



Jongen Werkzeugtechnik



EXTREME Long Life

A revolution for longer tool life and for smooth milling

VHM 477W TS35

LONG

ALL SPEED LONG

ALL SPEED LONG

ALL SPEED LONG

ALL SPEED LONG

ALL SPEED LONG

ALL SPEED LONG

ALL SPEED

ALL SPEED LONG

ALL SPEED LONG

ALL SPEED LONG

ALL SPEED LONG

ALL SPEED LONG

ALL SPEED LONG

ALL SPEED LONG

ALL SPEED LONG

ALL SPEED LONG

Products from



Willich



North-Rhine Westphalia



Germany



Europe

for



Europe

and the



The Tool

- Flat shaped shank type cutter, made to DIN 6527, long version
- Coupling made to DIN 6535-HB (Weldon)
- Optimized macro geometry
- Optimized micro geometry
- Front surface cutting geometry allows plunge milling
- Increasing neck length
- Dynamic twist angle
- Unequal pitch

The hard metal

- Finest grain carbide for high performance cutting in the ISO field K20-K30
- Very high tenacity with even more wear resistance

The coating

- Performance optimization of TiAlN-coating
- Finest layer structure
- High oxidation stability
- Very high tenacity and very high hardness
- Large wear volume

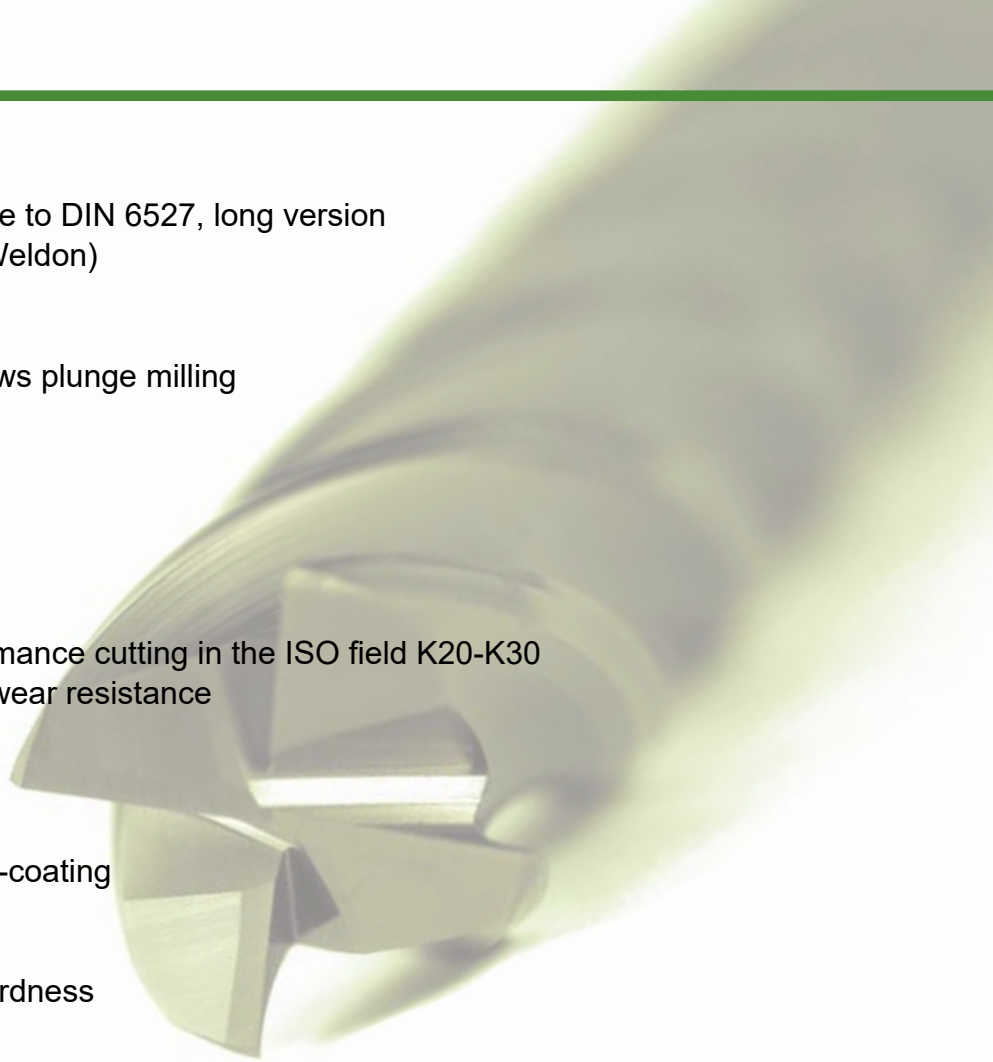
The quality „TS35“

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

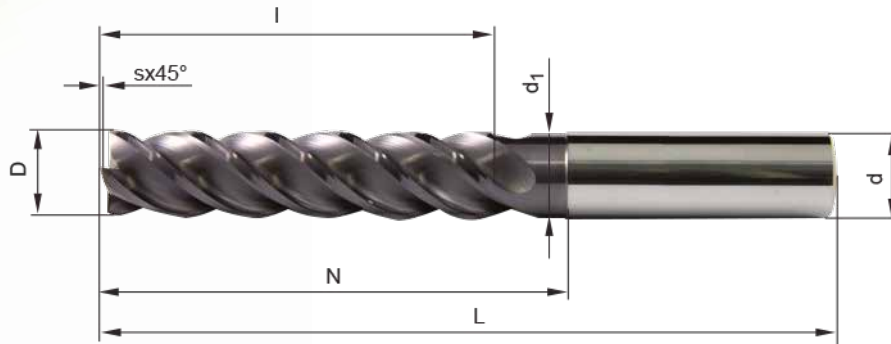
Advantages

- Extremely 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
- Very smooth running of machine
- Secure mode of working procedure
- Increasing neck length for greater usable depths
- Great application range in terms of different milling operations and different materials
- Especially suitable for Inox steels, high-alloy steels, as well as Titanium etc.

➤ **Our efficiency is your profit - tooling made by Jongen !**



Technical data



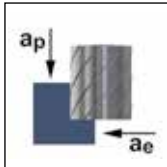
Tolerance \varnothing :
 $\varnothing 6,0 - 25,0 = -0,02$
 $-0,04$



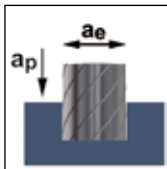
Order-No.	D	sx45°	I	N	d ₁	d _{h6}	L	Z
VHM 477W-06 TS35	6	0,20x45°	21	28	5,7	6	66	4
VHM 477W-08 TS35	8	0,25x45°	28	38	7,7	8	75	4
VHM 477W-10 TS35	10	0,30x45°	40	50	9,6	10	93	4
VHM 477W-12 TS35	12	0,40x45°	48	59	11,6	12	105	4
VHM 477W-16 TS35	16	0,50x45°	72	86	15,5	16	136	4
VHM 477W-20 TS35	20	0,50x45°	90	102	19,5	20	155	4
VHM 477W-25 TS35	25	0,50x45°	115	130	24,5	25	190	4



Cutting Data Recommendations



Material	D [mm]	V _c [m/min]	f _z [mm]	a _p [mm]	a _e [mm]	n [min ⁻¹]	V _f [mm/min]	Q [cm ³ /min]
Baustahl, Unlegierter Stahl <i>Structural steel, Unalloyed steel</i> Acier de construction, Acier non allié Acciaio di costruzione, Acciaio non legato <800 N/mm ²	6	120 (100-160)	0,05 (0,03-0,09)	21,0	0,5	6.370	1.275	12,9
	8	120 (100-160)	0,07 (0,05-0,11)	28,0	0,6	4.770	1.335	23,9
	10	120 (100-160)	0,10 (0,08-0,14)	40,0	0,8	3.820	1.530	49,0
	12	120 (100-160)	0,12 (0,10-0,16)	48,0	1,0	3.180	1.525	70,3
	16	120 (100-160)	0,14 (0,12-0,18)	72,0	1,3	2.390	1.340	123,5
	20	120 (100-160)	0,16 (0,14-0,20)	90,0	1,6	1.910	1.220	175,7
Werkzeugstahl, Vergütungsstahl, Legierter Stahl <i>Tool steel, heat-treatable steel, alloyed steel</i> Acier à outil, acier par traitement thermique, acier allié Acciaio d'utensile, acciaio bonificato, acciaio legato 800-1200 N/mm ²	6	100 (90-150)	0,05 (0,03-0,09)	21,0	0,5	5.310	1.060	10,7
	8	100 (90-150)	0,07 (0,05-0,11)	28,0	0,6	3.980	1.115	20,0
	10	100 (90-150)	0,10 (0,08-0,14)	40,0	0,8	3.180	1.270	40,6
	12	100 (90-150)	0,12 (0,10-0,16)	48,0	1,0	2.650	1.270	58,5
	16	100 (90-150)	0,14 (0,12-0,18)	72,0	1,3	1.990	1.115	102,8
	20	100 (90-150)	0,16 (0,14-0,20)	90,0	1,6	1.590	1.020	146,9
Edelstahl Hochlegierter Stahl <i>High grade steel</i> <i>High alloyed steel</i> Acier noble Acier fortement allié Acciaio superiore Acciaio di alta lega	6	80 (60-120)	0,05 (0,03-0,09)	21,0	0,5	4.240	850	8,6
	8	80 (60-120)	0,07 (0,05-0,11)	28,0	0,6	3.180	890	15,9
	10	80 (60-120)	0,10 (0,08-0,14)	40,0	0,8	2.550	1.020	32,6
	12	80 (60-120)	0,12 (0,10-0,16)	48,0	1,0	2.120	1.020	47,0
	16	80 (60-120)	0,14 (0,12-0,18)	72,0	1,3	1.590	890	82,0
	20	80 (60-120)	0,16 (0,14-0,20)	90,0	1,6	1.270	815	117,4
Titanlegierungen <i>Titanium alloys</i> Alliage titane Leghe di titanio >300 HB (z.B., e.g., p.ex., p.e. TiAlV6)	6	40 (20-60)	0,05 (0,03-0,09)	21,0	0,5	2.120	425	4,3
	8	40 (20-60)	0,07 (0,05-0,11)	28,0	0,6	1.590	445	8,0
	10	40 (20-60)	0,10 (0,08-0,14)	40,0	0,8	1.270	510	16,3
	12	40 (20-60)	0,12 (0,10-0,16)	48,0	1,0	1.060	510	23,5
	16	40 (20-60)	0,14 (0,12-0,18)	72,0	1,3	800	450	41,5
	20	40 (20-60)	0,16 (0,14-0,20)	90,0	1,6	640	410	59,0
Nickelbasislegierungen aushärtbar <i>Nickel-base alloy hardenable</i> Alliages traitable à base de nickel Leghe a base di Nickel (z.B., e.g., p.ex., p.e. Inconell 718)	6	30 (20-60)	0,05 (0,03-0,09)	21,0	0,5	1.590	320	3,2
	8	30 (20-60)	0,07 (0,05-0,11)	28,0	0,6	1.190	335	6,0
	10	30 (20-60)	0,10 (0,08-0,14)	40,0	0,8	950	380	12,2
	12	30 (20-60)	0,12 (0,10-0,16)	48,0	1,0	800	385	17,7
	16	30 (20-60)	0,14 (0,12-0,18)	72,0	1,3	600	335	30,9
	20	30 (20-60)	0,16 (0,14-0,20)	90,0	1,6	480	305	43,9
Gusseisen GG(G) <i>Cast iron GG(G)</i> Fonte GG(G) Ghisa GG(G)	6	140 (120-180)	0,05 (0,03-0,09)	21,0	0,5	7.430	1.485	15,0
	8	140 (120-180)	0,07 (0,05-0,11)	28,0	0,6	5.570	1.560	28,0
	10	140 (120-180)	0,10 (0,08-0,14)	40,0	0,8	4.460	1.785	57,1
	12	140 (120-180)	0,12 (0,10-0,16)	48,0	1,0	3.710	1.780	82,0
	16	140 (120-180)	0,14 (0,12-0,18)	72,0	1,3	2.790	1.560	143,8
	20	140 (120-180)	0,16 (0,14-0,20)	90,0	1,6	2.230	1.425	205,2
25	140 (120-180)	0,18 (0,16-0,22)	115,0	2,0	1.780	1.280	294,4	



Material	D [mm]	V _c [m/min]	f _z [mm]	a _p [mm]	a _e [mm]	n [min ⁻¹]	V _f [mm/min]	Q [cm ³ /min]
Baustahl, Unlegierter Stahl <i>Structural steel, Unalloyed steel</i> Acier de construction, Acier non allié Acciaio di costruzione, Acciaio non legato <800 N/mm ²	6	120 (100-160)	0,04 (0,02-0,08)	1,2	6	6.370	1.020	7,3
	8	120 (100-160)	0,06 (0,04-0,10)	1,3	8	4.770	1.145	12,2
	10	120 (100-160)	0,08 (0,06-0,12)	1,4	10	3.820	1.220	17,4
	12	120 (100-160)	0,10 (0,08-0,14)	1,5	12	3.180	1.270	22,9
	16	120 (100-160)	0,12 (0,10-0,18)	1,8	16	2.390	1.145	32,6
	20	120 (100-160)	0,14 (0,12-0,22)	2,0	20	1.910	1.070	42,8
Werkzeugstahl, Vergütungsstahl, Legierter Stahl <i>Tool steel, heat-treatable steel, alloyed steel</i> Acier à outil, acier par traitement thermique, acier allié Acciaio d'utensile, acciaio bonificato, acciaio legato 800-1200 N/mm ²	6	100 (90-150)	0,04 (0,02-0,08)	1,2	6	5.310	980	6,1
	8	100 (90-150)	0,06 (0,04-0,10)	1,3	8	3.980	955	10,2
	10	100 (90-150)	0,08 (0,06-0,12)	1,4	10	3.180	1.020	14,6
	12	100 (90-150)	0,10 (0,08-0,14)	1,5	12	2.650	1.060	19,1
	16	100 (90-150)	0,12 (0,10-0,18)	1,8	16	1.990	955	27,2
	20	100 (90-150)	0,14 (0,12-0,22)	2,0	20	1.590	890	35,6
Edelstahl Hochlegierter Stahl <i>High grade steel</i> <i>High alloyed steel</i> Acier noble Acier fortement allié Acciaio superiore Acciaio di alta lega	6	80 (60-120)	0,04 (0,02-0,08)	1,2	6	4.240	680	4,9
	8	80 (60-120)	0,06 (0,04-0,10)	1,3	8	3.180	765	8,2
	10	80 (60-120)	0,08 (0,06-0,12)	1,4	10	2.550	815	11,6
	12	80 (60-120)	0,10 (0,08-0,14)	1,5	12	2.120	850	15,3
	16	80 (60-120)	0,12 (0,10-0,18)	1,8	16	1.590	765	21,8
	20	80 (60-120)	0,14 (0,12-0,22)	2,0	20	1.270	710	28,4
Titanlegierungen <i>Titanium alloys</i> Alliage titane Leghe di titanio >300 HB (z.B., e.g., p.ex., p.e. TiAlV6)	6	40 (20-60)	0,03 (0,02-0,08)	1,2	6	2.120	210	1,5
	8	40 (20-60)	0,04 (0,02-0,10)	1,3	8	1.590	225	2,4
	10	40 (20-60)	0,05 (0,03-0,10)	1,4	10	1.270	255	3,6
	12	40 (20-60)	0,06 (0,04-0,10)	1,5	12	1.060	255	4,6
	16	40 (20-60)	0,08 (0,06-0,12)	1,8	16	800	255	7,3
	20	40 (20-60)	0,09 (0,06-0,14)	2,0	20	640	230	9,2
Nickelbasislegierungen aushärtbar <i>Nickel-base alloy hardenable</i> Alliages traitable à base de nickel Leghe a base di Nickel (z.B., e.g., p.ex., p.e. Inconell 718)	6	30 (20-60)	0,03 (0,02-0,08)	1,2	6	1.590	160	1,2
	8	30 (20-60)	0,04 (0,02-0,10)	1,3	8	1.190	165	1,8
	10	30 (20-60)	0,05 (0,03-0,10)	1,4	10	950	190	2,7
	12	30 (20-60)	0,06 (0,04-0,10)	1,5	12	800	190	3,4
	16	30 (20-60)	0,08 (0,06-0,12)	1,8	16	600	190	5,4
	20	30 (20-60)	0,09 (0,06-0,14)	2,0	20	480	175	7,0
Gusseisen GG(G) <i>Cast iron GG(G)</i> Fonte GG(G) Ghisa GG(G)	6	140 (120-180)	0,04 (0,02-0,08)	1,2	6	7.430	1.190	8,6
	8	140 (120-180)	0,06 (0,04-0,10)	1,3	8	5.570	1.335	14,2
	10	140 (120-180)	0,08 (0,06-0,12)	1,4	10	4.460	1.425	20,4
	12	140 (120-180)	0,10 (0,08-0,14)	1,5	12	3.710	1.485	26,7
	16	140 (120-180)	0,12 (0,10-0,18)	1,8	16	2.790	1.340	38,1
	20	140 (120-180)	0,14 (0,12-0,22)	2,0	20	2.230	1.250	50,0
25	140 (120-180)	0,16 (0,14-0,24)	2,3	25	1.780	1.140	65,6	

The above-mentioned data are standard values that may vary depending on processing, type of machine and material grade. For processing use a machine with the highest precision and rigidity. Should the available cutting speed be lower of that given in the table, reduce feed rate proportionally.