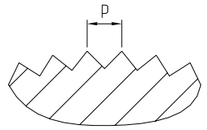
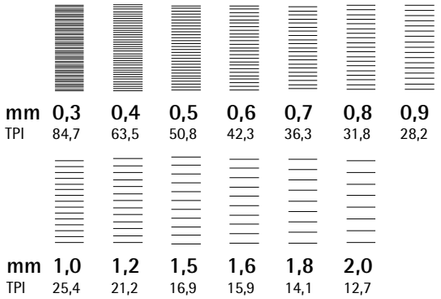
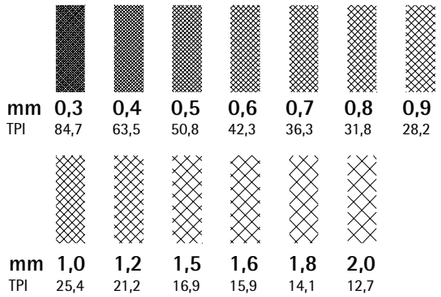
THE KNURLING WHEEL'S PITCH

The knurling wheel's pitch 'p' refers to the distance between the tips of two teeth.
Standard pitch sizes according to DIN 403 include: p=0,5/0,6/0,8/1,0/1,2/1,6.
The Hommel + Keller product programme covers also non-standard pitch sizes.
They are listed below in mm and TPI. Additional pitch sizes are available on demand.



STANDARD PITCH SIZES:





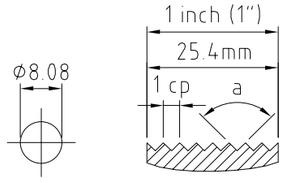
KNURLINGS ACCORDING TO AMERICAN NATIONAL STANDARD CP (TPI) AND DP:

Apart from the DIN 82 / DIN 403 the American National Standard specifies the pitch and profile angle of the knurling application. The CP (TPI) and DP are distinguished as follows:

CP (TPI) = Circular Pitch (Teeth Per Inch)

This standard specifies the number of teeth on a length of 1 inch (1"~25,4 mm). The CP (TPI) is calculated by dividing 1 inch through the number of teeth. The profile angle is determined according to the number of teeth with either 70° or 90°.

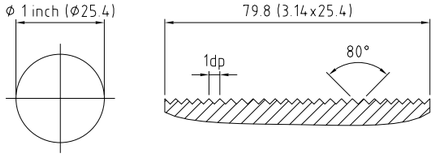
Arithmetic example:
Value CP (TPI) = 20
Pitch (mm) = 1 inch (~25,4 mm) : 20 (Number of teeth) = 1.27 mm



DP = Diametral Pitch

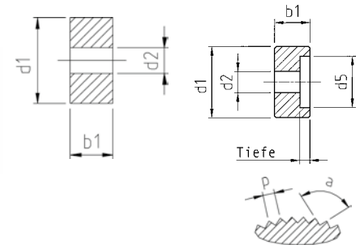
Contrary to the CP (TPI), this standard specifies the number of teeth along the circumference of a circle with a diameter of 1 inch (1"~25,4 mm). The pitch is calculated by dividing the circumference (= 1 inch) by the number of teeth. The profile angle is generally determined with 80°.

Arithmetic example:
Value DP = 64
Pitch (mm) = 1 inch (~25,4) x π (3,14...) : 64 (Number of teeth) = 1.25 mm



A list of mm and CP (TPI) conversions can be found on page 63. Furthermore, the Technical Appendix contains a separate chapter on how to optimize the relation between number of teeth and work piece circumference by adjusting the pitch size.

FORM KNURLING, NON-CUTTING FORMING



KNURLING WHEELS WITH CHAMFER (45°) – METRIC – POWDER METAL, S590

Standard version	Dimension			Standard Pitch	Type							
	Diameter	Width	Bore		AA	BL30°	BL45°	BR30°	BR45°	GE30°	GE45°	KE
No. 11	* 10	3	6	○	✓	✓	✓	✓	✓	✓	✓	☑
No. 11	10	4	4	○	✓	✓	✓	✓	✓	✓	✓	☑
No. 11	15	4	4	○	✓	✓	✓	✓	✓	✓	✓	✓
No. 11	* 15	4	8	■	✓	✓	✓	✓	✓	✓	✓	☑
No. 11	15	6	4	○	✓	✓	✓	✓	✓	✓	✓	✓
No. 11	15	6	6/8	□	✓	✓	✓	✓	✓	✓	✓	☑
No. 11	15	6	6/11	■	✓	✓	✓	✓	✓	✓	✓	☑
No. 11	20	6	6	●	✓	✓	✓	✓	✓	✓	✓	☑
No. 11	20	8	6	●	✓	✓	✓	✓	✓	✓	✓	✓
No. 11	20	8	6/13	■	✓	✓	✓	✓	✓	✓	✓	☑
No. 11	20	8	10/12	■	✓	✓	✓	✓	✓	✓	✓	☑
No. 11	20	10	6	■	✓	✓	✓	✓	✓	✓	✓	☑
No. 11	25	6	6	■	✓	✓	✓	✓	✓	☑	☑	☑
No. 11	* 25	6	8	■	✓	✓	✓	✓	✓	☑	☑	☑
No. 11	25	8	6	■	✓	✓	✓	✓	✓	☑	☑	☑
No. 11	25	10	6	■	✓	✓	✓	✓	✓	☑	☑	☑

* Chamfer 60°
Further dimensions and customized knurling wheels available on demand.

✓ = Stock item / immediate availability
☑ = Available on demand

STANDARD PITCH SIZES / PROFILE ANGLE 90°

●	0,3 / 0,4 / 0,5 / 0,6 / 0,7 / 0,8 / 0,9 / 1,0 / 1,2 / 1,5 / 1,6 / 1,8 / 2,0
○	0,3 / 0,4 / 0,5 / 0,6 / 0,7 / 0,8 / 0,9 / 1,0 / 1,2 / 1,5
■	0,6 / 0,8 / 1,0 / 1,2 / 1,5
□	0,6 / 0,8 / 1,0 / 1,2
☑	On demand

SPECIAL PITCHES

Further pitch sizes and customized knurling wheels available on demand.

ALTERNATIVE TYPES, METRIC

Powder Metal (PM)

No.	Type
No. 13	milled, without chamfer
No. 30	ground, with chamfer
No. 32	ground, without chamfer

Carbide (HM)

No.	Type
No. 50	ground, with chamfer
No. 52	ground, without chamfer

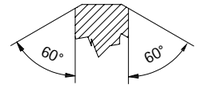
High Speed Automatic Steel (HSS)

No.	Type
No. 10	milled, with chamfer
No. 12	milled, without chamfer

Further versions available on demand.

PROTECTION CHAMFER

For form knurling applications in axial tool direction and big pitch sizes, a 60° chamfer on the knurling wheel might bring better results. The chamfer can support a better material flow.



Order No. PM = Nr. 95
Order No. HSS = Nr. 94

PVD-COATINGS

- TiN-coatings
- TiCN-coatings
- TiAlN-coatings
- TiAlCN-coatings

SPECIAL HEAT-TREATMENT

- TENIFER®-nitriding
- Defined hardness

SURFACE TREATMENT

- Polished knurling wheels