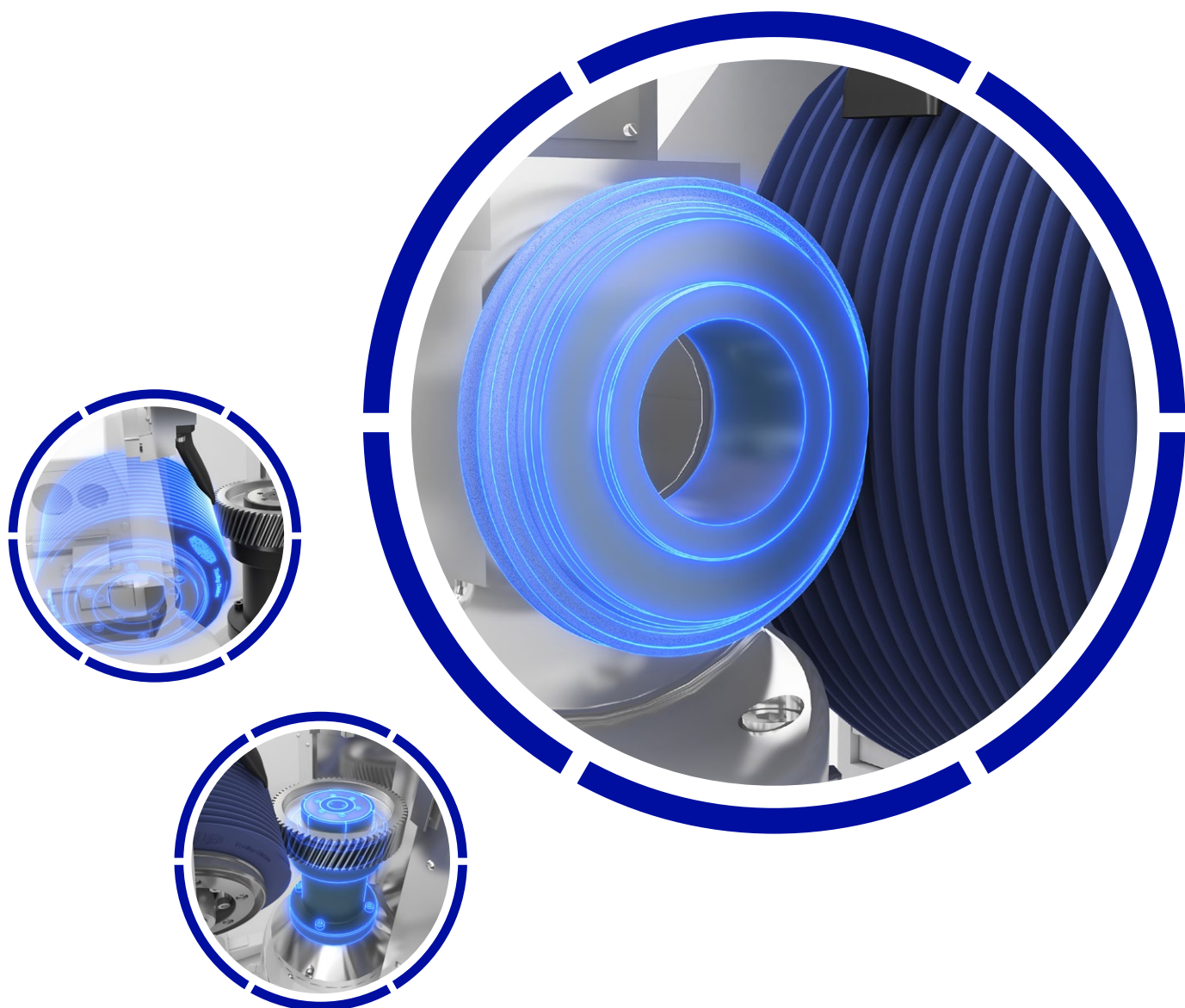


# REISHAUER

Gear Grinding Technology

## Reishauer Dressing Tools



MACHINE

AUTOMATION

**TOOLING**

TECHNOLOGY

DIGITAL

SERVICES

Where precision begins



# Swiss precision. Made by Reishauer.



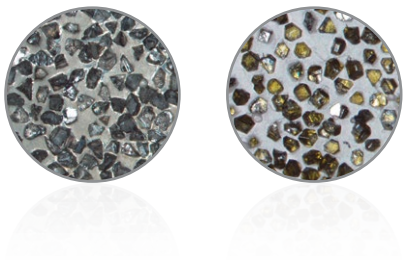
Reishauer tools are an essential part of our "Circle of Competence". We manufacture our own grinding wheels, diamond dressing tools, and clamping fixtures to ensure seamless integration so that our customers can utilize the full potential of Reishauer generating grinding machines.

## **Diamond dressing tools**

Reishauer Tooling Division designs, produces, and offers highly specialized diamond tools for dressing, grinding, and polishing, as well as for other special applications. The unmatched quality, precision, and service life of our tools is based on decades of experience and a passion for innovation. In this brochure you will find a brief overview of our diamond dressing tools for generating gear grinding.

# The principle of diamond dressing

Magnified images of two nickel-plated diamond grains used on our dressers; synthetic version on the right.



This is where precision begins! With diamond-plated dressing tools, the profile geometry of the teeth is applied to the grinding wheel in a process that is both highly accurate and reproducible.

Natural and synthetic diamonds are an essential part of this process. They are up to four times harder than the corundum wheels used to grind hardened steel and are therefore ideal for precisely transferring the gear profile to the grinding worm. The production of synthetic diamonds in particular has advanced rapidly in recent years. Due to our meticulous manufacturing process, they not only offer superior quality and exceptional purity, but also allow us to tailor specific attributes—such as strength or self-sharpening effects—offering even greater flexibility to meet our customers' needs.

## From flexibility to efficiency

Different requirements in the production of small, medium, or large batch sizes as well as specifications in terms of geometry and flexibility determine the respective tool selection. In combination with the corresponding dressing methods, almost all requirements for dressing involute and non-involute grinding worms are met.

Composite profile disc when creating the tip radius for grinding the tooth root radius



The project specification is of critical importance when choosing the right dressing tool, which our engineering team analyses together with the customer. Does your project need ultimate flexibility in the design of the tooth flank topography? Or does your project require maximum cycle time efficiency where the grinding worm is dressed as quick as possible? In any situation, we work with the customer to find the most efficient solution, combining job requirements and customer equipment to achieve the best possible results.

# Diamond dressing tools for generating grinding



1

Radius form roll



2

Double radius form roll



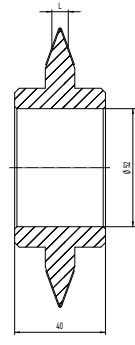
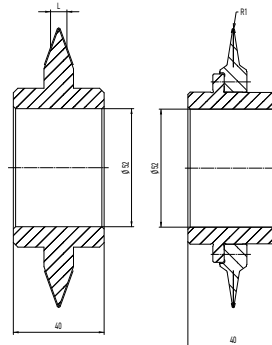
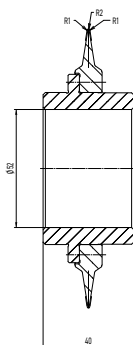
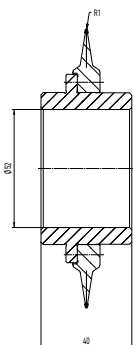
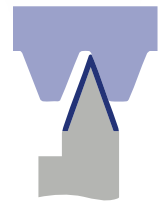
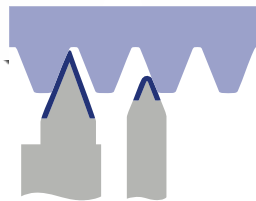
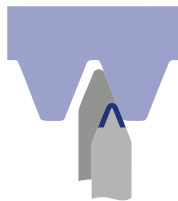
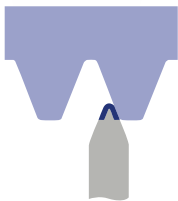
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Pre-profiling disc and  
radius form roll



4

Double taper disc







5

Composite profile  
disc RP 12x



6

Composite profile  
disk RP 16x



7

Double taper disc and  
OD dressing roll



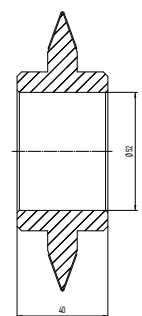
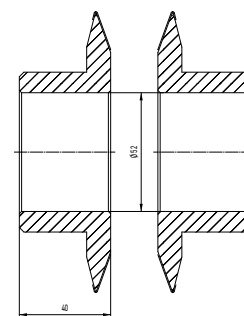
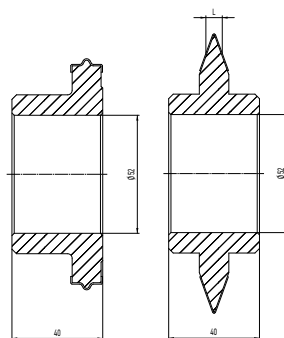
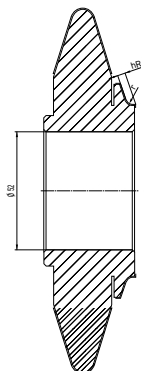
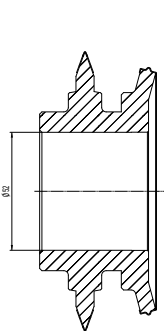
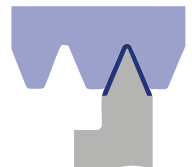
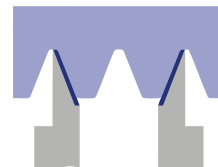
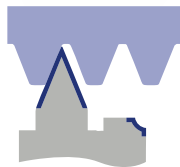
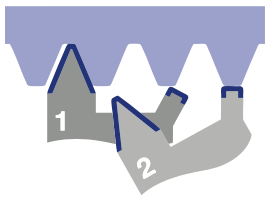
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Single taper  
disc pair



9

Profile roll





10

Profile roll and  
OD dressing roll



11

Composite profile roll



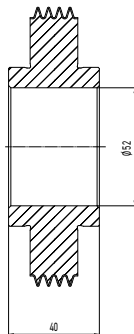
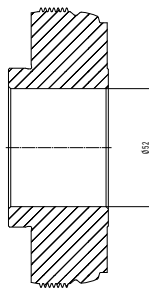
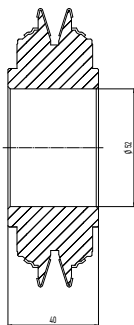
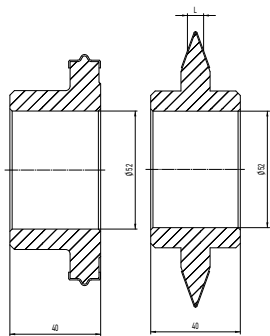
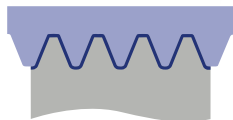
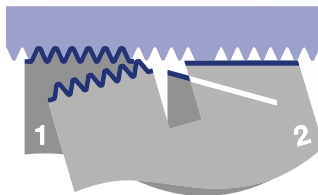
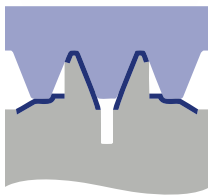
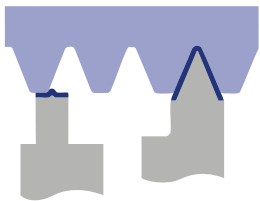
12

Composite full profile  
and OD dressing roll



13

Full profile roll



# Three manufacturing types for every dressing task...

When producing diamond profile rolls, shape and profile tolerances, for example, very acute angles or small radii become critical variables when selecting the suitable plating for the dressing tool. Thanks to our mastery of plating technology, Reishauer Tooling offers three different manufacturing processes to meet both economical and tight tolerance criteria.

## Suitable for repeat reprocessing: direct-plated

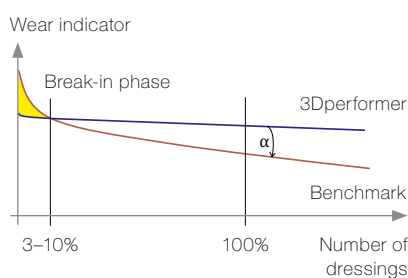
Directly plated diamond dressing tools are widely used in the gear industry and are the most common type of dressing discs and profile rolls. Due to the characteristics of the direct-plating process and the suitability for replating, these dressing tools represent a good overall package in terms of efficiency, delivery time, and quality.

Double taper disc base body (left) and the directly plated end product (right)



In the case of directly plated dressing tools, such as double taper discs or composite profile rolls, a single diamond layer is nickel-bonded onto a steel body. Since the diamond grains are aligned on the steel body and the diamond grains protrude according to their size, the effective surface roughness after plating is high and must therefore be reduced to the correct level through a diamond lapping process.

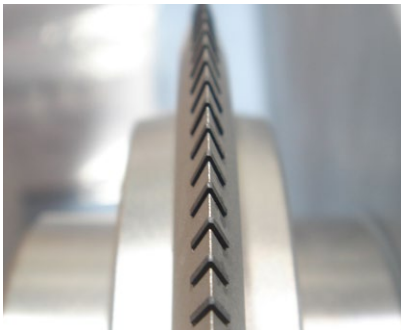
## Reishauer 3Dperformer



In addition to the dressing tools with a standard plating optimized for everyday processes, Reishauer offers the latest generation of high-performance tools: Our 3Dperformer. The Performance Line has been designed to meet the most stringent requirements for precision, quality, and tool life. These dressers feature a special synthetic diamond grain that guarantees particularly long-term stability with the tightest tolerances and are therefore highly suitable for electric mobility applications. The 3Dperformer is not subject to any restrictions compared to the standard plating and can be supplied for all steel bodies compatible with direct-plating technology.

# ...result in the full range of possibilities.

## Filigrée tool tip: high vacuum brazing



Detail image of a double radius form roll with centered CVD shaped parts

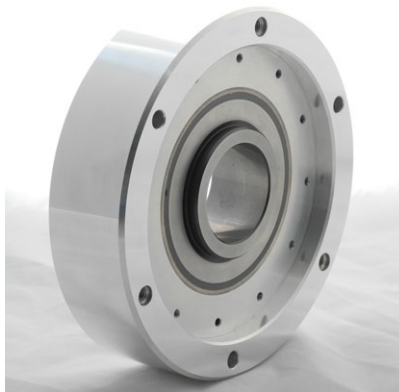
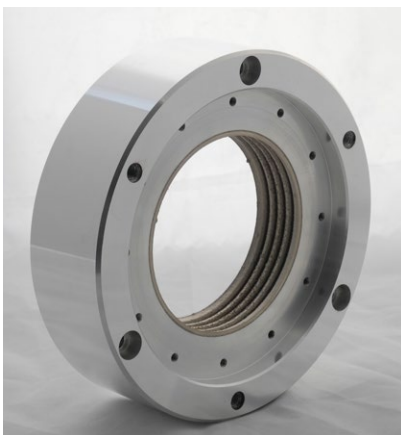
A direct-plated bond becomes inefficient with particularly small-module dressing tools with a pointed tip due to the fine diamond grain and the insufficient adhesion of the diamonds there. In order to achieve a sufficient tool life, even with very thin tools, these are manufactured using a brazing process with chemical vapor deposition (CVD) plates. CVD plates are diamond inserts that are brazed into the tip of the tool and allow particularly fine profiles to be dressed.

The CVD plates are bonded to the steel body by a thin layer on the surface of the diamonds, in which the carbon atoms from the diamond bond with the atoms in the solder. The inserted CVD plates are then ground to achieve the required accuracy.

## Complex profile geometry: reverse-plated tools

In the case of reverse-plated diamond tools, such as multirib full profile diamond rolls, the diamond layer is galvanically nickel-plated in a negative mold corresponding to the external geometry of the dressing tool. The diamonds are bonded to the inside of the mold and thus form the exact working surface of the plating. After the electroplating process, a steel hub is inserted, both parts are adhered to each other with a special resin, and then the mold is removed from the diamond.

Reverse-plated dressing tools show their advantages in small-module ranges and complex profile geometries. They offer a short dressing time and long tool life, which makes them very efficient despite the more complex production process.



The individual steps during reverse-plating: highly accurate mold with nickel-plated diamond layer (left), inserted steel hub (middle), final multiprofile diamond roll (right)



# Reishauer Circle of Competence

The Reishauer Circle of Competence encompasses our complete range of products and services. By offering everything related to the grinding process from a single source, Reishauer ensures a long service life of the machine system at low life cycle costs.

## Machine

A broad portfolio, future-oriented controls, and interface concepts, and state-of-the-art grinding technologies – for decades, our machines have guaranteed the highest possible output with maximum precision, consistent quality, and unmatched machine availability.

## Automation

Automation "Made by Reishauer". Our automation solutions are perfectly matched to our machines and keep pace with their high output. Modular in design, they can be flexibly tailored to your production needs.

## Tooling

Perfectly matched, consistent in quality, and with guaranteed availability: Together with the machine, Reishauer tooling forms the backbone of successful grinding processes.

## Technology

Modern e-drives demand higher overall gear quality, clearly defined surface finishes, and highly accurate gear geometries. Reishauer grinding technologies enable you to meet your and your customer's most demanding requirements and help you remain competitive. Our technology experts are at your disposal to advise you and provide support.

## Digital

System integration, in-depth process analyses, and predictive maintenance – the requirements for Industry 4.0 solutions are extremely complex and diverse. Reishauer offers a constantly growing portfolio of digital services to maximize the potential of your machines.

## Services

The reliability of our machines, and thus machine availability, is of central importance for your competitiveness. Shortest reaction time, a worldwide extended network of service engineers, and decentralized spare parts stores guarantee maximum availability.



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