



**GÜHRING**



***Energy  
high-performance  
taps***

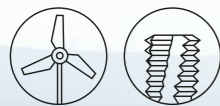
High-performance taps for the energy industry

# Strong performance in steel, reliable process stability

## The industry specialist for demanding threads

**Large components, special thread solutions and narrow tolerances - these challenges are part of everyday life in the energy industry and place the highest demands on machining.**

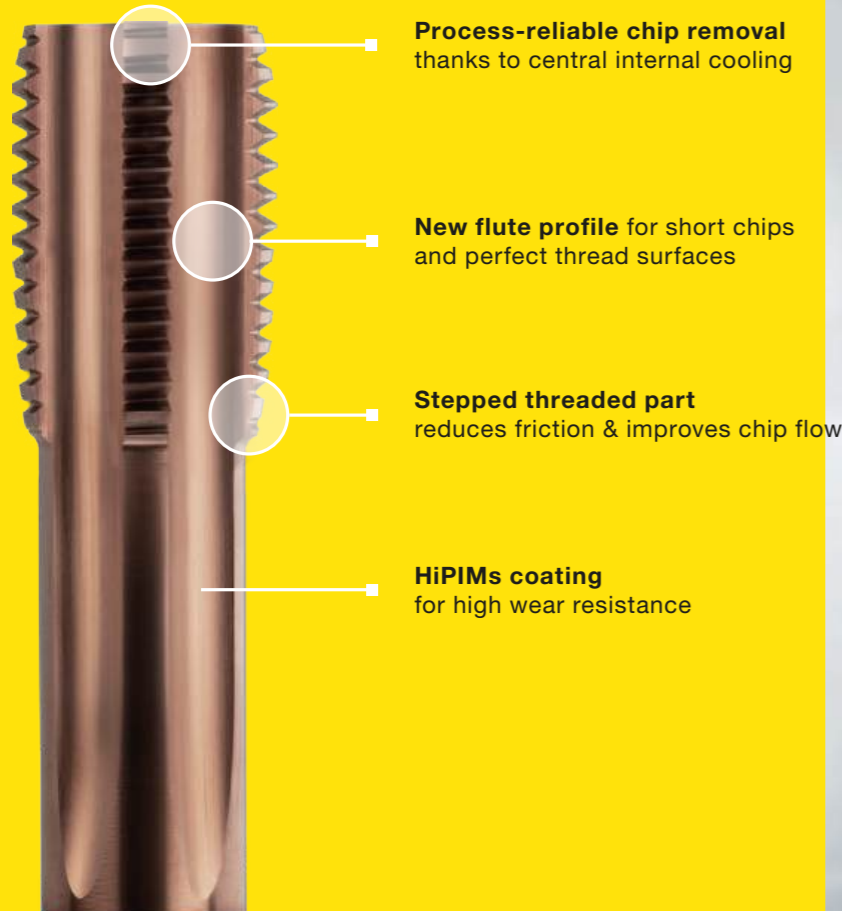
Threading tools, which are usually used in the final working step, must be reliable and absolutely process-reliable. With the Energy high-performance tap, Gühring has developed an industry specialist that shows its strengths in typical materials such as high-strength steels or cast materials: short chips and optimum chip removal ensure process-reliable threads, which also score points with maximum cost-effectiveness thanks to long tool lives.





# Energy high-performance taps

- X Short chips & safe chip removal
- X Perfect thread quality
- X Outstanding tool lives



**Process-reliable chip removal**  
thanks to central internal cooling

**New flute profile** for short chips  
and perfect thread surfaces

**Stepped threaded part**  
reduces friction & improves chip flow

**HiPIMs coating**  
for high wear resistance

X **Tool life** increased by 20 %

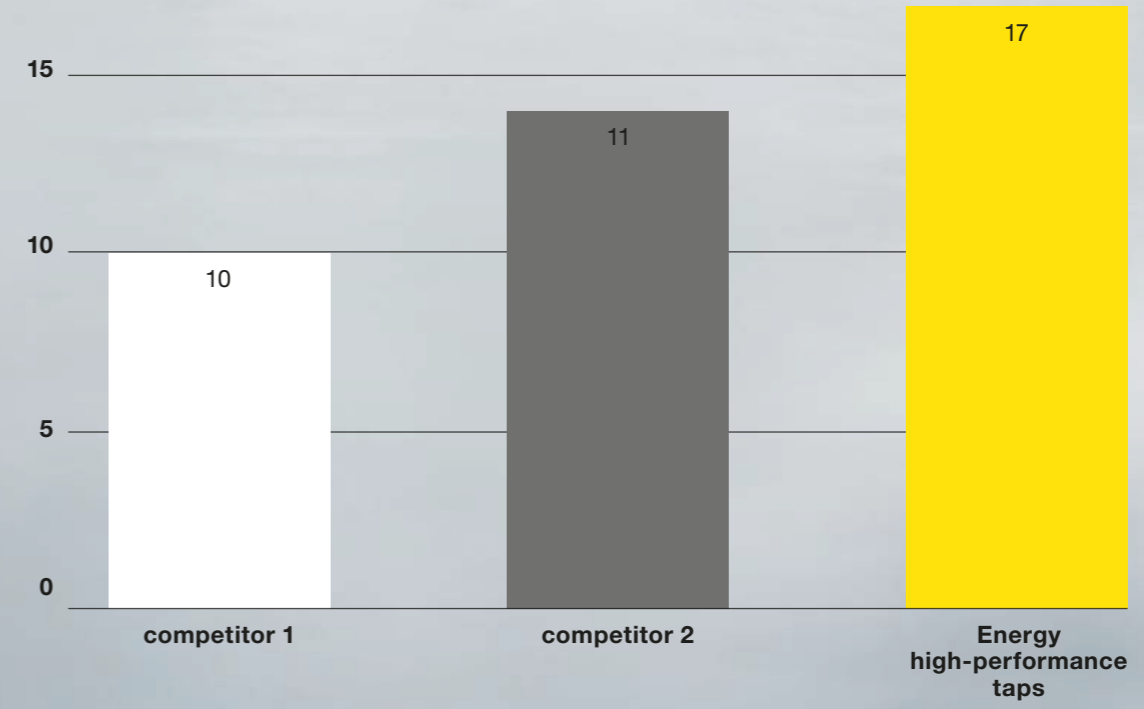
X Significantly improved **surface quality**

## Application example

|                         |   |                    |
|-------------------------|---|--------------------|
| <b>Component:</b>       | Large gear ring 42CrMo4, thread depth 70 mm, blind hole                       |                    |
| <b>Tool:</b>            | #8314, tap M36  |                    |
| <b>Customer target:</b> | Increased tool life & high thread surface quality                             |                    |
| <b>Difficulty:</b>      | Long chips are difficult to transport, jam & damage tool & component surfaces |                    |
| <b>Cutting data:</b>    | <b>Gühring</b>  | <b>Competition</b> |
|                         | $v_c$ 11 m/min  | $v_c$ 11 m/min     |
|                         | $f$ 4.0 mm/U  | $f$ 4.0 mm/U       |
| <b>Tool life:</b>       | 17 meters   | 11 Meter           |



Chart of tool life [m] 42CrMo4





Taps with coolant ducts for ISO metric threads

Article no. 8313

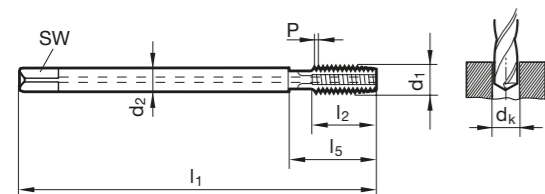


for short chips and optimal thread surface

cutting data see page 7

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

P ≤ 1200 N/mm<sup>2</sup>



| d1  | P     | d2    | SW    | dk    | l1     | l2    | l5     |
|-----|-------|-------|-------|-------|--------|-------|--------|
| mm  | mm    | mm    | mm    | mm    | mm     | mm    | mm     |
| M16 | 2.000 | 12.00 | 9.00  | 14.00 | 110.00 | 26.00 | 54.00  |
| M20 | 2.500 | 16.00 | 12.00 | 17.50 | 140.00 | 32.00 | 62.00  |
| M24 | 3.000 | 18.00 | 14.50 | 21.00 | 160.00 | 36.00 | 73.00  |
| M27 | 3.000 | 20.00 | 16.00 | 24.00 | 160.00 | 36.00 | 73.00  |
| M30 | 3.500 | 22.00 | 18.00 | 26.50 | 180.00 | 40.00 | 85.00  |
| M33 | 3.500 | 25.00 | 20.00 | 29.50 | 180.00 | 40.00 | 91.00  |
| M36 | 4.000 | 28.00 | 22.00 | 32.00 | 200.00 | 50.00 | 102.00 |
| M39 | 4.000 | 32.00 | 24.00 | 35.00 | 200.00 | 50.00 | 107.00 |
| M42 | 4.500 | 32.00 | 24.00 | 37.50 | 200.00 | 56.00 | 112.00 |
| M48 | 5.000 | 36.00 | 29.00 | 43.00 | 250.00 | 65.00 | 127.00 |

|             |                |
|-------------|----------------|
| Standard    | <b>DIN 376</b> |
| Article no. | <b>8313</b>    |
| Order no.   |                |

Taps with coolant ducts for ISO metric threads

Article no. 8314

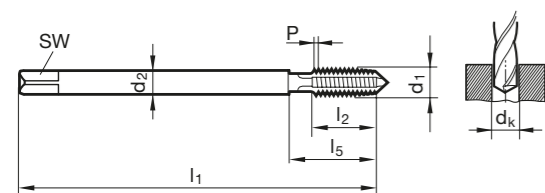


for short chips and optimal thread surface • long design

cutting data see page 7

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

P ≤ 1200 N/mm<sup>2</sup>



| d1  | P     | d2    | SW    | dk    | l1     | l2    | l5     |
|-----|-------|-------|-------|-------|--------|-------|--------|
| mm  | mm    | mm    | mm    | mm    | mm     | mm    | mm     |
| M16 | 2.000 | 12.00 | 9.00  | 14.00 | 160.00 | 26.00 | 100.00 |
| M20 | 2.500 | 16.00 | 12.00 | 17.50 | 180.00 | 32.00 | 120.00 |
| M24 | 3.000 | 18.00 | 14.50 | 21.00 | 200.00 | 36.00 | 120.00 |
| M27 | 3.000 | 20.00 | 16.00 | 24.00 | 225.00 | 36.00 | 145.00 |
| M30 | 3.500 | 22.00 | 18.00 | 26.50 | 250.00 | 40.00 | 160.00 |
| M33 | 3.500 | 25.00 | 20.00 | 29.50 | 275.00 | 40.00 | 170.00 |
| M36 | 4.000 | 28.00 | 22.00 | 32.00 | 300.00 | 50.00 | 180.00 |
| M39 | 4.000 | 32.00 | 24.00 | 35.00 | 325.00 | 50.00 | 210.00 |
| M42 | 4.500 | 32.00 | 24.00 | 37.50 | 350.00 | 56.00 | 235.00 |
| M48 | 5.000 | 36.00 | 29.00 | 43.00 | 400.00 | 65.00 | 275.00 |

|             |                 |
|-------------|-----------------|
| Standard    | <b>~DIN 376</b> |
| Article no. | <b>8314</b>     |
| Order no.   |                 |

Taps Energy



| Machining group   | Through-, blind holes  |  |
|---|------------------------|--|
|   | HSS-E-PM               |  |
|   | P                      |  |
|   | v <sub>c</sub> (m/min) |  |
| P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB                     |                        |  |
| P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm <sup>2</sup> , 125 HB                 |                        |  |
| P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB                     |                        |  |
| P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm <sup>2</sup> , 190 HB                 |                        |  |
| P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm <sup>2</sup> , 250 HB                 |                        |  |
| P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm <sup>2</sup> , 270 HB                     |                        |  |
| P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm <sup>2</sup> , 300 HB                |                        |  |
| P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm <sup>2</sup> , 180 HB                               |                        |  |
| P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm <sup>2</sup> , 275 HB                           | 18                     |  |
| P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm <sup>2</sup> , 300 HB                          | 15                     |  |
| P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm <sup>2</sup> , 350 HB                          | 12                     |  |
| P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB               | 10                     |  |
| P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm <sup>2</sup> , 325 HB | 10                     |  |
| M1.1.1 Stainless steel, ferritic/martensitic, with machining additives                            |                        |  |
| M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm <sup>2</sup> , 200 HB         |                        |  |
| M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm <sup>2</sup> , 240 HB     |                        |  |
| M2.1.1 Stainless steel, austenitic, quenched, 180 HB  |                        |  |
| M2.2.1 Duplex steel, high-strength stainless steels   |                        |  |
| K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB   | 28                     |  |
| K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB  | 28                     |  |
| K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB                                       | 28                     |  |
| K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB                                      | 28                     |  |
| K1.3.1 Malleable cast iron, ferritic, 130 HB  | 28                     |  |
| K1.3.2 Malleable cast iron, pearlitic, 230 HB   | 28                     |  |
| K2.1.1 Vermicular graphite cast iron (GVJ)  | 14                     |  |
| K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)                                    | 14                     |  |
| N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB  |                        |  |
| N1.1.2 Wrought aluminium alloys, hardened, 100 HB   |                        |  |
| N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB                                   |                        |  |
| N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB                                       |                        |  |
| N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB                                  |                        |  |
| N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %                                   |                        |  |
| N3.1.2 Copper and copper alloys: CuZn, CuSnZn   |                        |  |
| N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte                    |                        |  |
| N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics                            |                        |  |
| N4.1.2 Non-metallic materials: Hard rubber, wood, etc.  |                        |  |
| N4.1.3 Non-metallic materials: Graphite   |                        |  |
| S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB  |                        |  |
| S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB  |                        |  |
| S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB                                   |                        |  |
| S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB                                   |                        |  |
| S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB                                       |                        |  |
| S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm <sup>2</sup>                                   |                        |  |
| S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm <sup>2</sup>                |                        |  |
| H1.1.1 Hardened steel, hardened and tempered, < 55 HRC  |                        |  |
| H1.1.2 Hardened steel, hardened and tempered, < 60 HRC  |                        |  |
| H1.1.3 Hardened steel, hardened and tempered, > 60 HRC  |                        |  |
| H2.1.1 Chilled cast iron, 400 HB  |                        |  |
| H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC   |                        |  |

Cutting data



## Energy high-performance taps

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201 596/25020-VII-10 | Printed in Germany | 2025

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