



Jongen Werkzeugtechnik GmbH



# VHM 476W R TS35



Products from



Willich



North-Rhine  
Westphalia



Germany



Europe

for



Europe

and the



## The Tool

- Torus shaped shank type cutter, similar to DIN 6527
- Coupling made to DIN 6535-HB (Weldon)
- Optimized macro geometry
- Optimized micro geometry
- Front surface cutting geometry allows plunge milling
- 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

## The coating

- New developed TiAlN coating
- Finest layer structure
- High oxidation stability
- High tenacity and high hardness

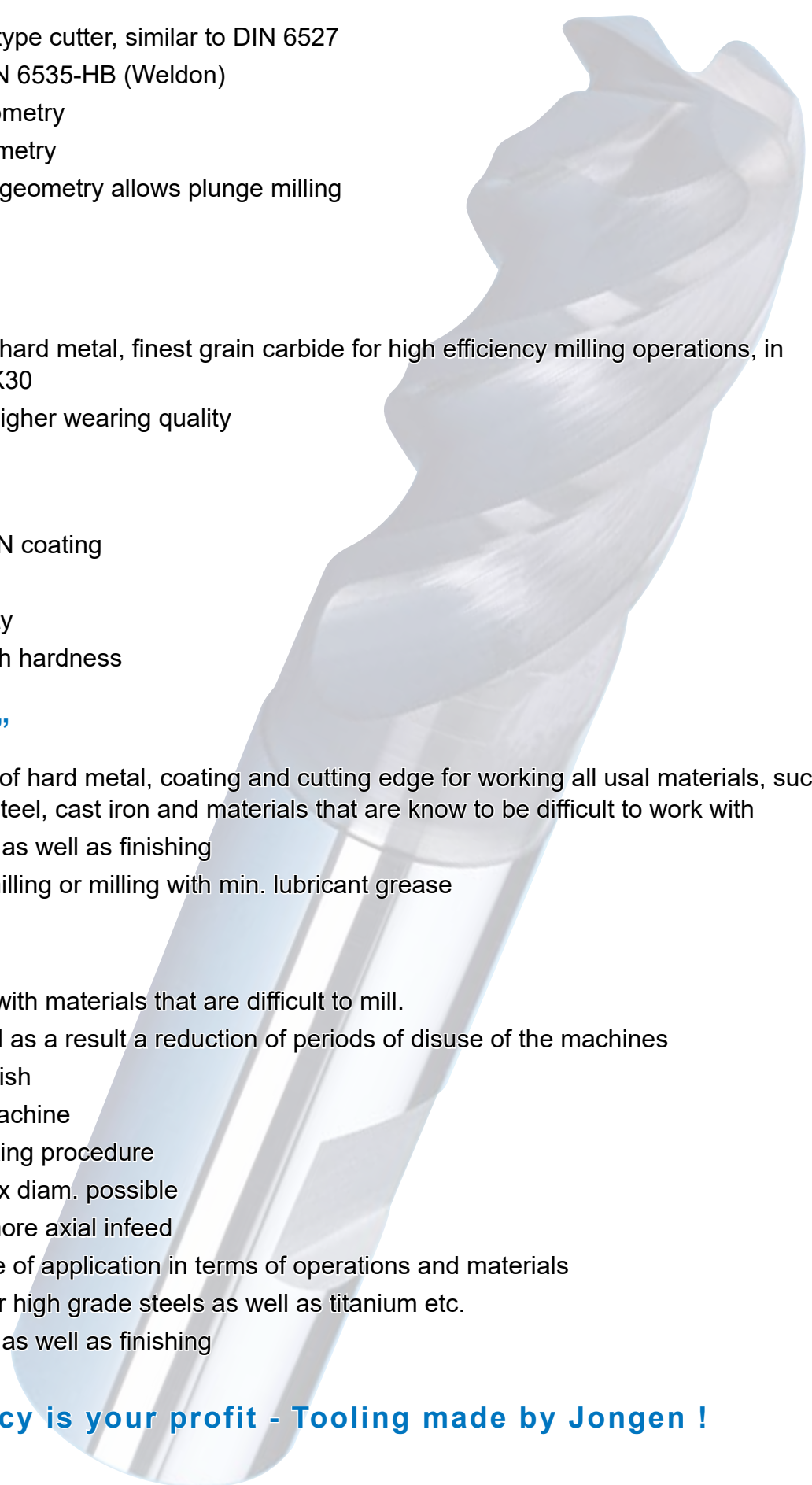
## The quality “TS35”

- 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 known 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
- Especially suitable for high grade steels as well as titanium etc.
- Suitable for roughing as well as finishing

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



Technical data



Tolerance D  
 $\varnothing 4,0-20,0 = \begin{matrix} -0,02 \\ -0,04 \end{matrix}$

Tolerance R  
 $\varnothing 4,0-20,0 = \begin{matrix} +0,025 \\ -0,025 \end{matrix}$



Key to symbols see main catalogue pages XII-4+5

| Order-No.            | D  | R   | I  | N  | d <sub>1</sub> | d  | L   | Z |
|----------------------|----|-----|----|----|----------------|----|-----|---|
| VHM 476W-04 R04 TS35 | 4  | 0,4 | 8  | 8  | -              | 6  | 58  | 4 |
| VHM 476W-05 R05 TS35 | 5  | 0,5 | 10 | 10 | -              | 6  | 58  | 4 |
| VHM 476W-06 R05 TS35 | 6  | 0,5 | 12 | 19 | 5,7            | 6  | 58  | 4 |
| VHM 476W-06 R10 TS35 | 6  | 1,0 | 12 | 19 | 5,7            | 6  | 58  | 4 |
| VHM 476W-08 R10 TS35 | 8  | 1,0 | 16 | 26 | 7,7            | 8  | 64  | 4 |
| VHM 476W-10 R10 TS35 | 10 | 1,0 | 20 | 30 | 9,6            | 10 | 73  | 4 |
| VHM 476W-12 R10 TS35 | 12 | 1,0 | 25 | 36 | 11,6           | 12 | 84  | 4 |
| VHM 476W-08 R15 TS35 | 8  | 1,5 | 16 | 26 | 7,7            | 8  | 64  | 4 |
| VHM 476W-10 R15 TS35 | 10 | 1,5 | 20 | 30 | 9,6            | 10 | 73  | 4 |
| VHM 476W-12 R15 TS35 | 12 | 1,5 | 25 | 36 | 11,6           | 12 | 84  | 4 |
| VHM 476W-16 R15 TS35 | 16 | 1,5 | 33 | 47 | 15,5           | 16 | 93  | 4 |
| VHM 476W-08 R20 TS35 | 8  | 2,0 | 16 | 26 | 7,7            | 8  | 64  | 4 |
| VHM 476W-10 R20 TS35 | 10 | 2,0 | 20 | 30 | 9,6            | 10 | 73  | 4 |
| VHM 476W-12 R20 TS35 | 12 | 2,0 | 25 | 36 | 11,6           | 12 | 84  | 4 |
| VHM 476W-16 R20 TS35 | 16 | 2,0 | 33 | 47 | 15,5           | 16 | 93  | 4 |
| VHM 476W-20 R20 TS35 | 20 | 2,0 | 42 | 54 | 19,5           | 20 | 104 | 4 |
| VHM 476W-12 R25 TS35 | 12 | 2,5 | 25 | 36 | 11,6           | 12 | 84  | 4 |
| VHM 476W-16 R25 TS35 | 16 | 2,5 | 33 | 47 | 15,5           | 16 | 93  | 4 |
| VHM 476W-20 R25 TS35 | 20 | 2,5 | 42 | 54 | 19,5           | 20 | 104 | 4 |
| VHM 476W-16 R30 TS35 | 16 | 3,0 | 33 | 47 | 15,5           | 16 | 93  | 4 |
| VHM 476W-20 R30 TS35 | 20 | 3,0 | 42 | 54 | 19,5           | 20 | 104 | 4 |
| VHM 476W-16 R40 TS35 | 16 | 4,0 | 33 | 47 | 15,5           | 16 | 93  | 4 |
| VHM 476W-20 R40 TS35 | 20 | 4,0 | 42 | 54 | 19,5           | 20 | 104 | 4 |

Cutting Data Recommendations

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

Mean Chip Thickness:

$$h_m \approx f_z \sqrt{\frac{a_e}{D}} [\text{mm}] \rightarrow f_z \approx h_m \sqrt{\frac{D}{a_e}} [\text{mm}]$$

h<sub>m</sub> = Mean chip thickness (mm)  
 f<sub>z</sub> = Feed rate per tooth (mm)  
 a<sub>e</sub> = radial infeed  
 D = tool diameter (mm)

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.