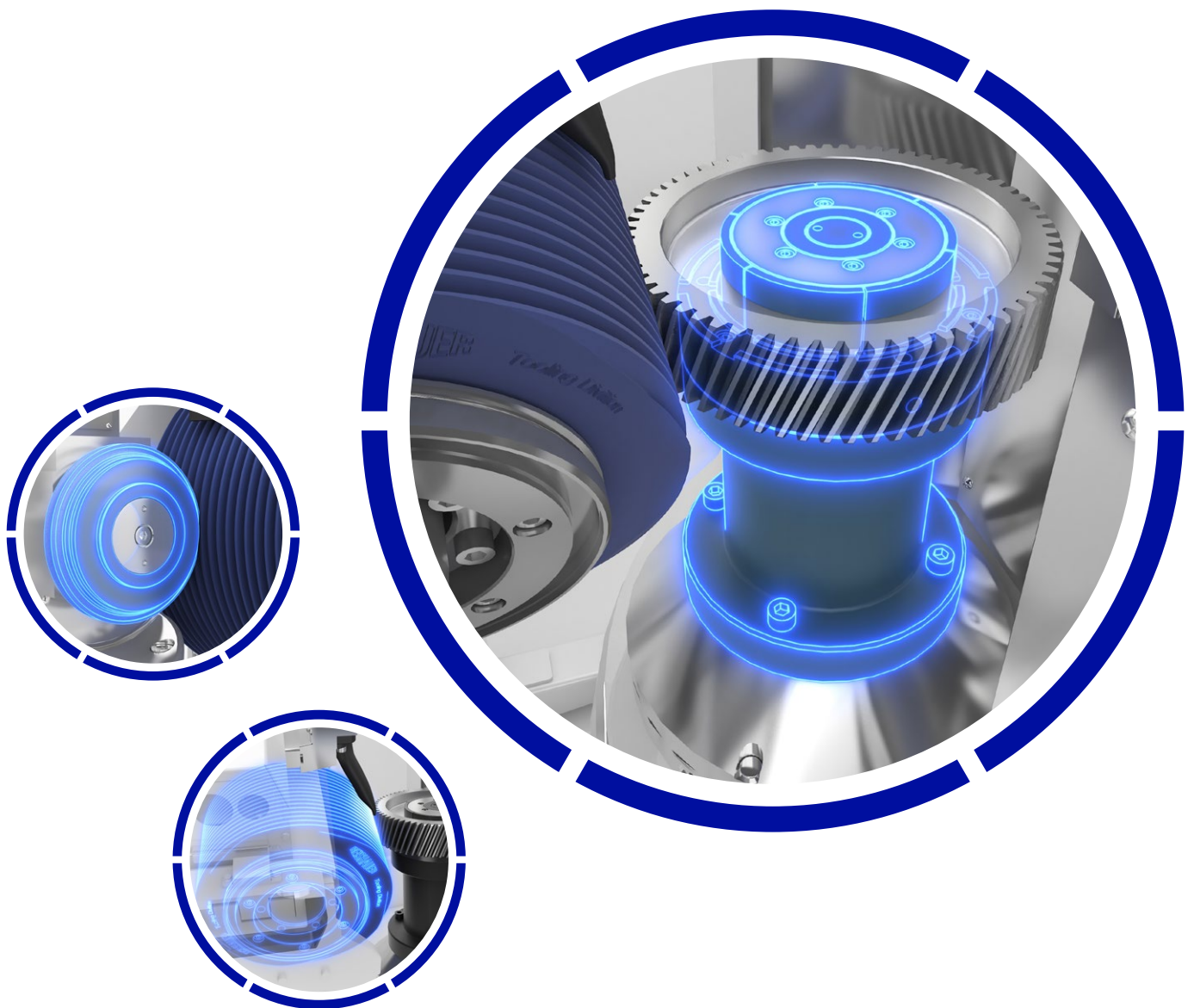


# REISHAUER

Gear Grinding Technology

## Reishauer Clamping Devices



MACHINE

AUTOMATION

TOOLING

TECHNOLOGY

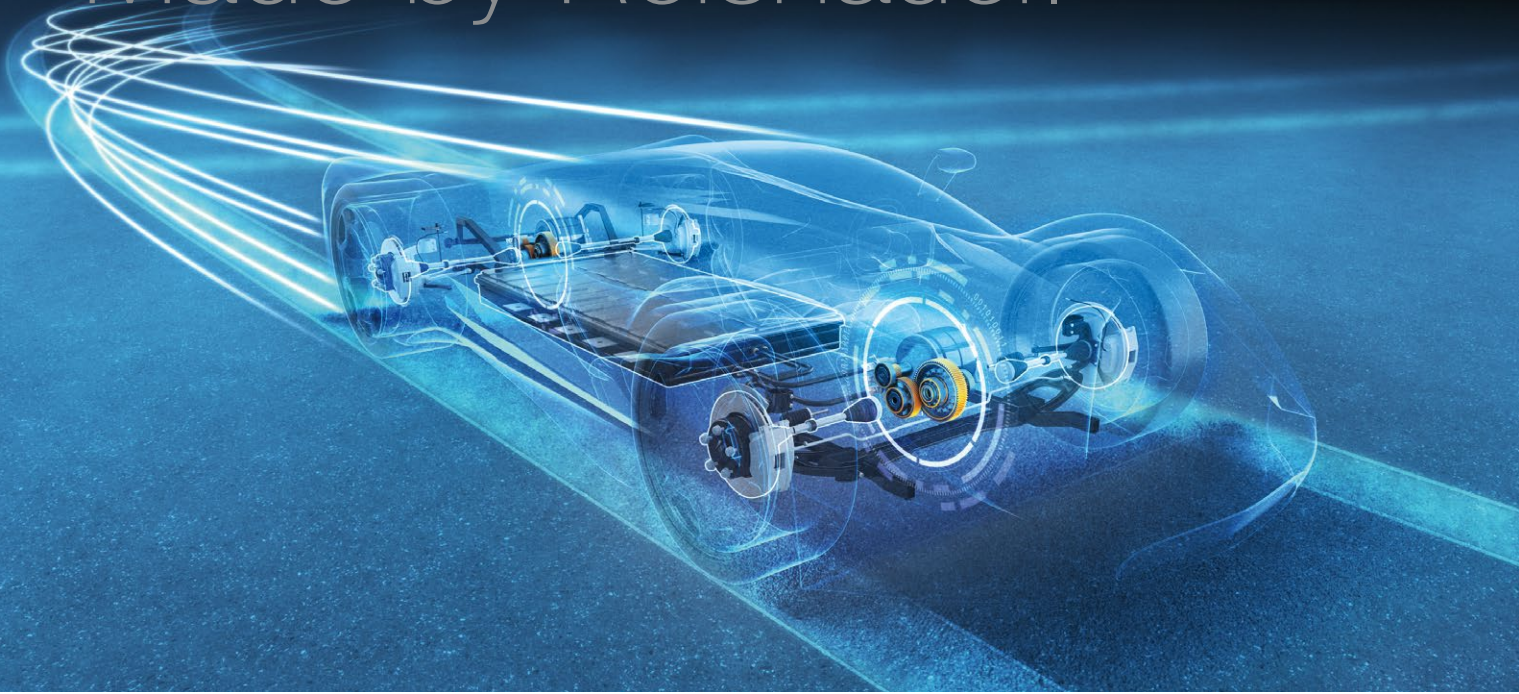
DIGITAL

SERVICES

Precise, durable, customized



# Swiss precision. Made by Reishauer.



As far back as developing the world's first generating grinding machine, Reishauer has greatly impacted modern transmission production through its innovative developments in machine and process technologies. Our high-tech gear grinding machines, pioneering digital applications, efficient tooling, and proven clamping device concepts enable the production of reliable, efficient, and quiet transmissions.

## **Clamping devices optimally adapted to suit your needs**

The Reishauer Circle of Competence stands for our ability to offer all technologies and tooling relating to the grinding process from a single source. The design and production of clamping devices are integral parts of this.

# Clamping device solution for the new drive generation

The Reishauer Tooling Division develops and produces clamping device solutions for economical high-volume and prototype gear production.

Powerful clamping devices for continuous generating grinding of gears for electric and alternative drives meet the highest technical requirements. Only a high level of precision suffices for the noise-optimized behavior of the hard-finish machined gears required for e-mobility.



## Clamping devices from Reishauer ...

- ... optimally connect your workpiece with Reishauer grinding machines
- ... are especially suitable for requirements of e-mobility
- ... ensure maximum accuracy and repeatability
- ... are perfectly matched to the grinding machine
- ... are manufactured with the correct clearance for a given task
- ... are Swiss Made

# Workpiece-specific for high-volume production

The latest generation of clamping devices for high-volume production have been specially developed for the low-vibration machining of gears. The product portfolio comprises customized clamping device solutions to fully cover the workpiece range of modern electric and alternative drive trains – from ring gears to shaft-type parts and pinions.

Precision is the main focus when designing clamping devices, regardless of whether it is a mechanical or hydraulic clamping design.



## Workpiece-specific clamping devices from Reishauer ...

- ... fulfill the highest demands on rigidity
- ... feature excellent damping properties
- ... have low radial runout
- ... are optimized for maximum service life
- ... support quick clamping cycles

The clamping devices developed for high-volume production are designed for a specific workpiece, which is produced in large numbers. Sometimes, these devices can be used to a limited extent for other workpieces with the same bore diameter.

Based on the workpiece and machine interface specifications, the Reishauer Tooling Division develops and produces an optimum clamping device solution that meets the highest standards of Swiss quality. This enables the customer to carry out the most cost-effective grinding operation in high-volume production.



# Cross-machine clamping for small & medium lot sizes



The Reishauer FK 38 base unit (top) and the FH 38 quick-change system (bottom) have connections for both spindle sizes.

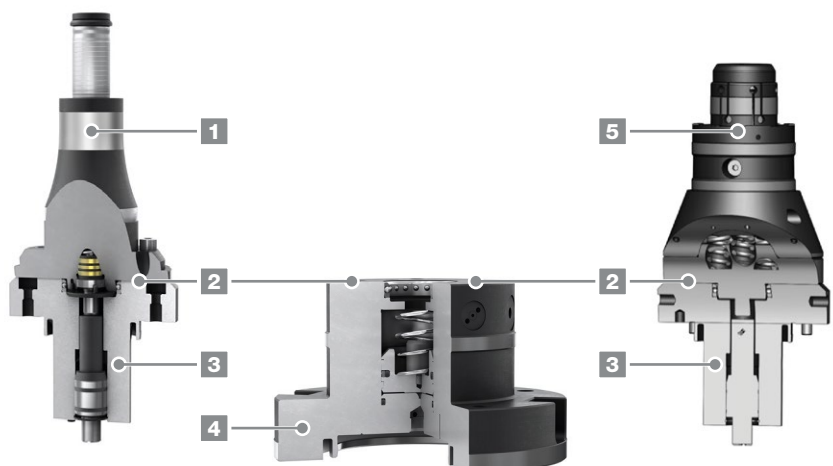
The base units and quick-change systems from Reishauer harmonize the clamping device interface of various machine types and enable maximum flexibility for the end user. A uniform platform is created for the use of small and medium lot sizes, for which existing clamping devices can be quickly used and changed, thereby saving time. On this basis, large workpiece ranges and frequently changed workpieces can be economically machined.

## Cross-machine clamping devices from Reishauer ...

- ... offer maximum flexibility regarding the workpiece range
- ... offer maximum rigidity
- ... have excellent radial runout and centering properties
- ... are optimized for maximum service life
- ... enable rapid setup times
- ... simplify handling in a production environment

Together with the customer, Reishauer analyzes the workpiece range to be ground and develops a complete clamping device system solution. In addition to the clamping device itself, this includes the base unit or the quick-change system. Customers can then machine workpieces as economically as possible in small and medium lot sizes.

- 1 Reishauer DH 28 clamping device—hydraulic expanding clamping device
- 2 Identical connection
- 3 Reishauer FK 38 clamping device – base unit for RZ 126 and RZ 160
- 4 Reishauer FK 38 clamping device – base unit for RZ 260 and larger Reishauer machines (base unit with integrated pressure transmitter)
- 5 Reishauer DME clamping device – mechanically expanding clamping device



# Universal clamping device for the ultimate flexibility

The Reishauer DHU clamping devices consist of three elements, which enable the clamping devices to be used universally across different Reishauer machine models and a wide range of workpiece clamping diameters.



The Reishauer FK 66 base unit is directly mounted on the C-axis and remains on the spindle. Two versions are available.



The Reishauer DHU clamping device is mounted on the base unit. It is currently available for eight different bore diameters.



Mounted on the DHU quick clamping hub, the slotted collets cover 18 to 92 mm bore diameters.

## The Reishauer DHU clamping devices are ideal for ...

- ... short-term arising requirements (partly available from stock)
- ... frequently changing workpieces with different clamping diameters from 15 to 92 mm
- ... for the use on different Reishauer grinding machines (Reishauer RZ 126 4.0 – RZ 410 and larger)

## Bore diameter for clamping device with and without slotted collets

Version	Only clamping device	With slotted collet
Reishauer DHU 15	15 mm	18 mm – 22 mm
Reishauer DHU 19	19 mm	22 mm – 28 mm
Reishauer DHU 25	25 mm	28 mm – 34 mm
Reishauer DHU 31	31 mm	34 mm – 43 mm
Reishauer DHU 40	40 mm	43 mm – 52 mm
Reishauer DHU 48	48 mm	52 mm – 64 mm
Reishauer DHU 60	60 mm	64 mm – 78 mm
Reishauer DHU 74	74 mm	78 mm – 92 mm

# The optimal clamping device

The targeted use of Reishauer changeover systems reduces setup times and increases productivity. This means you get greater economic benefits from your generating grinding machine, whether running large-scale or small-lot-size productions.

The clamping devices from Reishauer ensure optimal conditions during the grinding process. Reishauer's product range is as individual as its customers' requirements. Highly wear-resistant for high-volume production or a quick-change modular system for prototype manufacture — whatever the customer's needs, Reishauer offers a solution that is best suited to the gear grinding process.

Reishauer clamping device type	DH	DME	DMM	FH	FME	MT
Workpieces	Movable gear	Ring gear	Inner toothing	Shaft	Shaft	Shaft
Clamping range [mm]	10 – 150	30 – 175	18.5 – 120	20 – 80	20 – 80	4 – 50
Workpiece tolerance (clamping diameter nominal value)	max. 0.1 %, IT5: < 10mm, IT6: 10 – 20mm, IT7: > 20mm	IT10	IT10	max. 0.1 %, > 20 IT7	IT10	max. 0.1 mm
Accuracy (radial runout / axial runout)	≤ 3 μm	≤ 5 μm	≤ 5 μm	≤ 3 μm	≤ 5 μm	≤ 3 μm
<b>Properties</b>						
Clamping length	Normal	Short	Long	Long	Short	Very short
Torque	Normal	High	High	Normal	Normal	Low
Clearance	Normal	Large	Large	Normal	Large	Large
Tailstock	–	–	–	Needed	Needed	Needed
Service life clamping cycles	105,000	105,000+	105,000+	105,000	105,000	105,000
<b>Optional equipment</b>						
Insertion aid	Yes <sup>1)</sup>	–	–	Yes	Yes	–
Support ring	Yes	Yes	Yes	Yes	Yes	–
Self aligning support	Yes	Yes	Yes	Yes	Yes	–
Intermediate bush / collet, exchangeable	Yes	Yes	Yes	Yes	Yes	–
Push-out function	–	–	–	–	–	Yes
Hold function	–	–	–	Yes	Yes	–

1) May be suitable for special applications

The overview shown is not exhaustive and describes the current technical limits. As Reishauer continually develops the products, solutions beyond these limits may be possible. Reishauer is always open to exploring the feasibility of customer requests.

# Manufactured by us for our machines

Reishauer draws upon its extensive experience in gear grinding to develop customized clamping tools. The complete system – machine, clamping device, threaded grinding wheel, and diamond dressing tool ensures an optimal grinding process in line with your quality requirements.

Reishauer DH clamping device with six slotted collets and control ring. Our clamping devices are delivered in sturdy wooden boxes and custom-fit hard foam padding to ensure safe shipping and correct storage.



## High-precision grinding results require high-precision clamping

Our designs are grounded in the specialized knowledge we gained throughout the grinding process. As a manufacturer of machines and tooling, we understand the intricacies of grinding. With our comprehensive and holistic system approach, we possess the technical expertise to deliver the optimal solution to our customers.

Each Reishauer clamping device is custom-designed and precisely tailored to its specific application. These devices meet the highest standards of rigidity and flexibility, empowering our customers to execute efficient and cost-effective grinding processes.



# The 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

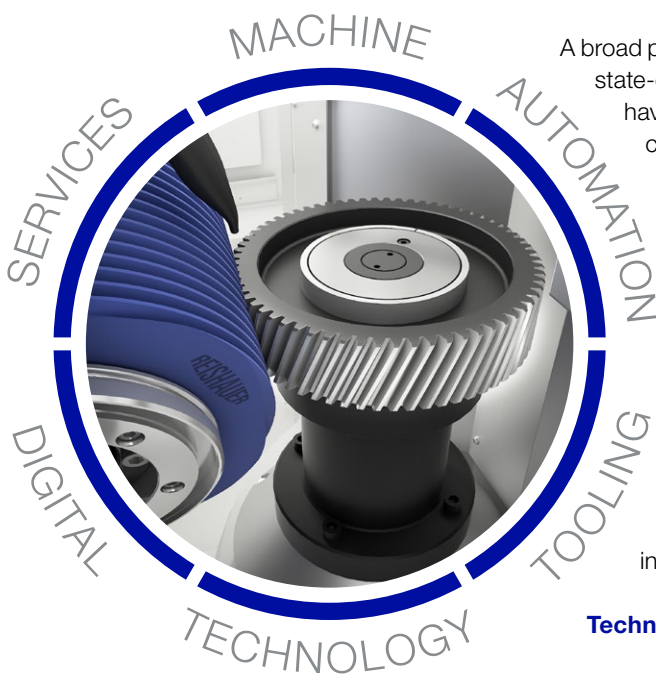
Modern e-drives demand higher overall gear quality, clearly defined surface finishes, and highly accurate gear geometries. Reishauer grinding technologies enable you to meet your and your customer's most demanding requirements and help you remain competitive. Our technology experts are at your disposal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