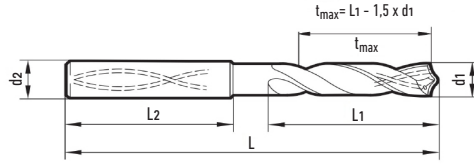


# Tvrdokový vrták 166530

## s vnitřním chlazením / 5xD

- úhel čela 140°
- tolerance průměru m7
- stopka válcová



| Popis         | Průměr (mm) | L (mm) | L <sub>1</sub> (mm) | L <sub>2</sub> (mm) | Stopka (mm) |
|---------------|-------------|--------|---------------------|---------------------|-------------|
| V.03000411.S5 | 3,00        | 66,0   | 28,0                | 36,0                | 6,000       |
| V.03100411.S5 | 3,10        | 66,0   | 28,0                | 36,0                | 6,000       |
| V.03170411.S5 | 3,17        | 66,0   | 28,0                | 36,0                | 6,000       |
| V.03200411.S5 | 3,20        | 66,0   | 28,0                | 36,0                | 6,000       |
| V.03250411.S5 | 3,25        | 66,0   | 28,0                | 36,0                | 6,000       |
| V.03300411.S5 | 3,30        | 66,0   | 28,0                | 36,0                | 6,000       |
| V.03400411.S5 | 3,40        | 66,0   | 28,0                | 36,0                | 6,000       |
| V.03500411.S5 | 3,50        | 66,0   | 28,0                | 36,0                | 6,000       |
| V.03570411.S5 | 3,57        | 66,0   | 28,0                | 36,0                | 6,000       |
| V.03600411.S5 | 3,60        | 66,0   | 28,0                | 36,0                | 6,000       |
| V.03700411.S5 | 3,70        | 66,0   | 28,0                | 36,0                | 6,000       |
| V.03800411.S5 | 3,80        | 74,0   | 36,0                | 36,0                | 6,000       |
| V.03900411.S5 | 3,90        | 74,0   | 36,0                | 36,0                | 6,000       |
| V.03970411.S5 | 3,97        | 74,0   | 36,0                | 36,0                | 6,000       |
| V.04000411.S5 | 4,00        | 74,0   | 36,0                | 36,0                | 6,000       |
| V.04100411.S5 | 4,10        | 74,0   | 36,0                | 36,0                | 6,000       |
| V.04200411.S5 | 4,20        | 74,0   | 36,0                | 36,0                | 6,000       |
| V.04300411.S5 | 4,30        | 74,0   | 36,0                | 36,0                | 6,000       |
| V.04370411.S5 | 4,37        | 74,0   | 36,0                | 36,0                | 6,000       |
| V.04400411.S5 | 4,40        | 74,0   | 36,0                | 36,0                | 6,000       |
| V.04500411.S5 | 4,50        | 74,0   | 36,0                | 36,0                | 6,000       |
| V.04600411.S5 | 4,60        | 74,0   | 36,0                | 36,0                | 6,000       |
| V.04650411.S5 | 4,65        | 74,0   | 36,0                | 36,0                | 6,000       |
| V.04700411.S5 | 4,70        | 74,0   | 36,0                | 36,0                | 6,000       |
| V.04760411.S5 | 4,76        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.04800411.S5 | 4,80        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.04900411.S5 | 4,90        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.05000411.S5 | 5,00        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.05100411.S5 | 5,10        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.05160411.S5 | 5,16        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.05200411.S5 | 5,20        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.05300411.S5 | 5,30        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.05400411.S5 | 5,40        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.05500411.S5 | 5,50        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.05550411.S5 | 5,55        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.05560411.S5 | 5,56        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.05600411.S5 | 5,60        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.05700411.S5 | 5,70        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.05800411.S5 | 5,80        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.05900411.S5 | 5,90        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.05950411.S5 | 5,95        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.06000411.S5 | 6,00        | 82,0   | 44,0                | 36,0                | 6,000       |
| V.06100411.S5 | 6,10        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.06200411.S5 | 6,20        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.06300411.S5 | 6,30        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.06350411.S5 | 6,35        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.06400411.S5 | 6,40        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.06500411.S5 | 6,50        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.06600411.S5 | 6,60        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.06700411.S5 | 6,70        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.06750411.S5 | 6,75        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.06800411.S5 | 6,80        | 91,0   | 53,0                | 36,0                | 8,000       |

| Popis         | Průměr (mm) | L (mm) | L <sub>1</sub> (mm) | L <sub>2</sub> (mm) | Stopka (mm) |
|---------------|-------------|--------|---------------------|---------------------|-------------|
| V.06900411.S5 | 6,90        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.07000411.S5 | 7,00        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.07100411.S5 | 7,10        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.07140411.S5 | 7,14        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.07200411.S5 | 7,20        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.07300411.S5 | 7,30        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.07400411.S5 | 7,40        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.07500411.S5 | 7,50        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.07540411.S5 | 7,54        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.07600411.S5 | 7,60        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.07700411.S5 | 7,70        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.07800411.S5 | 7,80        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.07900411.S5 | 7,90        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.07940411.S5 | 7,94        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.08000411.S5 | 8,00        | 91,0   | 53,0                | 36,0                | 8,000       |
| V.08100411.S5 | 8,10        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.08200411.S5 | 8,20        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.08300411.S5 | 8,30        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.08330411.S5 | 8,33        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.08400411.S5 | 8,40        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.08500411.S5 | 8,50        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.08600411.S5 | 8,60        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.08700411.S5 | 8,70        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.08730411.S5 | 8,73        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.08800411.S5 | 8,80        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.08900411.S5 | 8,90        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.09000411.S5 | 9,00        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.09100411.S5 | 9,10        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.09130411.S5 | 9,13        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.09200411.S5 | 9,20        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.09250411.S5 | 9,25        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.09300411.S5 | 9,30        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.09400411.S5 | 9,40        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.09500411.S5 | 9,50        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.09520411.S5 | 9,52        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.09600411.S5 | 9,60        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.09700411.S5 | 9,70        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.09800411.S5 | 9,80        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.09900411.S5 | 9,90        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.09920411.S5 | 9,92        | 103,0  | 61,0                | 40,0                | 10,000      |
| V.10000411.S5 | 10,00       | 103,0  | 61,0                | 40,0                | 10,000      |
| V.10100411.S5 | 10,10       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.10200411.S5 | 10,20       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.10300411.S5 | 10,30       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.10320411.S5 | 10,32       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.10400411.S5 | 10,40       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.10500411.S5 | 10,50       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.10600411.S5 | 10,60       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.10700411.S5 | 10,70       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.10800411.S5 | 10,80       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.10900411.S5 | 10,90       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.11000411.S5 | 11,00       | 118,0  | 71,0                | 45,0                | 12,000      |

| Popis         | Průměr (mm) | L (mm) | L <sub>1</sub> (mm) | L <sub>2</sub> (mm) | Stopka (mm) |
|---------------|-------------|--------|---------------------|---------------------|-------------|
| V.11100411.S5 | 11,10       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.11110411.S5 | 11,11       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.11200411.S5 | 11,20       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.11300411.S5 | 11,30       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.11400411.S5 | 11,40       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.11500411.S5 | 11,50       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.11600411.S5 | 11,60       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.11700411.S5 | 11,70       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.11800411.S5 | 11,80       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.11900411.S5 | 11,90       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.11910411.S5 | 11,91       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.12000411.S5 | 12,00       | 118,0  | 71,0                | 45,0                | 12,000      |
| V.12100411.S5 | 12,10       | 124,0  | 77,0                | 45,0                | 14,000      |
| V.12200411.S5 | 12,20       | 124,0  | 77,0                | 45,0                | 14,000      |
| V.12300411.S5 | 12,30       | 124,0  | 77,0                | 45,0                | 14,000      |
| V.12400411.S5 | 12,40       | 124,0  | 77,0                | 45,0                | 14,000      |
| V.12500411.S5 | 12,50       | 124,0  | 77,0                | 45,0                | 14,000      |
| V.12560411.S5 | 12,60       | 124,0  | 77,0                | 45,0                | 14,000      |
| V.12700411.S5 | 12,70       | 124,0  | 77,0                | 45,0                | 14,000      |
| V.12800411.S5 | 12,80       | 124,0  | 77,0                | 45,0                | 14,000      |
| V.13000411.S5 | 13,00       | 124,0  | 77,0                | 45,0                | 14,000      |
| V.13100411.S5 | 13,10       | 124,0  | 77,0                | 45,0                | 14,000      |
| V.13300411.S5 | 13,30       | 124,0  | 77,0                | 45,0                | 14,000      |
| V.13500411.S5 | 13,50       | 124,0  | 77,0                | 45,0                | 14,000      |
| V.13700411.S5 | 13,70       | 124,0  | 77,0                | 45,0                | 14,000      |
| V.13800411.S5 | 13,80       | 124,0  | 77,0                | 45,0                | 14,000      |
| V.14000411.S5 | 14,00       | 124,0  | 77,0                | 45,0                | 14,000      |
| V.14100411.S5 | 14,10       | 133,0  | 83,0                | 48,0                | 16,000      |
| V.14200411.S5 | 14,20       | 133,0  | 83,0                | 48,0                | 16,000      |
| V.14290411.S5 | 14,29       | 133,0  | 83,0                | 48,0                | 16,000      |
| V.14500411.S5 | 14,50       | 133,0  | 83,0                | 48,0                | 16,000      |
| V.14600411.S5 | 14,60       | 133,0  | 83,0                | 48,0                | 16,000      |
| V.14700411.S5 | 14,70       | 133,0  | 83,0                | 48,0                | 16,000      |
| V.14800411.S5 | 14,80       | 133,0  | 83,0                | 48,0                | 16,000      |
| V.15000411.S5 | 15,00       | 133,0  | 83,0                | 48,0                | 16,000      |
| V.15100411.S5 | 15,10       | 133,0  | 83,0                | 48,0                | 16,000      |
| V.15200411.S5 | 15,20       | 133,0  | 83,0                | 48,0                | 16,000      |
| V.15300411.S5 | 15,30       | 133,0  | 83,0                | 48,0                | 16,000      |
| V.15500410.S3 | 15,50       | 133,0  | 83,0                | 48,0                | 16,000      |
| V.15700411.S5 | 15,70       | 133,0  | 83,0                | 48,0                | 16,000      |
| V.15800411.S5 | 15,80       | 133,0  | 83,0                | 48,0                | 16,000      |
| V.16000411.S5 | 16,00       | 133,0  | 83,0                | 48,0                | 16,000      |
| V.16500411.S5 | 16,50       | 143,0  | 93,0                | 48,0                | 18,000      |
| V.16900411.S5 | 16,90       | 143,0  | 93,0                | 48,0                | 18,000      |
| V.17000411.S5 | 17,00       | 143,0  | 93,0                | 48,0                | 18,000      |
| V.17500411.S5 | 17,50       | 143,0  | 93,0                | 48,0                | 18,000      |
| V.18000411.S5 | 18,00       | 143,0  | 93,0                | 48,0                | 18,000      |
| V.18500411.S5 | 18,50       | 153,0  | 101,0               | 50,0                | 20,000      |
| V.18900411.S5 | 18,90       | 153,0  | 101,0               | 50,0                | 20,000      |
| V.19000411.S5 | 19,00       | 153,0  | 101,0               | 50,0                | 20,000      |
| V.19500411.S5 | 19,05       | 153,0  | 101,0               | 50,0                | 20,000      |
| V.19500411.S5 | 19,50       | 153,0  | 101,0               | 50,0                | 20,000      |
| V.20000411.S5 | 20,00       | 153,0  | 101,0               | 50,0                | 20,000      |

# Tvrdokovový vrták 166530

s vnitřním / 5xD



## Řezné podmínky

|                 | Typ materiálu               | Pevnost v tahu (N/mm <sup>2</sup> )<br>Tvrdost | V <sub>c</sub><br>(m/min.) | Posuv (mm/ot.)        |                       |               |               |
|-----------------|-----------------------------|--|----------------------------|-----------------------|-----------------------|---------------|---------------|
|                 |                             |  |                            | 3,0 - 7,9             | 8,0 - 15,9            | 16,0 - 20,0   |               |
| <b>P</b>        | Konstrukční ocel            | ≤500   | 145                        | 0,125 - 0,160 - 0,200 | 0,250 - 0,315         | 0,400 - 0,500 |               |
|                 |                             | ≤1000  | 120                        | 0,100 - 0,125 - 0,160 | 0,200 - 0,250         | 0,315 - 0,400 |               |
|                 | Automatová ocel             | ≤850   | 170                        | 0,160 - 0,200 - 0,250 | 0,315 - 0,400         | 0,500 - 0,630 |               |
|                 |                             | ≤1000  | 145                        | 0,160 - 0,200 - 0,250 | 0,315 - 0,400         | 0,500 - 0,630 |               |
|                 | Nelegovaná kalená ocel      | ≤700   | 130                        | 0,160 - 0,200 - 0,250 | 0,315 - 0,400         | 0,500 - 0,630 |               |
|                 |                             | ≤850   | 125                        | 0,125 - 0,160 - 0,200 | 0,250 - 0,315         | 0,400 - 0,500 |               |
|                 |                             | ≤1000  | 120                        | 0,125 - 0,160 - 0,200 | 0,250 - 0,315         | 0,400 - 0,500 |               |
|                 | Legovaná kalená ocel        | ≤1000  | 120                        | 0,125 - 0,160 - 0,200 | 0,250 - 0,315         | 0,400 - 0,500 |               |
|                 |                             | ≤1400  | 105                        | 0,125 - 0,160 - 0,200 | 0,250 - 0,315         | 0,400 - 0,500 |               |
|                 | Nelegovaná cementovaná ocel | ≤850   | 145                        | 0,160 - 0,200 - 0,250 | 0,315 - 0,400         | 0,500 - 0,630 |               |
|                 | Legovaná cementovaná ocel   | ≤1000  | 120                        | 0,125 - 0,160 - 0,200 | 0,250 - 0,315         | 0,400 - 0,500 |               |
|                 |                             | ≤1400  | 85                         | 0,080 - 0,100 - 0,125 | 0,160 - 0,200         | 0,250 - 0,315 |               |
|                 | Nitridovaná ocel            | ≤1000  | 105                        | 0,125 - 0,160 - 0,200 | 0,250 - 0,315         | 0,400 - 0,500 |               |
|                 |                             | ≤1400  | 100                        | 0,080 - 0,100 - 0,125 | 0,160 - 0,200         | 0,250 - 0,315 |               |
| Nástrojová ocel | ≤850                        | 70   | 0,100 - 0,125 - 0,160      | 0,200 - 0,250         | 0,315 - 0,400         |               |               |
|                 | ≤1400                       | 55   | 0,080 - 0,100 - 0,125      | 0,160 - 0,200         | 0,250 - 0,315         |               |               |
| <b>M</b>        | Nerezová ocel               | ≤900   | 60                         | 0,080 - 0,100 - 0,125 | 0,160 - 0,200         | 0,250 - 0,315 |               |
|                 |                             | austenititická                                 | ≤1100                      | 55                    | 0,080 - 0,100 - 0,125 | 0,160 - 0,200 | 0,250 - 0,315 |
|                 |                             | Martenzitická                                  | ≤1500                      | 45                    | 0,080 - 0,100 - 0,125 | 0,160 - 0,200 | 0,250 - 0,315 |
| <b>H</b>        | Kalená ocel                 | ≤48 HRC  | 55                         | 0,050 - 0,063 - 0,080 | 0,100 - 0,125         | 0,160 - 0,200 |               |
|                 |                             | ≤66 HRC  | 35                         | 0,040 - 0,050 - 0,063 | 0,080 - 0,100         | 0,125 - 0,160 |               |
| <b>K</b>        | Litina                      | ≤240 HB  | 195                        | 0,160 - 0,200 - 0,250 | 0,315 - 0,400         | 0,500 - 0,630 |               |
|                 |                             | ≤350 HB  | 160                        | 0,160 - 0,200 - 0,250 | 0,315 - 0,400         | 0,500 - 0,630 |               |
|                 | Temperovaná litina          | ≤240 HB  | 140                        | 0,160 - 0,200 - 0,250 | 0,315 - 0,400         | 0,500 - 0,630 |               |
|                 |                             | ≤350 HB  | 130                        | 0,160 - 0,200 - 0,250 | 0,315 - 0,400         | 0,500 - 0,630 |               |
|                 | Tvrzená litina              | ≤350 HB  | 40                         | 0,050 - 0,063 - 0,080 | 0,100 - 0,125         | 0,160 - 0,200 |               |
| <b>S</b>        | Titan a slitiny Titanu      | ≤850   | 45                         | 0,063 - 0,080 - 0,100 | 0,125 - 0,160         | 0,200 - 0,250 |               |
|                 |                             | ≤1400  | 40                         | 0,050 - 0,063 - 0,080 | 0,100 - 0,125         | 0,160 - 0,200 |               |
| <b>N</b>        | Hliník a slitiny hliníku    | ≤400   | 310                        | 0,160 - 0,200 - 0,315 | 0,315 - 0,500         | 0,500 - 0,630 |               |
|                 |                             | Kovaný hliník                                  | ≤650                       | 310                   | 0,160 - 0,200 - 0,315 | 0,315 - 0,500 | 0,500 - 0,630 |
|                 | Slitiny hliníku ≤ 10 % Si   | ≤600   | 260                        | 0,160 - 0,200 - 0,315 | 0,315 - 0,500         | 0,500 - 0,630 |               |
|                 |                             | > 10 % Si                                      | ≤600                       | 220                   | 0,160 - 0,200 - 0,315 | 0,315 - 0,500 | 0,500 - 0,630 |
|                 | Hořčík a slitiny hořčíku    | ≤400   | 280                        | 0,160 - 0,200 - 0,250 | 0,315 - 0,400         | 0,500 - 0,630 |               |
|                 | Měď                         | ≤500   | 125                        | 0,125 - 0,160 - 0,200 | 0,250 - 0,315         | 0,400 - 0,500 |               |
|                 |                             | Mosaz  | ≤600                       | 325                   | 0,160 - 0,200 - 0,250 | 0,315 - 0,400 | 0,500 - 0,630 |
|                 |                             |  | ≤600                       | 220                   | 0,125 - 0,160 - 0,200 | 0,250 - 0,315 | 0,400 - 0,500 |
|                 |                             | Bronz  | ≤600                       | 125                   | 0,125 - 0,160 - 0,200 | 0,250 - 0,315 | 0,400 - 0,500 |
|                 |                             |  | ≤850                       | 105                   | 0,100 - 0,125 - 0,160 | 0,200 - 0,250 | 0,315 - 0,400 |
|                 |                             | Bronz  | ≤850                       | 90                    | 0,100 - 0,125 - 0,160 | 0,200 - 0,250 | 0,315 - 0,400 |
|                 | ≤1000                       | 80   | 0,100 - 0,125 - 0,160      | 0,200 - 0,250         | 0,315 - 0,400         |               |               |