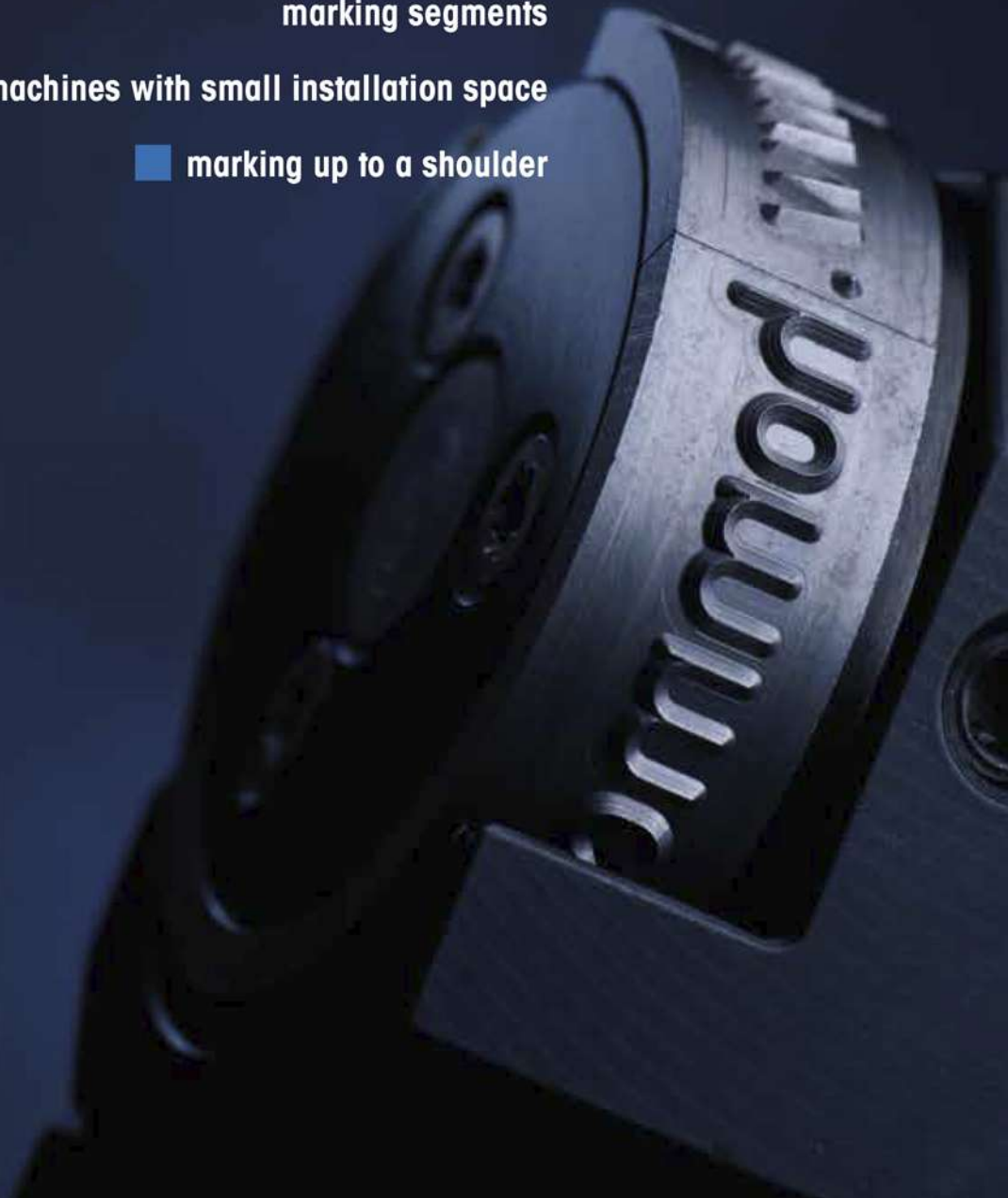




zeus **Marking Technology**

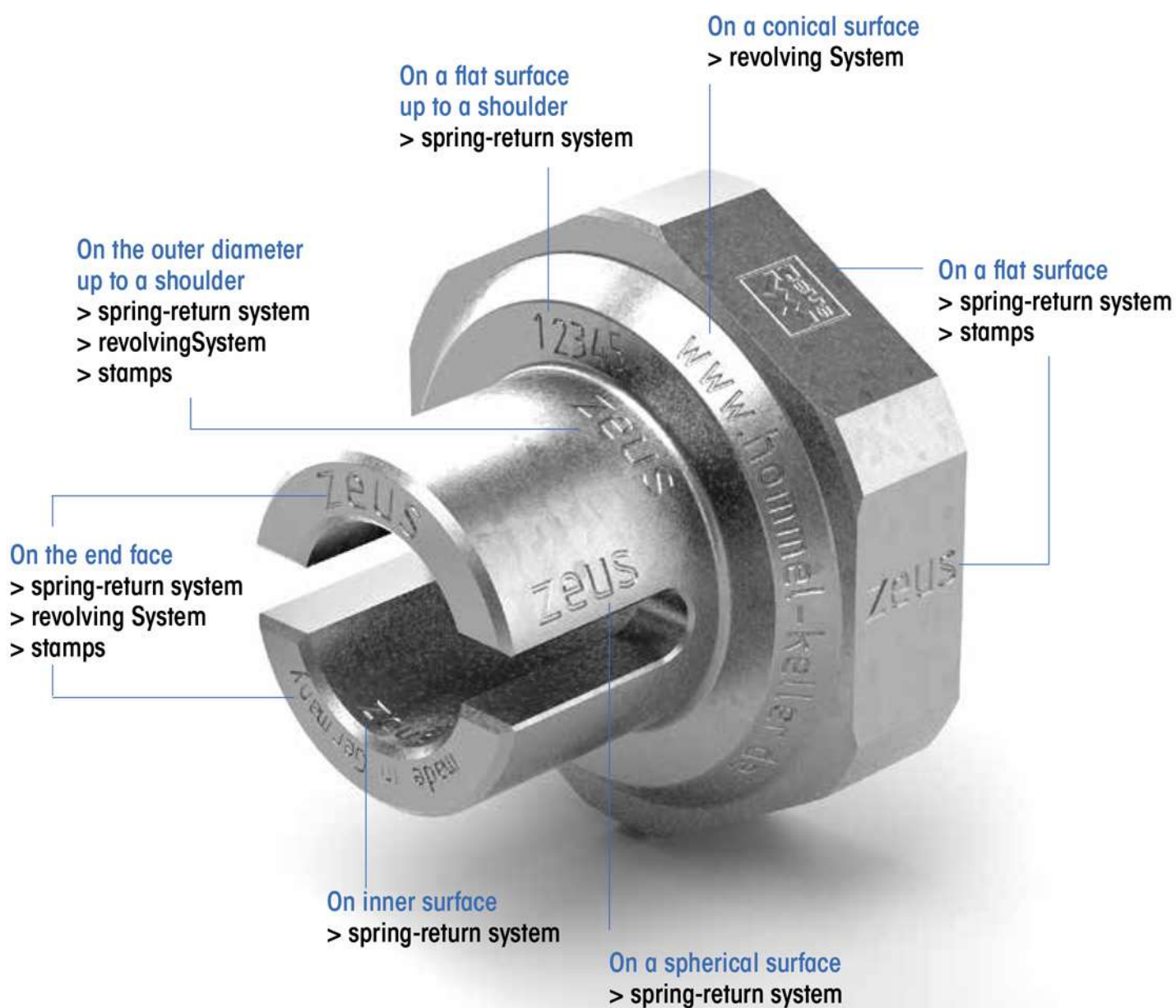
- marking workpieces in seconds
- on a wide variety of geometries independent of the workpiece diameter
- changing marking text thanks to interchangeable marking segments
- for machines with small installation space
- marking up to a shoulder



APPLICATIONS

Where and how can workpieces be marked?

The example shows that you can mark at practically any position. Whether you require marking on spherical or conical surface, up to a shoulder, on end face or inner surface – zeus marking tools will satisfy your requirements.



In marking technology
there are two different processes:
spring-return and the
revolving system.
Both processes have their special applications
and areas of utilisation.

Application Examples
marking tools:

432:
Very flexible tool for
different workpiece geometries
and changing marking text

MARKING SEGMENTS
IMMEDIATELY AVAILABLE:
A-Z, 0-9, -/.



422:
Extremely compact design
ideal for Swiss type lathes

131 / 311:
Extremely cost efficient
for consistent geometry
and marking text

OVERWIEV

MARKING TOOLS
Spring-return system



Marking tool	Marking segment / Marking roll	Shank [mm] (adaptable to shank size)	Marking on workpiece, on different geometries	Marking up to a shoulder	Changing marking text possible	Center height integrated
 432 (P. 48)	 Marking segment No. 43	8 (10 / 12 / 16) 16 (20 / 25)	> on a flat surface > on a spherical surface > on the end face > on the outer diameter	✓	✓	✓
 431 (P. 50)	 Marking segment No. 42	16 (20 / 25)	> on a flat surface > on a spherical surface > on the end face > on the outer diameter	X	✓	✓
 422 (P. 52)	 Marking roll No. 41	8 (10 / 12 / 16)	> on a flat surface > on a spherical surface > on the end face > on the outer diameter	✓	X	✓
 421 (P. 53)	 Marking roll No. 41	16 (20 / 25)	> on a flat surface > on a spherical surface > on the end face > on the outer diameter	X	X	✓

Revolving system

 131 (P. 54)	 Marking roll No. 41	10 / 12 / 16 20 / 25	> on a conical surface > on the end face > on the outer diameter	X	X	✓
 311 (P. 55)	 Marking roll No. 40-K	application- specific	> on a conical surface > on the end face	X	X	✓
 312 (P. 55)	 Marking roll No. 40-K	application- specific	> on a conical surface > on the end face	X	X	✓



MARKING TOOL SET 432

Spring-return system



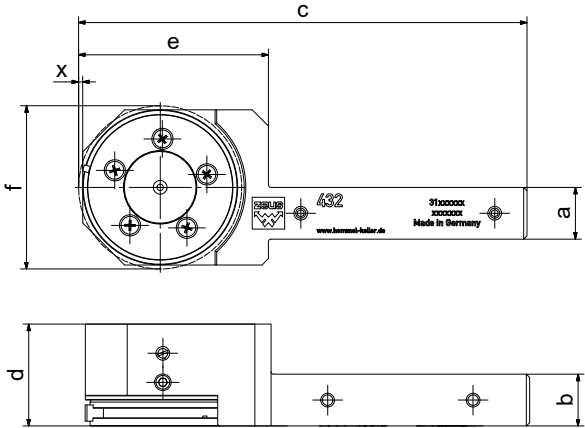
PRODUCT FEATURES

- modular shank design
- top edge of shank = centre height
- set screws in shank for correcting alignment
- hardened pin
- exact positioning of the marking on the circumference of the workpiece
- marking up to a shoulder
- center height corresponds to the first marking point
- marking position individually adjustable
- sets in high quality packaging

✓ Available from stock

Item no. (right-hand version)	Item no. (left-hand version)	Model / Sets (with shank adapter)	Item no. E-Kit		
			right	left	
31002833 ✓ (Set small version for segments Ø 30)	31002915 ✓ (Set small version for segments Ø 30)	432-08	21BHR1081	21BHR1082	
		with adapter 10 x 10 mm			
		with adapter 12 x 12 mm			
		with adapter 16 x 16 mm			
31002849 ✓ (Set big version for segments Ø 50)	31002873 ✓ (Set big version for segments Ø 50)	432-16	21BHR1111	21BHR1112	
		with adapter 20 x 20 mm			
		with adapter 25 x 25 mm			
		incl. start- u. end segment			

Item no. (right-hand version)	Item no. (left-hand version)	Dimensions [mm]						
		a	b	c	d	e	f	x
31002833 ✓ (small version)	31002915 ✓ (small version)	8	8	112.5	31.5	32.5	30	1
		10	10	112.5	31.5	32.5	30	1
		12	12	112.5	31.5	32.5	30	1
		16	16	112.5	31.5	32.5	31	1
31002849 ✓ (big version)	31002873 ✓ (big version)	16	16	137.5	31.5	57.5	48	1
		20	20	137.5	31.5	57.5	48	1
		25	25	137.5	31.5	57.5	48	1



CHANGING MARKING TEXT

MARKING SEGMENTS
IMMEDIATELY AVAILABLE:
A-Z, 0-9, -/.



MARKING SEGMENTE Nr. 43

(for tool set 432)



SEGMENTS Ø 30 - small version
for Item no. 31002833 / 31002915

Standard design	
flank angle	90°
dimension (ø x width x bore, mm)	30 x 8 x 18
font	according to DIN 1451



SEGMENTS Ø 50 - big version
for Item no. 31002849 / 31002873

Standard design	
flank angle	90°
dimension (ø x width x bore, mm)	50 x 8 x 38
font	according to DIN 1451

✓ Available from stock

Item no. character height 2 mm	Item no. character height 3 mm	Segments designations
85000000 ✓		Start segment
85001018 ✓		Letter set A-Z
85000992 ✓	85000346 ✓	A
85000993 ✓	85000356 ✓	B
85000994 ✓	85000344 ✓	C
85000995 ✓	85000347 ✓	D
85000996 ✓	85000348 ✓	E
85000997 ✓	85000349 ✓	F
85000998 ✓	85000350 ✓	G
85000999 ✓	85000351 ✓	H
85001000 ✓	85001407 ✓	I
85001001 ✓	85000352 ✓	J
85001002 ✓	85000353 ✓	K
85001003 ✓	85000354 ✓	L
85001004 ✓	85000355 ✓	M
85001005 ✓	85000852 ✓	N
85001006 ✓	85001408 ✓	O
85001007 ✓	85000855 ✓	P
85001008 ✓	85001409 ✓	Q
85001009 ✓	85001063 ✓	R
85001010 ✓	85000856 ✓	S
85001011 ✓	85001410 ✓	T
85001012 ✓	85001411 ✓	U
85001013 ✓	85001412 ✓	V
85001014 ✓	85000851 ✓	W
85001015 ✓	85001413 ✓	X
85001016 ✓	85001414 ✓	Y
85001017 ✓	85001415 ✓	Z
85000991 ✓		Numeral set 0-9
85000981 ✓	85000622 ✓	0
85000982 ✓	85000623 ✓	1
85000983 ✓	85000345 ✓	2
85000984 ✓	85000357 ✓	3
85000985 ✓	85000624 ✓	4
85000986 ✓	85000625 ✓	5
85000987 ✓	85000626 ✓	6
85000988 ✓	85000627 ✓	7
85000989 ✓	85000628 ✓	8
85000990 ✓	85000629 ✓	9
85002186 ✓		space segment
85001654 ✓	85001257 ✓	special character - (Minus)
85001019 ✓	85002485 ✓	special character . (Point)
85001059 ✓	85001537 ✓	special character / (Slash)
85000003 ✓		End segment

Item no. character height 2 mm	Item no. character height 3 mm	Segments designation
85000113 ✓		Start segment
85001819 ✓		Letter set A-Z
85001793 ✓	85001108 ✓	A
85001794 ✓	85001109 ✓	B
85001795 ✓	85001289 ✓	C
85001796 ✓	85001533 ✓	D
85001797 ✓	85001565 ✓	E
85001798 ✓	85001130 ✓	F
85001799 ✓	85001581 ✓	G
85001800 ✓	85001534 ✓	H
85001801 ✓	85001566 ✓	I
85001802 ✓	85001567 ✓	J
85001803 ✓	85001535 ✓	K
85001804 ✓	85001568 ✓	L
85001805 ✓	85001569 ✓	M
85001806 ✓	85001570 ✓	N
85001807 ✓	85001571 ✓	O
85001808 ✓	85001572 ✓	P
85001809 ✓	85001573 ✓	Q
85001810 ✓	85001574 ✓	R
85001811 ✓	85001575 ✓	S
85001812 ✓	85001576 ✓	T
85001813 ✓	85001290 ✓	U
85001814 ✓	85001577 ✓	V
85001815 ✓	85001578 ✓	W
85001816 ✓	85001579 ✓	X
85001817 ✓	85001580 ✓	Y
85001818 ✓	85001536 ✓	Z
85001431 ✓		Numeral set 0-9
85001421 ✓	85000466 ✓	0
85001422 ✓	85000467 ✓	1
85001423 ✓	85000468 ✓	2
85001424 ✓	85000469 ✓	3
85001425 ✓	85000470 ✓	4
85001426 ✓	85000471 ✓	5
85001427 ✓	85000472 ✓	6
85001428 ✓	85000473 ✓	7
85001429 ✓	85000474 ✓	8
85001430 ✓	85000475 ✓	9
85003870 ✓		space segment
85001912 ✓	85001600 ✓	special character - (Minus)
85002486 ✓	85002487 ✓	special character . (Point)
85001857 ✓	85001131 ✓	special character / (Slash)
85000114 ✓		End segment



MARKING TOOL SET 431

Spring-return system

PRODUCT FEATURES

- modular shank design
- top edge of shank = centre height
- set screws in shank for correcting alignment
- hardened pin
- exact positioning of the marking on the circumference of the workpiece
- center height corresponds to the first marking point
- marking position individually adjustable
- sets in high quality packaging



Available from stock

Item no.	Model / Sets (with shank adapter)	Item no. E-Kit		
		right	left	
31002845	431-16	21BHR1509	21BHR1510	
	with adapter 20 x 20 mm			
	with adapter 25 x 25 mm			
	incl. start- and endsegment			

Item no.	Dimensions [mm]							
	a	b	c	d	e	f	x	
31002845	16	16	130.5	30	50.5	45	2	
	20	20	130.5	30	50.5	45	2	
	25	25	130.5	30	50.5	47.5	2	

CHANGING MARKING TEXT

MARKING SEGMENTS
IMMEDIATELY AVAILABLE:
A-Z, 0-9, -/.

MARKING SEGMENTS Nr. 42

(for tool set 431)



SEGMENTS for Item no. 31002845

Standard design	
flank angle	90°
dimension (ø x width x bore, mm)	45 x 6 x 33
font	according to DIN 1451

Available from stock

Item no. character height 2 mm	Item no. character height3 mm	Segments designations
82000067		Start segment
82002237	82002300	Letter set A-Z
82000438	82000028	A
82000439	82002232	B
82002236	82002301	C
82001063	82002302	D
82002240	82002303	E
82001064	82002304	F
82002242	82000430	G
82002243	82000431	H
82002244	82002045	I
82002245	82002308	J
82002246	82002309	K
82002247	82002310	L
82002248	82002311	M
82002249	82002312	N
82002250	82002313	O
82002251	82000429	P
82002252	82002315	Q
82001089	82002316	R
82002254	82000379	S
82002255	82002318	T
82002256	82002319	U
82002257	82002320	V
82000867	82002321	W
82002259	82002322	X
82002260	82002323	Y
82002261	82002324	Z

Item no. character height 2 mm	Item no. character height 3 mm	Segments designations
82000441	82000378	Numeral set 0-9
82000001	82000187	0
82000141	82000189	1
82000142	82000039	2
82000143	82000029	3
82000239	82000190	4
82000145	82000030	5
82000146	82000191	6
82000147	82000421	7
82000148	82000193	8
82000149	82000031	9
82000416	82000040	special character - (Minus)
82000433	82000041	special character . (Point)
82000879	82002230	special character / (Slash)
82000065		End segment



MARKING TOOL SET 422

Spring-return system



- PRODUCT FEATURES**
- modular shank design
 - compact design - optimized for Swiss type lathe applications
 - top edge of shank = centre height
 - set screws in shank for correcting alignment
 - hardened pin
 - exact positioning of the marking on the circumference of the workpiece
 - marking up to a shoulder
 - center height corresponds to the first marking point
 - marking position individually adjustable
 - sets in high quality packaging

Available from stock

Item no. (right-hand version)	Item no. (left-hand version)	Model / Sets (with shank adapter)	Size Marking roll (Ø x w x b)	Item no. E-Kit		
				right	left	
31002843 Tool for marking up to a shoulder	31002913 Tool for marking up to a shoulder	422	15 x 5 x 6	21BHR1505	21BHR1506	
		with adapter 10 x 10 mm				
		with adapter 12 x 12 mm				
		with adapter 16 x 16 mm				
31002846 Tool for marking up to a shoulder	31002914 Tool for marking up to a shoulder	422	15 x 7 x 6	21BHR1507	21BHR1508	
		with adapter 10 x 10 mm				
		with adapter 12 x 12 mm				
		with adapter 16 x 16 mm				

Item no. (right-hand version)	Item no. (left-hand version)	Dimensions [mm]							
		a	b	c	d	e	f	x	
31002843	31002913	8	8	101	24	21	16	1	
		10	10	101	24	21	18	1	
		12	12	101	24	21	20	1	
		16	16	101	24	21	24	1	

Item no. (right-hand version)	Item no. (left-hand version)	Dimensions [mm]							
		a	b	c	d	e	f	x	
31002846 Tool for marking up to a shoulder	31002914 Tool for marking up to a shoulder	8	8	101	24.5	21	16	1	
		10	10	101	24.5	21	18	1	
		12	12	101	24.5	21	20	1	
		16	16	101	24.5	21	24	1	

MARKING ROLL Nr. 41

(for tool set 422)



Standard design	
flank angle	90°
dimension (Ø x width x bore, mm)	15 x 5 x 6 15 x 7 x 6
font	according to DIN 1451



MARKING TOOL SET 421

Spring-return system



- PRODUCT FEATURES**
- modular shank design
 - top edge of shank = centre height
 - set screws in shank for correcting alignment
 - hardened pin
 - exact positioning of the marking on the circumference of the workpiece
 - Marking independent of workpiece diameter
 - center height corresponds to the first marking point
 - marking position individually adjustable
 - sets in high quality packaging

Available from stock

Item no.	Model / Sets (with shank adapter)	Size Marking roll (Ø x w x b)	Item no. E-Kit		
			rechts	links	
31002844	421	25 x 6 x 6	21BHR1503	21BHR1504	
	with adapter 20 x 20 mm				
	with adapter 25 x 25 mm				

Item no.	Dimensions [mm]							
	a	b	c	d	e	f	x	
31002844	16	16	112.5	25	32.5	28.5	2.5	
	20	20	112.5	25	32.5	28.5	2.5	
	25	25	112.5	25	32.5	28.5	2.5	

MARKING ROLL Nr. 41

(for tool set 421)



Standard design	
flank angle	90°
dimension (Ø x width x bore, mm)	25 x 6 x 6
font	according to DIN 1451

APPLICATION EXAMPLE MARKING

MARK YOUR WORKPIECE IN SECONDS.



→ INTEGRATED INTO THE MACHINING PROCESS



MARKING TOOL

Revolving system

TOOL No.131

(catalogue page 8)

Perfect for recurring marking,
impresses with its easy handling

PRODUCT FEATURES

- easy handling
- very cost efficient and fast
- ideal for series production
- marking roll interchangeable
- marking roll is adjusted to the workpiece diameter
- top edge of shank = centre height (131 / 311 / 312)
- set screws in shank for correcting alignment



TOOL No. 311 / 312

(catalogue page 30)

Perfect for marking on conical
or flat surfaces



MARKING ROLL No. 40

(for tool no. 131)



MARKING ROLL No. 40-K

(for tool no. 311 / 312)



Standard design for 131 / 311 / 312	
flank angle	90°
roll width [mm]	application-specific
font	according to DIN 1451

Application example

Tool No. 131³¹¹
with marking roll Nr. 40

**EXTREMELY
COST EFFICIENT**

- For recurring marking on rotationally symmetrical components with constant diameter.

Application example

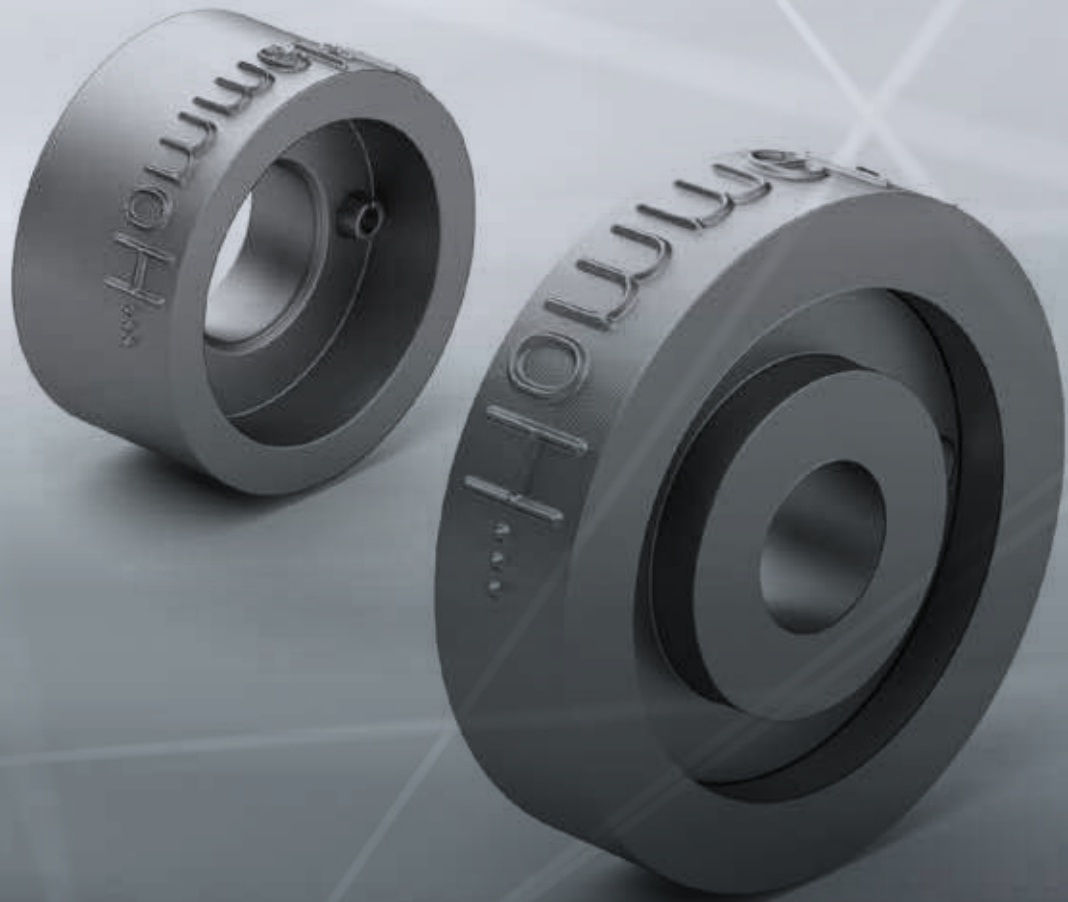
Tool No. 311 with marking roll Nr. 40-K



**PERFECT FOR
MARKING THE END FACE**

- When marking the end face, the calculated position of the pitch circle diameter must be observed.

Technology Marking tools



On www.hommel-keller.de you will find videos on the subject of marking technology. Convince yourself of our marking tools.

Important information

Guidelines for process parameters

System	Material	Workpiece Ø	Speed n [rpm]	Feed rate, radial f [mm/U]	Impression depth (PT) a_p value [mm]*
Revolving	up to max. $R_m = 1000 \text{ N/mm}^2$	Any	200	0.08	$r = 0.075$ $\varnothing = 0.15$
Spring-return	up to max. $R_m = 1000 \text{ N/mm}^2$	Any	200 Unwinding via C-axis is possible	$f = d \times \pi$ (d = workpiece diameter) High speed (possible with restrictions)	$r = 0.075$ $\varnothing = 0.15$

! The values provided here are recommendations (base values) and must be optimised for the application.

* The impression depth must always be greater than the concentricity ($\varnothing 0.03 \text{ mm}$).

The embossing quality and the wear of the marking rolls/segments is dependent on:

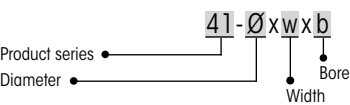
- the combination of workpiece diameter and speed
- the feed rate
- the material
- and the application (e.g. clamping set-up – single- or double-sided)

Surfaces for marking must be clean (free of surface contaminants) to ensure optimal driving of the segments and the marking roll. When marking in axial direction – spindle stop (speed = 0), feed rate in axial direction = feed rate in radial direction.

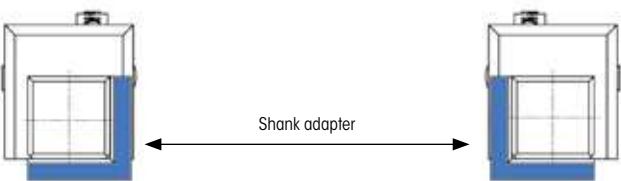
Spring-return system – start-up when stopped

1. Spindle at standstill
2. Infeed of tool to desired impression depth
3. Run spindle slowly
4. Return of tool

Explanation of marking roll designation



Shank adapter



! With the modular tool sets 421 and 431 the adapter is used to change the shank size asymmetrically.

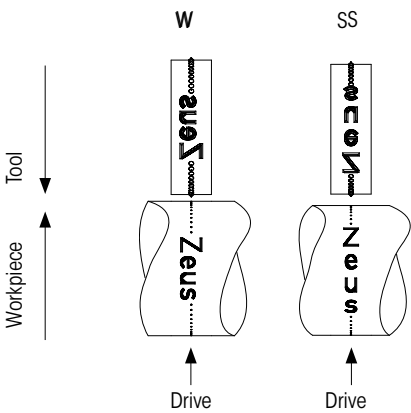
Technial specifications

1. Font

- The standard font is based on DIN 1451.
(Other typefaces available on request.)
- A .dxf file is needed for logos and special characters.

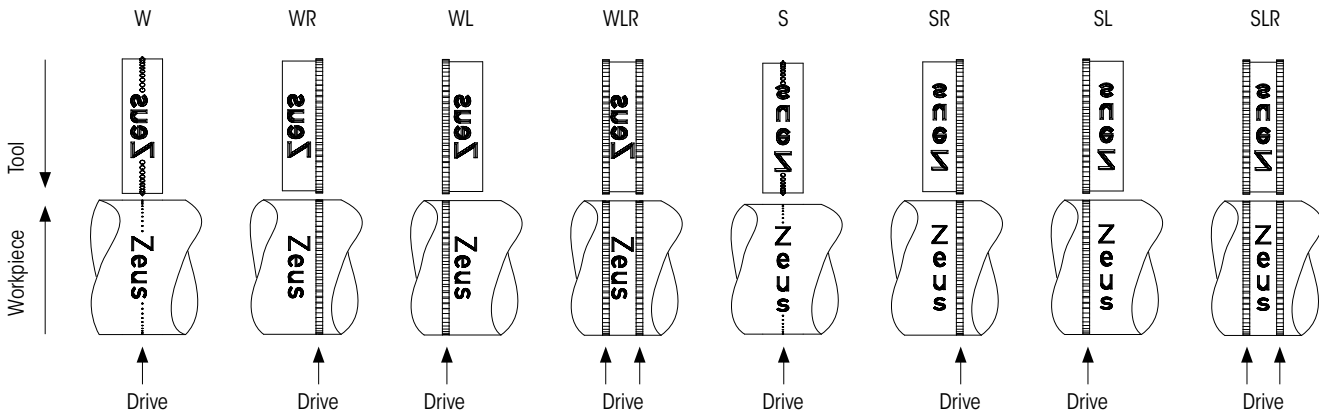
2. Possible marking types | drives

2.1 Spring-return system



- In the standard version the drive is positioned on the centre of the marking roll/marketing segment.
- On request, the drive, which can be custom designed (logo, backlash, asterisks, number signs, etc.), can be applied to the side of the characters and removed afterwards by reworking (cutting off, finish machining, bevelling, etc.).

2.2 Revolving system

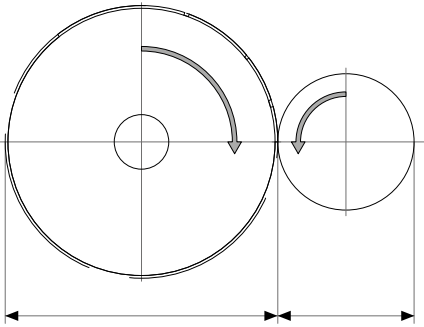


- To ensure continuous rotation of the tool, a drive is needed, which can be custom designed (logo, backlash, asterisks, number signs, etc.) and removed by means of reworking (cutting off, finish machining, bevelling, etc.).

3. Diameter ratio: Marking roll/segment and workpiece

3.2 Spring-return system

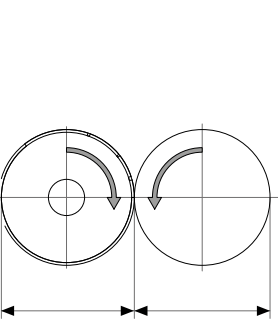
- The diameter of the marking roll / marking segment is **independent** on the workpiece diameter.



Ø Marking segment : Ø Workpiece
 $i = n : 1$

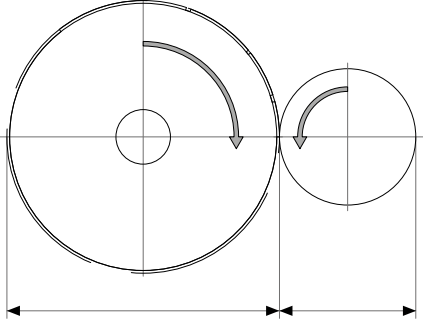
3.1 Revolving System

- The diameter of the marking roll is **dependent** on the workpiece diameter.



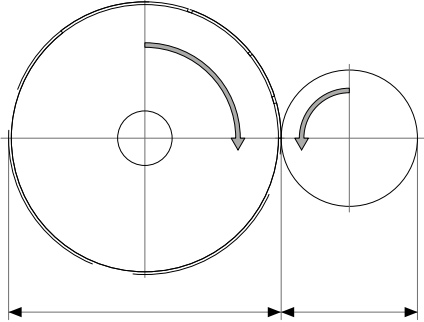
Ø Marking roll : Ø Workpiece
 $i = 1 : 1$

$i = 1$



Ø Marking roll : Ø Workpiece
 $i = n : 1$

$i > 1$



Ø Marking segment:
 $i = n : m$

$i > 1$

4. Practical guidance

1. Preparation of workpiece

- The surface must be clean
- Perfect concentricity is essential (0.03 mm)
- The diameter of the workpiece must be very precise
(max. tolerance: ± 0.025 mm)

2. Impression depth

- The standard impression depth is 0.075 mm relative to the radius/
0.15 mm relative to the diameter
- Impression depths exceeding the recommended maximum values
may cause character distortions

3. Marking as part of the machining process

- The position of the drive on the workpiece should be taken into
account during the machining process
- There is a danger that weak parts of the workpiece are deformed
during marking.
We recommend marking to be carried out on the strong parts of
the workpiece and/or before the critical machining steps



a brand of
Hommel+Keller
Präzisionswerkzeuge GmbH



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