

Tool selection

Symbols:

- LD** = Swiss-type lathes (CNC/conventional)
- KD** = Automatic-short-turning lathes/universal lathes/ turning/ milling centres (CNC/conventional)
- MS** = Multi-spindle lathes (CNC/conventional)
- RT** = Rotary indexing machines/indexing tables/ automatic transfer machines
- X** = Process is not possible with this application
- ▲** = Length of knurling is limited
- *** = For cut knurling RBR/RBL possible only to a limited extent

Explanation of arrows:

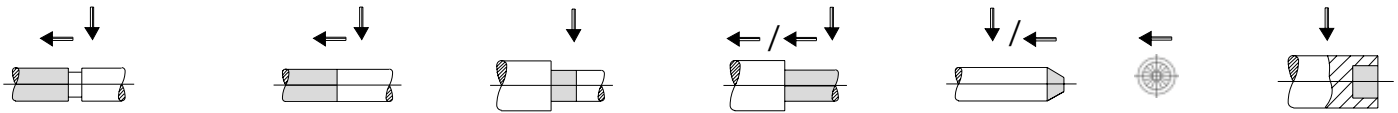
- ↓ Knurl can be manufactured in radial direction (plunge knurling)
- ← Knurl can be manufactured only in axial direction (feed knurling)
- ↔ Knurl can be manufactured in both axial and radial direction



Knurling profile (DIN 82)	Manufacturing process		Machine type	Knurling on workpiece centre/ without plunge cut	Knurling starting at workpiece beginning
	Form knurling	Cut knurling			
RAA knurl			LD	130 / 131 / 141 / 161	130 / 131 / 141 / 161 / 162▲ / 192▲ / 391
			KD	130 / 131 / 141 / 161	130 / 131 / 141 / 161 / 162▲ / 192▲ / 391
			MS	130 / 131 / 141 / 161	130 / 131 / 141 / 161 / 162▲ / 192▲ / 391
			RT	X	192▲ / 391
			LD	X	231
			KD	X	231
			MS	X	231
			RT	X	X
RBL left-hand knurl			LD	130 / 131 / 141 / 161	130 / 131
			KD	130 / 131 / 141 / 161	130 / 131
			MS	130 / 131 / 141 / 161	130 / 131
			RT	X	130 / 131
			LD	X	231*
			KD	X	231*
			MS	X	231*
			RT	X	X
RBR right-hand knurl			LD	130 / 131 / 141 / 161	130 / 131
			KD	130 / 131 / 141 / 161	130 / 131
			MS	130 / 131 / 141 / 161	130 / 131
			RT	X	130 / 131
			LD	X	231*
			KD	X	231*
			MS	X	231*
			RT	X	X
RGE left/right-hand knurl/ raised points/30°			LD	130 / 131 / 132 / 161	X
			KD	130 / 131 / 132 / 161	
			MS	130 / 131 / 132 / 161	
			RT		
			LD	141 / 161	141 / 161 / 162 / 192▲
			KD	141 / 161	141 / 161 / 162 / 192▲
			MS	141 / 161	141 / 161 / 162 / 192▲
			RT		161 / 162 / 192▲
			LD	X	241 / 291▲
			KD	X	241 / 291▲
			MS	X	241 / 291▲
			RT	X	291▲
RGV left/right-hand knurl/ lowered points/30°			LD	130 / 131	RGV: only plunge knurling possible
			KD	130 / 131	
			MS	130 / 131	
			RT		
RKE cross knurl/ raised points/90°			LD	130 / 131	RKE: only plunge knurling possible
			KD	130 / 131	
			MS	130 / 131	
			RT		
RKV cross knurl/ lowered points/90°			LD	130 / 131	RKV: only plunge knurling possible
			KD	130 / 131	
			MS	130 / 131	
			RT		

This matrix provides you with a selection of tool series that can be used for your application. You can use the table to define the profile, process and machine type.

Then you can choose the application based on the pictograms. Starting on page 9 you will find details of the products and tool features.



Knurling starting in centre of workpiece/ after plunge cut	Knurling starting in centre of workpiece/ without plunge cut	Knurling up to a shoulder	Knurling starting at workpiece beginning up to a shoulder	Conical knurling	Knurling on the front face	Knurling in a bore
130 / 131 / 141 / 161	130 / 131 / 141 / 161	132 / 142	132 / 142 / 162 ▲ / 192 ▲	311 / 312	311 / 312	330 / 332
130 / 131 / 141 / 161	130 / 131 / 141 / 161	132 / 142	132 / 142 / 162 ▲ / 192 ▲	311 / 312	311 / 312	330 / 332
130 / 131 / 141 / 161	130 / 131 / 141 / 161	132 / 142	132 / 142 / 162 ▲ / 192 ▲	311 / 312	311 / 312	330 / 332
X	X	X	162 ▲ / 192 ▲	X	X	330 / 332
231						
231						
231						
X						
130 / 131 / 141 / 161	130 / 131 / 141 / 161	132 / 142	132 / 142 / 162 ▲ / 192 ▲	311 / 312	311 / 312	330 / 332
130 / 131 / 141 / 161	130 / 131 / 141 / 161	132 / 142	132 / 142 / 162 ▲ / 192 ▲	311 / 312	311 / 312	330 / 332
130 / 131 / 141 / 161	130 / 131 / 141 / 161	132 / 142	132 / 142 / 162 ▲ / 192 ▲	311 / 312	311 / 312	330 / 332
X	X	X	162 ▲ / 192 ▲	X	X	X
231*						
231*						
231*	X	X	X	X	X	X
X						
130 / 131 / 141 / 161	130 / 131 / 141 / 161	132 / 142	132 / 142 / 162 ▲ / 192 ▲	311 / 312	311 / 312	330 / 332
130 / 131 / 141 / 161	130 / 131 / 141 / 161	132 / 142	132 / 142 / 162 ▲ / 192 ▲	311 / 312	311 / 312	330 / 332
130 / 131 / 141 / 161	130 / 131 / 141 / 161	132 / 142	132 / 142 / 162 ▲ / 192 ▲	311 / 312	311 / 312	330 / 332
			162 ▲ / 192 ▲			
231*						
231*						
231*	X	X	X	X	X	X
X						
X	only plunge knurling possible	132	132			
		132	132	X	X	X
		132	132			
		X	162 ▲			
141 / 161	141 / 161	142	142 / 162 ▲ / 192 ▲	161 / 162		340 / 342
141 / 161	141 / 161	142	142 / 162 ▲ / 192 ▲	161 / 162		340 / 342
141 / 161	141 / 161	142	142 / 162 ▲ / 192 ▲	161 / 162	X	340 / 342
X	X	X	162 ▲ / 192 ▲	161 / 162		X
241						
241						
241	X	X	X	X	X	X
X						
RGV: only plunge knurling possible	RGV: only plunge knurling possible	132		311 / 312	311 / 312	330 / 332
		132		311 / 312	311 / 312	330 / 332
		132		311 / 312	311 / 312	330 / 332
		X		311 / 312	X	330 / 332
		132				330 / 332
RKE: only plunge knurling possible	RKE: only plunge knurling possible	132				330 / 332
		132		X	X	330 / 332
		132				330 / 332
		X				330 / 332
		132				330 / 332
RKV: only plunge knurling possible	RKV: only plunge knurling possible	132				330 / 332
		132		X	X	330 / 332
		132				330 / 332
		X				330 / 332
		132				330 / 332
		X				330 / 332