

KRONOS L

Maximum performance for large workpieces



Key data

The KRONOS L has been specially designed for high-precision machining of large, heavy workpieces. This centerless grinding machine combines cost-cutting production advantages with highest grinding quality and impressively short changeover and set-up times.

Schautd Mikrosa GmbH

Schautd Mikrosa GmbH is synonymous worldwide for premium technology in cylindrical, noncircular, and universal grinding between centers, as well as in centerless external cylindrical grinding. Since 2009, the company combines the two long-established brands SCHAUDT and MIKROSA in a modern factory in Leipzig.

Our special strength lies in the high customer-individuality of our machines and the connection of units, automation components and process engineering to a highly productive grinding system.

Here, SCHAUDT is the brand for the automotive industry and its suppliers. It offers sophisticated technological solutions for cylindrical, noncircular and eccentric grinding. Our highly experienced experts also have unparalleled expertise in the high-precision grinding of long and heavy workpieces like rollers and turbine shafts. Within this broad application range, you obtain everything from a single source – application development, technology, assembly, and sales.

MIKROSA sets the standards in centerless external cylindrical grinding of rotationally symmetrical parts. The modular machine design means that you obtain a solution with handling and automation individually tailored to your grinding task. The technology spectrum extends from precision infeed grinding in many different variations to super productive throughfeed grinding. This allows you to machine a very large variety of workpieces, from small jet needles through to large shafts.

Schautd Mikrosa GmbH is part of the UNITED GRINDING group, one of the leading suppliers of machines, applications, and services for hard-fine machining worldwide. The group comprises eight strong brands with own subsidiaries and sales partners around the world to be a strong partner for our customers.

KRONOS L

Machining of large, heavy workpieces · Highest efficiency · Flexible applications · Cost-effective automation · Special software for centerless grinding

Features

Dimension

- Workpiece diameter 5...250 mm
- Max. workpiece diameter for infeed grinding 655 mm
- Grinding wheel \varnothing 660 x 660 x 304,8 mm / regulating wheel \varnothing 400 x 660 x 203,2 mm

Hardware

- Granitan® machine base
- 2-slide system
- Grinding and regulating wheel width up to 660 mm
- Drive power up to 95 kW
- Motorized opening of the grinding wheel guard
- Modular dressing system for stationary and rotating dressing tools, optionally also with acoustic gap control



Software

- Service-friendly SIEMENS SINUMERIK 840D sl control system
- MIKROSA software with special operator interface for centerless grinding
- Optional additional software modules such as HEUREEKA for optimizing the grinding zone geometry
- Standardized interfaces for loader and peripheral devices



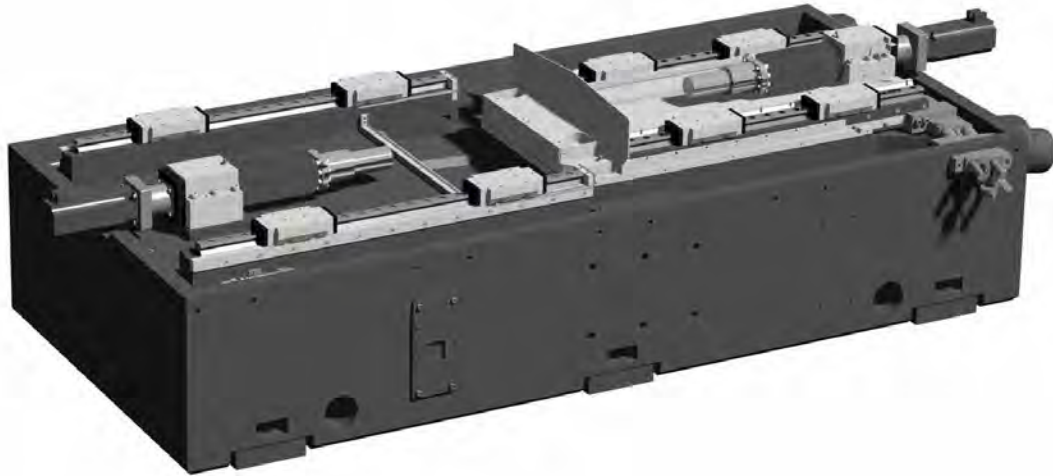
The KRONOS L centerless external cylindrical grinding machine is designed for infeed and throughfeed grinding in the diameter range of 5 to 250 mm and with a maximum infeed width up to 655 mm. The basis of the machine is a Granitan® bed, which guarantees the KRONOS L optimum damping characteristics and excellent thermal stability.

The machine's coolant discharge has also been considerably improved, in order to guarantee optimum chip removal. Depending on the grinding task the machine can be designed with bearing systems for conventional grinding and CBN high-speed grinding or optionally with hydrodynamic bearings for grinding and regulating wheel side.

The KRONOS L has a fixed grinding zone. This enables easy automation of the machine - a clear advantage particularly when handling long and heavy parts.

The machine has a modular dressing system for stationary and rotating dressing tools. The machine can also be optionally equipped with acoustic gap control for optimized dressing. An in-house MIKROSA software program for centerless grinding processes is used for dressing the regulating wheel geometry during infeed and particularly during throughfeed grinding. This significantly reduces machine setting times and guarantees an exactly reproducible regulating wheel geometry.

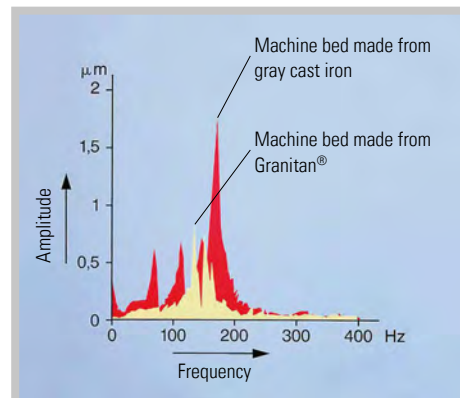
Granitan[®] machine base



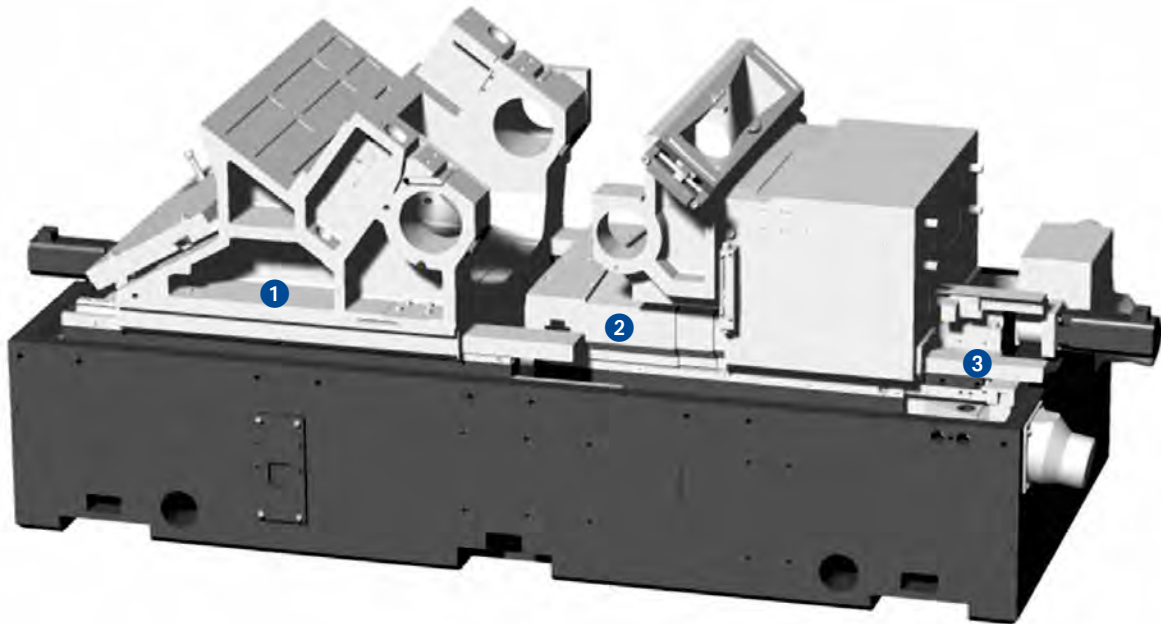
Your advantages

- Vibration-damping
- Thermally stable
- High dimensional stability
- Optimized coolant supply

The KRONOS L has a Granitan[®] machine bed. This material possesses excellent damping characteristics and high thermal stability. This is a big advantage when machining workpieces with high quality requirements. Temporary temperature fluctuations are extensively compensated and a high tolerance holding capacity can be guaranteed throughout the day. Also, the machine's coolant discharge has been considerably improved, in order to guarantee optimum chip removal.



2-slide system



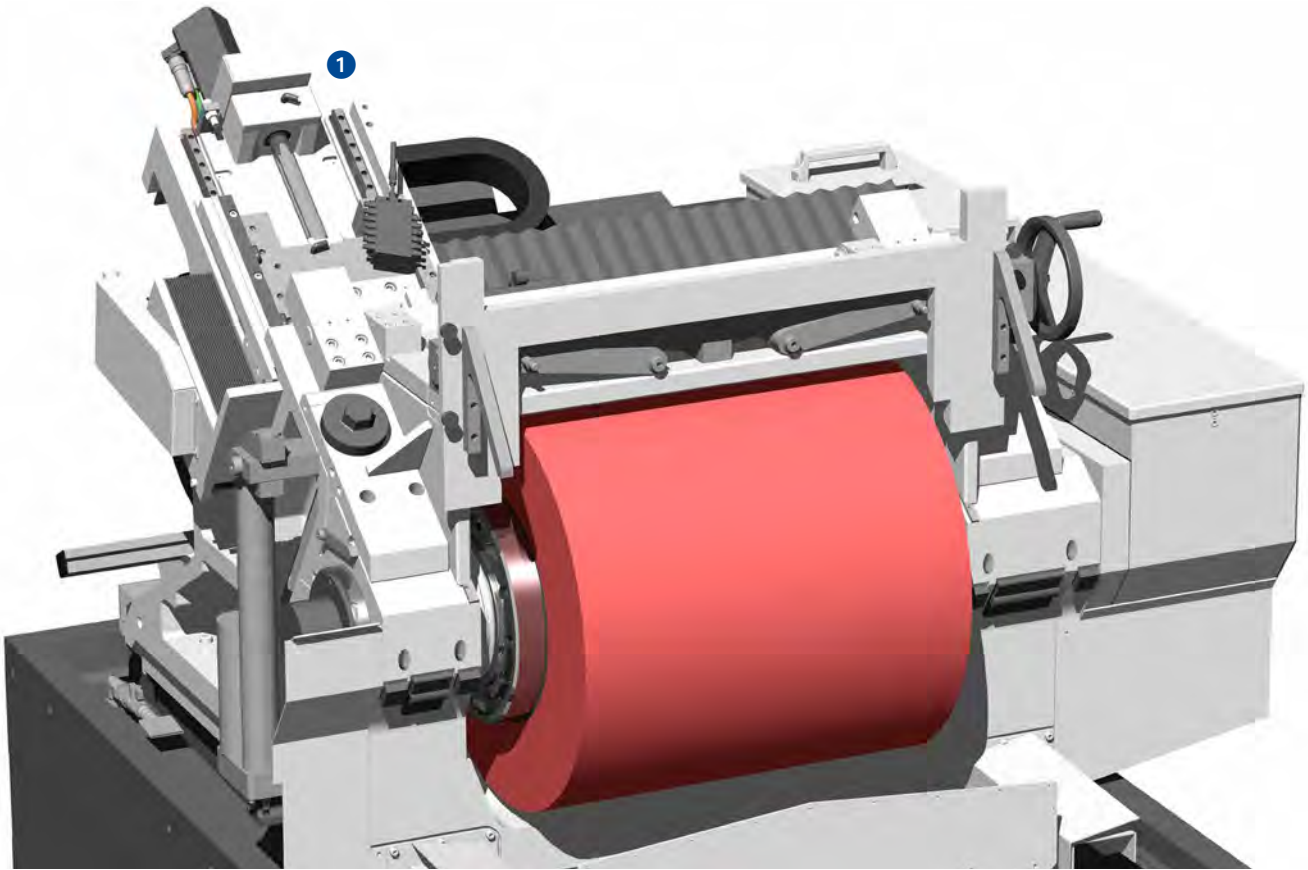
Your advantages

- Fixed grinding zone for easy automation
- Even pre-tensioning over the complete axis traversing range
- Glass scales as linear length measuring system

The KRONOS L has a fixed grinding zone. This means that the workpiece support is fixed in the center of the machine and all infeed and compensation movements are executed with the help of the grinding slide on the grinding wheel side (X1-axis) and the regulating wheel slide on the regulating wheel side (X4-axis). This enables easy automation of the machine - a clear advantage particularly when handling long and heavy parts.

The KRONOS L has 6 vibration-damping leveling elements for adjusting the machine. Pre-tensioned recirculating roller guides are used as guides. A digital servo motor and precision re-circulating ball screws are used for the axis drive. The infeed steps for the X1- and X4-axis are 0.1 μm . In the standard version, the axes are equipped with a glass scale as linear measuring system. The swivel angle setting for the B1-axis can optionally be realized as an NC axis.

Dressing



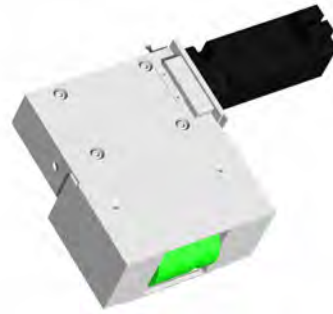
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3



4



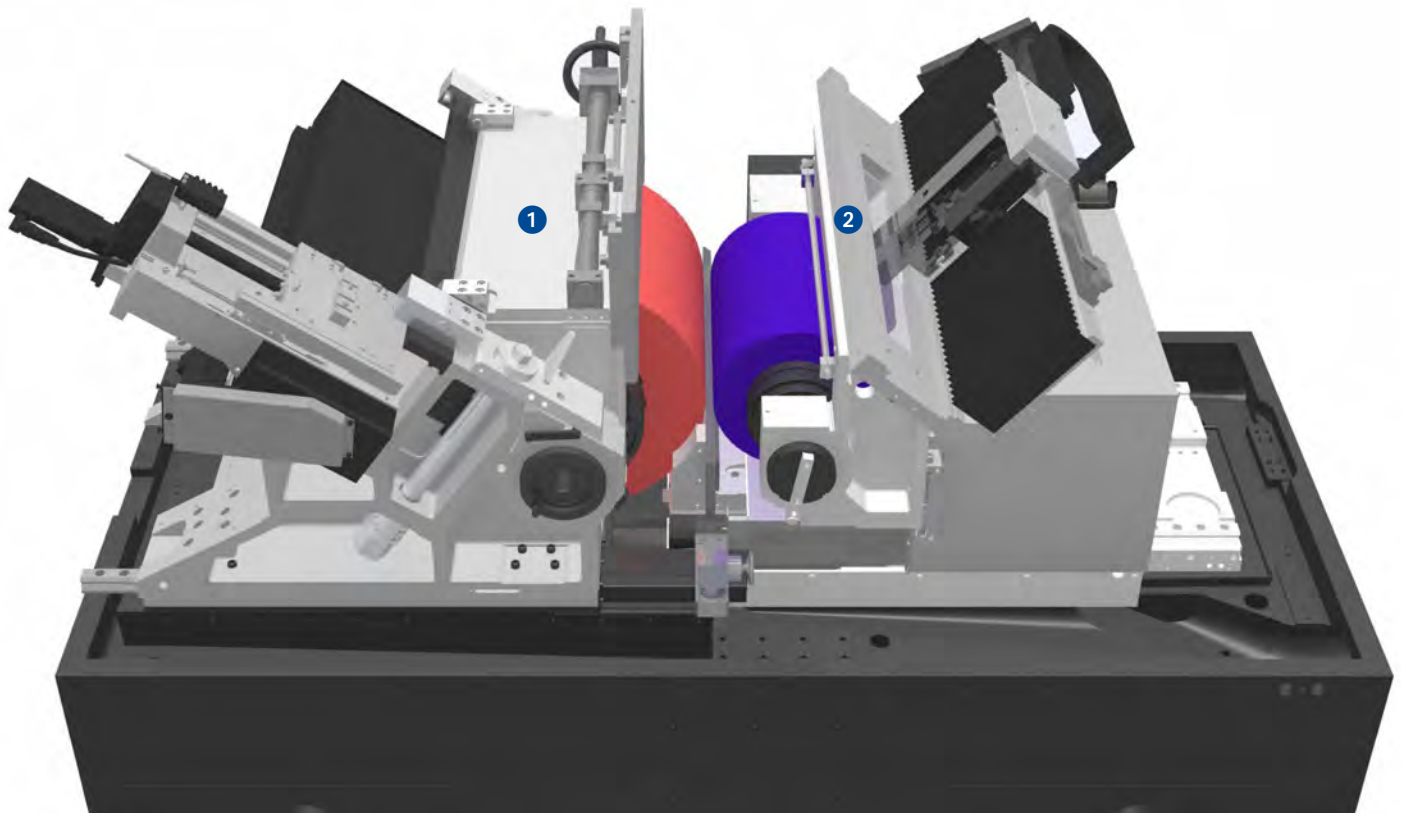
Your advantages

- Modular dressing system
- Extremely high dressing and profile accuracy
- Acoustic gap control

In addition to stationary dressing tools such as diamond blades and single-point diamonds, rotating dressing tools such as diamond dressing discs or diamond profile rolls can also be used, depending on the grinding task.

The dressing arbor supported on both sides allows an exceptionally high profile accuracy during dressing with rotating tools. The dressing times for grinding and regulating wheel can be reduced to a minimum through the optional use of acoustic gap control for dressing detection.

Grinding and regulating wheel



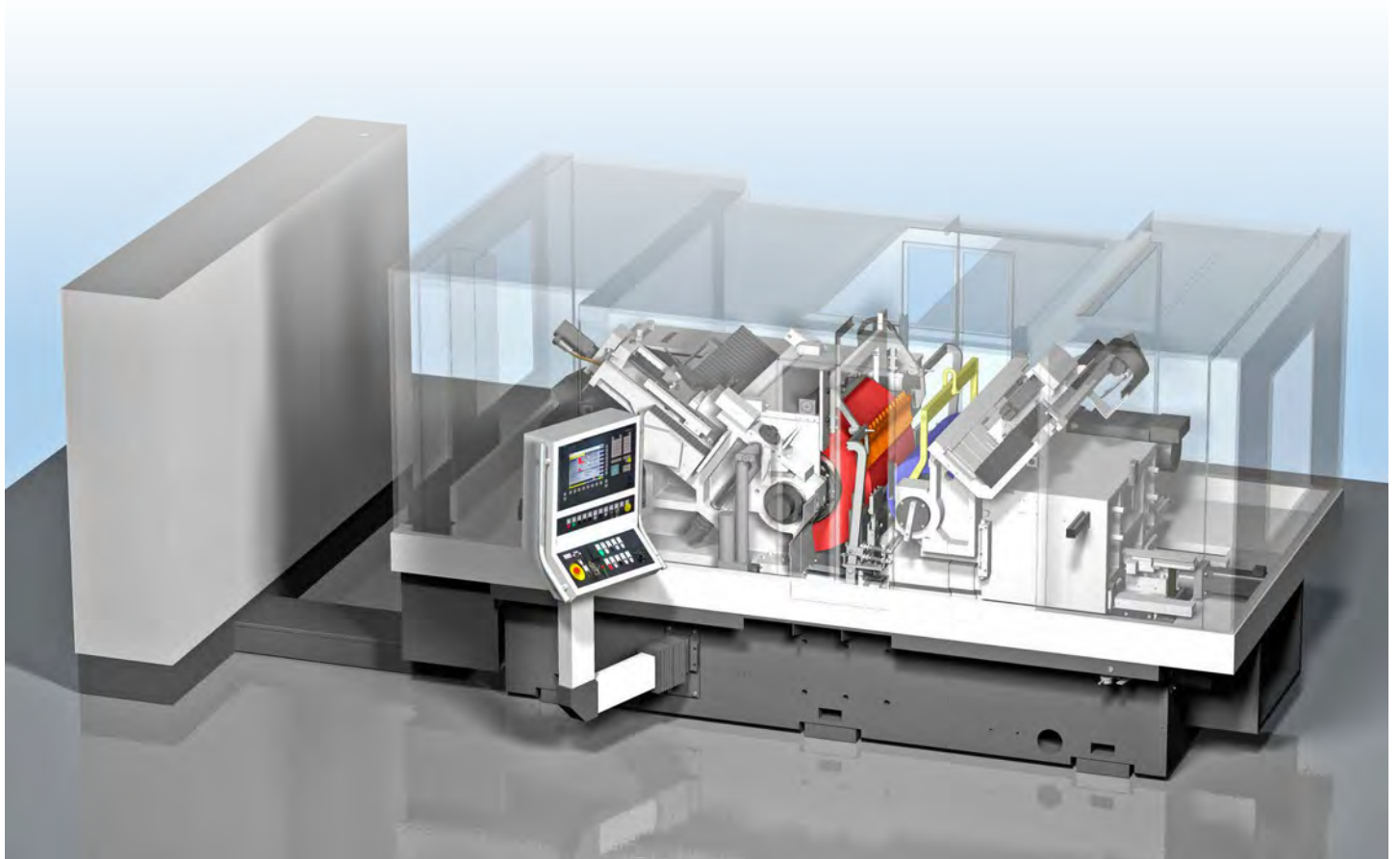
Your advantages

- Extremely stable, maintenance-free grinding and regulating spindles on double-sided bearings
- Grinding and regulating wheel width up to 660 mm
- Short regulating wheel dressing times thanks to high dressing speed

The grinding spindle, mounted on roller bearings and with maintenance-free permanent grease lubrication, is designed for the use of conventional grinding wheels up to 63 m/s. Wheels with a width of 660 mm and a bore diameter of 304.8 mm can be used. The use of hybrid bearings is optionally available. These allow peripheral speeds of up to 120 m/s when grinding with superabrasive cutting materials such as CBN or diamond. The grinding spindle is driven by a torsion bar free of lateral forces.

The regulating spindle is designed as a double-sided bearing. High-precision, pre-tensioned spindle bearings are used. The regulating spindle is suitable for 660 mm wide regulating wheels. The drive is provided by a digital servo motor and transmission. The operating speed range of 5...300 rpm can be continuously adjusted. A speed of up to 700 rpm can be set for dressing the regulating wheel. The adjustable regulating wheel inclination of $+7^{\circ}/-3^{\circ}$ enables throughfeed grinding in both directions.

Technology spectrum



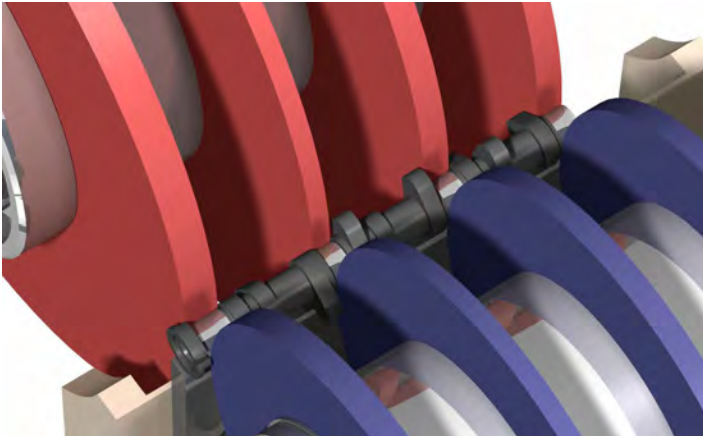
Centerless external cylindrical grinding is a superproductive method for the series and mass production of cylindrical, conical, and crowned workpieces. A distinction is made between two basic methods – infeed grinding and throughfeed grinding.

Throughfeed grinding is used for machining non-profiled workpieces – such as cylindrical and tapered rolls, rings, bars, and hydraulic slides. The infeed grinding method is used to machine workpieces with lowered or profiled lateral surfaces – such as jet needles, valves, cross pins, gear and electric motor shafts.

The workpiece is not clamped by means of friction locking. It is placed in the so-called grinding zone between grinding wheel, regulating wheel and workpiece fixture. These components support the workpiece stably over its entire length or a considerable portion of it, and absorb the machining forces that arise. As a result even slender workpieces can be machined with high removal rates and very good quality.

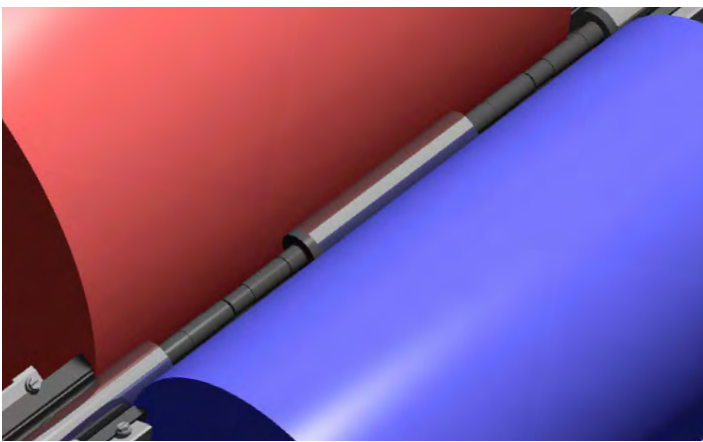
Available technologies

- Infeed grinding – straight
- Infeed grinding in single or multiple production
- Throughfeed grinding



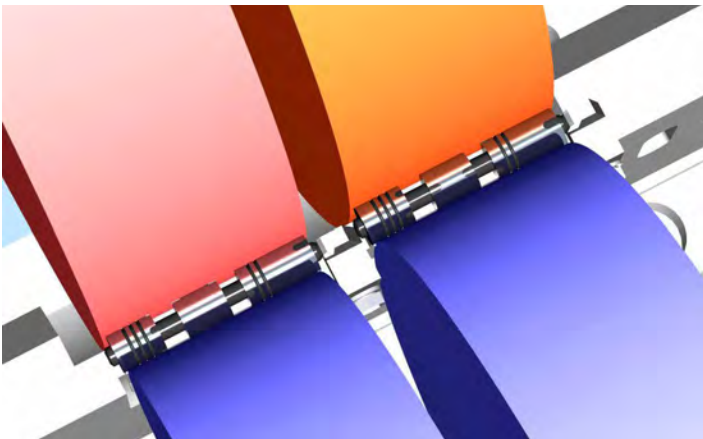
Straight infeed grinding - single production

- Highest workpiece precision with a maximum length-to-diameter ratio



Throughfeed grinding

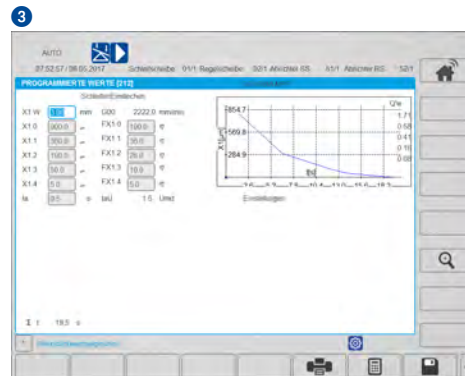
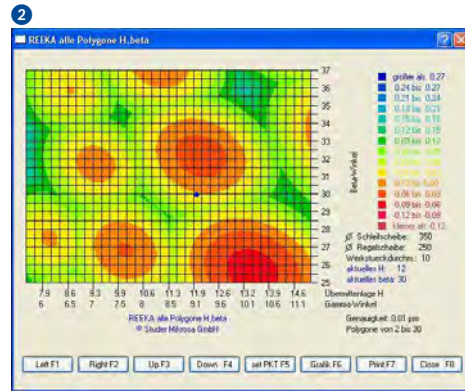
- Superproductive grinding method for the mass production of small precision workpieces



Multiple production

- Straight infeed grinding in multiple production

Control system and software



Your advantages

- Application-specific software
- Special operator interface for centerless grinding
- Easy to understand pictograms

A user-friendly control system is also important for efficiency. The KRONOS L comes with a SIEMENS SINUMERIK 840D sl control system and Simodrive drive technology as standard. These digital drives offer the highest precision and fast travel speeds. Operation, set-up, changeover, dressing, and the programming of complex grinding tasks are easy to learn.

MIKROSA has integrated a special operator interface for centerless grinding into the SIEMENS interface. The added symbols and icons are easy to understand and make programming even easier.

- Application-specific software to support every grinding task
- Integrated comprehensive expert system to provide technological support for throughfeed and infeed grinding
- Optional software modules such as HEUREKA for grinding technology optimization
- Extensive operating and error messages for operator guidance and error diagnosis
- Systematic use of Safety Integrated
- Machine and personal protection in accordance with EU directives
- Observance of EMC and low voltage requirements
- Reduction of set-up and changeover times through the use of auxiliary programs and semi-automated processes
- Integrated maintenance menu
- Dynamic status monitoring of all NC-controlled axes

Customer Care

MIKROSA centerless grinding machines should fulfill the customer's requirements for as long as possible, work cost-effectively, function reliably and be available at all times. From "start up" through to "retrofit" – our Customer Care is there for you throughout the working life of your machine. 12 professional helplines and more than 60 service technicians are available in your area, wherever you are in the world:

- We will provide you with fast, uncomplicated support.
- We will help to increase your productivity.
- We work professionally, reliably and transparently.
- We will provide a professional solution to your problems.



Start up

Commissioning
Warranty extension



Qualification

Training
Production support



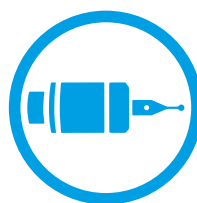
Prevention

Maintenance
Inspection



Service

Customer service
Customer consultation
HelpLine
Remote service



Material

Spare parts
Replacement parts
Accessories



Rebuild

Machine overhaul
Assembly overhaul



Retrofit

Modifications
Retrofits

Technical data

KRONOS L 660

Grinding range

Workpiece diameter	mm	5...250
Workpiece length, max. for infeed grinding	mm	655

Grinding wheel

Diameter, max.	mm	660
Width, max.	mm	660
Bore	mm	304.8
Peripheral speed	m/s	63
Peripheral speed CBN (option)	m/s	90/120
Drive power	kW	60/95

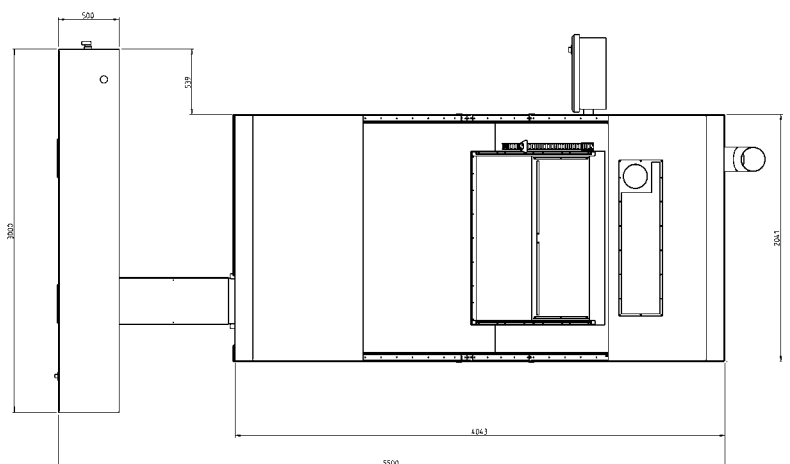
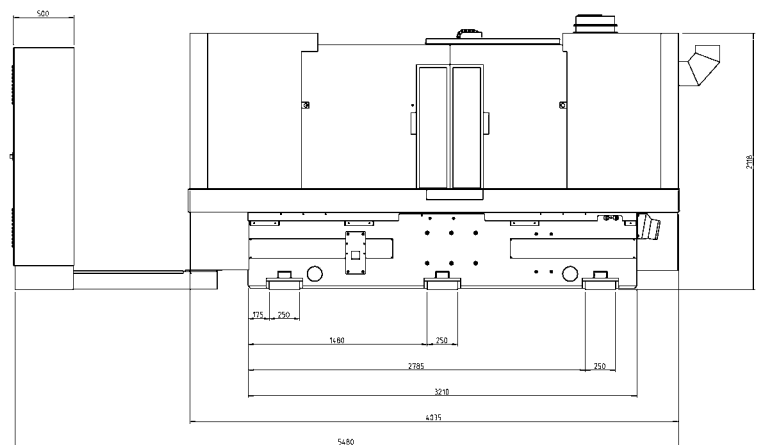
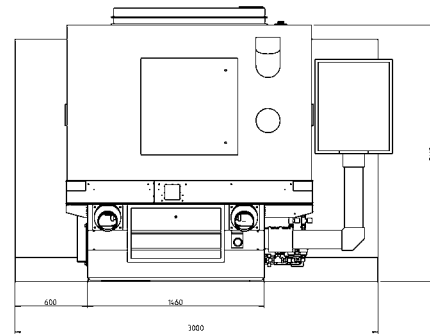
Regulating wheel

Diameter, max.	mm	400
Width, max.	mm	660
Bore	mm	203.2
Rpm range, infinitely variable	rpm	5...300
Dressing speed	rpm	700
Drive power	kW	12

Dimensions

Overall footprint (incl. control cabinet)	mm	6,869 x 3,572
Height, max.	mm	2,320

Machine weight	t	18.5
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Schautd Mikrosa GmbH
Saarländer Straße 25
04179 Leipzig
Germany
Tel. +49 341 4971 0
Fax +49 341 4971 500
sales@schautmikrosa.com
www.mikrosa.com

