Jongen Werkzeugtechnik

VHM 441W Ti08

for the machining of high grade steel

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The tool

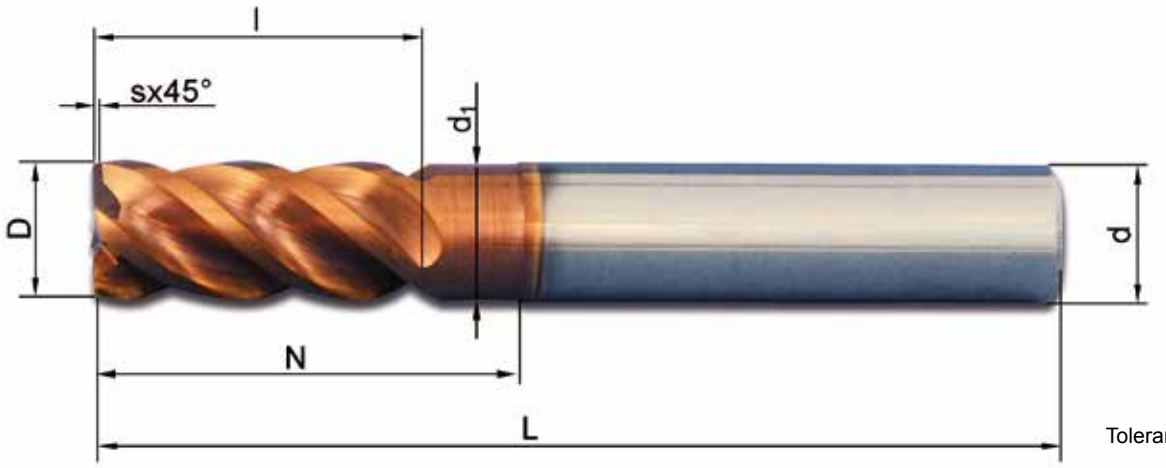
The high performance solid carbide cutter type VHM 441W, has been specifically designed for the milling of stainless materials and special alloys.

The tools can be adopted for step milling up to 2 x Ø, as well as for full slot milling up to 1 x Ø depth feed.

Product characteristics

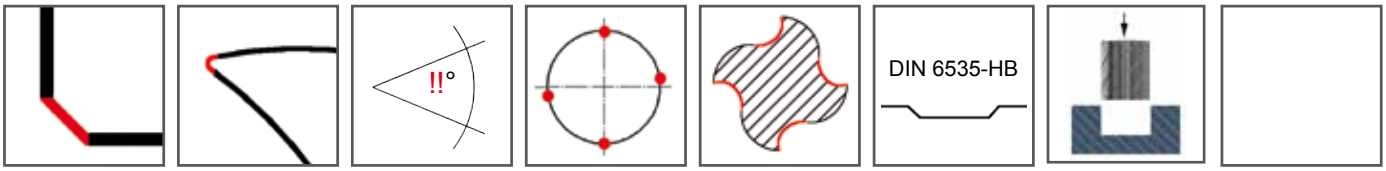
Characteristic	Your advantages
Flat shaped shank type cutter	- Suitable for roughing as well as finishing
With edge chamfer	- High edge stability
Cutting edges over centre	- Allows plunge milling
Holding shaft made to DIN 6535-HB (Weldon)	- Stable mounting of the tool
Toric cut starting from ø6	- Increment of utitlity length to DIN-clamping length
Dynamic angle of twist 41°/43°	- High running smoothness - Excellent surface finish
Differential tooth pitch	- High running smoothness - Excellent surface finish
Optimized macro geometry	- Special geometry for stainless steels - High edge stability and support of the chip flow
Optimized micro geometry	- For long tool life
Hard metal	- Finest grain carbide for high performance cutting in the ISO field K20 - High tenacity with very high wear resistance
Coating type	- TiALN / TiALSiN - Finest layer structure - High oxidation stability
Hard metal + coating type = Quality Ti08	- Especially suitable for Inox steels, high-alloy steels, and materials difficult to mill - Suitable for roughing as well as finishing - For dry milling, wet milling or milling with min. lubricant grease
Regrinding capability of the tools	- High cost-benefit factor

Technical Data



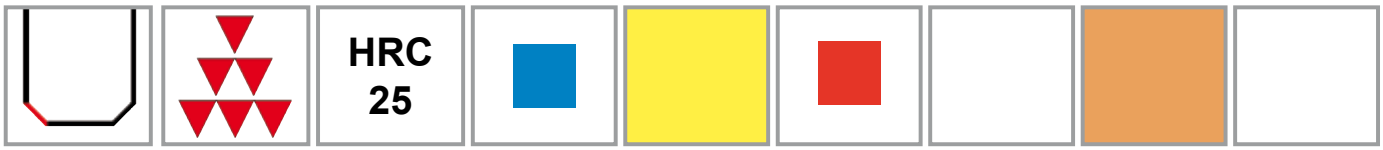
Tolerance D

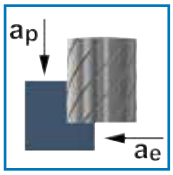
ø3,0-20,0= $^{-0,02}_{-0,04}$



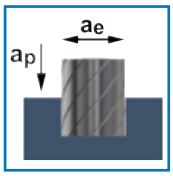
Order-No.	D	s	l	N	d_1	d_{h6}	L	Z
VHM 441W-03 Ti08	3	0,06x45°	6	6	-	6	50	4
VHM 441W-04 Ti08	4	0,09x45°	8	8	-	6	50	4
VHM 441W-05 Ti08	5	0,11x45°	10	10	-	6	50	4
VHM 441W-06 Ti08	6	0,13x45°	12	18	5,7	6	54	4
VHM 441W-08 Ti08	8	0,18x45°	16	26	7,7	8	64	4
VHM 441W-10 Ti08	10	0,22x45°	20	30	9,6	10	73	4
VHM 441W-12 Ti08	12	0,27x45°	25	36	11,6	12	84	4
VHM 441W-16 Ti08	16	0,36x45°	33	47	15,5	16	93	4
VHM 441W-20 Ti08	20	0,45x45°	42	54	19,5	20	104	4

Cutting Data Recommendations





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 [cm³/min]
High grade steel High alloyed steel	3	4	100 (60-120)	0,015 (0,005-0,030)	5	1,20	10.610	640	3,5
	4	4	100 (60-120)	0,018 (0,010-0,040)	6	1,60	7.960	570	5,5
	5	4	100 (60-120)	0,030 (0,010-0,050)	8	2,00	6.370	760	11,4
	6	4	100 (60-120)	0,040 (0,020-0,060)	9	2,40	5.310	850	18,4
	8	4	100 (60-120)	0,050 (0,020-0,070)	12	3,20	3.980	800	30,7
	10	4	100 (60-120)	0,060 (0,030-0,080)	15	4,00	3.180	760	45,6
	12	4	100 (60-120)	0,070 (0,030-0,080)	18	4,80	2.650	740	63,9
	16	4	100 (60-120)	0,080 (0,060-0,100)	24	6,40	1.990	640	98,3
	20	4	100 (60-120)	0,100 (0,080-0,150)	30	8,00	1.590	640	153,6
Titanium alloys >300 HB (e.g. TiAlV6)	3	4	50 (30-80)	0,015 (0,005-0,030)	5	1,20	5.310	320	1,7
	4	4	50 (30-80)	0,018 (0,010-0,040)	6	1,60	3.980	290	2,8
	5	4	50 (30-80)	0,030 (0,010-0,050)	8	2,00	3.180	380	5,7
	6	4	50 (30-80)	0,040 (0,020-0,060)	9	2,40	2.650	420	9,1
	8	4	50 (30-80)	0,050 (0,020-0,070)	12	3,20	1.990	400	15,4
	10	4	50 (30-80)	0,060 (0,030-0,080)	15	4,00	1.590	380	22,8
	12	4	50 (30-80)	0,070 (0,030-0,080)	18	4,80	1.330	370	32,0
	16	4	50 (30-80)	0,080 (0,060-0,100)	24	6,40	990	320	49,2
	20	4	50 (30-80)	0,100 (0,080-0,150)	30	8,00	800	320	76,8
Nickel-base alloys hardenable (e.g. Inconell 718)	3	4	30 (20-60)	0,015 (0,005-0,030)	5	1,20	3.180	190	1,0
	4	4	30 (20-60)	0,018 (0,010-0,040)	6	1,00	2.390	170	1,0
	5	4	30 (20-60)	0,030 (0,010-0,050)	8	1,25	1.910	230	2,2
	6	4	30 (20-60)	0,040 (0,020-0,060)	9	1,50	1.590	250	3,4
	8	4	30 (20-60)	0,050 (0,020-0,070)	12	2,00	1.190	240	5,8
	10	4	30 (20-60)	0,060 (0,030-0,080)	15	2,50	950	230	8,6
	12	4	30 (20-60)	0,070 (0,030-0,080)	18	3,00	800	220	11,9
	16	4	30 (20-60)	0,080 (0,060-0,100)	24	4,00	600	190	18,2
	20	4	30 (20-60)	0,100 (0,080-0,150)	30	5,00	480	190	28,5
Structural steel Unalloyed steel <800 N/mm² Tool steel Heat-treatable steel Alloyed steel 800-1200 N/mm² < 38 HRC	3	4	120 (90-180)	0,015 (0,005-0,030)	5	1,20	12.730	760	4,1
	4	4	120 (90-180)	0,018 (0,010-0,040)	7	1,80	9.550	690	8,9
	5	4	120 (90-180)	0,030 (0,010-0,050)	9	2,25	7.640	920	18,6
	6	4	120 (90-180)	0,040 (0,020-0,060)	11	2,70	6.370	1.020	29,7
	8	4	120 (90-180)	0,050 (0,020-0,070)	14	3,60	4.770	950	49,2
	10	4	120 (90-180)	0,060 (0,030-0,080)	18	4,50	3.820	920	74,5
	12	4	120 (90-180)	0,070 (0,030-0,080)	22	5,40	3.180	890	103,8
	16	4	120 (90-180)	0,080 (0,060-0,100)	29	7,20	2.390	760	157,6
	20	4	120 (90-180)	0,100 (0,080-0,150)	36	9,00	1.910	760	246,2



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 [cm³/min]
High grade steel High alloyed steel	3	4	80 (60-120)	0,01 (0,005-0,030)	3	3	8.490	320	3,5
	4	4	80 (60-120)	0,01 (0,005-0,030)	4	4	6.370	290	5,5
	5	4	80 (60-120)	0,02 (0,010-0,050)	5	5	5.090	390	11,4
	6	4	80 (60-120)	0,03 (0,020-0,060)	6	6	4.240	430	18,4
	8	4	80 (60-120)	0,03 (0,020-0,070)	8	8	3.180	400	30,7
	10	4	80 (60-120)	0,04 (0,030-0,080)	10	10	2.550	390	45,6
	12	4	80 (60-120)	0,04 (0,030-0,080)	12	12	2.120	380	63,9
	16	4	80 (60-120)	0,05 (0,030-0,080)	16	16	1.590	320	98,3
	20	4	80 (60-120)	0,07 (0,030-0,100)	20	20	1.270	360	153,6
Titanium alloys >300 HB (e.g. TiAlV6)	3	4	40 (30-80)	0,01 (0,005-0,030)	3	3	4.240	160	1,7
	4	4	40 (30-80)	0,01 (0,010-0,040)	4	4	3.180	140	2,8
	5	4	40 (30-80)	0,02 (0,010-0,050)	5	5	2.550	190	5,7
	6	4	40 (30-80)	0,03 (0,020-0,060)	6	6	2.120	210	9,1
	8	4	40 (30-80)	0,03 (0,020-0,070)	8	8	1.590	200	15,4
	10	4	40 (30-80)	0,04 (0,030-0,080)	10	10	1.270	190	22,8
	12	4	40 (30-80)	0,04 (0,030-0,080)	12	12	1.060	190	32,0
	16	4	40 (30-80)	0,05 (0,060-0,100)	16	16	800	160	49,2
	20	4	40 (30-80)	0,07 (0,030-0,100)	20	20	640	180	76,8
Nickel-base alloys hardenable (e.g. Inconell 718)	3	4	30 (20-60)	0,01 (0,005-0,030)	3	3	3.180	120	1,0
	4	4	30 (20-60)	0,01 (0,010-0,040)	4	4	2.390	110	1,0
	5	4	30 (20-60)	0,02 (0,010-0,050)	5	5	1.910	140	2,2
	6	4	30 (20-60)	0,03 (0,020-0,060)	6	6	1.590	160	3,4
	8	4	30 (20-60)	0,03 (0,020-0,070)	8	8	1.190	150	5,8
	10	4	30 (20-60)	0,04 (0,030-0,080)	10	10	950	140	8,6
	12	4	30 (20-60)	0,04 (0,030-0,080)	12	12	800	140	11,9
	16	4	30 (20-60)	0,05 (0,060-0,100)	16	16	600	120	18,2
	20	4	30 (20-60)	0,07 (0,030-0,100)	20	20	480	130	28,5
Structural steel Unalloyed steel <800 N/mm² Tool steel Heat-treatable steel Alloyed steel 800-1200 N/mm² < 38 HRC	3	4	100 (90-150)	0,01 (0,005-0,030)	3	3	10.610	400	4,1
	4	4	100 (90-150)	0,01 (0,010-0,040)	4	4	7.960	360	8,9
	5	4	100 (90-150)	0,02 (0,010-0,050)	5	5	6.370	480	18,6
	6	4	100 (90-150)	0,03 (0,020-0,060)	6	6	5.310	540	29,7
	8	4	100 (90-150)	0,03 (0,020-0,070)	8	8	3.980	500	49,2
	10	4	100 (90-150)	0,04 (0,030-0,080)	10	10	3.180	480	74,5
	12	4	100 (90-150)	0,04 (0,030-0,080)	12	12	2.650	470	103,8
	16	4	100 (90-150)	0,05 (0,060-0,100)	16	16	1.990	400	157,6
	20	4	100 (90-150)	0,07 (0,030-0,100)	20	20	1.590	450	246,2

The above-mentioned data are standard values that may vary depending on processing, type of machine and material grade.

Errors and omissions excepted!