

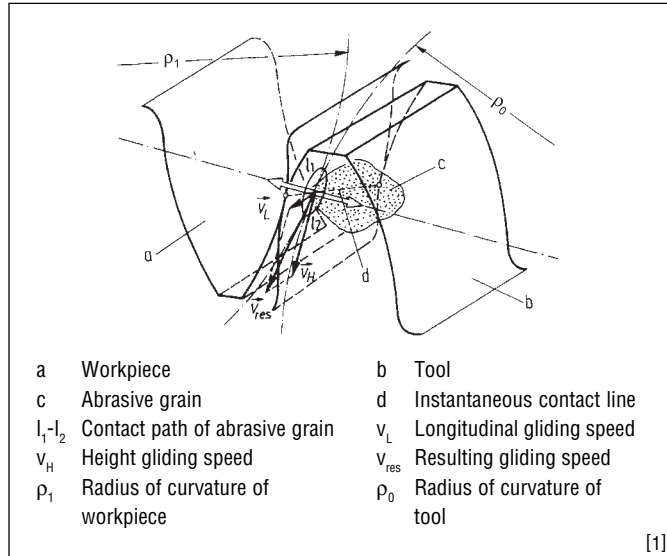


Hermes Gear Honing Tools

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Gear honing is a continuous chip-removing micro cutting process. The driven honing tool and the workpiece are in rolling contact. The crossed axes angle gives a resulting gliding movement running diagonally from tip to root of the teeth.

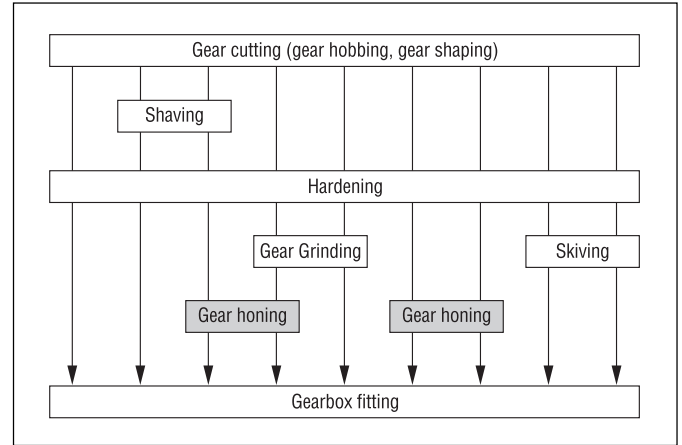
The following picture shows the cutting kinematics in generating.



The new surfaces topography achieved by this process is favorable for the gear operation.

The chip-removal ranges from 400 or 600 pinch for finish honing process up to more than 1600 pinch during heavy duty honing process.

Other gear manufacturing methods could be classified as pre-honing processes.



The honing process is used as a final operation on gears to improve the quality in respect to:

- Noise reduction
- Change of surface topography
- Surface finish
- Gear roundness
- Reduction of surface roughness
- Reduce distortion from the heat treatment process

Hermes materials for honing wheels with external teeth and honing rings with internal teeth

Standard

Resin bond with 100% friable aluminum oxide.

Specification example:

EWE 150/1 V2 B13

Vitrified bond with 100% friable aluminum oxide.

Specification example:

EWE 100/9 L11 V5 Z

CB

Resin bond with a mixture of high-performance abrasive microcrystalline aluminum oxide "Sapphire Blue" and friable aluminum oxide abrasive.

Specification example:

3CB5 150/1 V2 B13

Profine

Resin bond with a combination of friable grit and conglomerate with a controlled variable dimension. These honing tools for heavy duty honing with high stock removal are available in the combination of standard or CB grain and conglomerate.

Specification example:

Profine 1A5 16 U2 B13

1A5
1 combination of grain
A grain
5 amount of conglomerate

16
size of conglomerate

U2
hardness and porosity

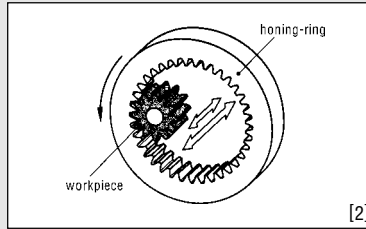
B13
bond

Due to the complex matrix of Profine honing rings they are currently limited to hardness values between U and X and structures 1 to 3.

Additional products

- Honing rings in a combination of vitrified and resin bond for special applications.
- Honing wheels with an metal or bakelite carrier.

Honing ring recommendation

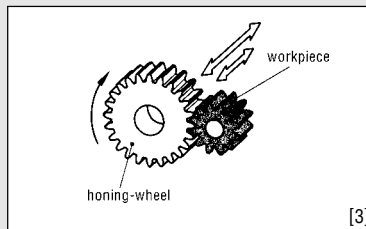


Available standard dimensions

outer Ø	D = 300 to 400 mm
width	T = 14 to 60 mm
inner Ø	H = according to requirement

Machining	Honing machines *	Application	DP	Recommended specification
ground and hardened	Fässler D-250 (C) Gleason-Hurth ZH 125	small stock removal < 600 µinch per flank high surface demand long lifetime	20 - 6 20 - 6 20 - 6	EWE 150/1 V2 B13 EWE 180/1 V1,5 B13 3CB3 150/1 V2 B13
shaved and hardened	Fässler D-250 (C) Gleason-Hurth ZH 125	small stock removal < 600 µinch per flank high surface demand small module	20 - 6 20 - 6 < 25	EWE 150/1 W4 B13 EWE 180/1 V4,5 B13 EWE 220/9 V1 B13
hobbed and hardened	Fässler K300 / K400	high stock removal 1200 - 1600 µinch per flank	≤ 3	Profine 1A3 16 U2 B13
hobbed and hardened	Gleason-Hurth ZH 250 Pfafter PH 280	very high stock removal > 1600 µinch per flank CB conglomerate for longer dressing cycles	20 - 4 ≤ 3,5	Profine 1A5 16 U2 B13 Profine 1B5 16 V1 B13

Honing wheel recommendation



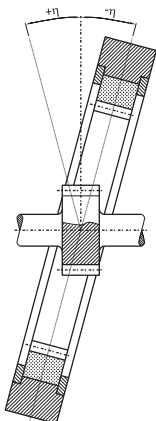
Available standard dimensions

outer Ø	D = according to requirement
width	T = 14 to 60 mm
inner Ø	H = according to requirement

Machining	Honing machines *	Application	DP	Recommended specification
ground and hardened	Reishauer RZF	small stock removal 200 - 400 µinch per flank	≤ 5	EWE 100 V3 B13
shaved and hardened	Gleason-Hurth ZHS ZHF 350	high stock removal 1600 - 4000 µinch per flank	≤ 3	EWE 100/9 L11 V5 Z
ground and hardened	Ex-Cell-O	small stock removal < 400 µinch per flank	17 - 6	EWE 220/1 X0 B13 NK 150 L5 BX 25

* other machine producer: Seiwa, Präwema, Mikron, Kapp

Required information for honing tool construction



Honing tool data	Workpiece data	Machining	Honing machine
<ul style="list-style-type: none"> Outer Ø Width b Number of teeth z Helix angle β Root & tip diameter df, da Addendum modification coefficient x 	<ul style="list-style-type: none"> Drawing and technical data Width u Number of teeth z Normal module mn Pressure angle α Helix angle β Hand of helix (left, right) Root & tip diameter df, da Addendum modification coefficient x 	<ul style="list-style-type: none"> Pre-honing process Dressing cycle Material removal Surface finish 	<ul style="list-style-type: none"> Type Crossed axes angle η (+/-) Center distance ah

References

- [1] Schiefer, H:
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