Jongen Werkzeugtechnik

VHM 309 R..

UNI MILL® JONGEN UNI MILL

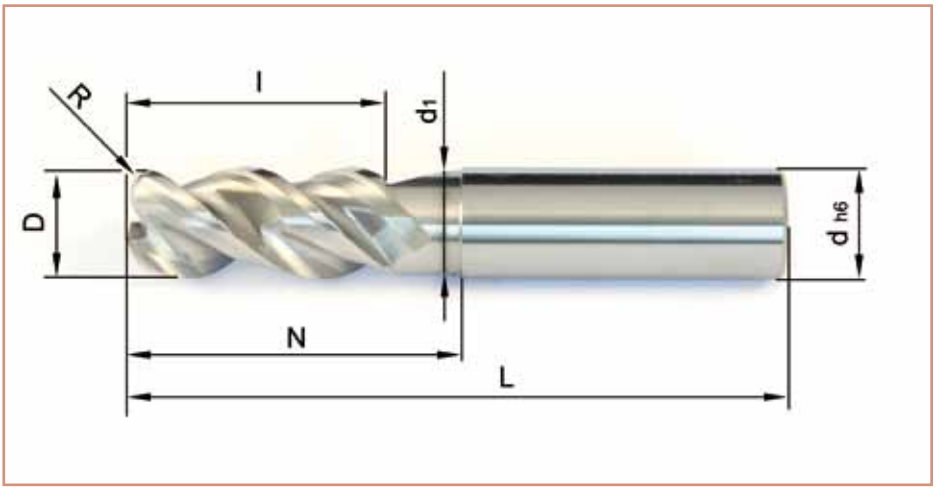
VHM 309 R..

This solid carbide cutter – Type 309 with radius – has been especially designed for machining aluminium and non-ferrous metals.

The optimal cutting characteristics of this universally applicable tool comprise a smooth running maintaining high levels of productivity.

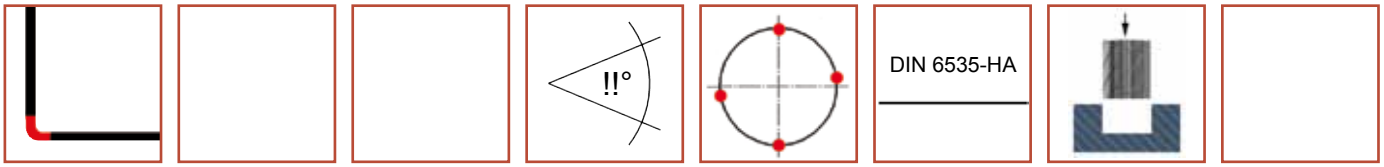
Product characteristics	**Advantages**
Torus-shaped shank type cutter	Universally applicable - for boring and pre-boring - for 90° step milling - for full slot milling - for roughing and finishing
3-flutes	High cutting volume
Differential tooth pitch	Smooth running of machine by full slot milling
Dynamic spiral angle	Smooth running of machine also by adopting the maximum depth of cut
Coupling made to DIN 6535-HA	- Suitable for collet chuck and hydraulic chuck - As well applicable for shrinking
Improved chip space	- Stable tool core - Generously carried out chip space
Optimized macro geometry	High cutting volume
Optimized micro geometry	Long tool life
Reduced shank for more axial speed	Increment of utility length to DIN-clamping length
The hard metal	Fine grain carbide according to ISO K05-K10 for higher wearing quality
The coating	- Low coefficient of friction - Prevention of adhesion and build-up material on cutting edge - Improved chip flow - High cutting parameters - High protection against wearing process

VHM 309 R..



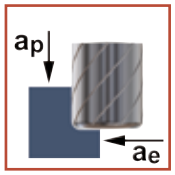
Tolerance ø:

ø 3,0 - 20,0 = $^{-0,02}_{-0,05}$

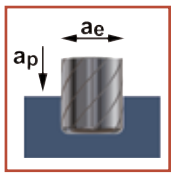


Order-No.	D	R	l	N	d_1	d_{h6}	L	Z
VHM 309-03 R03 AL05	3	0,3	8	12	2,7	6	58	3
VHM 309-04 R04 AL05	4	0,4	11	18	3,7	6	58	3
VHM 309-05 R05 AL05	5	0,5	13	18	4,7	6	58	3
VHM 309-06 R05 AL05	6	0,5	13	19	5,7	6	58	3
VHM 309-06 R10 AL05	6	1,0	13	19	5,7	6	58	3
VHM 309-08 R10 AL05	8	1,0	21	26	7,4	8	64	3
VHM 309-08 R15 AL05	8	1,5	21	26	7,4	8	64	3
VHM 309-08 R20 AL05	8	2,0	21	26	7,4	8	64	3
VHM 309-10 R10 AL05	10	1,0	22	30	9,2	10	73	3
VHM 309-10 R15 AL05	10	1,5	22	30	9,2	10	73	3
VHM 309-10 R20 AL05	10	2,0	22	30	9,2	10	73	3
VHM 309-12 R10 AL05	12	1,0	26	36	11,0	12	84	3
VHM 309-12 R15 AL05	12	1,5	26	36	11,0	12	84	3
VHM 309-12 R20 AL05	12	2,0	26	36	11,0	12	84	3
VHM 309-12 R25 AL05	12	2,5	26	36	11,0	12	84	3
VHM 309-16 R20 AL05	16	2,0	36	47	15,0	16	93	3
VHM 309-16 R25 AL05	16	2,5	36	47	15,0	16	93	3
VHM 309-16 R30 AL05	16	3,0	36	47	15,0	16	93	3
VHM 309-16 R40 AL05	16	4,0	36	47	15,0	16	93	3
VHM 309-20 R20 AL05	20	2,0	42	54	19,0	20	104	3
VHM 309-20 R25 AL05	20	2,5	42	54	19,0	20	104	3
VHM 309-20 R30 AL05	20	3,0	42	54	19,0	20	104	3
VHM 309-20 R40 AL05	20	4,0	42	54	19,0	20	104	3

VHM 309 R..



Material	D [mm]	V_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min-1]	V_f [mm/min]	Q [cm³/min]
Alu long chipping	3	500 (460-560)	0,06 (0,04-0,08)	5,0	1,2	53.050	9.550	61,9
	4	500 (460-560)	0,06 (0,04-0,08)	7,0	1,6	39.790	7.160	82,5
	5	500 (460-560)	0,09 (0,07-0,10)	9,0	2,0	31.830	8.590	154,6
	6	500 (460-560)	0,10 (0,08-0,12)	11,0	2,4	26.530	7.960	206,3
	8	500 (460-560)	0,10 (0,08-0,12)	14,0	3,2	19.890	5.970	275,1
	10	500 (460-560)	0,11 (0,09-0,13)	18,0	4,0	15.920	5.250	378,0
	12	500 (460-560)	0,11 (0,09-0,13)	22,0	4,8	13.260	4.380	454,1
	16	500 (460-560)	0,13 (0,11-0,15)	29,0	6,4	9.950	3.880	715,2
	20	500 (460-560)	0,16 (0,14-0,18)	36,0	8,0	7.960	3.820	1.100,2
Alu short chipping >6% Si	3	480 (400-520)	0,06 (0,04-0,08)	5,0	1,2	50.930	9.170	59,4
	4	480 (400-520)	0,06 (0,04-0,08)	7,0	1,6	38.200	6.880	79,3
	5	480 (400-520)	0,09 (0,07-0,10)	9,0	2,0	30.560	8.250	148,5
	6	480 (400-520)	0,10 (0,08-0,12)	11,0	2,4	25.460	7.640	198,0
	8	480 (400-520)	0,10 (0,08-0,12)	14,0	3,2	19.100	5.730	264,0
	10	480 (400-520)	0,10 (0,08-0,12)	18,0	4,0	15.280	4.580	329,8
	12	480 (400-520)	0,10 (0,08-0,12)	22,0	4,8	12.730	3.820	396,1
	16	480 (460-560)	0,13 (0,11-0,15)	29,0	6,4	9.550	3.720	685,7
	20	480 (460-560)	0,22 (0,20-0,24)	36,0	8,0	7.640	5.040	1.451,5
Cast aluminium >10% Si	3	250 (200-300)	0,06 (0,04-0,08)	5,0	1,2	26.530	4.780	31,0
	4	250 (200-300)	0,06 (0,04-0,08)	7,0	1,6	19.890	3.580	41,2
	5	250 (200-300)	0,08 (0,08-0,12)	9,0	2,0	15.920	3.820	68,8
	6	250 (200-300)	0,09 (0,07-0,11)	11,0	2,4	13.260	3.580	92,8
	8	250 (200-300)	0,09 (0,07-0,11)	14,0	3,2	9.950	2.690	124,0
	10	250 (200-300)	0,09 (0,07-0,11)	18,0	4,0	7.960	2.150	154,8
	12	250 (200-300)	0,09 (0,07-0,11)	22,0	4,8	6.630	1.790	185,6
	16	250 (200-300)	0,15 (0,13-0,17)	29,0	6,4	4.970	2.240	412,9
	20	250 (200-300)	0,20 (0,18-0,22)	36,0	8,0	3.980	2.390	688,3
CuZn alloys	3	270 (230-300)	0,05 (0,04-0,08)	5,0	1,2	28.650	4.300	27,9
	4	270 (230-300)	0,05 (0,04-0,08)	7,0	1,6	21.490	3.220	37,1
	5	270 (230-300)	0,08 (0,07-0,10)	9,0	2,0	17.190	4.130	74,3
	6	270 (230-300)	0,08 (0,08-0,12)	11,0	2,4	14.320	3.440	89,2
	8	270 (230-300)	0,08 (0,08-0,12)	14,0	3,2	10.740	2.580	118,9
	10	270 (230-300)	0,08 (0,09-0,13)	18,0	4,0	8.590	2.060	148,3
	12	270 (230-300)	0,08 (0,09-0,13)	22,0	4,8	7.160	1.720	178,3
	16	270 (230-300)	0,12 (0,11-0,15)	29,0	6,4	5.370	1.930	355,7
	20	270 (230-300)	0,16 (0,14-0,18)	36,0	8,0	4.300	2.060	593,3



Material	D [mm]	V_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min-1]	V_f [mm/min]	Q [cm³/min]
Alu long chipping	3	500 (460-560)	0,05 (0,02-0,05)	3,0	3,0	53.050	7.960	71,6
	4	500 (460-560)	0,05 (0,02-0,05)	4,0	4,0	39.790	5.970	95,5
	5	500 (460-560)	0,07 (0,045-0,075)	5,0	5,0	31.830	6.680	167,0
	6	500 (460-560)	0,08 (0,045-0,075)	6,0	6,0	26.530	6.370	229,3
	8	500 (460-560)	0,08 (0,045-0,075)	8,0	8,0	19.890	4.770	305,3
	10	500 (460-560)	0,09 (0,055-0,085)	10,0	10,0	15.920	4.300	430,0
	12	500 (460-560)	0,09 (0,055-0,085)	12,0	12,0	13.260	3.580	515,5
	16	500 (460-560)	0,11 (0,075-0,11)	16,0	16,0	9.950	3.280	839,7
	20	500 (460-560)	0,14 (0,10-0,14)	20,0	20,0	7.960	3.340	1.336,0
Alu short chipping >6% Si	3	480 (400-520)	0,05 (0,03-0,07)	3,0	3,0	50.930	7.640	68,8
	4	480 (400-520)	0,05 (0,03-0,07)	4,0	4,0	38.200	5.730	91,7
	5	480 (400-520)	0,07 (0,05-0,09)	5,0	5,0	30.560	6.420	160,5
	6	480 (400-520)	0,08 (0,06-0,10)	6,0	6,0	25.460	6.110	220,0
	8	480 (400-520)	0,08 (0,06-0,10)	8,0	8,0	19.100	4.580	293,1
	10	480 (400-520)	0,08 (0,06-0,10)	10,0	10,0	15.280	3.670	367,0
	12	480 (400-520)	0,08 (0,06-0,10)	12,0	12,0	12.730	3.060	440,6
	16	500 (460-560)	0,11 (0,09-0,13)	16,0	16,0	9.950	3.280	839,7
	20	500 (460-560)	0,18 (0,16-0,20)	20,0	20,0	7.960	4.300	1.720,0
Cast aluminium >10% Si	3	250 (200-300)	0,05 (0,03-0,07)	3,0	3,0	26.530	3.980	35,8
	4	250 (200-300)	0,05 (0,03-0,07)	4,0	4,0	19.890	2.980	47,7
	5	250 (200-300)	0,06 (0,04-0,08)	5,0	5,0	15.920	2.870	71,8
	6	250 (200-300)	0,07 (0,05-0,09)	6,0	6,0	13.260	2.780	100,1
	8	250 (200-300)	0,07 (0,05-0,09)	8,0	8,0	9.950	2.090	133,8
	10	250 (200-300)	0,07 (0,05-0,09)	10,0	10,0	7.960	1.670	167,0
	12	250 (200-300)	0,07 (0,05-0,09)	12,0	12,0	6.630	1.390	200,2
	16	250 (200-300)	0,14 (0,12-0,16)	16,0	16,0	4.970	2.090	535,0
	20	250 (200-300)	0,18 (0,16-0,20)	20,0	20,0	3.980	2.150	860,0
CuZn alloys	3	270 (230-300)	0,04 (0,02-0,06)	3,0	3,0	28.650	3.440	31,0
	4	270 (230-300)	0,04 (0,02-0,06)	4,0	4,0	21.490	2.580	41,3
	5	270 (230-300)	0,06 (0,04-0,08)	5,0	5,0	17.190	3.090	77,3
	6	270 (230-300)	0,06 (0,04-0,08)	6,0	6,0	14.320	2.580	92,9
	8	270 (230-300)	0,06 (0,04-0,08)	8,0	8,0	10.740	1.930	123,5
	10	270 (230-300)	0,06 (0,04-0,08)	10,0	10,0	8.590	1.550	155,0
	12	270 (230-300)	0,06 (0,04-0,08)	12,0	12,0	7.160	1.290	185,8
	16	270 (230-300)	0,10 (0,08-0,12)	16,0	16,0	5.370	1.610	412,2
	20	270 (230-300)	0,14 (0,12-0,16)	20,0	20,0	4.300	1.810	724,0

× Mean chip thickness has to be considered by side milling operations!

× The indicated figures are starting parameters. The adjustments top-down as well as bottom-up are possible depending on processing, type of machine and material grade.

Jongen Werkzeugtechnik GmbH & Co. KG

Siemensring 11 · 47877 Willich · Germany

Phone: +49 2154 / 9285-55 · Fax: +49 2154 / 85 330 500

www.jongen.de · email: info@jongen.de