

## Nové produkty pre trieskové obrábanie

**NEW** Vrták v skrutkovnici WTL, extra dlhý, TiAlN



Nový vrták v skrutkovnici WTL s osvedčeným multivrstvovým povlakom TiAlN zvýši Vašu produktivitu i procesnú spoľahlivosť.

→ Strana **29+30**



|                                |                                                       |          |
|--------------------------------|-------------------------------------------------------|----------|
|                                | <b>1</b> HSS vrtáky                                   | <b>1</b> |
| Vrtanie                        | <b>2</b> TK vrtáky                                    |          |
|                                | <b>3</b> Vrtáky s vymeniteľnými doštičkami            |          |
|                                | <b>4</b> Výstružníky a záhlbníky                      |          |
|                                | <b>5</b> Nástroje na vyvrtávanie                      |          |
| Závitovanie                    | <b>6</b> Závitníky                                    |          |
|                                | <b>7</b> Frézovanie závitov a cirkulárne frézovanie   |          |
|                                | <b>8</b> Sústruženie závitov                          |          |
| Sústruženie                    | <b>9</b> Sústružnícke nože s vymeniteľnými doštičkami |          |
|                                | <b>10</b> Multifunkčné nástroje – EcoCut a FreeTurn   |          |
|                                | <b>11</b> Nástroje na zapichovanie a upichovanie      |          |
|                                | <b>12</b> UltraMini obrábanie + MiniCut               |          |
| Frézovanie                     | <b>13</b> HSS frézy                                   |          |
|                                | <b>14</b> TK frézy                                    |          |
|                                | <b>15</b> Frézy s vymeniteľnými doštičkami            |          |
| Katalóg – Technológia upínania | <b>16</b> Nástrojové držiaky a príslušenstvo          |          |
|                                | <b>17</b> Upínanie obrobkov                           |          |
|                                | <b>18</b> Príklady materiálov a register obj. čísel   |          |

## Obsah

|                              |       |
|------------------------------|-------|
| Vysvetlenie symbolov         | 2     |
| Toolfinder                   | 3     |
| Prehľad                      | 4-7   |
| Produktová paleta            | 8-44  |
| Technické informácie         |       |
| Rezné parametre              | 45-54 |
| Orientačné hodnoty pre posuv | 55    |
| Povlaky                      | 56    |

## WNT \ Performance

Kvalitné prémiové nástroje pre maximálny výkon.

Kvalitné prémiové nástroje z produktového radu **WNT Performance** sa koncipovali pre špeciálne prípady použitia a vyznačujú sa zvlášť vysokým výkonom. Ak v rámci vlastnej výroby kladiete vysoké nároky na procesný výkon a chcete dosiahnuť optimálnych výsledkov, potom Vám odporúčame prémiové nástroje z tohto produktového radu.

## Vysvetlenie symbolov

### Stopka



### Prevedenie



Vnútročné chladenie



Samostrediaci

- = Hlavné použitie
- = Vedľajšie použitie



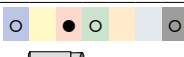
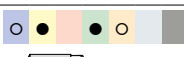
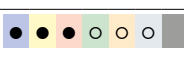
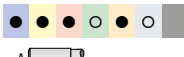
## Toolfinder

|                    | Typ nástroja | Materiál/<br>povlak | Popis                                                                                                                                                 | DIN 1897 | DIN 338 | DIN 340 | Rad 1  | Rad 2 | Rad 3 |
|--------------------|--------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------|---------|--------|-------|-------|
|                    |              |                     |                                                                                                                                                       | 3xD      | 5xD     | 10xD    | > 10xD |       |       |
| Oceľ všeobecne     | VX           | HSS-E<br>TiN        | ▲ univerzálny, vysoko výkonný vrták<br>▲ jednotná stopka DIN 1835A<br>▲ samostrediaci                                                                 | 8        | 16      |         |        |       |       |
|                    | UNI          | HSS-E-PM<br>TiN     | ▲ odolnosť proti oteru vďaka HSS-E-PM a povlaku TiN<br>▲ univerzálny vysoko výkonný vrták                                                             | 9-14     | 17-22   |         |        |       |       |
|                    | UNI          | HSS-E<br>TiN        | ▲ ako typ VX<br>▲ bez jednotnej stopky DIN 1835 A<br>▲ dodanie v súprave                                                                              | 9-14     | 17-22   | 26-28   |        |       |       |
|                    | N            | HSS<br>vap.         | ▲ stabilný vrták v skrutkoviaci<br>▲ vhodný aj pre ručné vrtačky<br>▲ dodáva sa v súprave                                                             | 9-14     | 17-22   |         |        |       |       |
|                    | WT           | HSS-E<br>vap.       | ▲ na vysoko legované ocele a špeciálne zliatiny (Hastelloy, Inconel, Nimonic)                                                                         | 9-14     |         |         |        |       |       |
|                    | WT           | HSS-E<br>TiN        | ▲ ako typ WT HSS-E vap.<br>▲ vyššia oteruodolnosť vďaka povlaku                                                                                       | 9-14     |         |         |        |       |       |
|                    | WTL-L        | HSS<br>F-nit        | ▲ ľavorezný<br>▲ vyššia oteruodolnosť rohov britu a vodiacej fazetky vďaka nitrídácii fazetky                                                         | 15       | 23      |         |        |       |       |
|                    | WNXi         | HSS-E               | ▲ veľmi dobré odvádzanie triesok vďaka vnútornému chladeniu<br>▲ na húževnaté materiály do 1000 N/mm <sup>2</sup>                                     |          | 25      |         |        |       |       |
|                    | WNXi         | HSS-E<br>TiN        | ▲ ako typ WNXi HSS-E<br>▲ vyššia oteruodolnosť vďaka povlaku                                                                                          |          | 25      |         |        |       |       |
|                    | WTL          | HSS-E<br>F-nit      | ▲ špeciálny profil drážky s veľkými drážkami pre odvádzanie triesok<br>▲ vyššia oteruodolnosť rohov britu a vodiacej fazetky vďaka nitrídácii fazetky |          | 17-22   | 26-28   |        |       |       |
|                    | WTL          | HSS-E<br>TiN        | ▲ ako WTL HSS-E, avšak vyššia v <sub>c</sub> a odolnosť voči oteru vďaka povlaku<br>▲ vhodného na oceľ a liatinu                                      |          | 17-22   |         |        |       |       |
|                    | WTL          | HSS-E<br>TiCN       | ▲ ako WTL TiN, je však možné dosiahnuť vyššej v <sub>c</sub> a odolnosti voči oteru u vysoko legovaných ocelí                                         |          | 23      |         |        |       |       |
|                    | WTL          | HSS-E<br>TiAlN      | ▲ špeciálny profil drážky s veľkými drážkami pre odvádzanie triesok<br>▲ vyššia oteruodolnosť vďaka povlaku TiAlN                                     |          |         |         | 29     | 30    | 30    |
|                    | WTL          | HSS<br>F-nit        | ▲ špeciálny profil drážky s veľkými drážkami pre odvádzanie triesok<br>▲ vyššia oteruodolnosť rohov britu a vodiacej fazetky vďaka nitrídácii fazetky |          |         | 26-28   | 29     | 30    | 30    |
|                    | WTL          | HSS<br>TiN          | ▲ ako WTL HSS, ale vyššia v <sub>c</sub> a odolnosť voči oteru vďaka povlaku                                                                          |          |         | 26-28   |        |       |       |
|                    | WNX          | HSS-E               | ▲ široké drážky pre odvádzanie triesok pre húževnaté materiály                                                                                        | 9-14     |         |         |        |       |       |
|                    | NC           | HSS                 | ▲ vhodný pre použitie s vrtacími puzdrami<br>▲ veľmi dobré odvádzanie triesok vďaka vnútornému chladeniu                                              |          |         | 25      |        |       |       |
|                    | NC           | HSS<br>TiAlN        | ▲ ako NC, avšak vyššia v <sub>c</sub> a odolnosť voči oteru vďaka povlaku                                                                             |          |         | 25      |        |       |       |
| Nehrdzavejúca oceľ | VA           | HSS-E               | ▲ špeciálne prevedenie na nehrdzavejúce materiály a materiály odolné proti kyselinám<br>▲ špeciálna geometria                                         | 9-14     | 17-22   |         |        |       |       |
| Neželezné kovy     | W            | HSS                 | ▲ špeciálne prevedenie na neželezné kovy                                                                                                              |          | 17-22   |         |        |       |       |
|                    | WTW          | HSS                 | ▲ na neželezné kovy do 500 N/mm <sup>2</sup><br>▲ na hlboké diery                                                                                     |          |         | 26-28   |        |       |       |

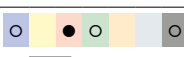
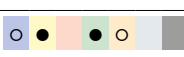
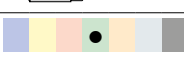
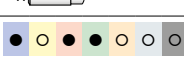
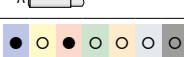
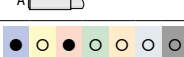
## Prehľad HSS vrtákov

| Typ nástroja | Materiál   povlak | Uhol špičky | Priemer v mm | DC | P    | M                  | K       | N              | S                     | H           | O                  | S povlakom                          | Bez povlaku              | WNT \ Performance |
|--------------|-------------------|-------------|--------------|----|------|--------------------|---------|----------------|-----------------------|-------------|--------------------|-------------------------------------|--------------------------|-------------------|
|              |                   |             |              |    | Oceľ | Nehrdzavajúca oceľ | Liatina | Neželezné kovy | Žiaruvzdorná zliatina | Kalená oceľ | Nekovové materiály | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                   |

## 3xD bez vnútorného chladenia

|                                                                                     |       |                 |      |        |                                                                                      |                                                                                     |                                                                                       |                                     |      |
|-------------------------------------------------------------------------------------|-------|-----------------|------|--------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------|------|
|    | VX    | HSS-E<br>TiN    | 118° | 2-20   |    |    |    | <input checked="" type="checkbox"/> | 8    |
|    | UNI   | HSS-E-PM<br>TiN | 130° | 1-14   |    |    |    | <input checked="" type="checkbox"/> | 9-14 |
|    | UNI   | HSS-E<br>TiN    | 118° | 1-14   |    |    |    | <input checked="" type="checkbox"/> | 9-14 |
|    | N     | HSS<br>vap.     | 118° | 0,4-20 |    |    |    | <input checked="" type="checkbox"/> | 9-14 |
|    | VA    | HSS-E           | 130° | 1-12   |    |    |    | <input type="checkbox"/>            | 9-14 |
|   | WNX   | HSS-E           | 130° | 1-20   |   |   |   | <input type="checkbox"/>            | 9-14 |
|  | WT    | HSS-E<br>vap.   | 130° | 0,4-25 |  |  |  | <input checked="" type="checkbox"/> | 9-14 |
|  | WT    | HSS-E<br>TiN    | 130° | 1-20   |  |  |  | <input checked="" type="checkbox"/> | 9-14 |
|  | WTL-L | HSS<br>F-nit    | 130° | 1-19   |  |  | ľavorezný                                                                             | <input checked="" type="checkbox"/> | 15   |

## 5xD bez vnútorného chladenia

|                                                                                     |       |                 |      |         |                                                                                      |                                                                                     |                                                                                       |                                     |       |
|-------------------------------------------------------------------------------------|-------|-----------------|------|---------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------|-------|
|  | VX    | HSS-E<br>TiN    | 118° | 2-20    |  |  |  | <input checked="" type="checkbox"/> | 16    |
|  | UNI   | HSS-E-PM<br>TiN | 130° | 1-14    |  |  |  | <input checked="" type="checkbox"/> | 17-22 |
|  | UNI   | HSS-E<br>TiN    | 118° | 0,9-14  |  |  |  | <input checked="" type="checkbox"/> | 17-22 |
|  | N     | HSS<br>vap.     | 118° | 0,2-20  |  |  |  | <input checked="" type="checkbox"/> | 17-22 |
|  | VA    | HSS-E           | 130° | 1-12    |  |  |  | <input type="checkbox"/>            | 17-22 |
|  | W     | HSS             | 130° | 0,20-20 |  |  |  | <input type="checkbox"/>            | 17-22 |
|  | WTL   | HSS-E<br>F-nit  | 130° | 1-16    |  |  |  | <input checked="" type="checkbox"/> | 17-22 |
|  | WTL   | HSS-E<br>TiN    | 130° | 1-16    |  |  |  | <input checked="" type="checkbox"/> | 17-22 |
|  | WTL   | HSS-E<br>TiCN   | 130° | 3-12    |  |  |  | <input checked="" type="checkbox"/> | 23    |
|  | WTL-L | HSS<br>F-nit    | 130° | 1-16    |  |  | ľavorezný                                                                             | <input checked="" type="checkbox"/> | 23    |

## Prehľad HSS vrtákov

|                                                                                   | Typ nástroja | Materiál   povlak | Uhol špičky | Priemer v mm | DC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <div><div>Oceľ</div><div>Nehrdzavejúca oceľ</div><div>Litina</div><div>Neželezné kovy</div><div>Žiaruvzdorná zliatina</div><div>Kalená oceľ</div><div>Nekovové materiály</div></div> | <div><div>S povlakom</div><div>Bez povlaku</div></div> | <div><div>WNT</div><div>Performance</div></div> |
|-----------------------------------------------------------------------------------|--------------|-------------------|-------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------------|
| 5xD s vnútorným chladením                                                         |              |                   |             |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                      |                                                        |                                                 |
|  | WNXi         | HSS-E             | 130°        | 5-20         | <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div></div> |                                                                                                                                                                                      |                                                        |                                                 |

## Prehľad HSS vrtákov

| Typ nástroja                                                                                    |                       |
|-------------------------------------------------------------------------------------------------|-----------------------|
| Materiál   povlak                                                                               |                       |
|                | Uhol špičky           |
|                | Priemer v mm          |
|                | Oceľ                  |
|                | Nehrdzavejúca oceľ    |
|                | Liatina               |
|              | Neželezné kovy        |
|              | Žiaruvzdorná zliatina |
|              | Kalená oceľ           |
|              | Nekovové materiály    |
|              | S povlakom            |
|              | Bez povlaku           |
|  Performance |                       |

## Súpravy vrtákov v skrutkovici



|     |           |      |      |  |  |  |  |  |  |  |  |    |
|-----|-----------|------|------|--|--|--|--|--|--|--|--|----|
| N   | HSS vap.  | 118° | 1-10 |  |  |  |  |  |  |  |  | 24 |
| UNI | HSS-E TiN | 118° | 1-10 |  |  |  |  |  |  |  |  | 24 |

## NC navrtávaky

|  |      |         |      |      |  |  |  |  |  |  |  |       |
|--|------|---------|------|------|--|--|--|--|--|--|--|-------|
|  | NC-A | HSS     | 90°  | 3-20 |  |  |  |  |  |  |  | 35-37 |
|  | NC-A | HSS TiN | 90°  | 3-20 |  |  |  |  |  |  |  | 35+36 |
|  | NC-A | HSS     | 120° | 3-20 |  |  |  |  |  |  |  | 35+36 |
|  | NC-A | HSS TiN | 120° | 3-20 |  |  |  |  |  |  |  | 35+36 |

## Strediace vrtáky

|  |    |         |      |         |  |  |  |  |  |  |                      |       |
|--|----|---------|------|---------|--|--|--|--|--|--|----------------------|-------|
|  | ZB | HSS     | 118° | 0,5-6,3 |  |  |  |  |  |  | DIN 333 - tvar A/B/R | 37-39 |
|  | ZB | HSS TiN | 118° | 0,5-6,3 |  |  |  |  |  |  | DIN 333 - tvar A     | 38    |
|  | ZB | HSS-E   | 118° | 0,5-6,3 |  |  |  |  |  |  | DIN 333 - tvar A     | 38    |

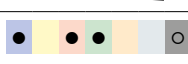
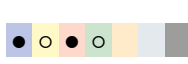
## Nástroje na vyvrtávanie (špirálové výhružníky)

|  |   |          |      |        |  |  |  |  |  |  |         |    |
|--|---|----------|------|--------|--|--|--|--|--|--|---------|----|
|  | N | HSS vap. | 120° | 3,8-12 |  |  |  |  |  |  | 3 brity | 40 |
|--|---|----------|------|--------|--|--|--|--|--|--|---------|----|

## Stupňovité vrtáky

|  |    |          |      |          |  |  |  |  |  |  |                     |    |
|--|----|----------|------|----------|--|--|--|--|--|--|---------------------|----|
|  | SB | HSS vap. | 118° | 2,5-10,2 |  |  |  |  |  |  | uhol zahĺbenia 90°  | 41 |
|  | SB | HSS      | 118° | 2,5-10,2 |  |  |  |  |  |  | uhol zahĺbenia 90°  | 41 |
|  | SB | HSS vap. | 118° | 3,2-10,5 |  |  |  |  |  |  | uhol zahĺbenia 90°  | 41 |
|  | SB | HSS      | 118° | 3,2-10,5 |  |  |  |  |  |  | uhol zahĺbenia 90°  | 41 |
|  | SB | HSS vap. | 118° | 3,4-11   |  |  |  |  |  |  | uhol zahĺbenia 180° | 42 |
|  | SB | HSS      | 118° | 3,4-11   |  |  |  |  |  |  | uhol zahĺbenia 180° | 42 |
|  | SB | HSS vap. | 118° | 3,3-21   |  |  |  |  |  |  | uhol zahĺbenia 60°  | 44 |

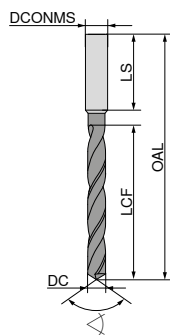
|                                                                                                     |                       |
|-----------------------------------------------------------------------------------------------------|-----------------------|
| Typ nástroja                                                                                        |                       |
| Materiál   povlak                                                                                   |                       |
| △                                                                                                   | Uhol špičky           |
| ⌀                                                                                                   | Priemer v mm          |
| ▮                                                                                                   | Oceľ                  |
| ▮                                                                                                   | Nehrdzavejúca oceľ    |
| ▮                                                                                                   | Liatina               |
| ▮                                                                                                   | Neželezné kovy        |
| ▮                                                                                                   | Žiaruvzdorná zliatina |
| ▮                                                                                                   | Kalená oceľ           |
| ▮                                                                                                   | Nekovové materiály    |
| ■                                                                                                   | S povlakom            |
| □                                                                                                   | Bez povlaku           |
| NWT  Performance |                       |

|                                                                                     |     |                            |      |        |                                                                                      |                                                                                          |                                                                                       |                                                                                       |    |
|-------------------------------------------------------------------------------------|-----|----------------------------|------|--------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----|
|    | WT  | HSS-E<br>vap.              | 130° | 10-30  |    | MK    |    | 31                                                                                    |    |
| 5xD                                                                                 |     |                            |      |        |                                                                                      |                                                                                          |                                                                                       |                                                                                       |    |
|    | N   | HSS<br>vap.                | 118° | 10-60  |    | MK    |    | 32                                                                                    |    |
|    | WTL | HSS-E<br>F-nit/vap.        | 130° | 10-27  |    | MK    |    | 32                                                                                    |    |
| 10xD                                                                                |     |                            |      |        |                                                                                      |                                                                                          |                                                                                       |                                                                                       |    |
|   | N   | HSS<br>vap.                | 118° | 10-50  |   | MK  |   | 33                                                                                    |    |
|  | WTL | HSS-E<br>F-nit/vap.        | 130° | 10-26  |  | MK  |  | 33                                                                                    |    |
| nad 10xD                                                                            |     |                            |      |        |                                                                                      |                                                                                          |                                                                                       |                                                                                       |    |
|  | WTL | HSS<br>F-nit/vap.<br>Rad 1 | 130° | 10-30  |  | MK  |  | 34                                                                                    |    |
|  | WTL | HSS<br>F-nit/vap.<br>Rad 2 | 130° | 10-30  |  | MK  |  | 34                                                                                    |    |
| Nástroje na vyvrtávanie (špirálové výhružníky)                                      |     |                            |      |        |                                                                                      |                                                                                          |                                                                                       |                                                                                       |    |
|  | N   | HSS<br>vap.                | 120° | 10-30  |  | MK  | 3 brity                                                                               |  | 40 |
| Stupňovité vrtáky                                                                   |     |                            |      |        |                                                                                      |                                                                                          |                                                                                       |                                                                                       |    |
|  | SB  | HSS<br>vap.                | 118° | 5,5-22 |  | MK  | uhol zahľbenia 180°                                                                   |  | 43 |

## Vysokovýkonné vrtáky v skrutkovici podľa DIN 1897, veľmi krátke

- ▲ jednotná stopka DIN 1835 A
- ▲ špeciálne prevedenie špičky
- ▲ veľmi dobré stredenie
- ▲ štvorplochý výbrus
- ▲ maximálny výkon

≤ 3xD



A   
 118°   
 HSS-E

| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | DCONMS <sub>h6</sub><br>mm | LS<br>mm | EUR<br>T2 | 10 122 ... |
|------------------------|-----------|-----------|----------------------------|----------|-----------|------------|
| 2,00                   | 44        | 12        | 3                          | 28       | 9,28      | 020        |
| 2,10                   | 44        | 12        | 3                          | 28       | 10,21     | 021        |
| 2,20                   | 45        | 13        | 3                          | 28       | 11,13     | 022        |
| 2,30                   | 45        | 13        | 3                          | 28       | 11,13     | 023        |
| 2,40                   | 46        | 14        | 3                          | 28       | 11,68     | 024        |
| 2,50                   | 46        | 14        | 3                          | 28       | 10,05     | 025        |
| 2,60                   | 46        | 14        | 3                          | 28       | 11,68     | 026        |
| 2,70                   | 48        | 16        | 3                          | 28       | 12,23     | 027        |
| 2,80                   | 48        | 16        | 3                          | 28       | 12,23     | 028        |
| 2,90                   | 48        | 16        | 3                          | 28       | 12,23     | 029        |
| 3,00                   | 48        | 16        | 3                          | 28       | 11,13     | 030        |
| 3,10                   | 50        | 18        | 4                          | 28       | 11,13     | 031        |
| 3,20                   | 50        | 18        | 4                          | 28       | 11,13     | 032        |
| 3,30                   | 50        | 18        | 4                          | 28       | 11,25     | 033        |
| 3,40                   | 52        | 20        | 4                          | 28       | 11,25     | 034        |
| 3,50                   | 52        | 20        | 4                          | 28       | 10,71     | 035        |
| 3,60                   | 52        | 20        | 4                          | 28       | 11,57     | 036        |
| 3,70                   | 52        | 20        | 4                          | 28       | 12,11     | 037        |
| 3,80                   | 54        | 22        | 4                          | 28       | 11,79     | 038        |
| 3,90                   | 54        | 22        | 4                          | 28       | 12,11     | 039        |
| 4,00                   | 54        | 22        | 4                          | 28       | 9,88      | 040        |
| 4,10                   | 66        | 22        | 6                          | 36       | 9,88      | 041        |
| 4,20                   | 66        | 22        | 6                          | 36       | 10,32     | 042        |
| 4,30                   | 68        | 24        | 6                          | 36       | 10,91     | 043        |
| 4,40                   | 68        | 24        | 6                          | 36       | 12,23     | 044        |
| 4,50                   | 68        | 24        | 6                          | 36       | 9,98      | 045        |
| 4,60                   | 68        | 24        | 6                          | 36       | 13,10     | 046        |
| 4,70                   | 68        | 24        | 6                          | 36       | 13,20     | 047        |
| 4,80                   | 70        | 26        | 6                          | 36       | 13,20     | 048        |
| 4,90                   | 70        | 26        | 6                          | 36       | 13,20     | 049        |
| 5,00                   | 70        | 26        | 6                          | 36       | 11,13     | 050        |
| 5,10                   | 70        | 26        | 6                          | 36       | 13,20     | 051        |
| 5,20                   | 70        | 26        | 6                          | 36       | 13,42     | 052        |
| 5,30                   | 70        | 26        | 6                          | 36       | 13,75     | 053        |
| 5,40                   | 72        | 28        | 6                          | 36       | 14,96     | 054        |
| 5,50                   | 72        | 28        | 6                          | 36       | 11,79     | 055        |
| 5,55                   | 72        | 28        | 6                          | 36       | 14,96     | 055        |
| 5,60                   | 72        | 28        | 6                          | 36       | 14,96     | 056        |
| 5,70                   | 72        | 28        | 6                          | 36       | 14,96     | 057        |
| 5,80                   | 72        | 28        | 6                          | 36       | 14,96     | 058        |
| 5,90                   | 72        | 28        | 6                          | 36       | 14,96     | 059        |
| 6,00                   | 72        | 28        | 6                          | 36       | 12,33     | 060        |
| 6,10                   | 75        | 31        | 8                          | 36       | 19,21     | 061        |
| 6,20                   | 75        | 31        | 8                          | 36       | 19,21     | 062        |
| 6,30                   | 75        | 31        | 8                          | 36       | 23,36     | 063        |
| 6,40                   | 75        | 31        | 8                          | 36       | 19,76     | 064        |
| 6,50                   | 75        | 31        | 8                          | 36       | 14,63     | 065        |
| 6,60                   | 75        | 31        | 8                          | 36       | 23,68     | 066        |
| 6,70                   | 75        | 31        | 8                          | 36       | 23,68     | 067        |
| 6,80                   | 78        | 34        | 8                          | 36       | 25,43     | 068        |
| 6,90                   | 78        | 34        | 8                          | 36       | 25,76     | 069        |
| 7,00                   | 78        | 34        | 8                          | 36       | 19,44     | 070        |
| 7,10                   | 78        | 34        | 8                          | 36       | 28,60     | 071        |

10 122 ...

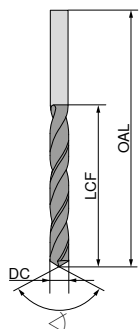
| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | DCONMS <sub>h6</sub><br>mm | LS<br>mm | EUR<br>T2 | 10 122 ... |
|------------------------|-----------|-----------|----------------------------|----------|-----------|------------|
| 7,20                   | 78        | 34        | 8                          | 36       | 28,49     | 072        |
| 7,30                   | 78        | 34        | 8                          | 36       | 28,49     | 073        |
| 7,40                   | 78        | 34        | 8                          | 36       | 28,60     | 074        |
| 7,45                   | 78        | 34        | 8                          | 36       | 28,60     | 075        |
| 7,50                   | 78        | 34        | 8                          | 36       | 20,53     | 075        |
| 7,60                   | 81        | 37        | 8                          | 36       | 28,71     | 076        |
| 7,70                   | 81        | 37        | 8                          | 36       | 31,98     | 077        |
| 7,80                   | 81        | 37        | 8                          | 36       | 31,98     | 078        |
| 7,90                   | 81        | 37        | 8                          | 36       | 31,98     | 079        |
| 8,00                   | 81        | 37        | 8                          | 36       | 21,07     | 080        |
| 8,10                   | 87        | 37        | 10                         | 40       | 35,14     | 081        |
| 8,20                   | 87        | 37        | 10                         | 40       | 35,14     | 082        |
| 8,30                   | 87        | 37        | 10                         | 40       | 35,14     | 083        |
| 8,40                   | 87        | 37        | 10                         | 40       | 35,14     | 084        |
| 8,50                   | 87        | 37        | 10                         | 40       | 23,79     | 085        |
| 8,60                   | 91        | 40        | 10                         | 40       | 36,68     | 086        |
| 8,70                   | 91        | 40        | 10                         | 40       | 36,68     | 087        |
| 8,80                   | 91        | 40        | 10                         | 40       | 36,68     | 088        |
| 8,90                   | 91        | 40        | 10                         | 40       | 36,68     | 089        |
| 9,00                   | 91        | 40        | 10                         | 40       | 26,20     | 090        |
| 9,10                   | 91        | 40        | 10                         | 40       | 45,07     | 091        |
| 9,20                   | 91        | 40        | 10                         | 40       | 45,07     | 092        |
| 9,30                   | 91        | 40        | 10                         | 40       | 45,07     | 093        |
| 9,35                   | 91        | 40        | 10                         | 40       | 45,07     | 093        |
| 9,40                   | 91        | 40        | 10                         | 40       | 45,07     | 094        |
| 9,50                   | 91        | 40        | 10                         | 40       | 31,44     | 095        |
| 9,60                   | 93        | 43        | 10                         | 40       | 33,95     | 096        |
| 9,70                   | 93        | 43        | 10                         | 40       | 33,95     | 097        |
| 9,80                   | 93        | 43        | 10                         | 40       | 33,95     | 098        |
| 9,90                   | 93        | 43        | 10                         | 40       | 33,95     | 099        |
| 10,00                  | 93        | 43        | 10                         | 40       | 30,12     | 100        |
| 10,10                  | 100       | 43        | 12                         | 45       | 47,37     | 101        |
| 10,20                  | 100       | 43        | 12                         | 45       | 44,42     | 102        |
| 10,30                  | 100       | 43        | 12                         | 45       | 46,06     | 103        |
| 10,40                  | 100       | 43        | 12                         | 45       | 49,01     | 104        |
| 10,50                  | 100       | 43        | 12                         | 45       | 43,33     | 105        |
| 10,60                  | 100       | 43        | 12                         | 45       | 52,61     | 106        |
| 10,70                  | 104       | 47        | 12                         | 45       | 48,03     | 107        |
| 10,80                  | 104       | 47        | 12                         | 45       | 46,16     | 108        |
| 10,90                  | 104       | 47        | 12                         | 45       | 67,78     | 109        |
| 11,00                  | 104       | 47        | 12                         | 45       | 43,33     | 110        |
| 11,10                  | 104       | 47        | 12                         | 45       | 43,01     | 111        |
| 11,50                  | 104       | 47        | 12                         | 45       | 45,07     | 115        |
| 11,70                  | 104       | 47        | 12                         | 45       | 51,52     | 117        |
| 11,80                  | 104       | 47        | 12                         | 45       | 54,03     | 118        |
| 11,90                  | 108       | 51        | 12                         | 45       | 67,90     | 119        |
| 12,00                  | 108       | 51        | 12                         | 45       | 51,95     | 120        |
| 12,10                  | 111       | 51        | 16                         | 48       | 38,32     | 121        |
| 12,20                  | 111       | 51        | 16                         | 48       | 57,08     | 122        |
| 12,30                  | 111       | 51        | 16                         | 48       | 70,18     | 123        |
| 12,40                  | 111       | 51        | 16                         | 48       | 83,62     | 124        |
| 12,50                  | 111       | 51        | 16                         | 48       | 54,36     | 125        |
| 12,60                  | 111       | 51        | 16                         | 48       | 110,20    | 126        |
| 12,70                  | 111       | 51        | 16                         | 48       | 120,10    | 127        |
| 12,80                  | 111       | 51        | 16                         | 48       | 56,98     | 128        |
| 12,90                  | 111       | 51        | 16                         | 48       | 84,05     | 129        |
| 13,00                  | 111       | 51        | 16                         | 48       | 58,40     | 130        |
| 13,50                  | 114       | 54        | 16                         | 48       | 86,23     | 135        |
| 14,00                  | 114       | 54        | 16                         | 48       | 86,23     | 140        |
| 14,50                  | 116       | 56        | 16                         | 48       | 110,20    | 145        |
| 15,00                  | 116       | 56        | 16                         | 48       | 103,90    | 150        |
| 15,50                  | 118       | 58        | 16                         | 48       | 113,50    | 155        |
| 16,00                  | 118       | 58        | 16                         | 48       | 108,80    | 160        |
| 16,50                  | 126       | 60        | 20                         | 50       | 169,20    | 165        |
| 17,00                  | 126       | 60        | 20                         | 50       | 169,20    | 170        |
| 17,50                  | 128       | 62        | 20                         | 50       | 169,20    | 175        |
| 18,00                  | 128       | 62        | 20                         | 50       | 169,20    | 180        |
| 18,50                  | 130       | 64        | 20                         | 50       | 169,20    | 185        |
| 19,00                  | 130       | 64        | 20                         | 50       | 169,20    | 190        |
| 19,50                  | 132       | 66        | 20                         | 50       | 169,20    | 195        |
| 20,00                  | 132       | 66        | 20                         | 50       | 149,60    | 200        |

|   |   |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ○ |
| S | ○ |
| H |   |
| O | ○ |

→ v. strana 46

## Vrtáky v skrutkovici, DIN 1897, veľmi krátke

≤ 3xD



UNI

TiN

130°  
HSS-E-PM

UNI

TiN

118°  
HSS-E

N

vap.

118°  
HSS

VA

130°  
HSS-E

WNX

130°  
HSS-E

WT

vap.

130°  
HSS-E

WT

TiN

130°  
HSS-E

| DC <sub>h8</sub><br>mm | DC<br>palec | OAL<br>mm | LCF<br>mm | 10 113 ... |                   | 10 107 ... |                   | 10 105 ... |                   | 10 130 ... |     | 10 106 ... |     | 10 109 ... |                     | 10 110 ... |     |
|------------------------|-------------|-----------|-----------|------------|-------------------|------------|-------------------|------------|-------------------|------------|-----|------------|-----|------------|---------------------|------------|-----|
|                        |             |           |           | EUR<br>T2  |                   | EUR<br>T2  |                   | EUR<br>T2  |                   | EUR<br>T2  |     | EUR<br>T2  |     | EUR<br>T2  |                     | EUR<br>T2  |     |
| 0,40                   |             | 19        | 2,5       |            |                   |            |                   | 4,14       | 004 <sup>1)</sup> |            |     |            |     | 6,94       | 00400 <sup>1)</sup> |            |     |
| 0,50                   |             | 20        | 3,0       |            |                   |            |                   | 3,10       | 005 <sup>1)</sup> |            |     |            |     | 5,13       | 00500 <sup>1)</sup> |            |     |
| 0,55                   |             | 21        | 3,5       |            |                   |            |                   |            |                   |            |     |            |     | 12,01      | 00550 <sup>1)</sup> |            |     |
| 0,60                   |             | 21        | 3,5       |            |                   |            |                   | 3,81       | 006 <sup>1)</sup> |            |     |            |     | 6,11       | 00600 <sup>1)</sup> |            |     |
| 0,65                   |             | 22        | 4,0       |            |                   |            |                   |            |                   |            |     |            |     | 6,65       | 00650 <sup>1)</sup> |            |     |
| 0,70                   |             | 23        | 4,5       |            |                   |            |                   | 3,54       | 007 <sup>1)</sup> |            |     |            |     | 5,60       | 00700 <sup>1)</sup> |            |     |
| 0,75                   |             | 23        | 4,5       |            |                   |            |                   |            |                   |            |     |            |     | 5,83       | 00750 <sup>1)</sup> |            |     |
| 0,80                   |             | 24        | 5,0       |            |                   |            |                   | 2,72       | 008 <sup>1)</sup> |            |     |            |     | 4,87       | 00800 <sup>1)</sup> |            |     |
| 0,85                   |             | 24        | 5,0       |            |                   |            |                   |            |                   |            |     |            |     | 5,50       | 00850 <sup>1)</sup> |            |     |
| 0,90                   |             | 25        | 5,5       |            |                   |            |                   | 2,72       | 009 <sup>1)</sup> |            |     |            |     | 4,87       | 00900 <sup>1)</sup> |            |     |
| 0,95                   |             | 25        | 5,5       |            |                   |            |                   |            |                   |            |     |            |     | 5,50       | 00950 <sup>1)</sup> |            |     |
| 1,00                   |             | 26        | 6,0       | 8,14       | 010 <sup>2)</sup> | 4,89       | 010 <sup>2)</sup> | 1,50       | 010 <sup>1)</sup> | 2,07       | 010 | 3,15       | 010 | 3,46       | 01000 <sup>1)</sup> | 4,80       | 010 |
| 1,05                   |             | 26        | 6,0       |            |                   |            |                   |            |                   |            |     |            |     | 4,66       | 01050 <sup>1)</sup> |            |     |
| 1,10                   |             | 28        | 7,0       | 8,14       | 011 <sup>2)</sup> | 4,89       | 011 <sup>2)</sup> | 1,59       | 011 <sup>1)</sup> | 2,07       | 011 | 3,45       | 011 | 3,31       | 01100 <sup>1)</sup> | 5,01       | 011 |
| 1,15                   |             | 28        | 7,0       |            |                   |            |                   |            |                   |            |     |            |     | 3,71       | 01150 <sup>1)</sup> |            |     |
| 1,20                   |             | 30        | 8,0       | 8,34       | 012 <sup>2)</sup> | 5,02       | 012 <sup>2)</sup> | 1,59       | 012 <sup>1)</sup> | 1,88       | 012 | 3,42       | 012 | 3,22       | 01200 <sup>1)</sup> | 4,68       | 012 |
| 1,25                   |             | 30        | 8,0       |            |                   |            |                   |            |                   |            |     |            |     | 3,71       | 01250 <sup>1)</sup> |            |     |
| 1,30                   |             | 30        | 8,0       | 8,79       | 013 <sup>2)</sup> | 5,27       | 013 <sup>2)</sup> | 1,59       | 013 <sup>1)</sup> | 1,88       | 013 | 3,32       | 013 | 3,31       | 01300 <sup>1)</sup> | 5,01       | 013 |
| 1,35                   |             | 32        | 9,0       |            |                   |            |                   |            |                   |            |     |            |     | 3,71       | 01350 <sup>1)</sup> |            |     |
| 1,40                   |             | 32        | 9,0       | 8,04       | 014 <sup>2)</sup> | 4,82       | 014 <sup>2)</sup> | 1,59       | 014 <sup>1)</sup> | 1,88       | 014 | 3,32       | 014 | 3,31       | 01400 <sup>1)</sup> | 5,01       | 014 |
| 1,45                   |             | 32        | 9,0       |            |                   |            |                   |            |                   |            |     |            |     | 3,71       | 01450 <sup>1)</sup> |            |     |
| 1,50                   |             | 32        | 9,0       | 7,59       | 015 <sup>2)</sup> | 4,55       | 015 <sup>2)</sup> | 1,25       | 015 <sup>1)</sup> | 1,88       | 015 | 3,04       | 015 | 3,07       | 01500 <sup>1)</sup> | 4,68       | 015 |
| 1,55                   |             | 34        | 10,0      |            |                   |            |                   |            |                   |            |     |            |     | 4,82       | 01550 <sup>1)</sup> |            |     |
| 1,60                   |             | 34        | 10,0      | 7,95       | 016 <sup>2)</sup> | 4,76       | 016 <sup>2)</sup> | 1,46       | 016 <sup>1)</sup> | 2,30       | 016 | 3,29       | 016 | 2,99       | 01600 <sup>1)</sup> | 4,53       | 016 |
| 1,65                   |             | 34        | 10,0      |            |                   |            |                   |            |                   |            |     |            |     | 3,97       | 01650 <sup>1)</sup> |            |     |
| 1,70                   |             | 34        | 10,0      | 8,04       | 017 <sup>2)</sup> | 4,82       | 017 <sup>2)</sup> | 1,46       | 017 <sup>1)</sup> | 2,30       | 017 | 3,25       | 017 | 2,96       | 01700 <sup>1)</sup> | 4,46       | 017 |
| 1,75                   |             | 36        | 11,0      |            |                   |            |                   |            |                   |            |     |            |     | 3,66       | 01750 <sup>1)</sup> |            |     |
| 1,80                   |             | 36        | 11,0      | 7,95       | 018 <sup>2)</sup> | 4,76       | 018 <sup>2)</sup> | 1,55       | 018 <sup>1)</sup> | 2,30       | 018 | 3,25       | 018 | 3,01       | 01800 <sup>1)</sup> | 4,59       | 018 |
| 1,83                   |             | 36        | 11,0      |            |                   |            |                   |            |                   |            |     |            |     | 5,41       | 01830 <sup>1)</sup> |            |     |
| 1,85                   |             | 36        | 11,0      |            |                   |            |                   |            |                   |            |     |            |     | 3,43       | 01850 <sup>1)</sup> |            |     |
| 1,90                   |             | 36        | 11,0      | 7,95       | 019 <sup>2)</sup> | 4,76       | 019 <sup>2)</sup> | 1,46       | 019 <sup>1)</sup> | 2,30       | 019 | 3,22       | 019 | 3,01       | 01900 <sup>1)</sup> | 4,59       | 019 |
| 1,95                   |             | 38        | 12,0      |            |                   |            |                   |            |                   |            |     |            |     | 5,35       | 01950 <sup>1)</sup> |            |     |
| 2,00                   |             | 38        | 12,0      | 6,65       | 020 <sup>2)</sup> | 3,99       | 020 <sup>2)</sup> | 0,96       | 020 <sup>1)</sup> | 2,30       | 020 | 2,74       | 020 | 2,65       | 02000 <sup>1)</sup> | 3,89       | 020 |
| 2,05                   |             | 38        | 12,0      |            |                   |            |                   |            |                   |            |     |            |     | 4,82       | 02050 <sup>1)</sup> |            |     |
| 2,10                   |             | 38        | 12,0      | 8,14       | 021 <sup>2)</sup> | 4,89       | 021 <sup>2)</sup> | 1,39       | 021 <sup>1)</sup> | 2,30       | 021 | 3,04       | 021 | 2,93       | 02100 <sup>1)</sup> | 4,39       | 021 |
| 2,15                   |             | 40        | 13,0      |            |                   |            |                   |            |                   |            |     |            |     | 4,53       | 02150 <sup>1)</sup> |            |     |
| 2,20                   |             | 40        | 13,0      | 8,14       | 022 <sup>2)</sup> | 4,89       | 022 <sup>2)</sup> | 1,39       | 022 <sup>1)</sup> | 2,30       | 022 | 3,07       | 022 | 3,41       | 02200 <sup>1)</sup> | 4,80       | 022 |
| 2,25                   |             | 40        | 13,0      |            |                   |            |                   |            |                   |            |     |            |     | 3,66       | 02250 <sup>1)</sup> |            |     |
| 2,30                   |             | 40        | 13,0      | 6,85       | 023 <sup>2)</sup> | 4,14       | 023 <sup>2)</sup> | 1,46       | 023 <sup>1)</sup> | 2,30       | 023 | 3,20       | 023 | 3,15       | 02300 <sup>1)</sup> | 4,80       | 023 |
| 2,35                   |             | 40        | 13,0      |            |                   |            |                   |            |                   |            |     |            |     | 5,13       | 02350 <sup>1)</sup> |            |     |
| 2,38                   | 3/32        | 43        | 14,0      | 7,54       | 238 <sup>2)</sup> | 4,50       | 238 <sup>2)</sup> |            |                   |            |     |            |     | 3,28       | 02400               | 4,96       | 024 |
| 2,40                   |             | 43        | 14,0      | 8,19       | 024 <sup>2)</sup> | 4,94       | 024 <sup>2)</sup> | 1,46       | 024               | 2,30       | 024 | 3,25       | 024 | 3,89       | 02450               |            |     |
| 2,45                   |             | 43        | 14,0      |            |                   |            |                   |            |                   |            |     |            |     | 2,80       | 02500               | 4,25       | 025 |
| 2,50                   |             | 43        | 14,0      | 7,15       | 025 <sup>2)</sup> | 4,34       | 025 <sup>2)</sup> | 1,09       | 025               | 2,30       | 025 | 3,04       | 025 | 5,13       | 02550               |            |     |
| 2,55                   |             | 43        | 14,0      |            |                   |            |                   |            |                   |            |     |            |     |            |                     |            |     |

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| P | • | • | ○ | ○ | • | • | • |
| M |   | • |   | • |   | • | • |
| K | • | • | • | • | • | • | • |
| N | ○ | ○ | ○ | • | ○ | ○ | ○ |
| S | ○ | ○ |   | ○ | ○ | ○ | • |
| H | ○ |   |   |   | ○ | ○ | ○ |
| O | ○ | ○ | ○ |   | ○ |   |   |

1) bez povrchové úpravy  
2) samostrediaci

## Vrtáky v skrutkovici, DIN 1897, veľmi krátke

| ≤ 3xD                  |             |           |           | UNI              |        | UNI           |        | N           |     | VA            |     | WNX           |     | WT            |       | WT            |     |
|------------------------|-------------|-----------|-----------|------------------|--------|---------------|--------|-------------|-----|---------------|-----|---------------|-----|---------------|-------|---------------|-----|
|                        |             |           |           | TiN              |        | TiN           |        | vap.        |     |               |     |               |     | vap.          |       | TiN           |     |
|                        |             |           |           |                  |        |               |        |             |     |               |     |               |     |               |       |               |     |
|                        |             |           |           | 130°<br>HSS-E-PM |        | 118°<br>HSS-E |        | 118°<br>HSS |     | 130°<br>HSS-E |     | 130°<br>HSS-E |     | 130°<br>HSS-E |       | 130°<br>HSS-E |     |
|                        |             |           |           | 10 113 ...       |        | 10 107 ...    |        | 10 105 ...  |     | 10 130 ...    |     | 10 106 ...    |     | 10 109 ...    |       | 10 110 ...    |     |
| DC <sub>h8</sub><br>mm | DC<br>palec | OAL<br>mm | LCF<br>mm | EUR<br>T2        |        | EUR<br>T2     |        | EUR<br>T2   |     | EUR<br>T2     |     | EUR<br>T2     |     | EUR<br>T2     |       | EUR<br>T2     |     |
| 2,60                   |             | 43        | 14,0      | 8,45             | 026 2) | 5,10          | 026 2) | 1,50        | 026 | 2,30          | 026 | 3,25          | 026 | 3,28          | 02600 | 4,96          | 026 |
| 2,65                   |             | 43        | 14,0      |                  |        |               |        |             |     |               |     |               |     | 5,13          | 02650 |               |     |
| 2,70                   |             | 46        | 16,0      | 8,99             | 027 2) | 5,42          | 027 2) | 1,50        | 027 | 2,30          | 027 | 3,29          | 027 | 3,43          | 02700 | 5,26          | 027 |
| 2,75                   |             | 46        | 16,0      |                  |        |               |        |             |     |               |     |               |     | 5,13          | 02750 |               |     |
| 2,78                   | 7/64        | 46        | 16,0      | 8,73             | 278 2) | 5,24          | 278 2) |             |     |               |     |               |     |               |       |               |     |
| 2,80                   |             | 46        | 16,0      | 8,34             | 028 2) | 5,02          | 028 2) | 1,50        | 028 | 2,30          | 028 | 3,45          | 028 | 3,43          | 02800 | 5,26          | 028 |
| 2,85                   |             | 46        | 16,0      |                  |        |               |        |             |     |               |     |               |     | 5,10          | 02850 |               |     |
| 2,90                   |             | 46        | 16,0      | 8,88             | 029 2) | 5,35          | 029 2) | 1,50        | 029 | 2,30          | 029 | 3,58          | 029 | 3,43          | 02900 | 5,26          | 029 |
| 2,95                   |             | 46        | 16,0      |                  |        |               |        |             |     |               |     |               |     | 3,66          | 02950 |               |     |
| 3,00                   |             | 46        | 16,0      | 7,54             | 030 2) | 4,50          | 030 2) | 1,09        | 030 | 2,30          | 030 | 3,25          | 030 | 3,01          | 03000 | 4,48          | 030 |
| 3,05                   |             | 49        | 18,0      |                  |        |               |        |             |     |               |     |               |     | 3,78          | 03050 |               |     |
| 3,10                   |             | 49        | 18,0      | 8,04             | 031 2) | 4,82          | 031 2) | 1,50        | 031 | 2,30          | 031 | 3,73          | 031 | 3,43          | 03100 | 5,16          | 031 |
| 3,15                   |             | 49        | 18,0      |                  |        |               |        |             |     |               |     |               |     | 5,50          | 03150 |               |     |
| 3,17                   | 1/8         | 49        | 18,0      | 7,95             | 317 2) | 4,76          | 317 2) |             |     |               |     |               |     |               |       |               |     |
| 3,20                   |             | 49        | 18,0      | 7,59             | 032 2) | 4,55          | 032 2) | 1,39        | 032 | 2,30          | 032 | 3,20          | 032 | 3,28          | 03200 | 4,87          | 032 |
| 3,25                   |             | 49        | 18,0      |                  |        |               |        |             |     |               |     |               |     | 3,81          | 03250 |               |     |
| 3,30                   |             | 49        | 18,0      | 7,59             | 033 2) | 4,55          | 033 2) | 1,46        | 033 | 2,30          | 033 | 3,45          | 033 | 3,54          | 03300 | 5,26          | 033 |
| 3,35                   |             | 49        | 18,0      |                  |        |               |        |             |     |               |     |               |     | 5,10          | 03350 |               |     |
| 3,40                   |             | 52        | 20,0      | 8,79             | 034 2) | 5,27          | 034 2) | 1,85        | 034 | 2,30          | 034 | 3,93          | 034 | 3,51          | 03400 | 5,26          | 034 |
| 3,45                   |             | 52        | 20,0      |                  |        |               |        |             |     |               |     |               |     | 3,81          | 03450 |               |     |
| 3,50                   |             | 52        | 20,0      | 7,59             | 035 2) | 4,55          | 035 2) | 1,25        | 035 | 2,30          | 035 | 3,84          | 035 | 3,46          | 03500 | 4,77          | 035 |
| 3,55                   |             | 52        | 20,0      |                  |        |               |        |             |     |               |     |               |     | 3,89          | 03550 |               |     |
| 3,57                   | 9/64        | 52        | 20,0      | 8,59             | 357 2) | 5,17          | 357 2) |             |     |               |     |               |     |               |       |               |     |
| 3,60                   |             | 52        | 20,0      | 10,08            | 036 2) | 6,06          | 036 2) | 1,85        | 036 | 2,65          | 036 | 3,93          | 036 | 3,54          | 03600 | 5,26          | 036 |
| 3,70                   |             | 52        | 20,0      | 8,73             | 037 2) | 5,24          | 037 2) | 1,85        | 037 | 2,65          | 037 | 3,93          | 037 | 3,78          | 03700 | 5,67          | 037 |
| 3,75                   |             | 52        | 20,0      |                  |        |               |        |             |     |               |     |               |     | 3,97          | 03750 |               |     |
| 3,80                   |             | 55        | 22,0      | 9,28             | 038 2) | 5,58          | 038 2) | 1,85        | 038 | 2,65          | 038 | 4,17          | 038 | 3,66          | 03800 | 5,39          | 038 |
| 3,85                   |             | 55        | 22,0      |                  |        |               |        |             |     |               |     |               |     | 6,11          | 03850 |               |     |
| 3,90                   |             | 55        | 22,0      | 10,52            | 039 2) | 6,33          | 039 2) | 1,85        | 039 |               |     | 4,17          | 039 | 3,75          | 03900 | 5,67          | 039 |
| 3,95                   |             | 55        | 22,0      |                  |        |               |        |             |     |               |     |               |     | 6,18          | 03950 |               |     |
| 3,97                   | 5/32        | 55        | 22,0      | 9,47             | 397 2) | 5,67          | 397 2) |             |     |               |     |               |     |               |       |               |     |
| 4,00                   |             | 55        | 22,0      | 8,59             | 040 2) | 5,17          | 040 2) | 1,31        | 040 | 3,92          | 040 | 4,14          | 040 | 3,71          | 04000 | 4,87          | 040 |
| 4,05                   |             | 55        | 22,0      |                  |        |               |        |             |     |               |     |               |     | 4,36          | 04050 |               |     |
| 4,10                   |             | 55        | 22,0      | 9,83             | 041 2) | 5,92          | 041 2) | 1,59        | 041 | 3,92          | 041 | 4,20          | 041 | 3,85          | 04100 | 5,39          | 041 |
| 4,15                   |             | 55        | 22,0      |                  |        |               |        |             |     |               |     |               |     | 6,14          | 04150 |               |     |
| 4,20                   |             | 55        | 22,0      | 8,59             | 042 2) | 5,17          | 042 2) | 1,55        | 042 | 3,92          | 042 | 3,84          | 042 | 3,78          | 04200 | 5,39          | 042 |
| 4,25                   |             | 55        | 22,0      |                  |        |               |        |             |     |               |     |               |     | 6,68          | 04250 |               |     |
| 4,30                   |             | 58        | 24,0      | 9,79             | 043 2) | 5,88          | 043 2) | 2,48        | 043 | 3,92          | 043 | 4,33          | 043 | 4,00          | 04300 | 5,98          | 043 |
| 4,35                   |             | 58        | 24,0      |                  |        |               |        |             |     |               |     |               |     | 6,71          | 04350 |               |     |
| 4,37                   | 11/64       | 58        | 24,0      | 13,20            | 437 2) | 7,91          | 437 2) |             |     |               |     |               |     |               |       |               |     |
| 4,40                   |             | 58        | 24,0      | 10,52            | 044 2) | 6,33          | 044 2) | 2,48        | 044 |               |     | 4,33          | 044 | 4,16          | 04400 | 6,14          | 044 |
| 4,45                   |             | 58        | 24,0      |                  |        |               |        |             |     |               |     |               |     | 6,90          | 04450 |               |     |
| 4,50                   |             | 58        | 24,0      | 9,79             | 045 2) | 5,88          | 045 2) | 1,59        | 045 | 4,13          | 045 | 4,33          | 045 | 3,97          | 04500 | 5,08          | 045 |
| 4,55                   |             | 58        | 24,0      |                  |        |               |        |             |     |               |     |               |     | 6,71          | 04550 |               |     |
| 4,60                   |             | 58        | 24,0      | 9,83             | 046 2) | 5,92          | 046 2) | 2,51        | 046 | 4,13          | 046 | 4,49          | 046 | 4,41          | 04600 | 6,68          | 046 |
| P                      |             |           |           | •                |        | •             |        | ○           |     | ○             |     | •             |     | •             |       | •             |     |
| M                      |             |           |           |                  |        | •             |        |             |     | •             |     |               |     | •             |       | •             |     |
| K                      |             |           |           | •                |        | •             |        | •           |     |               |     | •             |     | •             |       | •             |     |
| N                      |             |           |           | ○                |        | ○             |        | ○           |     | •             |     | ○             |     | ○             |       | ○             |     |
| S                      |             |           |           | ○                |        | ○             |        |             |     | ○             |     | ○             |     | ○             |       | •             |     |
| H                      |             |           |           | ○                |        |               |        |             |     |               |     | ○             |     | ○             |       | ○             |     |
| O                      |             |           |           | ○                |        | ○             |        | ○           |     |               |     | ○             |     |               |       | ○             |     |

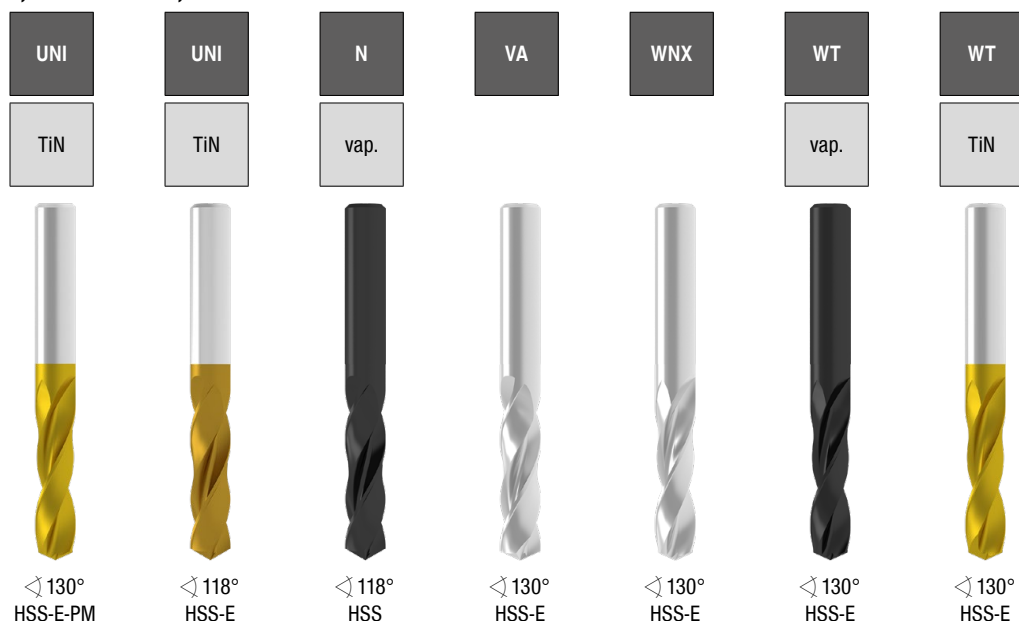
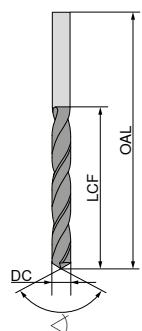
1) bez povrchové úpravy

2) samostrediaci

→ v<sub>c</sub> strana 46+47

## Vrtáky v skrutkovici, DIN 1897, veľmi krátke

≤ 3xD



| DC <sub>h8</sub><br>mm | DC<br>palec | OAL<br>mm | LCF<br>mm | 10 113 ... |                   | 10 107 ... |                   | 10 105 ... |     | 10 130 ... |     | 10 106 ... |     | 10 109 ... |       | 10 110 ... |     |
|------------------------|-------------|-----------|-----------|------------|-------------------|------------|-------------------|------------|-----|------------|-----|------------|-----|------------|-------|------------|-----|
|                        |             |           |           | EUR<br>T2  |                   | EUR<br>T2  |                   | EUR<br>T2  |     | EUR<br>T2  |     | EUR<br>T2  |     | EUR<br>T2  |       | EUR<br>T2  |     |
| 4,65                   |             | 58        | 24,0      |            |                   |            |                   |            |     |            |     |            |     | 6,00       | 04650 | 6,79       | 465 |
| 4,70                   |             | 58        | 24,0      | 11,02      | 047 <sup>2)</sup> | 6,59       | 047 <sup>2)</sup> | 2,51       | 047 | 4,13       | 047 | 4,80       | 047 | 4,55       | 04700 | 6,79       | 047 |
| 4,75                   |             | 58        | 24,0      |            |                   |            |                   |            |     |            |     |            |     | 6,00       | 04750 |            |     |
| 4,76                   | 3/16        | 62        | 26,0      | 11,02      | 476 <sup>2)</sup> | 6,59       | 476 <sup>2)</sup> |            |     |            |     |            |     | 4,77       | 04800 | 6,76       | 048 |
| 4,80                   |             | 62        | 26,0      | 11,13      | 048 <sup>2)</sup> | 6,71       | 048 <sup>2)</sup> | 2,51       | 048 | 4,26       | 048 | 5,02       | 048 |            |       |            |     |
| 4,85                   |             | 62        | 26,0      |            |                   |            |                   |            |     |            |     |            |     | 5,50       | 04850 |            |     |
| 4,90                   |             | 62        | 26,0      | 11,25      | 049 <sup>2)</sup> | 6,77       | 049 <sup>2)</sup> | 2,51       | 049 | 4,26       | 049 | 5,24       | 049 | 5,23       | 04900 | 6,76       | 049 |
| 4,95                   |             | 62        | 26,0      |            |                   |            |                   |            |     |            |     |            |     | 7,84       | 04950 |            |     |
| 5,00                   |             | 62        | 26,0      | 9,47       | 050 <sup>2)</sup> | 5,67       | 050 <sup>2)</sup> | 1,69       | 050 | 4,26       | 050 | 4,64       | 050 | 4,25       | 05000 | 5,50       | 050 |
| 5,05                   |             | 62        | 26,0      |            |                   |            |                   |            |     |            |     |            |     | 9,26       | 05050 |            |     |
| 5,10                   |             | 62        | 26,0      | 10,42      | 051 <sup>2)</sup> | 6,27       | 051 <sup>2)</sup> | 2,56       | 051 | 4,26       | 051 | 5,37       | 051 | 5,67       | 05100 | 6,96       | 051 |
| 5,15                   |             | 62        | 26,0      |            |                   |            |                   |            |     |            |     |            |     | 9,83       | 05150 |            |     |
| 5,16                   | 13/64       | 62        | 26,0      | 12,44      | 516 <sup>2)</sup> | 7,46       | 516 <sup>2)</sup> |            |     |            |     |            |     |            |       |            |     |
| 5,20                   |             | 62        | 26,0      | 11,25      | 052 <sup>2)</sup> | 6,77       | 052 <sup>2)</sup> | 2,56       | 052 | 4,84       | 052 | 5,44       | 052 | 6,79       | 05200 | 7,08       | 052 |
| 5,25                   |             | 62        | 26,0      |            |                   |            |                   |            |     |            |     |            |     | 8,03       | 05250 |            |     |
| 5,30                   |             | 62        | 26,0      | 12,77      | 053 <sup>2)</sup> | 7,69       | 053 <sup>2)</sup> | 2,56       | 053 | 4,84       | 053 | 5,60       | 053 | 7,47       | 05300 | 7,20       | 053 |
| 5,35                   |             | 66        | 28,0      |            |                   |            |                   |            |     |            |     |            |     | 13,32      | 05350 |            |     |
| 5,40                   |             | 66        | 28,0      | 12,44      | 054 <sup>2)</sup> | 7,50       | 054 <sup>2)</sup> | 2,93       | 054 |            |     | 5,88       | 054 | 8,03       | 05400 | 7,95       | 054 |
| 5,45                   |             | 66        | 28,0      |            |                   |            |                   |            |     |            |     |            |     | 12,88      | 05450 |            |     |
| 5,50                   |             | 66        | 28,0      | 10,68      | 055 <sup>2)</sup> | 6,41       | 055 <sup>2)</sup> | 2,22       | 055 | 4,84       | 055 | 5,80       | 055 | 5,41       | 05500 | 5,92       | 055 |
| 5,55                   |             | 66        | 28,0      |            |                   |            |                   |            |     |            |     |            |     | 14,63      | 05550 | 7,70       | 555 |
| 5,56                   | 7/32        | 66        | 28,0      | 11,68      | 556 <sup>2)</sup> | 7,00       | 556 <sup>2)</sup> |            |     |            |     |            |     |            |       |            |     |
| 5,60                   |             | 66        | 28,0      | 12,77      | 056 <sup>2)</sup> | 7,69       | 056 <sup>2)</sup> | 2,93       | 056 | 4,87       | 056 | 6,17       | 056 | 8,95       | 05600 | 7,70       | 056 |
| 5,70                   |             | 66        | 28,0      | 13,65      | 057 <sup>2)</sup> | 8,18       | 057 <sup>2)</sup> | 2,93       | 057 | 4,87       | 057 | 6,22       | 057 | 9,11       | 05700 | 7,70       | 057 |
| 5,75                   |             | 66        | 28,0      |            |                   |            |                   |            |     |            |     |            |     | 10,74      | 05750 |            |     |
| 5,80                   |             | 66        | 28,0      | 13,10      | 058 <sup>2)</sup> | 7,88       | 058 <sup>2)</sup> | 2,93       | 058 | 4,87       | 058 | 6,32       | 058 | 9,26       | 05800 | 7,70       | 058 |
| 5,85                   |             | 66        | 28,0      |            |                   |            |                   |            |     |            |     |            |     | 15,60      | 05850 |            |     |
| 5,90                   |             | 66        | 28,0      | 14,41      | 059 <sup>2)</sup> | 8,64       | 059 <sup>2)</sup> | 2,93       | 059 | 4,87       | 059 | 6,39       | 059 | 9,69       | 05900 | 7,93       | 059 |
| 5,95                   | 15/64       | 66        | 28,0      | 21,84      | 595 <sup>2)</sup> | 13,20      | 595 <sup>2)</sup> |            |     |            |     |            |     | 9,83       | 05950 |            |     |
| 6,00                   |             | 66        | 28,0      | 11,57      | 060 <sup>2)</sup> | 6,89       | 060 <sup>2)</sup> | 2,22       | 060 | 5,25       | 060 | 5,64       | 060 | 5,41       | 06000 | 6,21       | 060 |
| 6,05                   |             | 70        | 31,0      |            |                   |            |                   |            |     |            |     |            |     | 15,60      | 06050 |            |     |
| 6,10                   |             | 70        | 31,0      | 13,54      | 061 <sup>2)</sup> | 8,12       | 061 <sup>2)</sup> | 3,15       | 061 | 5,25       | 061 | 6,65       | 061 | 10,22      | 06100 | 9,95       | 061 |
| 6,15                   |             | 70        | 31,0      |            |                   |            |                   |            |     |            |     |            |     | 11,35      | 06150 |            |     |
| 6,20                   |             | 70        | 31,0      | 13,54      | 062 <sup>2)</sup> | 8,12       | 062 <sup>2)</sup> | 3,15       | 062 | 5,25       | 062 | 6,74       | 062 | 10,74      | 06200 | 10,25      | 062 |
| 6,25                   |             | 70        | 31,0      |            |                   |            |                   |            |     |            |     |            |     | 13,42      | 06250 |            |     |
| 6,30                   |             | 70        | 31,0      | 15,50      | 063 <sup>2)</sup> | 9,27       | 063 <sup>2)</sup> | 3,15       | 063 | 5,25       | 063 | 6,79       | 063 | 11,46      | 06300 | 10,44      | 063 |
| 6,35                   | 1/4         | 70        | 31,0      | 14,19      | 635 <sup>2)</sup> | 8,54       | 635 <sup>2)</sup> |            |     |            |     |            |     | 8,03       | 06350 |            |     |
| 6,40                   |             | 70        | 31,0      | 14,30      | 064 <sup>2)</sup> | 8,61       | 064 <sup>2)</sup> | 3,27       | 064 | 5,99       | 064 | 7,14       | 064 | 11,68      | 06400 | 10,50      | 064 |
| 6,45                   |             | 70        | 31,0      |            |                   |            |                   |            |     |            |     |            |     | 15,17      | 06450 |            |     |
| 6,50                   |             | 70        | 31,0      | 13,54      | 065 <sup>2)</sup> | 8,12       | 065 <sup>2)</sup> | 2,64       | 065 | 5,99       | 065 | 6,76       | 065 | 6,32       | 06500 | 7,78       | 065 |
| 6,55                   |             | 70        | 31,0      |            |                   |            |                   |            |     |            |     |            |     | 16,05      | 06550 |            |     |
| 6,60                   |             | 70        | 31,0      | 14,84      | 066 <sup>2)</sup> | 8,96       | 066 <sup>2)</sup> | 3,27       | 066 | 5,99       | 066 | 7,35       | 066 | 12,23      | 06600 | 10,48      | 066 |
| 6,65                   |             | 70        | 31,0      |            |                   |            |                   |            |     |            |     |            |     | 16,91      | 06650 |            |     |
| 6,70                   |             | 70        | 31,0      | 16,38      | 067 <sup>2)</sup> | 9,82       | 067 <sup>2)</sup> | 3,58       | 067 | 5,99       | 067 | 7,60       | 067 | 12,44      | 06700 | 10,65      | 067 |
| 6,75                   |             | 74        | 34,0      | 20,19      | 675 <sup>2)</sup> | 12,01      | 675 <sup>2)</sup> |            |     |            |     |            |     | 12,56      | 06750 |            |     |

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| P | • | • | ○ | ○ | • | • | • |
| M |   | • |   | • |   | • | • |
| K | • | • | • | • | • | • | • |
| N | ○ | ○ | ○ | • | ○ | ○ | ○ |
| S | ○ | ○ |   | ○ | ○ | ○ | • |
| H | ○ |   |   |   | ○ | ○ | ○ |
| O | ○ | ○ | ○ |   | ○ |   |   |

- 1) bez povrchové úpravy  
2) samostrediaci

→ v<sub>c</sub> strana 46+47

## Vrtáky v skrutkovici, DIN 1897, veľmi krátke

| ≤ 3xD                  |             |           |           | UNI                                                                               |                   | UNI                                                                               |                   | N                                                                                 |     | VA                                                                                |     | WNX                                                                                 |     | WT                                                                                  |       | WT                                                                                  |     |
|------------------------|-------------|-----------|-----------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-----|-----------------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------|-----|
|                        |             |           |           | TiN                                                                               |                   | TiN                                                                               |                   | vap.                                                                              |     |                                                                                   |     |                                                                                     |     | vap.                                                                                |       | TiN                                                                                 |     |
|                        |             |           |           |  |                   |  |                   |  |     |  |     |  |     |  |       |  |     |
|                        |             |           |           | 130°<br>HSS-E-PM                                                                  |                   | 118°<br>HSS-E                                                                     |                   | 118°<br>HSS                                                                       |     | 130°<br>HSS-E                                                                     |     | 130°<br>HSS-E                                                                       |     | 130°<br>HSS-E                                                                       |       | 130°<br>HSS-E                                                                       |     |
|                        |             |           |           | 10 113 ...                                                                        |                   | 10 107 ...                                                                        |                   | 10 105 ...                                                                        |     | 10 130 ...                                                                        |     | 10 106 ...                                                                          |     | 10 109 ...                                                                          |       | 10 110 ...                                                                          |     |
| DC <sub>h8</sub><br>mm | DC<br>palec | OAL<br>mm | LCF<br>mm | EUR<br>T2                                                                         |                   | EUR<br>T2                                                                         |                   | EUR<br>T2                                                                         |     | EUR<br>T2                                                                         |     | EUR<br>T2                                                                           |     | EUR<br>T2                                                                           |       | EUR<br>T2                                                                           |     |
| 6,80                   |             | 74        | 34,0      | 16,49                                                                             | 068 <sup>2)</sup> | 9,87                                                                              | 068 <sup>2)</sup> | 4,14                                                                              | 068 | 6,20                                                                              | 068 | 8,48                                                                                | 068 | 12,88                                                                               | 06800 | 11,35                                                                               | 068 |
| 6,85                   |             | 74        | 34,0      |                                                                                   |                   |                                                                                   |                   |                                                                                   |     |                                                                                   |     |                                                                                     |     | 18,13                                                                               | 06850 |                                                                                     |     |
| 6,90                   |             | 74        | 34,0      | 16,26                                                                             | 069 <sup>2)</sup> | 9,72                                                                              | 069 <sup>2)</sup> | 4,45                                                                              | 069 | 6,20                                                                              | 069 | 8,69                                                                                | 069 | 13,10                                                                               | 06900 | 11,35                                                                               | 069 |
| 7,00                   |             | 74        | 34,0      | 15,06                                                                             | 070 <sup>2)</sup> | 9,06                                                                              | 070 <sup>2)</sup> | 3,23                                                                              | 070 | 6,20                                                                              | 070 | 7,35                                                                                | 070 | 7,20                                                                                | 07000 | 9,31                                                                                | 070 |
| 7,05                   |             | 74        | 34,0      |                                                                                   |                   |                                                                                   |                   |                                                                                   |     |                                                                                   |     |                                                                                     |     | 20,30                                                                               | 07050 |                                                                                     |     |
| 7,10                   |             | 74        | 34,0      | 18,23                                                                             | 071 <sup>2)</sup> | 11,02                                                                             | 071 <sup>2)</sup> | 4,60                                                                              | 071 | 6,20                                                                              | 071 | 10,25                                                                               | 071 | 13,32                                                                               | 07100 | 12,56                                                                               | 071 |
| 7,14                   | 9/32        | 74        | 34,0      | 24,23                                                                             | 714 <sup>2)</sup> | 14,51                                                                             | 714 <sup>2)</sup> |                                                                                   |     |                                                                                   |     |                                                                                     |     |                                                                                     |       |                                                                                     |     |
| 7,20                   |             | 74        | 34,0      | 18,78                                                                             | 072 <sup>2)</sup> | 11,35                                                                             | 072 <sup>2)</sup> | 4,68                                                                              | 072 | 6,60                                                                              | 072 | 10,74                                                                               | 072 | 13,86                                                                               | 07200 | 12,56                                                                               | 072 |
| 7,25                   |             | 74        | 34,0      |                                                                                   |                   |                                                                                   |                   |                                                                                   |     |                                                                                   |     |                                                                                     |     | 16,49                                                                               | 07250 |                                                                                     |     |
| 7,30                   |             | 74        | 34,0      | 20,19                                                                             | 073 <sup>2)</sup> | 12,11                                                                             | 073 <sup>2)</sup> | 4,81                                                                              | 073 |                                                                                   |     | 11,35                                                                               | 073 | 13,97                                                                               | 07300 | 12,66                                                                               | 073 |
| 7,35                   |             | 74        | 34,0      |                                                                                   |                   |                                                                                   |                   |                                                                                   |     |                                                                                   |     |                                                                                     |     | 18,33                                                                               | 07350 |                                                                                     |     |
| 7,40                   |             | 74        | 34,0      | 18,89                                                                             | 074 <sup>2)</sup> | 11,46                                                                             | 074 <sup>2)</sup> | 5,16                                                                              | 074 |                                                                                   |     | 12,44                                                                               | 074 | 14,19                                                                               | 07400 | 12,66                                                                               | 074 |
| 7,50                   |             | 74        | 34,0      | 15,72                                                                             | 075 <sup>2)</sup> | 9,45                                                                              | 075 <sup>2)</sup> | 3,58                                                                              | 075 | 6,60                                                                              | 075 | 8,06                                                                                | 075 | 8,37                                                                                | 07500 | 9,74                                                                                | 075 |
| 7,60                   |             | 79        | 37,0      | 24,57                                                                             | 076 <sup>2)</sup> | 14,74                                                                             | 076 <sup>2)</sup> | 5,72                                                                              | 076 |                                                                                   |     | 11,68                                                                               | 076 | 14,84                                                                               | 07600 | 14,09                                                                               | 076 |
| 7,70                   |             | 79        | 37,0      | 26,52                                                                             | 077 <sup>2)</sup> | 15,94                                                                             | 077 <sup>2)</sup> | 5,72                                                                              | 077 | 6,95                                                                              | 077 | 12,01                                                                               | 077 | 15,50                                                                               | 07700 | 14,09                                                                               | 077 |
| 7,75                   |             | 79        | 37,0      |                                                                                   |                   |                                                                                   |                   |                                                                                   |     |                                                                                   |     |                                                                                     |     | 19,21                                                                               | 07750 |                                                                                     |     |
| 7,80                   |             | 79        | 37,0      | 20,30                                                                             | 078 <sup>2)</sup> | 12,23                                                                             | 078 <sup>2)</sup> | 5,72                                                                              | 078 |                                                                                   |     | 12,01                                                                               | 078 | 15,83                                                                               | 07800 | 14,19                                                                               | 078 |
| 7,90                   |             | 79        | 37,0      | 28,38                                                                             | 079 <sup>2)</sup> | 17,04                                                                             | 079 <sup>2)</sup> | 5,80                                                                              | 079 | 6,95                                                                              | 079 | 11,46                                                                               | 079 | 16,15                                                                               | 07900 | 14,19                                                                               | 079 |
| 7,94                   | 5/16        | 79        | 37,0      | 19,44                                                                             | 794 <sup>2)</sup> | 11,68                                                                             | 794 <sup>2)</sup> |                                                                                   |     |                                                                                   |     |                                                                                     |     |                                                                                     |       |                                                                                     |     |
| 8,00                   |             | 79        | 37,0      | 18,78                                                                             | 080 <sup>2)</sup> | 11,35                                                                             | 080 <sup>2)</sup> | 3,67                                                                              | 080 | 7,50                                                                              | 080 | 8,24                                                                                | 080 | 7,84                                                                                | 08000 | 10,12                                                                               | 080 |
| 8,05                   |             | 79        | 37,0      |                                                                                   |                   |                                                                                   |                   |                                                                                   |     |                                                                                   |     |                                                                                     |     | 25,87                                                                               | 08050 |                                                                                     |     |
| 8,10                   |             | 79        | 37,0      | 24,02                                                                             | 081 <sup>2)</sup> | 14,41                                                                             | 081 <sup>2)</sup> | 6,23                                                                              | 081 | 7,50                                                                              | 081 | 12,66                                                                               | 081 | 16,91                                                                               | 08100 | 14,30                                                                               | 081 |
| 8,15                   |             | 79        | 37,0      |                                                                                   |                   |                                                                                   |                   |                                                                                   |     |                                                                                   |     |                                                                                     |     | 25,87                                                                               | 08150 |                                                                                     |     |
| 8,20                   |             | 79        | 37,0      | 25,00                                                                             | 082 <sup>2)</sup> | 14,96                                                                             | 082 <sup>2)</sup> | 6,67                                                                              | 082 | 7,50                                                                              | 082 | 13,00                                                                               | 082 | 17,69                                                                               | 08200 | 14,30                                                                               | 082 |
| 8,25                   |             | 79        | 37,0      |                                                                                   |                   |                                                                                   |                   |                                                                                   |     |                                                                                   |     |                                                                                     |     | 20,09                                                                               | 08250 |                                                                                     |     |
| 8,30                   |             | 79        | 37,0      | 26,20                                                                             | 083 <sup>2)</sup> | 15,72                                                                             | 083 <sup>2)</sup> | 6,77                                                                              | 083 | 7,50                                                                              | 083 | 13,32                                                                               | 083 | 18,66                                                                               | 08300 | 14,51                                                                               | 083 |
| 8,40                   |             | 79        | 37,0      | 25,11                                                                             | 084 <sup>2)</sup> | 15,17                                                                             | 084 <sup>2)</sup> | 6,94                                                                              | 084 | 8,30                                                                              | 084 | 13,86                                                                               | 084 | 19,54                                                                               | 08400 | 14,51                                                                               | 084 |
| 8,50                   |             | 79        | 37,0      | 21,84                                                                             | 085 <sup>2)</sup> | 13,20                                                                             | 085 <sup>2)</sup> | 5,27                                                                              | 085 | 8,30                                                                              | 085 | 10,02                                                                               | 085 | 9,43                                                                                | 08500 | 12,11                                                                               | 085 |
| 8,55                   |             | 84        | 40,0      |                                                                                   |                   |                                                                                   |                   |                                                                                   |     |                                                                                   |     |                                                                                     |     | 29,57                                                                               | 08550 |                                                                                     |     |
| 8,60                   |             | 84        | 40,0      |                                                                                   |                   | 14,74                                                                             | 086 <sup>2)</sup> | 6,94                                                                              | 086 | 8,30                                                                              | 086 | 14,19                                                                               | 086 | 20,09                                                                               | 08600 | 14,84                                                                               | 086 |
| 8,70                   |             | 84        | 40,0      |                                                                                   |                   | 16,91                                                                             | 087 <sup>2)</sup> | 7,09                                                                              | 087 | 8,30                                                                              | 087 | 14,63                                                                               | 087 | 21,07                                                                               | 08700 | 14,84                                                                               | 087 |
| 8,73                   | 11/32       | 84        | 40,0      | 34,49                                                                             | 873 <sup>2)</sup> | 20,73                                                                             | 873 <sup>2)</sup> |                                                                                   |     |                                                                                   |     |                                                                                     |     |                                                                                     |       |                                                                                     |     |
| 8,75                   |             | 84        | 40,0      |                                                                                   |                   |                                                                                   |                   |                                                                                   |     |                                                                                   |     |                                                                                     |     | 25,87                                                                               | 08750 |                                                                                     |     |
| 8,80                   |             | 84        | 40,0      | 27,40                                                                             | 088 <sup>2)</sup> | 16,38                                                                             | 088 <sup>2)</sup> | 7,16                                                                              | 088 |                                                                                   |     | 16,38                                                                               | 088 | 21,94                                                                               | 08800 | 14,96                                                                               | 088 |
| 8,90                   |             | 84        | 40,0      |                                                                                   |                   | 20,95                                                                             | 089 <sup>2)</sup> | 7,45                                                                              | 089 |                                                                                   |     | 10,74                                                                               | 089 | 22,38                                                                               | 08900 | 15,72                                                                               | 089 |
| 8,95                   |             | 84        | 40,0      |                                                                                   |                   |                                                                                   |                   |                                                                                   |     |                                                                                   |     |                                                                                     |     | 28,71                                                                               | 08950 |                                                                                     |     |
| 9,00                   |             | 84        | 40,0      | 22,17                                                                             | 090 <sup>2)</sup> | 13,42                                                                             | 090 <sup>2)</sup> | 4,81                                                                              | 090 | 9,52                                                                              | 090 | 9,80                                                                                | 090 | 10,03                                                                               | 09000 | 12,23                                                                               | 090 |
| 9,05                   |             | 84        | 40,0      |                                                                                   |                   |                                                                                   |                   |                                                                                   |     |                                                                                   |     |                                                                                     |     | 23,68                                                                               | 09050 |                                                                                     |     |
| 9,10                   |             | 84        | 40,0      |                                                                                   |                   | 17,69                                                                             | 091 <sup>2)</sup> | 8,35                                                                              | 091 |                                                                                   |     | 17,04                                                                               | 091 | 22,93                                                                               | 09100 | 19,44                                                                               | 091 |
| 9,20                   |             | 84        | 40,0      |                                                                                   |                   | 17,79                                                                             | 092 <sup>2)</sup> | 9,02                                                                              | 092 | 10,03                                                                             | 092 | 18,33                                                                               | 092 | 23,68                                                                               | 09200 | 19,44                                                                               | 092 |
| 9,25                   |             | 84        | 40,0      |                                                                                   |                   |                                                                                   |                   |                                                                                   |     |                                                                                   |     |                                                                                     |     | 26,63                                                                               | 09250 |                                                                                     |     |
| 9,30                   |             | 84        | 40,0      | 25,11                                                                             | 093 <sup>2)</sup> | 15,17                                                                             | 093 <sup>2)</sup> | 9,41                                                                              | 093 | 10,03                                                                             | 093 | 12,66                                                                               | 093 | 24,88                                                                               | 09300 | 19,44                                                                               | 093 |
| 9,40                   |             | 84        | 40,0      |                                                                                   |                   | 20,63                                                                             | 094 <sup>2)</sup> | 9,57                                                                              | 094 |                                                                                   |     | 12,66                                                                               | 094 | 25,21                                                                               | 09400 | 19,44                                                                               | 094 |
| 9,50                   |             | 84        | 40,0      | 24,57                                                                             | 095 <sup>2)</sup> | 14,74                                                                             | 095 <sup>2)</sup> | 8,03                                                                              | 095 | 10,16                                                                             | 095 | 12,01                                                                               | 095 | 10,92                                                                               | 09500 | 16,05                                                                               | 095 |
| 9,60                   |             | 89        | 43,0      |                                                                                   |                   | 21,62                                                                             | 096 <sup>2)</sup> | 10,10                                                                             | 096 |                                                                                   |     | 19,10                                                                               | 096 | 25,21                                                                               | 09600 | 20,19                                                                               | 096 |
| P                      |             |           |           | •                                                                                 |                   | •                                                                                 |                   | ○                                                                                 |     | ○                                                                                 |     | •                                                                                   |     | •                                                                                   |       | •                                                                                   |     |
| M                      |             |           |           |                                                                                   |                   | •                                                                                 |                   |                                                                                   |     | •                                                                                 |     |                                                                                     |     | •                                                                                   |       | •                                                                                   |     |
| K                      |             |           |           | •                                                                                 |                   | •                                                                                 |                   | •                                                                                 |     |                                                                                   |     | •                                                                                   |     | •                                                                                   |       | •                                                                                   |     |
| N                      |             |           |           | ○                                                                                 |                   | ○                                                                                 |                   | ○                                                                                 |     | •                                                                                 |     | ○                                                                                   |     | ○                                                                                   |       | ○                                                                                   |     |
| S                      |             |           |           | ○                                                                                 |                   | ○                                                                                 |                   |                                                                                   |     | ○                                                                                 |     | ○                                                                                   |     | ○                                                                                   |       | •                                                                                   |     |
| H                      |             |           |           | ○                                                                                 |                   |                                                                                   |                   |                                                                                   |     |                                                                                   |     | ○                                                                                   |     | ○                                                                                   |       |                                                                                     |     |
| O                      |             |           |           | ○                                                                                 |                   | ○                                                                                 |                   | ○                                                                                 |     |                                                                                   |     | ○                                                                                   |     |                                                                                     |       | ○                                                                                   |     |

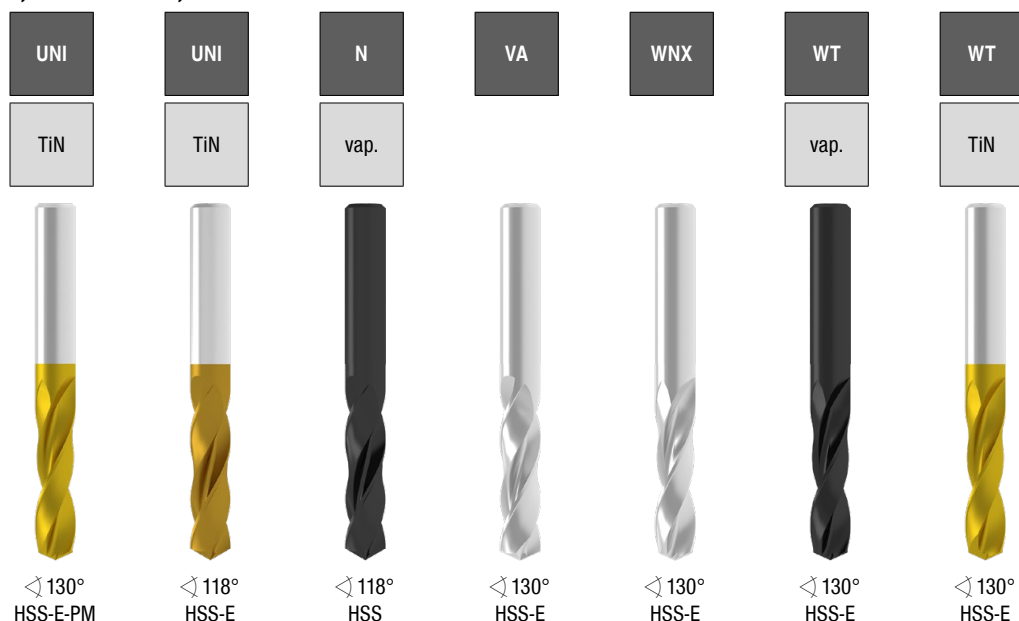
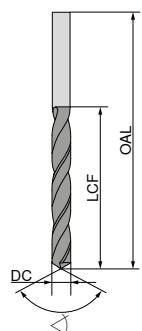
1) bez povrchové úpravy

2) samostrediaci

→ v<sub>c</sub> strana 46+47

## Vrtáky v skrutkovici, DIN 1897, veľmi krátke

≤ 3xD



|                        |             |           |           | 10 113 ...              | 10 107 ...              | 10 105 ... | 10 130 ... | 10 106 ...  | 10 109 ...  | 10 110 ... |
|------------------------|-------------|-----------|-----------|-------------------------|-------------------------|------------|------------|-------------|-------------|------------|
| DC <sub>h8</sub><br>mm | DC<br>palec | OAL<br>mm | LCF<br>mm | EUR<br>T2               | EUR<br>T2               | EUR<br>T2  | EUR<br>T2  | EUR<br>T2   | EUR<br>T2   | EUR<br>T2  |
| 9,65                   |             | 89        | 43,0      |                         |                         |            |            |             | 28,71 09650 |            |
| 9,70                   |             | 89        | 43,0      |                         | 20,95 097 <sup>2)</sup> | 10,25 097  |            | 19,10 097   | 25,53 09700 | 20,19 097  |
| 9,75                   |             | 89        | 43,0      |                         |                         |            |            |             | 28,71 09750 |            |
| 9,80                   |             | 89        | 43,0      | 29,25 098 <sup>2)</sup> | 17,69 098 <sup>2)</sup> | 10,80 098  | 11,13 098  | 19,44 098   | 25,87 09800 | 21,62 098  |
| 9,90                   |             | 89        | 43,0      |                         | 22,38 099 <sup>2)</sup> | 10,80 099  |            | 20,09 099   | 26,20 09900 | 21,62 099  |
| 10,00                  |             | 89        | 43,0      | 24,12 100 <sup>2)</sup> | 14,51 100 <sup>2)</sup> | 5,80 100   | 11,57 100  | 10,74 100   | 12,88 10000 | 14,96 100  |
| 10,05                  |             | 89        | 43,0      |                         |                         |            |            |             | 34,05 10050 |            |
| 10,10                  |             | 89        | 43,0      |                         | 21,62 101 <sup>2)</sup> | 11,79 101  |            |             | 34,93 10100 |            |
| 10,20                  |             | 89        | 43,0      | 30,56 102 <sup>2)</sup> | 18,45 102 <sup>2)</sup> | 10,25 102  | 11,57 102  | 19,10 102   | 20,09 10200 | 20,95 102  |
| 10,25                  |             | 89        | 43,0      |                         |                         |            |            |             | 30,67 10250 |            |
| 10,30                  |             | 89        | 43,0      |                         | 20,09 103 <sup>2)</sup> | 12,56 103  |            |             | 32,41 10300 |            |
| 10,40                  |             | 89        | 43,0      |                         | 23,47 104 <sup>2)</sup> | 13,32 104  |            |             | 38,32 10400 |            |
| 10,50                  |             | 89        | 43,0      | 29,04 105 <sup>2)</sup> | 17,58 105 <sup>2)</sup> | 10,80 105  | 12,44 105  | 15,94 105   | 22,38 10500 | 19,98 105  |
| 10,60                  |             | 95        | 47,0      |                         |                         | 16,05 106  |            |             | 38,53 10600 |            |
| 10,70                  |             | 95        | 47,0      |                         |                         | 16,49 107  |            |             | 38,53 10700 |            |
| 10,75                  |             | 95        | 47,0      |                         |                         |            |            |             | 33,51 10750 |            |
| 10,80                  |             | 95        | 47,0      |                         |                         | 16,91 108  |            | 21,18 108   | 37,44 10800 | 44,87 108  |
| 10,90                  |             | 95        | 47,0      |                         |                         | 16,91 109  |            |             | 38,32 10900 |            |
| 11,00                  |             | 95        | 47,0      | 32,20 110 <sup>2)</sup> | 19,21 110 <sup>2)</sup> | 10,80 110  | 12,88 110  | 18,89 110   | 23,68 11000 | 19,98 110  |
| 11,10                  |             | 95        | 47,0      |                         |                         | 16,91 111  |            |             | 43,45 11100 |            |
| 11,11                  | 7/16        | 95        | 47,0      | 37,87 111 <sup>2)</sup> | 22,81 111 <sup>2)</sup> |            |            |             |             |            |
| 11,20                  |             | 95        | 47,0      |                         |                         | 17,79 112  |            |             | 45,52 11200 |            |
| 11,30                  |             | 95        | 47,0      |                         |                         | 18,13 113  |            |             | 48,14 11300 |            |
| 11,40                  |             | 95        | 47,0      |                         |                         | 18,13 114  |            |             | 48,46 11400 |            |
| 11,50                  |             | 95        | 47,0      | 37,12 115 <sup>2)</sup> | 22,48 115 <sup>2)</sup> | 11,35 115  | 14,74 115  | 24,57 115   | 26,63 11500 | 21,18 115  |
| 11,60                  |             | 95        | 47,0      |                         |                         | 18,13 116  |            |             |             |            |
| 11,70                  |             | 95        | 47,0      |                         |                         | 18,13 117  | 15,94 117  |             | 48,46 11700 |            |
| 11,75                  |             | 95        | 47,0      |                         |                         |            |            |             | 52,73 11750 |            |
| 11,80                  |             | 95        | 47,0      |                         |                         | 18,66 118  |            | 30,56 118   | 48,46 11800 | 25,21 118  |
| 11,90                  |             | 102       | 51,0      |                         |                         | 18,89 119  |            |             |             |            |
| 12,00                  |             | 102       | 51,0      | 36,35 120 <sup>2)</sup> | 21,94 120 <sup>2)</sup> | 13,86 120  | 16,05 120  | 24,57 120   | 31,44 12000 | 24,57 120  |
| 12,10                  |             | 102       | 51,0      |                         |                         | 19,32 121  |            |             | 48,14 12100 |            |
| 12,20                  |             | 102       | 51,0      |                         |                         | 19,32 122  |            |             | 48,46 12200 |            |
| 12,25                  |             | 102       | 51,0      |                         |                         |            |            |             | 53,49 12250 |            |
| 12,30                  |             | 102       | 51,0      | 61,56 123 <sup>2)</sup> | 36,58 123 <sup>2)</sup> | 19,54 123  |            | 30,56 123   | 37,22 12300 | 37,54 123  |
| 12,40                  |             | 102       | 51,0      |                         |                         | 19,54 124  |            |             | 48,46 12400 |            |
| 12,50                  |             | 102       | 51,0      | 39,84 125 <sup>2)</sup> | 23,91 125 <sup>2)</sup> | 14,41 125  |            | 25,00 125   | 32,09 12500 | 25,21 125  |
| 12,60                  |             | 102       | 51,0      |                         |                         | 19,98 126  |            |             | 32,96 12600 |            |
| 12,70                  |             | 102       | 51,0      | 50,87 127 <sup>2)</sup> | 30,34 127 <sup>2)</sup> | 19,10 127  |            |             | 32,96 12700 |            |
| 12,80                  |             | 102       | 51,0      |                         |                         | 20,73 128  |            | 37,44 128   | 48,90 12800 | 47,60 128  |
| 12,90                  |             | 102       | 51,0      |                         |                         | 21,62 129  |            |             | 48,90 12900 |            |
| 13,00                  |             | 102       | 51,0      | 39,84 130 <sup>2)</sup> | 23,91 130 <sup>2)</sup> | 14,63 130  | 27,61 130  |             | 34,05 13000 | 25,87 130  |
| 13,20                  |             | 102       | 51,0      |                         |                         | 22,38 132  |            |             | 48,90 13200 |            |
| 13,30                  |             | 107       | 54,0      |                         |                         | 22,71 133  |            |             |             |            |
| 13,50                  |             | 107       | 54,0      | 42,35 135 <sup>2)</sup> | 25,53 135 <sup>2)</sup> | 16,91 135  | 34,49 135  | 36,78 13500 | 28,16 135   |            |
| P                      |             |           |           | ●                       | ●                       | ○          | ○          | ●           | ●           | ●          |
| M                      |             |           |           |                         | ●                       |            | ●          |             | ●           | ●          |
| K                      |             |           |           | ●                       | ●                       | ●          |            | ●           | ●           | ●          |
| N                      |             |           |           | ○                       | ○                       | ○          | ●          | ○           | ○           | ○          |
| S                      |             |           |           | ○                       | ○                       |            | ○          | ○           | ○           | ●          |
| H                      |             |           |           | ○                       |                         |            |            | ○           | ○           | ○          |
| O                      |             |           |           | ○                       | ○                       | ○          |            | ○           |             | ○          |

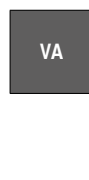
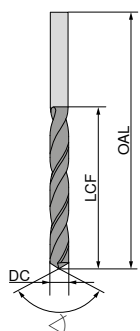
1) bez povrchové úpravy

2) samostrediaci

→ v<sub>c</sub> strana 46+47

## Vrtáky v skrutkovici, DIN 1897, veľmi krátke

≤ 3xD



130°  
HSS-E-PM

118°  
HSS-E

118°  
HSS

130°  
HSS-E

130°  
HSS-E

130°  
HSS-E

130°  
HSS-E

|                        |             |           |           | 10 113 ... |                   | 10 107 ... |                   | 10 105 ... |     | 10 130 ... |  | 10 106 ... |     | 10 109 ... |       | 10 110 ... |     |
|------------------------|-------------|-----------|-----------|------------|-------------------|------------|-------------------|------------|-----|------------|--|------------|-----|------------|-------|------------|-----|
| DC <sub>h8</sub><br>mm | DC<br>palec | OAL<br>mm | LCF<br>mm | EUR<br>T2  |                   | EUR<br>T2  |                   | EUR<br>T2  |     | EUR<br>T2  |  | EUR<br>T2  |     | EUR<br>T2  |       | EUR<br>T2  |     |
| 13,80                  |             | 107       | 54,0      |            |                   |            |                   | 23,36      | 138 |            |  | 44,54      | 138 |            |       | 29,91      | 138 |
| 14,00                  |             | 107       | 54,0      | 52,83      | 140 <sup>2)</sup> | 31,87      | 140 <sup>2)</sup> | 17,24      | 140 |            |  | 32,09      | 140 | 36,78      | 14000 | 29,25      | 140 |
| 14,50                  |             | 111       | 56,0      |            |                   |            |                   | 19,10      | 145 |            |  | 40,61      | 145 | 46,16      | 14500 | 29,80      | 145 |
| 14,75                  |             | 111       | 56,0      |            |                   |            |                   | 29,47      | 147 |            |  |            |     |            |       |            |     |
| 14,80                  |             | 111       | 56,0      |            |                   |            |                   |            |     |            |  | 56,54      | 148 |            |       |            |     |
| 15,00                  |             | 111       | 56,0      |            |                   |            |                   | 18,89      | 150 |            |  | 37,67      | 150 | 44,10      | 15000 | 30,79      | 150 |
| 15,25                  |             | 115       | 58,0      |            |                   |            |                   | 32,64      | 152 |            |  |            |     | 97,58      | 15250 |            |     |
| 15,50                  |             | 115       | 58,0      |            |                   |            |                   | 20,53      | 155 |            |  | 57,41      | 155 | 56,22      | 15500 | 40,27      | 155 |
| 15,75                  |             | 115       | 58,0      |            |                   |            |                   |            |     |            |  |            |     |            |       | 42,13      | 157 |
| 16,00                  |             | 115       | 58,0      |            |                   |            |                   | 20,73      | 160 |            |  | 45,41      | 160 | 45,96      | 16000 | 39,73      | 160 |
| 16,50                  |             | 119       | 60,0      |            |                   |            |                   | 24,78      | 165 |            |  | 46,61      | 165 | 74,34      | 16500 | 59,61      | 165 |
| 17,00                  |             | 119       | 60,0      |            |                   |            |                   | 25,21      | 170 |            |  | 47,05      | 170 | 64,19      | 17000 | 57,53      | 170 |
| 17,50                  |             | 123       | 62,0      |            |                   |            |                   | 26,20      | 175 |            |  | 48,25      | 175 | 74,99      | 17500 | 55,01      | 175 |
| 17,75                  |             | 123       | 62,0      |            |                   |            |                   |            |     |            |  |            |     |            |       | 66,80      | 177 |
| 18,00                  |             | 123       | 62,0      |            |                   |            |                   | 26,42      | 180 |            |  | 48,57      | 180 | 70,41      | 18000 | 62,87      | 180 |
| 18,50                  |             | 127       | 64,0      |            |                   |            |                   | 29,15      | 185 |            |  |            |     | 89,62      | 18500 | 71,06      | 185 |
| 19,00                  |             | 127       | 64,0      |            |                   |            |                   | 30,67      | 190 |            |  | 50,33      | 190 | 74,99      | 19000 | 69,32      | 190 |
| 19,50                  |             | 131       | 66,0      |            |                   |            |                   | 32,64      | 195 |            |  |            |     | 87,54      | 19500 | 77,83      | 195 |
| 19,75                  |             | 131       | 66,0      |            |                   |            |                   |            |     |            |  |            |     |            |       | 79,25      | 197 |
| 20,00                  |             | 131       | 66,0      |            |                   |            |                   | 32,64      | 200 |            |  | 52,94      | 200 | 76,62      | 20000 | 74,22      | 200 |
| 20,50                  |             | 136       | 68,0      |            |                   |            |                   |            |     |            |  |            |     | 122,30     | 20500 |            |     |
| 21,00                  |             | 136       | 68,0      |            |                   |            |                   |            |     |            |  |            |     | 117,90     | 21000 |            |     |
| 21,50                  |             | 141       | 70,0      |            |                   |            |                   |            |     |            |  |            |     | 125,60     | 21500 |            |     |
| 22,00                  |             | 141       | 70,0      |            |                   |            |                   |            |     |            |  |            |     | 126,60     | 22000 |            |     |
| 22,20                  |             | 141       | 70,0      |            |                   |            |                   |            |     |            |  |            |     | 133,20     | 22200 |            |     |
| 23,00                  |             | 146       | 72,0      |            |                   |            |                   |            |     |            |  |            |     | 140,90     | 23000 |            |     |
| 24,00                  |             | 151       | 75,0      |            |                   |            |                   |            |     |            |  |            |     | 149,60     | 24000 |            |     |
| 25,00                  |             | 151       | 75,0      |            |                   |            |                   |            |     |            |  |            |     | 171,40     | 25000 |            |     |
| P                      |             |           |           | •          |                   | •          |                   | ○          |     | ○          |  | •          |     | •          |       | •          |     |
| M                      |             |           |           |            |                   | •          |                   |            |     | •          |  |            |     | •          |       | •          |     |
| K                      |             |           |           | •          |                   | •          |                   | •          |     |            |  | •          |     | •          |       | •          |     |
| N                      |             |           |           | ○          |                   | ○          |                   | ○          |     | •          |  | ○          |     | ○          |       | ○          |     |
| S                      |             |           |           | ○          |                   | ○          |                   |            |     | ○          |  | ○          |     | ○          |       | •          |     |
| H                      |             |           |           | ○          |                   |            |                   |            |     |            |  | ○          |     | ○          |       |            |     |
| O                      |             |           |           | ○          |                   | ○          |                   | ○          |     |            |  | ○          |     |            |       | ○          |     |

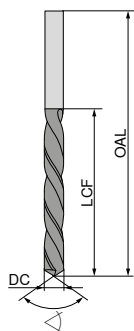
- 1) bez povrchové úpravy  
2) samostrediaci

→ v<sub>c</sub> strana 46+47

## Vrtáky v skrutkovici, DIN 1897, veľmi krátke

▲ ľavorezný

≤ 3xD



WTL-L

F-nit

130°  
HSS

10 112 ...

| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | EUR<br>T2 |                   |
|------------------------|-----------|-----------|-----------|-------------------|
| 1,0                    | 26        | 6         | 3,78      | 010 <sup>1)</sup> |
| 1,1                    | 28        | 7         | 4,19      | 011 <sup>1)</sup> |
| 1,2                    | 30        | 8         | 3,89      | 012 <sup>1)</sup> |
| 1,3                    | 30        | 8         | 3,89      | 013 <sup>1)</sup> |
| 1,4                    | 32        | 9         | 3,68      | 014 <sup>1)</sup> |
| 1,5                    | 32        | 9         | 3,25      | 015 <sup>1)</sup> |
| 1,6                    | 34        | 10        | 3,63      | 016 <sup>1)</sup> |
| 1,7                    | 34        | 10        | 3,48      | 017 <sup>1)</sup> |
| 1,8                    | 36        | 11        | 3,46      | 018 <sup>1)</sup> |
| 1,9                    | 36        | 11        | 3,31      | 019 <sup>1)</sup> |
| 2,0                    | 38        | 12        | 2,87      | 020 <sup>1)</sup> |
| 2,1                    | 38        | 12        | 3,11      | 021 <sup>1)</sup> |
| 2,2                    | 40        | 13        | 3,48      | 022 <sup>1)</sup> |
| 2,3                    | 40        | 13        | 3,63      | 023 <sup>1)</sup> |
| 2,4                    | 43        | 14        | 3,71      | 024               |
| 2,5                    | 43        | 14        | 3,15      | 025               |
| 2,6                    | 43        | 14        | 3,78      | 026               |
| 2,7                    | 46        | 16        | 3,81      | 027               |
| 2,8                    | 46        | 16        | 4,02      | 028               |
| 2,9                    | 46        | 16        | 4,19      | 029               |
| 3,0                    | 46        | 16        | 3,51      | 030               |
| 3,1                    | 49        | 18        | 4,41      | 031               |
| 3,2                    | 49        | 18        | 3,81      | 032               |
| 3,3                    | 49        | 18        | 4,41      | 033               |
| 3,4                    | 52        | 20        | 4,48      | 034               |
| 3,5                    | 52        | 20        | 4,34      | 035               |
| 3,6                    | 52        | 20        | 4,48      | 036               |
| 3,7                    | 52        | 20        | 4,61      | 037               |
| 3,8                    | 55        | 22        | 4,87      | 038               |
| 3,9                    | 55        | 22        | 4,87      | 039               |
| 4,0                    | 55        | 22        | 4,87      | 040               |
| 4,1                    | 55        | 22        | 5,60      | 041               |
| 4,2                    | 55        | 22        | 4,92      | 042               |
| 4,3                    | 58        | 24        | 6,79      | 043               |
| 4,4                    | 58        | 24        | 6,79      | 044               |
| 4,5                    | 58        | 24        | 5,53      | 045               |
| 4,6                    | 58        | 24        | 7,03      | 046               |
| 4,7                    | 58        | 24        | 7,03      | 047               |
| 4,8                    | 62        | 26        | 7,20      | 048               |
| 4,9                    | 62        | 26        | 7,20      | 049               |
| 5,0                    | 62        | 26        | 6,18      | 050               |
| 5,1                    | 62        | 26        | 7,27      | 051               |
| 5,2                    | 62        | 26        | 7,42      | 052               |
| 5,3                    | 62        | 26        | 7,57      | 053               |
| 5,4                    | 66        | 28        | 7,57      | 054               |
| 5,5                    | 66        | 28        | 7,00      | 055               |
| 5,6                    | 66        | 28        | 7,81      | 056               |
| 5,7                    | 66        | 28        | 7,95      | 057               |
| 5,8                    | 66        | 28        | 8,14      | 058               |
| 5,9                    | 66        | 28        | 8,30      | 059               |

10 112 ...

EUR  
T2

| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | EUR<br>T2 |                   |
|------------------------|-----------|-----------|-----------|-------------------|
| 6,0                    | 66        | 28        | 7,42      | 060               |
| 6,1                    | 70        | 31        | 8,87      | 061               |
| 6,2                    | 70        | 31        | 8,87      | 062               |
| 6,3                    | 70        | 31        | 8,87      | 063               |
| 6,4                    | 70        | 31        | 9,22      | 064               |
| 6,5                    | 70        | 31        | 7,81      | 065               |
| 6,6                    | 70        | 31        | 9,36      | 066               |
| 6,7                    | 70        | 31        | 10,01     | 067               |
| 6,8                    | 74        | 34        | 10,55     | 068               |
| 6,9                    | 74        | 34        | 12,88     | 069               |
| 7,0                    | 74        | 34        | 8,52      | 070               |
| 7,2                    | 74        | 34        | 16,91     | 072               |
| 7,3                    | 74        | 34        | 16,91     | 073               |
| 7,4                    | 74        | 34        | 17,58     | 074               |
| 7,5                    | 74        | 34        | 9,22      | 075               |
| 7,7                    | 79        | 37        | 18,13     | 077               |
| 8,0                    | 79        | 37        | 9,36      | 080               |
| 8,1                    | 79        | 37        | 18,89     | 081               |
| 8,2                    | 79        | 37        | 19,44     | 082               |
| 8,3                    | 79        | 37        | 19,44     | 083               |
| 8,5                    | 79        | 37        | 10,55     | 085               |
| 8,6                    | 84        | 40        | 20,30     | 086               |
| 8,7                    | 84        | 40        | 20,30     | 087               |
| 8,8                    | 84        | 40        | 21,28     | 088               |
| 9,0                    | 84        | 40        | 11,68     | 090               |
| 9,5                    | 84        | 40        | 13,32     | 095               |
| 9,7                    | 89        | 43        | 23,68     | 097               |
| 10,0                   | 89        | 43        | 13,42     | 100               |
| 10,1                   | 89        | 43        | 30,46     | 101               |
| 10,2                   | 89        | 43        | 21,94     | 102               |
| 10,5                   | 89        | 43        | 21,28     | 105               |
| 11,0                   | 95        | 47        | 21,94     | 110               |
| 11,5                   | 95        | 47        | 24,57     | 115               |
| 11,8                   | 95        | 47        | 31,98     | 118               |
| 12,0                   | 102       | 51        | 24,88     | 120               |
| 12,5                   | 102       | 51        | 26,63     | 125               |
| 12,8                   | 102       | 51        | 34,49     | 128               |
| 13,0                   | 102       | 51        | 29,69     | 130               |
| 14,0                   | 107       | 54        | 36,35     | 140               |
| 14,5                   | 111       | 56        | 45,52     | 145               |
| 15,0                   | 111       | 56        | 39,95     | 150               |
| 16,0                   | 115       | 58        | 48,14     | 160 <sup>2)</sup> |
| 18,0                   | 123       | 62        | 119,00    | 180 <sup>2)</sup> |
| 19,0                   | 127       | 64        | 155,00    | 190 <sup>2)</sup> |

|   |   |
|---|---|
| P | ○ |
| M | ○ |
| K | ● |
| N | ● |
| S | ○ |
| H | ○ |
| O | ○ |

1) bez povrchové úpravy

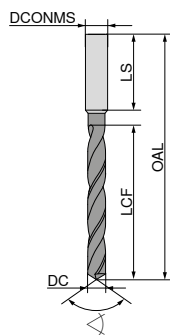
2) vaporizovaný

→ v. strana 47

## Vysokovýkonné vrtáky v skrutkovici podľa DIN 338, krátke

- ▲ s jednotnou stopkou DIN 1835 A
- ▲ špeciálne prevedenie špičky
- ▲ štvorplochý výbrus
- ▲ maximálny výkon
- ▲ veľmi dobré stredenie

≤ 5xD



VX

TiN



A

118°

HSS-E

10 124 ...

| DC <sub>h8</sub> | OAL | LCF | DCONMS <sub>h6</sub> | LS | EUR   |      |
|------------------|-----|-----|----------------------|----|-------|------|
| mm               | mm  | mm  | mm                   | mm | T2    |      |
| 2,00             | 56  | 24  | 3                    | 28 | 11,35 | 020  |
| 2,10             | 56  | 24  | 3                    | 28 | 13,32 | 021  |
| 2,20             | 59  | 27  | 3                    | 28 | 13,32 | 022  |
| 2,30             | 59  | 27  | 3                    | 28 | 13,32 | 023  |
| 2,40             | 62  | 30  | 3                    | 28 | 13,32 | 024  |
| 2,50             | 62  | 30  | 3                    | 28 | 13,32 | 025  |
| 2,60             | 62  | 30  | 3                    | 28 | 13,32 | 026  |
| 2,70             | 65  | 33  | 3                    | 28 | 13,32 | 027  |
| 2,80             | 65  | 33  | 3                    | 28 | 13,32 | 028  |
| 2,90             | 65  | 33  | 3                    | 28 | 13,32 | 029  |
| 3,00             | 65  | 33  | 3                    | 28 | 12,66 | 030  |
| 3,10             | 68  | 36  | 4                    | 28 | 14,41 | 031  |
| 3,20             | 68  | 36  | 4                    | 28 | 14,41 | 032  |
| 3,30             | 68  | 36  | 4                    | 28 | 14,41 | 033  |
| 3,40             | 71  | 39  | 4                    | 28 | 14,41 | 034  |
| 3,50             | 71  | 39  | 4                    | 28 | 14,41 | 035  |
| 3,60             | 71  | 39  | 4                    | 28 | 15,72 | 036  |
| 3,70             | 71  | 39  | 4                    | 28 | 15,72 | 037  |
| 3,80             | 75  | 43  | 4                    | 28 | 15,72 | 038  |
| 3,90             | 75  | 43  | 4                    | 28 | 15,72 | 039  |
| 4,00             | 75  | 43  | 4                    | 28 | 15,72 | 040  |
| 4,10             | 87  | 43  | 6                    | 36 | 18,78 | 041  |
| 4,20             | 87  | 43  | 6                    | 36 | 19,54 | 042  |
| 4,30             | 91  | 47  | 6                    | 36 | 18,78 | 043  |
| 4,40             | 91  | 47  | 6                    | 36 | 18,78 | 044  |
| 4,50             | 91  | 47  | 6                    | 36 | 18,78 | 045  |
| 4,60             | 91  | 47  | 6                    | 36 | 21,07 | 046  |
| 4,65             | 91  | 47  | 6                    | 36 | 21,07 | 0465 |
| 4,70             | 91  | 47  | 6                    | 36 | 21,07 | 047  |
| 4,80             | 96  | 52  | 6                    | 36 | 21,07 | 048  |
| 4,90             | 96  | 52  | 6                    | 36 | 21,07 | 049  |
| 5,00             | 96  | 52  | 6                    | 36 | 23,25 | 050  |
| 5,10             | 96  | 52  | 6                    | 36 | 23,25 | 051  |
| 5,20             | 96  | 52  | 6                    | 36 | 23,25 | 052  |
| 5,30             | 96  | 52  | 6                    | 36 | 24,57 | 053  |
| 5,40             | 101 | 57  | 6                    | 36 | 24,57 | 054  |
| 5,50             | 101 | 57  | 6                    | 36 | 23,25 | 055  |
| 5,55             | 101 | 57  | 6                    | 36 | 26,42 | 0555 |
| 5,60             | 101 | 57  | 6                    | 36 | 26,42 | 056  |
| 5,70             | 101 | 57  | 6                    | 36 | 26,42 | 057  |
| 5,80             | 101 | 57  | 6                    | 36 | 26,42 | 058  |
| 5,90             | 101 | 57  | 6                    | 36 | 26,42 | 059  |
| 6,00             | 101 | 57  | 6                    | 36 | 25,21 | 060  |
| 6,10             | 107 | 63  | 8                    | 36 | 30,34 | 061  |
| 6,20             | 107 | 63  | 8                    | 36 | 30,34 | 062  |
| 6,30             | 107 | 63  | 8                    | 36 | 30,34 | 063  |
| 6,40             | 107 | 63  | 8                    | 36 | 30,34 | 064  |
| 6,50             | 107 | 63  | 8                    | 36 | 30,34 | 065  |
| 6,60             | 107 | 63  | 8                    | 36 | 31,98 | 066  |
| 6,70             | 107 | 63  | 8                    | 36 | 31,98 | 067  |
| 6,80             | 113 | 69  | 8                    | 36 | 31,98 | 068  |
| 6,90             | 113 | 69  | 8                    | 36 | 31,98 | 069  |
| 7,00             | 113 | 69  | 8                    | 36 | 31,98 | 070  |
| 7,10             | 113 | 69  | 8                    | 36 | 33,19 | 071  |
| 7,20             | 113 | 69  | 8                    | 36 | 33,19 | 072  |
| 7,30             | 113 | 69  | 8                    | 36 | 33,19 | 073  |

10 124 ...

EUR

T2

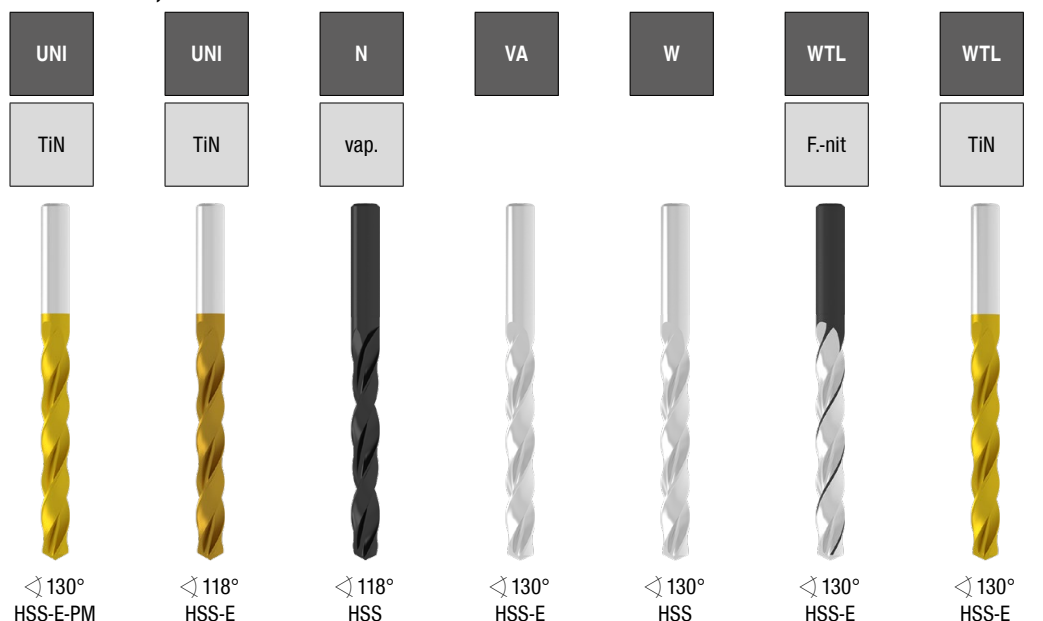
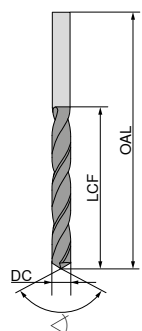
| DC <sub>h8</sub> | OAL | LCF | DCONMS <sub>h6</sub> | LS | EUR    |      |
|------------------|-----|-----|----------------------|----|--------|------|
| mm               | mm  | mm  | mm                   | mm | T2     |      |
| 7,40             | 113 | 69  | 8                    | 36 | 33,19  | 074  |
| 7,50             | 113 | 69  | 8                    | 36 | 33,19  | 075  |
| 7,55             | 119 | 75  | 8                    | 36 | 34,71  | 0755 |
| 7,60             | 119 | 75  | 8                    | 36 | 34,71  | 076  |
| 7,70             | 119 | 75  | 8                    | 36 | 34,71  | 077  |
| 7,80             | 119 | 75  | 8                    | 36 | 34,71  | 078  |
| 7,90             | 119 | 75  | 8                    | 36 | 34,71  | 079  |
| 8,00             | 119 | 75  | 8                    | 36 | 34,71  | 080  |
| 8,10             | 125 | 75  | 10                   | 40 | 37,87  | 081  |
| 8,20             | 125 | 75  | 10                   | 40 | 37,87  | 082  |
| 8,30             | 125 | 75  | 10                   | 40 | 37,87  | 083  |
| 8,40             | 125 | 75  | 10                   | 40 | 37,87  | 084  |
| 8,50             | 125 | 75  | 10                   | 40 | 39,41  | 085  |
| 8,60             | 131 | 81  | 10                   | 40 | 35,14  | 086  |
| 8,70             | 131 | 81  | 10                   | 40 | 35,14  | 087  |
| 8,80             | 131 | 81  | 10                   | 40 | 35,14  | 088  |
| 8,90             | 131 | 81  | 10                   | 40 | 35,14  | 089  |
| 9,00             | 131 | 81  | 10                   | 40 | 35,14  | 090  |
| 9,10             | 131 | 81  | 10                   | 40 | 37,99  | 091  |
| 9,20             | 131 | 81  | 10                   | 40 | 37,99  | 092  |
| 9,30             | 131 | 81  | 10                   | 40 | 37,99  | 093  |
| 9,40             | 131 | 81  | 10                   | 40 | 37,99  | 094  |
| 9,50             | 131 | 81  | 10                   | 40 | 37,99  | 095  |
| 9,55             | 137 | 87  | 10                   | 40 | 41,70  | 0955 |
| 9,60             | 137 | 87  | 10                   | 40 | 41,70  | 096  |
| 9,70             | 137 | 87  | 10                   | 40 | 41,70  | 097  |
| 9,80             | 137 | 87  | 10                   | 40 | 41,70  | 098  |
| 9,90             | 137 | 87  | 10                   | 40 | 41,70  | 099  |
| 10,00            | 137 | 87  | 10                   | 40 | 41,70  | 100  |
| 10,10            | 144 | 87  | 12                   | 45 | 51,63  | 101  |
| 10,20            | 144 | 87  | 12                   | 45 | 51,63  | 102  |
| 10,30            | 144 | 87  | 12                   | 45 | 51,63  | 103  |
| 10,40            | 144 | 87  | 12                   | 45 | 51,63  | 104  |
| 10,50            | 144 | 87  | 12                   | 45 | 51,63  | 105  |
| 10,60            | 144 | 87  | 12                   | 45 | 56,66  | 106  |
| 10,70            | 151 | 94  | 12                   | 45 | 56,66  | 107  |
| 10,80            | 151 | 94  | 12                   | 45 | 56,66  | 108  |
| 10,90            | 151 | 94  | 12                   | 45 | 56,66  | 109  |
| 11,00            | 151 | 94  | 12                   | 45 | 48,57  | 110  |
| 11,10            | 151 | 94  | 12                   | 45 | 52,28  | 111  |
| 11,20            | 151 | 94  | 12                   | 45 | 52,28  | 112  |
| 11,30            | 151 | 94  | 12                   | 45 | 52,28  | 113  |
| 11,40            | 151 | 94  | 12                   | 45 | 52,28  | 114  |
| 11,50            | 151 | 94  | 12                   | 45 | 52,28  | 115  |
| 11,60            | 151 | 94  | 12                   | 45 | 56,43  | 116  |
| 11,70            | 151 | 94  | 12                   | 45 | 56,43  | 117  |
| 11,80            | 151 | 94  | 12                   | 45 | 56,43  | 118  |
| 11,90            | 158 | 101 | 12                   | 45 | 56,43  | 119  |
| 12,00            | 158 | 101 | 12                   | 45 | 56,43  | 120  |
| 12,10            | 161 | 101 | 16                   | 48 | 64,29  | 121  |
| 12,20            | 161 | 101 | 16                   | 48 | 64,29  | 122  |
| 12,30            | 161 | 101 | 16                   | 48 | 64,29  | 123  |
| 12,40            | 161 | 101 | 16                   | 48 | 64,29  | 124  |
| 12,50            | 161 | 101 | 16                   | 48 | 64,29  | 125  |
| 12,60            | 161 | 101 | 16                   | 48 | 68,00  | 126  |
| 12,70            | 161 | 101 | 16                   | 48 | 68,00  | 127  |
| 12,80            | 161 | 101 | 16                   | 48 | 68,00  | 128  |
| 12,90            | 161 | 101 | 16                   | 48 | 68,00  | 129  |
| 13,00            | 161 | 101 | 16                   | 48 | 75,53  | 130  |
| 13,50            | 166 | 106 | 16                   | 48 | 97,58  | 135  |
| 14,00            | 166 | 106 | 16                   | 48 | 97,58  | 140  |
| 14,50            | 169 | 109 | 16                   | 48 | 125,60 | 145  |
| 15,00            | 169 | 109 | 16                   | 48 | 117,90 | 150  |
| 15,50            | 172 | 112 | 16                   | 48 | 127,70 | 155  |
| 16,00            | 172 | 112 | 16                   | 48 | 123,40 | 160  |
| 16,50            | 181 | 115 | 20                   | 50 | 189,90 | 165  |
| 17,00            | 181 | 115 | 20                   | 50 | 189,90 | 170  |
| 17,50            | 184 | 118 | 20                   | 50 | 189,90 | 175  |
| 18,00            | 184 | 118 | 20                   | 50 | 189,90 | 180  |
| 18,50            | 188 | 122 | 20                   | 50 | 189,90 | 185  |
| 19,00            | 188 | 122 | 20                   | 50 | 189,90 | 190  |
| 19,50            | 191 | 125 | 20                   | 50 | 189,90 | 195  |
| 20,00            | 191 | 125 | 20                   | 50 | 170,40 | 200  |

|   |   |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ○ |
| S | ○ |
| H |   |
| O | ○ |

→ v. strana 48

## Vrtáky v skrutkovici DIN 338, krátke

≤ 5xD



|                        |             |           |           | 10 173 ...  | 10 171 ...  | 10 152 ...               | 10 175 ... | 10 161 ...  | 10 168 ...  | 10 170 ... |
|------------------------|-------------|-----------|-----------|-------------|-------------|--------------------------|------------|-------------|-------------|------------|
| DC <sub>h8</sub><br>mm | DC<br>palec | OAL<br>mm | LCF<br>mm | EUR<br>T2   | EUR<br>T2   | EUR<br>T2                | EUR<br>T2  | EUR<br>T2   | EUR<br>T2   | EUR<br>T2  |
| 0,20                   |             | 19        | 2,5       |             |             | 4,66 00200 <sup>1)</sup> |            | 8,03 00200  |             |            |
| 0,25                   |             | 19        | 3,0       |             |             | 4,46 00250 <sup>1)</sup> |            | 12,01 00250 |             |            |
| 0,30                   |             | 19        | 3,0       |             |             | 3,31 00300 <sup>1)</sup> |            | 6,21 00300  |             |            |
| 0,35                   |             | 19        | 4,0       |             |             | 3,19 00350 <sup>1)</sup> |            | 5,77 00350  |             |            |
| 0,40                   |             | 20        | 5,0       |             |             | 2,69 00400 <sup>1)</sup> |            | 4,79 00400  |             |            |
| 0,45                   |             | 20        | 5,0       |             |             | 2,73 00450 <sup>1)</sup> |            | 5,02 00450  |             |            |
| 0,50                   |             | 22        | 6,0       |             |             | 2,29 00500 <sup>1)</sup> |            | 3,51 00500  |             |            |
| 0,55                   |             | 24        | 7,0       |             |             | 3,44 00550 <sup>1)</sup> |            | 6,13 00550  |             |            |
| 0,60                   |             | 24        | 7,0       |             |             | 2,19 00600 <sup>1)</sup> |            | 3,78 00600  |             |            |
| 0,65                   |             | 26        | 8,0       |             |             | 3,19 00650 <sup>1)</sup> |            | 6,13 00650  |             |            |
| 0,70                   |             | 28        | 9,0       |             |             | 1,97 00700 <sup>1)</sup> |            | 3,45 00700  |             |            |
| 0,75                   |             | 28        | 9,0       |             |             | 2,38 00750 <sup>1)</sup> |            | 3,56 00750  |             |            |
| 0,80                   |             | 30        | 10,0      |             |             | 1,88 00800 <sup>1)</sup> |            | 3,00 00800  |             |            |
| 0,85                   |             | 30        | 10,0      |             |             | 2,19 00850 <sup>1)</sup> |            | 3,47 00850  |             |            |
| 0,90                   |             | 32        | 11,0      |             |             | 1,79 00900 <sup>1)</sup> |            | 2,87 00900  |             |            |
| 0,95                   |             | 32        | 11,0      |             |             | 2,19 00950 <sup>1)</sup> |            | 3,47 00950  |             |            |
| 1,00                   |             | 34        | 12,0      | 6,45 010 2) | 3,07 010 2) | 1,75 01000 <sup>1)</sup> | 3,68 010   | 2,98 01000  | 3,11 010 1) | 6,85 010   |
| 1,05                   |             | 34        | 12,0      |             |             | 1,92 01050 <sup>1)</sup> |            | 3,40 01050  |             |            |
| 1,10                   |             | 36        | 14,0      | 6,99 011 2) | 3,37 011 2) | 1,69 01100 <sup>1)</sup> | 3,77 011   | 2,79 01100  | 3,45 011 1) | 7,66 011   |
| 1,15                   |             | 36        | 14,0      |             |             | 1,97 01150 <sup>1)</sup> |            | 3,15 01150  |             |            |
| 1,20                   |             | 38        | 16,0      | 6,85 012 2) | 3,29 012 2) | 1,75 01200 <sup>1)</sup> | 4,17 012   | 2,79 01200  | 3,45 012 1) | 7,66 012   |
| 1,25                   |             | 38        | 16,0      |             |             | 1,92 01250 <sup>1)</sup> |            | 3,07 01250  |             |            |
| 1,30                   |             | 38        | 16,0      | 6,99 013 2) | 3,37 013 2) | 1,63 01300 <sup>1)</sup> | 3,97 013   | 2,79 01300  | 3,40 013 1) | 7,46 013   |
| 1,35                   |             | 40        | 18,0      |             |             | 1,84 01350 <sup>1)</sup> |            | 3,15 01350  |             |            |
| 1,40                   |             | 40        | 18,0      | 7,05 014 2) | 3,39 014 2) | 1,60 01400 <sup>1)</sup> | 3,75 014   | 2,79 01400  | 3,45 014 1) | 7,66 014   |
| 1,45                   |             | 40        | 18,0      |             |             | 1,69 01450 <sup>1)</sup> |            | 3,11 01450  |             | 6,63 901   |
| 1,50                   |             | 40        | 18,0      | 6,65 015 2) | 3,19 015 2) | 1,44 01500 <sup>1)</sup> | 3,45 015   | 2,79 01500  | 3,09 015 1) | 6,78 015   |
| 1,55                   |             | 43        | 20,0      |             |             | 3,19 01550 <sup>1)</sup> |            | 3,11 01550  |             | 6,68 902   |
| 1,60                   |             | 43        | 20,0      | 6,65 016 2) | 3,19 016 2) | 1,40 01600 <sup>1)</sup> | 3,75 016   | 2,48 01600  | 3,11 016 1) | 6,85 016   |
| 1,65                   |             | 43        | 20,0      |             |             | 3,43 01650 <sup>1)</sup> |            | 3,11 01650  |             | 11,79 903  |
| 1,70                   |             | 43        | 20,0      | 7,15 017 2) | 3,43 017 2) | 1,40 01700 <sup>1)</sup> | 3,86 017   | 2,60 01700  | 3,11 017 1) | 6,85 017   |
| 1,75                   |             | 46        | 22,0      |             |             | 1,60 01750 <sup>1)</sup> |            | 3,00 01750  |             |            |
| 1,80                   |             | 46        | 22,0      | 7,05 018 2) | 3,39 018 2) | 1,24 01800 <sup>1)</sup> | 3,75 018   | 2,56 01800  | 3,11 018 1) | 6,85 018   |
| 1,85                   |             | 46        | 22,0      |             |             | 1,49 01850 <sup>1)</sup> |            | 3,00 01850  |             | 8,13 904   |
| 1,90                   |             | 46        | 22,0      | 7,05 019 2) | 3,39 019 2) | 1,28 01900 <sup>1)</sup> | 3,86 019   | 2,56 01900  | 3,11 019 1) | 6,85 019   |
| 1,95                   |             | 49        | 24,0      |             |             | 1,49 01950 <sup>1)</sup> |            | 2,87 01950  |             |            |
| 2,00                   |             | 49        | 24,0      | 6,85 020 2) | 3,29 020 2) | 1,05 02000 <sup>1)</sup> | 3,14 020   | 2,07 02000  | 2,80 020 1) | 6,13 020   |
| 2,05                   |             | 49        | 24,0      |             |             | 1,44 02050 <sup>1)</sup> |            | 2,71 02050  |             | 8,80 905   |
| 2,10                   |             | 49        | 24,0      | 7,15 021 2) | 3,43 021 2) | 1,24 02100 <sup>1)</sup> | 4,12 021   | 2,38 02100  | 3,06 021 1) | 6,68 021   |
| 2,15                   |             | 53        | 27,0      |             |             | 1,49 02150 <sup>1)</sup> |            | 2,71 02150  |             |            |
| 2,20                   |             | 53        | 27,0      | 7,54 022 2) | 3,58 022 2) | 1,28 02200 <sup>1)</sup> | 4,12 022   | 2,38 02200  | 3,06 022 1) | 6,68 022   |
| 2,25                   |             | 53        | 27,0      |             |             | 1,49 02250 <sup>1)</sup> |            | 2,65 02250  |             |            |
| 2,30                   |             | 53        | 27,0      | 7,29 023 2) | 3,50 023 2) | 1,28 02300 <sup>1)</sup> | 4,12 023   | 2,38 02300  | 3,06 023 1) | 6,68 023   |
| 2,35                   |             | 53        | 27,0      |             |             | 2,09 02350 <sup>1)</sup> |            | 3,23 02350  |             |            |
| 2,38                   | 3/32        | 57        | 30,0      | 7,29 238 2) | 3,50 238 2) |                          |            |             |             |            |
| 2,40                   |             | 57        | 30,0      | 6,85 024 2) | 3,29 024 2) | 1,35 02400               | 4,14 024   | 2,48 02400  | 3,06 024    | 6,68 024   |
| P                      |             |           |           | ●           | ●           | ○                        | ○          |             | ●           | ●          |
| M                      |             |           |           |             | ●           |                          | ●          |             | ○           | ○          |
| K                      |             |           |           | ●           | ●           | ●                        |            |             | ●           | ●          |
| N                      |             |           |           | ○           | ○           | ○                        | ●          | ●           | ●           | ○          |
| S                      |             |           |           | ○           | ○           |                          | ○          |             | ○           | ○          |
| H                      |             |           |           | ○           |             |                          |            |             | ○           | ○          |
| O                      |             |           |           | ○           | ○           | ○                        |            |             | ○           | ○          |

1) bez povrchové úpravy  
2) samostrediaci

## Vrtáky v skrutkovici DIN 338, krátke

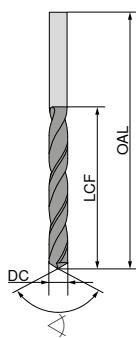
| ≤ 5xD                  |             |           |           | UNI              |        | UNI           |        | N           |       | VA            |     | W           |       | WTL           |     | WTL           |     |
|------------------------|-------------|-----------|-----------|------------------|--------|---------------|--------|-------------|-------|---------------|-----|-------------|-------|---------------|-----|---------------|-----|
|                        |             |           |           | TiN              |        | TiN           |        | vap.        |       |               |     |             |       | F-nit         |     | TiN           |     |
|                        |             |           |           |                  |        |               |        |             |       |               |     |             |       |               |     |               |     |
|                        |             |           |           | 130°<br>HSS-E-PM |        | 118°<br>HSS-E |        | 118°<br>HSS |       | 130°<br>HSS-E |     | 130°<br>HSS |       | 130°<br>HSS-E |     | 130°<br>HSS-E |     |
|                        |             |           |           | 10 173 ...       |        | 10 171 ...    |        | 10 152 ...  |       | 10 175 ...    |     | 10 161 ...  |       | 10 168 ...    |     | 10 170 ...    |     |
| DC <sub>h8</sub><br>mm | DC<br>palec | OAL<br>mm | LCF<br>mm | EUR<br>T2        |        | EUR<br>T2     |        | EUR<br>T2   |       | EUR<br>T2     |     | EUR<br>T2   |       | EUR<br>T2     |     | EUR<br>T2     |     |
| 2,45                   |             | 57        | 30,0      |                  |        |               |        | 2,09        | 02450 |               |     | 3,29        | 02450 |               |     |               |     |
| 2,50                   |             | 57        | 30,0      | 6,99             | 025 2) | 3,37          | 025 2) | 1,35        | 02500 | 3,31          | 025 | 2,10        | 02500 | 2,83          | 025 | 6,27          | 025 |
| 2,55                   |             | 57        | 30,0      |                  |        | 3,50          | 255 2) | 2,12        | 02550 |               |     | 3,81        | 02550 |               |     |               |     |
| 2,60                   |             | 57        | 30,0      | 7,29             | 026 2) | 3,50          | 026 2) | 1,40        | 02600 | 4,22          | 026 | 2,56        | 02600 | 3,06          | 026 | 6,68          | 026 |
| 2,65                   |             | 57        | 30,0      |                  |        |               |        | 2,29        | 02650 |               |     | 3,81        | 02650 |               |     |               |     |
| 2,70                   |             | 61        | 33,0      | 7,74             | 027 2) | 3,70          | 027 2) | 1,40        | 02700 | 4,22          | 027 | 2,63        | 02700 | 3,25          | 027 | 7,30          | 027 |
| 2,75                   |             | 61        | 33,0      |                  |        |               |        | 1,79        | 02750 |               |     | 3,69        | 02750 |               |     |               |     |
| 2,78                   | 7/64        | 61        | 33,0      | 9,42             | 278 2) | 4,50          | 278 2) |             |       |               |     |             |       |               |     |               |     |
| 2,80                   |             | 61        | 33,0      | 7,59             | 028 2) | 3,61          | 028 2) | 1,40        | 02800 | 4,34          | 028 | 2,87        | 02800 | 3,40          | 028 | 7,46          | 028 |
| 2,85                   |             | 61        | 33,0      |                  |        |               |        | 2,12        | 02850 |               |     | 4,46        | 02850 |               |     |               |     |
| 2,90                   |             | 61        | 33,0      | 7,74             | 029 2) | 3,70          | 029 2) | 1,40        | 02900 | 4,34          | 029 | 2,87        | 02900 | 3,40          | 029 | 7,46          | 029 |
| 2,95                   |             | 61        | 33,0      |                  |        |               |        | 1,79        | 02950 |               |     | 3,81        | 02950 |               |     |               |     |
| 3,00                   |             | 61        | 33,0      | 7,40             | 030 2) | 3,54          | 030 2) | 1,17        | 03000 | 3,31          | 030 | 2,31        | 03000 | 3,00          | 030 | 6,63          | 030 |
| 3,05                   |             | 65        | 36,0      |                  |        |               |        | 1,63        | 03050 |               |     | 3,23        | 03050 |               |     |               |     |
| 3,10                   |             | 65        | 36,0      | 8,19             | 031 2) | 3,92          | 031 2) | 1,49        | 03100 | 4,38          | 031 | 2,87        | 03100 | 3,25          | 031 | 7,30          | 031 |
| 3,15                   |             | 65        | 36,0      |                  |        |               |        | 1,63        | 03150 |               |     | 3,23        | 03150 |               |     |               |     |
| 3,17                   | 1/8         | 65        | 36,0      | 8,14             | 317 2) | 3,90          | 317 2) |             |       |               |     |             |       |               |     |               |     |
| 3,20                   |             | 65        | 36,0      | 8,04             | 032 2) | 3,75          | 032 2) | 1,49        | 03200 | 3,75          | 032 | 2,60        | 03200 | 3,45          | 032 | 7,66          | 032 |
| 3,25                   |             | 65        | 36,0      |                  |        | 3,92          | 325 2) | 1,69        | 03250 |               |     | 3,23        | 03250 |               |     |               |     |
| 3,30                   |             | 65        | 36,0      | 8,19             | 033 2) | 3,81          | 033 2) | 1,49        | 03300 | 3,77          | 033 | 2,63        | 03300 | 3,53          | 033 | 7,79          | 033 |
| 3,35                   |             | 65        | 36,0      |                  |        |               |        | 1,79        | 03350 |               |     | 3,29        | 03350 |               |     |               |     |
| 3,40                   |             | 70        | 39,0      | 8,79             | 034 2) | 4,21          | 034 2) | 1,49        | 03400 | 4,61          | 034 | 2,91        | 03400 | 3,94          | 034 | 8,66          | 034 |
| 3,45                   |             | 70        | 39,0      |                  |        |               |        | 1,84        | 03450 |               |     | 3,47        | 03450 |               |     |               |     |
| 3,50                   |             | 70        | 39,0      | 8,88             | 035 2) | 4,26          | 035 2) | 1,35        | 03500 | 3,68          | 035 | 2,69        | 03500 | 3,25          | 035 | 7,30          | 035 |
| 3,55                   |             | 70        | 39,0      |                  |        |               |        | 1,92        | 03550 |               |     | 3,47        | 03550 |               |     |               |     |
| 3,57                   | 9/64        | 70        | 39,0      | 8,88             | 357 2) | 4,26          | 357 2) |             |       |               |     |             |       |               |     |               |     |
| 3,60                   |             | 70        | 39,0      | 8,99             | 036 2) | 4,32          | 036 2) | 1,60        | 03600 | 4,79          | 036 | 2,91        | 03600 | 3,78          | 036 | 8,53          | 036 |
| 3,65                   |             | 70        | 39,0      |                  |        |               |        | 1,92        | 03650 |               |     | 3,31        | 03650 |               |     |               |     |
| 3,70                   |             | 70        | 39,0      | 8,99             | 037 2) | 4,32          | 037 2) | 1,69        | 03700 | 4,81          | 037 | 2,98        | 03700 | 3,97          | 037 | 8,66          | 037 |
| 3,75                   |             | 70        | 39,0      |                  |        |               |        | 1,97        | 03750 |               |     | 3,63        | 03750 |               |     |               |     |
| 3,80                   |             | 75        | 43,0      | 9,47             | 038 2) | 4,52          | 038 2) | 1,75        | 03800 | 4,89          | 038 | 3,23        | 03800 | 4,20          | 038 | 9,36          | 038 |
| 3,85                   |             | 75        | 43,0      |                  |        |               |        | 2,09        | 03850 |               |     | 3,65        | 03850 |               |     |               |     |
| 3,90                   |             | 75        | 43,0      | 9,68             | 039 2) | 4,61          | 039 2) | 1,84        | 03900 | 5,10          | 039 | 3,23        | 03900 | 4,46          | 039 | 9,72          | 039 |
| 3,95                   |             | 75        | 43,0      |                  |        |               |        | 2,19        | 03950 |               |     | 3,69        | 03950 |               |     |               |     |
| 3,97                   | 5/32        | 75        | 43,0      | 9,83             | 397 2) | 4,72          | 397 2) |             |       |               |     |             |       |               |     |               |     |
| 4,00                   |             | 75        | 43,0      | 9,28             | 040 2) | 4,44          | 040 2) | 1,40        | 04000 | 4,02          | 040 | 2,73        | 04000 | 3,56          | 040 | 7,95          | 040 |
| 4,05                   |             | 75        | 43,0      |                  |        |               |        | 2,29        | 04050 |               |     | 4,79        | 04050 |               |     |               |     |
| 4,10                   |             | 75        | 43,0      | 9,47             | 041 2) | 4,52          | 041 2) | 1,92        | 04100 | 5,10          | 041 | 3,23        | 04100 | 4,44          | 041 | 9,72          | 041 |
| 4,15                   |             | 75        | 43,0      |                  |        |               |        | 2,29        | 04150 |               |     | 4,79        | 04150 |               |     |               |     |
| 4,20                   |             | 75        | 43,0      | 9,47             | 042 2) | 4,52          | 042 2) | 1,69        | 04200 | 5,15          | 042 | 2,87        | 04200 | 4,16          | 042 | 9,22          | 042 |
| 4,25                   |             | 75        | 43,0      |                  |        | 4,84          | 425 2) | 2,38        | 04250 |               |     | 4,66        | 04250 |               |     |               |     |
| 4,30                   |             | 80        | 47,0      | 10,14            | 043 2) | 4,84          | 043 2) | 1,97        | 04300 | 5,15          | 043 | 3,98        | 04300 | 4,61          | 043 | 10,24         | 043 |
| 4,35                   |             | 80        | 47,0      |                  |        |               |        | 3,03        | 04350 |               |     | 5,74        | 04350 |               |     |               |     |
| 4,37                   | 11/64       | 80        | 47,0      | 10,23            | 437 2) | 4,90          | 437 2) |             |       |               |     |             |       |               |     |               |     |
| 4,40                   |             | 80        | 47,0      | 10,14            | 044 2) | 4,84          | 044 2) | 1,97        | 04400 | 5,24          | 044 | 3,98        | 04400 | 4,61          | 044 | 10,24         | 044 |
| 4,45                   |             | 80        | 47,0      |                  |        |               |        | 3,03        | 04450 |               |     |             |       |               |     |               |     |
| P                      |             |           |           | ●                |        | ●             |        | ○           |       | ○             |     |             |       | ●             |     | ●             |     |
| M                      |             |           |           |                  |        | ●             |        |             |       | ●             |     |             |       | ○             |     | ○             |     |
| K                      |             |           |           | ●                |        | ●             |        | ●           |       |               |     |             |       | ●             |     | ●             |     |
| N                      |             |           |           | ○                |        | ○             |        | ○           |       | ●             |     | ●           |       | ●             |     | ○             |     |
| S                      |             |           |           | ○                |        | ○             |        |             |       | ○             |     |             |       | ○             |     | ○             |     |
| H                      |             |           |           | ○                |        |               |        |             |       |               |     |             |       | ○             |     | ○             |     |
| O                      |             |           |           | ○                |        | ○             |        | ○           |       |               |     |             |       | ○             |     | ○             |     |

1) bez povrchové úpravy

2) samostrediaci

→ v<sub>c</sub> strana 48+49

## Vrtáky v skrutkovici DIN 338, krátke

| ≤ 5xD                                                                             |             |           |           | UNI                                                                               |                   | UNI                                                                               |                   | N                                                                                 |       | VA                                                                                |     | W                                                                                   |       | WTL                                                                                 |     | WTL                                                                                 |     |
|-----------------------------------------------------------------------------------|-------------|-----------|-----------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------------|-----|
|                                                                                   |             |           |           | TiN                                                                               |                   | TiN                                                                               |                   | vap.                                                                              |       |                                                                                   |     |                                                                                     |       | F-nit                                                                               |     | TiN                                                                                 |     |
|  |             |           |           |  |                   |  |                   |  |       |  |     |  |       |  |     |  |     |
|                                                                                   |             |           |           | 130°<br>HSS-E-PM                                                                  |                   | 118°<br>HSS-E                                                                     |                   | 118°<br>HSS                                                                       |       | 130°<br>HSS-E                                                                     |     | 130°<br>HSS                                                                         |       | 130°<br>HSS-E                                                                       |     | 130°<br>HSS-E                                                                       |     |
|                                                                                   |             |           |           | 10 173 ...                                                                        |                   | 10 171 ...                                                                        |                   | 10 152 ...                                                                        |       | 10 175 ...                                                                        |     | 10 161 ...                                                                          |       | 10 168 ...                                                                          |     | 10 170 ...                                                                          |     |
| DC <sub>h8</sub><br>mm                                                            | DC<br>palec | OAL<br>mm | LCF<br>mm | EUR<br>T2                                                                         |                   | EUR<br>T2                                                                         |                   | EUR<br>T2                                                                         |       | EUR<br>T2                                                                         |     | EUR<br>T2                                                                           |       | EUR<br>T2                                                                           |     | EUR<br>T2                                                                           |     |
| 4,50                                                                              |             | 80        | 47,0      | 9,83                                                                              | 045 <sup>2)</sup> | 4,72                                                                              | 045 <sup>2)</sup> | 1,79                                                                              | 04500 | 5,12                                                                              | 045 | 3,47                                                                                | 04500 | 4,26                                                                                | 045 | 9,22                                                                                | 045 |
| 4,55                                                                              |             | 80        | 47,0      |                                                                                   |                   |                                                                                   |                   | 3,03                                                                              | 04550 |                                                                                   |     | 6,98                                                                                | 04550 |                                                                                     |     |                                                                                     |     |
| 4,60                                                                              |             | 80        | 47,0      | 10,42                                                                             | 046 <sup>2)</sup> | 5,00                                                                              | 046 <sup>2)</sup> | 1,97                                                                              | 04600 | 5,44                                                                              | 046 | 3,98                                                                                | 04600 | 4,84                                                                                | 046 | 10,91                                                                               | 046 |
| 4,65                                                                              |             | 80        | 47,0      |                                                                                   |                   | 5,00                                                                              | 0465              | 3,03                                                                              | 04650 |                                                                                   |     | 6,98                                                                                | 04650 |                                                                                     |     |                                                                                     |     |
| 4,70                                                                              |             | 80        | 47,0      | 12,66                                                                             | 047 <sup>2)</sup> | 6,06                                                                              | 047 <sup>2)</sup> | 2,09                                                                              | 04700 | 5,51                                                                              | 047 | 3,98                                                                                | 04700 | 4,84                                                                                | 047 | 10,91                                                                               | 047 |
| 4,75                                                                              |             | 80        | 47,0      |                                                                                   |                   |                                                                                   |                   | 3,03                                                                              | 04750 |                                                                                   |     | 5,58                                                                                | 04750 |                                                                                     |     |                                                                                     |     |
| 4,76                                                                              | 3/16        | 86        | 52,0      | 10,68                                                                             | 476 <sup>2)</sup> | 5,10                                                                              | 476 <sup>2)</sup> |                                                                                   |       |                                                                                   |     |                                                                                     |       |                                                                                     |     |                                                                                     |     |
| 4,80                                                                              |             | 86        | 52,0      | 10,68                                                                             | 048 <sup>2)</sup> | 5,10                                                                              | 048 <sup>2)</sup> | 2,09                                                                              | 04800 | 5,57                                                                              | 048 | 3,98                                                                                | 04800 | 4,84                                                                                | 048 | 10,91                                                                               | 048 |
| 4,85                                                                              |             | 86        | 52,0      |                                                                                   |                   |                                                                                   |                   | 2,76                                                                              | 04850 |                                                                                   |     | 6,98                                                                                | 04850 |                                                                                     |     |                                                                                     |     |
| 4,90                                                                              |             | 86        | 52,0      | 10,82                                                                             | 049 <sup>2)</sup> | 5,18                                                                              | 049 <sup>2)</sup> | 2,19                                                                              | 04900 | 5,77                                                                              | 049 | 3,98                                                                                | 04900 | 5,05                                                                                | 049 | 11,13                                                                               | 049 |
| 4,95                                                                              |             | 86        | 52,0      |                                                                                   |                   | 5,04                                                                              | 495 <sup>2)</sup> | 3,40                                                                              | 04950 |                                                                                   |     | 6,98                                                                                | 04950 |                                                                                     |     |                                                                                     |     |
| 5,00                                                                              |             | 86        | 52,0      | 10,92                                                                             | 050 <sup>2)</sup> | 5,23                                                                              | 050 <sup>2)</sup> | 1,75                                                                              | 05000 | 4,89                                                                              | 050 | 3,78                                                                                | 05000 | 4,49                                                                                | 050 | 9,88                                                                                | 050 |
| 5,05                                                                              |             | 86        | 52,0      |                                                                                   |                   | 5,23                                                                              | 0505              | 3,51                                                                              | 05050 |                                                                                   |     | 8,40                                                                                | 05050 |                                                                                     |     |                                                                                     |     |
| 5,10                                                                              |             | 86        | 52,0      | 10,92                                                                             | 051 <sup>2)</sup> | 5,23                                                                              | 051 <sup>2)</sup> | 2,29                                                                              | 05100 | 5,77                                                                              | 051 | 4,19                                                                                | 05100 | 5,05                                                                                | 051 | 11,13                                                                               | 051 |
| 5,15                                                                              |             | 86        | 52,0      |                                                                                   |                   |                                                                                   |                   | 3,67                                                                              | 05150 |                                                                                   |     |                                                                                     |       |                                                                                     |     |                                                                                     |     |
| 5,16                                                                              | 13/64       | 86        | 52,0      | 11,90                                                                             | 516 <sup>2)</sup> | 5,71                                                                              | 516 <sup>2)</sup> |                                                                                   |       |                                                                                   |     |                                                                                     |       |                                                                                     |     |                                                                                     |     |
| 5,20                                                                              |             | 86        | 52,0      | 11,25                                                                             | 052 <sup>2)</sup> | 5,38                                                                              | 052 <sup>2)</sup> | 2,29                                                                              | 05200 | 5,82                                                                              | 052 | 4,33                                                                                | 05200 | 5,23                                                                                | 052 | 11,79                                                                               | 052 |
| 5,25                                                                              |             | 86        | 52,0      |                                                                                   |                   |                                                                                   |                   | 3,51                                                                              | 05250 |                                                                                   |     | 6,68                                                                                | 05250 |                                                                                     |     |                                                                                     |     |
| 5,30                                                                              |             | 86        | 52,0      | 11,90                                                                             | 053 <sup>2)</sup> | 5,71                                                                              | 053 <sup>2)</sup> | 2,29                                                                              | 05300 | 5,94                                                                              | 053 | 4,33                                                                                | 05300 | 5,23                                                                                | 053 | 11,79                                                                               | 053 |
| 5,35                                                                              |             | 93        | 57,0      |                                                                                   |                   |                                                                                   |                   | 4,17                                                                              | 05350 |                                                                                   |     |                                                                                     |       |                                                                                     |     |                                                                                     |     |
| 5,40                                                                              |             | 93        | 57,0      | 14,63                                                                             | 054 <sup>2)</sup> | 6,97                                                                              | 054 <sup>2)</sup> | 2,52                                                                              | 05400 | 6,43                                                                              | 054 | 4,62                                                                                | 05400 | 5,69                                                                                | 054 | 12,56                                                                               | 054 |
| 5,45                                                                              |             | 93        | 57,0      |                                                                                   |                   |                                                                                   |                   | 4,33                                                                              | 05450 |                                                                                   |     | 5,74                                                                                | 05450 |                                                                                     |     |                                                                                     |     |
| 5,50                                                                              |             | 93        | 57,0      | 12,66                                                                             | 055 <sup>2)</sup> | 6,00                                                                              | 055 <sup>2)</sup> | 2,43                                                                              | 05500 | 6,96                                                                              | 055 | 4,23                                                                                | 05500 | 5,23                                                                                | 055 | 11,68                                                                               | 055 |
| 5,55                                                                              |             | 93        | 57,0      |                                                                                   |                   | 7,06                                                                              | 555 <sup>2)</sup> | 4,33                                                                              | 05550 |                                                                                   |     | 5,74                                                                                | 05550 |                                                                                     |     |                                                                                     |     |
| 5,56                                                                              | 7/32        | 93        | 57,0      | 14,84                                                                             | 556 <sup>2)</sup> | 7,06                                                                              | 556 <sup>2)</sup> |                                                                                   |       |                                                                                   |     |                                                                                     |       |                                                                                     |     |                                                                                     |     |
| 5,60                                                                              |             | 93        | 57,0      | 13,42                                                                             | 056 <sup>2)</sup> | 6,41                                                                              | 056 <sup>2)</sup> | 2,60                                                                              | 05600 | 6,65                                                                              | 056 | 5,10                                                                                | 05600 | 5,75                                                                                | 056 | 13,00                                                                               | 056 |
| 5,65                                                                              |             | 93        | 57,0      |                                                                                   |                   |                                                                                   |                   | 4,46                                                                              | 05650 |                                                                                   |     | 7,91                                                                                | 05650 |                                                                                     |     |                                                                                     |     |
| 5,70                                                                              |             | 93        | 57,0      | 13,20                                                                             | 057 <sup>2)</sup> | 6,34                                                                              | 057 <sup>2)</sup> | 2,63                                                                              | 05700 | 6,65                                                                              | 057 | 5,10                                                                                | 05700 | 5,75                                                                                | 057 | 13,00                                                                               | 057 |
| 5,75                                                                              |             | 93        | 57,0      |                                                                                   |                   | 6,34                                                                              | 575 <sup>2)</sup> | 4,46                                                                              | 05750 |                                                                                   |     | 7,78                                                                                | 05750 |                                                                                     |     |                                                                                     |     |
| 5,80                                                                              |             | 93        | 57,0      | 13,20                                                                             | 058 <sup>2)</sup> | 6,34                                                                              | 058 <sup>2)</sup> | 2,69                                                                              | 05800 | 6,65                                                                              | 058 | 5,10                                                                                | 05800 | 5,81                                                                                | 058 | 13,10                                                                               | 058 |
| 5,85                                                                              |             | 93        | 57,0      |                                                                                   |                   |                                                                                   |                   | 4,46                                                                              | 05850 |                                                                                   |     | 9,34                                                                                | 05850 |                                                                                     |     |                                                                                     |     |
| 5,90                                                                              |             | 93        | 57,0      | 14,09                                                                             | 059 <sup>2)</sup> | 6,74                                                                              | 059 <sup>2)</sup> | 2,73                                                                              | 05900 | 6,65                                                                              | 059 | 5,10                                                                                | 05900 | 6,25                                                                                | 059 | 14,09                                                                               | 059 |
| 5,95                                                                              | 15/64       | 93        | 57,0      | 17,24                                                                             | 595 <sup>2)</sup> | 8,25                                                                              | 595 <sup>2)</sup> | 2,76                                                                              | 05950 |                                                                                   |     | 5,10                                                                                | 05950 |                                                                                     |     |                                                                                     |     |
| 6,00                                                                              |             | 93        | 57,0      | 12,77                                                                             | 060 <sup>2)</sup> | 6,10                                                                              | 060 <sup>2)</sup> | 2,43                                                                              | 06000 | 6,38                                                                              | 060 | 5,02                                                                                | 06000 | 5,79                                                                                | 060 | 13,86                                                                               | 060 |
| 6,05                                                                              |             | 101       | 63,0      |                                                                                   |                   |                                                                                   |                   | 4,85                                                                              | 06050 |                                                                                   |     | 10,92                                                                               | 06050 |                                                                                     |     |                                                                                     |     |
| 6,10                                                                              |             | 101       | 63,0      | 14,41                                                                             | 061 <sup>2)</sup> | 6,88                                                                              | 061 <sup>2)</sup> | 2,98                                                                              | 06100 | 7,44                                                                              | 061 | 5,10                                                                                | 06100 | 6,30                                                                                | 061 | 14,19                                                                               | 061 |
| 6,15                                                                              |             | 101       | 63,0      |                                                                                   |                   |                                                                                   |                   | 4,85                                                                              | 06150 |                                                                                   |     | 8,40                                                                                | 06150 |                                                                                     |     |                                                                                     |     |
| 6,20                                                                              |             | 101       | 63,0      | 14,19                                                                             | 062 <sup>2)</sup> | 6,78                                                                              | 062 <sup>2)</sup> | 2,98                                                                              | 06200 | 7,44                                                                              | 062 | 5,10                                                                                | 06200 | 6,65                                                                                | 062 | 14,63                                                                               | 062 |
| 6,25                                                                              |             | 101       | 63,0      |                                                                                   |                   |                                                                                   |                   | 4,85                                                                              | 06250 |                                                                                   |     | 8,73                                                                                | 06250 |                                                                                     |     |                                                                                     |     |
| 6,30                                                                              |             | 101       | 63,0      | 15,72                                                                             | 063 <sup>2)</sup> | 7,51                                                                              | 063 <sup>2)</sup> | 3,03                                                                              | 06300 | 7,44                                                                              | 063 | 5,40                                                                                | 06300 | 7,30                                                                                | 063 | 15,72                                                                               | 063 |
| 6,35                                                                              | 1/4         | 101       | 63,0      | 16,59                                                                             | 635 <sup>2)</sup> | 7,93                                                                              | 635 <sup>2)</sup> | 3,23                                                                              | 06350 |                                                                                   |     | 5,18                                                                                | 06350 |                                                                                     |     |                                                                                     |     |
| 6,40                                                                              |             | 101       | 63,0      | 16,59                                                                             | 064 <sup>2)</sup> | 7,95                                                                              | 064 <sup>2)</sup> | 3,19                                                                              | 06400 | 8,13                                                                              | 064 | 5,40                                                                                | 06400 | 7,30                                                                                | 064 | 15,83                                                                               | 064 |
| 6,45                                                                              |             | 101       | 63,0      |                                                                                   |                   |                                                                                   |                   | 5,51                                                                              | 06450 |                                                                                   |     |                                                                                     |       |                                                                                     |     |                                                                                     |     |
| 6,50                                                                              |             | 101       | 63,0      | 15,39                                                                             | 065 <sup>2)</sup> | 7,33                                                                              | 065 <sup>2)</sup> | 3,03                                                                              | 06500 | 7,30                                                                              | 065 | 5,16                                                                                | 06500 | 6,33                                                                                | 065 | 14,19                                                                               | 065 |
| 6,55                                                                              |             | 101       | 63,0      |                                                                                   |                   |                                                                                   |                   | 5,77                                                                              | 06550 |                                                                                   |     | 11,79                                                                               | 06550 |                                                                                     |     |                                                                                     |     |
| 6,60                                                                              |             | 101       | 63,0      | 16,81                                                                             | 066 <sup>2)</sup> | 8,04                                                                              | 066 <sup>2)</sup> | 3,31                                                                              | 06600 | 8,13                                                                              | 066 | 6,19                                                                                | 06600 | 7,46                                                                                | 066 | 16,38                                                                               | 066 |
| P                                                                                 |             |           |           | ●                                                                                 |                   | ●                                                                                 |                   | ○                                                                                 |       | ○                                                                                 |     |                                                                                     |       | ●                                                                                   |     | ●                                                                                   |     |
| M                                                                                 |             |           |           |                                                                                   |                   | ●                                                                                 |                   |                                                                                   |       | ●                                                                                 |     |                                                                                     |       | ○                                                                                   |     | ○                                                                                   |     |
| K                                                                                 |             |           |           | ●                                                                                 |                   | ●                                                                                 |                   | ●                                                                                 |       |                                                                                   |     |                                                                                     |       | ●                                                                                   |     | ●                                                                                   |     |
| N                                                                                 |             |           |           | ○                                                                                 |                   | ○                                                                                 |                   | ○                                                                                 |       | ●                                                                                 |     | ●                                                                                   |       | ●                                                                                   |     | ○                                                                                   |     |
| S                                                                                 |             |           |           | ○                                                                                 |                   | ○                                                                                 |                   |                                                                                   |       | ○                                                                                 |     |                                                                                     |       | ○                                                                                   |     | ○                                                                                   |     |
| H                                                                                 |             |           |           | ○                                                                                 |                   |                                                                                   |                   |                                                                                   |       |                                                                                   |     |                                                                                     |       | ○                                                                                   |     | ○                                                                                   |     |
| O                                                                                 |             |           |           | ○                                                                                 |                   | ○                                                                                 |                   | ○                                                                                 |       |                                                                                   |     |                                                                                     |       | ○                                                                                   |     | ○                                                                                   |     |

1) bez povrchové úpravy  
2) samostrediaci

→ v<sub>c</sub> strana 48+49

## Vrtáky v skrutkovici DIN 338, krátke

| ≤ 5xD                  |             |           |           | UNI              |        | UNI           |        | N           |       | VA            |     | W           |       | WTL           |     | WTL           |     |
|------------------------|-------------|-----------|-----------|------------------|--------|---------------|--------|-------------|-------|---------------|-----|-------------|-------|---------------|-----|---------------|-----|
|                        |             |           |           | TiN              |        | TiN           |        | vap.        |       |               |     |             |       | F-nit         |     | TiN           |     |
|                        |             |           |           |                  |        |               |        |             |       |               |     |             |       |               |     |               |     |
|                        |             |           |           | 130°<br>HSS-E-PM |        | 118°<br>HSS-E |        | 118°<br>HSS |       | 130°<br>HSS-E |     | 130°<br>HSS |       | 130°<br>HSS-E |     | 130°<br>HSS-E |     |
|                        |             |           |           | 10 173 ...       |        | 10 171 ...    |        | 10 152 ...  |       | 10 175 ...    |     | 10 161 ...  |       | 10 168 ...    |     | 10 170 ...    |     |
| DC <sub>h8</sub><br>mm | DC<br>palec | OAL<br>mm | LCF<br>mm | EUR<br>T2        |        | EUR<br>T2     |        | EUR<br>T2   |       | EUR<br>T2     |     | EUR<br>T2   |       | EUR<br>T2     |     | EUR<br>T2     |     |
| 6,65                   |             | 101       | 63,0      |                  |        |               |        | 5,85        | 06650 |               |     | 11,35       | 06650 |               |     |               |     |
| 6,70                   |             | 101       | 63,0      | 16,81            | 067 2) | 8,02          | 067 2) | 3,44        | 06700 | 8,13          | 067 | 6,23        | 06700 | 7,46          | 067 | 16,38         | 067 |
| 6,75                   |             | 109       | 69,0      | 22,71            | 675 2) | 10,84         | 675 2) | 4,02        | 06750 |               |     | 6,68        | 06750 |               |     |               |     |
| 6,80                   |             | 109       | 69,0      | 17,24            | 068 2) | 8,25          | 068 2) | 3,98        | 06800 | 8,80          | 068 | 6,68        | 06800 | 7,79          | 068 | 16,70         | 068 |
| 6,85                   |             | 109       | 69,0      |                  |        |               |        | 6,57        | 06850 |               |     | 11,79       | 06850 |               |     |               |     |
| 6,90                   |             | 109       | 69,0      | 17,58            | 069 2) | 8,39          | 069 2) | 3,98        | 06900 | 8,80          | 069 | 6,68        | 06900 | 8,13          | 069 | 17,79         | 069 |
| 6,95                   |             | 109       | 69,0      |                  |        |               |        | 6,66        | 06950 |               |     | 11,79       | 06950 |               |     |               |     |
| 7,00                   |             | 109       | 69,0      | 17,24            | 070 2) | 8,25          | 070 2) | 3,67        | 07000 | 7,60          | 070 | 5,92        | 07000 | 6,92          | 070 | 15,29         | 070 |
| 7,05                   |             | 109       | 69,0      |                  |        |               |        | 7,11        | 07050 |               |     | 9,53        | 07050 |               |     |               |     |
| 7,10                   |             | 109       | 69,0      | 19,87            | 071 2) | 9,49          | 071 2) | 4,02        | 07100 | 10,41         | 071 | 8,21        | 07100 | 10,73         | 071 | 23,58         | 071 |
| 7,14                   | 9/32        | 109       | 69,0      | 29,69            | 714 2) | 14,19         | 714 2) |             |       |               |     |             |       |               |     |               |     |
| 7,15                   |             | 109       | 69,0      |                  |        |               |        | 6,78        | 07150 |               |     |             |       |               |     |               |     |
| 7,20                   |             | 109       | 69,0      | 19,76            | 072 2) | 9,46          | 072 2) | 4,17        | 07200 | 10,41         | 072 | 8,21        | 07200 | 10,73         | 072 | 23,58         | 072 |
| 7,25                   |             | 109       | 69,0      |                  |        |               |        | 6,57        | 07250 |               |     | 13,97       | 07250 |               |     |               |     |
| 7,30                   |             | 109       | 69,0      | 20,53            | 073 2) | 9,82          | 073 2) | 4,17        | 07300 | 10,41         | 073 | 8,21        | 07300 | 10,73         | 073 | 23,58         | 073 |
| 7,35                   |             | 109       | 69,0      |                  |        |               |        | 7,11        | 07350 |               |     |             |       |               |     |               |     |
| 7,40                   |             | 109       | 69,0      | 20,09            | 074 2) | 9,60          | 074 2) | 4,37        | 07400 | 10,41         | 074 | 8,21        | 07400 | 10,73         | 074 | 23,58         | 074 |
| 7,45                   |             | 109       | 69,0      |                  |        | 8,74          | 745 2) | 6,98        | 07450 |               |     |             |       |               |     |               |     |
| 7,50                   |             | 109       | 69,0      | 18,23            | 075 2) | 8,74          | 075 2) | 3,98        | 07500 | 8,28          | 075 | 6,80        | 07500 | 7,95          | 075 | 17,79         | 075 |
| 7,55                   |             | 117       | 75,0      |                  |        |               |        | 8,13        | 07550 |               |     |             |       |               |     |               |     |
| 7,60                   |             | 117       | 75,0      | 22,17            | 076 2) | 10,61         | 076 2) | 4,56        | 07600 | 12,56         | 076 | 9,02        | 07600 | 11,79         | 076 | 25,98         | 076 |
| 7,65                   |             | 117       | 75,0      |                  |        |               |        | 8,13        | 07650 |               |     |             |       |               |     |               |     |
| 7,70                   |             | 117       | 75,0      | 25,21            | 077 2) | 12,11         | 077 2) | 4,56        | 07700 | 12,56         | 077 | 9,02        | 07700 | 11,79         | 077 | 25,98         | 077 |
| 7,75                   |             | 117       | 75,0      |                  |        |               |        | 7,41        | 07750 |               |     | 15,83       | 07750 |               |     |               |     |
| 7,80                   |             | 117       | 75,0      | 21,62            | 078 2) | 10,35         | 078 2) | 4,66        | 07800 | 12,56         | 078 | 9,02        | 07800 | 11,79         | 078 | 25,98         | 078 |
| 7,85                   |             | 117       | 75,0      |                  |        |               |        | 8,13        | 07850 |               |     |             |       |               |     |               |     |
| 7,90                   |             | 117       | 75,0      | 25,87            | 079 2) | 12,33         | 079 2) | 4,72        | 07900 | 12,56         | 079 | 10,44       | 07900 | 11,79         | 079 | 25,98         | 079 |
| 7,94                   | 5/16        | 117       | 75,0      | 23,25            | 794 2) | 11,13         | 794 2) |             |       |               |     |             |       |               |     |               |     |
| 7,95                   |             | 117       | 75,0      |                  |        |               |        | 8,50        | 07950 |               |     |             |       |               |     |               |     |
| 8,00                   |             | 117       | 75,0      | 20,63            | 080 2) | 9,86          | 080 2) | 3,98        | 08000 | 10,16         | 080 | 7,59        | 08000 | 8,99          | 080 | 20,09         | 080 |
| 8,05                   |             | 117       | 75,0      |                  |        |               |        | 8,66        | 08050 |               |     | 19,98       | 08050 |               |     |               |     |
| 8,10                   |             | 117       | 75,0      | 22,48            | 081 2) | 10,77         | 081 2) | 4,85        | 08100 | 12,56         | 081 | 10,82       | 08100 | 12,56         | 081 | 27,61         | 081 |
| 8,15                   |             | 117       | 75,0      |                  |        |               |        | 8,79        | 08150 |               |     | 19,98       | 08150 |               |     |               |     |
| 8,20                   |             | 117       | 75,0      | 22,17            | 082 2) | 10,61         | 082 2) | 5,02        | 08200 | 13,65         | 082 | 11,35       | 08200 | 13,10         | 082 | 28,38         | 082 |
| 8,25                   |             | 117       | 75,0      |                  |        |               |        | 6,12        | 08250 |               |     | 16,38       | 08250 |               |     |               |     |
| 8,30                   |             | 117       | 75,0      | 24,67            | 083 2) | 11,79         | 083 2) | 5,44        | 08300 | 13,65         | 083 | 11,90       | 08300 | 14,09         | 083 | 30,56         | 083 |
| 8,35                   |             | 117       | 75,0      |                  |        |               |        | 9,29        | 08350 |               |     |             |       |               |     |               |     |
| 8,40                   |             | 117       | 75,0      | 24,78            | 084 2) | 11,79         | 084 2) | 5,44        | 08400 | 14,09         | 084 | 11,90       | 08400 | 14,09         | 084 | 30,56         | 084 |
| 8,45                   |             | 117       | 75,0      |                  |        |               |        | 9,81        | 08450 |               |     | 18,99       | 08450 |               |     |               |     |
| 8,50                   |             | 117       | 75,0      | 21,18            | 085 2) | 10,15         | 085 2) | 5,16        | 08500 | 9,95          | 085 | 8,73        | 08500 | 10,24         | 085 | 22,59         | 085 |
| 8,55                   |             | 125       | 81,0      |                  |        |               |        | 11,46       | 08550 |               |     | 19,54       | 08550 |               |     |               |     |
| 8,60                   |             | 125       | 81,0      |                  |        | 17,79         | 086 2) | 5,90        | 08600 | 14,74         | 086 | 11,90       | 08600 | 15,50         | 086 | 33,84         | 086 |
| 8,65                   |             | 125       | 81,0      |                  |        |               |        | 11,46       | 08650 |               |     |             |       |               |     |               |     |
| 8,70                   |             | 125       | 81,0      |                  |        | 17,79         | 087 2) | 5,90        | 08700 | 14,74         | 087 | 13,32       | 08700 | 15,72         | 087 | 34,38         | 087 |
| 8,73                   | 11/32       | 125       | 81,0      | 22,93            | 873 2) | 10,92         | 873 2) |             |       |               |     |             |       |               |     |               |     |
| 8,75                   |             | 125       | 81,0      |                  |        |               |        | 10,22       | 08750 |               |     | 18,99       | 08750 |               |     |               |     |
| P                      |             |           |           | •                |        | •             |        | ○           |       | ○             |     |             |       | •             |     | •             |     |
| M                      |             |           |           |                  |        | •             |        |             |       | •             |     |             |       | ○             |     | ○             |     |
| K                      |             |           |           | •                |        | •             |        | •           |       |               |     |             |       | •             |     | •             |     |
| N                      |             |           |           | ○                |        | ○             |        | ○           |       | •             |     | •           |       | •             |     | ○             |     |
| S                      |             |           |           | ○                |        | ○             |        |             |       | ○             |     |             |       | ○             |     | ○             |     |
| H                      |             |           |           | ○                |        |               |        |             |       |               |     |             |       | ○             |     | ○             |     |
| O                      |             |           |           | ○                |        | ○             |        | ○           |       |               |     |             |       | ○             |     | ○             |     |

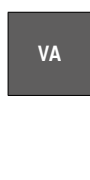
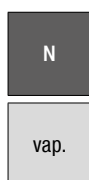
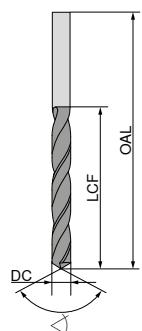
1) bez povrchové úpravy

2) samostrediaci

→ v<sub>c</sub> strana 48+49

## Vrtáky v skrutkovici DIN 338, krátke

≤ 5xD


 $\angle 130^\circ$   
HSS-E-PM

 $\angle 118^\circ$   
HSS-E

 $\angle 118^\circ$   
HSS

 $\angle 130^\circ$   
HSS-E

 $\angle 130^\circ$   
HSS

 $\angle 130^\circ$   
HSS-E

 $\angle 130^\circ$   
HSS-E

|                        |             |           |           | 10 173 ... |        | 10 171 ... |        | 10 152 ... |       | 10 175 ... |     | 10 161 ... |       | 10 168 ... |     | 10 170 ... |     |
|------------------------|-------------|-----------|-----------|------------|--------|------------|--------|------------|-------|------------|-----|------------|-------|------------|-----|------------|-----|
| DC <sub>h8</sub><br>mm | DC<br>palec | OAL<br>mm | LCF<br>mm | EUR<br>T2  |        | EUR<br>T2  |        | EUR<br>T2  |       | EUR<br>T2  |     | EUR<br>T2  |       | EUR<br>T2  |     | EUR<br>T2  |     |
| 8,80                   |             | 125       | 81,0      | 24,78      | 088 2) | 11,79      | 088 2) | 6,12       | 08800 | 16,05      | 088 | 13,32      | 08800 | 15,72      | 088 | 34,38      | 088 |
| 8,90                   |             | 125       | 81,0      |            |        | 16,49      | 089 2) | 6,39       | 08900 | 16,91      | 089 | 13,42      | 08900 | 15,83      | 089 | 34,93      | 089 |
| 8,95                   |             | 125       | 81,0      |            |        |            |        | 11,90      | 08950 |            |     |            |       |            |     |            |     |
| 9,00                   |             | 125       | 81,0      | 23,36      | 090 2) | 11,13      | 090 2) | 5,62       | 09000 | 13,00      | 090 | 9,53       | 09000 | 12,01      | 090 | 26,31      | 090 |
| 9,05                   |             | 125       | 81,0      |            |        |            |        | 11,90      | 09050 |            |     |            |       |            |     |            |     |
| 9,10                   |             | 125       | 81,0      |            |        | 18,33      | 091 2) | 6,39       | 09100 | 18,00      | 091 | 14,74      | 09100 | 16,70      | 091 | 37,12      | 091 |
| 9,15                   |             | 125       | 81,0      |            |        |            |        | 11,90      | 09150 |            |     |            |       |            |     |            |     |
| 9,20                   |             | 125       | 81,0      |            |        | 18,33      | 092 2) | 6,39       | 09200 | 18,89      | 092 | 14,74      | 09200 | 18,23      | 092 | 39,95      | 092 |
| 9,25                   |             | 125       | 81,0      |            |        |            |        | 8,50       | 09250 |            |     | 22,81      | 09250 |            |     |            |     |
| 9,30                   |             | 125       | 81,0      | 26,85      | 093 2) | 12,88      | 093 2) | 6,49       | 09300 | 19,44      | 093 | 14,74      | 09300 | 18,23      | 093 | 39,41      | 093 |
| 9,35                   |             | 125       | 81,0      |            |        | 11,68      | 935 2) | 12,66      | 09350 |            |     |            |       |            |     |            |     |
| 9,40                   |             | 125       | 81,0      |            |        | 18,78      | 094 2) | 6,49       | 09400 | 20,85      | 094 | 14,74      | 09400 | 18,23      | 094 | 39,41      | 094 |
| 9,45                   |             | 125       | 81,0      |            |        |            |        | 12,66      | 09450 |            |     |            |       |            |     |            |     |
| 9,50                   |             | 125       | 81,0      | 24,57      | 095 2) | 11,68      | 095 2) | 6,42       | 09500 | 15,29      | 095 | 11,13      | 09500 | 13,00      | 095 | 28,06      | 095 |
| 9,55                   |             | 133       | 87,0      |            |        |            |        | 14,41      | 09550 |            |     |            |       |            |     |            |     |
| 9,60                   |             | 133       | 87,0      |            |        | 13,97      | 096 2) | 7,11       | 09600 | 21,94      | 096 | 16,70      | 09600 | 18,99      | 096 | 42,02      | 096 |
| 9,65                   |             | 133       | 87,0      |            |        |            |        | 14,41      | 09650 |            |     |            |       |            |     |            |     |
| 9,70                   |             | 133       | 87,0      |            |        | 20,19      | 097 2) | 7,11       | 09700 | 21,94      | 097 | 17,14      | 09700 | 20,73      | 097 | 44,87      | 097 |
| 9,75                   |             | 133       | 87,0      |            |        |            |        | 9,29       | 09750 |            |     |            |       |            |     |            |     |
| 9,80                   |             | 133       | 87,0      | 29,25      | 098 2) | 13,97      | 098 2) | 7,93       | 09800 | 21,94      | 098 | 17,14      | 09800 | 20,73      | 098 | 44,87      | 098 |
| 9,85                   |             | 133       | 87,0      |            |        |            |        | 15,60      | 09850 |            |     |            |       |            |     |            |     |
| 9,90                   |             | 133       | 87,0      |            |        | 16,59      | 099 2) | 7,93       | 09900 | 21,94      | 099 | 17,58      | 09900 | 20,73      | 099 | 44,87      | 099 |
| 9,95                   |             | 133       | 87,0      |            |        |            |        | 15,60      | 09950 |            |     |            |       |            |     |            |     |
| 10,00                  |             | 133       | 87,0      | 27,73      | 100 2) | 13,20      | 100 2) | 6,78       | 10000 | 14,63      | 100 | 11,79      | 10000 | 14,63      | 100 | 32,31      | 100 |
| 10,05                  |             | 133       | 87,0      |            |        |            |        | 20,95      | 10050 |            |     | 29,80      | 10050 |            |     |            |     |
| 10,10                  |             | 133       | 87,0      |            |        | 18,89      | 101 2) | 8,50       | 10100 | 24,67      | 101 | 17,79      | 10100 | 32,64      | 101 | 71,39      | 101 |
| 10,15                  |             | 133       | 87,0      |            |        |            |        | 20,95      | 10150 |            |     |            |       |            |     |            |     |
| 10,20                  |             | 133       | 87,0      | 31,98      | 102 2) | 15,29      | 102 2) | 8,66       | 10200 | 20,85      | 102 | 17,79      | 10200 | 20,09      | 102 | 43,66      | 102 |
| 10,25                  |             | 133       | 87,0      |            |        |            |        | 11,68      | 10250 |            |     | 19,98      | 10250 |            |     |            |     |
| 10,30                  |             | 133       | 87,0      |            |        | 16,49      | 103 2) | 10,45      | 10300 | 32,74      | 103 | 17,79      | 10300 | 26,85      | 103 | 58,29      | 103 |
| 10,35                  |             | 133       | 87,0      |            |        |            |        | 20,95      | 10350 |            |     |            |       |            |     |            |     |
| 10,40                  |             | 133       | 87,0      |            |        | 20,41      | 104 2) | 10,45      | 10400 | 32,74      | 104 | 17,79      | 10400 | 28,38      | 104 | 62,21      | 104 |
| 10,45                  |             | 133       | 87,0      |            |        |            |        | 20,95      | 10450 |            |     |            |       |            |     |            |     |
| 10,50                  |             | 133       | 87,0      | 32,20      | 105 2) | 15,39      | 105 2) | 8,79       | 10500 | 21,62      | 105 | 14,51      | 10500 | 18,45      | 105 | 40,61      | 105 |
| 10,55                  |             | 133       | 87,0      |            |        | 15,94      | 955 2) | 14,74      | 10550 |            |     |            |       |            |     |            |     |
| 10,60                  |             | 133       | 87,0      |            |        |            |        | 11,02      | 10600 | 43,76      | 106 | 17,79      | 10600 | 28,38      | 106 |            |     |
| 10,70                  |             | 142       | 94,0      |            |        |            |        | 12,66      | 10700 | 43,12      | 107 | 20,19      | 10700 | 28,38      | 107 | 62,21      | 107 |
| 10,75                  |             | 142       | 94,0      |            |        |            |        | 14,09      | 10750 |            |     | 23,47      | 10750 |            |     |            |     |
| 10,80                  |             | 142       | 94,0      |            |        |            |        | 12,33      | 10800 | 43,76      | 108 | 21,07      | 10800 | 27,07      | 108 | 59,61      | 108 |
| 10,90                  |             | 142       | 94,0      |            |        |            |        | 13,32      | 10900 | 43,76      | 109 | 21,07      | 10900 | 34,38      | 109 |            |     |
| 11,00                  |             | 142       | 94,0      | 33,29      | 110 2) | 15,94      | 110 2) | 10,22      | 11000 | 23,47      | 110 | 17,14      | 11000 | 22,59      | 110 | 48,57      | 110 |
| 11,10                  |             | 142       | 94,0      |            |        |            |        | 13,32      | 11100 | 45,62      | 111 | 21,07      | 11100 | 33,40      | 111 |            |     |
| 11,11                  | 7/16        | 142       | 94,0      | 41,70      | 111 2) | 19,98      | 111 2) |            |       |            |     |            |       |            |     |            |     |
| 11,20                  |             | 142       | 94,0      |            |        | 17,69      | 112 2) | 12,66      | 11200 | 45,62      | 112 | 26,97      | 11200 | 37,12      | 112 | 82,64      | 112 |
| 11,30                  |             | 142       | 94,0      |            |        | 17,69      | 113 2) |            |       | 45,96      | 113 |            |       | 37,12      | 113 |            |     |
| 11,40                  |             | 142       | 94,0      |            |        | 17,69      | 114 2) | 13,75      | 11400 | 45,96      | 114 | 29,80      | 11400 | 37,12      | 114 |            |     |

|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| P | • | • | ○ | ○ | • | • |
| M |   | • |   | • | ○ | ○ |
| K | • | • | • |   | • | • |
| N | ○ | ○ | ○ | • | • | ○ |
| S | ○ | ○ |   | ○ | ○ | ○ |
| H | ○ |   |   |   | ○ | ○ |
| O | ○ | ○ | ○ |   | ○ | ○ |

1) bez povrchové úpravy

2) samostrediaci

→ v<sub>c</sub> strana 48+49

## Vrtáky v skrutkovici DIN 338, krátke

| ≤ 5xD                  |             |           |           | UNI              |                   | UNI           |                   | N           |       | VA            |     | W           |       | WTL           |     | WTL           |     |
|------------------------|-------------|-----------|-----------|------------------|-------------------|---------------|-------------------|-------------|-------|---------------|-----|-------------|-------|---------------|-----|---------------|-----|
|                        |             |           |           | TiN              |                   | TiN           |                   | vap.        |       |               |     |             |       | F-nit         |     | TiN           |     |
|                        |             |           |           |                  |                   |               |                   |             |       |               |     |             |       |               |     |               |     |
|                        |             |           |           | 130°<br>HSS-E-PM |                   | 118°<br>HSS-E |                   | 118°<br>HSS |       | 130°<br>HSS-E |     | 130°<br>HSS |       | 130°<br>HSS-E |     | 130°<br>HSS-E |     |
|                        |             |           |           | 10 173 ...       |                   | 10 171 ...    |                   | 10 152 ...  |       | 10 175 ...    |     | 10 161 ...  |       | 10 168 ...    |     | 10 170 ...    |     |
| DC <sub>h8</sub><br>mm | DC<br>palec | OAL<br>mm | LCF<br>mm | EUR<br>T2        |                   | EUR<br>T2     |                   | EUR<br>T2   |       | EUR<br>T2     |     | EUR<br>T2   |       | EUR<br>T2     |     | EUR<br>T2     |     |
| 11,50                  |             | 142       | 94,0      | 36,89            | 115 <sup>2)</sup> | 17,69         | 115 <sup>2)</sup> | 11,02       | 11500 | 30,12         | 115 | 19,21       | 11500 | 26,31         | 115 | 58,07         | 115 |
| 11,60                  |             | 142       | 94,0      |                  |                   | 18,89         | 116 <sup>2)</sup> | 13,75       | 11600 | 52,61         | 116 | 29,80       | 11600 | 37,12         | 116 |               |     |
| 11,70                  |             | 142       | 94,0      |                  |                   |               |                   | 14,09       | 11700 | 52,61         | 117 | 29,80       | 11700 | 37,12         | 117 | 82,64         | 117 |
| 11,80                  |             | 142       | 94,0      |                  |                   |               |                   | 14,30       | 11800 | 52,61         | 118 | 29,80       | 11800 | 39,41         | 118 | 86,56         | 118 |
| 11,90                  |             | 151       | 101,0     |                  |                   |               |                   | 15,60       | 11900 | 52,61         | 119 | 29,80       | 11900 |               |     |               |     |
| 12,00                  |             | 151       | 101,0     | 39,52            | 120 <sup>2)</sup> | 18,89         | 120 <sup>2)</sup> | 12,33       | 12000 | 33,95         | 120 | 20,85       | 12000 | 28,06         | 120 | 61,35         | 120 |
| 12,15                  |             | 151       | 101,0     |                  |                   | 19,64         | 121 <sup>2)</sup> |             |       |               |     |             |       |               |     |               |     |
| 12,20                  |             | 151       | 101,0     |                  |                   |               |                   | 16,49       | 12200 |               |     | 35,47       | 12200 |               |     |               |     |
| 12,25                  |             | 151       | 101,0     |                  |                   |               |                   | 18,45       | 12250 |               |     |             |       |               |     |               |     |
| 12,30                  |             | 151       | 101,0     | 70,84            | 123 <sup>2)</sup> | 33,84         | 123 <sup>2)</sup> |             |       |               |     |             |       |               |     |               |     |
| 12,50                  |             | 151       | 101,0     | 41,04            | 125 <sup>2)</sup> | 19,64         | 925 <sup>2)</sup> | 13,97       | 12500 |               |     | 20,85       | 12500 | 34,71         | 125 | 76,52         | 125 |
| 12,70                  |             | 151       | 101,0     | 53,70            | 127 <sup>2)</sup> | 25,66         | 127 <sup>2)</sup> | 15,50       | 12700 |               |     | 20,19       | 12700 |               |     |               |     |
| 12,80                  |             | 151       | 101,0     |                  |                   |               |                   | 18,66       | 12800 |               |     | 37,33       | 12800 | 58,83         | 128 | 128,80        | 128 |
| 13,00                  |             | 151       | 101,0     | 43,66            | 130 <sup>2)</sup> | 20,85         | 130 <sup>2)</sup> | 15,29       | 13000 |               |     | 24,78       | 13000 | 34,71         | 130 | 75,76         | 130 |
| 13,10                  |             | 151       | 101,0     |                  |                   | 37,12         | 131 <sup>2)</sup> |             |       |               |     |             |       |               |     |               |     |
| 13,20                  |             | 151       | 101,0     |                  |                   |               |                   | 19,98       | 13200 |               |     | 45,62       | 13200 |               |     |               |     |
| 13,30                  |             | 160       | 108,0     |                  |                   | 37,12         | 133 <sup>2)</sup> |             |       |               |     |             |       |               |     |               |     |
| 13,50                  |             | 160       | 108,0     | 77,61            | 135 <sup>2)</sup> | 37,12         | 135 <sup>2)</sup> | 17,69       | 13500 |               |     | 30,67       | 13500 | 45,74         | 135 | 99,98         | 135 |
| 13,80                  |             | 160       | 108,0     |                  |                   |               |                   | 25,43       | 13800 |               |     | 57,41       | 13800 | 52,07         | 138 | 114,60        | 138 |
| 14,00                  |             | 160       | 108,0     | 52,83            | 140 <sup>2)</sup> | 25,33         | 140 <sup>2)</sup> | 19,54       | 14000 |               |     | 29,57       | 14000 | 41,16         | 140 | 88,73         | 140 |
| 14,50                  |             | 169       | 114,0     |                  |                   |               |                   | 20,95       | 14500 |               |     | 39,08       | 14500 | 50,00         | 145 | 109,00        | 145 |
| 14,80                  |             | 169       | 114,0     |                  |                   |               |                   |             |       |               |     |             |       | 75,76         | 148 | 163,80        | 148 |
| 15,00                  |             | 169       | 114,0     |                  |                   |               |                   | 22,81       | 15000 |               |     | 34,82       | 15000 | 51,41         | 150 | 112,50        | 150 |
| 15,25                  |             | 178       | 120,0     |                  |                   |               |                   | 42,35       | 15250 |               |     |             |       |               |     |               |     |
| 15,50                  |             | 178       | 120,0     |                  |                   |               |                   | 24,78       | 15500 |               |     | 49,23       | 15500 | 74,99         | 155 | 162,60        | 155 |
| 15,80                  |             | 178       | 120,0     |                  |                   |               |                   | 40,82       | 15800 |               |     |             |       |               |     |               |     |
| 16,00                  |             | 178       | 120,0     |                  |                   |               |                   | 26,63       | 16000 |               |     | 46,61       | 16000 | 62,98         | 160 | 139,70        | 160 |
| 16,50                  |             | 184       | 125,0     |                  |                   |               |                   | 30,46       | 16500 |               |     | 77,94       | 16500 |               |     |               |     |
| 17,00                  |             | 184       | 125,0     |                  |                   |               |                   | 32,20       | 17000 |               |     | 79,03       | 17000 |               |     |               |     |
| 17,50                  |             | 191       | 130,0     |                  |                   |               |                   | 35,14       | 17500 |               |     | 157,20      | 17500 |               |     |               |     |
| 18,00                  |             | 191       | 130,0     |                  |                   |               |                   | 37,44       | 18000 |               |     | 85,58       | 18000 |               |     |               |     |
| 18,50                  |             | 198       | 135,0     |                  |                   |               |                   | 40,82       | 18500 |               |     |             |       |               |     |               |     |
| 19,00                  |             | 198       | 135,0     |                  |                   |               |                   | 44,10       | 19000 |               |     | 97,48       | 19000 |               |     |               |     |
| 19,50                  |             | 205       | 140,0     |                  |                   |               |                   | 46,61       | 19500 |               |     |             |       |               |     |               |     |
| 20,00                  |             | 205       | 140,0     |                  |                   |               |                   | 51,09       | 20000 |               |     | 121,10      | 20000 |               |     |               |     |
| P                      |             |           |           | ●                |                   | ●             |                   | ○           |       | ○             |     |             |       | ●             |     | ●             |     |
| M                      |             |           |           |                  |                   | ●             |                   |             |       | ●             |     |             |       | ○             |     | ○             |     |
| K                      |             |           |           | ●                |                   | ●             |                   | ●           |       |               |     |             |       | ●             |     | ●             |     |
| N                      |             |           |           | ○                |                   | ○             |                   | ○           |       | ●             |     | ●           |       | ●             |     | ○             |     |
| S                      |             |           |           | ○                |                   | ○             |                   |             |       | ○             |     |             |       | ○             |     | ○             |     |
| H                      |             |           |           | ○                |                   |               |                   |             |       |               |     |             |       | ○             |     | ○             |     |
| O                      |             |           |           | ○                |                   | ○             |                   | ○           |       |               |     |             |       | ○             |     | ○             |     |

1) bez povrchové úpravy

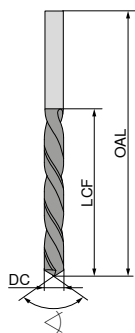
2) samostrediaci

→ v<sub>c</sub> strana 48+49

## Vrtáky v skrutkovici DIN 338, krátke

▲ Artikel č. 10 169 ... WTL-L - ľavorezný vrták

≤ 5xD

130°  
HSS-E130°  
HSS

| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | 10 172 ...<br>EUR<br>T2 | 10 169 ...<br>EUR<br>T2 |                   |
|------------------------|-----------|-----------|-------------------------|-------------------------|-------------------|
| 1,0                    | 34        | 12        |                         | 5,11                    | 010 <sup>1)</sup> |
| 1,3                    | 38        | 16        |                         | 5,17                    | 013 <sup>1)</sup> |
| 1,4                    | 40        | 18        |                         | 5,17                    | 014 <sup>1)</sup> |
| 1,5                    | 40        | 18        |                         | 4,16                    | 015 <sup>1)</sup> |
| 1,6                    | 43        | 20        |                         | 4,35                    | 016 <sup>1)</sup> |
| 1,7                    | 43        | 20        |                         | 4,40                    | 017 <sup>1)</sup> |
| 1,8                    | 46        | 22        |                         | 4,46                    | 018 <sup>1)</sup> |
| 1,9                    | 46        | 22        |                         | 4,53                    | 019 <sup>1)</sup> |
| 2,0                    | 49        | 24        |                         | 3,53                    | 020 <sup>1)</sup> |
| 2,1                    | 49        | 24        |                         | 4,20                    | 021 <sup>1)</sup> |
| 2,2                    | 53        | 27        |                         | 4,61                    | 022 <sup>1)</sup> |
| 2,3                    | 53        | 27        |                         | 4,35                    | 023 <sup>1)</sup> |
| 2,4                    | 57        | 30        |                         | 4,35                    | 024               |
| 2,5                    | 57        | 30        |                         | 3,94                    | 025               |
| 2,6                    | 57        | 30        |                         | 4,46                    | 026               |
| 2,7                    | 61        | 33        |                         | 4,46                    | 027               |
| 2,8                    | 61        | 33        |                         | 4,61                    | 028               |
| 2,9                    | 61        | 33        |                         | 4,61                    | 029               |
| 3,0                    | 61        | 33        | 8,80                    | 4,20                    | 030               |
| 3,1                    | 65        | 36        | 9,36                    | 5,13                    | 031               |
| 3,2                    | 65        | 36        | 9,88                    | 4,66                    | 032               |
| 3,3                    | 65        | 36        | 10,62                   | 4,84                    | 033               |
| 3,4                    | 70        | 39        | 11,68                   | 5,50                    | 034               |
| 3,5                    | 70        | 39        | 9,36                    | 4,49                    | 035               |
| 3,6                    | 70        | 39        | 11,13                   | 5,69                    | 036               |
| 3,7                    | 70        | 39        | 11,68                   | 5,86                    | 037               |
| 3,8                    | 75        | 43        | 12,33                   | 6,11                    | 038               |
| 3,9                    | 75        | 43        | 13,00                   | 6,40                    | 039               |
| 4,0                    | 75        | 43        | 10,62                   | 4,84                    | 040               |
| 4,1                    | 75        | 43        | 13,00                   | 6,65                    | 041               |
| 4,2                    | 75        | 43        | 12,01                   | 5,88                    | 042               |
| 4,3                    | 80        | 47        | 13,42                   | 7,66                    | 043               |
| 4,4                    | 80        | 47        | 13,42                   | 7,95                    | 044               |
| 4,5                    | 80        | 47        | 12,33                   | 6,18                    | 045               |
| 4,6                    | 80        | 47        | 14,30                   | 8,13                    | 046               |
| 4,7                    | 80        | 47        | 14,30                   | 8,13                    | 047               |
| 4,8                    | 86        | 52        | 14,30                   | 8,13                    | 048               |
| 4,9                    | 86        | 52        | 14,51                   | 8,31                    | 049               |
| 5,0                    | 86        | 52        | 13,10                   | 5,92                    | 050               |
| 5,1                    | 86        | 52        | 14,51                   | 8,31                    | 051               |
| 5,2                    | 86        | 52        | 15,29                   | 9,22                    | 052               |
| 5,3                    | 86        | 52        | 15,29                   | 9,22                    | 053               |
| 5,4                    | 93        | 57        | 16,26                   | 9,72                    | 054               |
| 5,5                    | 93        | 57        | 15,17                   | 7,66                    | 055               |
| 5,6                    | 93        | 57        | 16,38                   | 10,24                   | 056               |
| 5,7                    | 93        | 57        | 16,38                   | 10,24                   | 057               |
| 5,8                    | 93        | 57        | 16,70                   | 10,24                   | 058               |
| 5,9                    | 93        | 57        | 18,23                   | 10,24                   | 059               |
| 6,0                    | 93        | 57        | 16,70                   | 7,66                    | 060               |
| 6,1                    | 101       | 63        | 18,45                   | 11,13                   | 061               |

| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | 10 172 ...<br>EUR<br>T2 | 10 169 ...<br>EUR<br>T2 |     |
|------------------------|-----------|-----------|-------------------------|-------------------------|-----|
| 6,2                    | 101       | 63        | 18,99                   | 12,33                   | 062 |
| 6,3                    | 101       | 63        | 20,73                   | 12,33                   | 063 |
| 6,4                    | 101       | 63        | 21,07                   | 12,33                   | 064 |
| 6,5                    | 101       | 63        | 18,45                   | 9,22                    | 065 |
| 6,6                    | 101       | 63        | 21,94                   | 13,32                   | 066 |
| 6,7                    | 101       | 63        | 21,94                   | 13,32                   | 067 |
| 6,8                    | 109       | 69        | 22,38                   | 14,30                   | 068 |
| 6,9                    | 109       | 69        | 23,58                   | 14,63                   | 069 |
| 7,0                    | 109       | 69        | 20,09                   | 10,73                   | 070 |
| 7,1                    | 109       | 69        | 30,56                   | 20,09                   | 071 |
| 7,2                    | 109       | 69        | 30,56                   | 20,09                   | 072 |
| 7,3                    | 109       | 69        |                         | 20,09                   | 073 |
| 7,4                    | 109       | 69        | 30,56                   | 20,09                   | 074 |
| 7,5                    | 109       | 69        | 23,25                   | 12,56                   | 075 |
| 7,7                    | 117       | 75        | 33,84                   | 21,28                   | 077 |
| 7,8                    | 117       | 75        | 33,84                   | 21,28                   | 078 |
| 7,9                    | 117       | 75        |                         | 21,28                   | 079 |
| 8,0                    | 117       | 75        | 25,98                   | 12,01                   | 080 |
| 8,1                    | 117       | 75        | 35,69                   | 21,94                   | 081 |
| 8,2                    | 117       | 75        | 37,12                   | 21,94                   | 082 |
| 8,3                    | 117       | 75        |                         | 21,94                   | 083 |
| 8,4                    | 117       | 75        | 39,95                   | 21,94                   | 084 |
| 8,5                    | 117       | 75        | 29,25                   | 15,17                   | 085 |
| 8,6                    | 125       | 81        | 44,10                   | 24,45                   | 086 |
| 8,7                    | 125       | 81        | 44,65                   | 24,45                   | 087 |
| 8,8                    | 125       | 81        | 44,65                   | 24,45                   | 088 |
| 8,9                    | 125       | 81        | 45,74                   | 24,45                   | 089 |
| 9,0                    | 125       | 81        | 34,17                   | 14,84                   | 090 |
| 9,2                    | 125       | 81        |                         | 25,11                   | 092 |
| 9,3                    | 125       | 81        |                         | 25,11                   | 093 |
| 9,5                    | 125       | 81        | 36,78                   | 19,32                   | 095 |
| 9,8                    | 133       | 87        |                         | 26,85                   | 098 |
| 9,9                    | 133       | 87        |                         | 28,06                   | 099 |
| 10,0                   | 133       | 87        | 42,35                   | 16,70                   | 100 |
| 10,1                   | 133       | 87        |                         | 28,06                   | 101 |
| 10,2                   | 133       | 87        | 56,32                   | 28,71                   | 102 |
| 10,3                   | 133       | 87        |                         | 28,38                   | 103 |
| 10,4                   | 133       | 87        |                         | 29,91                   | 104 |
| 10,5                   | 133       | 87        | 53,05                   | 29,25                   | 105 |
| 11,0                   | 142       | 94        | 75,76                   | 29,25                   | 110 |
| 11,5                   | 142       | 94        | 75,76                   | 32,31                   | 115 |
| 12,0                   | 151       | 101       | 80,66                   | 33,40                   | 120 |
| 12,2                   | 151       | 101       |                         | 52,73                   | 122 |
| 12,5                   | 151       | 101       |                         | 35,69                   | 125 |
| 13,0                   | 151       | 101       |                         | 36,78                   | 130 |
| 14,0                   | 160       | 108       |                         | 42,67                   | 140 |
| 14,5                   | 169       | 114       |                         | 46,39                   | 145 |
| 15,0                   | 169       | 114       |                         | 51,74                   | 150 |
| 16,0                   | 178       | 120       |                         | 58,07                   | 160 |

|   |   |   |
|---|---|---|
| P | ● | ○ |
| M | ○ | ○ |
| K | ● | ● |
| N | ○ | ● |
| S | ○ | ○ |
| H | ○ | ○ |
| O | ○ | ○ |

1) bez povrchovej úpravy

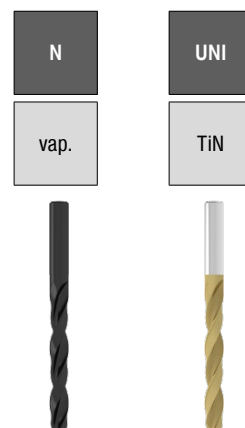
→ v<sub>c</sub> strana 49

# Súpravy vrtákov v skrutkovici DIN 338, krátke

▲ v kovovej kazete

▲ priemery odstupňované po 0,1 mm

≤ 5xD

Súprava vrtákov  
Typ N vap.  
HSSSúprava vrtákov  
Typ UNI s TiN  
HSS-E

| DC <sub>h8</sub><br>mm | 10 158 ...         | 10 158 ...          |
|------------------------|--------------------|---------------------|
| 1,0 - 5,9              | EUR<br>T2<br>92,45 | EUR<br>T2<br>275,10 |
| 6,0 - 10,0             | 203,00             | 433,30              |
| P                      | ○                  | ●                   |
| M                      |                    | ●                   |
| K                      | ●                  | ●                   |
| N                      | ○                  | ○                   |
| S                      |                    | ○                   |
| H                      |                    |                     |
| O                      | ○                  | ○                   |

→ v. strana 48

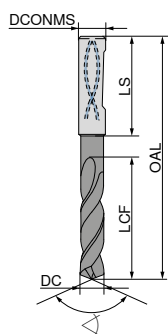
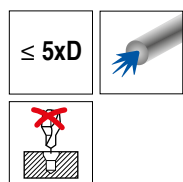


Súprava typ N vap., obsahuje vrtáky v skrutkovnici, artikel č. 10 152 ...

Súprava typ UNI s TiN, obsahuje vrtáky v skrutkovnici, artikel č. 10 171 ...

## Vrtáky v skrutkovici s chladiacimi kanálkami, ~ DIN 338, krátke

- ▲ kužeľový výbrus
- ▲ špeciálne prevedenie špičky
- ▲ široké drážky pre odvádzanie triesok
- ▲ zaoblené chrbtové hrany
- ▲ na húževnaté materiály do 1000 N/mm<sup>2</sup>



W NXi

W NXi

TiN

E  
130°  
HSS-EE  
130°  
HSS-E

10 180 ...

10 181 ...

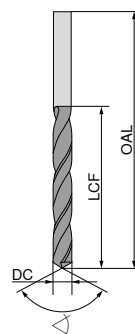
| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | DCONMS <sub>h8</sub><br>mm | LS<br>mm | EUR<br>T2 |     | EUR<br>T2 |     |
|------------------------|-----------|-----------|----------------------------|----------|-----------|-----|-----------|-----|
| 5,0                    | 82        | 44        | 6                          | 38       | 69,64     | 050 | 97,58     | 050 |
| 5,5                    | 82        | 44        | 6                          | 38       | 70,51     | 055 | 99,33     | 055 |
| 6,0                    | 82        | 44        | 6                          | 38       | 66,69     | 060 | 93,66     | 060 |
| 6,5                    | 91        | 53        | 8                          | 38       | 74,12     | 065 | 103,20    | 065 |
| 6,8                    | 91        | 53        | 8                          | 38       | 75,43     | 068 | 105,60    | 068 |
| 7,0                    | 91        | 53        | 8                          | 38       | 75,43     | 070 | 104,70    | 070 |
| 7,5                    | 91        | 53        | 8                          | 38       | 75,64     | 075 | 106,40    | 075 |
| 7,8                    | 91        | 53        | 8                          | 38       | 77,17     | 078 | 108,80    | 078 |
| 8,0                    | 91        | 53        | 8                          | 38       | 72,81     | 080 | 102,50    | 080 |
| 8,5                    | 103       | 61        | 10                         | 42       | 80,44     | 085 | 113,50    | 085 |
| 9,0                    | 103       | 61        | 10                         | 42       | 81,10     | 090 | 114,60    | 090 |
| 9,5                    | 103       | 61        | 10                         | 42       | 82,74     | 095 | 115,70    | 095 |
| 10,0                   | 103       | 61        | 10                         | 42       | 78,70     | 100 | 110,20    | 100 |
| 10,2                   | 118       | 71        | 12                         | 47       | 88,96     | 102 | 124,50    | 102 |
| 10,5                   | 118       | 71        | 12                         | 47       | 88,96     | 105 | 125,60    | 105 |
| 11,0                   | 118       | 71        | 12                         | 47       | 91,36     | 110 | 127,70    | 110 |
| 11,5                   | 118       | 71        | 12                         | 47       | 94,53     | 115 | 133,20    | 115 |
| 12,0                   | 118       | 71        | 12                         | 47       | 86,56     | 120 | 120,10    | 120 |
| 12,5                   | 124       | 77        | 14                         | 47       | 106,40    | 125 | 151,70    | 125 |
| 13,0                   | 124       | 77        | 14                         | 47       | 108,10    | 130 | 154,00    | 130 |
| 13,5                   | 124       | 77        | 14                         | 47       | 110,20    | 135 | 157,20    | 135 |
| 14,0                   | 124       | 77        | 14                         | 47       | 104,00    | 140 | 148,40    | 140 |
| 14,5                   | 133       | 83        | 16                         | 50       | 128,80    | 145 | 184,50    | 145 |
| 15,0                   | 133       | 83        | 16                         | 50       | 131,00    | 150 | 186,70    | 150 |
| 15,5                   | 133       | 83        | 16                         | 50       | 134,20    | 155 | 189,90    | 155 |
| 16,0                   | 133       | 83        | 16                         | 50       | 125,60    | 160 | 183,40    | 160 |
| 16,5                   | 143       | 93        | 18                         | 50       | 158,30    | 165 | 222,70    | 165 |
| 17,0                   | 143       | 93        | 18                         | 50       | 159,40    | 170 | 229,30    | 170 |
| 17,5                   | 143       | 93        | 18                         | 50       | 163,80    | 175 | 235,80    | 175 |
| 18,0                   | 143       | 93        | 18                         | 50       | 155,00    | 180 | 218,40    | 180 |
| 18,5                   | 153       | 101       | 20                         | 52       | 186,70    | 185 | 263,10    | 185 |
| 19,0                   | 153       | 101       | 20                         | 52       | 188,90    | 190 | 268,50    | 190 |
| 19,5                   | 153       | 101       | 20                         | 52       | 191,00    | 195 | 271,80    | 195 |
| 20,0                   | 153       | 101       | 20                         | 52       | 183,40    | 200 | 259,80    | 200 |

|   |   |   |
|---|---|---|
| P | ● | ● |
| M |   | ○ |
| K | ● | ● |
| N | ○ | ○ |
| S |   |   |
| H |   |   |
| O | ○ | ○ |

→ v<sub>c</sub> strana 49

## Vrtáky v skrutkovici s chladiacimi kanálkami, dielenská norma, dlhé

≤ 10xD



NC

NC

TiAlN

130°  
HSS130°  
HSS

10 223 ...

10 224 ...

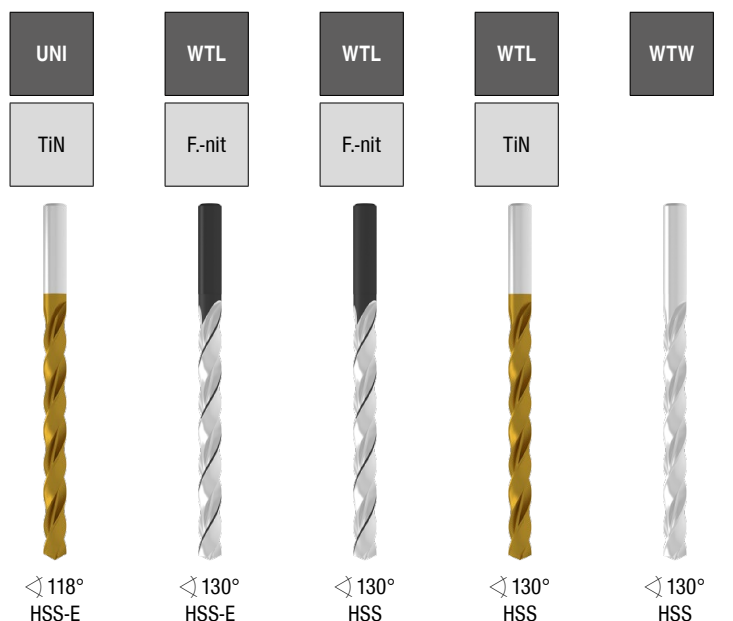
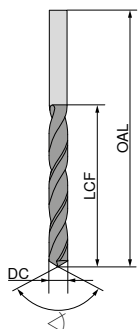
| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | EUR<br>T2 |     | EUR<br>T2 |     |
|------------------------|-----------|-----------|-----------|-----|-----------|-----|
| 3,0                    | 100       | 66        | 110,20    | 030 | 122,30    | 030 |
| 3,3                    | 106       | 69        | 114,60    | 033 | 138,60    | 033 |
| 3,5                    | 112       | 73        | 113,50    | 035 | 136,50    | 035 |
| 3,8                    | 119       | 78        |           |     | 167,00    | 038 |
| 4,0                    | 119       | 78        | 114,60    | 040 | 138,60    | 040 |
| 4,2                    | 119       | 78        | 115,70    | 042 | 140,90    | 042 |
| 4,5                    | 126       | 82        | 115,70    | 045 | 139,70    | 045 |
| 4,8                    | 132       | 87        |           |     | 164,90    | 048 |
| 5,0                    | 132       | 87        | 115,70    | 050 | 140,90    | 050 |
| 5,5                    | 139       | 91        | 119,00    | 055 | 145,10    | 055 |
| 5,8                    | 139       | 91        |           |     | 167,00    | 058 |
| 6,0                    | 139       | 91        | 123,40    | 060 | 149,60    | 060 |
| 6,5                    | 148       | 97        | 132,10    | 065 | 160,50    | 065 |
| 6,8                    | 156       | 102       | 133,20    | 068 | 161,50    | 068 |
| 7,0                    | 156       | 102       | 133,20    | 070 | 161,50    | 070 |
| 7,5                    | 156       | 102       | 138,60    | 075 | 167,00    | 075 |
| 7,8                    | 165       | 109       |           |     | 179,00    | 078 |
| 8,0                    | 165       | 109       | 140,90    | 080 | 170,40    | 080 |
| 8,5                    | 165       | 109       | 145,10    | 085 | 179,00    | 085 |
| 8,8                    | 175       | 115       |           |     | 183,40    | 088 |
| 9,0                    | 175       | 115       | 145,10    | 090 | 183,40    | 090 |
| 9,5                    | 175       | 115       | 149,60    | 095 | 188,90    | 095 |
| 9,8                    | 184       | 121       |           |     | 193,20    | 098 |
| 10,0                   | 184       | 121       | 149,60    | 100 | 188,90    | 100 |
| 10,2                   | 184       | 121       | 152,90    | 102 | 193,20    | 102 |
| 10,5                   | 184       | 121       | 152,90    | 105 | 194,40    | 105 |
| 10,8                   | 195       | 128       |           |     | 199,80    | 108 |
| 11,0                   | 195       | 128       | 152,90    | 110 | 194,40    | 110 |
| 11,5                   | 195       | 128       | 157,20    | 115 | 198,70    | 115 |
| 11,8                   | 205       | 134       |           |     | 231,30    | 118 |
| 12,0                   | 205       | 134       | 158,30    | 120 | 203,00    | 120 |
| 12,8                   | 205       | 134       |           |     | 243,40    | 128 |
| 13,0                   | 205       | 134       | 164,90    | 130 | 212,90    | 130 |

|   |   |   |
|---|---|---|
| P | ○ | ○ |
| M |   | ○ |
| K | ● | ● |
| N | ○ | ○ |
| S |   |   |
| H |   |   |
| O | ○ | ○ |

→ v<sub>c</sub> strana 50

## Vrtáky v skrutkovici, DIN 340, dlhé

≤ 10xD



|                        |           |           | UNI<br>TiN<br>118°<br>HSS-E |     | WTL<br>F-nit<br>130°<br>HSS-E |                   | WTL<br>F-nit<br>130°<br>HSS |                   | WTL<br>TiN<br>130°<br>HSS |     | WTW<br>130°<br>HSS |     |
|------------------------|-----------|-----------|-----------------------------|-----|-------------------------------|-------------------|-----------------------------|-------------------|---------------------------|-----|--------------------|-----|
|                        |           |           | 10 270 ...                  |     | 10 225 ...                    |                   | 10 215 ...                  |                   | 10 210 ...                |     | 10 200 ...         |     |
| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | EUR<br>T2                   |     | EUR<br>T2                     |                   | EUR<br>T2                   |                   | EUR<br>T2                 |     | EUR<br>T2          |     |
| 1,0                    | 56        | 33        | 5,51                        | 010 | 7,95                          | 010 <sup>1)</sup> | 5,98                        | 010 <sup>1)</sup> | 13,42                     | 010 | 5,75               | 010 |
| 1,1                    | 60        | 37        | 6,21                        | 011 | 9,88                          | 011 <sup>1)</sup> | 6,58                        | 011 <sup>1)</sup> | 14,30                     | 011 | 6,25               | 011 |
| 1,2                    | 65        | 41        | 6,90                        | 012 | 9,36                          | 012 <sup>1)</sup> | 6,11                        | 012 <sup>1)</sup> | 13,75                     | 012 | 5,86               | 012 |
| 1,3                    | 65        | 41        | 6,79                        | 013 | 9,22                          | 013 <sup>1)</sup> | 6,24                        | 013 <sup>1)</sup> | 14,09                     | 013 | 5,54               | 013 |
| 1,4                    | 70        | 45        | 6,71                        | 014 | 8,80                          | 014 <sup>1)</sup> | 5,79                        | 014 <sup>1)</sup> | 12,88                     | 014 | 5,17               | 014 |
| 1,5                    | 70        | 45        | 5,80                        | 015 | 7,66                          | 015 <sup>1)</sup> | 4,97                        | 015 <sup>1)</sup> | 11,02                     | 015 | 5,19               | 015 |
| 1,6                    | 76        | 50        | 6,90                        | 016 | 8,53                          | 016 <sup>1)</sup> | 4,78                        | 016 <sup>1)</sup> | 10,73                     | 016 | 4,77               | 016 |
| 1,7                    | 76        | 50        | 7,50                        | 017 | 8,31                          | 017 <sup>1)</sup> | 4,76                        | 017 <sup>1)</sup> | 10,73                     | 017 | 4,68               | 017 |
| 1,8                    | 80        | 53        | 7,20                        | 018 | 8,31                          | 018 <sup>1)</sup> | 4,72                        | 018 <sup>1)</sup> | 10,39                     | 018 | 4,68               | 018 |
| 1,9                    | 80        | 53        | 7,70                        | 019 | 7,79                          | 019 <sup>1)</sup> | 4,64                        | 019 <sup>1)</sup> | 10,25                     | 019 | 4,66               | 019 |
| 2,0                    | 85        | 56        | 5,72                        | 020 | 5,92                          | 020 <sup>1)</sup> | 4,36                        | 020 <sup>1)</sup> | 9,80                      | 020 | 3,83               | 020 |
| 2,1                    | 85        | 56        | 6,60                        | 021 | 7,30                          | 021 <sup>1)</sup> | 5,02                        | 021 <sup>1)</sup> | 11,25                     | 021 | 4,59               | 021 |
| 2,2                    | 90        | 59        | 6,71                        | 022 | 7,46                          | 022 <sup>1)</sup> | 5,12                        | 022 <sup>1)</sup> | 11,46                     | 022 | 4,68               | 022 |
| 2,3                    | 90        | 59        | 6,60                        | 023 | 7,46                          | 023 <sup>1)</sup> | 5,16                        | 023 <sup>1)</sup> | 11,57                     | 023 | 4,68               | 023 |
| 2,4                    | 95        | 62        | 6,12                        | 024 | 7,66                          | 024               | 5,26                        | 024               | 11,90                     | 024 | 4,68               | 024 |
| 2,5                    | 95        | 62        | 5,80                        | 025 | 6,30                          | 025               | 4,53                        | 025               | 10,25                     | 025 | 4,16               | 025 |
| 2,6                    | 95        | 62        | 6,71                        | 026 | 7,66                          | 026               | 5,30                        | 026               | 11,90                     | 026 | 4,68               | 026 |
| 2,7                    | 100       | 66        | 7,11                        | 027 | 7,79                          | 027               | 5,33                        | 027               | 12,01                     | 027 | 4,68               | 027 |
| 2,8                    | 100       | 66        | 6,79                        | 028 | 7,79                          | 028               | 5,35                        | 028               | 12,01                     | 028 | 4,68               | 028 |
| 2,9                    | 100       | 66        | 7,11                        | 029 | 7,79                          | 029               | 5,40                        | 029               | 12,23                     | 029 | 4,68               | 029 |
| 3,0                    | 100       | 66        | 6,30                        | 030 | 6,63                          | 030               | 4,64                        | 030               | 10,39                     | 030 | 4,35               | 030 |
| 3,1                    | 106       | 69        | 7,50                        | 031 | 7,95                          | 031               | 6,20                        | 031               | 13,97                     | 031 | 5,79               | 031 |
| 3,2                    | 106       | 69        | 7,00                        | 032 | 7,79                          | 032               | 5,24                        | 032               | 11,57                     | 032 | 4,66               | 032 |
| 3,3                    | 106       | 69        | 7,41                        | 033 | 8,53                          | 033               | 5,88                        | 033               | 13,10                     | 033 | 5,23               | 033 |
| 3,4                    | 112       | 73        | 7,70                        | 034 | 8,13                          | 034               | 6,24                        | 034               | 14,09                     | 034 | 5,86               | 034 |
| 3,5                    | 112       | 73        | 7,50                        | 035 | 7,79                          | 035               | 5,33                        | 035               | 11,90                     | 035 | 4,91               | 035 |
| 3,6                    | 112       | 73        | 7,80                        | 036 | 8,31                          | 036               | 6,89                        | 036               | 14,96                     | 036 | 6,00               | 036 |
| 3,7                    | 112       | 73        | 7,60                        | 037 | 8,31                          | 037               | 6,40                        | 037               | 14,30                     | 037 | 6,18               | 037 |
| 3,8                    | 119       | 78        | 7,30                        | 038 | 8,53                          | 038               | 6,58                        | 038               | 14,30                     | 038 | 6,25               | 038 |
| 3,9                    | 119       | 78        | 8,20                        | 039 | 8,66                          | 039               | 6,74                        | 039               | 14,51                     | 039 | 6,37               | 039 |
| 4,0                    | 119       | 78        | 8,00                        | 040 | 8,31                          | 040               | 5,81                        | 040               | 12,88                     | 040 | 5,35               | 040 |
| 4,1                    | 119       | 78        | 8,11                        | 041 | 8,80                          | 041               | 6,89                        | 041               | 14,84                     | 041 | 6,63               | 041 |
| 4,2                    | 119       | 78        | 7,80                        | 042 | 9,22                          | 042               | 6,58                        | 042               | 14,30                     | 042 | 5,72               | 042 |
| 4,3                    | 126       | 82        | 8,69                        | 043 | 9,36                          | 043               | 7,35                        | 043               | 16,26                     | 043 | 7,30               | 043 |
| 4,4                    | 126       | 82        | 7,70                        | 044 | 9,56                          | 044               | 7,69                        | 044               | 17,04                     | 044 | 7,46               | 044 |
| 4,5                    | 126       | 82        | 8,20                        | 045 | 9,88                          | 045               | 6,74                        | 045               | 14,74                     | 045 | 6,58               | 045 |
| 4,6                    | 126       | 82        | 7,89                        | 046 | 9,72                          | 046               | 7,69                        | 046               | 17,04                     | 046 | 7,46               | 046 |
| 4,7                    | 126       | 82        | 9,08                        | 047 | 10,24                         | 047               | 7,69                        | 047               | 17,04                     | 047 | 7,66               | 047 |
| 4,8                    | 132       | 87        | 8,89                        | 048 | 10,91                         | 048               | 7,69                        | 048               | 17,04                     | 048 | 7,79               | 048 |
| 4,9                    | 132       | 87        | 9,01                        | 049 | 11,35                         | 049               | 8,01                        | 049               | 17,69                     | 049 | 7,95               | 049 |
| 5,0                    | 132       | 87        | 9,08                        | 050 | 9,88                          | 050               | 7,06                        | 050               | 15,60                     | 050 | 6,27               | 050 |
| 5,1                    | 132       | 87        | 10,11                       | 051 | 11,68                         | 051               | 8,13                        | 051               | 18,13                     | 051 | 8,13               | 051 |

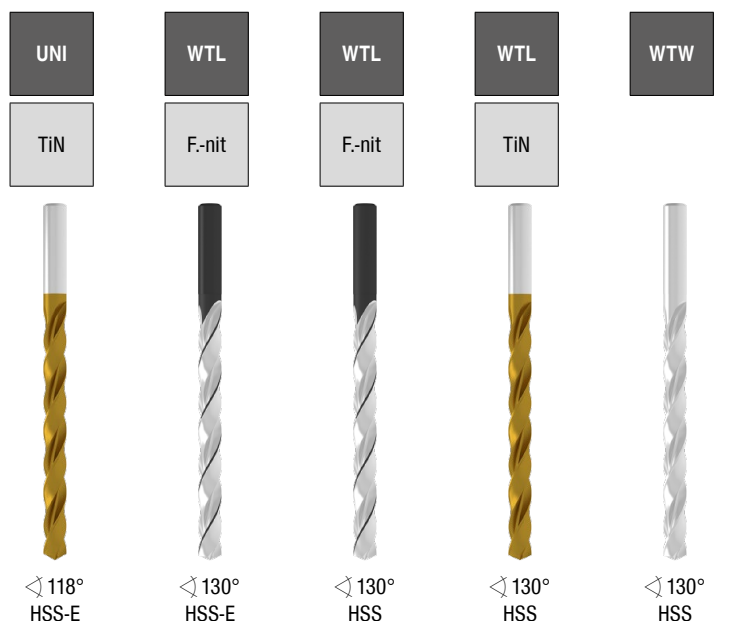
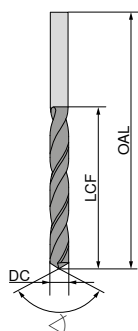
|   |   |   |   |   |
|---|---|---|---|---|
| P | ● | ● | ○ | ○ |
| M | ● | ○ |   |   |
| K | ● | ● | ● | ● |
| N | ○ | ● | ● | ○ |
| S | ○ | ○ |   |   |
| H |   | ○ |   |   |
| O | ○ | ○ | ○ | ○ |

1) bez povrchové úpravy

→ v. strana 50+51

## Vrtáky v skrutkovici, DIN 340, dlhé

≤ 10xD



| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | 10 270 ... |     |  | 10 225 ... |     |  | 10 215 ... |     |  | 10 210 ... |     |  | 10 200 ... |     |  |
|------------------------|-----------|-----------|------------|-----|--|------------|-----|--|------------|-----|--|------------|-----|--|------------|-----|--|
|                        |           |           | EUR<br>T2  |     |  | EUR<br>T2  |     |  | EUR<br>T2  |     |  | EUR<br>T2  |     |  | EUR<br>T2  |     |  |
| 5,2                    | 132       | 87        | 9,90       | 052 |  | 12,01      | 052 |  | 8,64       | 052 |  | 19,21      | 052 |  | 8,53       | 052 |  |
| 5,3                    | 132       | 87        | 10,91      | 053 |  | 12,23      | 053 |  | 8,82       | 053 |  | 19,44      | 053 |  | 8,66       | 053 |  |
| 5,4                    | 139       | 91        | 11,90      | 054 |  | 12,33      | 054 |  | 8,98       | 054 |  | 20,19      | 054 |  | 8,80       | 054 |  |
| 5,5                    | 139       | 91        | 9,50       | 055 |  | 11,79      | 055 |  | 8,30       | 055 |  | 18,66      | 055 |  | 8,13       | 055 |  |
| 5,6                    | 139       | 91        | 12,44      | 056 |  | 13,00      | 056 |  | 10,09      | 056 |  | 22,27      | 056 |  | 9,56       | 056 |  |
| 5,7                    | 139       | 91        | 13,86      | 057 |  | 13,10      | 057 |  | 10,39      | 057 |  | 22,81      | 057 |  | 9,72       | 057 |  |
| 5,8                    | 139       | 91        | 12,01      | 058 |  | 13,32      | 058 |  | 10,73      | 058 |  | 23,03      | 058 |  | 10,24      | 058 |  |
| 5,9                    | 139       | 91        | 13,42      | 059 |  | 13,42      | 059 |  | 11,02      | 059 |  | 24,57      | 059 |  | 10,62      | 059 |  |
| 6,0                    | 139       | 91        | 11,46      | 060 |  | 12,23      | 060 |  | 8,64       | 060 |  | 19,21      | 060 |  | 8,31       | 060 |  |
| 6,1                    | 148       | 97        | 13,65      | 061 |  | 14,19      | 061 |  | 11,90      | 061 |  | 25,98      | 061 |  | 12,33      | 061 |  |
| 6,2                    | 148       | 97        | 12,11      | 062 |  | 14,30      | 062 |  | 12,01      | 062 |  | 26,20      | 062 |  | 12,33      | 062 |  |
| 6,3                    | 148       | 97        | 13,65      | 063 |  | 14,51      | 063 |  | 12,23      | 063 |  | 26,42      | 063 |  | 12,56      | 063 |  |
| 6,4                    | 148       | 97        | 12,33      | 064 |  | 15,17      | 064 |  | 13,20      | 064 |  | 28,71      | 064 |  | 13,10      | 064 |  |
| 6,5                    | 148       | 97        | 11,79      | 065 |  | 13,86      | 065 |  | 9,65       | 065 |  | 21,07      | 065 |  | 9,36       | 065 |  |
| 6,6                    | 148       | 97        | 13,75      | 066 |  | 15,50      | 066 |  | 13,75      | 066 |  | 29,80      | 066 |  | 13,32      | 066 |  |
| 6,7                    | 148       | 97        | 14,09      | 067 |  | 15,83      | 067 |  | 14,09      | 067 |  | 30,46      | 067 |  | 13,42      | 067 |  |
| 6,8                    | 156       | 102       | 14,96      | 068 |  | 16,70      | 068 |  | 14,63      | 068 |  | 32,31      | 068 |  | 14,19      | 068 |  |
| 6,9                    | 156       | 102       | 15,60      | 069 |  | 17,79      | 069 |  | 14,84      | 069 |  | 32,64      | 069 |  | 14,30      | 069 |  |
| 7,0                    | 156       | 102       | 14,19      | 070 |  | 15,29      | 070 |  | 11,25      | 070 |  | 24,78      | 070 |  | 11,46      | 070 |  |
| 7,1                    | 156       | 102       | 13,75      | 071 |  | 18,23      | 071 |  | 14,96      | 071 |  |            |     |  | 14,51      | 071 |  |
| 7,2                    | 156       | 102       | 15,60      | 072 |  | 18,78      | 072 |  | 15,60      | 072 |  | 34,38      | 072 |  | 14,84      | 072 |  |
| 7,3                    | 156       | 102       | 16,26      | 073 |  | 18,99      | 073 |  | 15,83      | 073 |  | 34,60      | 073 |  | 15,17      | 073 |  |
| 7,4                    | 156       | 102       | 16,91      | 074 |  | 20,09      | 074 |  | 16,05      | 074 |  | 34,93      | 074 |  | 15,29      | 074 |  |
| 7,5                    | 156       | 102       | 17,14      | 075 |  | 18,23      | 075 |  | 13,97      | 075 |  | 30,12      | 075 |  | 13,86      | 075 |  |
| 7,6                    | 165       | 109       | 18,45      | 076 |  |            |     |  | 16,26      | 076 |  | 35,92      | 076 |  | 15,83      | 076 |  |
| 7,7                    | 165       | 109       | 17,58      | 077 |  | 21,94      | 077 |  | 16,49      | 077 |  |            |     |  | 16,05      | 077 |  |
| 7,8                    | 165       | 109       | 19,21      | 078 |  | 22,38      | 078 |  | 17,04      | 078 |  | 37,12      | 078 |  | 16,26      | 078 |  |
| 7,9                    | 165       | 109       | 18,55      | 079 |  | 22,59      | 079 |  | 17,04      | 079 |  | 37,44      | 079 |  | 16,70      | 079 |  |
| 8,0                    | 165       | 109       | 15,72      | 080 |  | 17,04      | 080 |  | 13,10      | 080 |  | 28,49      | 080 |  | 12,66      | 080 |  |
| 8,1                    | 165       | 109       | 17,24      | 081 |  | 23,58      | 081 |  | 17,24      | 081 |  | 38,42      | 081 |  | 17,14      | 081 |  |
| 8,2                    | 165       | 109       | 18,89      | 082 |  | 23,91      | 082 |  | 17,69      | 082 |  | 38,64      | 082 |  | 17,58      | 082 |  |
| 8,3                    | 165       | 109       | 20,09      | 083 |  | 24,45      | 083 |  | 17,69      | 083 |  | 39,29      | 083 |  | 17,79      | 083 |  |
| 8,4                    | 165       | 109       | 21,50      | 084 |  | 25,11      | 084 |  | 18,66      | 084 |  | 40,27      | 084 |  | 18,23      | 084 |  |
| 8,5                    | 165       | 109       | 18,45      | 085 |  | 21,07      | 085 |  | 17,04      | 085 |  | 37,44      | 085 |  | 16,70      | 085 |  |
| 8,6                    | 175       | 115       | 18,45      | 086 |  | 25,76      | 086 |  | 18,89      | 086 |  | 41,16      | 086 |  | 18,45      | 086 |  |
| 8,7                    | 175       | 115       | 18,55      | 087 |  | 25,98      | 087 |  | 18,89      | 087 |  | 41,48      | 087 |  |            |     |  |
| 8,8                    | 175       | 115       | 18,89      | 088 |  | 26,85      | 088 |  | 19,44      | 088 |  | 42,57      | 088 |  | 18,99      | 088 |  |
| 8,9                    | 175       | 115       | 19,10      | 089 |  | 27,61      | 089 |  | 20,53      | 089 |  | 44,42      | 089 |  | 20,09      | 089 |  |
| 9,0                    | 175       | 115       | 19,32      | 090 |  | 20,73      | 090 |  | 15,72      | 090 |  | 34,60      | 090 |  | 15,72      | 090 |  |
| 9,1                    | 175       | 115       | 19,32      | 091 |  | 28,38      | 091 |  | 21,28      | 091 |  | 46,39      | 091 |  | 21,07      | 091 |  |
| 9,2                    | 175       | 115       | 19,32      | 092 |  | 30,12      | 092 |  | 24,57      | 092 |  |            |     |  | 22,59      | 092 |  |
| 9,3                    | 175       | 115       | 19,32      | 093 |  | 30,79      | 093 |  | 24,78      | 093 |  |            |     |  | 23,58      | 093 |  |

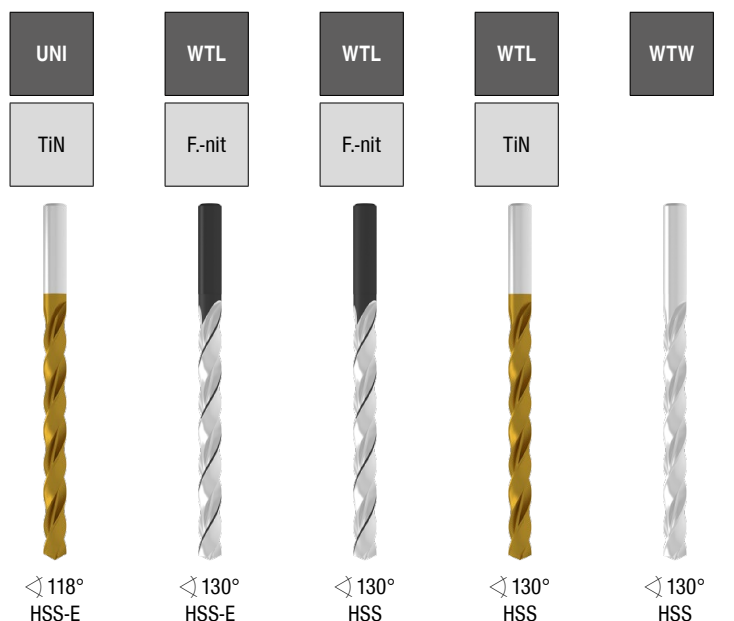
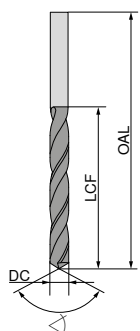
|   |   |   |   |   |
|---|---|---|---|---|
| P | ● | ● | ○ | ○ |
| M | ● | ○ |   |   |
| K | ● |   | ● | ● |
| N | ○ | ● | ● | ○ |
| S | ○ | ○ |   |   |
| H |   | ○ |   |   |
| O | ○ | ○ | ○ | ○ |

1) bez povrchové úpravy

→ v. strana 50+51

## Vrtáky v skrutkovici, DIN 340, dlhé

≤ 10xD



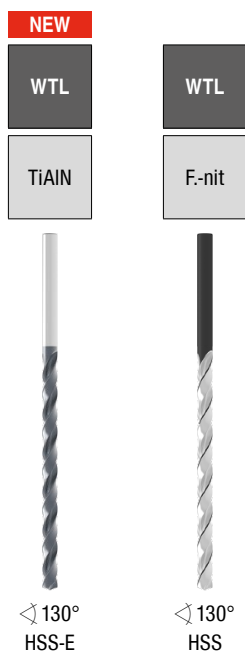
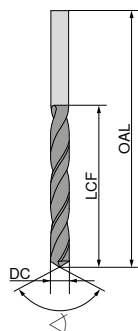
| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | 10 270 ... |     | 10 225 ... |     | 10 215 ... |     | 10 210 ... |     | 10 200 ... |     |
|------------------------|-----------|-----------|------------|-----|------------|-----|------------|-----|------------|-----|------------|-----|
|                        |           |           | EUR<br>T2  |     | EUR<br>T2  |     | EUR<br>T2  |     | EUR<br>T2  |     | EUR<br>T2  |     |
| 9,4                    | 175       | 115       | 19,32      | 094 | 31,11      | 094 |            |     |            |     | 24,78      | 094 |
| 9,5                    | 175       | 115       | 19,32      | 095 | 27,40      | 095 | 23,91      | 095 | 52,28      | 095 | 23,58      | 095 |
| 9,6                    | 184       | 121       | 20,53      | 096 |            |     | 28,71      | 096 |            |     | 29,25      | 096 |
| 9,7                    | 184       | 121       | 21,50      | 097 | 38,09      | 097 | 30,79      | 097 | 67,78      | 097 |            |     |
| 9,8                    | 184       | 121       | 23,03      | 098 | 38,09      | 098 | 32,31      | 098 | 71,17      | 098 | 30,79      | 098 |
| 9,9                    | 184       | 121       | 25,00      | 099 | 38,09      | 099 | 34,38      | 099 | 76,20      | 099 |            |     |
| 10,0                   | 184       | 121       | 27,07      | 100 | 31,11      | 100 | 19,21      | 100 | 41,92      | 100 | 18,23      | 100 |
| 10,1                   | 184       | 121       | 29,69      | 101 |            |     | 42,35      | 101 | 92,90      | 101 |            |     |
| 10,2                   | 184       | 121       | 31,55      | 102 | 40,17      | 102 | 34,05      | 102 | 74,99      | 102 | 33,84      | 102 |
| 10,3                   | 184       | 121       | 34,17      | 103 |            |     | 50,97      | 103 |            |     | 53,05      | 103 |
| 10,4                   | 184       | 121       | 34,17      | 104 |            |     | 61,24      | 104 |            |     | 55,34      | 104 |
| 10,5                   | 184       | 121       | 34,60      | 105 | 42,67      | 105 | 34,38      | 105 | 76,20      | 105 | 34,93      | 105 |
| 10,6                   | 184       | 121       |            |     |            |     |            |     | 127,70     | 106 |            |     |
| 10,8                   | 195       | 128       |            |     | 48,03      | 108 | 50,33      | 108 |            |     | 48,25      | 108 |
| 11,0                   | 195       | 128       | 41,16      | 110 | 47,15      | 110 | 28,49      | 110 | 62,44      | 110 | 28,38      | 110 |
| 11,5                   | 195       | 128       | 41,58      | 115 | 57,63      | 115 | 47,81      | 115 | 104,30     | 115 | 46,39      | 115 |
| 11,6                   | 195       | 128       |            |     |            |     |            |     |            |     | 62,44      | 116 |
| 11,8                   | 195       | 128       |            |     | 63,64      | 118 | 57,63      | 118 |            |     | 55,89      | 118 |
| 12,0                   | 205       | 134       | 42,02      | 120 | 58,07      | 120 | 34,93      | 120 | 77,50      | 120 | 35,69      | 120 |
| 12,2                   | 205       | 134       |            |     |            |     |            |     |            |     | 65,50      | 122 |
| 12,3                   | 205       | 134       |            |     |            |     |            |     |            |     | 55,89      | 123 |
| 12,5                   | 205       | 134       | 46,06      | 125 |            |     | 36,24      | 125 | 79,25      | 125 | 36,78      | 125 |
| 13,0                   | 205       | 134       | 50,10      | 130 |            |     | 37,67      | 130 | 83,29      | 130 | 39,95      | 130 |
| 13,5                   | 214       | 140       | 50,97      | 135 |            |     | 70,51      | 135 |            |     |            |     |
| 14,0                   | 214       | 140       | 53,05      | 140 |            |     | 63,20      | 140 | 144,10     | 140 | 66,48      | 140 |
| P                      |           |           | ●          |     | ●          |     | ○          |     | ○          |     |            |     |
| M                      |           |           | ●          |     | ○          |     |            |     |            |     |            |     |
| K                      |           |           | ●          |     | ●          |     | ●          |     | ●          |     |            |     |
| N                      |           |           | ○          |     | ●          |     | ●          |     | ○          |     | ●          |     |
| S                      |           |           | ○          |     | ○          |     |            |     |            |     |            |     |
| H                      |           |           |            |     | ○          |     |            |     |            |     |            |     |
| O                      |           |           | ○          |     | ○          |     | ○          |     | ○          |     |            |     |

1) bez povrchové úpravy

→ v<sub>c</sub> strana 50+51

## Vrtáky v skrutkovici, DIN 1869, velmi dlouhé, rad 1

&gt; 10xD



| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | 10 236 ...<br>EUR<br>T2 | 10 235 ...<br>EUR<br>T2 |                   |
|------------------------|-----------|-----------|-------------------------|-------------------------|-------------------|
| 2,0                    | 125       | 85        |                         | 8,80                    | 020 <sup>1)</sup> |
| 2,1                    | 125       | 85        |                         | 10,91                   | 021 <sup>1)</sup> |
| 2,2                    | 135       | 90        |                         | 10,91                   | 022 <sup>1)</sup> |
| 2,3                    | 135       | 90        |                         | 10,91                   | 023 <sup>1)</sup> |
| 2,4                    | 140       | 95        |                         | 11,46                   | 024               |
| 2,5                    | 140       | 95        |                         | 8,80                    | 025               |
| 2,6                    | 140       | 95        |                         | 11,46                   | 026               |
| 2,7                    | 150       | 100       |                         | 12,01                   | 027               |
| 2,8                    | 150       | 100       |                         | 12,01                   | 028               |
| 2,9                    | 150       | 100       |                         | 12,01                   | 029               |
| 3,0                    | 150       | 100       | 19,94                   | 10,03                   | 030               |
| 3,1                    | 155       | 105       |                         | 12,56                   | 031               |
| 3,2                    | 155       | 105       |                         | 12,56                   | 032               |
| 3,3                    | 155       | 105       | 31,74                   | 12,56                   | 033               |
| 3,4                    | 165       | 115       |                         | 12,66                   | 034               |
| 3,5                    | 165       | 115       | 22,70                   | 10,03                   | 035               |
| 3,6                    | 165       | 115       |                         | 12,66                   | 036               |
| 3,7                    | 165       | 115       |                         | 14,09                   | 037               |
| 3,8                    | 175       | 120       |                         | 14,09                   | 038               |
| 3,9                    | 175       | 120       |                         | 14,09                   | 039               |
| 4,0                    | 175       | 120       | 22,23                   | 10,24                   | 040               |
| 4,1                    | 175       | 120       |                         | 14,09                   | 041               |
| 4,2                    | 175       | 120       | 32,73                   | 14,30                   | 042               |
| 4,3                    | 185       | 125       |                         | 15,50                   | 043               |
| 4,4                    | 185       | 125       |                         | 15,50                   | 044               |
| 4,5                    | 185       | 125       | 24,98                   | 11,13                   | 045               |
| 4,6                    | 185       | 125       |                         | 15,50                   | 046               |
| 4,7                    | 185       | 125       |                         | 15,94                   | 047               |
| 4,8                    | 195       | 135       |                         | 16,26                   | 048               |
| 4,9                    | 195       | 135       |                         | 17,04                   | 049               |
| 5,0                    | 195       | 135       | 18,64                   | 11,79                   | 050               |
| 5,1                    | 195       | 135       |                         | 17,79                   | 051               |
| 5,2                    | 195       | 135       |                         | 18,23                   | 052               |
| 5,3                    | 195       | 135       |                         | 18,23                   | 053               |
| 5,4                    | 205       | 140       |                         | 18,23                   | 054               |
| 5,5                    | 205       | 140       | 26,40                   | 13,00                   | 055               |
| 5,6                    | 205       | 140       |                         | 18,23                   | 056               |
| 5,7                    | 205       | 140       |                         | 18,45                   | 057               |
| 5,8                    | 205       | 140       |                         | 18,78                   | 058               |
| 5,9                    | 205       | 140       |                         | 18,78                   | 059               |
| 6,0                    | 205       | 140       | 27,97                   | 13,00                   | 060               |
| 6,1                    | 215       | 150       |                         | 20,09                   | 061               |
| 6,2                    | 215       | 150       |                         | 19,76                   | 062               |
| 6,3                    | 215       | 150       |                         | 21,07                   | 063               |
| 6,4                    | 215       | 150       |                         | 21,94                   | 064               |
| 6,5                    | 215       | 150       | 30,08                   | 17,79                   | 065               |
| 6,6                    | 215       | 150       |                         | 21,94                   | 066               |
| 6,7                    | 215       | 150       |                         | 23,25                   | 067               |

| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | 10 236 ...<br>EUR<br>T2 | 10 235 ...<br>EUR<br>T2 |     |
|------------------------|-----------|-----------|-------------------------|-------------------------|-----|
| 6,8                    | 225       | 155       | 28,33                   | 22,93                   | 068 |
| 6,9                    | 225       | 155       |                         | 23,91                   | 069 |
| 7,0                    | 225       | 155       | 25,88                   | 18,45                   | 070 |
| 7,1                    | 225       | 155       |                         | 26,85                   | 071 |
| 7,3                    | 225       | 155       |                         | 26,85                   | 073 |
| 7,4                    | 225       | 155       |                         | 26,85                   | 074 |
| 7,5                    | 225       | 155       | 28,89                   | 20,73                   | 075 |
| 7,7                    | 240       | 165       |                         | 28,71                   | 077 |
| 7,8                    | 240       | 165       |                         | 30,12                   | 078 |
| 7,9                    | 240       | 165       |                         | 30,79                   | 079 |
| 8,0                    | 240       | 165       | 28,60                   | 22,93                   | 080 |
| 8,1                    | 240       | 165       |                         | 35,37                   | 081 |
| 8,2                    | 240       | 165       |                         | 35,37                   | 082 |
| 8,3                    | 240       | 165       |                         | 35,37                   | 083 |
| 8,4                    | 240       | 165       |                         | 37,12                   | 084 |
| 8,5                    | 240       | 165       | 36,80                   | 29,57                   | 085 |
| 8,6                    | 250       | 175       |                         | 37,87                   | 086 |
| 8,7                    | 250       | 175       |                         | 39,95                   | 087 |
| 8,8                    | 250       | 175       |                         | 41,36                   | 088 |
| 9,0                    | 250       | 175       | 41,09                   | 31,55                   | 090 |
| 9,2                    | 250       | 175       |                         | 46,94                   | 092 |
| 9,4                    | 250       | 175       |                         | 50,33                   | 094 |
| 9,5                    | 250       | 175       | 41,35                   | 36,45                   | 095 |
| 9,6                    | 265       | 185       |                         | 51,74                   | 096 |
| 9,7                    | 265       | 185       |                         | 51,74                   | 097 |
| 9,8                    | 265       | 185       |                         | 52,40                   | 098 |
| 9,9                    | 265       | 185       |                         | 52,40                   | 099 |
| 10,0                   | 265       | 185       | 46,62                   | 32,64                   | 100 |
| 10,2                   | 265       | 185       | 68,33                   |                         |     |
| 10,5                   | 265       | 185       |                         | 58,07                   | 105 |
| 11,0                   | 280       | 195       |                         | 43,45                   | 110 |
| 11,5                   | 280       | 195       |                         | 53,37                   | 115 |
| 12,0                   | 295       | 205       |                         | 49,55                   | 120 |
| 12,5                   | 295       | 205       |                         | 60,80                   | 125 |
| 13,0                   | 295       | 205       |                         | 60,26                   | 130 |

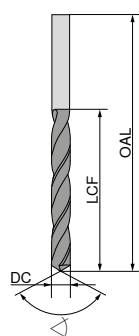
|   |   |   |
|---|---|---|
| P | • | • |
| M |   |   |
| K | • | • |
| N | • | • |
| S |   |   |
| H |   |   |
| O | ○ | ○ |

1) bez povrchové úpravy

→ v<sub>c</sub> strana 52

Vrtáky v skrutkovici, DIN 1869,  
velmi dlhé, rad 2Vrtáky v skrutkovici, DIN 1869,  
velmi dlhé, rad 3

&gt; 10xD

NEW  
WTL  
TiAlN130°  
HSS-EWTL  
F-nit130°  
HSS

10 246 ...

EUR  
T2

10 245 ...

EUR  
T2

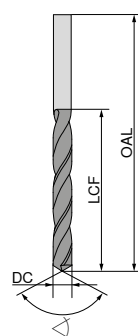
| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm |       |       |
|------------------------|-----------|-----------|-------|-------|
| 2,0                    | 160       | 110       |       |       |
| 2,5                    | 180       | 120       |       |       |
| 3,0                    | 190       | 130       |       |       |
| 3,5                    | 210       | 145       | 26,87 | 03000 |
| 4,0                    | 220       | 150       | 31,51 | 03500 |
| 4,5                    | 235       | 160       | 28,24 | 04000 |
| 5,0                    | 245       | 170       | 13,86 | 035   |
| 5,5                    | 260       | 180       | 14,63 | 040   |
| 6,0                    | 260       | 180       | 15,50 | 045   |
| 6,5                    | 275       | 190       | 18,99 | 055   |
| 7,0                    | 290       | 200       | 38,59 | 06000 |
| 7,5                    | 290       | 200       | 21,28 | 065   |
| 8,0                    | 305       | 210       | 23,58 | 070   |
| 8,5                    | 305       | 210       | 27,61 | 075   |
| 9,0                    | 320       | 220       | 41,57 | 07500 |
| 9,5                    | 320       | 220       | 45,92 | 08000 |
| 10,0                   | 340       | 235       | 43,12 | 085   |
| 10,2                   | 340       | 235       | 42,02 | 090   |
| 10,5                   | 340       | 235       | 49,99 | 09000 |
| 11,0                   | 365       | 250       | 52,06 | 09500 |
| 11,5                   | 365       | 250       | 48,90 | 095   |
| 12,0                   | 375       | 260       | 59,36 | 10000 |
| 12,5                   | 375       | 260       | 44,31 | 100   |
| 13,0                   | 375       | 260       | 66,92 | 10200 |
|                        |           |           | 64,29 | 105   |
|                        |           |           | 62,76 | 110   |
|                        |           |           | 74,22 | 115   |
|                        |           |           | 72,04 | 120   |
|                        |           |           | 72,04 | 125   |
|                        |           |           | 73,68 | 130   |

|   |   |   |
|---|---|---|
| P | • | • |
| M |   |   |
| K | • | • |
| N | • | • |
| S |   |   |
| H |   |   |
| O | ○ | ○ |

1) bez povrchové úpravy

→ v<sub>c</sub> strana 52

&gt; 10xD

NEW  
WTL  
TiAlN130°  
HSS-EWTL  
F-nit130°  
HSS

10 256 ...

EUR  
T2

10 255 ...

EUR  
T2

| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm |       |       |
|------------------------|-----------|-----------|-------|-------|
| 2,5                    | 225       | 150       |       |       |
| 3,0                    | 240       | 160       |       |       |
| 3,5                    | 265       | 180       |       |       |
| 4,0                    | 280       | 190       |       |       |
| 4,5                    | 295       | 200       |       |       |
| 5,0                    | 315       | 210       | 36,70 | 04000 |
| 5,5                    | 330       | 225       |       |       |
| 6,0                    | 330       | 225       | 41,53 | 05000 |
| 6,5                    | 350       | 235       | 47,84 | 06000 |
| 7,0                    | 370       | 250       |       |       |
| 7,5                    | 370       | 250       |       |       |
| 8,0                    | 390       | 265       |       |       |
| 8,5                    | 390       | 265       | 56,78 | 08000 |
| 9,0                    | 410       | 280       |       |       |
| 9,5                    | 410       | 280       |       |       |
| 10,0                   | 430       | 295       |       |       |
| 10,5                   | 430       | 295       | 77,94 | 10000 |
| 11,0                   | 455       | 310       |       |       |
| 11,5                   | 455       | 310       |       |       |
| 12,0                   | 480       | 330       |       |       |
| 12,5                   | 480       | 330       |       |       |
| 13,0                   | 480       | 330       |       |       |

|   |   |   |
|---|---|---|
| P | • | • |
| M |   |   |
| K | • | • |
| N | • | • |
| S |   |   |
| H |   |   |
| O | ○ | ○ |

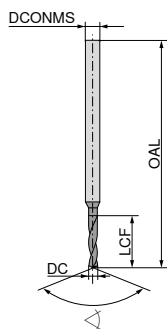
→ v<sub>c</sub> strana 52

## Minivrtáky DIN 1899

- ▲ štvorplochý výbrus
- ▲ so zosilnenou stopkou

## Rozsah dodávky:

- ▲ balenie po 5 kusoch
- ▲ cena za kus



118°  
HSS-E-PM

10 103 ...

| DC <sub>-0,004</sub><br>mm | OAL<br>mm | LCF<br>mm | DCONMS <sub>h8</sub><br>mm | EUR<br>T2 |       |
|----------------------------|-----------|-----------|----------------------------|-----------|-------|
| 0,15                       | 25        | 0,8       | 1,0                        | 6,42      | 00150 |
| 0,20                       | 25        | 1,5       | 1,0                        | 5,15      | 00200 |
| 0,25                       | 25        | 1,9       | 1,0                        | 3,51      | 00250 |
| 0,30                       | 25        | 1,9       | 1,0                        | 4,08      | 00300 |
| 0,35                       | 25        | 2,4       | 1,0                        | 3,63      | 00350 |
| 0,40                       | 25        | 3,0       | 1,0                        | 3,63      | 00400 |
| 0,45                       | 25        | 3,0       | 1,0                        | 3,69      | 00450 |
| 0,50                       | 25        | 3,4       | 1,0                        | 3,63      | 00500 |
| 0,55                       | 25        | 3,9       | 1,0                        | 3,69      | 00550 |
| 0,60                       | 25        | 3,9       | 1,0                        | 3,67      | 00600 |
| 0,65                       | 25        | 4,2       | 1,0                        | 3,63      | 00650 |
| 0,70                       | 25        | 4,8       | 1,0                        | 3,38      | 00700 |
| 0,75                       | 25        | 4,8       | 1,0                        | 3,43      | 00750 |
| 0,80                       | 25        | 5,3       | 1,5                        | 3,77      | 00800 |
| 0,85                       | 25        | 5,3       | 1,5                        | 3,83      | 00850 |
| 0,90                       | 25        | 6,0       | 1,5                        | 3,83      | 00900 |
| 0,95                       | 25        | 6,0       | 1,5                        | 3,85      | 00950 |
| 1,00                       | 25        | 6,8       | 1,5                        | 3,85      | 01000 |
| 1,05                       | 25        | 6,8       | 1,5                        | 3,83      | 01050 |
| 1,10                       | 25        | 7,6       | 1,5                        | 3,94      | 01100 |
| 1,15                       | 25        | 7,6       | 1,5                        | 3,94      | 01150 |
| 1,20                       | 25        | 8,5       | 1,5                        | 3,85      | 01200 |
| 1,25                       | 25        | 8,5       | 1,5                        | 3,83      | 01250 |
| 1,30                       | 25        | 8,5       | 1,5                        | 3,97      | 01300 |
| 1,35                       | 25        | 9,5       | 1,5                        | 3,94      | 01350 |
| 1,40                       | 25        | 9,5       | 1,5                        | 3,85      | 01400 |
| 1,45                       | 25        | 9,5       | 1,5                        | 3,83      | 01450 |

|   |   |
|---|---|
| P | ● |
| M | ○ |
| K | ● |
| N | ● |
| S | ○ |
| H | ○ |
| O | ○ |

→ v<sub>c</sub> strana 54

## Vrtáky v skrutkovici, dielenská norma, krátke

≤ 3xD



130°  
HSS-E

10 285 ...

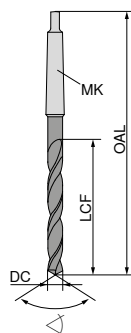
| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | MK | EUR<br>T2 |     |
|------------------------|-----------|-----------|----|-----------|-----|
| 10,0                   | 138       | 57        | 1  | 39,73     | 100 |
| 10,5                   | 138       | 57        | 1  | 43,12     | 105 |
| 11,0                   | 142       | 61        | 1  | 35,14     | 110 |
| 11,5                   | 142       | 61        | 1  | 46,06     | 115 |
| 12,0                   | 147       | 66        | 1  | 40,07     | 120 |
| 12,5                   | 147       | 66        | 1  | 43,12     | 125 |
| 13,0                   | 147       | 66        | 1  | 41,70     | 130 |
| 13,5                   | 168       | 70        | 2  | 53,17     | 135 |
| 14,0                   | 168       | 70        | 2  | 52,94     | 140 |
| 14,5                   | 172       | 74        | 2  | 56,66     | 145 |
| 15,0                   | 172       | 74        | 2  | 55,13     | 150 |
| 15,5                   | 176       | 78        | 2  | 82,74     | 155 |
| 16,0                   | 176       | 78        | 2  | 53,17     | 160 |
| 16,5                   | 179       | 81        | 2  | 84,05     | 165 |
| 17,0                   | 179       | 81        | 2  | 55,89     | 170 |
| 17,5                   | 183       | 85        | 2  | 88,09     | 175 |
| 18,0                   | 183       | 85        | 2  | 59,27     | 180 |
| 18,5                   | 186       | 88        | 2  | 88,73     | 185 |
| 19,0                   | 186       | 88        | 2  | 64,84     | 190 |
| 19,5                   | 212       | 91        | 3  | 105,10    | 195 |
| 20,0                   | 212       | 91        | 3  | 75,43     | 200 |
| 21,0                   | 216       | 95        | 3  | 84,82     | 210 |
| 22,0                   | 219       | 98        | 3  | 88,73     | 220 |
| 23,0                   | 222       | 101       | 3  | 94,75     | 230 |
| 24,0                   | 225       | 104       | 3  | 97,04     | 240 |
| 25,0                   | 225       | 104       | 3  | 101,10    | 250 |
| 26,0                   | 256       | 107       | 4  | 141,90    | 260 |
| 27,0                   | 259       | 110       | 4  | 149,60    | 270 |
| 28,0                   | 259       | 110       | 4  | 152,90    | 280 |
| 30,0                   | 263       | 114       | 4  | 167,00    | 300 |

|   |   |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ○ |
| S | ○ |
| H | ○ |
| O | ○ |

→ v<sub>c</sub> strana 47

## Vrtáky v skrutkovici, DIN 345

≤ 5xD

N  
vap.MK  
118°  
HSS

WTL

MK  
130°  
HSS-E

|                        |           |           |    | 10 265 ... |     | 10 280 ... |                   |
|------------------------|-----------|-----------|----|------------|-----|------------|-------------------|
| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | MK | EUR<br>T2  |     | EUR<br>T2  |                   |
| 10,00                  | 168       | 87        | 1  | 16,26      | 100 | 38,53      | 100 <sup>1)</sup> |
| 10,20                  | 168       | 87        | 1  | 18,89      | 102 | 39,95      | 102 <sup>1)</sup> |
| 10,50                  | 168       | 87        | 1  | 17,04      | 105 | 39,95      | 105 <sup>1)</sup> |
| 10,80                  | 175       | 94        | 1  | 22,38      | 108 | 43,76      | 108 <sup>1)</sup> |
| 11,00                  | 175       | 94        | 1  | 17,79      | 110 | 41,81      | 110 <sup>1)</sup> |
| 11,20                  | 175       | 94        | 1  | 23,79      | 112 |            |                   |
| 11,50                  | 175       | 94        | 1  | 20,09      | 115 | 50,76      | 115 <sup>1)</sup> |
| 11,80                  | 175       | 94        | 1  | 25,43      | 118 |            |                   |
| 12,00                  | 182       | 101       | 1  | 18,33      | 120 | 43,76      | 120 <sup>1)</sup> |
| 12,20                  | 182       | 101       | 1  | 25,98      | 122 | 47,92      | 122 <sup>1)</sup> |
| 12,50                  | 182       | 101       | 1  | 19,10      | 125 | 45,62      | 125 <sup>1)</sup> |
| 12,80                  | 182       | 101       | 1  | 26,20      | 128 |            |                   |
| 13,00                  | 182       | 101       | 1  | 19,76      | 130 | 49,23      | 130 <sup>1)</sup> |
| 13,20                  | 182       | 101       | 1  | 26,97      | 132 |            |                   |
| 13,50                  | 189       | 108       | 1  | 22,59      | 135 | 58,29      | 135 <sup>1)</sup> |
| 13,80                  | 189       | 108       | 1  | 28,38      | 138 |            |                   |
| 14,00                  | 189       | 108       | 1  | 20,95      | 140 | 52,94      | 140 <sup>1)</sup> |
| 14,25                  | 212       | 114       | 2  | 31,55      | 142 | 78,59      | 142 <sup>1)</sup> |
| 14,50                  | 212       | 114       | 2  | 22,17      | 145 | 61,67      | 145 <sup>1)</sup> |
| 14,75                  | 212       | 114       | 2  | 33,84      | 147 |            |                   |
| 15,00                  | 212       | 114       | 2  | 23,25      | 150 | 63,20      | 150 <sup>1)</sup> |
| 15,25                  | 218       | 120       | 2  | 31,11      | 152 | 80,66      | 152 <sup>1)</sup> |
| 15,50                  | 218       | 120       | 2  | 25,11      | 155 | 59,81      | 155 <sup>1)</sup> |
| 15,75                  | 218       | 120       | 2  | 28,38      | 157 | 67,14      | 157 <sup>1)</sup> |
| 16,00                  | 218       | 120       | 2  | 25,11      | 160 | 65,50      | 160 <sup>1)</sup> |
| 16,25                  | 223       | 125       | 2  | 38,32      | 162 |            |                   |
| 16,50                  | 223       | 125       | 2  | 27,17      | 165 | 67,14      | 165 <sup>2)</sup> |
| 16,75                  | 223       | 125       | 2  | 31,11      | 167 |            |                   |
| 17,00                  | 223       | 125       | 2  | 28,06      | 170 | 63,20      | 170 <sup>2)</sup> |
| 17,25                  | 228       | 130       | 2  | 35,14      | 172 | 74,12      | 172 <sup>2)</sup> |
| 17,50                  | 228       | 130       | 2  | 28,60      | 175 | 69,64      | 175 <sup>2)</sup> |
| 17,75                  | 228       | 130       | 2  | 35,47      | 177 | 75,53      | 177 <sup>2)</sup> |
| 18,00                  | 228       | 130       | 2  | 30,34      | 180 | 71,61      | 180 <sup>2)</sup> |
| 18,25                  | 233       | 135       | 2  | 36,45      | 182 |            |                   |
| 18,50                  | 233       | 135       | 2  | 32,64      | 185 | 69,64      | 185 <sup>2)</sup> |
| 18,75                  | 233       | 135       | 2  | 38,32      | 187 |            |                   |
| 19,00                  | 233       | 135       | 2  | 32,41      | 190 | 74,12      | 190 <sup>2)</sup> |
| 19,25                  | 238       | 140       | 2  | 40,72      | 192 |            |                   |
| 19,50                  | 238       | 140       | 2  | 37,54      | 195 |            |                   |
| 19,75                  | 238       | 140       | 2  | 42,57      | 197 |            |                   |
| 20,00                  | 238       | 140       | 2  | 34,60      | 200 | 79,69      | 200 <sup>2)</sup> |
| 20,25                  | 243       | 145       | 2  | 46,61      | 202 |            |                   |
| 20,50                  | 243       | 145       | 2  | 36,68      | 205 |            |                   |
| 20,75                  | 243       | 145       | 2  | 47,05      | 207 |            |                   |
| 21,00                  | 243       | 145       | 2  | 39,08      | 210 | 94,42      | 210 <sup>2)</sup> |
| 21,25                  | 248       | 150       | 2  | 48,46      | 212 |            |                   |
| 21,50                  | 248       | 150       | 2  | 44,65      | 215 |            |                   |
| 21,75                  | 248       | 150       | 2  | 50,76      | 217 |            |                   |
| 22,00                  | 248       | 150       | 2  | 43,56      | 220 | 101,50     | 220 <sup>2)</sup> |
| 22,25                  | 248       | 150       | 2  | 52,07      | 222 |            |                   |
| 22,50                  | 253       | 155       | 2  | 47,05      | 225 | 124,50     | 225 <sup>2)</sup> |

|                        |           |           |    | 10 265 ... |     | 10 280 ... |                   |
|------------------------|-----------|-----------|----|------------|-----|------------|-------------------|
| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | MK | EUR<br>T2  |     | EUR<br>T2  |                   |
| 22,75                  | 253       | 155       | 2  | 53,37      | 227 |            |                   |
| 23,00                  | 253       | 155       | 2  | 51,09      | 230 | 117,90     | 230 <sup>2)</sup> |
| 23,50                  | 276       | 155       | 3  | 50,76      | 235 |            |                   |
| 23,75                  | 281       | 160       | 3  | 69,74      | 237 |            |                   |
| 24,00                  | 281       | 160       | 3  | 53,17      | 240 | 127,70     | 240 <sup>2)</sup> |
| 24,50                  | 281       | 160       | 3  | 55,23      | 245 |            |                   |
| 24,75                  | 281       | 160       | 3  | 76,75      | 247 |            |                   |
| 25,00                  | 281       | 160       | 3  | 58,62      | 250 | 131,00     | 250 <sup>2)</sup> |
| 25,50                  | 286       | 165       | 3  | 60,90      | 255 |            |                   |
| 25,75                  | 286       | 165       | 3  | 79,46      | 257 |            |                   |
| 26,00                  | 286       | 165       | 3  | 67,34      | 260 | 151,70     | 260 <sup>2)</sup> |
| 26,50                  | 286       | 165       | 3  | 64,95      | 265 |            |                   |
| 26,75                  | 291       | 170       | 3  | 102,60     | 267 |            |                   |
| 27,00                  | 291       | 170       | 3  | 67,34      | 270 | 174,60     | 270 <sup>2)</sup> |
| 27,50                  | 291       | 170       | 3  | 69,32      | 275 |            |                   |
| 27,75                  | 291       | 170       | 3  | 98,79      | 277 |            |                   |
| 28,00                  | 291       | 170       | 3  | 74,22      | 280 |            |                   |
| 28,50                  | 296       | 175       | 3  | 90,82      | 285 |            |                   |
| 28,75                  | 296       | 175       | 3  | 102,60     | 287 |            |                   |
| 29,00                  | 296       | 175       | 3  | 80,56      | 290 |            |                   |
| 29,50                  | 296       | 175       | 3  | 82,30      | 295 |            |                   |
| 29,75                  | 296       | 175       | 3  | 105,10     | 297 |            |                   |
| 30,00                  | 296       | 175       | 3  | 80,56      | 300 |            |                   |
| 30,50                  | 301       | 180       | 3  | 98,03      | 305 |            |                   |
| 31,00                  | 301       | 180       | 3  | 95,18      | 310 |            |                   |
| 31,50                  | 301       | 180       | 3  | 108,20     | 315 |            |                   |
| 32,00                  | 334       | 185       | 4  | 100,10     | 320 |            |                   |
| 32,50                  | 334       | 185       | 4  | 115,70     | 325 |            |                   |
| 33,00                  | 334       | 185       | 4  | 107,40     | 330 |            |                   |
| 33,50                  | 334       | 185       | 4  | 119,00     | 335 |            |                   |
| 34,00                  | 339       | 190       | 4  | 125,60     | 340 |            |                   |
| 34,50                  | 339       | 190       | 4  | 140,90     | 345 |            |                   |
| 35,00                  | 339       | 190       | 4  | 127,70     | 350 |            |                   |
| 35,50                  | 339       | 190       | 4  | 148,40     | 355 |            |                   |
| 36,00                  | 344       | 195       | 4  | 139,70     | 360 |            |                   |
| 36,50                  | 344       | 195       | 4  | 154,00     | 365 |            |                   |
| 37,00                  | 344       | 195       | 4  | 151,70     | 370 |            |                   |
| 37,50                  | 344       | 195       | 4  | 170,40     | 375 |            |                   |
| 38,00                  | 349       | 200       | 4  | 160,50     | 380 |            |                   |
| 38,50                  | 349       | 200       | 4  | 191,00     | 385 |            |                   |
| 39,00                  | 349       | 200       | 4  | 176,90     | 390 |            |                   |
| 39,50                  | 349       | 200       | 4  | 221,70     | 395 |            |                   |
| 40,00                  | 349       | 200       | 4  | 183,40     | 400 |            |                   |
| 41,00                  | 354       | 205       | 4  | 193,20     | 410 |            |                   |
| 42,00                  | 354       | 205       | 4  | 211,80     | 420 |            |                   |
| 43,00                  | 359       | 210       | 4  | 225,90     | 430 |            |                   |
| 44,00                  | 359       | 210       | 4  | 237,90     | 440 |            |                   |
| 45,00                  | 359       | 210       | 4  | 248,90     | 450 |            |                   |
| 46,00                  | 364       | 215       | 4  | 256,60     | 460 |            |                   |
| 47,00                  | 364       | 215       | 4  | 274,00     | 470 |            |                   |
| 48,00                  | 369       | 220       | 4  | 280,60     | 480 |            |                   |
| 49,00                  | 369       | 220       | 4  | 293,70     | 490 |            |                   |
| 50,00                  | 369       | 220       | 4  | 303,40     | 500 |            |                   |
| 51,00                  | 412       | 225       | 5  | 364,60     | 510 |            |                   |
| 52,00                  | 412       | 225       | 5  | 390,80     | 520 |            |                   |
| 53,00                  | 412       | 225       | 5  | 414,80     | 530 |            |                   |
| 54,00                  | 417       | 230       | 5  | 425,70     | 540 |            |                   |
| 55,00                  | 417       | 230       | 5  | 433,30     | 550 |            |                   |
| 56,00                  | 417       | 230       | 5  | 444,20     | 560 |            |                   |
| 57,00                  | 422       | 235       | 5  | 462,90     | 570 |            |                   |
| 58,00                  | 422       | 235       | 5  | 494,50     | 580 |            |                   |
| 59,00                  | 422       | 235       | 5  | 518,50     | 590 |            |                   |
| 60,00                  | 422       | 235       | 5  | 535,90     | 600 |            |                   |

|   |   |   |
|---|---|---|
| P | ○ | ● |
| M |   | ○ |
| K | ● | ● |
| N | ○ | ● |
| S |   | ○ |
| H |   | ○ |
| O | ○ | ○ |

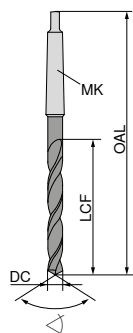
1) s nitridovanými fazetkami

2) vaporizovaný

→ v. strana 49

## Vrtáky v skrutkovici, DIN 341, dlhé

≤ 10xD



HSS



HSS-E

|                        |           |           |    | 10 295 ... |     | 10 297 ... |                   |
|------------------------|-----------|-----------|----|------------|-----|------------|-------------------|
| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | MK | EUR<br>T2  |     | EUR<br>T2  |                   |
| 10,00                  | 197       | 116       | 1  | 21,62      | 100 | 39,95      | 100 <sup>1)</sup> |
| 10,20                  | 197       | 116       | 1  | 24,02      | 102 | 37,99      | 102 <sup>1)</sup> |
| 10,50                  | 197       | 116       | 1  | 21,94      | 105 | 43,01      | 105 <sup>1)</sup> |
| 10,80                  | 206       | 125       | 1  | 28,06      | 108 |            |                   |
| 11,00                  | 206       | 125       | 1  | 22,59      | 110 | 42,13      | 110 <sup>1)</sup> |
| 11,20                  | 206       | 125       | 1  | 30,12      | 112 | 38,32      | 112 <sup>1)</sup> |
| 11,50                  | 206       | 125       | 1  | 22,59      | 115 | 43,22      | 115 <sup>1)</sup> |
| 11,80                  | 206       | 125       | 1  | 30,46      | 118 | 38,32      | 118 <sup>1)</sup> |
| 12,00                  | 215       | 134       | 1  | 22,59      | 120 | 43,22      | 120 <sup>1)</sup> |
| 12,20                  | 215       | 134       | 1  | 30,12      | 122 | 37,67      | 122 <sup>1)</sup> |
| 12,50                  | 215       | 134       | 1  | 22,81      | 125 | 43,88      | 125 <sup>1)</sup> |
| 12,80                  | 215       | 134       | 1  | 32,64      | 128 | 37,99      | 128 <sup>1)</sup> |
| 13,00                  | 215       | 134       | 1  | 22,81      | 130 | 45,62      | 130 <sup>1)</sup> |
| 13,20                  | 215       | 134       | 1  | 32,64      | 132 |            |                   |
| 13,50                  | 223       | 142       | 1  | 25,43      | 135 | 47,70      | 135 <sup>1)</sup> |
| 13,80                  | 223       | 142       | 1  | 41,81      | 138 | 43,01      | 138 <sup>1)</sup> |
| 14,00                  | 223       | 142       | 1  | 25,76      | 140 | 52,50      | 140 <sup>1)</sup> |
| 14,25                  | 245       | 147       | 2  | 40,17      | 142 |            |                   |
| 14,50                  | 245       | 147       | 2  | 32,64      | 145 | 51,09      | 145 <sup>1)</sup> |
| 14,75                  | 245       | 147       | 2  | 40,17      | 147 |            |                   |
| 15,00                  | 245       | 147       | 2  | 32,31      | 150 | 54,03      | 150 <sup>1)</sup> |
| 15,25                  | 251       | 153       | 2  | 40,17      | 152 |            |                   |
| 15,50                  | 251       | 153       | 2  | 31,44      | 155 | 53,17      | 155 <sup>1)</sup> |
| 15,75                  | 251       | 153       | 2  | 40,61      | 157 |            |                   |
| 16,00                  | 251       | 153       | 2  | 33,84      | 160 | 55,01      | 160 <sup>1)</sup> |
| 16,25                  | 257       | 159       | 2  | 45,62      | 162 |            |                   |
| 16,50                  | 257       | 159       | 2  | 35,47      | 165 | 55,34      | 165 <sup>2)</sup> |
| 16,75                  | 257       | 159       | 2  | 43,76      | 167 |            |                   |
| 17,00                  | 257       | 159       | 2  | 35,14      | 170 | 62,65      | 170 <sup>2)</sup> |
| 17,25                  | 263       | 165       | 2  | 49,66      | 172 |            |                   |
| 17,50                  | 263       | 165       | 2  | 40,17      | 175 | 60,04      | 175 <sup>2)</sup> |
| 17,75                  | 263       | 165       | 2  | 49,45      | 177 |            |                   |
| 18,00                  | 263       | 165       | 2  | 39,95      | 180 | 65,50      | 180 <sup>2)</sup> |
| 18,25                  | 269       | 171       | 2  | 58,83      | 182 |            |                   |
| 18,50                  | 269       | 171       | 2  | 44,65      | 185 | 60,04      | 185 <sup>2)</sup> |
| 18,75                  | 269       | 171       | 2  | 56,43      | 187 |            |                   |
| 19,00                  | 269       | 171       | 2  | 43,88      | 190 | 74,12      | 190 <sup>2)</sup> |
| 19,25                  | 275       | 177       | 2  | 61,89      | 192 |            |                   |
| 19,50                  | 275       | 177       | 2  | 50,76      | 195 | 73,68      | 195 <sup>2)</sup> |
| 19,75                  | 275       | 177       | 2  | 69,20      | 197 |            |                   |
| 20,00                  | 275       | 177       | 2  | 48,14      | 200 | 79,03      | 200 <sup>2)</sup> |
| 20,50                  | 282       | 184       | 2  | 60,57      | 205 | 77,94      | 205 <sup>2)</sup> |
| 21,00                  | 282       | 184       | 2  | 55,01      | 210 | 93,11      | 210 <sup>2)</sup> |
| 21,50                  | 289       | 191       | 2  | 65,50      | 215 |            |                   |
| 21,75                  | 289       | 191       | 2  | 87,54      | 217 |            |                   |
| 22,00                  | 289       | 191       | 2  | 60,04      | 220 | 103,30     | 220 <sup>2)</sup> |
| 22,50                  | 296       | 198       | 2  | 66,69      | 225 |            |                   |
| 23,00                  | 296       | 198       | 2  | 62,44      | 230 |            |                   |

|                        |           |           |    | 10 295 ... |     | 10 297 ... |                   |
|------------------------|-----------|-----------|----|------------|-----|------------|-------------------|
| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | MK | EUR<br>T2  |     | EUR<br>T2  |                   |
| 23,50                  | 319       | 198       | 3  | 76,08      | 235 |            |                   |
| 24,00                  | 327       | 206       | 3  | 76,75      | 240 | 131,00     | 240 <sup>2)</sup> |
| 24,50                  | 327       | 206       | 3  | 82,41      | 245 |            |                   |
| 25,00                  | 327       | 206       | 3  | 77,29      | 250 | 136,50     | 250 <sup>2)</sup> |
| 25,50                  | 335       | 214       | 3  | 92,67      | 255 |            |                   |
| 26,00                  | 335       | 214       | 3  | 88,63      | 260 | 158,30     | 260 <sup>2)</sup> |
| 26,50                  | 335       | 214       | 3  | 95,07      | 265 |            |                   |
| 27,00                  | 343       | 222       | 3  | 95,07      | 270 |            |                   |
| 27,50                  | 343       | 222       | 3  | 117,90     | 275 |            |                   |
| 28,00                  | 343       | 222       | 3  | 105,80     | 280 |            |                   |
| 29,00                  | 351       | 230       | 3  | 122,30     | 290 |            |                   |
| 29,50                  | 351       | 230       | 3  | 138,60     | 295 |            |                   |
| 30,00                  | 351       | 230       | 3  | 122,30     | 300 |            |                   |
| 30,50                  | 360       | 239       | 3  | 155,00     | 305 |            |                   |
| 31,00                  | 360       | 239       | 3  | 147,40     | 310 |            |                   |
| 31,50                  | 360       | 239       | 3  | 163,80     | 315 |            |                   |
| 32,00                  | 397       | 248       | 4  | 158,30     | 320 |            |                   |
| 33,00                  | 397       | 248       | 4  | 158,30     | 330 |            |                   |
| 33,50                  | 397       | 248       | 4  | 184,50     | 335 |            |                   |
| 34,00                  | 406       | 257       | 4  | 195,40     | 340 |            |                   |
| 35,00                  | 406       | 257       | 4  | 189,90     | 350 |            |                   |
| 36,00                  | 416       | 267       | 4  | 219,40     | 360 |            |                   |
| 37,00                  | 416       | 267       | 4  | 247,80     | 370 |            |                   |
| 37,50                  | 416       | 267       | 4  | 266,30     | 375 |            |                   |
| 38,00                  | 426       | 277       | 4  | 236,80     | 380 |            |                   |
| 39,00                  | 426       | 277       | 4  | 253,30     | 390 |            |                   |
| 40,00                  | 426       | 277       | 4  | 266,30     | 400 |            |                   |
| 42,00                  | 436       | 287       | 4  | 301,30     | 420 |            |                   |
| 43,00                  | 447       | 298       | 4  | 323,10     | 430 |            |                   |
| 44,00                  | 447       | 298       | 4  | 323,10     | 440 |            |                   |
| 45,00                  | 447       | 298       | 4  | 337,30     | 450 |            |                   |
| 50,00                  | 470       | 321       | 4  | 443,20     | 500 |            |                   |

|   |   |   |
|---|---|---|
| P | ○ | ● |
| M |   | ○ |
| K | ● | ● |
| N | ○ | ● |
| S |   | ○ |
| H |   | ○ |
| O | ○ | ○ |

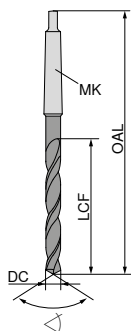
1) s nitridovanými fazetkami

2) vaporizovaný

→ v<sub>c</sub> strana 51

Vrtáky v skrutkovici, DIN 1870, veľmi dlhé,  
rad 1

&gt; 10xD



WTL


 $\angle 130^\circ$   
HSS

10 305 ...

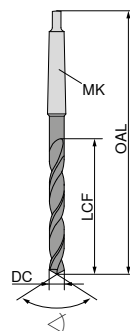
| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | MK | EUR<br>T2 |                   |
|------------------------|-----------|-----------|----|-----------|-------------------|
| 10,0                   | 285       | 185       | 1  | 40,82     | 100 <sup>1)</sup> |
| 10,5                   | 285       | 185       | 1  | 49,66     | 105 <sup>1)</sup> |
| 11,0                   | 300       | 195       | 1  | 47,70     | 110 <sup>1)</sup> |
| 11,5                   | 300       | 195       | 1  | 50,10     | 115 <sup>1)</sup> |
| 12,0                   | 310       | 205       | 1  | 53,17     | 120 <sup>1)</sup> |
| 12,5                   | 310       | 205       | 1  | 54,80     | 125 <sup>1)</sup> |
| 13,0                   | 310       | 205       | 1  | 55,34     | 130 <sup>1)</sup> |
| 13,5                   | 325       | 220       | 1  | 63,85     | 135 <sup>1)</sup> |
| 14,0                   | 325       | 220       | 1  | 62,11     | 140 <sup>1)</sup> |
| 14,5                   | 340       | 220       | 2  | 64,29     | 145 <sup>1)</sup> |
| 15,0                   | 340       | 220       | 2  | 67,68     | 150 <sup>1)</sup> |
| 15,5                   | 355       | 230       | 2  | 74,12     | 155 <sup>1)</sup> |
| 16,0                   | 355       | 230       | 2  | 71,06     | 160 <sup>1)</sup> |
| 16,5                   | 355       | 230       | 2  | 71,61     | 165 <sup>2)</sup> |
| 17,0                   | 355       | 230       | 2  | 72,81     | 170 <sup>2)</sup> |
| 17,5                   | 370       | 245       | 2  | 76,75     | 175 <sup>2)</sup> |
| 18,0                   | 370       | 245       | 2  | 79,03     | 180 <sup>2)</sup> |
| 18,5                   | 370       | 245       | 2  | 87,54     | 185 <sup>2)</sup> |
| 19,0                   | 370       | 245       | 2  | 89,40     | 190 <sup>2)</sup> |
| 19,5                   | 385       | 260       | 2  | 96,49     | 195 <sup>2)</sup> |
| 20,0                   | 385       | 260       | 2  | 102,10    | 200 <sup>2)</sup> |
| 21,0                   | 385       | 260       | 2  | 117,90    | 210 <sup>2)</sup> |
| 22,0                   | 405       | 270       | 2  | 123,40    | 220 <sup>2)</sup> |
| 23,0                   | 405       | 270       | 2  | 145,10    | 230 <sup>2)</sup> |
| 24,0                   | 440       | 290       | 3  | 161,50    | 240 <sup>2)</sup> |
| 25,0                   | 440       | 290       | 3  | 163,80    | 250 <sup>2)</sup> |
| 26,0                   | 440       | 290       | 3  | 177,90    | 260 <sup>2)</sup> |
| 28,0                   | 460       | 305       | 3  | 206,30    | 280 <sup>2)</sup> |
| 30,0                   | 460       | 305       | 3  | 236,80    | 300 <sup>2)</sup> |

|   |   |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ● |
| O | ○ |

- 1) s nitridovanými fazetkami  
2) vaporizovaný

→ v<sub>c</sub> strana 53Vrtáky v skrutkovici, DIN 1870, veľmi dlhé,  
rad 2

&gt; 10xD


 $\angle 130^\circ$   
HSS

WTL


 $\angle 130^\circ$   
HSS

10 315 ...

| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | MK | EUR<br>T2 |                   |
|------------------------|-----------|-----------|----|-----------|-------------------|
| 10,0                   | 360       | 235       | 1  | 58,62     | 100 <sup>1)</sup> |
| 10,5                   | 360       | 235       | 1  | 73,68     | 105 <sup>1)</sup> |
| 11,0                   | 375       | 250       | 1  | 67,14     | 110 <sup>1)</sup> |
| 11,5                   | 375       | 250       | 1  | 71,61     | 115 <sup>1)</sup> |
| 12,0                   | 395       | 260       | 1  | 81,65     | 120 <sup>1)</sup> |
| 13,0                   | 395       | 260       | 1  | 85,58     | 130 <sup>1)</sup> |
| 13,5                   | 410       | 275       | 1  | 91,26     | 135 <sup>1)</sup> |
| 14,0                   | 410       | 275       | 1  | 91,26     | 140 <sup>1)</sup> |
| 14,5                   | 425       | 275       | 2  | 92,02     | 145 <sup>1)</sup> |
| 15,0                   | 425       | 275       | 2  | 92,67     | 150 <sup>1)</sup> |
| 15,5                   | 445       | 295       | 2  | 96,49     | 155 <sup>1)</sup> |
| 16,0                   | 445       | 295       | 2  | 95,07     | 160 <sup>1)</sup> |
| 16,5                   | 445       | 295       | 2  | 108,50    | 165 <sup>2)</sup> |
| 17,0                   | 445       | 295       | 2  | 102,10    | 170 <sup>2)</sup> |
| 17,5                   | 465       | 310       | 2  | 110,20    | 175 <sup>2)</sup> |
| 18,0                   | 465       | 310       | 2  | 114,60    | 180 <sup>2)</sup> |
| 18,5                   | 465       | 310       | 2  | 123,40    | 185 <sup>2)</sup> |
| 19,0                   | 465       | 310       | 2  | 125,60    | 190 <sup>2)</sup> |
| 19,5                   | 490       | 325       | 2  | 143,00    | 195 <sup>2)</sup> |
| 20,0                   | 490       | 325       | 2  | 141,90    | 200 <sup>2)</sup> |
| 21,0                   | 490       | 325       | 2  | 151,70    | 210 <sup>2)</sup> |
| 22,0                   | 515       | 345       | 2  | 182,30    | 220 <sup>2)</sup> |
| 23,0                   | 515       | 345       | 2  | 184,50    | 230 <sup>2)</sup> |
| 24,0                   | 555       | 365       | 3  | 206,30    | 240 <sup>2)</sup> |
| 25,0                   | 555       | 365       | 3  | 208,50    | 250 <sup>2)</sup> |
| 26,0                   | 555       | 365       | 3  | 244,50    | 260 <sup>2)</sup> |
| 28,0                   | 580       | 385       | 3  | 283,80    | 280 <sup>2)</sup> |
| 30,0                   | 580       | 385       | 3  | 328,60    | 300 <sup>2)</sup> |

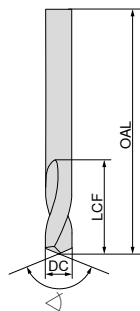
|   |   |
|---|---|
| P | ● |
| M | ● |
| K | ● |
| N | ● |
| S | ● |
| H | ● |
| O | ○ |

- 1) s nitridovanými fazetkami  
2) vaporizovaný

→ v<sub>c</sub> strana 53

## NC navrtávky, dielenská norma

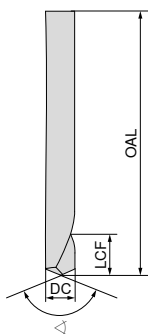
▲ drážky v skrutkovi



| DC <sub>h6</sub><br>mm | OAL<br>mm | LCF<br>mm |
|------------------------|-----------|-----------|
| 3                      | 46        | 12,0      |
| 4                      | 55        | 12,0      |
| 5                      | 62        | 14,0      |
| 6                      | 66        | 16,0      |
| 8                      | 79        | 21,0      |
| 10                     | 89        | 25,0      |
| 12                     | 102       | 30,0      |
| 16                     | 115       | 37,5      |
| 20                     | 131       | 45,0      |

| NC-A              | NC-A<br>TiN       | NC-A              | NC-A<br>TiN       |
|-------------------|-------------------|-------------------|-------------------|
|                   |                   |                   |                   |
| 120°<br>HSS       | 120°<br>HSS       | 90°<br>HSS        | 90°<br>HSS        |
| <b>10 510 ...</b> | <b>10 512 ...</b> | <b>10 520 ...</b> | <b>10 522 ...</b> |
| EUR<br>T2         | EUR<br>T2         | EUR<br>T2         | EUR<br>T2         |
| 7,05 030          | 10,23 030         | 7,05 030          | 10,23 030         |
| 7,16 040          | 10,46 040         | 7,16 040          | 10,46 040         |
| 7,49 050          | 10,90 050         | 7,49 050          | 10,90 050         |
| 7,67 060          | 11,02 060         | 7,67 060          | 11,02 060         |
| 12,88 080         | 18,66 080         | 12,88 080         | 18,66 080         |
| 14,30 100         | 20,63 100         | 14,30 100         | 20,63 100         |
| 20,73 120         | 30,24 120         | 20,73 120         | 30,24 120         |
| 27,17 160         | 39,52 160         | 27,17 160         | 39,52 160         |
| 43,76 200         | 63,53 200         | 43,76 200         | 63,53 200         |

▲ s upínacou ploškou, dle DIN 1835 B



| DC <sub>h6</sub><br>mm | OAL<br>mm | LCF<br>mm |
|------------------------|-----------|-----------|
| 6                      | 66        | 7,0       |
| 8                      | 79        | 9,0       |
| 10                     | 89        | 11,5      |
| 12                     | 102       | 14,0      |
| 16                     | 115       | 18,0      |
| 20                     | 131       | 23,0      |

| ~B                | ~B                | ~B                | ~B                |
|-------------------|-------------------|-------------------|-------------------|
|                   |                   |                   |                   |
| 120°<br>HSS       | 120°<br>HSS       | 90°<br>HSS        | 90°<br>HSS        |
| <b>10 511 ...</b> | <b>10 513 ...</b> | <b>10 521 ...</b> | <b>10 523 ...</b> |
| EUR<br>T2         | EUR<br>T2         | EUR<br>T2         | EUR<br>T2         |
| 7,89 060          | 11,02 060         | 7,89 060          | 11,02 060         |
| 11,13 080         | 15,72 080         | 11,13 080         | 15,72 080         |
| 12,44 100         | 17,36 100         | 12,44 100         | 17,36 100         |
| 17,24 120         | 24,67 120         | 17,24 120         | 24,67 120         |
| 22,59 160         | 32,20 160         | 22,59 160         | 32,20 160         |
| 32,20 200         | 46,94 200         | 32,20 200         | 46,94 200         |

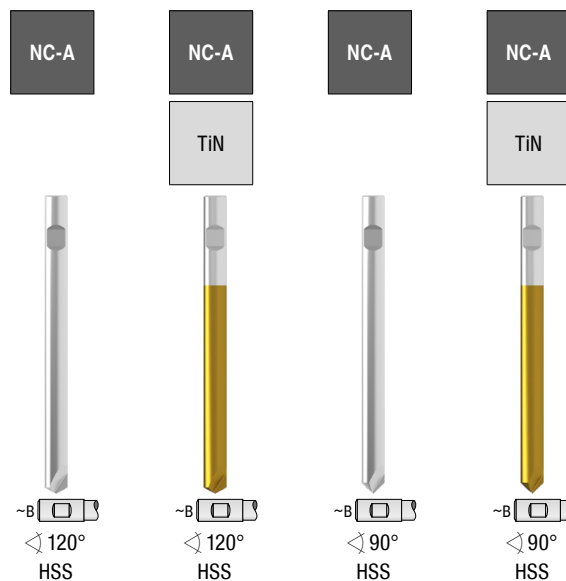
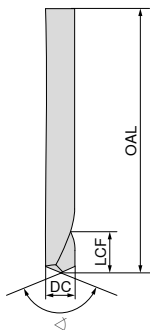
|   |       |       |       |       |
|---|-------|-------|-------|-------|
| P | 15-35 | 25-55 | 15-35 | 25-55 |
| M | 10    | 20    | 10    | 20    |
| K | 20-35 | 30-55 | 20-35 | 30-55 |
| N | 50-70 | 65-85 | 50-70 | 65-85 |
| S |       |       |       |       |
| H |       |       |       |       |
| O |       |       |       |       |



Vhodný iba pre navrtávanie!

## NC navrtávky, dielenská norma, dlhé

▲ s ploškou na upínanie podľa DIN 1835 B



| DC <sub>h6</sub><br>mm | OAL<br>mm | LCF<br>mm | 10 530 ...<br>EUR<br>T2 | 060 | 10 532 ...<br>EUR<br>T2 | 060 | 10 526 ...<br>EUR<br>T2 | 060 | 10 528 ...<br>EUR<br>T2 | 060 |
|------------------------|-----------|-----------|-------------------------|-----|-------------------------|-----|-------------------------|-----|-------------------------|-----|
| 6                      | 93        | 7,0       | 9,68                    | 060 | 13,75                   | 060 | 9,68                    | 060 | 13,75                   | 060 |
| 8                      | 117       | 9,0       | 15,06                   | 080 | 21,72                   | 080 | 15,06                   | 080 | 21,72                   | 080 |
| 10                     | 133       | 11,5      | 16,59                   | 100 | 23,79                   | 100 | 16,59                   | 100 | 23,79                   | 100 |
| 12                     | 151       | 14,0      | 19,76                   | 120 | 28,16                   | 120 | 19,76                   | 120 | 28,16                   | 120 |
| 16                     | 178       | 18,0      | 30,24                   | 160 | 43,66                   | 160 | 30,24                   | 160 | 43,66                   | 160 |
| 20                     | 205       | 23,0      | 41,92                   | 200 | 61,45                   | 200 | 41,92                   | 200 | 61,45                   | 200 |
| P                      |           |           | 15-35                   |     | 25-55                   |     | 15-35                   |     | 25-55                   |     |
| M                      |           |           | 10                      |     | 20                      |     | 10                      |     | 20                      |     |
| K                      |           |           | 20-35                   |     | 30-55                   |     | 20-35                   |     | 30-55                   |     |
| N                      |           |           | 50-70                   |     | 65-85                   |     | 50-70                   |     | 65-85                   |     |
| S                      |           |           |                         |     |                         |     |                         |     |                         |     |
| H                      |           |           |                         |     |                         |     |                         |     |                         |     |
| O                      |           |           |                         |     |                         |     |                         |     |                         |     |



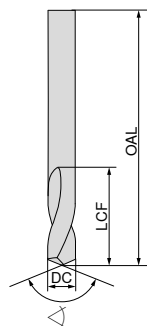
Vhodný iba pre navrtávanie!

## NC navrtávky, dielenská norma, dlhé

## Strediace vrtáky, DIN 333, typ B

▲ s ochranným zahĺbením 120°

▲ drážky v skrutkovici

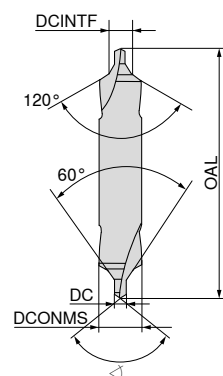


NC-A

90°  
HSS

| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | EUR<br>T2 |       |
|------------------------|-----------|-----------|-----------|-------|
| 6,35                   | 105       | 17        | 11,90     | 025   |
| 8,00                   | 118       | 21        | 21,84     | 030   |
| 9,52                   | 132       | 25        | 22,17     | 040   |
| 12,70                  | 159       | 30        | 31,44     | 050   |
| 15,87                  | 186       | 37        | 27,40     | 060   |
| 19,05                  | 213       | 45        | 63,10     | 075   |
| P                      |           |           |           | 15-35 |
| M                      |           |           |           | 10    |
| K                      |           |           |           | 20-35 |
| N                      |           |           |           | 50-70 |
| S                      |           |           |           |       |
| H                      |           |           |           |       |
| O                      |           |           |           |       |

Vhodný iba pre navrtávanie!



ZB

ZB

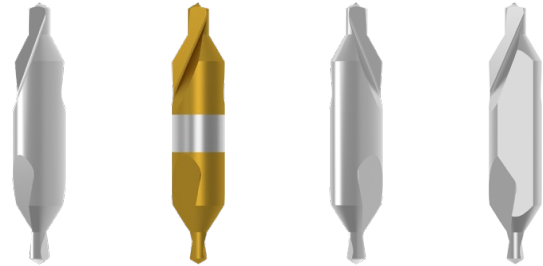
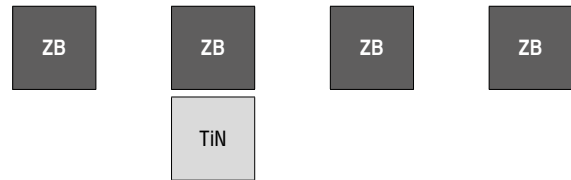
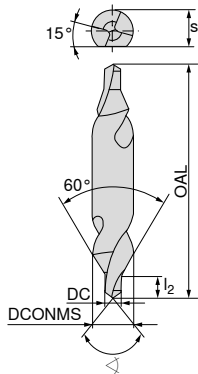
pravá  
118°  
HSSľavá  
118°  
HSS

10 480 ...

10 485 ...

| DC<br>mm | DCONMS <sub>h8</sub><br>mm | DCINTF <sub>k12</sub><br>mm | OAL<br>mm | EUR<br>T2 |       | EUR<br>T2 |       |
|----------|----------------------------|-----------------------------|-----------|-----------|-------|-----------|-------|
| 1,00     | 4,0                        | 2,12                        | 35,5      | 7,23      | 100   | 16,49     | 100   |
| 1,25     | 5,0                        | 2,65                        | 40,0      | 8,18      | 125   | 19,32     | 125   |
| 1,60     | 6,3                        | 3,35                        | 45,0      | 7,56      | 160   | 20,30     | 160   |
| 2,00     | 8,0                        | 4,25                        | 50,0      | 8,18      | 200   | 21,62     | 200   |
| 2,50     | 10,0                       | 5,30                        | 56,0      | 9,98      | 250   | 21,94     | 250   |
| 3,15     | 11,2                       | 6,70                        | 62,0      | 14,51     | 315   | 29,80     | 315   |
| 4,00     | 14,0                       | 8,50                        | 69,0      | 18,66     | 400   | 32,53     | 400   |
| 5,00     | 18,0                       | 10,60                       | 77,0      | 23,91     | 500   | 34,93     | 500   |
| P        |                            |                             |           |           | 15-35 |           | 15-35 |
| M        |                            |                             |           |           | 10    |           | 10    |
| K        |                            |                             |           |           | 20-35 |           | 20-35 |
| N        |                            |                             |           |           | 50-70 |           | 50-70 |
| S        |                            |                             |           |           |       |           |       |
| H        |                            |                             |           |           |       |           |       |
| O        |                            |                             |           |           |       |           |       |

## Strediace vrtáky DIN 333, tvar A



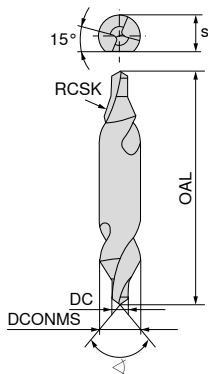
pravá  $\angle 118^\circ$  HSS  
pravá  $\angle 118^\circ$  HSS  
ľavá  $\angle 118^\circ$  HSS  
pravá  $\angle 118^\circ$  HSS-E

| DC<br>mm | s<br>mm | DCONMS <sub>h8</sub><br>mm | OAL<br>mm | l <sub>2</sub><br>mm | 10 415 ...<br>EUR<br>T2 | 050 2) | 10 425 ...<br>EUR<br>T2 | 050 2) | 10 435 ...<br>EUR<br>T2 | 050 2) | 10 445 ...<br>EUR<br>T2 | 160 1) | 200 1) | 250 1) | 315 1) | 400 1) | 500 1) | 630 1) |
|----------|---------|----------------------------|-----------|----------------------|-------------------------|--------|-------------------------|--------|-------------------------|--------|-------------------------|--------|--------|--------|--------|--------|--------|--------|
| 0,50     |         | 3,15                       | 25,0      | 0,8                  | 5,31                    |        | 12,56                   |        | 7,23                    |        |                         |        |        |        |        |        |        |        |
| 0,80     |         | 3,15                       | 25,0      | 1,1                  | 5,11                    | 080 2) | 12,11                   | 080 2) | 7,11                    | 080 2) |                         |        |        |        |        |        |        |        |
| 1,00     |         | 3,15                       | 31,5      | 1,3                  | 4,64                    | 100    | 11,13                   | 100    | 6,42                    | 100    |                         |        |        |        |        |        |        |        |
| 1,25     |         | 3,15                       | 31,5      | 1,6                  | 5,31                    | 125    | 12,66                   | 125    | 7,56                    | 125    |                         |        |        |        |        |        |        |        |
| 1,60     | 3,25    | 4,00                       | 35,5      | 2,0                  |                         |        |                         |        |                         |        | 5,72                    | 160 1) |        |        |        |        |        |        |
| 1,60     |         | 4,00                       | 35,5      | 2,0                  | 4,26                    | 160    | 10,16                   | 160    | 6,63                    | 160    |                         |        |        |        |        |        |        |        |
| 2,00     | 4,20    | 5,00                       | 40,0      | 2,5                  |                         |        |                         |        |                         |        | 5,85                    | 200 1) |        |        |        |        |        |        |
| 2,00     |         | 5,00                       | 40,0      | 2,5                  | 4,54                    | 200    | 10,82                   | 200    | 7,43                    | 200    |                         |        |        |        |        |        |        |        |
| 2,50     | 5,35    | 6,30                       | 45,0      | 3,1                  |                         |        |                         |        |                         |        | 6,78                    | 250 1) |        |        |        |        |        |        |
| 2,50     |         | 6,30                       | 45,0      | 3,1                  | 5,27                    | 250    | 12,56                   | 250    | 8,03                    | 250    |                         |        |        |        |        |        |        |        |
| 3,15     | 6,95    | 8,00                       | 50,0      | 3,9                  |                         |        |                         |        |                         |        | 8,91                    | 315 1) |        |        |        |        |        |        |
| 3,15     |         | 8,00                       | 50,0      | 3,9                  | 6,78                    | 315    | 15,94                   | 315    | 10,16                   | 315    |                         |        |        |        |        |        |        |        |
| 4,00     | 8,40    | 10,00                      | 56,0      | 5,0                  |                         |        |                         |        |                         |        | 13,00                   | 400 1) |        |        |        |        |        |        |
| 4,00     |         | 10,00                      | 56,0      | 5,0                  | 10,64                   | 400    | 25,00                   | 400    | 13,65                   | 400    |                         |        |        |        |        |        |        |        |
| 5,00     | 10,95   | 12,50                      | 63,0      | 6,3                  |                         |        |                         |        |                         |        | 18,99                   | 500 1) |        |        |        |        |        |        |
| 5,00     |         | 12,50                      | 63,0      | 6,3                  | 15,29                   | 500    | 35,80                   | 500    | 21,18                   | 500    |                         |        |        |        |        |        |        |        |
| 6,30     | 14,00   | 16,00                      | 71,0      | 8,0                  |                         |        |                         |        |                         |        | 31,87                   | 630 1) |        |        |        |        |        |        |
| 6,30     |         | 16,00                      | 71,0      | 8,0                  | 22,71                   | 630    | 53,27                   | 630    | 31,22                   | 630    |                         |        |        |        |        |        |        |        |
| P        |         |                            |           |                      | 15-35                   |        | 25-55                   |        | 15-35                   |        | 15-35                   |        |        |        |        |        |        |        |
| M        |         |                            |           |                      | 10                      |        | 20                      |        | 10                      |        | 10                      |        |        |        |        |        |        |        |
| K        |         |                            |           |                      | 20-35                   |        | 30-55                   |        | 20-35                   |        | 20-35                   |        |        |        |        |        |        |        |
| N        |         |                            |           |                      | 50-70                   |        | 65-85                   |        | 50-70                   |        | 50-70                   |        |        |        |        |        |        |        |
| S        |         |                            |           |                      |                         |        |                         |        |                         |        |                         |        |        |        |        |        |        |        |
| H        |         |                            |           |                      |                         |        |                         |        |                         |        |                         |        |        |        |        |        |        |        |
| O        |         |                            |           |                      |                         |        |                         |        |                         |        |                         |        |        |        |        |        |        |        |

1) s plochou

2) iba jednostranné

## Strediacie vrtáky DIN 333, typ R

pravá  
118°  
HSSľavá  
118°  
HSSpravá  
118°  
HSS

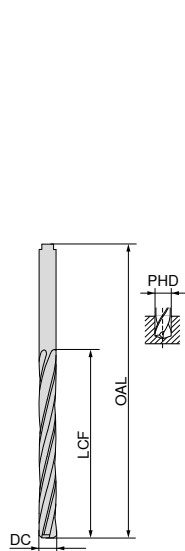
| DC<br>mm | s<br>mm | DCONMS <sub>h8</sub><br>mm | OAL<br>mm | RSK<br>mm | 10 455 ...<br>EUR<br>T2 | 10 475 ...<br>EUR<br>T2 | 10 465 ...<br>EUR<br>T2 |
|----------|---------|----------------------------|-----------|-----------|-------------------------|-------------------------|-------------------------|
| 0,50     |         | 3,15                       | 25,0      | 2,00      | 5,31                    | 050 <sup>2)</sup>       |                         |
| 0,80     |         | 3,15                       | 25,0      | 2,50      | 5,11                    | 080 <sup>2)</sup>       |                         |
| 1,00     |         | 3,15                       | 31,5      | 2,90      | 4,57                    | 100                     |                         |
| 1,25     |         | 3,15                       | 31,5      | 3,15      | 5,21                    | 125                     |                         |
| 1,60     | 3,25    | 4,00                       | 35,5      | 4,00      |                         |                         | 5,72 160 <sup>1)</sup>  |
| 1,60     |         | 4,00                       | 35,5      | 4,00      | 4,26                    | 160                     | 7,74 160                |
| 2,00     | 4,20    | 5,00                       | 40,0      | 5,00      |                         |                         | 5,85 200 <sup>1)</sup>  |
| 2,00     |         | 5,00                       | 40,0      | 5,00      | 4,54                    | 200                     | 7,93 200                |
| 2,50     | 5,35    | 6,30                       | 45,0      | 6,30      |                         |                         | 6,78 250 <sup>1)</sup>  |
| 2,50     |         | 6,30                       | 45,0      | 6,30      | 5,27                    | 250                     | 8,18 250                |
| 3,15     | 6,95    | 8,00                       | 50,0      | 8,00      |                         |                         | 8,71 315 <sup>1)</sup>  |
| 3,15     |         | 8,00                       | 50,0      | 8,00      | 6,78                    | 315                     | 11,35 315               |
| 4,00     | 8,40    | 10,00                      | 56,0      | 10,00     |                         |                         | 13,32 400 <sup>1)</sup> |
| 4,00     |         | 10,00                      | 56,0      | 10,00     | 9,86                    | 400                     | 16,49 400               |
| 5,00     | 10,95   | 12,50                      | 63,0      | 12,50     |                         |                         | 18,99 500 <sup>1)</sup> |
| 5,00     |         | 12,50                      | 63,0      | 12,50     | 14,96                   | 500                     | 24,12 500               |
| 6,30     | 14,00   | 16,00                      | 71,0      | 16,00     |                         |                         | 31,87 630 <sup>1)</sup> |
| 6,30     |         | 16,00                      | 71,0      | 16,00     | 22,71                   | 630                     |                         |
| P        |         |                            |           |           | 15-35                   | 15-35                   | 15-35                   |
| M        |         |                            |           |           | 10                      | 10                      | 10                      |
| K        |         |                            |           |           | 20-35                   | 20-35                   | 20-35                   |
| N        |         |                            |           |           | 50-70                   | 50-70                   | 50-70                   |
| S        |         |                            |           |           |                         |                         |                         |
| H        |         |                            |           |           |                         |                         |                         |
| O        |         |                            |           |           |                         |                         |                         |

1) s plochou

2) iba jednostranné

## Nástroj na vyvrtávanie (špirálový výhružník)

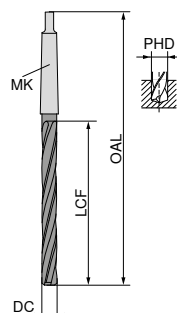
▲ s valcovou stopkou, DIN 344

120°  
HSS

10 226 ...

| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | PHD<br>mm | EUR<br>T2 |     |
|------------------------|-----------|-----------|-----------|-----------|-----|
| 3,80                   | 96        | 64        | 2,8       | 21,62     | 038 |
| 4,00                   | 96        | 64        | 2,8       | 21,07     | 040 |
| 4,80                   | 108       | 74        | 3,5       | 15,72     | 048 |
| 5,00                   | 108       | 74        | 3,5       | 15,50     | 050 |
| 5,80                   | 116       | 80        | 4,2       | 15,72     | 058 |
| 6,00                   | 116       | 80        | 4,2       | 15,50     | 060 |
| 6,80                   | 133       | 93        | 4,9       | 17,69     | 068 |
| 7,00                   | 133       | 93        | 4,9       | 17,69     | 070 |
| 7,80                   | 142       | 100       | 5,6       | 20,30     | 078 |
| 8,00                   | 142       | 100       | 5,6       | 19,98     | 080 |
| 8,80                   | 151       | 107       | 6,3       | 21,62     | 088 |
| 9,00                   | 151       | 107       | 6,3       | 21,07     | 090 |
| 9,80                   | 162       | 116       | 7,0       | 23,91     | 098 |
| 10,00                  | 162       | 116       | 7,0       | 23,58     | 100 |
| 10,75                  | 173       | 125       | 7,7       | 32,20     | 107 |
| 11,00                  | 173       | 125       | 7,7       | 28,38     | 110 |
| 11,75                  | 184       | 134       | 8,4       | 32,53     | 117 |
| 12,00                  | 184       | 134       | 8,4       | 29,25     | 120 |
| P                      | 15-35     |           |           |           |     |
| M                      | 10        |           |           |           |     |
| K                      | 20-35     |           |           |           |     |
| N                      | 50-80     |           |           |           |     |
| S                      | 14-28     |           |           |           |     |
| H                      |           |           |           |           |     |
| O                      |           |           |           |           |     |

## Nástroj na vyvrtávanie (špirálový výhružník)

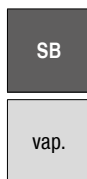
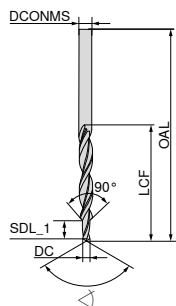
120°  
HSS

10 228 ...

| DC <sub>h8</sub><br>mm | OAL<br>mm | LCF<br>mm | PHD<br>mm | MK | EUR<br>T2 |     |
|------------------------|-----------|-----------|-----------|----|-----------|-----|
| 10,00                  | 168       | 87        | 7,0       | 1  | 28,38     | 100 |
| 10,75                  | 175       | 94        | 7,7       | 1  | 34,28     | 107 |
| 11,00                  | 175       | 94        | 7,7       | 1  | 30,46     | 110 |
| 11,75                  | 182       | 101       | 8,4       | 1  | 34,28     | 117 |
| 12,00                  | 182       | 101       | 8,4       | 1  | 30,46     | 120 |
| 12,75                  | 182       | 101       | 9,1       | 1  | 37,33     | 127 |
| 13,00                  | 182       | 101       | 9,1       | 1  | 33,40     | 130 |
| 13,75                  | 189       | 108       | 9,8       | 1  | 37,67     | 137 |
| 14,00                  | 189       | 108       | 9,8       | 1  | 33,95     | 140 |
| 14,75                  | 212       | 114       | 10,5      | 2  | 42,35     | 147 |
| 15,00                  | 212       | 114       | 10,5      | 2  | 37,67     | 150 |
| 15,75                  | 218       | 120       | 11,2      | 2  | 43,88     | 157 |
| 16,00                  | 218       | 120       | 11,2      | 2  | 39,29     | 160 |
| 16,75                  | 223       | 125       | 11,9      | 2  | 46,83     | 167 |
| 17,00                  | 223       | 125       | 11,9      | 2  | 41,58     | 170 |
| 17,75                  | 228       | 130       | 12,6      | 2  | 48,03     | 177 |
| 18,00                  | 228       | 130       | 12,6      | 2  | 42,35     | 180 |
| 18,70                  | 233       | 135       | 13,3      | 2  | 48,36     | 187 |
| 19,00                  | 233       | 135       | 13,3      | 2  | 47,70     | 190 |
| 19,70                  | 238       | 140       | 14,0      | 2  | 48,36     | 197 |
| 20,00                  | 238       | 140       | 14,0      | 2  | 47,70     | 200 |
| 20,70                  | 243       | 145       | 14,6      | 2  | 56,43     | 207 |
| 21,00                  | 243       | 145       | 14,6      | 2  | 55,77     | 210 |
| 21,70                  | 248       | 150       | 15,3      | 2  | 57,08     | 217 |
| 22,00                  | 248       | 150       | 15,3      | 2  | 56,22     | 220 |
| 22,70                  | 253       | 155       | 16,0      | 2  | 62,98     | 227 |
| 23,00                  | 253       | 155       | 16,0      | 2  | 62,21     | 230 |
| 23,70                  | 281       | 160       | 16,6      | 3  | 65,70     | 237 |
| 24,00                  | 281       | 160       | 16,6      | 3  | 64,29     | 240 |
| 24,70                  | 281       | 160       | 17,3      | 3  | 69,86     | 247 |
| 25,00                  | 281       | 160       | 17,3      | 3  | 68,66     | 250 |
| 25,70                  | 286       | 165       | 18,0      | 3  | 73,13     | 257 |
| 26,00                  | 286       | 165       | 18,0      | 3  | 72,15     | 260 |
| 26,70                  | 291       | 170       | 18,6      | 3  | 85,37     | 267 |
| 27,00                  | 291       | 170       | 18,6      | 3  | 83,73     | 270 |
| 27,70                  | 291       | 170       | 19,3      | 3  | 86,13     | 277 |
| 28,00                  | 291       | 170       | 19,3      | 3  | 84,70     | 280 |
| 28,70                  | 296       | 175       | 20,0      | 3  | 94,31     | 287 |
| 29,00                  | 296       | 175       | 20,0      | 3  | 93,44     | 290 |
| 29,70                  | 296       | 175       | 20,5      | 3  | 98,13     | 297 |
| 30,00                  | 296       | 175       | 20,5      | 3  | 96,83     | 300 |
| P                      | 15-35     |           |           |    |           |     |
| M                      | 10        |           |           |    |           |     |
| K                      | 20-35     |           |           |    |           |     |
| N                      | 50-80     |           |           |    |           |     |
| S                      | 14-28     |           |           |    |           |     |
| H                      |           |           |           |    |           |     |
| O                      |           |           |           |    |           |     |

## Stupňovité vrtáky, dlhé

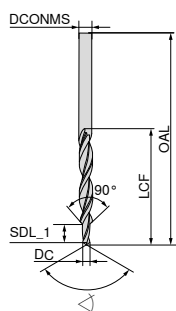
- ▲ uhol zahĺbenia 90°
- ▲ na otvory pre závit podľa DIN 336, tabuľka 1 s voľným zahĺbením 90° aj na priechodné otvory podľa DIN EN 20273 – stredný rad
- ▲ posuv sa volí podľa malého priemeru DC



10 365 ...

| pre závit | DC <sub>h9</sub><br>mm | DCONMS <sub>h8</sub><br>mm | OAL<br>mm | SDL_1<br>mm | LCF<br>mm | EUR<br>T2 |     |
|-----------|------------------------|----------------------------|-----------|-------------|-----------|-----------|-----|
| M3        | 2,5                    | 3,4                        | 70        | 8,8         | 39        | 18,23     | 030 |
| M4        | 3,3                    | 4,5                        | 80        | 11,4        | 47        | 19,54     | 040 |
| M5        | 4,2                    | 5,5                        | 93        | 13,6        | 57        | 20,09     | 050 |
| M6        | 5,0                    | 6,6                        | 101       | 16,5        | 63        | 22,93     | 060 |
| M8        | 6,8                    | 9,0                        | 125       | 21,0        | 81        | 25,76     | 080 |
| M10       | 8,5                    | 11,0                       | 142       | 25,5        | 94        | 32,96     | 100 |
| M12       | 10,2                   | 13,5                       | 160       | 30,0        | 108       | 42,35     | 120 |

- ▲ na priechodné otvory podľa DIN EN 20273 – jemný rad
- ▲ so zahĺbením pre hlavu skrutiek 90°
- ▲ posuv sa volí podľa malého priemeru DC



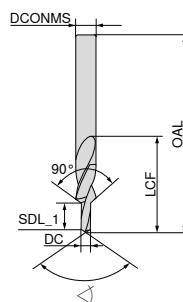
10 355 ...

| pre závit | DC <sub>h9</sub><br>mm | DCONMS <sub>h8</sub><br>mm | OAL<br>mm | SDL_1<br>mm | LCF<br>mm | EUR<br>T2 |     |
|-----------|------------------------|----------------------------|-----------|-------------|-----------|-----------|-----|
| M3        | 3,2                    | 6,0                        | 93        | 9           | 57        | 20,95     | 030 |
| M4        | 4,3                    | 8,0                        | 117       | 11          | 75        | 24,88     | 040 |
| M5        | 5,3                    | 10,0                       | 133       | 13          | 87        | 30,56     | 050 |
| M6        | 6,4                    | 11,5                       | 142       | 15          | 94        | 34,93     | 060 |
| M8        | 8,4                    | 15,0                       | 169       | 19          | 114       | 57,63     | 080 |
| M10       | 10,5                   | 19,0                       | 198       | 23          | 135       | 88,96     | 100 |

|   |       |
|---|-------|
| P | 15-35 |
| M | 10    |
| K | 20-35 |
| N | 50-80 |
| S |       |
| H |       |
| O |       |

## Stupňovité vrtáky, dĺžka podľa DIN 1897

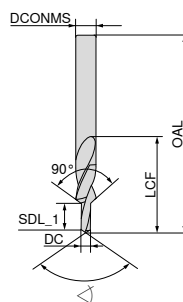
- ▲ uhol zahĺbenia 90°
- ▲ na otvory pre závit podľa DIN 336, tabuľka 1 s voľným zahĺbením 90° aj na priechodné otvory podľa DIN EN 20273 – stredný rad
- ▲ posuv sa volí podľa malého priemeru DC



10 320 ...

| pre závit | DC <sub>h6</sub><br>mm | DCONMS <sub>h6</sub><br>mm | OAL<br>mm | SDL_1<br>mm | LCF<br>mm | EUR<br>T2 |     |
|-----------|------------------------|----------------------------|-----------|-------------|-----------|-----------|-----|
| M3        | 2,5                    | 3,4                        | 52        | 8,8         | 20        | 11,68     | 030 |
| M4        | 3,3                    | 4,5                        | 58        | 11,4        | 24        | 11,79     | 040 |
| M5        | 4,2                    | 5,5                        | 66        | 13,6        | 28        | 12,66     | 050 |
| M6        | 5,0                    | 6,6                        | 70        | 16,5        | 31        | 13,65     | 060 |
| M8        | 6,8                    | 9,0                        | 84        | 21,0        | 40        | 15,72     | 080 |
| M10       | 8,5                    | 11,0                       | 95        | 25,5        | 47        | 20,30     | 100 |
| M12       | 10,2                   | 13,5                       | 107       | 30,0        | 54        | 26,08     | 120 |

- ▲ na priechodné otvory podľa DIN EN 20273 – jemný rad
- ▲ so zahĺbením pre hlavu skrutiek 90°
- ▲ posuv sa volí podľa malého priemeru DC



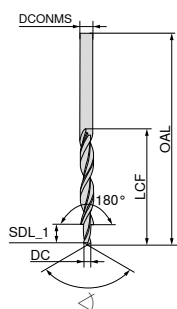
10 330 ...

| pre závit | DC <sub>h6</sub><br>mm | DCONMS <sub>h6</sub><br>mm | OAL<br>mm | SDL_1<br>mm | LCF<br>mm | EUR<br>T2 |     |
|-----------|------------------------|----------------------------|-----------|-------------|-----------|-----------|-----|
| M3        | 3,2                    | 6,0                        | 66        | 9           | 28        | 13,65     | 030 |
| M4        | 4,3                    | 8,0                        | 79        | 11          | 37        | 15,17     | 040 |
| M5        | 5,3                    | 10,0                       | 89        | 13          | 43        | 19,10     | 050 |
| M6        | 6,4                    | 11,5                       | 95        | 15          | 47        | 21,18     | 060 |
| M8        | 8,4                    | 15,0                       | 111       | 19          | 56        | 24,88     | 080 |
| M10       | 10,5                   | 19,0                       | 127       | 23          | 64        | 36,78     | 100 |

|   |       |
|---|-------|
| P | 15-35 |
| M | 10    |
| K | 20-35 |
| N | 50-80 |
| S |       |
| H |       |
| O |       |

## Stupňovité vrtáky, dlhé

- ▲ uhol zahĺbenia 180°
- ▲ na priechodné otvory podľa DIN EN 20273 – stredný rad
- ▲ na zahĺbenie pre hlavy skrutiek podľa DIN 974-1 – rad 1
- ▲ posuv sa volí podľa malého priemeru DC



SB



vap.



118°  
HSS

10 375 ...

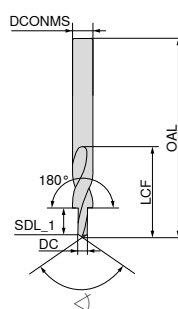
| pre závit | DC <sub>h9</sub><br>mm | DCONMS <sub>h8</sub><br>mm | OAL<br>mm | SDL_1<br>mm | LCF<br>mm | EUR<br>T2 |                   |
|-----------|------------------------|----------------------------|-----------|-------------|-----------|-----------|-------------------|
| M3        | 3,4                    | 6                          | 93        | 9           | 57        | 20,95     | 030 <sup>1)</sup> |
| M4        | 4,5                    | 8                          | 117       | 11          | 75        | 24,88     | 040               |
| M5        | 5,5                    | 10                         | 133       | 13          | 87        | 29,69     | 050               |
| M6        | 6,6                    | 11                         | 142       | 15          | 94        | 34,17     | 060               |
| M8        | 9,0                    | 15                         | 169       | 19          | 114       | 43,12     | 080               |
| M10       | 11,0                   | 18                         | 191       | 23          | 130       | 89,72     | 100               |

|   |       |
|---|-------|
| P | 15-35 |
| M | 10    |
| K | 20-35 |
| N | 50-80 |
| S |       |
| H |       |
| O |       |

1) DCONMS nielen podľa DIN 974-1

## Stupňovité vrtáky, dĺžka podľa DIN 1897

- ▲ uhol zahĺbenia 180°
- ▲ na priechodné otvory podľa DIN EN 20273 – stredný rad
- ▲ na zahĺbenie pre hlavy skrutiek podľa DIN 974-1 – rad 1
- ▲ posuv sa volí podľa malého priemeru DC



SB



118°  
HSS

10 340 ...

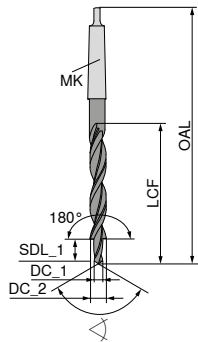
| pre závit | DC <sub>h6</sub><br>mm | DCONMS <sub>h6</sub><br>mm | OAL<br>mm | SDL_1<br>mm | LCF<br>mm | EUR<br>T2 |                   |
|-----------|------------------------|----------------------------|-----------|-------------|-----------|-----------|-------------------|
| M3        | 3,4                    | 6                          | 66        | 9           | 28        | 13,00     | 030 <sup>1)</sup> |
| M4        | 4,5                    | 8                          | 79        | 11          | 37        | 14,74     | 040               |
| M5        | 5,5                    | 10                         | 89        | 13          | 43        | 18,23     | 050               |
| M6        | 6,6                    | 11                         | 95        | 15          | 47        | 20,95     | 060               |
| M8        | 9,0                    | 15                         | 111       | 19          | 56        | 26,85     | 080               |
| M10       | 11,0                   | 18                         | 123       | 23          | 62        | 40,07     | 100               |

|   |       |
|---|-------|
| P | 15-35 |
| M | 10    |
| K | 20-35 |
| N | 50-80 |
| S |       |
| H |       |
| O |       |

1) DCONMS nielen podľa DIN 974-1

# Stupňovité vrtáky

- ▲ uhol zahĺbenia 180°
- ▲ na priečhodné otvory podľa DIN EN 20273 – stredný rad
- ▲ na zahĺbenie pre hlavy skrutiek podľa DIN 974-1 – rad 1
- ▲ posuv sa volí podľa malého priemeru DC



118°  
HSS

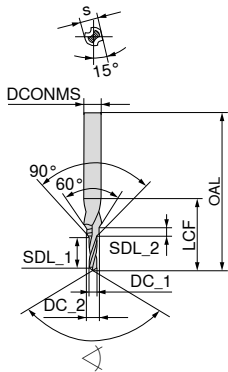
10 405 ...

| pre závit | DC_1<br>mm | DC_2<br>mm | OAL<br>mm | SDL_1<br>mm | LCF<br>mm | MK | EUR<br>T2 |     |
|-----------|------------|------------|-----------|-------------|-----------|----|-----------|-----|
| M5        | 5,5        | 10         | 168       | 13          | 87        | 1  | 42,57     | 050 |
| M6        | 6,6        | 11         | 175       | 15          | 94        | 1  | 43,12     | 060 |
| M8        | 9,0        | 15         | 212       | 19          | 114       | 2  | 56,66     | 080 |
| M10       | 11,0       | 18         | 228       | 23          | 130       | 2  | 75,76     | 100 |
| M12       | 13,5       | 20         | 238       | 27          | 140       | 2  | 91,80     | 120 |
| M14       | 15,5       | 24         | 281       | 31          | 160       | 3  | 117,90    | 140 |
| M16       | 17,5       | 26         | 286       | 35          | 165       | 3  | 139,70    | 160 |
| M18       | 20,0       | 30         | 296       | 39          | 175       | 3  | 161,50    | 180 |
| M20       | 22,0       | 33         | 334       | 43          | 185       | 4  | 187,80    | 200 |

|   |       |
|---|-------|
| P | 15-35 |
| M | 10    |
| K | 20-35 |
| N | 50-80 |
| S |       |
| H |       |
| O |       |

# Stupňovité vrtáky pre centrovanie, dielenská norma

- ▲ s ploškou.
- ▲ uhol zahĺbenia 60°
- ▲ špeciálny vrták pre strediace otvory so závitom podľa DIN 332, tvar D.
- ▲ vrtanie od Ø 3,3 mm
- ▲ posuv sa volí podľa malého priemeru DC



SB

vap.



118°  
HSS

10 350 ...

| pre závit | DC_1<br>mm <sub>H8</sub> | DCONMS<br>mm <sub>H7</sub> | DC_2<br>mm | s<br>mm | OAL<br>mm | SDL_1<br>mm | LCF<br>mm | SDL_2<br>mm |
|-----------|--------------------------|----------------------------|------------|---------|-----------|-------------|-----------|-------------|
| M4        | 3,3                      | 8,0                        | 4,3        | 6,75    | 63        | 11,0        | 23        | 1,60        |
| M5        | 4,2                      | 10,0                       | 5,3        | 8,45    | 67        | 13,0        | 27        | 2,15        |
| M6        | 5,0                      | 12,5                       | 6,4        | 10,45   | 71        | 16,0        | 33        | 2,90        |
| M8        | 6,8                      | 14,0                       | 8,4        | 12,50   | 88        | 19,5        | 41        | 3,50        |
| M10       | 8,5                      | 16,0                       | 10,5       | 14,85   | 94        | 23,0        | 47        | 4,70        |
| M12       | 10,2                     | 20,0                       | 13,0       | 18,45   | 105       | 28,0        | 59        | 6,50        |
| M16       | 14,0                     | 25,0                       | 17,0       | 23,40   | 132       | 33,0        | 67        | 8,30        |
| M20       | 17,5                     | 31,5                       | 21,0       | 29,35   | 145       | 38,0        | 77        | 10,35       |
| M24       | 21,0                     | 40,0                       | 25,0       | 36,50   | 160       | 45,0        | 90        | 12,00       |

EUR  
T2

040  
050  
060  
080  
100  
120  
160  
200  
240

|   |       |
|---|-------|
| P | 15-35 |
| M | 10    |
| K | 20-35 |
| N | 50-80 |
| S |       |
| H |       |
| O |       |

## Príklady materiálov k tabuľkám rezných parametrov

|   | Materiálová podskupina                               | Index | Zloženie / štruktúra / tepelné spracovanie |                    | Pevnosť<br>N/mm <sup>2</sup> / HB / HRC | Číslo<br>materiálu | Názov<br>materiálu         | Číslo<br>materiálu | Názov<br>materiálu |
|---|------------------------------------------------------|-------|--------------------------------------------|--------------------|-----------------------------------------|--------------------|----------------------------|--------------------|--------------------|
| P | Nelegovaná oceľ                                      | P.1.1 | < 0,15 % C                                 | žihaná             | 420 N/mm <sup>2</sup> / 125 HB          | 1.0401             | C15                        | 1.1141             | Ck15               |
|   |                                                      | P.1.2 | < 0,45 % C                                 | žihaná             | 640 N/mm <sup>2</sup> / 190 HB          | 1.1191             | C45E                       | 1.0718             | 9SMnPb28           |
|   |                                                      | P.1.3 |                                            | zušľachtená        | 840 N/mm <sup>2</sup> / 250 HB          | 1.1191             | C45E                       | 1.0535             | C55                |
|   |                                                      | P.1.4 | < 0,75 % C                                 | žihaná             | 910 N/mm <sup>2</sup> / 270 HB          | 1.1223             | C60R                       | 1.0535             | C55                |
|   |                                                      | P.1.5 |                                            | zušľachtená        | 1010 N/mm <sup>2</sup> / 300 HB         | 1.1223             | C60R                       | 1.0727             | 45S20              |
|   | Nízkolegovaná oceľ                                   | P.2.1 |                                            | žihaná             | 610 N/mm <sup>2</sup> / 180 HB          | 1.7131             | 16MnCr5                    | 1.6587             | 17CrNiMo6          |
|   |                                                      | P.2.2 |                                            | zušľachtená        | 930 N/mm <sup>2</sup> / 275 HB          | 1.7131             | 16MnCr5                    | 1.6587             | 17CrNiMo6          |
|   |                                                      | P.2.3 |                                            | zušľachtená        | 1010 N/mm <sup>2</sup> / 300 HB         | 1.7225             | 42CrMo4                    | 1.3505             | 100Cr6             |
|   |                                                      | P.2.4 |                                            | zušľachtená        | 1200 N/mm <sup>2</sup> / 375 HB         | 1.7225             | 42CrMo4                    | 1.3505             | 100Cr6             |
|   | Vysokolegovaná oceľ a vysokolegovaná nástrojová oceľ | P.3.1 |                                            | žihaná             | 680 N/mm <sup>2</sup> / 200 HB          | 1.4021             | X20Cr13                    | 1.4034             | X46Cr13            |
|   |                                                      | P.3.2 |                                            | kalená a popúšťaná | 1100 N/mm <sup>2</sup> / 300 HB         | 1.2343             | X38CrMoV5-1                | 1.4034             | X46Cr13            |
|   |                                                      | P.3.3 |                                            | kalená a popúšťaná | 1300 N/mm <sup>2</sup> / 400 HB         | 1.2343             | X38CrMoV5-1                | 1.4034             | X46Cr13            |
|   | Nehrdzavejúca oceľ                                   | P.4.1 | feritická / martenzitická                  | žihaná             | 680 N/mm <sup>2</sup> / 200 HB          | 1.4016             | X6Cr17                     | 1.2316             | X36CrMo16          |
|   |                                                      | P.4.2 | martenzitická                              | zušľachtená        | 1010 N/mm <sup>2</sup> / 300 HB         | 1.4112             | X90CrMoV18                 | 1.2316             | X36CrMo16          |
| M | Nehrdzavejúca oceľ                                   | M.1.1 | austenitická / austeniticko-feritická      | zakalená           | 610 N/mm <sup>2</sup> / 180 HB          | 1.4301             | X5CrNi18-10                | 1.4571             | X6CrNiMoTi17-12-2  |
|   |                                                      | M.2.1 | austenitická                               | zušľachtená        | 300 HB                                  | 1.4841             | X15CrNiSi25-21             | 1.4539             | X1NiCrMoCu25-20-5  |
|   |                                                      | M.3.1 | austenitická / feritická (Duplex)          |                    | 780 N/mm <sup>2</sup> / 230 HB          | 1.4462             | X2CrNiMoN22-5-3            | 1.4501             | X2CrNiMoCuWN25-7-4 |
| K | Sivá liatina                                         | K.1.1 | perlitická / feritická                     |                    | 350 N/mm <sup>2</sup> / 180 HB          | 0.6010             | GG-10                      | 0.6025             | GG-25              |
|   |                                                      | K.1.2 | perlitická (martenzitická)                 |                    | 500 N/mm <sup>2</sup> / 260 HB          | 0.6030             | GG-30                      | 0.6045             | GG-45              |
|   | Tvárna liatina                                       | K.2.1 | feritická                                  |                    | 540 N/mm <sup>2</sup> / 160 HB          | 0.7040             | GGG-40                     | 0.7060             | GGG-60             |
|   |                                                      | K.2.2 | perlitická                                 |                    | 845 N/mm <sup>2</sup> / 250 HB          | 0.7070             | GGG-70                     | 0.7080             | GGG-80             |
|   | Temperovaná liatina                                  | K.3.1 | feritická                                  |                    | 440 N/mm <sup>2</sup> / 130 HB          | 0.8035             | GTW-35-04                  | 0.8045             | GTW-45             |
|   |                                                      | K.3.2 | perlitická                                 |                    | 780 N/mm <sup>2</sup> / 230 HB          | 0.8165             | GTS-65-02                  | 0.8170             | GTS-70-02          |
| N | Hliník – tvárna zliatina                             | N.1.1 | nezakaliteľná                              |                    | 60 HB                                   | 3.0255             | Al99,5                     | 3.3315             | AlMg1              |
|   |                                                      | N.1.2 | zakaliteľná                                | zakalená           | 340 N/mm <sup>2</sup> / 100 HB          | 3.1355             | AlCuMg2                    | 3.2315             | AlMgSi1            |
|   | Hliník – zlievarenská zliatina                       | N.2.1 | ≤ 12 % Si, nezakaliteľná                   |                    | 250 N/mm <sup>2</sup> / 75 HB           | 3.2581             | G-AlSi12                   | 3.2163             | G-AlSi9Cu3         |
|   |                                                      | N.2.2 | ≤ 12 % Si, zakaliteľná                     | zakalená           | 300 N/mm <sup>2</sup> / 90 HB           | 3.2134             | G-AlSi5Cu1Mg               | 3.2373             | G-AlSi9Mg          |
|   |                                                      | N.2.3 | > 12 % Si, nezakaliteľná                   |                    | 440 N/mm <sup>2</sup> / 130 HB          |                    | G-AlSi17Cu4Mg              |                    | G-AlSi18CuNiMg     |
|   | Meď a zliatiny medi (bronz / mosadz)                 | N.3.1 | automatové zliatiny, PB > 1 %              |                    | 375 N/mm <sup>2</sup> / 110 HB          | 2.0380             | CuZn39Pb2 (Ms58)           | 2.0410             | CuZn44Pb2          |
|   |                                                      | N.3.2 | CuZn, CuSnZn                               |                    | 300 N/mm <sup>2</sup> / 90 HB           | 2.0331             | CuZn15                     | 2.4070             | CuZn28Sn1As        |
|   |                                                      | N.3.3 | CuSn, bezolovnatá meď a elektrolytická meď |                    | 340 N/mm <sup>2</sup> / 100 HB          | 2.0060             | E-Cu57                     | 2.0590             | CuZn40Fe           |
|   | Zliatiny horčíka                                     | N.4.1 | horčík a zliatiny horčíka                  |                    | 70 HB                                   | 3.5612             | MgAl6Zn                    | 3.5312             | MgAl3Zn            |
| S | Žiaruvzdorné zliatiny                                | S.1.1 | základ Fe                                  | žihané             | 680 N/mm <sup>2</sup> / 200 HB          | 1.4864             | X12NiCrSi 36-16            | 1.4865             | G-X40NiCrSi38-18   |
|   |                                                      | S.1.2 |                                            | zakalené           | 950 N/mm <sup>2</sup> / 280 HB          | 1.4980             | X6NiCrTiMoVB25-15-2        | 1.4876             | X10NiCrAlTi32-20   |
|   |                                                      | S.2.1 |                                            | žihaná             | 840 N/mm <sup>2</sup> / 250 HB          | 2.4631             | NiCr20TiAl (Nimonic80A)    | 3.4856             | NiCr22Mo9Nb        |
|   |                                                      | S.2.2 | základ Ni alebo Co                         | zakalené           | 1180 N/mm <sup>2</sup> / 350 HB         | 2.4668             | NiCr19Nb5Mo3 (Inconel 718) | 2.4955             | NiFe25Cr20NbTi     |
|   |                                                      | S.2.3 |                                            | liate              | 1080 N/mm <sup>2</sup> / 320 HB         | 2.4765             | CoCr20W15Ni                | 1.3401             | G-X120Mn12         |
|   | Zliatiny titánu                                      | S.3.1 | čistý titán                                |                    | 400 N/mm <sup>2</sup>                   | 3.7025             | Ti99,8                     | 3.7034             | Ti99,7             |
|   |                                                      | S.3.2 | alfa + beta zliatiny                       | zakalené           | 1050 N/mm <sup>2</sup> / 320 HB         | 3.7165             | TiAl6V4                    | Ti-6246            | Ti-6Al-2Sn-4Zr-6Mo |
|   |                                                      | S.3.3 | beta zliatiny                              |                    | 1400 N/mm <sup>2</sup> / 410 HB         | Ti555.3            | Ti-5Al-5V-5Mo-3Cr          | R56410             | Ti-10V-2Fe-3Al     |
| H | Zakalená oceľ                                        | H.1.1 |                                            | kalená a popúšťaná | 46–55 HRC                               |                    |                            |                    |                    |
|   |                                                      | H.1.2 |                                            | kalená a popúšťaná | 56–60 HRC                               |                    |                            |                    |                    |
|   |                                                      | H.1.3 |                                            | kalená a popúšťaná | 61–65 HRC                               |                    |                            |                    |                    |
|   |                                                      | H.1.4 |                                            | kalená a popúšťaná | 66–70 HRC                               |                    |                            |                    |                    |
|   | Tvrdená liatina                                      | H.2.1 |                                            | liata              | 400 HB                                  |                    |                            |                    |                    |
|   | Kalená liatina                                       | H.3.1 |                                            | kalená a popúšťaná | 55 HRC                                  |                    |                            |                    |                    |
| O | Nekovové materiály                                   | O.1.1 | plasty, duroplastické                      |                    | ≤ 150 N/mm <sup>2</sup>                 |                    |                            |                    |                    |
|   |                                                      | O.1.2 | plasty, termoplastické                     |                    | ≤ 100 N/mm <sup>2</sup>                 |                    |                            |                    |                    |
|   |                                                      | O.2.1 | vystužené aramidovými vláknami             |                    | ≤ 1000 N/mm <sup>2</sup>                |                    |                            |                    |                    |
|   |                                                      | O.2.2 | vystužené sklenými/uhľíkovými vláknami     |                    | ≤ 1000 N/mm <sup>2</sup>                |                    |                            |                    |                    |
|   |                                                      | O.3.1 | grafit                                     |                    |                                         |                    |                            |                    |                    |

\* pevnosť v ťahu

## Orientačné rezné parametre – hĺbka vrtania 3xD

| Index | Typ VX-TiN<br>10 122 ... |   | Typ UNI-PM-TiN<br>10 113 ... |   | Typ UNI-TiN<br>10 107 ... |   | Typ N<br>10 105 ...  |   | Typ VA<br>10 130 ... |   | Typ WNX<br>10 106 ... |   |
|-------|--------------------------|---|------------------------------|---|---------------------------|---|----------------------|---|----------------------|---|-----------------------|---|
|       | v <sub>c</sub> m/min     | F | v <sub>c</sub> m/min         | F | v <sub>c</sub> m/min      | F | v <sub>c</sub> m/min | F | v <sub>c</sub> m/min | F | v <sub>c</sub> m/min  | F |
| P.1.1 | 46                       | 6 | 44                           | 6 | 46                        | 6 | 28                   | 6 | 38                   | 5 | 38                    | 6 |
| P.1.2 | 39                       | 5 | 37                           | 5 | 39                        | 5 | 24                   | 5 | 32                   | 4 | 32                    | 5 |
| P.1.3 | 35                       | 5 | 33                           | 5 | 35                        | 5 | 21                   | 5 | 29                   | 4 | 29                    | 5 |
| P.1.4 | 32                       | 5 | 31                           | 5 | 32                        | 5 | 20                   | 5 | 27                   | 4 | 27                    | 5 |
| P.1.5 | 28                       | 5 | 26                           | 5 | 28                        | 5 | 17                   | 5 |                      |   | 23                    | 5 |
| P.2.1 | 35                       | 5 | 32                           | 6 | 35                        | 5 | 17                   | 4 | 25                   | 5 | 28                    | 6 |
| P.2.2 | 24                       | 4 | 23                           | 5 | 24                        | 4 | 12                   | 3 | 18                   | 4 | 20                    | 5 |
| P.2.3 | 21                       | 4 | 19                           | 5 | 21                        | 4 | 10                   | 3 |                      |   | 17                    | 5 |
| P.2.4 | 19                       | 3 | 18                           | 4 | 19                        | 3 | 9                    | 2 |                      |   | 15                    | 4 |
| P.3.1 | 17                       | 4 | 21                           | 4 | 17                        | 4 | 13                   | 4 |                      |   | 18                    | 4 |
| P.3.2 | 13                       | 3 | 16                           | 3 | 13                        | 3 |                      |   |                      |   | 14                    | 3 |
| P.3.3 | 12                       | 3 | 15                           | 3 | 12                        | 3 |                      |   |                      |   | 13                    | 3 |
| P.4.1 | 18                       | 4 | 14                           | 3 | 18                        | 4 |                      |   | 15                   | 3 | 13                    | 3 |
| P.4.2 | 17                       | 3 | 14                           | 2 | 17                        | 3 |                      |   | 14                   | 2 | 12                    | 2 |
| M.1.1 | 15                       | 4 |                              |   | 15                        | 4 |                      |   | 13                   | 3 |                       |   |
| M.2.1 | 12                       | 3 |                              |   | 12                        | 3 |                      |   | 11                   | 2 |                       |   |
| M.3.1 | 10                       | 3 |                              |   | 10                        | 3 |                      |   | 9                    | 2 |                       |   |
| K.1.1 | 41                       | 6 | 46                           | 6 | 41                        | 6 | 30                   | 6 |                      |   | 40                    | 6 |
| K.1.2 | 33                       | 6 | 37                           | 6 | 33                        | 6 | 24                   | 6 |                      |   | 32                    | 6 |
| K.2.1 | 35                       | 6 | 39                           | 6 | 35                        | 6 | 26                   | 6 |                      |   | 34                    | 6 |
| K.2.2 | 27                       | 5 | 30                           | 5 | 27                        | 5 | 20                   | 5 |                      |   | 26                    | 5 |
| K.3.1 | 35                       | 6 | 39                           | 6 | 35                        | 6 | 26                   | 6 |                      |   | 34                    | 6 |
| K.3.2 | 27                       | 5 | 30                           | 5 | 27                        | 5 | 20                   | 5 |                      |   | 26                    | 5 |
| N.1.1 |                          |   |                              |   |                           |   |                      |   | 80                   | 7 |                       |   |
| N.1.2 |                          |   |                              |   |                           |   |                      |   | 80                   | 7 |                       |   |
| N.2.1 | 75                       | 6 | 69                           | 6 | 75                        | 6 | 50                   | 6 | 65                   | 6 | 60                    | 6 |
| N.2.2 | 60                       | 5 | 55                           | 5 | 60                        | 5 | 40                   | 5 | 52                   | 5 | 48                    | 5 |
| N.2.3 | 52                       | 5 | 48                           | 5 | 52                        | 5 | 35                   | 5 | 46                   | 5 | 42                    | 5 |
| N.3.1 | 69                       | 5 | 64                           | 5 | 69                        | 5 | 60                   | 5 | 60                   | 5 | 56                    | 5 |
| N.3.2 | 41                       | 4 | 39                           | 4 | 41                        | 4 | 36                   | 4 | 36                   | 4 | 34                    | 4 |
| N.3.3 | 55                       | 4 | 52                           | 4 | 55                        | 4 | 48                   | 4 | 48                   | 4 | 45                    | 4 |
| N.4.1 | 70                       | 5 | 60                           | 5 | 70                        | 5 | 45                   | 5 | 6                    | 5 | 55                    | 5 |
| S.1.1 |                          |   | 7                            | 2 |                           |   |                      |   | 8                    | 1 | 6                     | 2 |
| S.1.2 |                          |   | 6                            | 1 |                           |   |                      |   | 6                    | 1 | 5                     | 1 |
| S.2.1 |                          |   | 6                            | 2 |                           |   |                      |   | 7                    | 1 | 5                     | 2 |
| S.2.2 |                          |   |                              |   |                           |   |                      |   |                      |   |                       |   |
| S.2.3 |                          |   |                              |   |                           |   |                      |   |                      |   |                       |   |
| S.3.1 | 9                        | 2 |                              |   | 9                         | 2 |                      |   | 10                   | 2 |                       |   |
| S.3.2 | 6                        | 1 |                              |   | 6                         | 1 |                      |   | 7                    | 1 |                       |   |
| S.3.3 |                          |   |                              |   |                           |   |                      |   | 6                    | 2 |                       |   |
| H.1.1 |                          |   | 6                            | 1 |                           |   |                      |   |                      |   | 5                     | 1 |
| H.1.2 |                          |   |                              |   |                           |   |                      |   |                      |   |                       |   |
| H.1.3 |                          |   |                              |   |                           |   |                      |   |                      |   |                       |   |
| H.1.4 |                          |   |                              |   |                           |   |                      |   |                      |   |                       |   |
| H.2.1 |                          |   | 10                           | 3 |                           |   |                      |   |                      |   | 9                     | 3 |
| H.3.1 |                          |   |                              |   |                           |   |                      |   |                      |   |                       |   |
| O.1.1 | 29                       | 4 | 23                           | 4 | 29                        | 4 | 20                   | 5 |                      |   | 20                    | 4 |
| O.1.2 | 29                       | 4 |                              |   | 29                        | 4 | 20                   | 5 |                      |   |                       |   |
| O.2.1 | 29                       | 4 | 23                           | 4 | 29                        | 4 | 20                   | 5 |                      |   | 20                    | 4 |
| O.2.2 | 29                       | 4 | 23                           | 4 | 29                        | 4 | 20                   | 5 |                      |   | 20                    | 4 |
| O.3.1 |                          |   |                              |   |                           |   |                      |   |                      |   |                       |   |



Rezné parametre sú v značnej miere závislé od vonkajších podmienok, ako je napr. stabilita upnutia nástroja a obrobnú, materiál a typ stroja!  
Uvádzané hodnoty predstavujú možné rezné parametre, ktoré sa v závislosti od pracovných podmienok musia upraviť smerom hore alebo dole!

| Index | Typ WT<br>10 109 ... |   | Typ WT-TiN<br>10 110 ... |   | Typ WTL-L<br>10 112 ... |   | Typ WT-MK<br>10 285 ... |   |
|-------|----------------------|---|--------------------------|---|-------------------------|---|-------------------------|---|
|       | $v_c$ m/min          | F | $v_c$ m/min              | F | $v_c$ m/min             | F | $v_c$ m/min             | F |
| P.1.1 | 38                   | 6 | 44                       | 6 | 28                      | 6 | 38                      | 6 |
| P.1.2 | 32                   | 5 | 37                       | 5 | 24                      | 5 | 32                      | 5 |
| P.1.3 | 29                   | 5 | 33                       | 5 | 21                      | 5 | 29                      | 5 |
| P.1.4 | 27                   | 5 | 31                       | 5 | 20                      | 5 | 27                      | 5 |
| P.1.5 | 23                   | 5 | 26                       | 5 | 17                      | 5 | 23                      | 5 |
| P.2.1 | 25                   | 5 | 29                       | 5 | 17                      | 4 | 25                      | 5 |
| P.2.2 | 18                   | 4 | 20                       | 4 | 12                      | 3 | 18                      | 4 |
| P.2.3 | 15                   | 4 | 17                       | 4 | 10                      | 3 | 15                      | 4 |
| P.2.4 | 14                   | 3 | 16                       | 3 | 9                       | 2 | 14                      | 3 |
| P.3.1 | 16                   | 4 | 18                       | 4 | 13                      | 4 | 16                      | 4 |
| P.3.2 | 12                   | 3 | 14                       | 3 |                         |   | 12                      | 3 |
| P.3.3 | 12                   | 3 | 14                       | 3 |                         |   | 12                      | 3 |
| P.4.1 | 14                   | 3 | 17                       | 3 |                         |   | 14                      | 3 |
| P.4.2 | 14                   | 2 | 16                       | 2 |                         |   | 14                      | 2 |
| M.1.1 | 12                   | 3 | 14                       | 3 |                         |   | 12                      | 3 |
| M.2.1 | 10                   | 2 | 12                       | 2 |                         |   | 10                      | 2 |
| M.3.1 | 8                    | 2 | 10                       | 2 |                         |   | 8                       | 2 |
| K.1.1 | 35                   | 6 | 40                       | 6 | 30                      | 6 | 35                      | 6 |
| K.1.2 | 28                   | 6 | 32                       | 6 | 24                      | 6 | 28                      | 6 |
| K.2.1 | 30                   | 6 | 34                       | 6 | 26                      | 6 | 30                      | 6 |
| K.2.2 | 23                   | 5 | 26                       | 5 | 20                      | 5 | 23                      | 5 |
| K.3.1 | 30                   | 6 | 34                       | 6 | 26                      | 6 | 30                      | 6 |
| K.3.2 | 23                   | 5 | 26                       | 5 | 20                      | 5 | 23                      | 5 |
| N.1.1 |                      |   |                          |   | 60                      | 7 |                         |   |
| N.1.2 |                      |   |                          |   | 60                      | 7 |                         |   |
| N.2.1 |                      |   |                          |   | 50                      | 6 |                         |   |
| N.2.2 |                      |   |                          |   | 40                      | 5 |                         |   |
| N.2.3 |                      |   |                          |   | 35                      | 5 |                         |   |
| N.3.1 | 62                   | 5 | 71                       | 5 | 60                      | 5 | 62                      | 5 |
| N.3.2 | 37                   | 4 | 43                       | 4 | 36                      | 4 | 37                      | 4 |
| N.3.3 |                      |   |                          |   | 48                      | 4 |                         |   |
| N.4.1 |                      |   |                          |   | 45                      | 5 |                         |   |
| S.1.1 | 8                    | 1 | 9                        | 1 |                         |   | 8                       | 1 |
| S.1.2 | 6                    | 1 | 7                        | 1 |                         |   | 6                       | 1 |
| S.2.1 | 7                    | 1 | 8                        | 1 |                         |   | 7                       | 1 |
| S.2.2 |                      |   | 5                        | 1 |                         |   |                         |   |
| S.2.3 |                      |   | 6                        | 1 |                         |   |                         |   |
| S.3.1 | 10                   | 2 | 12                       | 2 |                         |   | 10                      | 2 |
| S.3.2 | 7                    | 1 | 7                        | 1 |                         |   | 7                       | 1 |
| S.3.3 | 6                    | 2 | 7                        | 2 |                         |   | 6                       | 2 |
| H.1.1 | 4                    | 1 | 5                        | 1 |                         |   | 4                       | 1 |
| H.1.2 |                      |   |                          |   |                         |   |                         |   |
| H.1.3 |                      |   |                          |   |                         |   |                         |   |
| H.1.4 |                      |   |                          |   |                         |   |                         |   |
| H.2.1 | 8                    | 3 | 9                        | 3 |                         |   | 8                       | 3 |
| H.3.1 |                      |   |                          |   |                         |   |                         |   |
| O.1.1 |                      |   |                          |   | 20                      | 4 |                         |   |
| O.1.2 |                      |   |                          |   |                         |   |                         |   |
| O.2.1 |                      |   |                          |   | 20                      | 4 |                         |   |
| O.2.2 |                      |   |                          |   | 20                      | 4 |                         |   |
| O.3.1 |                      |   |                          |   |                         |   |                         |   |

 Pri vrtaní do húževnatých a zvierajúcich materiálov by sa pri hĺbkach vrtania  $\geq 4xD$  mali odstraňovať triesky a rezná rýchlosť  $v_c$  by sa mala znížiť nasledujúcim spôsobom: u hĺbky vrtania  $> 4xD$  o 10%, u hĺbky vrtania  $> 6xD$  o 15–20%.  
Ďalej odporúčame aplikovať chladienie emulziou.

  $v_c$  = rezná rýchlosť v m/min.  
F = koeficient pre výber posuvu  
Orientačné hodnoty pre posuv pozri  
→ strana 55

## Orientačné rezné parametre – hĺbka vŕtania 5xD

| Index | Typ VX-TiN<br>10 124 ... |   | Typ UNI-PM-TiN<br>10 173 ... |   | Typ UNI-TiN<br>10 171 ... |   | Typ N<br>10 152 ...  |   | Typ VA<br>10 175 ... |   | Typ W<br>10 161 ...  |   | Typ WTL<br>10 168 ... |   |
|-------|--------------------------|---|------------------------------|---|---------------------------|---|----------------------|---|----------------------|---|----------------------|---|-----------------------|---|
|       | v <sub>c</sub> m/min     | F | v <sub>c</sub> m/min         | F | v <sub>c</sub> m/min      | F | v <sub>c</sub> m/min | F | v <sub>c</sub> m/min | F | v <sub>c</sub> m/min | F | v <sub>c</sub> m/min  | F |
| P.1.1 | 46                       | 6 | 44                           | 6 | 46                        | 6 | 28                   | 6 | 38                   | 5 |                      |   | 32                    | 6 |
| P.1.2 | 39                       | 5 | 37                           | 5 | 39                        | 5 | 24                   | 5 | 32                   | 4 |                      |   | 27                    | 5 |
| P.1.3 | 35                       | 5 | 33                           | 5 | 35                        | 5 | 21                   | 5 | 29                   | 4 |                      |   | 24                    | 5 |
| P.1.4 | 32                       | 5 | 31                           | 5 | 32                        | 5 | 20                   | 5 | 27                   | 4 |                      |   | 23                    | 5 |
| P.1.5 | 28                       | 5 | 26                           | 5 | 28                        | 5 | 17                   | 5 |                      |   |                      |   | 19                    | 5 |
| P.2.1 | 35                       | 5 | 32                           | 6 | 35                        | 5 | 17                   | 4 | 25                   | 5 |                      |   | 20                    | 5 |
| P.2.2 | 24                       | 4 | 23                           | 5 | 24                        | 4 | 12                   | 3 | 18                   | 4 |                      |   | 14                    | 4 |
| P.2.3 | 21                       | 4 | 19                           | 5 | 21                        | 4 | 10                   | 3 |                      |   |                      |   | 12                    | 4 |
| P.2.4 | 19                       | 3 | 18                           | 4 | 19                        | 3 | 9                    | 2 |                      |   |                      |   | 11                    | 3 |
| P.3.1 | 17                       | 4 | 21                           | 4 | 17                        | 4 | 13                   | 4 |                      |   |                      |   | 15                    | 4 |
| P.3.2 | 13                       | 3 | 16                           | 3 | 13                        | 3 |                      |   |                      |   |                      |   | 11                    | 3 |
| P.3.3 | 12                       | 3 | 15                           | 3 | 12                        | 3 |                      |   |                      |   |                      |   | 10                    | 3 |
| P.4.1 | 18                       | 4 | 14                           | 3 | 18                        | 4 |                      |   | 15                   | 3 |                      |   | 10                    | 3 |
| P.4.2 | 17                       | 3 | 14                           | 2 | 17                        | 3 |                      |   | 14                   | 2 |                      |   | 10                    | 2 |
| M.1.1 | 15                       | 4 |                              |   | 15                        | 4 |                      |   | 13                   | 3 |                      |   | 9                     | 3 |
| M.2.1 | 14                       | 4 |                              |   | 14                        | 4 |                      |   | 12                   | 3 |                      |   | 8                     | 2 |
| M.3.1 | 10                       | 3 |                              |   | 10                        | 3 |                      |   | 9                    | 2 |                      |   |                       |   |
| K.1.1 | 41                       | 6 | 46                           | 6 | 41                        | 6 | 30                   | 6 |                      |   |                      |   | 35                    | 6 |
| K.1.2 | 33                       | 6 | 37                           | 6 | 33                        | 6 | 24                   | 6 |                      |   |                      |   | 28                    | 6 |
| K.2.1 | 35                       | 6 | 39                           | 6 | 35                        | 6 | 26                   | 6 |                      |   |                      |   | 29                    | 6 |
| K.2.2 | 27                       | 5 | 30                           | 5 | 27                        | 5 | 20                   | 5 |                      |   |                      |   | 22                    | 5 |
| K.3.1 | 35                       | 6 | 39                           | 6 | 35                        | 6 | 26                   | 6 |                      |   |                      |   | 29                    | 6 |
| K.3.2 | 27                       | 5 | 30                           | 5 | 27                        | 5 | 20                   | 5 |                      |   |                      |   | 22                    | 5 |
| N.1.1 |                          |   |                              |   |                           |   |                      |   | 80                   | 7 | 70                   | 7 | 69                    | 7 |
| N.1.2 |                          |   |                              |   |                           |   |                      |   | 80                   | 7 | 70                   | 7 | 69                    | 7 |
| N.2.1 | 75                       | 6 | 69                           | 6 | 75                        | 6 | 50                   | 6 | 65                   | 6 | 60                   | 6 | 58                    | 6 |
| N.2.2 | 60                       | 5 | 55                           | 5 | 60                        | 5 | 40                   | 5 | 52                   | 5 |                      |   | 46                    | 5 |
| N.2.3 | 52                       | 5 | 48                           | 5 | 52                        | 5 | 35                   | 5 | 46                   | 5 |                      |   | 40                    | 5 |
| N.3.1 | 69                       | 5 | 64                           | 5 | 69                        | 5 | 60                   | 5 | 60                   | 5 |                      |   | 69                    | 5 |
| N.3.2 | 41                       | 4 | 39                           | 4 | 41                        | 4 | 36                   | 4 | 36                   | 4 |                      |   | 41                    | 4 |
| N.3.3 | 55                       | 4 | 52                           | 4 | 55                        | 4 | 48                   | 4 | 48                   | 4 | 56                   | 4 | 55                    | 4 |
| N.4.1 | 75                       | 6 | 65                           | 6 | 70                        | 6 | 45                   | 6 | 60                   | 6 | 60                   | 6 | 6                     | 6 |
| S.1.1 |                          |   | 7                            | 2 |                           |   |                      |   | 8                    | 1 |                      |   | 7                     | 2 |
| S.1.2 |                          |   | 6                            | 1 |                           |   |                      |   | 6                    | 1 |                      |   | 6                     | 1 |
| S.2.1 |                          |   | 6                            | 2 |                           |   |                      |   | 7                    | 1 |                      |   | 6                     | 2 |
| S.2.2 |                          |   |                              |   |                           |   |                      |   |                      |   |                      |   | 3                     | 1 |
| S.2.3 |                          |   |                              |   |                           |   |                      |   |                      |   |                      |   | 4                     | 1 |
| S.3.1 | 9                        | 2 |                              |   | 9                         | 2 |                      |   | 10                   | 2 |                      |   | 6                     | 2 |
| S.3.2 | 6                        | 1 |                              |   | 6                         | 1 |                      |   | 7                    | 1 |                      |   | 4                     | 1 |
| S.3.3 |                          |   |                              |   |                           |   |                      |   | 6                    | 1 |                      |   |                       |   |
| H.1.1 |                          |   | 6                            | 1 |                           |   |                      |   |                      |   |                      |   | 5                     | 1 |
| H.1.2 |                          |   |                              |   |                           |   |                      |   |                      |   |                      |   |                       |   |
| H.1.3 |                          |   |                              |   |                           |   |                      |   |                      |   |                      |   |                       |   |
| H.1.4 |                          |   |                              |   |                           |   |                      |   |                      |   |                      |   |                       |   |
| H.2.1 |                          |   | 10                           | 3 |                           |   |                      |   |                      |   |                      |   | 9                     | 3 |
| H.3.1 |                          |   |                              |   |                           |   |                      |   |                      |   |                      |   |                       |   |
| O.1.1 | 29                       | 4 | 23                           | 4 | 29                        | 4 | 20                   | 5 |                      |   |                      |   | 23                    | 4 |
| O.1.2 | 29                       | 4 |                              |   | 29                        | 4 | 20                   | 5 |                      |   |                      |   | 23                    | 4 |
| O.2.1 | 29                       | 4 | 23                           | 4 | 29                        | 4 | 20                   | 5 |                      |   |                      |   | 23                    | 4 |
| O.2.2 | 29                       | 4 | 23                           | 4 | 29                        | 4 | 20                   | 5 |                      |   |                      |   | 23                    | 4 |
| O.3.1 |                          |   |                              |   |                           |   |                      |   |                      |   |                      |   |                       |   |



Rezné parametre sú v značnej miere závislé od vonkajších podmienok, ako je napr. stabilita upnutia nástroja a obrobnú, materiál a typ stroja! Uvádzané hodnoty predstavujú možné rezné parametre, ktoré sa v závislosti od pracovných podmienok musia upraviť smerom hore alebo dole!

| Index | Typ WTL-TiN<br>10 170 ... |   | Typ WTL-TiCN<br>10 172 ... |   | Typ WTL-L<br>10 169 ... |   | Typ WNXi<br>10 180 ... |   | Typ WNXi-TiN<br>10 181 ... |   | Typ N-MK<br>10 265 ... |   | Typ WTL-MK<br>10 280 ... |   |
|-------|---------------------------|---|----------------------------|---|-------------------------|---|------------------------|---|----------------------------|---|------------------------|---|--------------------------|---|
|       | $v_c$ m/min               | F | $v_c$ m/min                | F | $v_c$ m/min             | F | $v_c$ m/min            | F | $v_c$ m/min                | F | $v_c$ m/min            | F | $v_c$ m/min              | F |
| P.1.1 | 37                        | 6 | 37                         | 6 | 28                      | 6 | 45                     | 7 | 52                         | 7 | 28                     | 6 | 32                       | 6 |
| P.1.2 | 31                        | 5 | 31                         | 5 | 24                      | 5 | 38                     | 6 | 44                         | 6 | 24                     | 5 | 27                       | 5 |
| P.1.3 | 28                        | 5 | 28                         | 5 | 21                      | 5 | 34                     | 6 | 39                         | 6 | 21                     | 5 | 24                       | 5 |
| P.1.4 | 26                        | 5 | 26                         | 5 | 20                      | 5 | 32                     | 6 | 36                         | 6 | 20                     | 5 | 23                       | 5 |
| P.1.5 | 22                        | 5 | 22                         | 5 | 17                      | 5 | 27                     | 6 | 31                         | 6 | 17                     | 5 | 19                       | 5 |
| P.2.1 | 22                        | 5 | 22                         | 5 | 17                      | 5 | 27                     | 5 | 31                         | 5 | 17                     | 4 | 20                       | 5 |
| P.2.2 | 16                        | 4 | 16                         | 4 | 12                      | 4 | 19                     | 4 | 22                         | 4 | 12                     | 3 | 14                       | 4 |
| P.2.3 | 13                        | 4 | 13                         | 4 | 10                      | 4 | 16                     | 4 | 19                         | 4 | 10                     | 3 | 12                       | 4 |
| P.2.4 | 12                        | 3 | 12                         | 3 | 9                       | 3 | 15                     | 3 | 17                         | 3 | 9                      | 2 | 11                       | 3 |
| P.3.1 | 17                        | 4 | 17                         | 4 | 13                      | 4 | 21                     | 5 | 24                         | 5 | 13                     | 4 | 15                       | 4 |
| P.3.2 | 13                        | 3 | 13                         | 3 | 10                      | 3 | 16                     | 4 | 18                         | 4 |                        |   | 11                       | 3 |
| P.3.3 | 12                        | 3 | 12                         | 3 |                         |   | 15                     | 4 | 17                         | 4 |                        |   | 10                       | 3 |
| P.4.1 | 12                        | 3 | 12                         | 3 |                         |   | 14                     | 4 | 17                         | 4 |                        |   | 10                       | 3 |
| P.4.2 | 11                        | 2 | 11                         | 2 |                         |   | 14                     | 3 | 16                         | 3 |                        |   | 10                       | 2 |
| M.1.1 | 11                        | 3 | 11                         | 3 |                         |   |                        |   |                            |   |                        |   | 9                        | 3 |
| M.2.1 |                           |   |                            |   |                         |   |                        |   |                            |   |                        |   | 8                        | 2 |
| M.3.1 |                           |   |                            |   |                         |   |                        |   |                            |   |                        |   |                          |   |
| K.1.1 | 40                        | 6 | 40                         | 6 | 30                      | 6 | 48                     | 7 | 56                         | 7 | 30                     | 6 | 35                       | 6 |
| K.1.2 | 32                        | 6 | 32                         | 6 | 24                      | 6 | 39                     | 7 | 44                         | 7 | 24                     | 6 | 28                       | 6 |
| K.2.1 | 34                        | 6 | 34                         | 6 | 26                      | 6 | 41                     | 7 | 47                         | 7 | 26                     | 6 | 29                       | 6 |
| K.2.2 | 26                        | 5 | 26                         | 5 | 20                      | 5 | 31                     | 6 | 36                         | 6 | 20                     | 5 | 22                       | 5 |
| K.3.1 | 34                        | 6 | 34                         | 6 | 26                      | 6 | 41                     | 7 | 47                         | 7 | 26                     | 6 | 29                       | 6 |
| K.3.2 | 26                        | 5 | 26                         | 5 | 20                      | 5 | 31                     | 6 | 36                         | 6 | 20                     | 5 | 22                       | 5 |
| N.1.1 |                           |   |                            |   | 60                      | 7 |                        |   |                            |   |                        |   | 69                       | 7 |
| N.1.2 |                           |   |                            |   | 60                      | 7 |                        |   |                            |   |                        |   | 69                       | 7 |
| N.2.1 | 66                        | 6 | 66                         | 6 | 50                      | 6 | 81                     | 7 | 93                         | 7 | 50                     | 6 | 58                       | 6 |
| N.2.2 | 53                        | 5 | 53                         | 5 | 40                      | 5 | 64                     | 6 | 74                         | 6 | 40                     | 5 | 46                       | 5 |
| N.2.3 | 46                        | 5 | 46                         | 5 | 35                      | 5 | 56                     | 6 | 65                         | 6 | 35                     | 5 | 40                       | 5 |
| N.3.1 | 79                        | 5 | 79                         | 5 | 60                      | 5 | 97                     | 6 | 111                        | 6 | 60                     | 5 | 69                       | 5 |
| N.3.2 | 48                        | 4 | 48                         | 4 | 36                      | 4 | 58                     | 5 | 67                         | 5 | 36                     | 4 | 41                       | 4 |
| N.3.3 | 63                        | 4 | 63                         | 4 | 48                      | 4 | 77                     | 5 | 89                         | 5 | 48                     | 4 | 55                       | 4 |
| N.4.1 | 60                        | 6 | 60                         | 6 | 45                      | 6 | 70                     | 7 | 80                         | 7 | 45                     | 6 | 50                       | 6 |
| S.1.1 | 8                         | 2 | 8                          | 2 |                         |   |                        |   |                            |   |                        |   | 7                        | 2 |
| S.1.2 | 6                         | 1 | 6                          | 1 |                         |   |                        |   |                            |   |                        |   | 6                        | 1 |
| S.2.1 | 7                         | 2 | 7                          | 2 |                         |   |                        |   |                            |   |                        |   | 6                        | 2 |
| S.2.2 | 4                         | 1 | 4                          | 1 |                         |   |                        |   |                            |   |                        |   | 3                        | 1 |
| S.2.3 | 5                         | 1 | 5                          | 1 |                         |   |                        |   |                            |   |                        |   | 4                        | 1 |
| S.3.1 | 7                         | 2 | 7                          | 2 |                         |   |                        |   |                            |   |                        |   | 6                        | 2 |
| S.3.2 | 4                         | 1 | 4                          | 1 |                         |   |                        |   |                            |   |                        |   | 4                        | 1 |
| S.3.3 |                           |   |                            |   |                         |   |                        |   |                            |   |                        |   |                          |   |
| H.1.1 | 5                         | 1 | 5                          | 1 |                         |   |                        |   |                            |   |                        |   | 5                        | 1 |
| H.1.2 |                           |   |                            |   |                         |   |                        |   |                            |   |                        |   |                          |   |
| H.1.3 |                           |   |                            |   |                         |   |                        |   |                            |   |                        |   |                          |   |
| H.1.4 |                           |   |                            |   |                         |   |                        |   |                            |   |                        |   |                          |   |
| H.2.1 | 11                        | 3 | 11                         | 3 |                         |   |                        |   |                            |   |                        |   | 9                        | 3 |
| H.3.1 |                           |   |                            |   |                         |   |                        |   |                            |   |                        |   |                          |   |
| O.1.1 | 26                        | 4 | 26                         | 4 | 20                      | 4 | 32                     | 5 | 37                         | 5 | 20                     | 5 | 23                       | 4 |
| O.1.2 | 26                        | 4 | 26                         | 4 | 20                      | 4 |                        |   |                            |   | 20                     | 5 | 23                       | 4 |
| O.2.1 | 26                        | 4 | 26                         | 4 | 20                      | 4 | 32                     | 5 | 37                         | 5 | 20                     | 5 | 23                       | 4 |
| O.2.2 | 26                        | 4 | 26                         | 4 | 20                      | 4 | 32                     | 5 | 37                         | 5 | 20                     | 5 | 23                       | 4 |
| O.3.1 |                           |   |                            |   |                         |   |                        |   |                            |   |                        |   |                          |   |



Pri vrtaní do húževnatých a zvierajúcich materiálov by sa pri hĺbkach vrtania  $\geq 4xD$  mali odstraňovať triesky a rezná rýchlosť  $v_c$  by sa mala znížiť nasledujúcim spôsobom: u hĺbky vrtania  $> 4xD$  o 10%, u hĺbky vrtania  $> 6xD$  o 15–20%.  
Ďalej odporúčame aplikovať chladienie emulziou.



$v_c$  = rezná rýchlosť v m/min.  
F = koeficient pre výber posuvu  
Orientačné hodnoty pre posuv pozri  
→ strana 55

## Orientačné rezné parametre – hĺbka vrtania 10xD

| Index | Typ NC<br>10 223 ... |   | Typ NC-TiAlN<br>10 224 ... |   | Typ UNI-TiN<br>10 270 ... |   | Typ WTL<br>10 225 ... |   | Typ WTL<br>10 215 ... |   |
|-------|----------------------|---|----------------------------|---|---------------------------|---|-----------------------|---|-----------------------|---|
|       | v <sub>c</sub> m/min | F | v <sub>c</sub> m/min       | F | v <sub>c</sub> m/min      | F | v <sub>c</sub> m/min  | F | v <sub>c</sub> m/min  | F |
| P.1.1 | 35                   | 7 | 41                         | 7 | <b>41</b>                 | 6 | <b>29</b>             | 6 | 25                    | 6 |
| P.1.2 | 30                   | 6 | 34                         | 6 | <b>35</b>                 | 5 | <b>25</b>             | 5 | 21                    | 5 |
| P.1.3 | 26                   | 6 | 30                         | 6 | <b>31</b>                 | 5 | <b>22</b>             | 5 | 19                    | 5 |
| P.1.4 | 25                   | 6 | 28                         | 6 | <b>29</b>                 | 5 | <b>20</b>             | 5 | 18                    | 5 |
| P.1.5 | 21                   | 6 | 24                         | 6 | <b>25</b>                 | 5 | <b>17</b>             | 5 | 15                    | 5 |
| P.2.1 | 21                   | 5 | 25                         | 5 | <b>31</b>                 | 5 | <b>18</b>             | 5 | 15                    | 5 |
| P.2.2 | 15                   | 4 | 17                         | 4 | <b>22</b>                 | 4 | <b>12</b>             | 4 | 11                    | 4 |
| P.2.3 | 13                   | 4 | 15                         | 4 | <b>19</b>                 | 4 | <b>11</b>             | 4 | 9                     | 4 |
| P.2.4 | 12                   | 3 | 14                         | 3 | <b>17</b>                 | 3 | <b>10</b>             | 3 | 8                     | 3 |
| P.3.1 | 16                   | 5 | 19                         | 5 | <b>16</b>                 | 4 | <b>13</b>             | 4 | 12                    | 4 |
| P.3.2 |                      |   |                            |   | <b>12</b>                 | 3 | <b>10</b>             | 3 | 9                     | 3 |
| P.3.3 |                      |   |                            |   | <b>10</b>                 | 2 | <b>8</b>              | 3 |                       |   |
| P.4.1 |                      |   | 13                         | 4 | <b>16</b>                 | 4 | <b>9</b>              | 3 |                       |   |
| P.4.2 |                      |   | 12                         | 3 | <b>15</b>                 | 3 | <b>9</b>              | 2 |                       |   |
| M.1.1 |                      |   | 12                         | 4 | <b>13</b>                 | 4 | 8                     | 3 |                       |   |
| M.2.1 |                      |   | 8                          | 3 | <b>8</b>                  | 3 | 2                     | 2 |                       |   |
| M.3.1 |                      |   |                            |   | <b>9</b>                  | 3 |                       |   |                       |   |
| K.1.1 | <b>38</b>            | 7 | <b>43</b>                  | 7 | <b>37</b>                 | 6 | <b>31</b>             | 6 | <b>27</b>             | 6 |
| K.1.2 | <b>30</b>            | 7 | <b>35</b>                  | 7 | <b>30</b>                 | 6 | <b>25</b>             | 6 | <b>22</b>             | 6 |
| K.2.1 | <b>32</b>            | 7 | <b>37</b>                  | 7 | <b>32</b>                 | 6 | <b>26</b>             | 6 | <b>23</b>             | 6 |
| K.2.2 | <b>25</b>            | 6 | <b>28</b>                  | 6 | <b>24</b>                 | 5 | <b>20</b>             | 5 | <b>18</b>             | 5 |
| K.3.1 | <b>32</b>            | 7 | <b>37</b>                  | 7 | <b>32</b>                 | 6 | <b>26</b>             | 6 | <b>23</b>             | 6 |
| K.3.2 | <b>25</b>            | 6 | <b>28</b>                  | 6 | <b>24</b>                 | 5 | <b>20</b>             | 5 | <b>18</b>             | 5 |
| N.1.1 |                      |   |                            |   |                           |   | <b>62</b>             | 7 | <b>54</b>             | 7 |
| N.1.2 |                      |   |                            |   |                           |   | <b>62</b>             | 7 | <b>54</b>             | 7 |
| N.2.1 | 63                   | 7 | 72                         | 7 | 67                        | 6 | <b>52</b>             | 6 | <b>45</b>             | 6 |
| N.2.2 | 50                   | 6 | 58                         | 6 | 54                        | 5 | <b>41</b>             | 5 | <b>36</b>             | 5 |
| N.2.3 | 44                   | 6 | 51                         | 6 | 47                        | 5 | <b>36</b>             | 5 | <b>32</b>             | 5 |
| N.3.1 | 76                   | 6 | 87                         | 6 | 62                        | 5 | <b>62</b>             | 5 | <b>54</b>             | 5 |
| N.3.2 | 45                   | 5 | 52                         | 5 | 37                        | 4 | <b>37</b>             | 4 | <b>32</b>             | 4 |
| N.3.3 | 60                   | 5 | 70                         | 5 | 50                        | 4 | <b>50</b>             | 4 | <b>43</b>             | 4 |
| N.4.1 | 60                   | 5 | 50                         | 6 | 50                        | 6 | <b>50</b>             | 6 | <b>45</b>             | 5 |
| S.1.1 |                      |   |                            |   |                           |   | 6                     | 2 |                       |   |
| S.1.2 |                      |   |                            |   |                           |   | 5                     | 1 |                       |   |
| S.2.1 |                      |   |                            |   |                           |   | 5                     | 2 |                       |   |
| S.2.2 |                      |   |                            |   |                           |   | 3                     | 1 |                       |   |
| S.2.3 |                      |   |                            |   |                           |   | 4                     | 1 |                       |   |
| S.3.1 |                      |   |                            |   | 8                         | 2 | 5                     | 2 |                       |   |
| S.3.2 |                      |   |                            |   | 5                         | 1 | 3                     | 1 |                       |   |
| S.3.3 |                      |   |                            |   |                           |   |                       |   |                       |   |
| H.1.1 |                      |   |                            |   |                           |   | 4                     | 1 |                       |   |
| H.1.2 |                      |   |                            |   |                           |   |                       |   |                       |   |
| H.1.3 |                      |   |                            |   |                           |   |                       |   |                       |   |
| H.1.4 |                      |   |                            |   |                           |   |                       |   |                       |   |
| H.2.1 |                      |   |                            |   |                           |   | 8                     | 3 |                       |   |
| H.3.1 |                      |   |                            |   |                           |   |                       |   |                       |   |
| O.1.1 | 25                   | 6 | 29                         | 6 | 26                        | 4 | 21                    | 4 | 18                    | 4 |
| O.1.2 | 25                   | 6 | 29                         | 6 | 26                        | 4 | 21                    | 4 | 18                    | 4 |
| O.2.1 | 25                   | 6 | 29                         | 6 | 26                        | 4 | 21                    | 4 | 18                    | 4 |
| O.2.2 | 25                   | 6 | 29                         | 6 | 26                        | 4 | 21                    | 4 | 18                    | 4 |
| O.3.1 |                      |   |                            |   |                           |   |                       |   |                       |   |



Rezné parametre sú v značnej miere závislé od vonkajších podmienok, ako je napr. stabilita upnutia nástroja a obrodku, materiál a typ stroja! Uvádzané hodnoty predstavujú možné rezné parametre, ktoré sa v závislosti od pracovných podmienok musia upraviť smerom hore alebo dole!

| Index | Typ WTL-TiN<br>10 210 ... |   | Typ WTW<br>10 200 ... |   | Typ N-MK<br>10 295 ... |   | Typ WTL-MK<br>10 297 ... |   |
|-------|---------------------------|---|-----------------------|---|------------------------|---|--------------------------|---|
|       | $v_c$ m/min               | F | $v_c$ m/min           | F | $v_c$ m/min            | F | $v_c$ m/min              | F |
| P.1.1 | 29                        | 6 |                       |   | 25                     | 6 | 29                       | 6 |
| P.1.2 | 25                        | 5 |                       |   | 21                     | 5 | 25                       | 5 |
| P.1.3 | 22                        | 5 |                       |   | 19                     | 5 | 22                       | 5 |
| P.1.4 | 20                        | 5 |                       |   | 18                     | 5 | 20                       | 5 |
| P.1.5 | 17                        | 5 |                       |   | 15                     | 5 | 17                       | 5 |
| P.2.1 | 18                        | 5 |                       |   | 15                     | 4 | 18                       | 5 |
| P.2.2 | 12                        | 4 |                       |   | 11                     | 3 | 12                       | 4 |
| P.2.3 | 11                        | 4 |                       |   | 9                      | 3 | 11                       | 4 |
| P.2.4 | 10                        | 3 |                       |   | 8                      | 2 | 10                       | 3 |
| P.3.1 | 13                        | 4 |                       |   | 12                     | 4 | 13                       | 4 |
| P.3.2 | 10                        | 3 |                       |   |                        |   | 10                       | 3 |
| P.3.3 | 8                         | 3 |                       |   |                        |   | 8                        | 3 |
| P.4.1 |                           |   |                       |   |                        |   | 9                        | 3 |
| P.4.2 |                           |   |                       |   |                        |   | 9                        | 2 |
| M.1.1 |                           |   |                       |   |                        |   | 8                        | 3 |
| M.2.1 |                           |   |                       |   |                        |   | 2                        | 2 |
| M.3.1 |                           |   |                       |   |                        |   |                          |   |
| K.1.1 | 31                        | 6 |                       |   | 27                     | 6 | 31                       | 6 |
| K.1.2 | 25                        | 6 |                       |   | 22                     | 6 | 25                       | 6 |
| K.2.1 | 26                        | 6 |                       |   | 23                     | 6 | 26                       | 6 |
| K.2.2 | 20                        | 5 |                       |   | 18                     | 5 | 20                       | 5 |
| K.3.1 | 26                        | 6 |                       |   | 23                     | 6 | 26                       | 6 |
| K.3.2 | 20                        | 5 |                       |   | 18                     | 5 | 20                       | 5 |
| N.1.1 |                           |   | 72                    | 7 |                        |   | 62                       | 7 |
| N.1.2 |                           |   | 72                    | 7 |                        |   | 62                       | 7 |
| N.2.1 | 52                        | 6 |                       |   | 45                     | 6 | 52                       | 6 |
| N.2.2 | 41                        | 5 |                       |   | 36                     | 5 | 41                       | 5 |
| N.2.3 | 36                        | 5 |                       |   | 32                     | 5 | 36                       | 5 |
| N.3.1 | 62                        | 5 |                       |   | 54                     | 5 | 62                       | 5 |
| N.3.2 | 37                        | 4 |                       |   | 32                     | 4 | 37                       | 4 |
| N.3.3 | 50                        | 4 |                       |   | 43                     | 4 | 50                       | 4 |
| N.4.1 | 50                        | 5 |                       |   | 60                     | 6 | 50                       | 6 |
| S.1.1 |                           |   |                       |   |                        |   | 6                        | 2 |
| S.1.2 |                           |   |                       |   |                        |   | 5                        | 1 |
| S.2.1 |                           |   |                       |   |                        |   | 5                        | 2 |
| S.2.2 |                           |   |                       |   |                        |   | 3                        | 1 |
| S.2.3 |                           |   |                       |   |                        |   | 4                        | 1 |
| S.3.1 |                           |   |                       |   |                        |   | 5                        | 2 |
| S.3.2 |                           |   |                       |   |                        |   | 3                        | 1 |
| S.3.3 |                           |   |                       |   |                        |   |                          |   |
| H.1.1 |                           |   |                       |   |                        |   | 4                        | 1 |
| H.1.2 |                           |   |                       |   |                        |   |                          |   |
| H.1.3 |                           |   |                       |   |                        |   |                          |   |
| H.1.4 |                           |   |                       |   |                        |   |                          |   |
| H.2.1 |                           |   |                       |   |                        |   | 8                        | 3 |
| H.3.1 |                           |   |                       |   |                        |   |                          |   |
| O.1.1 | 21                        | 4 |                       |   | 18                     | 5 | 21                       | 4 |
| O.1.2 | 21                        | 4 |                       |   | 18                     | 5 | 21                       | 4 |
| O.2.1 | 21                        | 4 |                       |   | 18                     | 5 | 21                       | 4 |
| O.2.2 | 21                        | 4 |                       |   | 18                     | 5 | 21                       | 4 |
| O.3.1 |                           |   |                       |   |                        |   |                          |   |



Pri vrtaní do húževnatých a zvierajúcich materiálov by sa pri hĺbkach vrtania  $\geq 4xD$  mali odstraňovať triesky a rezná rýchlosť  $v_c$  by sa mala znížiť nasledujúcim spôsobom: u hĺbky vrtania  $> 4xD$  o 10%, u hĺbky vrtania  $> 6xD$  o 15–20%.  
Ďalej odporúčame aplikovať chladienie emulziou.



$v_c$  = rezná rýchlosť v m/min.  
F = koeficient pre výber posuvu  
Orientačné hodnoty pre posuv pozri  
→ strana 55

## Orientačné rezné parametre – hĺbka vrtania nad 10xD

| Index | Typ WTL-R1<br>10 235 ... |   | Typ WTL-R2<br>10 245 ... |   | Typ WTL-R3<br>10 255 ... |   | Typ WTL-TiAIN-R1<br>10 236 ... |   | Typ WTL-TiAIN-R2<br>10 246 ... |   | Typ WTL-TiAIN-R3<br>10 256 ... |   |
|-------|--------------------------|---|--------------------------|---|--------------------------|---|--------------------------------|---|--------------------------------|---|--------------------------------|---|
|       | v <sub>c</sub> m/min     | F | v <sub>c</sub> m/min     | F | v <sub>c</sub> m/min     | F | v <sub>c</sub> m/min           | F | v <sub>c</sub> m/min           | F | v <sub>c</sub> m/min           | F |
| P.1.1 | 21                       | 5 | 21                       | 5 | 21                       | 5 | 24                             | 5 | 24                             | 5 | 24                             | 5 |
| P.1.2 | 18                       | 4 | 18                       | 4 | 18                       | 4 | 21                             | 4 | 21                             | 4 | 21                             | 4 |
| P.1.3 | 16                       | 4 | 16                       | 4 | 16                       | 4 | 18                             | 4 | 18                             | 4 | 18                             | 4 |
| P.1.4 | 15                       | 4 | 15                       | 4 | 15                       | 4 | 17                             | 4 | 17                             | 4 | 17                             | 4 |
| P.1.5 | 13                       | 4 | 13                       | 4 | 13                       | 4 | 14                             | 4 | 14                             | 4 | 14                             | 4 |
| P.2.1 | 13                       | 4 | 13                       | 4 | 13                       | 4 | 15                             | 4 | 15                             | 4 | 15                             | 4 |
| P.2.2 | 9                        | 3 | 9                        | 3 | 9                        | 3 | 10                             | 3 | 10                             | 3 | 10                             | 3 |
| P.2.3 | 8                        | 3 | 8                        | 3 | 8                        | 3 | 9                              | 3 | 9                              | 3 | 9                              | 3 |
| P.2.4 | 7                        | 2 | 7                        | 2 | 7                        | 2 | 8                              | 2 | 8                              | 2 | 8                              | 2 |
| P.3.1 | 10                       | 3 | 10                       | 3 | 10                       | 3 | 11                             | 3 | 11                             | 3 | 11                             | 3 |
| P.3.2 | 7                        | 2 | 7                        | 2 | 7                        | 2 | 8                              | 2 | 8                              | 2 | 8                              | 2 |
| P.3.3 | 6                        | 2 | 6                        | 2 | 6                        | 2 | 7                              | 2 | 7                              | 2 | 7                              | 2 |
| P.4.1 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| P.4.2 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| M.1.1 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| M.2.1 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| M.3.1 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| K.1.1 | 23                       | 5 | 23                       | 5 | 23                       | 5 | 26                             | 5 | 26                             | 5 | 26                             | 5 |
| K.1.2 | 18                       | 5 | 18                       | 5 | 18                       | 5 | 21                             | 5 | 21                             | 5 | 21                             | 5 |
| K.2.1 | 19                       | 5 | 19                       | 5 | 19                       | 5 | 22                             | 5 | 22                             | 5 | 22                             | 5 |
| K.2.2 | 15                       | 4 | 15                       | 4 | 15                       | 4 | 17                             | 4 | 17                             | 4 | 17                             | 4 |
| K.3.1 | 19                       | 5 | 19                       | 5 | 19                       | 5 | 22                             | 5 | 22                             | 5 | 22                             | 5 |
| K.3.2 | 15                       | 4 | 15                       | 4 | 15                       | 4 | 17                             | 4 | 17                             | 4 | 17                             | 4 |
| N.1.1 | 45                       | 6 | 45                       | 6 | 45                       | 6 | 52                             | 6 | 52                             | 6 | 52                             | 6 |
| N.1.2 | 45                       | 6 | 45                       | 6 | 45                       | 6 | 52                             | 6 | 52                             | 6 | 52                             | 6 |
| N.2.1 | 38                       | 5 | 38                       | 5 | 38                       | 5 | 43                             | 5 | 43                             | 5 | 43                             | 5 |
| N.2.2 | 30                       | 4 | 30                       | 4 | 30                       | 4 | 35                             | 4 | 35                             | 4 | 35                             | 4 |
| N.2.3 | 26                       | 4 | 26                       | 4 | 26                       | 4 | 30                             | 4 | 30                             | 4 | 30                             | 4 |
| N.3.1 | 45                       | 4 | 45                       | 4 | 45                       | 4 | 52                             | 4 | 52                             | 4 | 52                             | 4 |
| N.3.2 | 27                       | 3 | 27                       | 3 | 27                       | 3 | 31                             | 3 | 31                             | 3 | 31                             | 3 |
| N.3.3 | 36                       | 3 | 36                       | 3 | 36                       | 3 | 41                             | 3 | 41                             | 3 | 41                             | 3 |
| N.4.1 | 55                       | 5 | 55                       | 5 | 55                       | 5 | 60                             | 6 | 60                             | 6 | 60                             | 6 |
| S.1.1 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| S.1.2 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| S.2.1 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| S.2.2 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| S.2.3 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| S.3.1 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| S.3.2 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| S.3.3 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| H.1.1 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| H.1.2 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| H.1.3 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| H.1.4 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| H.2.1 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| H.3.1 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |
| O.1.1 | 15                       | 3 | 15                       | 3 | 15                       | 3 | 17                             | 3 | 17                             | 3 | 17                             | 3 |
| O.1.2 | 15                       | 3 | 15                       | 3 | 15                       | 3 | 17                             | 3 | 17                             | 3 | 17                             | 3 |
| O.2.1 | 15                       | 3 | 15                       | 3 | 15                       | 3 | 17                             | 3 | 17                             | 3 | 17                             | 3 |
| O.2.2 | 15                       | 3 | 15                       | 3 | 15                       | 3 | 17                             | 3 | 17                             | 3 | 17                             | 3 |
| O.3.1 |                          |   |                          |   |                          |   |                                |   |                                |   |                                |   |



Rezné parametre sú v značnej miere závislé od vonkajších podmienok, ako je napr. stabilita upnutia nástroja a obrobnú, materiál a typ stroja!  
Uvádzané hodnoty predstavujú možné rezné parametre, ktoré sa v závislosti od pracovných podmienok musia upraviť smerom hore alebo dole!

| Index | Typ WTL-MK-R1<br>10 305 ... |   | Typ WTL-MK-R2<br>10 315 ... |   |
|-------|-----------------------------|---|-----------------------------|---|
|       | $v_c$ m/min                 | F | $v_c$ m/min                 | F |
| P.1.1 | 21                          | 5 | 21                          | 5 |
| P.1.2 | 18                          | 4 | 18                          | 4 |
| P.1.3 | 16                          | 4 | 16                          | 4 |
| P.1.4 | 15                          | 4 | 15                          | 4 |
| P.1.5 | 13                          | 4 | 13                          | 4 |
| P.2.1 | 13                          | 4 | 13                          | 4 |
| P.2.2 | 9                           | 3 | 9                           | 3 |
| P.2.3 | 8                           | 3 | 8                           | 3 |
| P.2.4 | 7                           | 2 | 7                           | 2 |
| P.3.1 | 10                          | 3 | 10                          | 3 |
| P.3.2 | 7                           | 2 | 7                           | 2 |
| P.3.3 | 6                           | 2 | 6                           | 2 |
| P.4.1 |                             |   |                             |   |
| P.4.2 |                             |   |                             |   |
| M.1.1 |                             |   |                             |   |
| M.2.1 |                             |   |                             |   |
| M.3.1 |                             |   |                             |   |
| K.1.1 | 23                          | 5 | 23                          | 5 |
| K.1.2 | 18                          | 5 | 18                          | 5 |
| K.2.1 | 19                          | 5 | 19                          | 5 |
| K.2.2 | 15                          | 4 | 15                          | 4 |
| K.3.1 | 19                          | 5 | 19                          | 5 |
| K.3.2 | 15                          | 4 | 15                          | 4 |
| N.1.1 | 45                          | 6 | 45                          | 6 |
| N.1.2 | 45                          | 6 | 45                          | 6 |
| N.2.1 | 38                          | 5 | 38                          | 5 |
| N.2.2 | 30                          | 4 | 30                          | 4 |
| N.2.3 | 26                          | 4 | 26                          | 4 |
| N.3.1 | 45                          | 4 | 45                          | 4 |
| N.3.2 | 27                          | 3 | 27                          | 3 |
| N.3.3 | 36                          | 3 | 36                          | 3 |
| N.4.1 | 55                          | 5 | 55                          | 5 |
| S.1.1 |                             |   |                             |   |
| S.1.2 |                             |   |                             |   |
| S.2.1 |                             |   |                             |   |
| S.2.2 |                             |   |                             |   |
| S.2.3 |                             |   |                             |   |
| S.3.1 |                             |   |                             |   |
| S.3.2 |                             |   |                             |   |
| S.3.3 |                             |   |                             |   |
| H.1.1 |                             |   |                             |   |
| H.1.2 |                             |   |                             |   |
| H.1.3 |                             |   |                             |   |
| H.1.4 |                             |   |                             |   |
| H.2.1 |                             |   |                             |   |
| H.3.1 |                             |   |                             |   |
| O.1.1 | 15                          | 3 | 15                          | 3 |
| O.1.2 | 15                          | 3 | 15                          | 3 |
| O.2.1 | 15                          | 3 | 15                          | 3 |
| O.2.2 | 15                          | 3 | 15                          | 3 |
| O.3.1 |                             |   |                             |   |



Pri vrtaní do húževnatých a zvierajúcich materiálov by sa pri hĺbkach vrtania  $\geq 4xD$  mali odstraňovať triesky a rezná rýchlosť  $v_c$  by sa mala znížiť nasledujúcim spôsobom: u hĺbky vrtania  $> 4xD$  o 10%, u hĺbky vrtania  $> 6xD$  o 15–20%.  
Ďalej odporúčame aplikovať chladienie emulziou.



$v_c$  = rezná rýchlosť v m/min.  
F = koeficient pre výber posuvu  
Orientačné hodnoty pre posuv pozri  
→ **strana 55**

## Orientačné rezné parametre – minivrtáky 10 103 ...

| Index | v <sub>c</sub> m/min | Men. Ø v mm |             |             |             |             |             |             |
|-------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|       |                      | Ø 0,15      | Ø 0,20–0,25 | Ø 0,30–0,35 | Ø 0,40–0,55 | Ø 0,60–0,75 | Ø 0,80–0,95 | Ø 1,00–1,45 |
|       |                      | f<br>mm/ot. | f<br>mm/ot. | f<br>mm/ot. | f<br>mm/ot. | f<br>mm/ot. | f<br>mm/ot. | f<br>mm/ot. |
| P.1.1 | 33                   | 0,0090      | 0,0110      | 0,0150      | 0,0190      | 0,0260      | 0,0310      | 0,0500      |
| P.1.2 | 28                   | 0,0070      | 0,0090      | 0,0110      | 0,0140      | 0,0200      | 0,0240      | 0,0410      |
| P.1.3 | 25                   | 0,0070      | 0,0090      | 0,0110      | 0,0140      | 0,0200      | 0,0240      | 0,0410      |
| P.1.4 | 23                   | 0,0070      | 0,0090      | 0,0110      | 0,0140      | 0,0200      | 0,0240      | 0,0410      |
| P.1.5 | 20                   | 0,0070      | 0,0090      | 0,0110      | 0,0140      | 0,0200      | 0,0240      | 0,0410      |
| P.2.1 | 20                   | 0,0050      | 0,0070      | 0,0090      | 0,0110      | 0,0150      | 0,0200      | 0,0350      |
| P.2.2 | 14                   | 0,0040      | 0,0050      | 0,0070      | 0,0080      | 0,0120      | 0,0160      | 0,0290      |
| P.2.3 | 12                   | 0,0040      | 0,0050      | 0,0070      | 0,0080      | 0,0120      | 0,0160      | 0,0290      |
| P.2.4 | 11                   | 0,0030      | 0,0040      | 0,0050      | 0,0070      | 0,0090      | 0,0130      | 0,0240      |
| P.3.1 | 15                   | 0,0050      | 0,0070      | 0,0090      | 0,0110      | 0,0150      | 0,0200      | 0,0350      |
| P.3.2 | 11                   | 0,0040      | 0,0050      | 0,0070      | 0,0080      | 0,0120      | 0,0160      | 0,0290      |
| P.3.3 | 10                   | 0,0040      | 0,0050      | 0,0070      | 0,0080      | 0,0120      | 0,0160      | 0,0290      |
| P.4.1 | 11                   | 0,0040      | 0,0050      | 0,0070      | 0,0080      | 0,0120      | 0,0160      | 0,0290      |
| P.4.2 | 10                   | 0,0030      | 0,0040      | 0,0050      | 0,0070      | 0,0090      | 0,0130      | 0,0240      |
| M.1.1 | 9                    | 0,0040      | 0,0050      | 0,0070      | 0,0080      | 0,0120      | 0,0160      | 0,0290      |
| M.2.1 | 8                    | 0,0040      | 0,0050      | 0,0070      | 0,0080      | 0,0120      | 0,0160      | 0,0290      |
| M.3.1 |                      |             |             |             |             |             |             |             |
| K.1.1 | 35                   | 0,0090      | 0,0110      | 0,0150      | 0,0190      | 0,0260      | 0,0310      | 0,0500      |
| K.1.2 | 28                   | 0,0090      | 0,0110      | 0,0150      | 0,0190      | 0,0260      | 0,0310      | 0,0500      |
| K.2.1 | 30                   | 0,0090      | 0,0110      | 0,0150      | 0,0190      | 0,0260      | 0,0310      | 0,0500      |
| K.2.2 | 23                   | 0,0070      | 0,0090      | 0,0110      | 0,0140      | 0,0200      | 0,0240      | 0,0410      |
| K.3.1 | 30                   | 0,0090      | 0,0110      | 0,0150      | 0,0190      | 0,0260      | 0,0310      | 0,0500      |
| K.3.2 | 23                   | 0,0070      | 0,0090      | 0,0110      | 0,0140      | 0,0200      | 0,0240      | 0,0410      |
| N.1.1 | 70                   | 0,0120      | 0,0140      | 0,0190      | 0,0240      | 0,0340      | 0,0380      | 0,0600      |
| N.1.2 | 70                   | 0,0120      | 0,0140      | 0,0190      | 0,0240      | 0,0340      | 0,0380      | 0,0600      |
| N.2.1 | 59                   | 0,0090      | 0,0110      | 0,0150      | 0,0190      | 0,0260      | 0,0310      | 0,0500      |
| N.2.2 | 47                   | 0,0070      | 0,0090      | 0,0110      | 0,0140      | 0,0200      | 0,0240      | 0,0410      |
| N.2.3 | 41                   | 0,0070      | 0,0090      | 0,0110      | 0,0140      | 0,0200      | 0,0240      | 0,0410      |
| N.3.1 | 70                   | 0,0070      | 0,0090      | 0,0110      | 0,0140      | 0,0200      | 0,0240      | 0,0410      |
| N.3.2 | 42                   | 0,0050      | 0,0070      | 0,0090      | 0,0110      | 0,0150      | 0,0200      | 0,0350      |
| N.3.3 | 56                   | 0,0050      | 0,0070      | 0,0090      | 0,0110      | 0,0150      | 0,0200      | 0,0350      |
| N.4.1 | 42                   | 0,0070      | 0,0090      | 0,0110      | 0,0140      | 0,0200      | 0,0240      | 0,0410      |
| S.1.1 | 7                    | 0,0030      | 0,0040      | 0,0050      | 0,0070      | 0,0090      | 0,0130      | 0,0240      |
| S.1.2 | 6                    | 0,0020      | 0,0030      | 0,0040      | 0,0050      | 0,0070      | 0,0100      | 0,0200      |
| S.2.1 | 6                    | 0,0030      | 0,0040      | 0,0050      | 0,0070      | 0,0090      | 0,0130      | 0,0240      |
| S.2.2 | 4                    | 0,0020      | 0,0030      | 0,0040      | 0,0050      | 0,0070      | 0,0100      | 0,0200      |
| S.2.3 | 4                    | 0,0020      | 0,0030      | 0,0040      | 0,0050      | 0,0070      | 0,0100      | 0,0200      |
| S.3.1 | 6                    | 0,0030      | 0,0040      | 0,0050      | 0,0070      | 0,0090      | 0,0130      | 0,0240      |
| S.3.2 | 4                    | 0,0020      | 0,0030      | 0,0040      | 0,0050      | 0,0070      | 0,0100      | 0,0200      |
| S.3.3 |                      |             |             |             |             |             |             |             |
| H.1.1 |                      |             |             |             |             |             |             |             |
| H.1.2 |                      |             |             |             |             |             |             |             |
| H.1.3 |                      |             |             |             |             |             |             |             |
| H.1.4 |                      |             |             |             |             |             |             |             |
| H.2.1 |                      |             |             |             |             |             |             |             |
| H.3.1 |                      |             |             |             |             |             |             |             |
| O.1.1 | 23                   | 0,0070      | 0,0090      | 0,0110      | 0,0140      | 0,0200      | 0,0240      | 0,0410      |
| O.1.2 | 23                   | 0,0070      | 0,0090      | 0,0110      | 0,0140      | 0,0200      | 0,0240      | 0,0410      |
| O.2.1 | 23                   | 0,0070      | 0,0090      | 0,0110      | 0,0140      | 0,0200      | 0,0240      | 0,0410      |
| O.2.2 | 23                   | 0,0070      | 0,0090      | 0,0110      | 0,0140      | 0,0200      | 0,0240      | 0,0410      |
| O.3.1 |                      |             |             |             |             |             |             |             |



Rezné parametre sú v značnej miere závislé od vonkajších podmienok, ako je napr. stabilita upnutia nástroja a obrobku, materiál a typ stroja! Uvádzané hodnoty predstavujú možné rezné parametre, ktoré sa v závislosti od pracovných podmienok musia upraviť smerom hore alebo dole!

## Orientačné hodnoty posuvu pre HSS vrtáky v skrutkovici

| Faktor F | Priemer vrtáka v mm |       |      |      |      |       |      |      |      |      |      |      |      |      |      |      |
|----------|---------------------|-------|------|------|------|-------|------|------|------|------|------|------|------|------|------|------|
|          | 0,5                 | 1     | 2    | 3    | 4    | 5     | 6    | 8    | 10   | 12   | 14   | 16   | 18   | 20   | 26   | 30   |
|          | Posuv f v mm/ot.    |       |      |      |      |       |      |      |      |      |      |      |      |      |      |      |
| 1        | 0,004               | 0,006 | 0,02 | 0,03 | 0,04 | 0,04  | 0,05 | 0,06 | 0,08 | 0,08 | 0,09 | 0,1  | 0,12 | 0,15 | 0,18 | 0,19 |
| 2        | 0,006               | 0,008 | 0,02 | 0,03 | 0,05 | 0,05  | 0,05 | 0,08 | 0,1  | 0,1  | 0,1  | 0,12 | 0,12 | 0,2  | 0,2  | 0,2  |
| 3        | 0,007               | 0,012 | 0,03 | 0,05 | 0,06 | 0,069 | 0,08 | 0,1  | 0,12 | 0,13 | 0,13 | 0,16 | 0,16 | 0,25 | 0,25 | 0,25 |
| 4        | 0,008               | 0,014 | 0,04 | 0,06 | 0,08 | 0,09  | 0,1  | 0,14 | 0,16 | 0,16 | 0,16 | 0,2  | 0,2  | 0,3  | 0,3  | 0,3  |
| 5        | 0,01                | 0,016 | 0,06 | 0,08 | 0,1  | 0,12  | 0,13 | 0,16 | 0,2  | 0,2  | 0,22 | 0,25 | 0,25 | 0,4  | 0,4  | 0,4  |
| 6        | 0,012               | 0,018 | 0,06 | 0,1  | 0,12 | 0,14  | 0,16 | 0,2  | 0,25 | 0,25 | 0,25 | 0,3  | 0,3  | 0,5  | 0,5  | 0,5  |
| 7        | 0,014               | 0,02  | 0,08 | 0,13 | 0,16 | 0,18  | 0,2  | 0,25 | 0,35 | 0,35 | 0,35 | 0,4  | 0,4  | 0,6  | 0,6  | 0,6  |
| 8        | 0,016               | 0,023 | 0,1  | 0,16 | 0,2  | 0,2   | 0,25 | 0,35 | 0,4  | 0,4  | 0,4  | 0,4  | 0,5  | 0,6  | 0,7  | 0,8  |
| 9        | 0,019               | 0,025 | 0,13 | 0,17 | 0,2  | 0,23  | 0,32 | 0,4  | 0,4  | 0,5  | 0,5  | 0,5  | 0,6  | 0,8  | 0,9  | 0,9  |



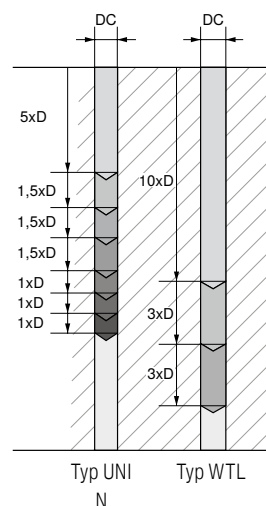
Všetky uvedené údaje sú orientačné a uvádzajú sa priemerné hodnoty.

## Otáčky pre HSS vrtáky v skrutkovici

| v <sub>c</sub> m/min | Priemer vrtáka v mm |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|----------------------|---------------------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                      | 2,0                 | 2,5   | 3,15 | 4,0  | 5,0  | 6,3  | 8,0  | 10,0 | 12,5 | 16,0 | 20,0 | 25,0 | 31,5 | 40,0 | 50,0 | 63,0 | 80,0 |
|                      | Otáčky v ot./min.   |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 80                   | 12500               | 10000 | 8000 | 6300 | 5000 | 4000 | 3200 | 2500 | 2000 | 1600 | 1250 | 1000 | 800  | 630  | 500  | 400  | 320  |
| 63                   | 10000               | 8000  | 6300 | 5000 | 4000 | 3200 | 2500 | 2000 | 1600 | 1250 | 1000 | 800  | 630  | 500  | 400  | 320  | 250  |
| 50                   | 8000                | 6300  | 5000 | 4000 | 3200 | 2500 | 2000 | 1600 | 1250 | 1000 | 800  | 630  | 500  | 400  | 320  | 250  | 200  |
| 40                   | 6300                | 5000  | 4000 | 3200 | 2500 | 2000 | 1600 | 1250 | 1000 | 800  | 630  | 500  | 400  | 320  | 250  | 200  | 160  |
| 32                   | 5000                | 4000  | 3200 | 2500 | 2000 | 1600 | 1250 | 1000 | 800  | 630  | 500  | 400  | 320  | 250  | 200  | 160  | 125  |
| 25                   | 4000                | 3200  | 2500 | 2000 | 1600 | 1250 | 1000 | 800  | 630  | 500  | 400  | 320  | 250  | 200  | 160  | 125  | 100  |
| 20                   | 3200                | 2500  | 2000 | 1600 | 1250 | 1000 | 800  | 630  | 500  | 400  | 320  | 250  | 200  | 160  | 125  | 100  | 80   |
| 16                   | 2500                | 2000  | 1600 | 1250 | 1000 | 800  | 630  | 500  | 400  | 320  | 250  | 200  | 160  | 125  | 100  | 80   | 63   |
| 12                   | 2000                | 1600  | 1250 | 1000 | 800  | 630  | 500  | 400  | 320  | 250  | 200  | 160  | 125  | 100  | 80   | 63   | 50   |
| 10                   | 1600                | 1250  | 1000 | 800  | 630  | 500  | 400  | 320  | 250  | 200  | 160  | 125  | 100  | 80   | 63   | 50   | 40   |
| 8                    | 1250                | 1000  | 800  | 630  | 500  | 400  | 320  | 250  | 200  | 160  | 125  | 100  | 80   | 63   | 50   | 40   | 32   |
| 6                    | 1000                | 800   | 630  | 500  | 400  | 320  | 250  | 200  | 160  | 125  | 100  | 80   | 63   | 50   | 40   | 32   | 25   |
| 5                    | 800                 | 630   | 500  | 400  | 320  | 250  | 200  | 160  | 125  | 100  | 80   | 63   | 50   | 40   | 32   | 25   | 20   |
| 4                    | 630                 | 500   | 400  | 320  | 250  | 200  | 160  | 125  | 100  | 80   | 63   | 50   | 40   | 32   | 25   | 20   | 16   |
| 3                    | 500                 | 400   | 320  | 250  | 200  | 160  | 125  | 100  | 80   | 63   | 50   | 40   | 32   | 25   | 20   | 16   | 12   |

## Početnosť odstraňovania triesok pri vrtaní hlbokých otvorov:

- ▲ špička vrtáka sa musí dostatočne chladiť
- ▲ použitím vrtáka s plochým profilom drážky (typ WTL) sa odvod triesok značne vylepší
- ▲ na extrémne hlboké otvory alebo pri horizontálnom vrtaní doporučujeme používať vrtáky s chladiacimi kanálkami pre vnútorný privod chladiaceho média



## Povlaky

**TiN**

- ▲ povlak TiN
- ▲ maximálna pracovná teplota: 450 °C

**TiAlN**

- ▲ multivrstvový povlak TiAlN
- ▲ maximálna pracovná teplota: 900 °C

**vap.**

- ▲ vaporizovaný
- ▲ vaporizácia (popúšťanie v pare) bráni tomu, aby sa na nástroji vytvárali studené zvary, zvyšuje tvrdosť povrchu a tým i oteruodolnosť

**TiCN**

- ▲ multivrstvový povlak TiCN
- ▲ maximálna pracovná teplota: 450 °C

**F-nit**

- ▲ špeciálny povlak PVD na báze TiCN zvlášť vhodný pre obrábanie ocele.
- ▲ možnosť použitia do cca 450 °C

