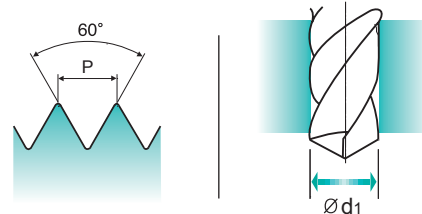
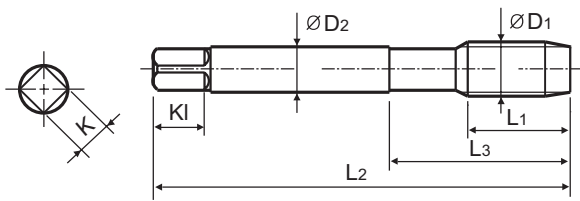
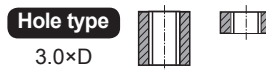


**UNC** Unified coarse threads  
 Unified Grobgewinde  
 UNC  
 Unificato passo grosso

► Suitable for through hole in more cutting speed than other taps due to thick web.

► Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.



Material groups **VG** HSS-E DIN 371/376 2B 60° B TiN

Machine taps  
 Maschinengewindebohrer

Recommended Cutting Page : P.189

Unit : mm

| SIZE  | TPI     | EDP No.  | Thread Length | Overall Length | Neck Length | Shank Diameter | Square Size | Square Length | No. of Flute | Tapping Drill Diameter |
|-------|---------|----------|---------------|----------------|-------------|----------------|-------------|---------------|--------------|------------------------|
| ØD1   |         | TiN      | L1            | L2             | L3          | ØD2            | K           | Kl            | Z            | Ød1                    |
| #4    | - 40UNC | TD244162 | 11            | 56             | 18          | 3.5            | 2.7         | 6             | 3            | 2.3                    |
| #5    | - 40UNC | TD244202 | 11            | 56             | 18          | 3.5            | 2.7         | 6             | 3            | 2.6                    |
| #6    | - 32UNC | TD244242 | 12            | 56             | 20          | 4              | 3           | 6             | 3            | 2.85                   |
| #8    | - 32UNC | TD244282 | 13            | 63             | 21          | 4.5            | 3.4         | 6             | 3            | 3.5                    |
| #10   | - 24UNC | TD244322 | 15            | 70             | 25          | 6              | 4.9         | 8             | 3            | 3.9                    |
| #12   | - 24UNC | TD244362 | 16            | 80             | 30          | 6              | 4.9         | 8             | 3            | 4.5                    |
| 1/4   | - 20UNC | TD244402 | 17            | 80             | 30          | 7              | 5.5         | 8             | 3            | 5.2                    |
| 5/16  | - 18UNC | TD244442 | 20            | 90             | 35          | 8              | 6.2         | 9             | 3            | 6.6                    |
| 3/8   | - 16UNC | TD244482 | 22            | 100            | 39          | 9              | 7           | 10            | 3            | 8                      |
| 7/16  | - 14UNC | TD244522 | 22            | 100            | 40          | 8              | 6.2         | 9             | 3            | 9.4                    |
| 1/2   | - 13UNC | TD244562 | 25            | 110            | 44          | 9              | 7           | 10            | 3            | 10.75                  |
| 9/16  | - 12UNC | TD244602 | 26            | 110            | 44          | 11             | 9           | 12            | 3            | 12.25                  |
| 5/8   | - 11UNC | TD244642 | 27            | 110            | 44          | 12             | 9           | 12            | 3            | 13.5                   |
| 3/4   | - 10UNC | TD244702 | 30            | 125            | 50          | 14             | 11          | 14            | 4            | 16.5                   |
| 7/8   | - 9UNC  | TD244742 | 32            | 140            | 54          | 18             | 14.5        | 17            | 4            | 19.5                   |
| 1     | - 8UNC  | TD244782 | 36            | 160            | 60          | 20             | 16          | 19            | 4            | 22.25                  |
| 1-1/8 | - 7UNC  | TD244822 | 40            | 180            | 70          | 22             | 18          | 21            | 4            | 25                     |

►DIN 371(#4~3/8) and DIN 376(7/16~1-1/8)

◎ : Excellent ○ : Good

| ISO                  | P                      |     |                        |     |     |   |     |     |                        |     | M                                  |     |                 |     | K              |                 |                   |                |                     |                    |     |
|----------------------|------------------------|-----|------------------------|-----|-----|---|-----|-----|------------------------|-----|------------------------------------|-----|-----------------|-----|----------------|-----------------|-------------------|----------------|---------------------|--------------------|-----|
| Material Description | Non-alloy steel        |     |                        |     |     | Low alloy steel                           |     |     |                        |     | High alloyed steel, and tool steel |     | Stainless steel |     | Grey cast iron |                 | Nodular cast iron |                | Malleable cast iron |                    |     |
| VDI 3323             | 1                      | 2   | 3                      | 4   | 5   | 6   | 7   | 8   | 9                      | 10  | 11                                 | 12  | 13              | 14  | 15             | 16              | 17                | 18             | 19                  | 20                 |     |
| HRc                  | 13                     | 25  | 28                     | 32  | 32  | 10  | 29  | 32  | 38                     | 15  | 35                                 | 15  | 23              | 10  | 10             | 26              | 3                 | 25             |                     | 21                 |     |
| HB                   | 125                    | 190 | 250                    | 270 | 300 | 180                                       | 275 | 300 | 350                    | 200 | 325                                | 200 | 240             | 180 | 180            | 260             | 160               | 250            | 130                 | 230                |     |
| Recommended          | ○                      | ○   | ○                      | ○   | ◎   | ○   | ○   | ◎   | ◎                      | ○   | ○                                  | ○   | ○               | ○   | ○              |                 |                   |                |                     |                    |     |
| ISO                  | N                      |     |                        |     |     | S   |     |     |                        |     | H                                  |     |                 |     |                |                 |                   |                |                     |                    |     |
| Material Description | Aluminum-wrought alloy |     | Aluminum-cast, alloyed |     |     | Copper and Copper Alloys (Bronze / Brass) |     |     | Non Metallic Materials |     | Heat Resistant Super Alloys        |     |                 |     |                | Titanium Alloys |                   | Hardened steel | Chilled Cast Iron   | Hardened Cast Iron |     |
| VDI 3323             | 21                     | 22  | 23                     | 24  | 25  | 26  | 27  | 28  | 29                     | 30  | 31                                 | 32  | 33              | 34  | 35             | 36              | 37                | 38             | 39                  | 40                 | 41  |
| HRc                  |                        |     |                        |     |     |   |     |     |                        |     | 15                                 | 30  | 25              | 38  | 34             |                 |                   | 55             | 60                  | 42                 | 55  |
| HB                   | 60                     | 100 | 75                     | 90  | 130 | 110                                       | 90  | 100 |                        |     | 200                                | 280 | 250             | 350 | 320            | 400Rm           | 1050Rm            | 550            | 630                 | 400                | 550 |
| Recommended          |                        |     |                        |     |     |   |     |     |                        |     | ○                                  |     |                 |     |                |                 | ○                 |                |                     |                    |     |



**RECOMMENDED CUTTING CONDITIONS**  
**EMPFOHLENE SCHNEIDKONDITIONEN**

| ISO | VDI 3323 | Material Description        | HB  | HRc | Vc (m/min) |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|-----|----------|-----------------------------|---|-----|------------|-------|----------------------------------|-------------------------|-------|-------|-------|-------|-------|----------------------------------|-------------------------|-------|-------|-----|
|     |          |                             |   |     | TQ823      | TR823 | TC312<br>TC413<br>TC174<br>TC184 | TD312<br>TD413<br>TD174 | TB312 | TY312 | TB913 | TQ863 | TR863 | TC422<br>TC263<br>TC244<br>TC254 | TD422<br>TD263<br>TD244 | TE422 | TY422 |     |
| P   | 1        | Non-alloy steel             | 125                                       |     |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 2        |                             | 190                                       | 13  | 15-20      | 15-20 | 15-20                            | 20-25                   | 15-20 | 20-25 | 15-20 | 15-20 | 15-20 | 15-20                            | 15-20                   | 20-25 | 20-25 |     |
|     | 3        |                             | 250                                       | 25  | 12-18      | 12-18 | 12-18                            | 18-24                   | 12-18 | 18-24 | 12-18 | 12-18 | 12-18 | 12-18                            | 12-18                   | 18-24 | 18-24 |     |
|     | 4        |                             | 270                                       | 28  | 10-15      | 10-15 | 10-15                            | 15-20                   | 10-15 | 15-20 | 10-15 | 10-15 | 10-15 | 10-15                            | 10-15                   | 15-20 | 15-20 |     |
|     | 5        |                             | 300                                       | 32  | 6-10       | 6-10  | 6-10                             | 10-14                   | 6-10  | 10-14 | 6-10  | 6-10  | 6-10  | 6-10                             | 6-10                    | 10-14 | 10-14 |     |
|     | 6        | Low alloy steel             | 180                                       | 10  | 10-15      | 10-15 | 10-15                            | 15-20                   | 10-15 | 15-20 | 10-15 | 10-15 | 10-15 | 10-15                            | 10-15                   | 15-20 | 15-20 |     |
|     | 7        |                             | 275                                       | 29  | 10-15      | 10-15 | 10-15                            | 15-20                   | 10-15 | 15-20 | 10-15 | 10-15 | 10-15 | 10-15                            | 10-15                   | 15-20 | 15-20 |     |
|     | 8        |                             | 300                                       | 32  | 6-10       | 6-10  | 6-10                             | 10-14                   | 6-10  | 10-14 | 6-10  | 6-10  | 6-10  | 6-10                             | 6-10                    | 10-14 | 10-14 |     |
|     | 9        |                             | 350                                       | 38  | 3-5        | 3-5   | 3-5                              | 5-7                     | 3-5   | 5-7   | 3-5   | 3-5   | 3-5   | 3-5                              | 3-5                     | 5-7   | 5-7   |     |
|     | 10       |                             | High alloyed steel, and tool steel        | 200 | 15         | 3-5   | 3-5                              | 3-5                     | 5-7   | 3-5   | 5-7   | 3-5   | 3-5   | 3-5                              | 3-5                     | 3-5   | 5-7   | 5-7 |
|     | 11       |                             |   | 325 | 35         |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
| M   | 12       | Stainless steel             | 200                                       | 15  |            |       |                                  |                         |       |       |       | 7-10  | 7-10  | 7-10                             | 7-10                    | 10-15 | 10-15 |     |
|     | 13       |                             | 240                                       | 23  |            |       |                                  |                         |       |       |       | 5-8   | 5-8   | 5-8                              | 5-8                     | 8-11  | 8-11  |     |
|     | 14       |                             | 180                                       | 10  | 4-6        | 4-6   | 4-6                              | 6-8                     | 4-6   | 6-8   | 4-6   | 4-6   | 4-6   | 4-6                              | 4-6                     | 6-8   | 6-8   |     |
| K   | 15       | Grey cast iron              | 180                                       | 10  |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 16       |                             | 260                                       | 26  |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 17       | Nodular cast iron           | 160                                       | 3   |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 18       |                             | 250                                       | 25  |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 19       |                             | Malleable cast iron                       | 130 |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
| 20  | 230      | 21                          |   |     |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
| N   | 21       | Aluminum-wrought alloy      | 60  |     |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 22       |                             | 100                                       |     |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 23       | Aluminum-cast, alloyed      | 75  |     |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 24       |                             | 90  |     |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 25       |                             | 130                                       |     |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 26       |                             | 110                                       |     |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 27       |                             | Copper and Copper Alloys (Bronze / Brass) | 90  |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 28       |                             |   | 100 |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 29       |                             | Non Metallic Materials                    |     |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 30       |                             |   |     |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
| S   | 31       | Heat Resistant Super Alloys | 200                                       | 15  | 10-15      | 10-15 | 10-15                            | 15-20                   | 10-15 | 15-20 | 10-15 | 10-15 | 10-15 | 10-15                            | 10-15                   | 15-20 | 15-20 |     |
|     | 32       |                             | 280                                       | 30  |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 33       |                             | 250                                       | 25  |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 34       |                             | 350                                       | 38  |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 35       |                             | 320                                       | 34  |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 36       | Titanium Alloys             | 400Rm                                     |     | 10-15      | 10-15 | 10-15                            | 15-20                   | 10-15 | 15-20 | 10-15 | 10-15 | 10-15 | 10-15                            | 10-15                   | 15-20 | 15-20 |     |
|     | 37       |                             | 1050Rm                                    |     |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
| H   | 38       | Hardened steel              | 550                                       | 55  |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 39       |                             | 630                                       | 60  |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 40       | Chilled Cast Iron           | 400                                       | 42  |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |
|     | 41       | Hardened Cast Iron          | 550                                       | 55  |            |       |                                  |                         |       |       |       |       |       |                                  |                         |       |       |     |

# SURFACE TREATMENT AND COATING

The applied High Speed Steels holds a grant of good wear resistance and toughness. Therefore YG-1 normally delivers taps with bright and unfinished surface. For certain materials, various surface treatments provide higher advantage in machining.

## STEAM TEMPERED - Vap

Steam Tempered is a Fe<sub>3</sub>O<sub>4</sub>-oxyd-coating which reduces friction between the tool and workpiece, also preventing cold welding.

## NITRIDING - NI

Recommend surface treatment for machining materials that affect wear abrasion, such as grey cast iron, alu-alloys with high Si-percentages (more than 10%).

Below are the various surface treatments for excellent finish surfaces suitable for many applications. The surface treatments are produced and developed within the company.

## TiN-COATING

TiN-coating yields a hardness of approx. 2,300 HV and also a heat resistant up to approx. 600°C. The current coating is an excellent all-round coating for normal applications.

Colour : Golden Coefficient of friction against steel : 0.4

## TiCN-COATING

TiCN takes place of TiN when the conditions require the coating to have a different hardness and toughness.

The TiCN brings advantages for machining very difficult steels or cutting interrupted bores.

The TiCN-coating has a hardness of approx. 3,000 HV, but is heat resistance only holds up to approx. 400°C, meaning that the TiCN needs an excellent cooling system for a long service life.

Colour : Blue-Grey Coefficient of friction against steel : 0.4

## TiAlN-COATING

A special coating for machining abrasive materials such as grey cast iron, alu-alloys with silicon, fiber reinforced plastics, etc., or machining at high temperatures with insufficient cooling, or at high speeds  $\geq 600$ m/min. TiAlN has a hardness of approx. 3,000 HV and is heat resistant up to approx. 800°C.

Colour : Violet-Grey Coefficient of friction against steel : 0.4

## Hardslick-COATING

Hardslick combines the advantages of an extremely hard, thermally stable TiAlN-coating with the sliding and lubricating properties of an outer WC/C(Tungsten carbide/carbon)-coating in a novel way. The Hardslick coating has a hardness of approx. 3,000 HV and is temperature-resistant up to approx. 800°C.

Colour : Violet-Grey Coefficient of friction against steel : 0.2

SELECTION GUIDE



**HSS-E & HSS-PM  
YG TAP  
STEEL**

For Steel Materials but also other  
Long Chip Forming Materials



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for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.189

| HOLE TYPE                    |            | Max. 2.5xD<br>Blind Hole |                  |                  |                  |                  |
|------------------------------|------------|--------------------------|------------------|------------------|------------------|------------------|
| TOOL MATERIAL                |            | HSS-PM                   |                  | HSS-E            |                  |                  |
| CHAMFER LEAD ACC. TO DIN2197 |            | C                        | C                | C                | C                |                  |
| FLUTE TYPE                   |            | Spiral Flute             | Spiral Flute     | Spiral Flute     | Spiral Flute     |                  |
| SPIRAL FLUTE ANGLE           |            | R40                      | R40              | R40              | R40              |                  |
| SERIES                       | M          | DIN371/376               | TQ823<br>(P.166) | TR823<br>(P.167) | TC312<br>(P.168) | TD312<br>(P.169) |
|                              |            | DIN352                   |                  |                  |                  |                  |
|                              |            | DIN357/LONG              |                  |                  |                  |                  |
|                              | MF         | DIN374                   |                  |                  | TC413<br>(P.172) | TD413<br>(P.173) |
|                              |            | DIN2181                  |                  |                  |                  |                  |
|                              | UNC        | DIN371/376               |                  |                  | TC174<br>(P.174) | TD174<br>(P.175) |
|                              |            | DIN351                   |                  |                  |                  |                  |
|                              | UNF        | DIN371/374               |                  |                  | TC184<br>(P.176) |                  |
|                              |            | DIN2181                  |                  |                  |                  |                  |
|                              | BSW        | DIN2182/2183             |                  |                  |                  |                  |
|                              |            | DIN351                   |                  |                  |                  |                  |
|                              | G(BSP)     | DIN5156/5157             |                  |                  |                  |                  |
|                              | EG-M       | DIN371/376               |                  |                  |                  |                  |
|                              | EG-UNC     | DIN371/376               |                  |                  |                  |                  |
| EG-UNF                       | DIN371/374 |                          |                  |                  |                  |                  |
| SURFACE TREATMENT            |            | VAP                      | Bright           | Bright           | TIN              |                  |
| MODEL                        |            |                          |                  |                  |                  |                  |

| ISO | VDI 3323            | Material Description                      | Composition / Structure / Heat Treatment       |                     | HB     | HRc |   |   |   |   |
|-----|---------------------|---|--|---------------------|--------|-----|---|---|---|---|
| P   | 1                   | Non-alloy steel                           | About 0.15% C                                  | Annealed            | 125    |     |   |   |   |   |
|     | 2                   |   | About 0.45% C                                  | Annealed            | 190    | 13  | ○ | ○ | ○ | ○ |
|     | 3                   |   | About 0.45% C                                  | Quenched & Tempered | 250    | 25  | ○ | ○ | ○ | ○ |
|     | 4                   |   | About 0.75% C                                  | Annealed            | 270    | 28  | ○ | ○ | ○ | ○ |
|     | 5                   | About 0.75% C                             | Quenched & Tempered                            | 300                 | 32     | ◎   | ◎ | ◎ | ◎ |   |
|     | 6                   | Low alloy steel                           |  | Annealed            | 180    | 10  | ○ | ○ | ○ | ○ |
|     | 7                   |   | Quenched & Tempered                            | 275                 | 29     | ○   | ○ | ○ | ○ |   |
|     | 8                   |   | Quenched & Tempered                            | 300                 | 32     | ◎   | ◎ | ◎ | ◎ |   |
|     | 9                   |   | Quenched & Tempered                            | 350                 | 38     | ◎   | ◎ | ◎ | ◎ |   |
|     | 10                  | High alloyed steel,<br>and tool steel     |  | Annealed            | 200    | 15  | ○ | ○ | ○ | ○ |
|     | 11                  |   | Quenched & Tempered                            | 325                 | 35     |     |   |   |   |   |
| M   | 12                  | Stainless steel                           | Ferritic / Martensitic                         | Annealed            | 200    | 15  |   |   |   |   |
|     | 13                  |   | Martensitic                                    | Quenched & Tempered | 240    | 23  |   |   |   |   |
|     | 14                  |   | Austenitic                                     |                     | 180    | 10  | ○ | ○ | ○ | ○ |
| K   | 15                  | Grey cast iron                            | Pearlitic / ferritic                           |                     | 180    | 10  |   |   |   |   |
|     | 16                  |   | Pearlitic (Martensitic)                        |                     | 260    | 26  |   |   |   |   |
|     | 17                  | Nodular cast iron                         | Ferritic                                       |                     | 160    | 3   |   |   |   |   |
|     | 18                  |   | Pearlitic                                      |                     | 250    | 25  |   |   |   |   |
|     | 19                  |   | Ferritic                                       |                     | 130    |     |   |   |   |   |
| 20  | Malleable cast iron | Pearlitic                                 |  | 230                 | 21     |     |   |   |   |   |
| N   | 21                  | Aluminum-wrought alloy                    | Not Curable                                    |                     | 60     |     |   |   |   |   |
|     | 22                  |   | Curable Hardened                               |                     | 100    |     |   |   |   |   |
|     | 23                  | Aluminum-cast, alloyed                    | ≤ 12% Si, Not Curable                          |                     | 75     |     |   |   |   |   |
|     | 24                  |   | ≤ 12% Si, Curable Hardened                     |                     | 90     |     |   |   |   |   |
|     | 25                  |   | > 12% Si, Not Curable                          |                     | 130    |     |   |   |   |   |
|     | 26                  |   | Cutting Alloys, PB>1%                          |                     | 110    |     |   |   |   |   |
|     | 27                  | Copper and Copper Alloys (Bronze / Brass) | CuZn, CuSnZn (Brass)                           |                     | 90     |     |   |   |   |   |
|     | 28                  |   | CuSn, lead-free copper and electrolytic copper |                     | 100    |     |   |   |   |   |
|     | 29                  | Non Metallic Materials                    | Duroplastic, Fiber Reinforced Plastic          |                     |        |     |   |   |   |   |
|     | 30                  |   | Rubber, Wood, etc.                             |                     |        |     |   |   |   |   |
| S   | 31                  | Heat Resistant Super Alloys               | Fe Based                                       | Annealed            | 200    | 15  | ○ | ○ | ○ | ○ |
|     | 32                  |   | Cured  | 280                 | 30     |     |   |   |   |   |
|     | 33                  |   | Annealed                                       | 250                 | 25     |     |   |   |   |   |
|     | 34                  |   | Ni or Co Based                                 | Cured               | 350    | 38  |   |   |   |   |
|     | 35                  | Cast                                      | 320  | 34                  |        |     |   |   |   |   |
|     | 36                  | Titanium Alloys                           | Pure Titanium                                  |                     | 400 Rm |     | ○ | ○ | ○ | ○ |
| 37  | Alpha + Beta Alloys |   | 1050 Rm  |                     |        |     |   |   |   |   |
| H   | 38                  | Hardened steel                            | Hardened                                       |                     | 550    | 55  |   |   |   |   |
|     | 39                  |   | Hardened                                       |                     | 630    | 60  |   |   |   |   |
|     | 40                  | Chilled Cast Iron                         | Cast   |                     | 400    | 42  |   |   |   |   |
|     | 41                  | Hardened Cast Iron                        | Hardened                                       |                     | 550    | 55  |   |   |   |   |

