

YG SPIRAL FLUTE TAPS

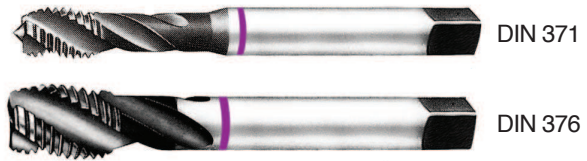
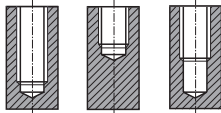
TQ833 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

► Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

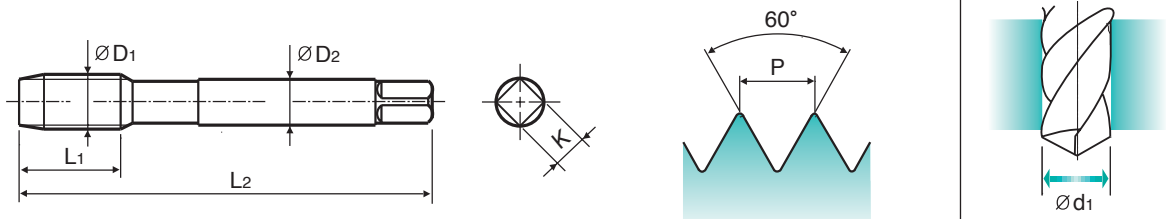
► Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

Hole type



HSS-PM DIN 371/376 6H 60° C Vap R40

Machine taps
Maschinengewindebohrer



Unit : mm

| SIZE | Pitch | EDP No. | Thread Length | Overall Length | Shank Diameter | Square Size | Tapping Drill Diameter |
|------|--------|-----------------|---------------|----------------|----------------|-------------|------------------------|
| ØD1 | P | | L1 | L2 | ØD2 | K | Ød1 |
| M2 | × 0.4 | TQ833136 | 8 | 45 | 2.8 | 2.1 | 1.6 |
| M2.2 | × 0.45 | TQ833156 | 8 | 45 | 2.8 | 2.1 | 1.75 |
| M2.5 | × 0.45 | TQ833176 | 9 | 50 | 2.8 | 2.1 | 2.05 |
| M3 | × 0.5 | TQ833206 | 6 | 56 | 3.5 | 2.7 | 2.5 |
| M3.5 | × 0.6 | TQ833226 | 7 | 56 | 4 | 3 | 2.9 |
| M4 | × 0.7 | TQ833246 | 7 | 63 | 4.5 | 3.4 | 3.3 |
| M4.5 | × 0.75 | TQ833266 | 8 | 70 | 6 | 4.9 | 3.7 |
| M5 | × 0.8 | TQ833286 | 8 | 70 | 6 | 4.9 | 4.2 |
| M6 | × 1 | TQ833316 | 10 | 80 | 6 | 4.9 | 5 |
| M7 | × 1 | TQ833346 | 10 | 80 | 7 | 5.5 | 6 |
| M8 | × 1.25 | TQ833366 | 13 | 90 | 8 | 6.2 | 6.8 |
| M10 | × 1.5 | TQ833426 | 15 | 100 | 10 | 8 | 8.5 |
| M12 | × 1.75 | TQ833506 | 18 | 110 | 9 | 7 | 10.2 |

► DIN 371(M2~M10) and DIN 376(M12)

Unit : N/mm²

◎ : Excellent ○ : Good

| | | | | | | | | | | | | | | |
|-----------------|-------------|----------------|-----------------|------------------|------------------|-----------------|------------------|---------------|---------------|----------------|----------------|--------------------|-------------------|----------------|
| Steel < 400 | Steel < 700 | Steel < 850 | St. Alloy < 850 | St. Alloy ≤ 1200 | St. Alloy > 1200 | INOX Free < 850 | INOX Aust. < 850 | INOX < 1000 | GG Cast < 500 | GG Cast < 1000 | GGG Cast < 700 | GGG Cast < 1000 | Ti < 700 | Ti Alloy < 900 |
| | | | | ○ | ◎ | | | | | | | | ○ | ◎ |
| Ti Alloy ≤ 1300 | Ni < 500 | Ni Alloy < 900 | Ni Alloy ≤ 1400 | Cu < 350 | Cu Alloy Short | Cu Alloy Long | Cu-Al-Fe < 1500 | Al / Mg < 350 | Al Wrought | Al Si ≤ 10% | Al Si > 10% | Plastic Thermosoft | Plastic Thermoset | Plastic FRP |
| ○ | | ○ | ○ | | | | ○ | | | | | | | |



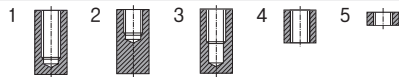
MACHINE TAPS

RECOMMENDATION TABLE

USE

⊙ = EXCELLENT



○ = GOOD



| MATERIAL GROUPS | | | HR | VA |
|-----------------------------|----------|----------------|---------------|---------------|
| DIN 371/376 | M | EDP No. (Page) | TY313 (p.417) | TQ853 (p.462) |
| DIN 371/376 | EG-M | EDP No. (Page) | | |
| DIN 352 | M | EDP No. (Page) | | |
| DIN 374 | MF | EDP No. (Page) | | |
| DIN 371/376 | UNC | EDP No. (Page) | | |
| DIN 371/376 | EG-UNC | EDP No. (Page) | | |
| DIN 371/374 | UNF | EDP No. (Page) | | |
| 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 | | | TiAlN | Vap |
| SPIRAL FLUTE ANGLE | | | R40 | |
| CHAMFER LEAD ACC. DIN 2197 | | | C | B |
| HOLE TYPE | | | 1-2-3 | 4-5 |

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

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)

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

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