



PRÄZISIONSWERKZEUGE

HOMMEL+KELLER

TOOLTALK ESSENTIALS

KNOW-HOW-NUGGETS

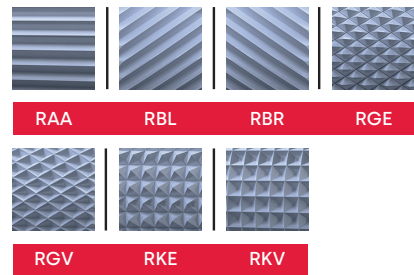
FORM KNURLING | CUT KNURLING

FUNDAMENTAL
DIFFERENCES AND
POSSIBILITIES



FORM KNURLING

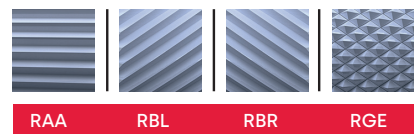
Knurling profile on work piece (DIN 82)



Form knurling is a non-cutting process during which a surface compression of the work piece takes place. As form knurling is a cold forming process, the technique is only suitable for cold deformable materials. As a result of the forming process, the outer diameter is increased. A main advantage of the technique lies in the application diversity. With form knurling all knurling profiles can be produced and it is also suitable for front, internal or conical knurling. It is further possible to knurl up to a shoulder.

CUT KNURLING

Knurling profile on work piece (DIN 82)



Cut knurling is the milling alternative to form knurling. During feed, material is removed. This technique is especially suitable for thin-walled work pieces, soft materials (e.g. plastics) or difficult to machine materials. Cut knurling excels in high precision and excellent surface quality, a reason why it is recommended for producing high-quality visual profiles. Contrary to form knurling, the surface compression and the material displacement are negligible. The strain on the machine is also relatively small. One major restriction of the cut knurling technique is the smaller range of application. Cut knurling is only suitable for producing the knurling profiles RAA and RGE. Furthermore, due to the minimal surface compression, the toughness of the knurling profile is reduced.

Application:

- Processing of cold deformable material
- Suitable for all knurling patterns, profiles and markings
- Suitable for front and internal knurling
- Knurling to a shoulder
- Tool can be started at any position of the work piece

Handling:

- Preparation of work piece generally not required (reduced setting time)
- Easy tool handling

Characteristics:

- Work piece diameter is increased through displacement
- Surface is compressed
- More strain on machine compared to cut knurling
- Form knurling of thin-walled work pieces can cause difficulties
- Knurling of small diameters can cause difficulties

Application:

- Suitable for most materials
- Suitable for thin-walled work pieces
- Suitable for very small work pieces
- High precision and surface quality, therefore suitable for excellent visual profiles
- Limited range of application: The knurling profiles RAA and RGE can be produced with all tool series. The possibility of the knurling profiles RBR and RBL is limited
- Only suitable for cylindrical work pieces in axial tool direction
- Knurling to be started at work piece end or in the middle after a groove
- Knurling up to a shoulder is not possible

Handling:

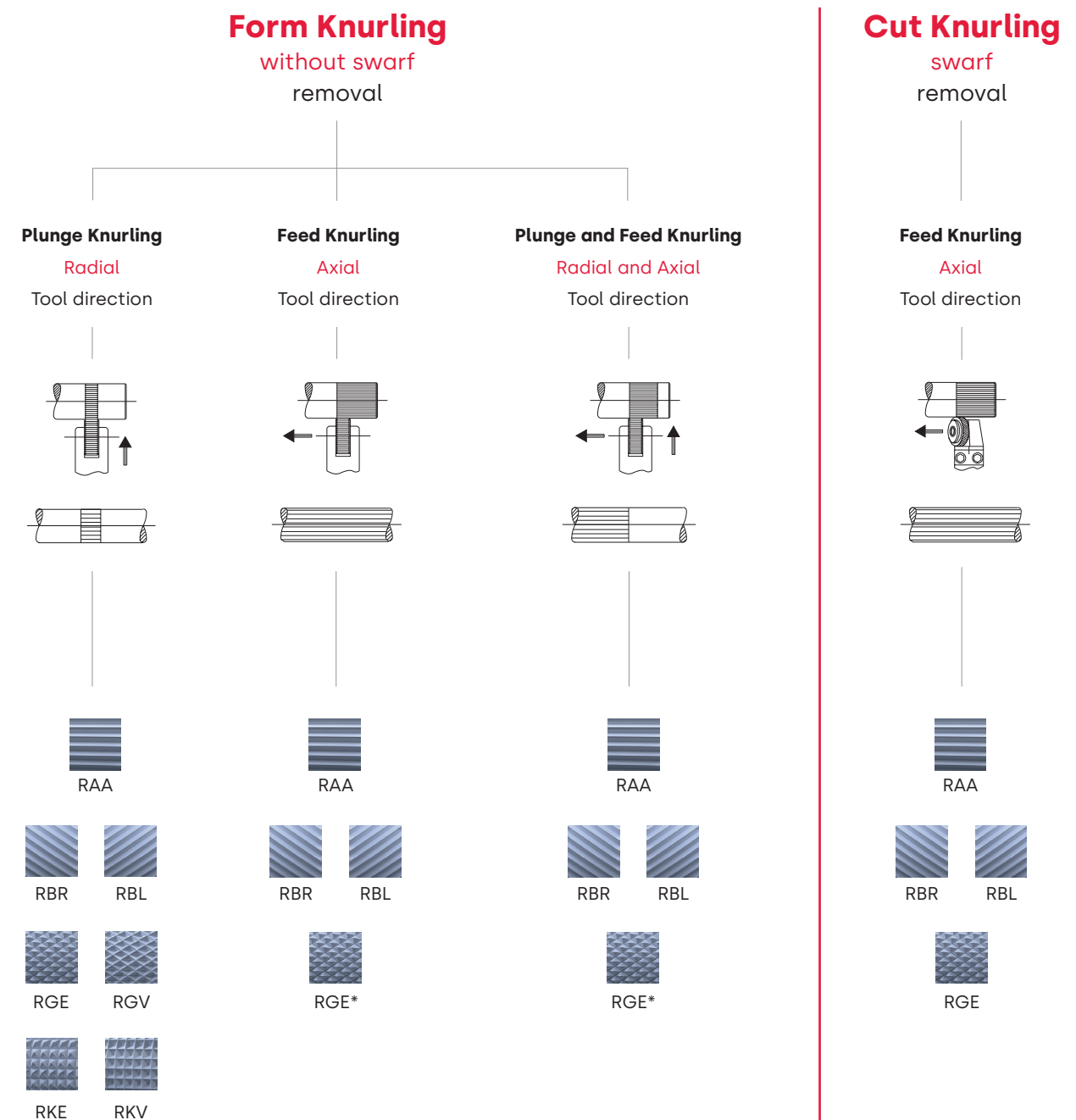
- Precise setting of tool and fine adjustment required
- Precise setting of work piece required

Characteristics:

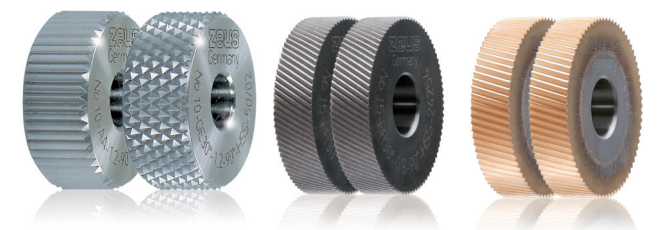
- No major change in diameter after knurling
- Minimal surface compression
- Less strain on machine compared to form knurling
- Minimal strain on tool and work piece

KNURLING TECHNIQUES - OVERVIEW

A fundamental distinction lies in the relation between tool direction and possible knurling profiles. The chart below outlines this important distinction:



*Only suitable with knurling tools RD2/RD3/RF2/RF3





Imagefilm / YouTube

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