



Jongen Werkzeugtechnik GmbH & Co. KG



Long Life

A revolution for longer tool life and for smooth milling

The Specialist

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VHM 413WTS35

The Tool

- Flat shaped shank type cutter, similar to DIN 6527
- Coupling made to DIN 6535-HB (Weldon)
- Unequal tooth pitch
- Dynamic working cutting geometry
- Front surface cutting geometry allows plunge milling
- Optimized macro geometry
- Optimized micro geometry
- Edge chamfer for stabilizing the cutting edge
- Reduced shank

The hard metal

- New development of hard metal, finest grain carbide for high efficiency milling operations, in the field of ISO K20-K30
- Higher tenacity and higher wearing quality high tenacity and high hardness

The coating

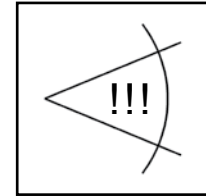
- New developed TiAlN coating
- Finest layer structure
- High oxidation stability

The quality „TS35“

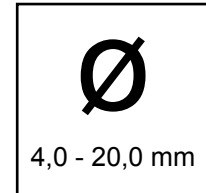
- Optimal combination of hard metal, coating and cutting edge for working all usual materials, such as steel, high grade steel, cast iron and materials that are know to be difficult to work with
- Suitable for roughing as well as finishing
- For dry milling, wet milling or milling with min. lubricant grease

Advantages

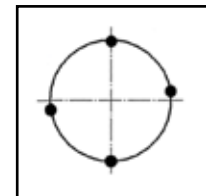
- High feed rates also with materials that are difficult to mill.
- Very long tool life and as a result a reduction of periods of disuse of the machines
- Very good surface finish
- Smooth running of machine
- Secure mode of working procedure
- Full slot milling up to 1 x diam. possible
- Reduced shank for more axial infeed
- Great variety of range of application in terms of operations and materials.



Unequal spiral angle

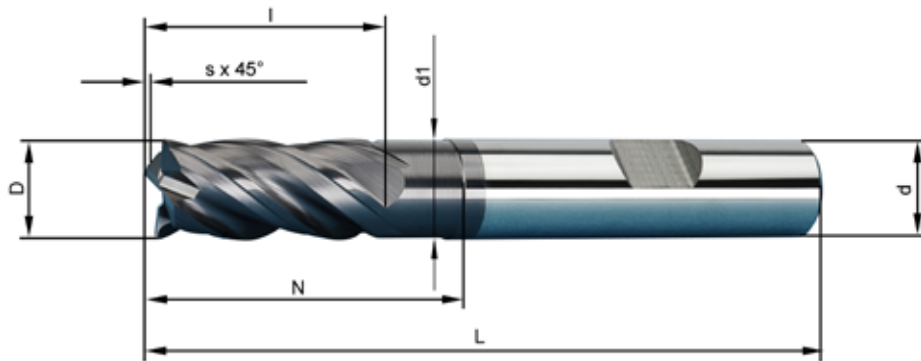
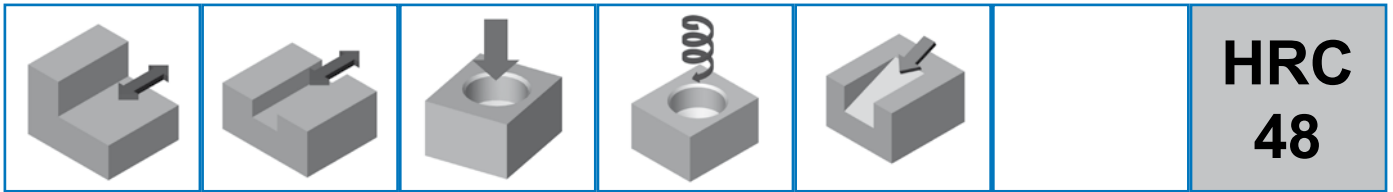


Different diameters



Discontinuous milling

Technical data



Toleranz \varnothing :
 $\varnothing 4,0 - 20,0 = -0,02$
 $-0,04$

Order-No.	D	sx45°	l	N	d ₁	d	L	Z
VHM 473W-04 TS35	4	0,075x45°	13	13	-	6	58	4
VHM 473W-05 TS35	5	0,10x45°	13	13	-	6	58	4
VHM 473W-06 TS35	6	0,15x45°	13	19	5,7	6	58	4
VHM 473W-08 TS35	8	0,15x45°	20	26	7,7	8	64	4
VHM 473W-10 TS35	10	0,20x45°	22	30	9,6	10	73	4
VHM 473W-12 TS35	12	0,25x45°	25	36	11,6	12	84	4
VHM 473W-16 TS35	16	0,30x45°	34	47	15,5	16	93	4
VHM 473W-20 TS35	20	0,40x45°	38	54	19,5	20	104	4

Cutting Data Recommendations

Material	Treatment/ Alloy	V _c (m/min)	Feed rate per tooth (f _z) in mm			
			ø 4-5 mm	ø 6,8 mm	ø 10-12 mm	ø 16-20 mm
Unalloyed steel / Structural steel	annealed 0,15 - 0,45% C HB 125 - 250	150 (140-180)	0,03 (0,01-0,04)	0,04 (0,03-0,06)	0,08 (0,06-0,14)	0,1 (0,08-0,15)
Low alloy steel	annealed tempered HB 180 - 350	150 (140-180)	0,03 (0,01-0,04)	0,04 (0,03-0,06)	0,08 (0,06-0,14)	0,1 (0,08-0,15)
High alloy steel / Tool steel	annealed tempered HB 180 - 330	120 (80-130)	0,03 (0,01-0,04)	0,04 (0,03-0,06)	0,08 (0,06-0,14)	0,1 (0,08-0,15)
Stainless steel / High grade steel (only limited applicability)	annealed quenched HB 180 - 330	120 (80-130)	0,03 (0,01-0,04)	0,04 (0,03-0,06)	0,08 (0,06-0,14)	0,1 (0,08-0,15)
Grey cast iron	ferrite perlitic	160 (150-170)	0,03 (0,01-0,04)	0,04 (0,03-0,06)	0,08 (0,06-0,14)	0,1 (0,08-0,15)
Grey cast iron with globular graphite	ferrite perlitic	140 (130-150)	0,03 (0,01-0,04)	0,04 (0,03-0,06)	0,08 (0,06-0,12)	0,1 (0,08-0,15)
Tempered cast iron	ferrite perlitic	130 (120-150)	0,03 (0,01-0,04)	0,04 (0,03-0,06)	0,08 (0,06-0,12)	0,1 (0,08-0,15)
Titanium/ Titanium alloys (only limited applicability)	-	50 (40-80)	0,02 (0,01-0,04)	0,04 (0,03-0,06)	0,06 (0,04-0,08)	0,08 (0,06-0,1)
Aluminium/ Non metallic (only limited applicability)	-	200 (200-400)	0,04 (0,01-0,04)	0,06 (0,03-0,06)	0,12 (0,06-0,12)	0,15 (0,08-0,15)

- * Feed rate per tooth are made to apply full slot milling with radial infeed 1 x diam.
- * Mean chip thickness has to be considered by side milling operations
- * The indicated figures are starting parameters!

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