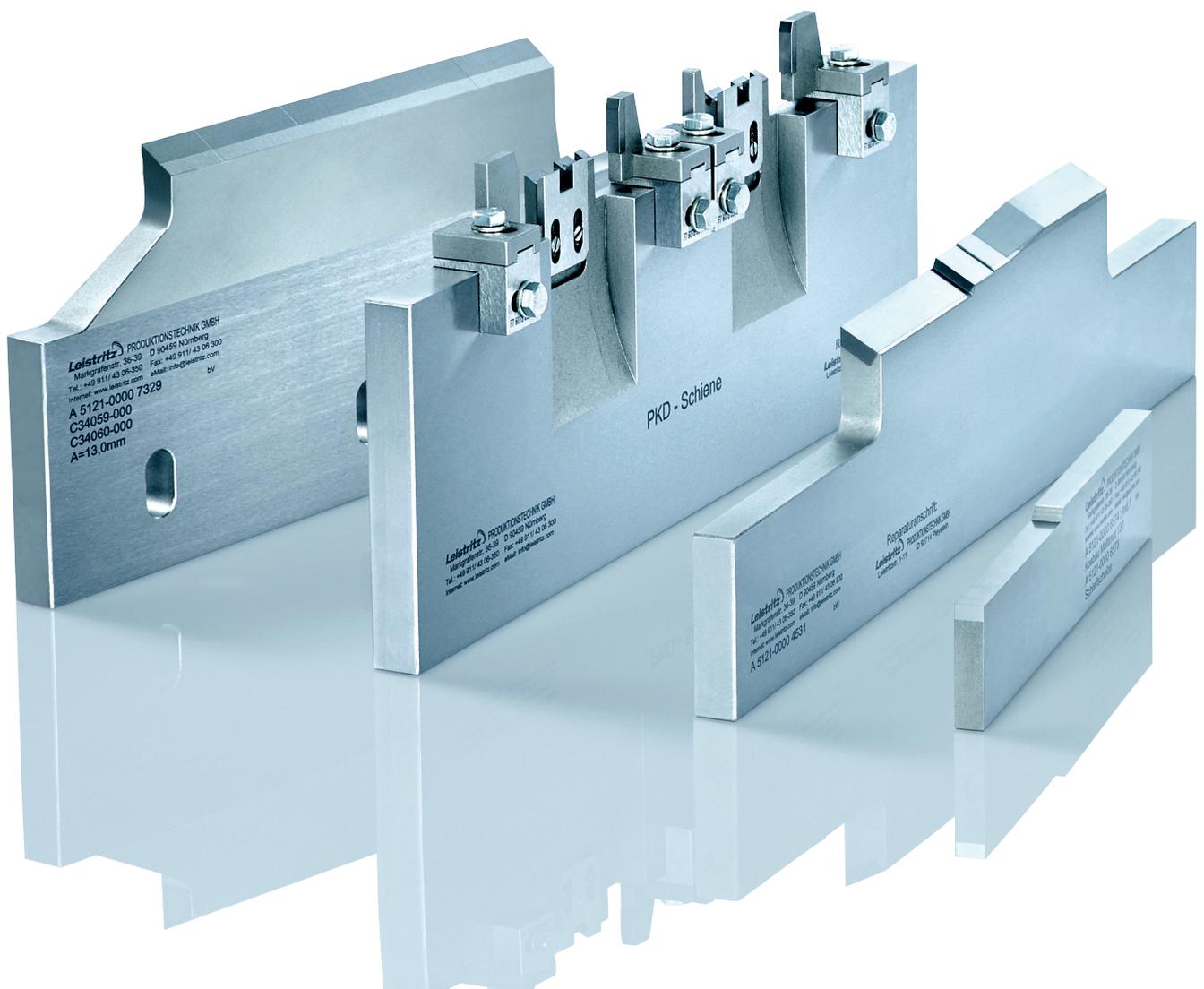


WORK REST BLADES

Solid carbide tools and tool solutions



WORK REST BLADES

Precision and efficiency in centerless grinding

In serial production, the grinding of rotationally symmetrical components on centerless grinding machines. Components from the roller bearing industry such as rollers, inner and outer rings are predestined for this, but also in the automotive sector, nozzle needles, valves, camshafts, piston pins etc. are rounded to the highest precision using centerless grinding. Centerless grinding process to the highest precision (e.g. needles in the textile industry).

In the past, centerless grinding was only used for large series and quantities, but in recent years it has also been increasingly used for small and very small series. Support blades or also support, back-up or grinding rulers are used here - the practice has many names for this.

Alongside the regulating and grinding wheel, the support blade is one of the most important parameters in the grinding process. Their precision, surface quality and wear resistance are the guarantee for high dimensional and shape accuracy of the workpieces to be grinded.

Leistriz has been manufacturing support blades for all centerless grinding machines for throughfeed, plunge-cut and step grinding for decades. We have an enormous amount of knowledge in the design, construction and manufacture of this sophisticated product.

DIFFERENT VERSIONS OF WORK REST BLADES

Through-feed blades

These work rest blades are used for workpieces whose diameter needs to be ground uniformly.



Prism blade

These work rest blades are primarily used in through-feed grinding. For the workpiece, the prismatic guide of the prism blade (usually 120°, carbide-tipped on both sides) ensures a simple and clean feed to and removal from the grinding process. However, the workpiece is lifted from the prism during the grinding process, and is in contact with the blade only on one side, i.e. the side of the grinding wheel.



DIFFERENT VERSIONS OF WORK REST BLADES

Simple plunge cut blades

These blades are used for workpieces whose diameter needs to be ground uniformly, but cannot be through-feed ground (component-wise with projection or the like).



Examples:

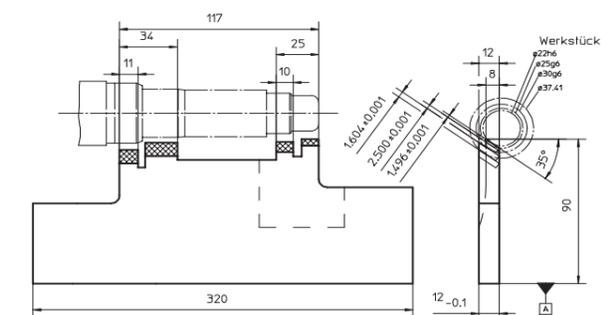
Plunge cut blades (in-feed blades) / Stepped blades

These blades are used for workpieces which need to be ground with a varying diameter.



Design example

Design of a stepped blade





Through-feed blades

Example of a through-feed blade in screw version with clamping plate for customer-exchangeable hard metal.



Carbide inserts with a basic thickness of 2 mm are ground in A-dimension (carbide thickness) in accordance with the workpieces that will be ground. In this example, it is 0.5 mm. Various inserts can be stocked and changed by the customer.



SPECIAL PRODUCTS

... are our challenge

These can be: complex stepped blades with adjustable stops for fixing the workpiece and support plates for positioning the workpiece. Multi-chamber blades for simultaneous grinding of several workpieces: High-precision work rest blades with step tolerances in the μ range.

Corrugated blades

These blades stabilize the blade body with low A-dimensions < 1.0 mm in the grinding process. The regulating wheel must be adjusted accordingly.



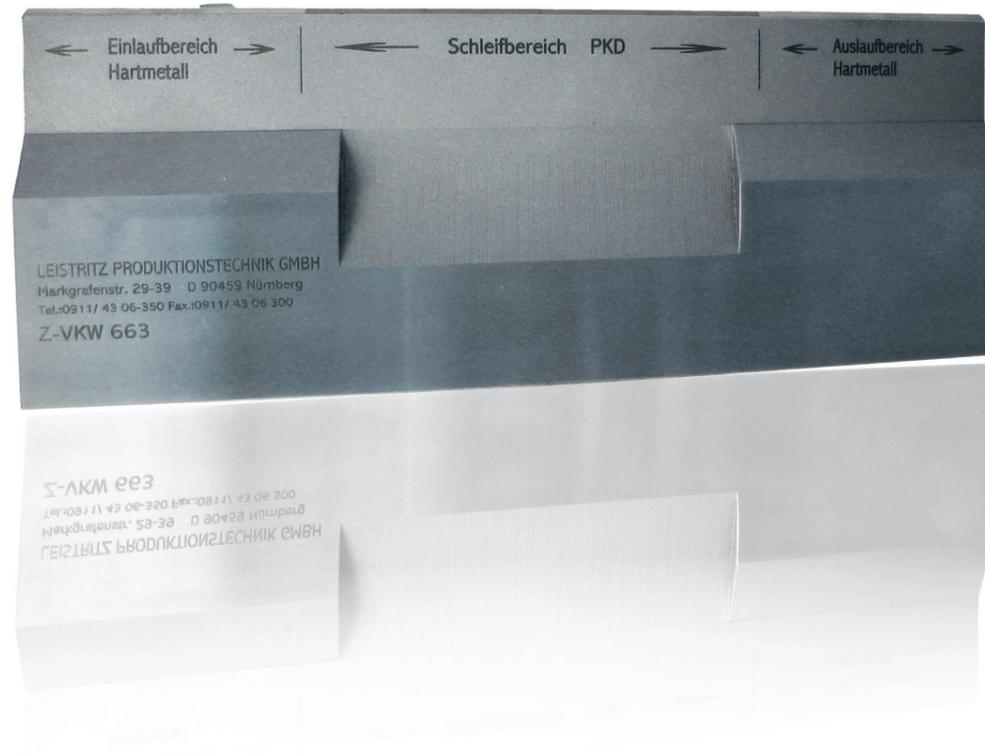
Through-feed blades

Here with A-dimension of 0.3 mm for needle grinding; for workpiece diameters of 0.35 mm.



Special shape

A particular challenge is the work rest blade for barrel-shaped workpieces. This example is used for through-feed grinding with 30° inclination. In order that, during through-feed grinding, the barrel-shaped workpieces can be processed, a large radius must be ground on the work rest blade on both the regulating wheel side and the grinding wheel side. Additionally, in the hard metal, a radius below 30° will be ground.



CERAMIC-TIPPED WORK REST BLADE

Significantly longer tool life and higher workpiece quality!

Our new ceramic-tipped blades offer a promising alternative to conventional blades. Although it is priced higher than carbide, but significantly lower than PCD. To date, there is no other work rest blade manufacturer on the market offering ceramic as a material. This gives you a unique positioning.

The low friction between ceramic and steel enables similarly high-quality surfaces as those known from PCD-tipped blades. Thanks to the continuous development of high-performance ceramics, there are increasing advantages that are also important in the technical field. Various types of ceramics are available to meet the requirements of our customers.

Based on the results of our tests, we can derive some important findings. Our Customers feedback shows that our ceramic blade has achieved particularly good results when machining stainless steel. In general, our ceramic blade is suitable for all materials, although the advantages tend to be more with softer materials.

Depending on the application, the use of our ceramic blade can offer advantages over the carbide work rest blade and represents a more cost-effective alternative to PCD. A well-known reference customer from the automotive industry, for example, has successfully used the work rest blade in the machining of unhardened steel. This underlines the potential of our ceramic-tipped work rest blades.

PCD-TIPPED WORK REST BLADES

Discover the future of the tool with PCD diamond technology!

The PCD material is synthetically manufactured from diamond particles and defines the pinnacle of tool innovation. As one of the hardest known materials, PCD offers unparalleled performance.

Thanks to its outstanding properties, you benefit from many advantages with PCD-tipped blades:

- Experience the lowest friction and lowest wear for long-lasting precision wear for long-lasting precision.
- Achieve surface finishes of the highest quality, that exceed your expectations.

As a premium product, the PCD-tipped blades impress with their superior performance. Thanks to their durability and efficiency, this investment pays for itself surprisingly quickly.

Prepare to take your production to a new level and experience the level and experience the future of tool design!



Grinding stars & abrasive segments

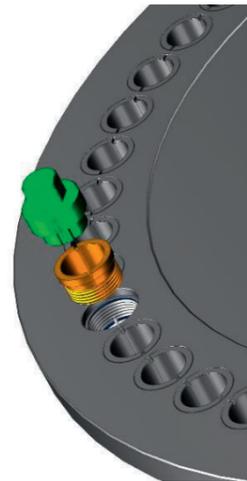
These machine components are used in double-sided surface grinding machines. The star and segment are carbide-tipped for wear protection. They are primarily used in the ball bearing industry.

- No heat input during production
- Perfect flatness thanks to high-precision thread inserts
- Warp-free repair
- Available in all standard dimensions
- Long service life thanks to carbide fasteners



Example: Rolling bearings, 2 million parts, grinding star pitch 45

	Grinding star so far	Grinding star Leistriz
Material	Steel hardened	Solid carbide (inserts)
Acquisition costs	5.000,- Euro	15.000,- Euro
Service life	100.000 Parts	400.000 Parts
Replacement costs	5.000,- Euro	5.500,- Euro
Replacement time	6 Weeks	Tool insert change on site
Costs for two million parts	100.000,- Euro	37.000,- Euro



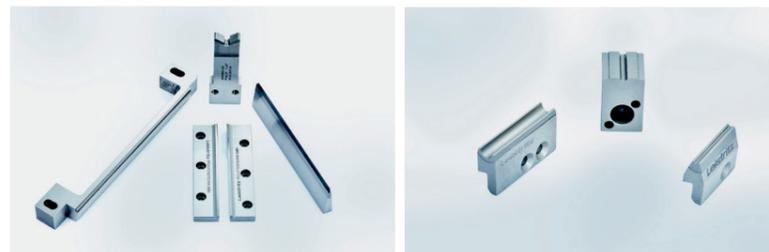
Thread rolling supports

On special thread rolling machines, the material is cold-formed by two forming rollers on the workpieces. As with centerless grinding, a thread rolling support is required in the rolling process as a supporting element for the workpieces.



Special elements

These elements are manufactured individually according to customer requirements: Guide blades, clamping jaws, paper knives, special knives, support shells, machine components.



OUR STRENGTH: PRECISION

High design competence

Most important in the production of work rest blades is undoubtedly the execution or manufacturing drawing. Precision and accuracy are essential to ensure that the manufactured blades meet the specific requirements and standards.

At Leistriz work rest blade center, we understand the importance of this phase and take it extremely seriously. Upon customer request and as needed, we carefully lay out the blades and create the necessary drawings, where we rely on our decades of experience.

In doing so, we consider not only the technical aspects but also the individual requirements and applications of our customers.

Our expertise enables us to offer tailor-made solutions that meet the highest quality standards and fully meet our customers' expectations, individual requirements and areas of application.

OUR PRODUCTS FOR ALL CENTERLESS-GRINDING MACHINES

Leistriz manufactures work rest blades for all centerless grinding machines from, among others:

- | | | | |
|-----------------|-----------------|-----------|--------------|
| ■ Agathon | ■ Junker | ■ Nomoco | ■ Tschudin |
| ■ Cincinnati | ■ König + Bauer | ■ Palmary | ■ Viking |
| ■ ESO | ■ Koyo | ■ Paragon | ■ Wedalco |
| ■ Estrarta | ■ Lidköping | ■ PeTeWe | ■ und andere |
| ■ Ghiringhelli | ■ Mikrosa | ■ Schumag | |
| ■ Hartex | ■ Modler | ■ Seny | |
| ■ Herminghausen | ■ Monza | ■ SLR | |

MANUFACTURING STEPS

Extensive, modern machine park

MILLING

The blade body is milled according to the production drawing: The contour and, if necessary, the recesses in the regulating and grinding wheels, the insert seat for the hard metal, the elongated holes for fixing etc.

BRAZING

Brazing the carbide requires a lot of experience and skilled craftsmanship. It is necessary to reach the right temperature and to braze, wherever possible, without warpage. The challenge: The different expansion coefficients of steel and carbide.

GRINDING

Grinding the blade involves many operations: flat, thickness, base, carbide and step grinding. Repeatedly measuring in between. Checking dimensions and compliance with tolerances during manufacturing.

CONTROL & QA

Dimensional inspection and quality control are carried out with modern measuring machines in an air-conditioned testing room.

SMART OPTIONS

Digitally readable tools

With the Smart feature, Leistriz offers the capability to store and digitally retrieve individual, process-relevant information directly on the tool itself. This is particularly advantageous when it comes to new or partial restocking of blades, as conventional markings or labels often become illegible due to heavy use.

The solution lies in integrating an RFID chip (radio-frequency identification) onto the work rest blade, where all pertinent information is stored. This includes contact details, equipment, part, or machine numbers, setting parameters, service life, and more, readily accessible to the customer.

As a supplier, we can also store part drawings, inspection reports, repair information, and more. Through a shared input and reading software, this information can be accessed and is only accessible to these two parties.



RE-PROCESSING

Work rest blades like new for centerless grinding

Work rest blades are constantly subjected to harsh operating conditions. The combination of high workpiece throughput, pressure during the grinding process, and abrasive components in the grinding emulsion inevitably leads to wear of the blades. Thorough and professional maintenance is therefore essential to ensure optimal grinding results. At Leistriz, we recognize the importance of this measure and have developed special services to meet the needs of our customers.

Our service encompasses three key areas: regrinding, partial replacement or complete replacement of work rest blades.

Regrinding restores the original quality of the blades through precise machining to ensure consistently high performance. Partial or complete replacement, on the other hand, offers the opportunity to replace worn or damaged parts with new ones to maximize the efficiency and longevity of the blades.

Repair is possible for the following types of blades

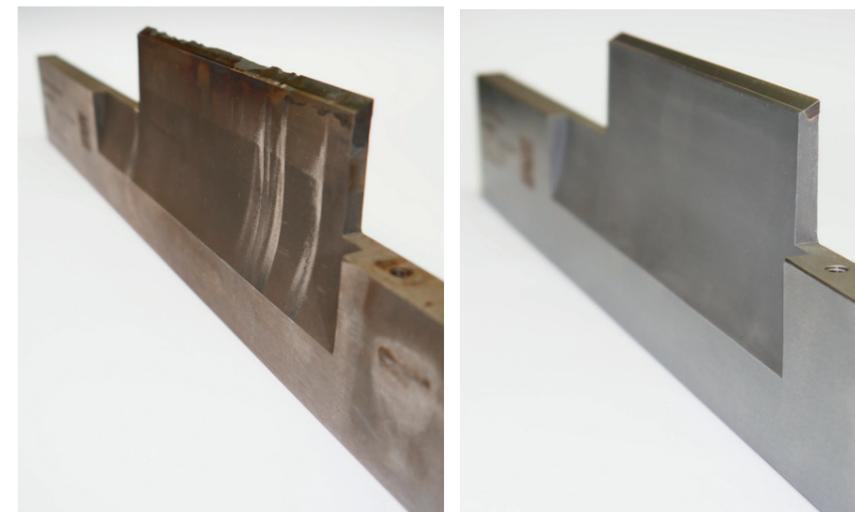
- Through-feed blades
- Prism blades
- Simple plunge cut and step blades

Depending on the blade dimensions, the following repair methods can be applied:

- Brazing
- Bonding

To ensure that you can remain productive at all times, we place great importance on efficient repair processing. Therefore, our average repair time is only **14 days**, allowing you to be fully operational again as quickly as possible.

Carbide-tipped through-feed-blade: previously, after total crash (remaining carbide not worth retaining), and subsequently re-tipped



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