0,039	24,7	1,98	2.790	440	21,27
	14	4	105 (75-120)	0,047 (0,041-0,053)	0,046	28,5	2,31	2.390	440	28,90
	16	4	105 (75-120)	0,053 (0,047-0,060)	0,052	32,3	2,64	2.090	430	37,01
General structural steel, unalloyed steel	20	4	105 (75-120)	0,067 (0,059-0,075)	0,065	39,9	3,30	1.670	430	57,14
	25	4	105 (75-120)	0,083 (0,073-0,093)	0,081	51,3	4,13	1.340	430	91,74
	4	4	50 (20-60)	0,011 (0,010-0,013)	0,011	7,2	0,45	4.000	180	0,57
	5	4	50 (20-60)	0,013 (0,012-0,015)	0,013	9,0	0,57	3.200	170	0,85
	6	4	50 (20-60)	0,015 (0,014-0,017)	0,015	11,7	0,68	2.660	160	1,27
	8	4	50 (20-60)	0,021 (0,018-0,023)	0,020	16,2	0,91	1.990	160	2,34
	10	4	50 (20-60)	0,026 (0,023-0,029)	0,025	20,9	1,14	1.590	160	3,79
	12	4	50 (20-60)	0,032 (0,028-0,036)	0,031	24,7	1,38	1.330	160	5,59
High-heat resistant steel	14	4	50 (20-60)	0,038 (0,033-0,043)	0,037	28,5	1,61	1.140	170	7,71
	16	4	50 (20-60)	0,043 (0,038-0,048)	0,042	32,3	1,84	1.000	170	9,93
	20	4	50 (20-60)	0,053 (0,047-0,060)	0,052	39,9	2,30	800	170	15,14
	25	4	50 (20-60)	0,067 (0,059-0,075)	0,065	51,3	2,88	640	170	24,38

Cutting Data Recommendations VHM 479W HD08 - RAMPING



Material	D [mm]	Z	Vc [m/min]	fz [mm]	ap max. [mm]	ae [mm]	φR max. [°]	L [mm]	n [min ⁻¹]	Vf [mm/min]
General structural steel, unalloyed steel	4	4	155 (125-170)	0,023 (0,020-0,027)	2,4	4,0	29	4,33	12.400	1.140
	5	4	155 (125-170)	0,028 (0,025-0,033)	3,0	5,0	29	5,41	9.910	1.110
	6	4	155 (125-170)	0,033 (0,029-0,039)	3,6	6,0	29	6,49	8.250	1.090
	8	4	155 (125-170)	0,044 (0,039-0,052)	4,8	8,0	29	8,66	6.180	1.090
	10	4	155 (125-170)	0,055 (0,048-0,065)	6,0	10,0	29	10,82	4.940	1.090
	12	4	155 (125-170)	0,068 (0,060-0,080)	7,2	12,0	29	12,99	4.120	1.120
	14	4	155 (125-170)	0,079 (0,069-0,093)	8,4	14,0	29	15,15	3.530	1.120
	16	4	155 (125-170)	0,090 (0,079-0,106)	9,6	16,0	29	17,32	3.090	1.110
	20	4	155 (125-170)	0,112 (0,098-0,132)	12,0	20,0	29	21,65	2.470	1.110
25	4	155 (125-170)	0,139 (0,122-0,163)	15,0	25,0	29	27,06	1.980	1.100	
Low alloyed steel	4	4	125 (95-140)	0,016 (0,014-0,019)	2,4	4,0	19	6,97	10.000	640
	5	4	125 (95-140)	0,020 (0,018-0,024)	3,0	5,0	19	8,71	7.990	640
	6	4	125 (95-140)	0,024 (0,021-0,028)	3,6	6,0	19	10,46	6.650	640
	8	4	125 (95-140)	0,031 (0,027-0,036)	4,8	8,0	19	13,94	4.990	620
	10	4	125 (95-140)	0,039 (0,034-0,046)	6,0	10,0	19	17,43	3.990	620
	12	4	125 (95-140)	0,048 (0,042-0,056)	7,2	12,0	19	20,91	3.320	640
	14	4	125 (95-140)	0,055 (0,048-0,065)	8,4	14,0	19	24,40	2.850	630
	16	4	125 (95-140)	0,063 (0,055-0,074)	9,6	16,0	19	27,88	2.490	630
	20	4	125 (95-140)	0,080 (0,070-0,094)	12,0	20,0	19	34,85	1.990	640
25	4	125 (95-140)	0,099 (0,087-0,116)	15,0	25,0	19	43,56	1.590	630	
INOX, ferritic, sulphurised	4	4	110 (80-125)	0,016 (0,014-0,019)	2,4	4,0	10	13,61	8.800	560
	5	4	110 (80-125)	0,020 (0,018-0,024)	3,0	5,0	10	17,01	7.030	560
	6	4	110 (80-125)	0,024 (0,021-0,028)	3,6	6,0	10	20,42	5.860	560
	8	4	110 (80-125)	0,031 (0,027-0,036)	4,8	8,0	10	27,22	4.390	540
	10	4	110 (80-125)	0,039 (0,034-0,046)	6,0	10,0	10	34,03	3.510	550
	12	4	110 (80-125)	0,048 (0,042-0,056)	7,2	12,0	10	40,83	2.920	560
	14	4	110 (80-125)	0,055 (0,048-0,065)	8,4	14,0	10	47,64	2.500	550
	16	4	110 (80-125)	0,063 (0,055-0,074)	9,6	16,0	10	54,44	2.190	550
	20	4	110 (80-125)	0,080 (0,070-0,094)	12,0	20,0	10	68,06	1.750	560
25	4	110 (80-125)	0,099 (0,087-0,116)	15,0	25,0	10	85,07	1.400	550	
INOX, martensitic	4	4	70 (40-85)	0,016 (0,014-0,019)	2,4	4,0	8	17,08	5.600	360
	5	4	70 (40-85)	0,020 (0,018-0,024)	3,0	5,0	8	21,35	4.470	360
	6	4	70 (40-85)	0,024 (0,021-0,028)	3,6	6,0	8	25,62	3.730	360
	8	4	70 (40-85)	0,031 (0,027-0,036)	4,8	8,0	8	34,15	2.790	350
	10	4	70 (40-85)	0,039 (0,034-0,046)	6,0	10,0	8	42,69	2.230	350
	12	4	70 (40-85)	0,048 (0,042-0,056)	7,2	12,0	8	51,23	1.860	360
	14	4	70 (40-85)	0,055 (0,048-0,065)	8,4	14,0	8	59,77	1.590	350
	16	4	70 (40-85)	0,063 (0,055-0,074)	9,6	16,0	8	68,31	1.390	350
	20	4	70 (40-85)	0,080 (0,070-0,094)	12,0	20,0	8	85,38	1.120	360
25	4	70 (40-85)	0,099 (0,087-0,116)	15,0	25,0	8	106,73	890	350	
INOX, austenitic	4	4	85 (55-100)	0,016 (0,014-0,019)	2,4	4,0	8	17,08	6.800	440
	5	4	85 (55-100)	0,020 (0,018-0,024)	3,0	5,0	8	21,35	5.430	430
	6	4	85 (55-100)	0,024 (0,021-0,028)	3,6	6,0	8	25,62	4.520	430
	8	4	85 (55-100)	0,031 (0,027-0,036)	4,8	8,0	8	34,15	3.390	420
	10	4	85 (55-100)	0,039 (0,034-0,046)	6,0	10,0	8	42,69	2.710	420
	12	4	85 (55-100)	0,048 (0,042-0,056)	7,2	12,0	8	51,23	2.260	430
	14	4	85 (55-100)	0,055 (0,048-0,065)	8,4	14,0	8	59,77	1.940	430
	16	4	85 (55-100)	0,063 (0,055-0,074)	9,6	16,0	8	68,31	1.690	430
	20	4	85 (55-100)	0,080 (0,070-0,094)	12,0	20,0	8	85,38	1.350	430
25	4	85 (55-100)	0,099 (0,087-0,116)	15,0	25,0	8	106,73	1.080	430	
High-heat resistant steel	4	4	30 (10-45)	0,011 (0,010-0,013)	1,2	4,0	4	17,16	2.400	110
	5	4	30 (10-45)	0,014 (0,012-0,016)	1,5	5,0	4	21,45	1.920	110
	6	4	30 (10-45)	0,016 (0,014-0,019)	1,8	6,0	4	25,74	1.600	100
	8	4	30 (10-45)	0,021 (0,018-0,025)	2,4	8,0	4	34,32	1.200	100
	10	4	30 (10-45)	0,027 (0,024-0,032)	3,0	10,0	4	42,90	960	100
	12	4	30 (10-45)	0,033 (0,029-0,039)	3,6	12,0	4	51,48	800	110
	14	4	30 (10-45)	0,039 (0,034-0,046)	4,2	14,0	4	60,06	680	110
	16	4	30 (10-45)	0,044 (0,039-0,052)	4,8	16,0	4	68,64	600	110
	20	4	30 (10-45)	0,055 (0,048-0,065)	6,0	20,0	4	85,80	480	100
25	4	30 (10-45)	0,069 (0,060-0,081)	7,5	25,0	4	107,25	380	110	

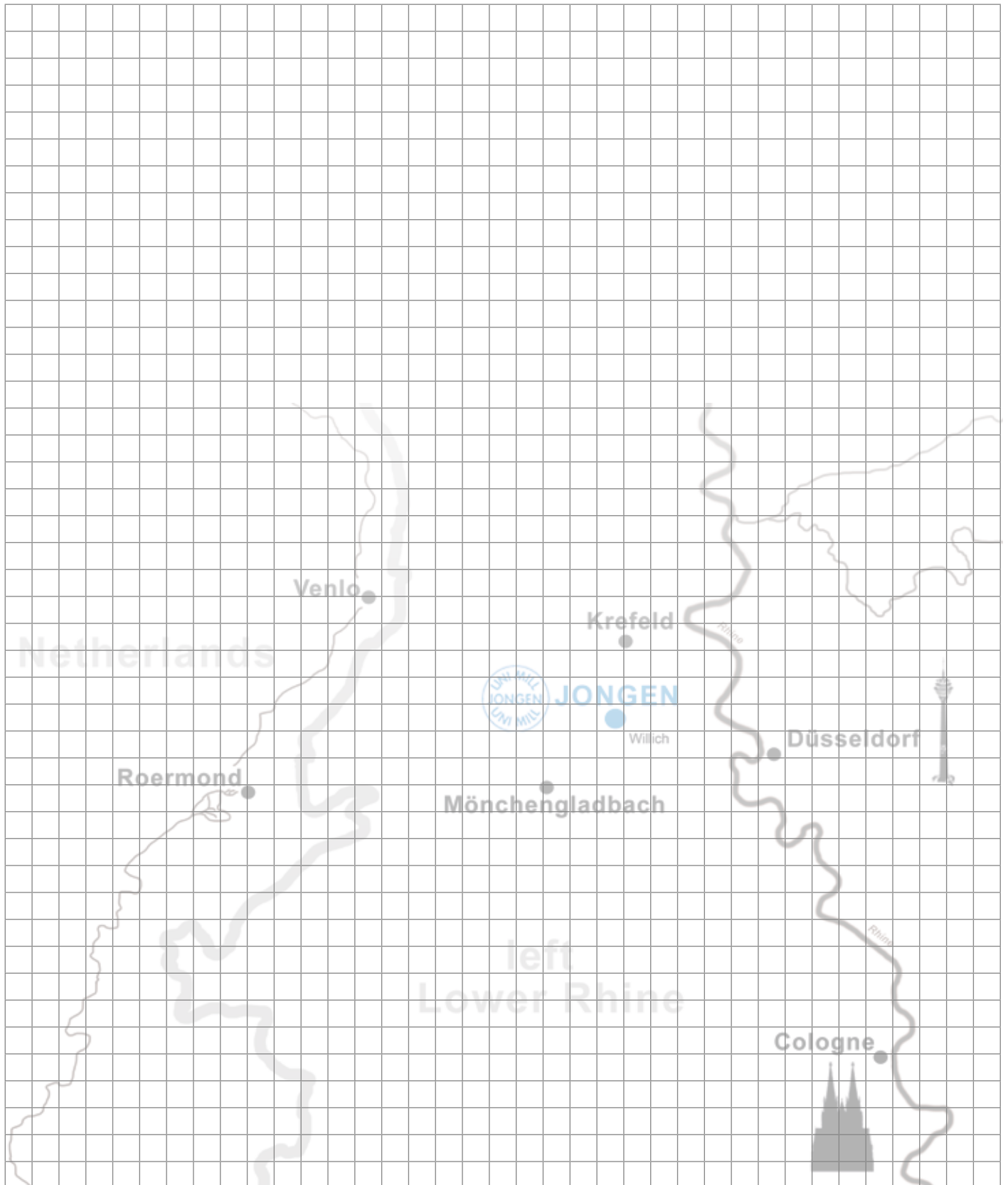
For boring operations ($\phi R = 90^\circ$), we recommend to reduce the above mentioned ramping feed rate f_z by 50%.

Cutting Data Recommendations VHM 479W HD08 - HELIX MILLING



Material	D [mm]	Z	Vc [m/min]	fz [mm]	ap max./turn [mm]	ae [mm]	φZ max. [°]	Bd [mm]	n [min ⁻¹]	Vf [mm/min]
General structural steel, unalloyed steel	4	4	185 (155-200)	0,023 (0,020-0,027)	2,4	4,00	14,29	7,00	14.800	1.360
	5	4	185 (155-200)	0,028 (0,025-0,033)	3,0	5,00	14,29	8,75	11.820	1.320
	6	4	185 (155-200)	0,033 (0,029-0,039)	3,6	6,00	14,29	10,50	9.850	1.300
	8	4	185 (155-200)	0,044 (0,039-0,052)	4,8	8,00	14,29	14,00	7.380	1.300
	10	4	185 (155-200)	0,055 (0,048-0,065)	6,0	10,00	14,29	17,50	5.900	1.300
	12	4	185 (155-200)	0,068 (0,060-0,080)	7,2	12,00	14,29	21,00	4.920	1.340
	14	4	185 (155-200)	0,079 (0,069-0,093)	8,4	14,00	14,29	24,50	4.210	1.330
	16	4	185 (155-200)	0,090 (0,079-0,106)	9,6	16,00	14,29	28,00	3.690	1.330
	20	4	185 (155-200)	0,112 (0,098-0,132)	12,0	20,00	14,29	35,00	2.950	1.320
Low alloyed steel	25	4	185 (155-200)	0,139 (0,122-0,163)	15,0	25,00	14,29	43,75	2.360	1.310
	4	4	155 (125-170)	0,016 (0,014-0,019)	2,4	4,00	14,29	7,00	12.400	790
	5	4	155 (125-170)	0,020 (0,018-0,024)	3,0	5,00	14,29	8,75	9.910	790
	6	4	155 (125-170)	0,024 (0,021-0,028)	3,6	6,00	14,29	10,50	8.250	790
	8	4	155 (125-170)	0,031 (0,027-0,036)	4,8	8,00	14,29	14,00	6.180	770
	10	4	155 (125-170)	0,039 (0,034-0,046)	6,0	10,00	14,29	17,50	4.940	770
	12	4	155 (125-170)	0,048 (0,042-0,056)	7,2	12,00	14,29	21,00	4.120	790
	14	4	155 (125-170)	0,055 (0,048-0,065)	8,4	14,00	14,29	24,50	3.530	780
	16	4	155 (125-170)	0,063 (0,055-0,074)	9,6	16,00	14,29	28,00	3.090	780
INOX, ferritic, sulphurised	20	4	155 (125-170)	0,080 (0,070-0,094)	12,0	20,00	14,29	35,00	2.470	790
	25	4	155 (125-170)	0,099 (0,087-0,116)	15,0	25,00	14,29	43,75	1.980	780
	4	4	135 (105-150)	0,016 (0,014-0,019)	2,4	4,00	14,29	7,00	10.800	690
	5	4	135 (105-150)	0,020 (0,018-0,024)	3,0	5,00	14,29	8,75	8.630	690
	6	4	135 (105-150)	0,024 (0,021-0,028)	3,6	6,00	14,29	10,50	7.190	690
	8	4	135 (105-150)	0,031 (0,027-0,036)	4,8	8,00	14,29	14,00	5.380	670
	10	4	135 (105-150)	0,039 (0,034-0,046)	6,0	10,00	14,29	17,50	4.310	670
	12	4	135 (105-150)	0,048 (0,042-0,056)	7,2	12,00	14,29	21,00	3.590	690
	14	4	135 (105-150)	0,055 (0,048-0,065)	8,4	14,00	14,29	24,50	3.070	680
INOX, martensitic	16	4	135 (105-150)	0,063 (0,055-0,074)	9,6	16,00	14,29	28,00	2.690	680
	20	4	135 (105-150)	0,080 (0,070-0,094)	12,0	20,00	14,29	35,00	2.150	690
	25	4	135 (105-150)	0,099 (0,087-0,116)	15,0	25,00	14,29	43,75	1.720	680
	4	4	90 (60-105)	0,016 (0,014-0,019)	2,4	4,00	14,29	7,00	7.200	460
	5	4	90 (60-105)	0,020 (0,018-0,024)	3,0	5,00	14,29	8,75	5.750	460
	6	4	90 (60-105)	0,024 (0,021-0,028)	3,6	6,00	14,29	10,50	4.790	460
	8	4	90 (60-105)	0,031 (0,027-0,036)	4,8	8,00	14,29	14,00	3.590	450
	10	4	90 (60-105)	0,039 (0,034-0,046)	6,0	10,00	14,29	17,50	2.870	450
	12	4	90 (60-105)	0,048 (0,042-0,056)	7,2	12,00	14,29	21,00	2.390	460
INOX, austenitic	14	4	90 (60-105)	0,055 (0,048-0,065)	8,4	14,00	14,29	24,50	2.050	450
	16	4	90 (60-105)	0,063 (0,055-0,074)	9,6	16,00	14,29	28,00	1.790	450
	20	4	90 (60-105)	0,080 (0,070-0,094)	12,0	20,00	14,29	35,00	1.430	460
	25	4	90 (60-105)	0,099 (0,087-0,116)	15,0	25,00	14,29	43,75	1.150	450
	4	4	105 (75-120)	0,016 (0,014-0,019)	2,4	4,00	14,29	7,00	8.400	540
	5	4	105 (75-120)	0,020 (0,018-0,024)	3,0	5,00	14,29	8,75	6.710	540
	6	4	105 (75-120)	0,024 (0,021-0,028)	3,6	6,00	14,29	10,50	5.590	540
	8	4	105 (75-120)	0,031 (0,027-0,036)	4,8	8,00	14,29	14,00	4.190	520
	10	4	105 (75-120)	0,039 (0,034-0,046)	6,0	10,00	14,29	17,50	3.350	520
High-heat resistant steel	12	4	105 (75-120)	0,048 (0,042-0,056)	7,2	12,00	14,29	21,00	2.790	540
	14	4	105 (75-120)	0,055 (0,048-0,065)	8,4	14,00	14,29	24,50	2.390	530
	16	4	105 (75-120)	0,063 (0,055-0,074)	9,6	16,00	14,29	28,00	2.090	530
	20	4	105 (75-120)	0,080 (0,070-0,094)	12,0	20,00	14,29	35,00	1.670	540
	25	4	105 (75-120)	0,099 (0,087-0,116)	15,0	25,00	14,29	43,75	1.340	530
	4	4	49,5 (20-60)	0,011 (0,010-0,013)	1,2	4,00	7,26	7,00	3.960	170
	5	4	49,5 (20-60)	0,014 (0,012-0,016)	1,5	5,00	7,26	8,75	3.160	180
	6	4	49,5 (20-60)	0,016 (0,014-0,019)	1,8	6,00	7,26	10,50	2.630	170
	8	4	49,5 (20-60)	0,021 (0,018-0,025)	2,4	8,00	7,26	14,00	1.970	170
10	4	49,5 (20-60)	0,027 (0,024-0,032)	3,0	10,00	7,26	17,50	1.580	170	
12	4	49,5 (20-60)	0,033 (0,029-0,039)	3,6	12,00	7,26	21,00	1.320	170	
14	4	49,5 (20-60)	0,039 (0,034-0,046)	4,2	14,00	7,26	24,50	1.130	180	
16	4	49,5 (20-60)	0,044 (0,039-0,052)	4,8	16,00	7,26	28,00	990	170	
20	4	49,5 (20-60)	0,055 (0,048-0,065)	6,0	20,00	7,26	35,00	790	170	
25	4	49,5 (20-60)	0,069 (0,060-0,081)	7,5	25,00	7,26	43,75	630	170	

Notes



The mentioned cutting parameters are standard values that may vary depending on processing, type of machine and material grade.
Errors, omissions and technical modifications are reserved.



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