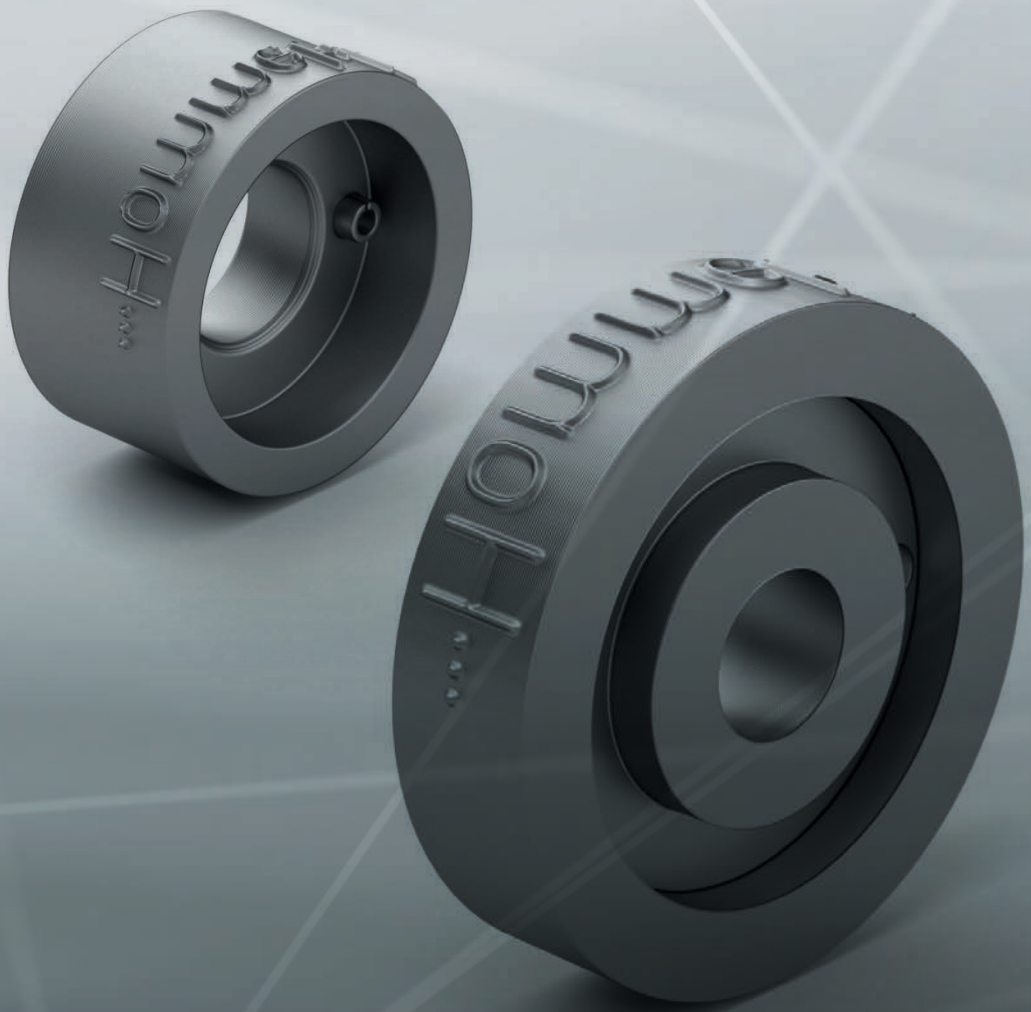
Technology



Visit www.hommel-keller.de for
video clips about marking technology.
Our marking tools will convince you!

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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 N/mm²	Any	200	0.08	r = 0.075 Ø = 0.15
Spring-return	up to max. R_m = 1000 N/mm²	Any	200 Unwinding via C-axis is possible	f = d x π (d = workpiece diameter) High speed (possible with restrictions)	r = 0.075 Ø = 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 (Ø 0.03 mm).

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

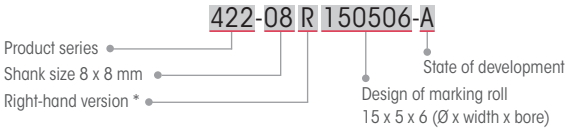
- the combination of workpiece diameter and speed
- the feed rate
- the material
- and the application (e.g. clamping set-up – single- or double-sided)

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

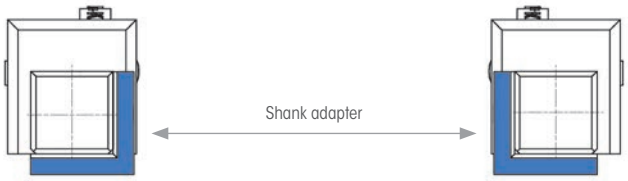
Explanation of tool holder designation



* L = l/h design
M = modular design

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.

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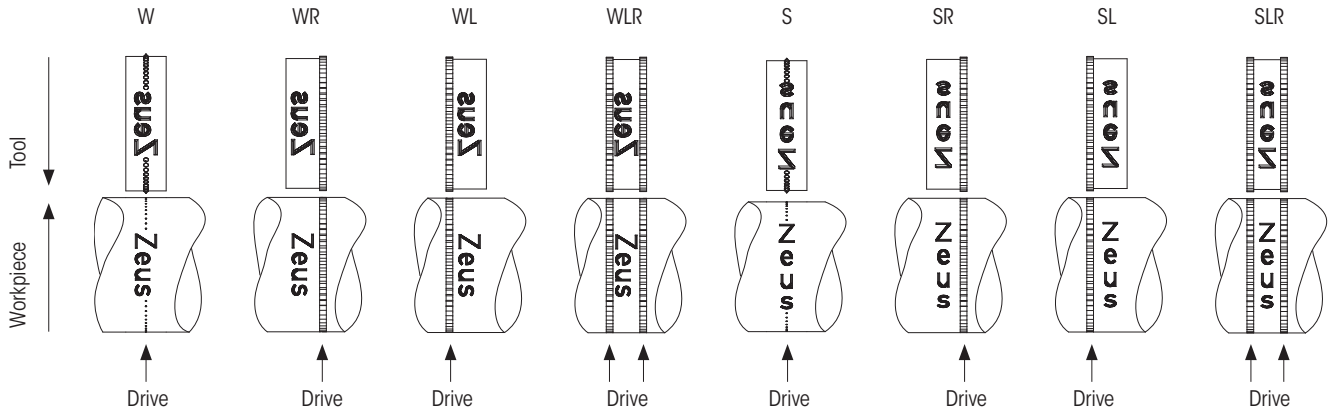
Marking roll specifications

1. Typefaces

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

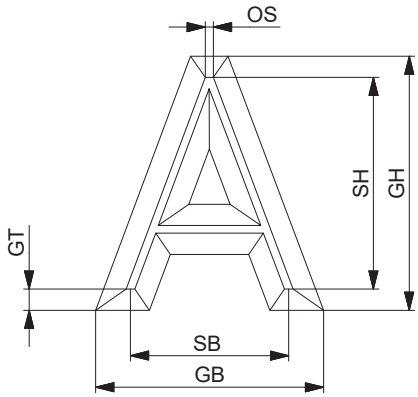
2. Possible marking types | drives

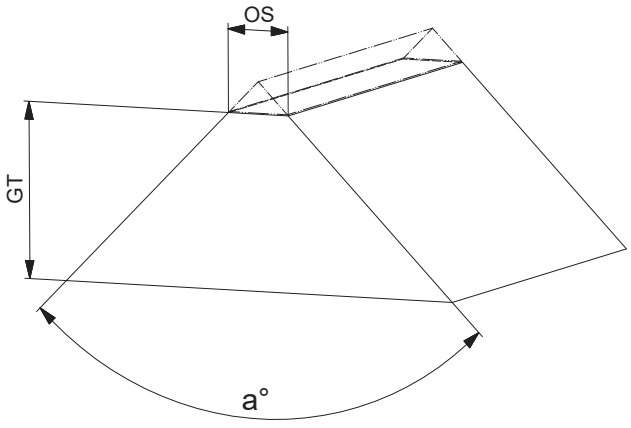
- To ensure continuous rotation of the tool, a drive is needed, which can be custom designed (logo, backslash, asterisks, number signs, etc.) and removed by means of reworking (cutting off, finish machining, bevelling, etc.)



3. Character height / embossing depth

- The standard flank angle is 90° (Other flank angles available on request)
- Minimum character height: 0.8 mm
- Maximum character height: Depending on the roll width all standard sizes are possible
- The character height is measured on the offset (see figure below)
- Standard embossing depth: 0.35 mm





a° = flank angle
GT = embossing depth
GB = embossing width
GH = embossing height
SB = character width
SH = character height
OS = offset

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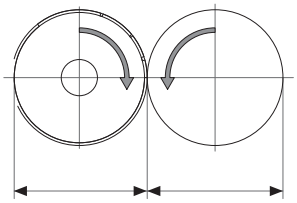
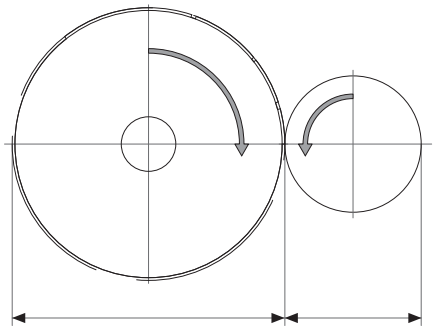
4. Diameter ratio: Marking roll – workpiece

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



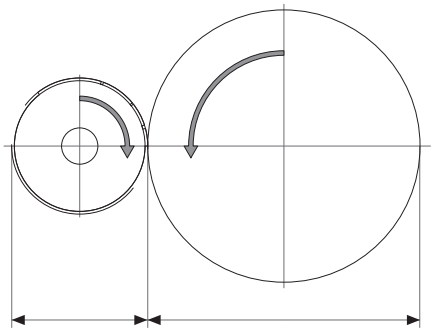
Marking roll Ø : Workpiece Ø
i = 1 : 1

i = 1



Marking roll Ø : Workpiece Ø
i = n : 1

i > 1



Marking roll Ø : Workpiece Ø
i = 1 : n

i < 1

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

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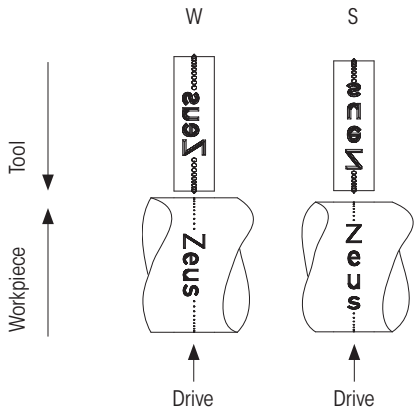
Specification of the marking roll/segments

1. Typefaces

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

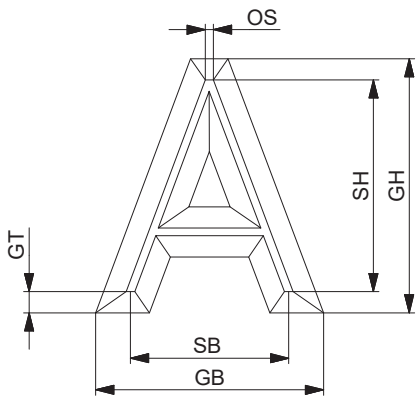
2. Possible marking types | drives

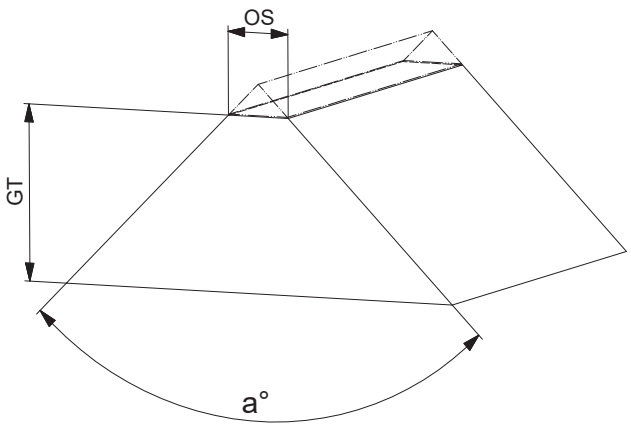
- In the standard version the drive is positioned on the centre of the marking roll/marking segment
- On request, the drive, which can be custom designed (logo, backslash, asterisks, number signs, etc.), can be applied to the side of the characters and removed afterwards by reworking (cutting off, finish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



3. Character height/ embossing depth

- The standard flank angle is 90° (Other flank angles available on request)
- Minimum character height: 0.8 mm
- Maximum character height: Segment width – 1 mm (Example: max. character height = 6 mm – 1 mm = 5 mm)
- The character height is measured on the offset (see figure below)
- Standard embossing depth: 0.35 mm





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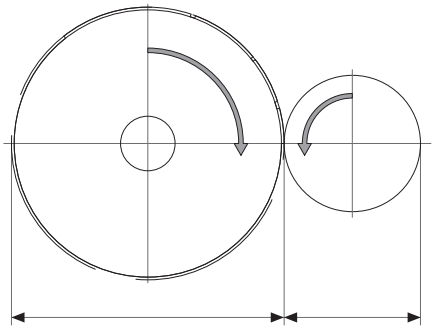
4. Diameter ratio: Roll/segments – workpiece

- The diameter of the marking roll/segments is **independent** of the workpiece diameter



Marking segment Ø:
i = n : m

Practical guidance

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