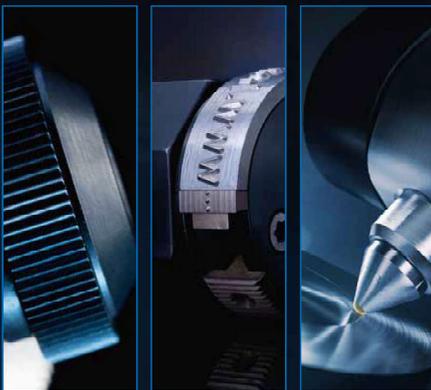
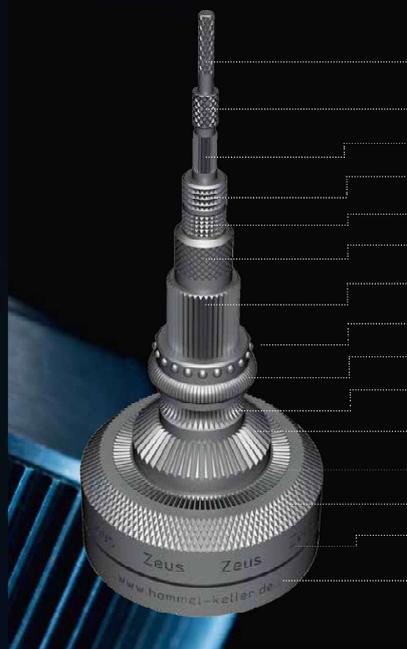




zeus **Knurling Technology**
 zeus **Marking Technology**
 zeus **Burnishing Technology**



Our zeus product range
 offers tooling solutions for a wide range of applications in the field of knurling, marking and burnishing technology. With zeus precision tools, we offer high-quality and durable products. In this catalogue we present the zeus standard program. Most of the tools and knurling wheels shown are available from stock.



Application	Profile (DIN 82) Marking	Tool Examples	Knurling wheels / marking rolls
Cut knurling, axial	RGE30°	291	3x AA
Cut knurling, axial	RGE45°	241	1x BL15° 1x BK15°
Cut knurling, axial	RAA	231	1x BR30°
Form knurling, radial	RKV	131	1x KE
Form knurling, radial	RKE	132	1x KV
Form knurling, radial	HGE-45°	141	1x BL45° 1x BR45°
Form knurling, radial + axial up to a shoulder	RAA	162	2x AA
Peel radial	RHE	131	1x HV
Form knurling, radial	RE	131	1x C
Form knurling, radial	RC	131	1x E
Form knurling radial	RKAA	311	1x KAA
Form knurling, axial	RAA-face	311	1x AA
Form knurling	RKGV	311	1x KGE
Continuous roll marking	zeus	130	40 W
Spring return marking	hommel + keller.de	431	41 W

The profiles with 45° are standard on Hommel-Keller Präzisionswerkzeuge GmbH but not defined in DIN 403 and DIN 82.

KNURLING TOOLS

널링 기술 분야

널링은 두가지 타입으로 제작 :

꺾는 타입과 누르는 타입이 있습니다. 두가지 타입만의 스페셜한 용도의 적용 범위를 가지고 있습니다.

권장 사용법 form knurling

- 131 :**
- 우수한 가공성
 - 셋팅이 간편하고 편리함
- 161 :**
- 우수한 가공성
 - 긴 제품 삽입에 적합

권장 사용법 cut knurling

- 241 :**
- 까다롭고 눈에 들어오는 부분의 널링 작업에 탁월

Profile on the workpiece		RAA	RBL/RBR	RGE	RGV	RKE	RKV
Form knurling		Tool selection form knurling					
	Knurling on workpiece centre / without plunge cut	131 141 161		131 (E) 141 161			
	Knurling starting at workpiece beginning	131 141 161 191 391		131 (E) 141 161 191 391			
	Knurling starting on workpiece centre / without plunge cut	131 141 161		131 (E) 141 161			
	Knurling starting at workpiece centre up to a shoulder	132 142 162		132 (E) 142 162			
	Knurling starting at workpiece beginning up to a shoulder	132 142 162 192		132 (E) 142 162 192			
	Conical knurling	311 312 161		161	311 312	—	—
	Knurling in a bore	330 332		330 (E) 332 (E) 342		330 (E) 332 (E)	
Cut knurling		Tool selection cut knurling					
	Knurling starting at workpiece beginning	231	231 Note installation See RW231	241 291	—	—	—
	Knurling starting on workpiece centre / after plunge cut			241	—	—	—

(E) = only plunge cut possible

FORM KNURLING TOOLS Series 131



- 모든 널링 형상 작업에 이상적인 제품이며 편리하게 사용 가능합니다.

Knurling profiles on workpiece (DIN 82):



Selection of knurling wheels:



- 제품의 특징 :
- Click-Prin® 시스템을 갖춰 빠른 널링 휠 교체 가능
 - 홀더에 있는 니사를 이용하여 각도를 조절 할 수 있음
 - 초경 편이 장차되어 강성이 우수함

TOOL VERSIONS / SPARE PARTS:

Item no. (right hand version)	Item no. (left hand version)	Model	Knurling wheel (Ø x w x b) [mm]	Workpiece Ø [mm]	Item no. Pin
31013703	31013704	131-08	10 / 15 x 4 x 4	3 - 50	06TER1015
31002706	31002709	131-10	10 / 15 x 4 x 4	3 - 50	06TER1015
31013690	31013691	131-10	15 x 6 x 4	3 - 50	06TER1036
31002707	31002710	131-12	10 / 15 x 4 x 4	3 - 50	06TER1015
31013692	31013693	131-12	20 / 25 x 6 x 6	8 - 200	06TER1018
31013694	31013695	131-12	20 / 25 x 8 x 6	8 - 200	06TER1018
31013696	31013697	131-14	10 / 15 x 6 x 4	3 - 50	06TER1036
31013698	31013699	131-14	20 / 25 x 6 x 6	8 - 200	06TER1018
31002708	31002711	131-16	10 / 15 x 4 x 4	3 - 50	06TER1036
31013700	31013701	131-16	20 / 25 x 6 x 6	8 - 200	06TER1018
31003646	31003647	131-16	20 / 25 x 8 x 6	8 - 200	06TER1018
	31000714	131-20	20 / 25 x 8 x 6	8 - 200	06TER1018
	31013702	131-20	20 / 25 x 10 x 6	8 - 200	06TER1018
	31000715	131-25	20 / 25 x 8 x 6	8 - 200	06TER1018

Available from stock

Item no. (right-hand version)	Item no. (left-hand version)	Dimensions [mm]							
		a	b	c	d	e	f	x	
31013703	31013704	8	8	99	12	19	15.5	1.5 / 4	
31002706	31002709	10	10	99	12	19	17.5	1.5 / 4	
31013690	31013691	10	10	99	16	19	17.5	1.5 / 4	
31002707	31002710	12	12	99	12	19	19.5	1.5 / 4	
31013692	31013693	12	12	109.5	20	29.5	24.5	3 / 5.5	
31013694	31013695	12	12	109.5	20	29.5	24.5	3 / 5.5	
31013696	31013697	14	14	99	16	19	21.5	1.5 / 4	
31013698	31013699	14	14	109.5	20	29.5	26.5	3 / 5.5	
31002708	31002711	16	16	99	16	19	23.5	4	
31013700	31013701	16	16	109.5	20	29.5	28.5	3 / 5.5	
31003646	31003647	16	16	113.5	20	33.5	28.5	6.5	

Item no.	Dimensions [mm]							
	a	b	c	d	e	f	x	
31000714	20	20	109.5	20	29.5	32.5	3 / 5.5	
31013702	20	20	109.5	20	29.5	32.5	3 / 5.5	
31000715	25	20	109.5	20	29.5	37.5	3 / 5.5	

FORM KNURLING TOOLS Series 132



- 제품에 단이 있을때 단 가까이 붙여서 작업 가능하며 모든 널링 형상 작업에 이상적입니다.

Knurling profiles on workpiece (DIN 82):



Selection of knurling wheels:

AA	BR	BL	GV	GE	KV	KE	AA	BR	BL
----	----	----	----	----	----	----	----	----	----

- 제품의 특징 :**
- 초경 핀이 장착되어 강성이 우수함
 - 홀더에 있는 나사를 이용하여 각도를 조절 할 수 있음
 - 모듈러 타입 디자인 : 기본 10x10mm 스크에 아답터를 활용하여 사이즈 변경

TOOL VERSIONS / SPARE PARTS:

Available from stock

Item no. (right-hand version)	Item no. (left-hand version)	Model	Knurling wheel (Ø x w x b) [mm]	Workpiece Ø [mm]	Item no. Pin	Item no. Washer	Item no. Grub screw
31002726 <input checked="" type="checkbox"/>	31002727 <input checked="" type="checkbox"/>	132-10	15 x 6 x 6A11	3 - 50	06TER0444	21BHR0375	06TER2147
31002227 <input checked="" type="checkbox"/>	31002728 <input checked="" type="checkbox"/>	132-12	15 x 6 x 6A11	3 - 50	06TER0444	21BHR0375	06TER2147
31002729 <input checked="" type="checkbox"/>	31002730 <input checked="" type="checkbox"/>	132-16	15 x 6 x 6A11	3 - 50	06TER0444	21BHR0375	06TER2147
	31000742 <input checked="" type="checkbox"/>	132-20	20 x 8 x 6A13	8 - 200	06TER0445	21BHR0380	06TER2101
	31000743 <input checked="" type="checkbox"/>	132-25	20 x 8 x 6A13	8 - 200	06TER0445	21BHR0380	06TER2101

Item no. (right-hand version)	Item no. (left-hand version)	Dimensions [mm]							
		a	b	c	d	e	f	x	
31002726	31002727	10	10	101	19	21	18	1.5	
31002227	31002728	12	12	101	19	21	20	1.5	
31002729	31002730	16	16	101	19	21	24	1.5	

Item no.	Dimensions [mm]							
	a	b	c	d	e	f	x	
31000742	20	20	105.3	26.5	25.3	30	1.3	
31000743	25	20	105.3	26.5	25.3	35	1.3	

FORM KNURLING TOOLS Series 141



- 축 방향의 널링 작업에 탁월하며 유연한 센터링이 특징입니다.

Knurling profiles on workpiece (DIN 82):

Plunge / feed knurling (눌러서 / 이송하여 널링 작업)



Selection of knurling wheels:

2x AA	2x BR	2x BL	1x BL / 1x BR
-------	-------	-------	---------------

- 제품의 특징 :**
- 홀더 20x20mm 외 25x25mm: Click-Pin용 시스템을 맞춰 빠른 널링 교체 가능
 - 모듈러 타입 디자인으로 홀더 하나로 R 타입과 L 타입 병행해서 사용 가능
 - 홀더에 있는 나사를 이용하여 각도를 조절 할 수 있음
 - 조금 반이 산적되어 강성이 우수함
 - L 타입 = CNC 자동산반용

TOOL VERSIONS / SPARE PARTS:

Available from stock

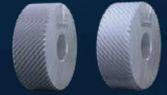
Item no.	Model	Knurling wheel (Ø x w x b) [mm]	Workpiece Ø [mm]	Item no. Pin	Item no. Grub screw	Item no. Knurling head
31013761 <input checked="" type="checkbox"/>	141 10 LD	10 x 4 x 4	3 - 25	06TER0960	06TER2154	21BHR0628
31013762 <input checked="" type="checkbox"/>	141-12-LD	10 x 4 x 4	3 - 25	06TER0960	06TER2154	21BHR0628
31013763 <input checked="" type="checkbox"/>	141-16-LD	15 x 4 x 4	3 - 50	06TER0964	06TER2154	21BHR0779
31002702 <input checked="" type="checkbox"/>	141-10	10 x 4 x 4	3 - 25	06TER0960	06TER2154	21BHR0628
31002703 <input checked="" type="checkbox"/>	141-12	10 x 4 x 4	3 - 25	06TER0960	06TER2154	21BHR0628
31002658 <input checked="" type="checkbox"/>	141-16	15 x 4 x 4	6 - 60	06TER0964	06TER2155	21BHR1791
31000741 <input checked="" type="checkbox"/>	141-16	15 x 6 x 4	6 - 60	06TER0964	06TER2155	21BHR0629
31003648 <input checked="" type="checkbox"/>	141-16	20 x 8 x 6	10 - 110	06TER1018	06TER1016	21BHR1796
31002704 <input checked="" type="checkbox"/>	141-20	20 x 8 x 6	10 - 110	06TER1018	06TER1016	21BHR1796
31002705 <input checked="" type="checkbox"/>	141-25	20 x 8 x 6	10 - 110	06TER1018	06TER1016	21BHR1796
31002721 <input checked="" type="checkbox"/>	141-25	25 x 8 x 6	15 - 220	06TER1018	06TER1016	21BHR1796

Tools of series 141 can be converted to series 142 and vice versa by replacing the knurling head.

APPLICATION EXAMPLE Series 141 | PROFILE RGE



PROFIL RGE30°
PROFIL RGE45°



Series 141 | KNURLING HEAD WITH FLEXIBLE CENTRING
KNURLING WHEELS: 1x BL45°, 1x BR45°

FORM KNURLING TOOLS
Series 141



Item no.	Dimensions [mm]						
	a	b	c	d	e	f	x
31013761	10	14	125.5	12	25.5	21	1
31013762	12	14	125.5	12	25.5	21	1
31013763	16	16	135	16	32.5	30.4	2.5

Item no.	Dimensions [mm]						
	a	b	c	d	e	f	x
31002702	10	10	105.5	12	25.5	21	1
31002703	12	12	105.5	12	25.5	22.5	1
31002658	16	16	119	16	39	33	1.5
31000741	16	16	119	16	39	33	1.5

Item no.	Dimensions [mm]						
	a	b	c	d	e	f	x
31003648	16	16	130	20	50	42	2.5
31002704	20	20	130	20	50	42	2.5
31002705	25	20	130	20	50	46	2.5
31002721	25	20	136	20	56	55	2.5

FORM KNURLING TOOLS
Series 142



- 제품에 단이 있을때 단 가까이 붙어서 작업 가능하며 모든 널링 작업에 적합합니다.

Knurling profiles on workpiece (DIN 82):

Plunge / feed knurling (놀리서 / 이송하여 널링 작업)



Selection of knurling wheels:

2x AA	2x BR	2x BL	1x BL / 1x BR
-------	-------	-------	---------------

- 제품의 특징 :
- 초경 핀이 장착되어 강성이 우수한
 - 모프러미의 디자인으로 출다 하나로 R디임과 L디임 병행해서 사용 가능하며 헤드를 돌려서 쉽게 변경 가능
 - 플러에 있는 나사볼 이용하여 각도를 조절 할 수 있음
 - LDR임 - CNC 자동나반용

TOOL VERSIONS / SPARE PARTS:

Available from stock

Item no.	Model	Knurling wheel (Ø x w x b) [mm]	Workpiece Ø [mm]	Item no. Pin	Item no. Grub screw	Item no. Washer	Item no. Knurling head
31003995/	142-10 LD	15 x 6 x 6A11	3-40	061HRD444	061HR2154	21BHR0375	21BHR0778
31003998	142-12 LD	15 x 6 x 6A11	3-40	061HRD444	061HR2154	21BHR0375	21BHR0778
31003999	142-16 LD	15 x 6 x 6A11	3-40	061HRD444	061HR2154	21BHR0375	21BHR0778
31002801	142-10	15 x 6 x 6A11	3-40	061HRD444	061HR2154	21BHR0375	21BHR1797
31002803	142-12	15 x 6 x 6A11	3-40	061HRD444	061HR2154	21BHR0375	21BHR1797
31000761	142-16	15 x 6 x 6A11	10-110	061HRD444	061HR2154	21BHR0375	21BHR0632
31000762	142-20	20 x 8 x 6A13	10-110	061HRD445	061HR2147	21BHR0380	21BHR0633
31000763	142-25	20 x 8 x 6A13	10-110	061HRD445	061HR2147	21BHR0380	21BHR0633

Tools of series 142 can be converted to series 141 and vice versa by replacing the knurling head.

APPLICATION EXAMPLE

Series 142 | PROFILE UP TO SHOULDER



PROFILE RAA
PROFILE RGE



Series 142 | PROFILE UP TO A SHOULDER
KNURLING WHEELS: 2x AA | 1x BL, 1x BR

FORM KNURLING TOOLS
Series 142



Item no.	Dimensions [mm]						
	a	b	c	d	e	f	x
31003957	10	16	135	19	35	30.3	2.4
31003958	12	16	135	19	35	30.3	2.4
31003959	16	16	135	19	35	30.3	2.4

Item no.	Dimensions [mm]						
	a	b	c	d	e	f	x
31002801	10	10	110	19	30	30.4	1.5
31002803	12	12	110	19	30	30.4	1.5
31000751	16	16	118	19	39	33	1.5

Item no.	Dimensions [mm]						
	a	b	c	d	e	f	x
31000752	20	20	130	24	50	42	1.2
31000753	25	20	130	24	50	46	1.2

FORM KNURLING TOOLS
Series 161



■ 소형 가공물에 이상적이며 널링 작업시 부하를 줄일 수 있습니다.

Knurling profiles on workpiece (DIN 82):

Plunge / feed knurling (눌러서 / 이동하며 널링 작업)



Selection of knurling wheels:



- 제품의 특징 :
- 동기식 스프린들을 통해 소재의 직경에 따른 조절이 쉬움
 - 윤곽에 있는 나사를 이용하여 각도를 조절 할 수 있음
 - 초경 핀이 장착되어 강성이 우수함
 - L.D타입 = CNC 자동선반용

TOOL VERSIONS / SPARE PARTS:

Available from stock

Item no. (right-hand version)	Item no. (left-hand version)	Model	Knurling wheel (Ø x w x b) [mm]	Workpiece Ø [mm]	Item no. Pin	Item no. Grub screw	Item no. Jaws
31013707 <input checked="" type="checkbox"/>		161-00-LD	10 x 4 x 4	0 - 12.5	06TER0964	06TER2155	21DIR9740
31013788 <input checked="" type="checkbox"/>		161-10-LD	10 x 4 x 4	0 - 12.5	06TER0964	06TER2155	21BHR9748
31013789 <input checked="" type="checkbox"/>		161-12-LD	10 x 4 x 4	0 - 12.5	06TER0964	06TER2155	21BHR9748
31013790 <input checked="" type="checkbox"/>		161-16-LD	10 x 4 x 4	0 - 12.5	06TER0964	06TER2155	21BHR9748
31002719 <input checked="" type="checkbox"/>	31002720 <input checked="" type="checkbox"/>	161-10	15 x 4 x 4	0 - 15	06TER0964	06TER2155	21BHR1672
31002722 <input checked="" type="checkbox"/>	31002723 <input checked="" type="checkbox"/>	161-12	15 x 4 x 4	0 - 15	06TER0964	06TER2155	21BHR1672
31002724 <input checked="" type="checkbox"/>	31002725 <input checked="" type="checkbox"/>	161-16	15 x 4 x 4	0 - 15	06TER0964	06TER2155	21BHR1672
31002177 <input checked="" type="checkbox"/>		161-20	20 x 8 x 6	3.5 - 65	21BHR1248	06TER2147	21BHR1213
			25 x 8 x 6	0 - 65	21BHR1248	06TER2147	21BHR1213
			20 x 8 x 6	3.5 - 65	21BHR1248	06TER2147	21BHR1213
31002176 <input checked="" type="checkbox"/>		161-25	25 x 8 x 6	0 - 65	21BHR1248	06TER2147	21BHR1213
			25 x 8 x 6	0 - 65	21BHR1248	06TER2147	21BHR1213

ANWENDUNGSBEISPIEL
Series 161 | PROFILE RGE



PROFIL RGE30°



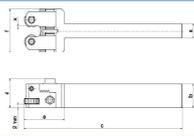
Series 161 OPTIMALE KRÄFTEVERTEILUNG -
IDEAL FÜR LANGE UND DÜNNWANDIGE BAUTEILE

RÄNDELRÄDER: 1x BL30°, 1x BR30°

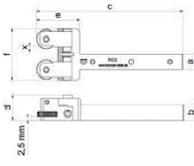
FORM KNURLING TOOLS
Series 161



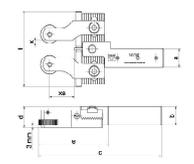
Item no.	Dimensions [mm]							
	a	b	c	d	e	f	x	xa
31013787	8	16	107.4	19.6	27.4	30	1.3	5.4
31013788	10	16	107.4	19.6	27.4	30	1.3	5.4
31013789	12	16	107.4	19.6	27.4	30	1.3	5.4
31013790	16	16	107.4	19.6	27.4	30	1.3	5.4



Item no. (right hand version)	Item no. (left hand version)	Dimensions [mm]							
		a	b	c	d	e	f	x	xa
31002719	31002720	10	10	113.4	19.6	33.4	40	2.5	8.9
31002722	31002723	12	12	113.4	19.6	33.4	40	2.5	8.9
31002724	31002725	16	16	113.4	19.6	33.4	40	2.5	8.9



Item no.	Dimensions [mm]							
	a	b	c	d	e	f	x	xa
31002127	20	25	164.8	28.4	92.8	103	1.5	33.5
	20	25	167.3	28.4	95.3	103	4	33.5
31002176	25	25	167.3	28.4	92.8	103	1.5	33.5
	25	25	167.3	28.4	95.3	103	4	33.5



CUT KNURLING TOOLS
Series 231



■ 보물창 설계로 효율적이며 견고한 구조로 안정적인 널링 작업이 가능합니다.

Knurling profiles on workpiece (DIN B2):

Feed knurling (이송하여 널링 작업)



Selection of knurling wheels:

1x BR30° (right-hand use)	1x AA (left-hand use) / 1x BR15° (left-hand use)	1x AA (right-hand use) / 1x BL15° (right-hand use)
---------------------------	--	--

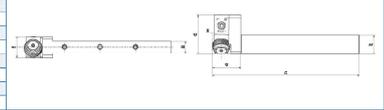
- 제품의 특징 :
- 좌절 스톨들과 볼트를 활용하여 미세 센터 조정이 가능함
 - 홀더에 있는 나사를 이용하여 각도를 조절 할 수 있음
 - 초경 부품을 사용하여 갯숫을 높이고 널링 할과의 미질 및 내마모성을 증대 시킴
 - LD타입 = CNC 자동선반용

TOOL VERSIONS / SPARE PARTS:

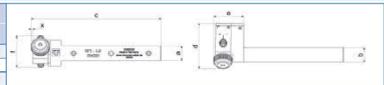
Item no.	Model	Knurling wheel Ø x w x b [mm]	Workpiece Ø [mm]	Item no. E-KIT (Washer, Bushing, Screw)	Item no. Washer	Item no. Screw
31003826	231-08-LD	10 x 3 x 6	0 - 15	21BHR9757	-	06TER0390
31003828	231-08-LD	15 x 4 x 8	3 - 50	21BHR9758	06TER0125	06TER0448
31003827	231-10-LD	10 x 3 x 6	0 - 15	21BHR9757	-	06TER0390
31003829	231-10-LD	15 x 4 x 8	3 - 50	21BHR9758	06TER0125	06TER0448
31003901	231-12-LD	10 x 3 x 6	0 - 15	21BHR9757	-	06TER0390
31003900	231-12-LD	15 x 4 x 8	3 - 50	21BHR9758	06TER0125	06TER0448
31003902	231-16-LD	10 x 3 x 6	0 - 15	21BHR9757	-	06TER0390
31003903	231-16-LD	15 x 4 x 8	3 - 50	21BHR9758	06TER0125	06TER0448
31002739	231-10	15 x 4 x 8	3 - 50	21BHR0792	06TER0125	06TER0443
31002740	231-12	15 x 4 x 8	3 - 50	21BHR0792	06TER0125	06TER0390
31002741	231-16	15 x 4 x 8	3 - 50	21BHR0792	06TER0125	06TER0390
31003650	231-16	25 x 6 x 8	10 - 300	21BHR0506	21BHR0016	06TER0864
31002652	231-20	25 x 6 x 8	10 - 300	21BHR0506	21BHR0016	06TER0864
31002445	231-25	25 x 6 x 8	10 - 300	21BHR0506	21BHR0016	06TER0864

Available from stock

Item no.	Dimensions [mm]							
	a	b	c	d	e	f	x	xa
31003826	8	16	120	33	20	17.5	0.5	
31003828	8	16	124	33	24	17.5	1.5	
31003827	10	16	120	33	20	17.5	0.5	
31003829	10	16	124	33	24	17.5	1.5	
31003901	12	16	120	33	20	17.5	0.5	
31003900	12	16	124	33	24	17.5	1.5	
31003902	16	16	120	33	20	17.5	0.5	
31003903	16	16	124	33	24	17.5	1.5	



Item no.	Dimensions [mm]							
	a	b	c	d	e	f	x	xa
31002739	10	10	104.1	36.2	24.1	25.3	1.2	
31002740	12	12	104.1	36.2	24.1	25.3	1.2	
31002741	16	16	104.1	36.2	24.1	29.3	1.2	



Item no.	Dimensions [mm]							
	a	b	c	d	e	f	x	xa
31003650	16	16	130.8	35	50.4	36.3	3.8	
31002652	20	20	130.4	35	50.4	36.3	3.7	
31002445	25	25	130.8	35	50.8	40	3.7	



CUT KNURLING TOOLS
Series 241



■ 정밀한 날링 형상이 요구되는 작업에 적합하며, 길이가 긴 제품의 날링에도 안정적으로 작업이 가능합니다.

Knurling profiles on workpiece (DIN 82):

Feed knurling (이송하여 보링사건)



RGE30° RGE45°

Selection of knurling wheels:

2x AA 1x BL15/ 1x BR15°

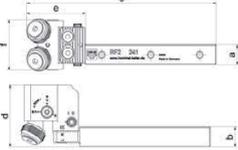
- 제품의 특징 :
- 모듈러 타입 디자인으로 홀더 하나에 R타입과 I 타입 병행해서 사용 가능하며 분리된 레드를 돌려서 쉽게 변경 가능
 - 홀더와 헤드기 분리형으로 홀더 사이즈를 변경하여 다양한 사이즈로 사용 가능
 - 모듈식의 상크 디자인으로 10x10mm 상크에 이따리를 활용하여 사이즈 변경
 - 분리되는 너런 레드의 센터를 미세 조정 할 수 있음
 - 홀더에 있는 나사를 이용하여 각도를 조절 할 수 있음
 - 조정 부위를 사용하여 강성을 높이고 보링 형태의 마찰 방지와 내마모성을 증대 시킴

Available from stock

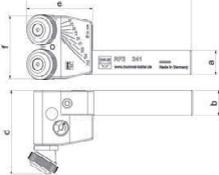
TOOL VERSIONS / SPARE PARTS:

Item no.	Model	Knurling wheel (Ø x w x b) [mm]	Workpiece Ø [mm]	Item no. E-KI (Washer, Bushing, Screw)	Item no. Washer	Item no. Screw
31001926	241-10	15 x 4 x 8	3 - 50	21BHR0792	06TER0125	06TER0390
31001901	241-12	15 x 4 x 8	3 - 50	21BHR0792	06TER0125	06TER0390
31001945	241-16	15 x 4 x 8	3 - 50	21BHR0792	06TER0125	06TER0390
31000804	241-20	15 x 4 x 8	3 - 50	21BHR0792	06TER0125	06TER0390
31003651	241-16	25 x 6 x 8	10 - 250	21BHR0506	21BHR0016	06TER0864
31000666	241-20	25 x 6 x 8	10 - 250	21BHR0506	21BHR0016	06TER0864
31001899	241-25	25 x 6 x 8	10 - 250	21BHR0506	21BHR0016	06TER0864

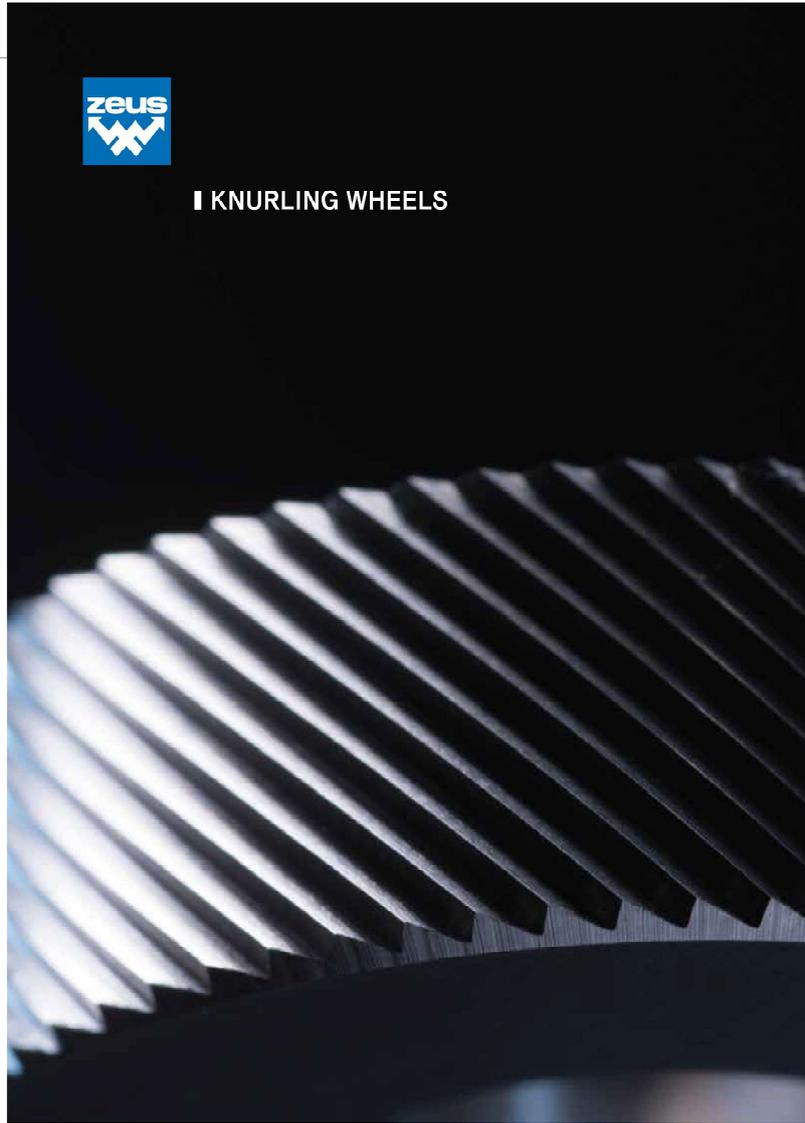
Item no.	Dimensions [mm]					
	a	b	c	d	e	f
31001926	10	10	116	36.7	36	32.7
31001901	12	12	116	37.7	36	32.7
31001945	16	16	116	39.7	36	32.7
31000804	20	20	116	44.7	36	36.7



Item no.	Dimensions [mm]					
	a	b	c	d	e	f
31003651	16	20	133.3	68	53.3	53
31000666	20	20	133.3	67.7	53.3	53
31001899	25	20	133.3	67.8	53.3	52.9



I KNURLING WHEELS



FORM KNURLING WHEELS

non-cutting process

zeus knurling wheels according to DIN 403 for profiles according to DIN 82, with chamfer 45°, PM



Profile AA

AA

Item no.	Product group	Profile	Spiral angle (°)	Ø (mm)	Width (mm)	Bore (mm)	Pitch (mm)
41014502	11	AA	0	10	4	4	0.3
41009690	11	AA	0	10	4	4	0.4
41008170	11	AA	0	10	4	4	0.5
41006452	11	AA	0	10	4	4	0.6
41010150	11	AA	0	10	4	4	0.7
41007356	11	AA	0	10	4	4	0.8
41010136	11	AA	0	10	4	4	1
41011071	11	AA	0	10	4	4	1.2
41015697	11	AA	0	10	4	4	1.5
41013392	11	AA	0	15	4	4	0.3
41012169	11	AA	0	15	4	4	0.4
41010191	11	AA	0	15	4	4	0.5
41007312	11	AA	0	15	4	4	0.6
41011113	11	AA	0	15	4	4	0.7
41007807	11	AA	0	15	4	4	0.8
41015073	11	AA	0	15	4	4	0.9
41007737	11	AA	0	15	4	4	1
41007748	11	AA	0	15	4	4	1.2
41007739	11	AA	0	15	4	4	1.5
41012039	11	AA	0	15	6	4	0.3
41015306	11	AA	0	15	6	4	0.4
41012066	11	AA	0	15	6	4	0.5
41011047	11	AA	0	15	6	4	0.6
41012783	11	AA	0	15	6	4	0.8
41015307	11	AA	0	15	6	4	0.9
41011375	11	AA	0	15	6	4	1
41014956	11	AA	0	15	6	4	1.2
41014958	11	AA	0	15	6	4	1.5
41016963	11	AA	0	16	6	6A8	0.6
41012084	11	AA	0	15	6	6A8	0.8
41015390	11	AA	0	15	6	6A8	1
41014708	11	AA	0	15	6	6A11	0.5
41011751	11	AA	0	15	6	6A11	0.6
41010869	11	AA	0	15	6	6A11	0.8
41010201	11	AA	0	15	6	6A11	1
41012902	11	AA	0	15	6	6A11	1.2
41015060	11	AA	0	20	6	6	0.4
41012734	11	AA	0	20	6	6	0.5
41012735	11	AA	0	20	6	6	0.6
41008306	11	AA	0	20	6	6	0.8
41011514	11	AA	0	20	6	6	1
41007802	11	AA	0	20	6	6	1.2
4100794A	11	AA	0	20	6	6	1.5
41007041	11	AA	0	20	6	6	1.6

Item no.	Product group	Profile	Spiral angle (°)	Ø (mm)	Width (mm)	Bore (mm)	Pitch (mm)
41015173	11	AA	0	20	8	6	0.3
41015174	11	AA	0	20	8	6	0.4
41007303	11	AA	0	20	8	6	0.5
41007304	11	AA	0	20	8	6	0.6
41010305	11	AA	0	20	8	6	0.7
41008208	11	AA	0	20	8	6	0.8
41015175	11	AA	0	20	8	6	0.9
41007357	11	AA	0	20	8	6	1
41008603	11	AA	0	20	8	6	1.2
41008354	11	AA	0	20	8	6	1.5
41012327	11	AA	0	20	8	6	1.6
41010416	11	AA	0	20	8	6	2
41013770	11	AA	0	20	8	6A13	0.5
41015455	11	AA	0	20	8	6A13	0.6
41011477	11	AA	0	20	8	6A13	0.8
41009204	11	AA	0	20	8	6A13	1
41012892	11	AA	0	20	8	6A13	1.2
41012893	11	AA	0	20	8	6A13	1.5
41007741	11	AA	0	20	10	6	0.5
41013841	11	AA	0	20	10	6	0.6
41008281	11	AA	0	20	10	6	0.8
41008672	11	AA	0	20	10	6	1
41011395	11	AA	0	20	10	6	1.2
41008564	11	AA	0	20	10	6	1.5
41015934	11	AA	0	25	6	6	0.6
41007361	11	AA	0	25	6	6	0.8
41008030	11	AA	0	25	6	6	1
41007716	11	AA	0	25	6	6	1.2
41016216	11	AA	0	25	6	6	1.5
41016216	11	AA	0	25	8	6	0.6
41010169	11	AA	0	25	8	6	0.8
41007421	11	AA	0	25	8	6	1
41007454	11	AA	0	25	8	6	1.2
41009373	11	AA	0	25	8	6	1.5

FORM KNURLING WHEELS

non-cutting process

zeus knurling wheels according to DIN 403 for profiles according to DIN 82, with chamfer 45°, PM



Profile BL

BL30°

BL45°

Item no.	Product group	Profile	Spiral angle (°)	Ø (mm)	Width (mm)	Bore (mm)	Pitch (mm)
41015698	11	BL	30	10	4	4	0.3
41015699	11	BL	30	10	4	4	0.4
41010091	11	BL	30	10	4	4	0.5
41006997	11	BL	30	10	4	4	0.6
41006673	11	BL	30	10	4	4	0.7
41011077	11	BL	30	10	4	4	0.8
41010803	11	BL	30	10	4	4	1
41011078	11	BL	30	10	4	4	1.2
41015701	11	BL	30	10	4	4	1.5
41015702	11	BL	45	10	4	4	0.3
41015703	11	BL	45	10	4	4	0.4
41014711	11	BL	45	10	4	4	0.5
41013953	11	BL	45	10	4	4	0.6
41010089	11	BL	45	10	4	4	0.8
41013954	11	BL	45	10	4	4	1
41013000	11	BL	45	10	4	4	1.2
41011664	11	BL	30	15	4	4	0.5
41007033	11	DL	30	15	4	4	0.6
41011079	11	BL	30	15	4	4	0.8
41008148	11	BL	30	15	4	4	1
41011080	11	BL	30	15	4	4	1.2
41007691	11	BL	30	15	4	4	1.5
41015252	11	BL	45	15	4	4	0.5
41015253	11	BL	45	15	4	4	0.6
41015254	11	BL	45	15	4	4	0.8
41015255	11	BL	45	15	4	4	1
41008146	11	BL	45	15	4	4	1.2
41012730	11	BL	30	15	6	4	0.5
41010784	11	BL	30	16	6	4	0.6
41012731	11	BL	30	15	6	4	0.8
41015312	11	BL	30	15	6	4	1
41015313	11	BL	30	15	6	4	1.2
41015316	11	BL	45	15	6	4	0.4
41011684	11	BL	45	15	6	4	0.8
41013332	11	BL	45	15	6	4	1
41013320	11	BL	45	15	6	4	1.2
41016114	11	BL	30	15	6	6A8	0.6
41016115	11	BL	30	15	6	6A8	0.8
41016116	11	BL	30	15	6	6A8	1
41009186	11	BL	30	15	6	6A11	0.5
41016144	11	BL	30	15	6	6A11	0.8
41016145	11	BL	30	15	6	6A11	1
41014710	11	BL	45	15	6	6A11	0.5
41012904	11	BL	45	15	6	6A11	0.8
41012906	11	BL	45	15	6	6A11	1
41012910	11	DL	45	15	6	6A11	1.2

Item no.	Product group	Profile	Spiral angle (°)	Ø (mm)	Width (mm)	Bore (mm)	Pitch (mm)
41011588	11	BL	30	20	6	6	0.6
41010919	11	BL	30	20	6	6	0.8
41012655	11	BL	30	20	6	6	1
41012736	11	BL	30	20	6	6	1.2
41014277	11	BL	30	20	6	6	1.5
41015102	11	BL	45	20	6	6	0.8
41013021	11	BL	45	20	6	6	1
41013023	11	BL	45	20	6	6	1.2
41015104	11	BL	45	20	6	6	1.5
41012738	11	BL	30	20	8	6	0.5
41011981	11	BL	30	20	8	6	0.6
41015198	11	BL	30	20	8	6	0.7
41008999	11	BL	30	20	8	6	0.8
41015179	11	BL	30	20	8	6	0.9
41008918	11	BL	30	20	8	6	1
41010393	11	BL	30	20	8	6	1.2
41010397	11	BL	30	20	8	6	1.5
41010102	11	BL	30	20	8	6	1.6
41015180	11	BL	30	20	8	6	1.8
41014360	11	BL	30	20	8	6	2
41026032	11	BL	30	20	8	6A13	0.5
41016168	11	BL	30	20	8	6A13	0.6
41014603	11	BL	30	20	8	6A13	0.8
41008375	11	BL	30	20	8	6A13	1
41014841	11	BL	30	20	8	6A13	1.2
41013684	11	BL	30	20	8	6A13	1.5
41014361	11	BL	45	20	8	6	0.5
41010279	11	BL	45	20	8	6	0.6
41010244	11	BL	45	20	8	6	0.8
41008565	11	BL	45	20	8	6	1
41008343	11	BL	45	20	8	6	1.2
41009011	11	BL	45	20	8	6	1.5
41007385	11	BL	45	20	8	6	2
41008582	11	BL	45	20	8	6A13	1
41012213	11	BL	45	20	8	6A13	1.2
41016235	11	BL	30	25	8	6	0.8
41007742	11	BL	30	25	8	6	1
41009849	11	BL	30	25	8	6	1.2
41007745	11	BL	30	25	8	6	1.5
41012286	11	BL	45	25	8	6	0.8
41008338	11	BL	45	25	8	6	1
41015577	11	BL	45	25	8	6	1.2
41014944	11	BL	45	25	8	6	1.5

FORM KNURLING WHEELS

non-cutting process

zeus knurling wheels according to DIN 403 for profiles according to DIN 82, with chamfer 45°, PM



Profile BR

Item no.	Product group	Profile	Spiral angle	Ø (mm)	Width (mm)	Bore (mm)	Pitch (mm)
41015707	11	BR	30	10	4	4	0.3
41015708	11	BR	30	10	4	4	0.4
41010099	11	BR	30	10	4	4	0.5
41008998	11	BR	30	10	4	4	0.6
41008674	11	BR	30	10	4	4	0.7
41011072	11	DR	30	10	4	4	0.0
41010805	11	BR	30	10	4	4	1
41011073	11	BR	30	10	4	4	1.2
41015710	11	BR	30	10	4	4	1.5
41015711	11	BR	45	10	4	4	0.3
41015712	11	BR	45	10	4	4	0.4
41014712	11	BR	45	10	4	4	0.5
41013958	11	BR	45	10	4	4	0.6
41010090	11	BR	45	10	4	4	0.8
41013959	11	BR	45	10	4	4	1
41012999	11	BR	45	10	4	4	1.2
41011645	11	BR	30	15	4	4	0.5
41007032	11	BR	30	15	4	4	0.6
41011074	11	BR	30	15	4	4	0.8
41008147	11	BR	30	15	4	4	1
41011075	11	BR	30	15	4	4	1.2
41007690	11	BR	30	15	4	4	1.5
41015262	11	BR	45	15	4	4	0.5
41015263	11	BR	45	15	4	4	0.6
41008106	11	BR	45	15	4	4	0.8
41015265	11	BR	45	15	4	4	1
41008145	11	BR	45	15	4	4	1.2
41012732	11	BR	30	15	6	4	0.5
41010783	11	BR	30	15	6	4	0.6
41012733	11	BR	30	15	6	4	0.8
41013882	11	BR	30	15	6	4	1
41015425	11	BR	30	15	6	4	1.2
41015427	11	BR	45	15	6	4	0.4
41011683	11	BR	45	15	6	4	0.8
41013333	11	BR	45	15	6	4	1
41015431	11	BR	45	15	6	4	1.2
41016127	11	DR	30	15	6	6A8	0.6
41016128	11	BR	30	15	6	6A8	0.8
41016129	11	BR	30	15	6	6A8	1
41009187	11	BR	30	15	6	6A11	0.5
41016149	11	BR	30	15	6	6A11	0.8
41016150	11	BR	30	15	6	6A11	1
41014709	11	BR	45	15	6	6A11	0.5
41012905	11	BR	45	15	6	6A11	0.8
41012907	11	BR	45	15	6	6A11	1
41012900	11	BR	45	15	6	6A11	1.2

Item no.	Product group	Profile	Spiral angle	Ø (mm)	Width (mm)	Bore (mm)	Pitch (mm)
41011259	11	BR	30	20	6	6	0.6
41010917	11	BR	30	20	6	6	0.8
41012729	11	BR	30	20	6	6	1
41012737	11	BR	30	20	6	6	1.2
41014278	11	BR	30	20	6	6	1.5
41015146	11	DR	45	20	6	6	0.0
41015146	11	BR	45	20	6	6	1
41015146	11	BR	45	20	6	6	1.2
41015146	11	BR	45	20	6	6	1.5
41012739	11	BR	30	20	8	6	0.5
41011076	11	BR	30	20	8	6	0.6
41014201	11	BR	30	20	8	6	0.7
41009000	11	BR	30	20	8	6	0.8
41015202	11	BR	30	20	8	6	0.9
41008917	11	BR	30	20	8	6	1
41010392	11	DR	30	20	8	6	1.2
41010398	11	DR	30	20	8	6	1.5
41010101	11	BR	30	20	8	6	1.6
41015203	11	BR	30	20	8	6	1.8
41014359	11	BR	30	20	8	6	2
41026033	11	BR	30	20	8	6A13	0.5
41016170	11	BR	30	20	8	6A13	0.6
41016404	11	BR	30	20	8	6A13	0.8
41008374	11	BR	30	20	8	6A13	1
41014842	11	BR	30	20	8	6A13	1.2
41013605	11	DR	30	20	8	6A13	1.5
41015206	11	BR	45	20	8	6	0.5
41010274	11	BR	45	20	8	6	0.6
41007437	11	BR	45	20	8	6	0.8
41008839	11	BR	45	20	8	6	1
41008345	11	BR	45	20	8	6	1.2
41009010	11	BR	45	20	8	6	1.5
41007384	11	BR	45	20	8	6	2
41008584	11	BR	45	20	8	6A13	1
41012214	11	BR	45	20	8	6A13	1.2
41016238	11	DR	30	25	8	6	0.8
41007743	11	DR	30	25	8	6	1
41009850	11	BR	30	25	8	6	1.2
41007744	11	BR	30	25	8	6	1.5
41016240	11	BR	45	25	8	6	0.8
41008537	11	BR	45	25	8	6	1
41016126	11	BR	45	25	8	6	1.2
41014945	11	BR	45	25	8	6	1.5

FORM KNURLING WHEELS

non-cutting process

zeus knurling wheels according to DIN 403 for profiles according to DIN 82, with chamfer 45°, PM

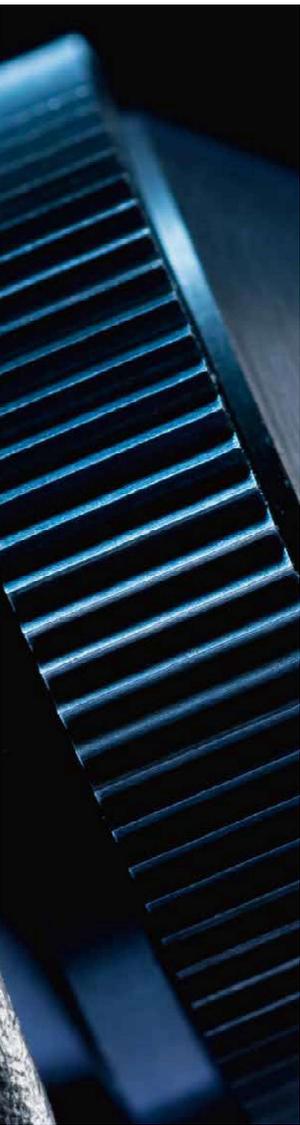


Profile GE

Item no.	Product group	Profile	Spiral angle	Ø (mm)	Width (mm)	Bore (mm)	Pitch (mm)
41015267	11	GE	30	15	4	4	0.5
41013346	11	GE	30	15	4	4	0.6
41014787	11	GE	30	15	4	4	0.8
41014788	11	GE	30	15	4	4	1
41014789	11	GE	30	15	4	4	1.2
41015786	11	GE	30	15	6	4	0.5
41014077	11	GE	30	15	6	4	0.6
41015857	11	GE	30	15	6	4	0.8
41014037	11	GE	30	16	6	4	1
41016100	11	GE	45	15	6	4	1
41014595	11	GE	30	20	6	6	0.8
41015195	11	GE	30	20	6	6	1
41015166	11	GE	45	20	6	6	0.8
41015717	11	GF	30	20	8	6	0.5
41013960	11	GE	30	20	8	6	0.6
41013060	11	GE	30	20	8	6	0.8
41007700	11	GE	30	20	8	6	1
41013061	11	GE	30	20	8	6	1.2
41013062	11	GE	30	20	8	6	1.5
41015223	11	GE	30	20	8	6	2
41015224	11	GE	45	20	8	6	0.3
41015196	11	GE	45	20	8	6	0.5
41015196	11	GF	45	20	8	6	0.8
41008500	11	GE	45	20	8	6	1
41008675	11	GE	45	20	8	6	1.2
41014950	11	GE	45	20	8	6	1.5

Profile GV

Item no.	Product group	Profile	Spiral angle	Ø (mm)	Width (mm)	Bore (mm)	Pitch (mm)
41020545	21	GV	45	10	4	4	0.3
41014943	21	GV	45	10	4	4	0.4
41020547	21	GV	45	10	4	4	0.5
41015461	21	GV	45	10	4	4	0.6
41007192	21	GV	30	15	4	4	0.5
41011393	21	GV	30	15	4	4	0.6
41014087	21	GV	30	15	4	4	0.8
41013229	21	GV	30	15	4	4	1
41015621	21	GV	30	15	4	4	1.2
41015625	21	GV	45	15	4	4	0.5
41011846	21	GV	45	15	4	4	0.6
41015629	21	GV	45	15	4	4	1
41015630	21	GV	45	15	4	4	1.2
41023534	21	GV	30	15	6	4	0.5
41015446	21	GV	30	15	6	4	0.6
41014830	21	GV	30	15	6	4	0.8
41013787	21	GV	30	15	6	4	1
41015644	21	GV	30	15	6	4	1.2
41015197	21	GV	30	20	6	6	0.6
41015673	21	GV	30	20	6	6	0.8
41013422	21	GV	30	20	6	6	1
41015684	21	GV	30	20	6	6	0.5
41015685	21	GV	30	20	6	6	0.6
41014562	21	GV	30	20	8	6	0.8
41013436	21	GV	30	20	8	6	1
41015688	21	GV	30	20	8	6	1.2
41015689	21	GV	30	20	8	6	1.5
41015498	21	GV	45	20	8	6	0.5
41015489	21	GV	45	20	8	6	0.6
41013170	21	GV	45	20	8	6	0.8
41010183	21	GV	45	20	8	6	1
41015695	21	GV	45	20	8	6	1.2
41015351	21	GV	45	20	8	6	1.5
41016070	21	GV	30	25	8	6	0.8
41008338	21	GV	30	25	8	6	1



CUT KNURLING WHEELS

cutting process

zeus knurling wheels according to DIN 403 for profiles according to DIN 82, without chamfer, PM



Profile AA

AA

Item no.	Product group	Profile	Spiral angle	Ø (mm)	Width (mm)	Bore (mm)	Pitch (mm)
41015794	16	AA	0	8.9	2.5	4	0.3
41013748	16	AA	0	8.9	2.5	4	0.5
41008427	16	AA	0	8.9	2.5	4	0.6
41010772	16	AA	0	8.9	2.5	4	0.7
41012043	16	AA	0	8.9	2.5	4	0.8
41015136	16	AA	0	8.9	2.5	4	1
41010879	16	AA	0	10	3	6	0.5
41010724	16	AA	0	10	3	6	0.6
41010727	16	AA	0	10	3	6	0.8
41009767	16	AA	0	10	3	6	1
41015135	16	AA	0	10	3	6	1.2
41015600	16	AA	0	14.5	3	5	0.5
41010740	16	AA	0	14.5	3	5	0.6
41013654	16	AA	0	14.5	3	5	0.7
41009300	16	AA	0	14.5	3	5	0.8
41008428	16	AA	0	14.5	3	5	1
41010741	16	AA	0	14.5	3	5	1.2
41008406	16	AA	0	15	4	8	0.5
41008407	16	AA	0	15	4	8	0.6
41008408	16	AA	0	15	4	8	0.7
41007444	16	AA	0	15	4	8	0.8
41008409	16	AA	0	15	4	8	1
41007033	16	AA	0	15	4	8	1.2
41010443	16	AA	0	15	4	8	1.5
41008554	16	AA	0	21.5	5	8	0.6
41010502	16	AA	0	21.5	5	8	0.8
41010503	16	AA	0	21.5	5	8	1
41010743	16	AA	0	21.5	5	8	1.2
41008595	16	AA	0	21.5	5	8	1.5
41011886	16	AA	0	21.5	5	8	2
41007104	16	AA	0	25	6	8	0.5
41007105	16	AA	0	25	6	8	0.6
41007107	16	AA	0	25	6	8	0.8
41007109	16	AA	0	25	6	8	1
41007110	16	AA	0	25	6	8	1.2
41007111	16	AA	0	25	6	8	1.5
41007112	16	AA	0	25	6	8	1.6
41007114	16	AA	0	25	6	8	2

CUT KNURLING WHEELS

cutting process

zeus knurling wheels according to DIN 403 for profiles according to DIN 82, without chamfer, PM



Profile BL

BL15

BL30

Item no.	Product group	Profile	Spiral angle	Ø (mm)	Width (mm)	Bore (mm)	Pitch (mm)
41015785	16	BL	30	8.9	2.5	4	0.8
41015809	16	BL	30	8.9	2.5	4	1
41011615	16	BL	15	10	3	6	0.5
41010733	16	BL	15	10	3	6	0.6
41010409	16	BL	15	10	3	6	0.8
41006487	16	BL	15	10	3	6	1
41015835	16	BL	30	10	3	6	0.5
41010728	16	BL	30	10	3	6	0.6
41015836	16	BL	30	10	3	6	0.8
41010466	16	BL	30	10	3	6	1
41010729	16	BL	30	10	3	6	1.2
41015836	16	BL	30	10	3	6	1.2
41015868	16	BL	15	14.5	3	5	0.5
41010732	16	BL	15	14.5	3	5	0.6
41015809	16	BL	15	14.5	3	5	0.7
41010753	16	BL	15	14.5	3	5	0.8
41015880	16	BL	15	14.5	3	5	1
41000754	16	BL	15	14.5	3	5	1.2
41010671	16	BL	30	14.5	3	5	0.5
41010132	16	BL	30	14.5	3	5	0.6
41010405	16	BL	30	14.5	3	5	0.8
41009779	16	BL	30	14.5	3	5	1
41010193	16	BL	30	14.5	3	5	1.2
41011754	16	BL	15	15	4	8	0.5
41002951	16	BL	15	15	4	8	0.6
41007333	16	BL	16	16	4	8	0.8
41007382	16	BL	15	15	4	8	1
41007639	16	BL	15	15	4	8	1.2
41008013	16	BL	15	15	4	8	1.5
41015894	16	BL	30	15	4	8	0.3
41015895	16	BL	30	15	4	8	0.4
41010764	16	BL	30	15	4	8	0.5
41006587	16	BL	30	15	4	8	0.6
41010445	16	BL	30	15	4	8	0.7
41007857	16	BL	30	15	4	8	0.8
41015896	16	BL	30	15	4	8	0.9
41007043	16	BL	30	15	4	8	1
41010517	16	BL	30	15	4	8	1.2
41010730	16	BL	30	15	4	8	1.5

Item no.	Product group	Profile	Spiral angle	Ø (mm)	Width (mm)	Bore (mm)	Pitch (mm)
41009960	16	BL	15	21.5	5	8	0.8
41008613	16	BL	15	21.5	5	8	1
41010758	16	BL	15	21.5	5	8	1.2
41009132	16	BL	15	21.5	5	8	1.5
41009561	16	BL	30	21.5	5	8	0.8
41008691	16	BL	30	21.5	5	8	1
41010332	16	BL	15	25	6	8	0.5
41010495	16	BL	15	25	6	8	0.6
41009407	16	BL	15	25	6	8	0.8
41007044	16	BL	15	25	6	8	1
41006373	16	BL	15	25	6	8	1.2
41007799	16	BL	15	25	6	8	1.5
41008502	16	BL	15	25	6	8	1.6
41007300	16	BL	15	25	6	8	2
41012128	16	BL	30	25	6	8	0.5
41009147	16	BL	30	25	6	8	0.6
41008501	16	BL	30	25	6	8	0.8
41007031	16	BL	30	25	6	8	1
41007209	16	BL	30	25	6	8	1.2
41007424	16	BL	30	25	6	8	1.5
41010807	16	BL	30	25	6	8	1.6
41010420	16	BL	30	25	6	8	2

CUT KNURLING WHEELS

cutting process

zeus knurling wheels according to DIN 403 for profiles according to DIN 82, without chamfer, PM



Profile BR

BR15'

BR30'

Item no.	Product group	Profile	Spiral angle (°)	Ø (mm)	Width (mm)	Bore (mm)	Pitch (mm)
41011952	16	BR	30	8.9	2.5	4	0.8
41015823	16	BR	30	8.9	2.5	4	1
41011614	16	BR	15	10	3	6	0.5
41010734	16	BR	15	10	3	6	0.6
41010408	16	BR	15	10	3	6	0.8
41006808	16	DR	15	10	3	6	1
41012951	16	BR	30	10	3	6	0.5
41010731	16	BR	30	10	3	6	0.6
41015844	16	BR	30	10	3	6	0.7
41009757	16	BR	30	10	3	6	0.8
41010732	16	BR	30	10	3	6	1
41015844	16	BR	30	10	3	6	1.2
41015877	16	BR	15	14.5	3	5	0.5
41010736	16	BR	15	14.5	3	5	0.6
41015878	16	DR	15	14.5	3	5	0.7
41010737	16	BR	15	14.5	3	5	0.8
41006882	16	DR	15	14.5	3	5	1
41010738	16	BR	15	14.5	3	5	1.2
41015882	16	BR	30	14.5	3	5	0.5
41010133	16	BR	30	14.5	3	5	0.6
41010750	16	BR	30	14.5	3	5	0.8
41010751	16	BR	30	14.5	3	5	1
41010299	16	BR	30	14.5	3	5	1.2
41011753	16	DR	15	15	4	8	0.5
41009252	16	BR	15	15	4	8	0.6
41007832	16	BR	16	16	4	8	0.8
41007381	16	BR	15	15	4	8	1
41010735	16	BR	15	15	4	8	1.2
41007423	16	BR	15	15	4	8	1.5
41009516	16	BR	30	15	4	8	0.3
41015899	16	DR	30	15	4	8	0.4
41007309	10	BR	30	15	4	8	0.5
41008402	16	BR	30	15	4	8	0.6
41010446	16	DR	30	15	4	8	0.7
41007045	16	BR	30	15	4	8	0.8
41013942	16	BR	30	15	4	8	0.9
41007046	16	BR	30	15	4	8	1
41008403	16	BR	30	15	4	8	1.2
41007230	16	BR	30	15	4	8	1.5

Item no.	Product group	Profile	Spiral angle (°)	Ø (mm)	Width (mm)	Bore (mm)	Pitch (mm)
41010172	16	BR	15	21.5	5	8	0.8
41008514	16	BR	15	21.5	5	8	1
41010173	16	BR	15	21.5	5	8	1.2
41009133	16	BR	15	21.5	5	8	1.5
41010746	16	BR	30	21.5	5	8	0.8
41008592	16	DR	30	21.5	5	8	1
41011088	16	BR	15	25	6	8	0.5
41010496	16	BR	15	25	6	8	0.6
41009624	16	BR	15	25	6	8	0.8
41007047	16	BR	15	25	6	8	1
41006374	16	BR	15	25	6	8	1.2
41006375	16	BR	15	25	6	8	1.5
41008518	16	BR	15	25	6	8	1.6
41007301	16	BR	15	25	6	8	2
41009780	16	DR	30	25	6	8	0.5
41006637	16	BR	30	25	6	8	0.6
41007752	16	DR	30	25	6	8	0.8
41007465	16	BR	30	25	6	8	1
41008240	16	BR	30	25	6	8	1.2
41007197	16	BR	30	25	6	8	1.5
41014036	16	BR	30	25	6	8	1.6
41007369	16	BR	30	25	6	8	2

ZEUS Burnishing Technology

zeus Burnishing Rolls

