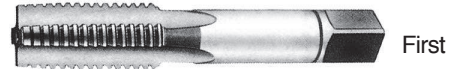


MF ISO metric fine threads DIN 13

Metrisches ISO-Feingewinde DIN 13

- ▶ Serial hand tap set in First and Bottoming.
- ▶ Bottoming tap of set has final internal thread dimensions only.
- ▶ Handgewindebohrersatz mit Vor- und Fertigschneider.
- ▶ Nur der Fertigschneider kann das gewünschte Gewinde schneiden.

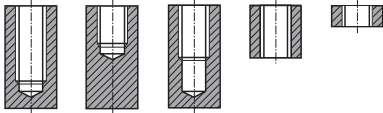


First



Bottoming

Hole type



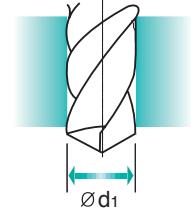
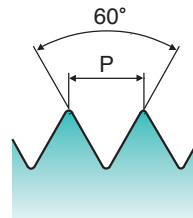
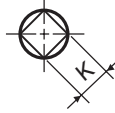
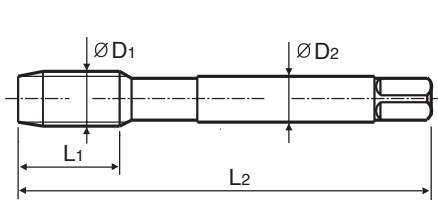
HSS

DIN
2181

6H



Bright

Sets of taps
Gewindebohrer-Satz

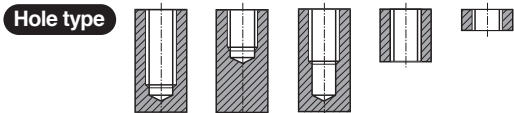
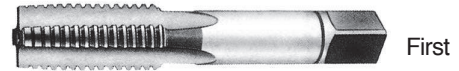
Unit : mm

| SIZE | Pitch | EDP No. | Thread Length | Overall Length | Shank Diameter | Square Size | Tapping Drill Diameter |
|------|--------|----------|---------------|----------------|----------------|-------------|------------------------|
| ØD1 | P | | L1 | L2 | ØD2 | K | Ød1 |
| M3 | × 0.35 | T7309219 | 8 | 42 | 3.5 | 2.7 | 2.65 |
| M4 | × 0.5 | T7309259 | 9 | 48 | 4.5 | 3.4 | 3.5 |
| M5 | × 0.5 | T7309299 | 11 | 52 | 6 | 4.9 | 4.5 |
| M6 | × 0.75 | T7309329 | 12 | 56 | 6 | 4.9 | 5.2 |
| M6 | × 0.5 | T7309339 | 12 | 56 | 6 | 4.9 | 5.5 |
| M7 | × 0.75 | T7309359 | 14 | 56 | 6 | 4.9 | 6.2 |
| M8 | × 1 | T7309379 | 17 | 63 | 6 | 4.9 | 7 |
| M8 | × 0.75 | T7309389 | 14 | 63 | 6 | 4.9 | 7.2 |
| M8 | × 0.5 | T7309939 | 14 | 63 | 6 | 4.9 | 7.5 |
| M9 | × 1 | T7309409 | 17 | 63 | 7 | 5.5 | 8 |
| M10 | × 1.25 | T7309439 | 22 | 70 | 7 | 5.5 | 8.8 |
| M10 | × 1 | T7309449 | 18 | 63 | 7 | 5.5 | 9 |
| M10 | × 0.75 | T7309459 | 18 | 63 | 7 | 5.5 | 9.2 |
| M11 | × 1 | T7309479 | 18 | 63 | 8 | 6.2 | 10 |
| M12 | × 1.5 | T7309519 | 20 | 70 | 9 | 7 | 10.5 |
| M12 | × 1.25 | T7309529 | 20 | 70 | 9 | 7 | 10.8 |
| M12 | × 1 | T7309539 | 18 | 70 | 9 | 7 | 11 |
| M13 | × 1.5 | T7309N19 | 20 | 70 | 11 | 9 | 11.5 |
| M13 | × 1 | T7309N29 | 18 | 70 | 11 | 9 | 12 |
| M14 | × 1.5 | T7309559 | 20 | 70 | 11 | 9 | 12.5 |
| M14 | × 1.25 | T7309569 | 20 | 70 | 11 | 9 | 12.8 |
| M14 | × 1 | T7309579 | 18 | 70 | 11 | 9 | 13 |
| M15 | × 1.5 | T7309589 | 20 | 70 | 12 | 9 | 13.5 |
| M15 | × 1 | T7309599 | 18 | 70 | 12 | 9 | 14 |
| M16 | × 1.5 | T7309619 | 20 | 70 | 12 | 9 | 14.5 |
| M16 | × 1 | T7309629 | 18 | 70 | 12 | 9 | 15 |

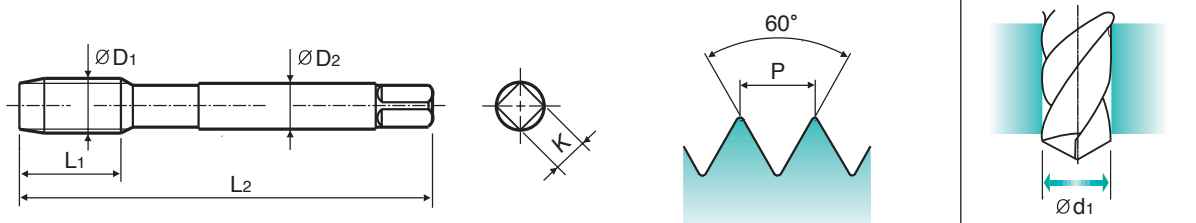
MF ISO metric fine threads DIN 13

Metrisches ISO-Feingewinde DIN 13

- ▶ Serial hand tap set in First and Bottoming.
- ▶ Bottoming tap of set has final internal thread dimensions only.
- ▶ Handgewindebohrersatz mit Vor- und Fertigschneider.
- ▶ Nur der Fertigschneider kann das gewünschte Gewinde schneiden.



Sets of taps
Gewindebohrer-Satz



Unit : mm

| SIZE | Pitch | EDP No. | Thread Length | Overall Length | Shank Diameter | Square Size | Tapping Drill Diameter |
|-----------|-------|-----------------|---------------|----------------|----------------|-------------|------------------------|
| ØD1 | P | | L1 | L2 | ØD2 | K | Ød1 |
| M18 × 2 | | T7309669 | 22 | 80 | 14 | 11 | 16 |
| M18 × 1.5 | | T7309679 | 22 | 80 | 14 | 11 | 16.5 |
| M18 × 1 | | T7309689 | 18 | 80 | 14 | 11 | 17 |
| M20 × 2 | | T7309719 | 22 | 80 | 16 | 12 | 18 |
| M20 × 1.5 | | T7309729 | 22 | 80 | 16 | 12 | 18.5 |
| M20 × 1 | | T7309739 | 18 | 80 | 16 | 12 | 19 |
| M22 × 2 | | T7309759 | 22 | 80 | 18 | 14.5 | 20 |
| M22 × 1.5 | | T7309769 | 22 | 80 | 18 | 14.5 | 20.5 |
| M22 × 1 | | T7309779 | 18 | 80 | 18 | 14.5 | 21 |
| M24 × 2 | | T7309799 | 22 | 90 | 18 | 14.5 | 22 |
| M24 × 1.5 | | T7309809 | 22 | 90 | 18 | 14.5 | 22.5 |
| M24 × 1 | | T7309819 | 18 | 90 | 18 | 14.5 | 23 |
| M25 × 1.5 | | T7309839 | 22 | 90 | 18 | 14.5 | 23.5 |
| M25 × 1 | | T7309849 | 18 | 90 | 18 | 14.5 | 24 |
| M26 × 1.5 | | T7309859 | 22 | 90 | 18 | 14.5 | 24.5 |
| M26 × 1 | | T7309N59 | 18 | 90 | 18 | 14.5 | 25 |
| M27 × 2 | | T7309879 | 22 | 90 | 20 | 16 | 25 |
| M27 × 1.5 | | T7309889 | 22 | 90 | 20 | 16 | 25.5 |
| M27 × 1 | | T7309899 | 18 | 90 | 20 | 16 | 26 |
| M28 × 2 | | T7309909 | 22 | 90 | 20 | 16 | 26 |
| M28 × 1.5 | | T7309919 | 22 | 90 | 20 | 16 | 26.5 |
| M30 × 2 | | T7309969 | 22 | 90 | 22 | 18 | 28 |
| M30 × 1.5 | | T7309979 | 22 | 90 | 22 | 18 | 28.5 |
| M30 × 1 | | T7309989 | 18 | 90 | 22 | 18 | 29 |



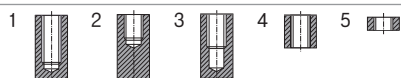
MACHINE TAPS

RECOMMENDATION TABLE

USE

⊙ = EXCELLENT

○ = GOOD



| MATERIAL GROUPS | | | MU | MU | MU |
|-----------------------------|----------|----------------|---------------|---------------|------------------|
| DIN 371/376 | M | EDP No. (Page) | TC804 (p.375) | TD804 (p.375) | TC804-IC (p.378) |
| DIN 371/376 | EG-M | EDP No. (Page) | | | |
| DIN 352 | M | EDP No. (Page) | | | |
| DIN 374 | MF | EDP No. (Page) | TC844 (p.376) | TD844 (p.376) | |
| DIN 371/376 | UNC | EDP No. (Page) | TC824 (p.384) | TD824 (p.384) | |
| DIN 371/376 | EG-UNC | EDP No. (Page) | | | |
| DIN 371/374 | UNF | EDP No. (Page) | TC864 (p.385) | TD864 (p.385) | |
| DIN 371/376 | EG-UNF | EDP No. (Page) | | | |
| DIN 2182/2183 | BSW | EDP No. (Page) | | | |
| DIN 357/5156 | M/G(BSP) | EDP No. (Page) | | | |
| LONG | M | EDP No. (Page) | | | |
| SURFACE TREATMENT / COATING | | | Bright | TiN | Bright |
| SPIRAL FLUTE ANGLE | | | R40 | R40 | R40 |
| CHAMFER LEAD ACC. DIN 2197 | | | C | C | C |
| HOLE TYPE | | | 1-2-3 | 1-2-3 | 1-2-3 |

COOLANT

- A = Cutting Oil
- T = Oil Emulsion
- X = Cutting Oil/Oil Emulsion
- S = Dry
- Z = Dry/Oil Emulsion

| MATERIAL GROUPS | LIST OF MATERIALS | HARDNESS HB | TENSILE STRENGTH Rm N/mm ² | CHIP | CUTTING SPEED Vc m/min | COOLANT | COOLANT | COOLANT | COOLANT | COOLANT |
|----------------------------------|-----------------------------|--------------------------------------------|---------------------------------------------|---------|------------------------------|---------|---------|---------|---------|---------|
| | | | | | | | | | | |
| 10. STEELS | 11 Steel < 400 | Magnetic soft steels | < 120 | < 400 | Extra long | 15-20 | T | ⊙ | ⊙ | ⊙ |
| | 12 Steel < 700 | Structure steels | < 200 | < 700 | Medium/long | 15-20 | T | ⊙ | ⊙ | ⊙ |
| | 13 Steel < 850 | Plain carbon steels | < 250 | < 850 | Long | 12-18 | T | ⊙ | ⊙ | ⊙ |
| | 14 St. Alloy < 850 | Alloy steels | < 250 | < 850 | Long | 10-15 | X | ⊙ | ⊙ | ⊙ |
| | 15 St. Alloy ≤ 1,200 | Alloy steels, Hardened steels | < 350 | ≤ 1,200 | Long | 6-10 | X | ⊙ | ⊙ | ⊙ |
| | 16 St. Alloy > 1,200 | Alloy steels, Hardened steels | > 350 | > 1,200 | Long | 3-5 | A | | | |
| 20. STAINLESS STEELS | 21 INOX Free < 850 | Free machining | < 250 | < 850 | Medium | 7-10 | A | ⊙ | ⊙ | ⊙ |
| | 22 INOX Aust.< 850 | Austenitic | < 250 | < 850 | Long | 5-8 | A | ⊙ | ⊙ | ⊙ |
| | 23 INOX < 1,100 | Ferritic, Ferritic+Austenitic, Martensitic | < 300 | < 1,100 | Long | 4-6 | A | ⊙ | ⊙ | ⊙ |
| 30. CAST IRON | 31 GG Cast < 500 | Grey cast iron | < 150 | < 500 | Extra short | 10-15 | X | ⊙ | ⊙ | ⊙ |
| | 32 GG Cast < 1,000 | Grey cast iron | < 300 | < 1,000 | Extra short | 5-8 | T | ⊙ | ⊙ | ⊙ |
| | 33 GGG Cast < 700 | Nodular graphite, Malleable cast iron | < 200 | < 700 | Short | 10-15 | X | ⊙ | ⊙ | ⊙ |
| | 34 GGG Cast < 1,000 | Nodular graphite, Malleable cast iron | < 300 | < 1,000 | Short | 5-8 | X | ⊙ | ⊙ | ⊙ |
| 40. TITANIUM | 41 Ti < 700 | Titanium, Unalloyed | < 200 | < 700 | Extra long | 10-15 | T | ⊙ | ⊙ | ⊙ |
| | 42 Ti Alloy < 900 | Titanium, Alloyed | < 270 | < 900 | Medium/Short | 8-12 | A | ○ | ○ | ○ |
| | 43 Ti Alloy ≤ 1,300 | Titanium, Alloyed | < 350 | ≤ 1,300 | Medium/Short | 4-6 | A | | | |
| 50. NICKEL | 51 Ni < 500 | Nickel, Unalloyed | < 150 | < 500 | Extra long | 8-12 | A | ⊙ | ⊙ | ⊙ |
| | 52 Ni Alloy < 900 | Nickel, Alloyed | < 270 | < 900 | Long | 10-15 | A | ○ | ○ | ○ |
| | 53 Ni Alloy ≤ 1,400 | Nickel, Alloyed | < 410 | ≤ 1,400 | Long | 2-4 | A | | | |
| 60. COPPER, BRASS, BRONZE | 61 Cu < 350 | Copper, Unalloyed | < 100 | < 350 | Extra long | 8-12 | T | ⊙ | ⊙ | ⊙ |
| | 62 Cu Alloy (Short) | Short chip Brass, Bronze, Copper | < 200 | < 700 | Medium/Short | 25-35 | T | ⊙ | ⊙ | ⊙ |
| | 63 Cu Alloy (Long) | Long chip Brass, Bronze, Copper | < 200 | < 700 | Long | 15-20 | T | ⊙ | ⊙ | ⊙ |
| | 64 Cu-Al-Fe < 1,500 | Cu-Al-Fe alloys | < 470 | < 1,500 | Short | 3-5 | A | | | |
| 70. ALUMINUM | 71 Al/Mg < 350 | Aluminum, Magnesium, Unalloyed | < 100 | < 350 | Extra long | 10-15 | T | | | |
| | 72 Al Wrought | Aluminum, Alloyed Si < 0.5% | < 150 | < 500 | Medium | 25-35 | T | ⊙ | ⊙ | ⊙ |
| | 73 Al (Si ≤ 10%) | Aluminum, Alloyed, Si ≤ 10% | < 120 | < 400 | Medium/Short | 15-20 | T | ⊙ | ⊙ | ⊙ |
| | 74 Al (Si > 10%) | Aluminum, Alloyed, Si > 10% | < 120 | < 400 | Short | 10-15 | T | ⊙ | ⊙ | ⊙ |
| 80. PLASTICS | 81 Thermosoft. | Thermoplastics | | | Extra long | 20-30 | T | | | |
| | 82 Thermoset. | Thermosetting Plastics | | | Short | 8-12 | Z | | | |
| | 83 FRP | Fiber Reinforced Plastics | | | Extra short | 5-7 | Z | | | |

| MU | MU | VA | VA | MU | MU | MU | MU | VA | VA | GS | GS | GS | GS | GS | GS | GS | GS | GS | GS |
|---------------|---------------|---------------|---------------|---------------|---------------|------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| TC807 (p.379) | | TQ744 (p.381) | TB744 (p.381) | TC814 (p.386) | TD814 (p.386) | TC814-IC (p.389) | | TQ428 (p.391) | TB428 (p.391) | TTS31 (p.400) | TTS33 (p.450) | TKS35 (p.493) | TTS37 (p.509) | TC127 (p.452) | TC227 (p.453) | TD127 (p.454) | TD227 (p.455) | TC463 (p.494) | TC211 (p.402) |
| | | | | | | | | | | | | | | TC122 (p.451) | | | | | |
| | | TQ754 (p.382) | TB754 (p.382) | TC854 (p.387) | TD854 (p.387) | | | TQ438 (p.392) | TB438 (p.392) | | | | | TC222 (p.476) | | TD222 (p.478) | | TC473 (p.502) | |
| | | | | TC834 (p.394) | TD834 (p.394) | | | | | | | | | TC214 (p.483) | | | | TC424 (p.504) | |
| | | | | TC874 (p.395) | TD874 (p.395) | | | | | | | | | TC234 (p.487) | | | | | |
| | | | | | | | | | | | | | | TC224 (p.490) | | | | | |
| | | | | | | | | | | | | | | TC727 (p.548) | | | | TC803 (p.524) | |
| | TC633 (p.380) | | | | | | TC445 (p.390) | | | | | | | | | | | | |

| Bright | Bright | Vap | Vap | Bright | TiN | Bright | Bright | Vap | Vap | TiN | TiN | TiCN | TiN | Bright | Bright | TiN | TiN | Bright | Bright |
|--------|--------|-------|-------|--------|-----|--------|--------|-----|-----|-----|-----|--------------|--------------|--------|--------|-----|-----|--------------|--------|
| R40 | R40 | R45 | R45 | | | | | | | R45 | | | | | | | | | L20 |
| E | C | C | C | B | B | B | B | B | B | C | B | C | C | B | B | B | B | C/Long | C |
| 1-2-3 | 1-2-3 | 1-2-3 | 1-2-3 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 2-3 | 4-5 | 1-2-3 4-5 | 1-2-3 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 1-2-3 4-5 | 4-5 |



| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |



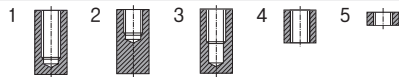
MACHINE TAPS

RECOMMENDATION TABLE

USE

⊙ = EXCELLENT

○ = GOOD



| MATERIAL GROUPS | | | GS | GS |
|-----------------------------|----------|----------------|---------------|---------------|
| DIN 371/376 | M | EDP No. (Page) | TC517 (p.403) | TC711 (p.404) |
| DIN 371/376 | EG-M | EDP No. (Page) | | |
| DIN 352 | M | EDP No. (Page) | TC612 (p.401) | |
| DIN 374 | MF | EDP No. (Page) | | TC411 (p.429) |
| DIN 371/376 | UNC | EDP No. (Page) | | TC144 (p.437) |
| DIN 371/376 | EG-UNC | EDP No. (Page) | | |
| DIN 371/374 | UNF | EDP No. (Page) | | TC124 (p.442) |
| DIN 371/376 | EG-UNF | EDP No. (Page) | | |
| DIN 2182/2183 | BSW | EDP No. (Page) | | TC134 (p.446) |
| DIN 357/5156 | M/G(BSP) | EDP No. (Page) | | TC728 (p.549) |
| LONG | M | EDP No. (Page) | | |
| SURFACE TREATMENT / COATING | | | Bright | Bright |
| SPIRAL FLUTE ANGLE | | | R20 | R40 |
| CHAMFER LEAD ACC. DIN 2197 | | | C | C |
| HOLE TYPE | | | 2-3 | 1-2-3 |

COOLANT

- A = Cutting Oil
- T = Oil Emulsion
- X = Cutting Oil/Oil Emulsion
- S = Dry
- Z = Dry/Oil Emulsion

| HARDNESS | TENSILE STRENGTH | CHIP | CUTTING SPEED | COOLANT | | |
|----------|----------------------|------|---------------|---------|--|--|
| HB | Rm N/mm ² | | Vc m/min | | | |

| MATERIAL GROUPS | | LIST OF MATERIALS | HB | Rm N/mm ² | CHIP | CUTTING SPEED Vc m/min | COOLANT | | |
|----------------------------------|-----------------------------|--------------------------------------------|-------|----------------------|--------------|------------------------|---------|---|---|
| 10. STEELS | 11 Steel < 400 | Magnetic soft steels | < 120 | < 400 | Extra long | 15-20 | T | | |
| | 12 Steel < 700 | Structure steels | < 200 | < 700 | Medium/long | 15-20 | T | ⊙ | ⊙ |
| | 13 Steel < 850 | Plain carbon steels | < 250 | < 850 | Long | 12-18 | T | ⊙ | ⊙ |
| | 14 St. Alloy < 850 | Alloy steels | < 250 | < 850 | Long | 10-15 | X | ⊙ | ⊙ |
| | 15 St. Alloy ≤ 1,200 | Alloy steels, Hardened steels | < 350 | ≤ 1,200 | Long | 6-10 | X | | |
| | 16 St. Alloy > 1,200 | Alloy steels, Hardened steels | > 350 | > 1,200 | Long | 3-5 | A | | |
| 20. STAINLESS STEELS | 21 INOX Free < 850 | Free machining | < 250 | < 850 | Medium | 7-10 | A | | |
| | 22 INOX Aust.< 850 | Austenitic | < 250 | < 850 | Long | 5-8 | A | | |
| | 23 INOX < 1,100 | Ferritic, Ferritic+Austenitic, Martensitic | < 300 | < 1,100 | Long | 4-6 | A | | |
| 30. CAST IRON | 31 GG Cast < 500 | Grey cast iron | < 150 | < 500 | Extra short | 10-15 | X | | |
| | 32 GG Cast < 1,000 | Grey cast iron | < 300 | < 1,000 | Extra short | 5-8 | T | | |
| | 33 GGG Cast < 700 | Nodular graphite, Malleable cast iron | < 200 | < 700 | Short | 10-15 | X | ⊙ | ⊙ |
| | 34 GGG Cast < 1,000 | Nodular graphite, Malleable cast iron | < 300 | < 1,000 | Short | 5-8 | X | ⊙ | ⊙ |
| 40. TITANIUM | 41 Ti < 700 | Titanium, Unalloyed | < 200 | < 700 | Extra long | 10-15 | T | ○ | ○ |
| | 42 Ti Alloy < 900 | Titanium, Alloyed | < 270 | < 900 | Medium/Short | 8-12 | A | | |
| | 43 Ti Alloy ≤ 1,300 | Titanium, Alloyed | < 350 | ≤ 1,300 | Medium/Short | 4-6 | A | | |
| 50. NICKEL | 51 Ni < 500 | Nickel, Unalloyed | < 150 | < 500 | Extra long | 8-12 | A | ○ | ○ |
| | 52 Ni Alloy < 900 | Nickel, Alloyed | < 270 | < 900 | Long | 10-15 | A | | |
| | 53 Ni Alloy ≤ 1,400 | Nickel, Alloyed | < 410 | ≤ 1,400 | Long | 2-4 | A | | |
| 60. COPPER, BRASS, BRONZE | 61 Cu < 350 | Copper, Unalloyed | < 100 | < 350 | Extra long | 8-12 | T | ○ | ○ |
| | 62 Cu Alloy (Short) | Short chip Brass, Bronze, Copper | < 200 | < 700 | Medium/Short | 25-35 | T | | |
| | 63 Cu Alloy (Long) | Long chip Brass, Bronze, Copper | < 200 | < 700 | Long | 15-20 | T | ⊙ | ⊙ |
| | 64 Cu-Al-Fe < 1,500 | Cu-Al-Fe alloys | < 470 | < 1,500 | Short | 3-5 | A | | |
| 70. ALUMINUM | 71 Al/Mg < 350 | Aluminum, Magnesium, Unalloyed | < 100 | < 350 | Extra long | 10-15 | T | ○ | ○ |
| | 72 Al Wrought | Aluminum, Alloyed Si < 0.5% | < 150 | < 500 | Medium | 25-35 | T | ○ | ○ |
| | 73 Al (Si ≤ 10%) | Aluminum, Alloyed, Si ≤ 10% | < 120 | < 400 | Medium/Short | 15-20 | T | ○ | ○ |
| | 74 Al (Si > 10%) | Aluminum, Alloyed, Si > 10% | < 120 | < 400 | Short | 10-15 | T | ⊙ | ⊙ |
| 80. PLASTICS | 81 Thermosoft. | Thermoplastics | | | Extra long | 20-30 | T | ○ | ○ |
| | 82 Thermoset. | Thermosetting Plastics | | | Short | 8-12 | Z | | |
| | 83 FRP | Fiber Reinforced Plastics | | | Extra short | 5-7 | Z | | |

| GS | VG | VG | VG | VG | VG | VG | VG | VG | VG | VG | VG | VG | VG | HR | HR | HR | HR | HR | HR |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| TD711 (p.405) | TQ863 (p.456) | TR863 (p.457) | TC422 (p.458) | TE422 (p.459) | TD422 (p.460) | TY422 (p.461) | TQ823 (p.406) | TR823 (p.407) | TC312 (p.410) | TB312 (p.408) | TD312 (p.411) | TY312 (p.412) | TB913 (p.409) | T0997 (p.556) | T0999 (p.556) | TC283 (p.464) | TY283 (p.465) | TC313 (p.416) | TB313 (p.415) |
| | | | | | | | | | | | | | | | | | | | |
| TD411 (p.431) | | | TC263 (p.480) | | TD263 (p.481) | | | | TC413 (p.433) | | TD413 (p.434) | | | | | | | | |
| | | | TC244 (p.484) | | TD244 (p.485) | | | | TC174 (p.438) | | TD174 (p.439) | | | | | | | | |
| | | | TC254 (p.488) | | | | | | TC184 (p.443) | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | TC729 (p.550) | | | | | | | | | | | | | | | | |
| TiN | Vap | Bright | Bright | NI | TiN | TiAlN | Vap | Bright | Bright | Vap | TiN | TiAlN | Vap | TiCN | TiCN | Bright | TiAlN | Bright | Vap |
| R40 | | | | | | | R40 | R40 | R40 | R40 | R40 | R40 | R40 | | | | | R40 | R40 |
| C | B | B | B | B | B | B | C | C | C | C | C | C | C | C | D | B | B | C | C |
| 1-2-3 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 4-5 | 1-2-3 | 1-2-3 | 1-2-3 | 1-2-3 | 1-2-3 | 1-2-3 | 1-2-3 | 1-2-3 4-5 | 1-2-3 4-5 | 4-5 | 4-5 | 1-2-3 | 1-2-3 |
| | | | | | | | | | | | | | | | | | | | |
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CUTTING SPEED TABLE

CUTTING SPEED TABLE **SCHNITTGESCHWINDIGKEITSTABELLE** Cutting Speeds m/min. into revolutions per minute

| TOOL R.P.M.(rev/min) | | | | | | | | | | | | | | | | |
|----------------------|-----------------------|-----|-----|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|
| Tool Dia. | Cutting Speed (m/min) | | | | | | | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 15 | 20 | 25 | 30 | 40 | 50 | 60 |
| 1 | 318 | 637 | 955 | 1274 | 1592 | 1910 | 2548 | 3185 | 3822 | 4777 | 6396 | 7962 | 9554 | 12739 | 15924 | 19108 |
| 2 | 159 | 318 | 478 | 637 | 796 | 955 | 1274 | 1592 | 1911 | 2388 | 3185 | 3981 | 4777 | 6369 | 7962 | 9554 |
| 3 | 106 | 212 | 318 | 425 | 531 | 637 | 849 | 1062 | 1274 | 1592 | 2123 | 2654 | 3185 | 4246 | 5308 | 6369 |
| 4 | 80 | 159 | 239 | 318 | 398 | 478 | 637 | 796 | 955 | 1194 | 1592 | 1990 | 2389 | 3185 | 3981 | 4777 |
| 5 | 64 | 127 | 191 | 255 | 318 | 382 | 510 | 637 | 764 | 955 | 1274 | 1592 | 1911 | 2548 | 3185 | 3822 |
| 6 | 53 | 106 | 159 | 212 | 265 | 318 | 425 | 531 | 637 | 796 | 1062 | 1327 | 1592 | 2123 | 2653 | 3185 |
| 8 | 40 | 80 | 119 | 159 | 199 | 239 | 318 | 398 | 478 | 597 | 796 | 955 | 1194 | 1592 | 1990 | 2388 |
| 10 | 31 | 64 | 96 | 127 | 159 | 191 | 255 | 318 | 382 | 478 | 637 | 796 | 955 | 1274 | 1592 | 1911 |
| 12 | 26 | 53 | 80 | 106 | 133 | 159 | 212 | 265 | 318 | 398 | 531 | 663 | 796 | 1062 | 1327 | 1592 |
| 14 | 23 | 45 | 68 | 91 | 114 | 136 | 182 | 227 | 273 | 341 | 455 | 569 | 682 | 910 | 1137 | 1365 |
| 16 | 20 | 40 | 60 | 80 | 100 | 119 | 159 | 199 | 239 | 299 | 398 | 498 | 597 | 796 | 995 | 1194 |
| 18 | 18 | 35 | 53 | 71 | 88 | 106 | 142 | 177 | 212 | 265 | 354 | 442 | 531 | 708 | 885 | 1062 |
| 20 | 16 | 32 | 48 | 64 | 80 | 96 | 127 | 159 | 191 | 239 | 318 | 398 | 478 | 637 | 796 | 955 |
| 25 | 13 | 25 | 38 | 51 | 64 | 76 | 102 | 127 | 153 | 191 | 255 | 318 | 382 | 510 | 637 | 764 |
| 30 | 11 | 21 | 32 | 42 | 53 | 64 | 85 | 106 | 127 | 159 | 212 | 265 | 318 | 425 | 531 | 637 |
| 35 | 9 | 18 | 27 | 36 | 45 | 55 | 73 | 91 | 109 | 136 | 182 | 227 | 273 | 364 | 455 | 546 |
| 40 | 8 | 16 | 24 | 32 | 40 | 48 | 64 | 80 | 96 | 119 | 159 | 199 | 239 | 118 | 398 | 478 |

RPM = rev/min

V = m/min

D = Dia.(mm)

$$V = \frac{RPM \cdot \pi \cdot D}{1000}$$

$$RPM = \frac{1000 \cdot V}{\pi \cdot D}$$