

GRINDSTAR

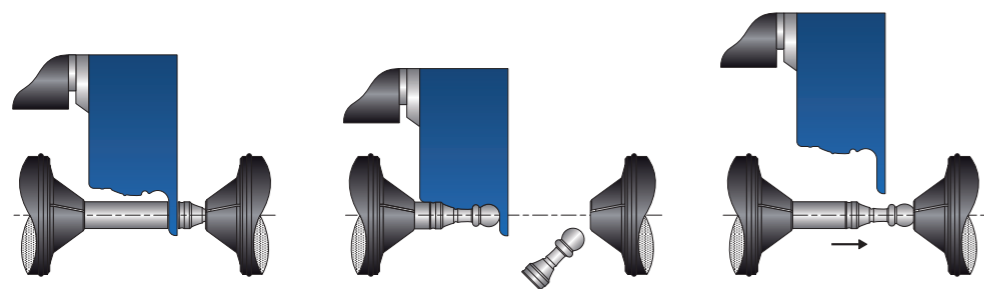
REPLACE TURNING WITH GRINDING



GREATER EFFICIENCY, SPEED AND ACCURACY



The GRINDSTAR machine concept replaces turning through the use of dressing-free high-speed plunge-cut grinding. This can open up enormous potential for savings, in particular when working with large production volumes.

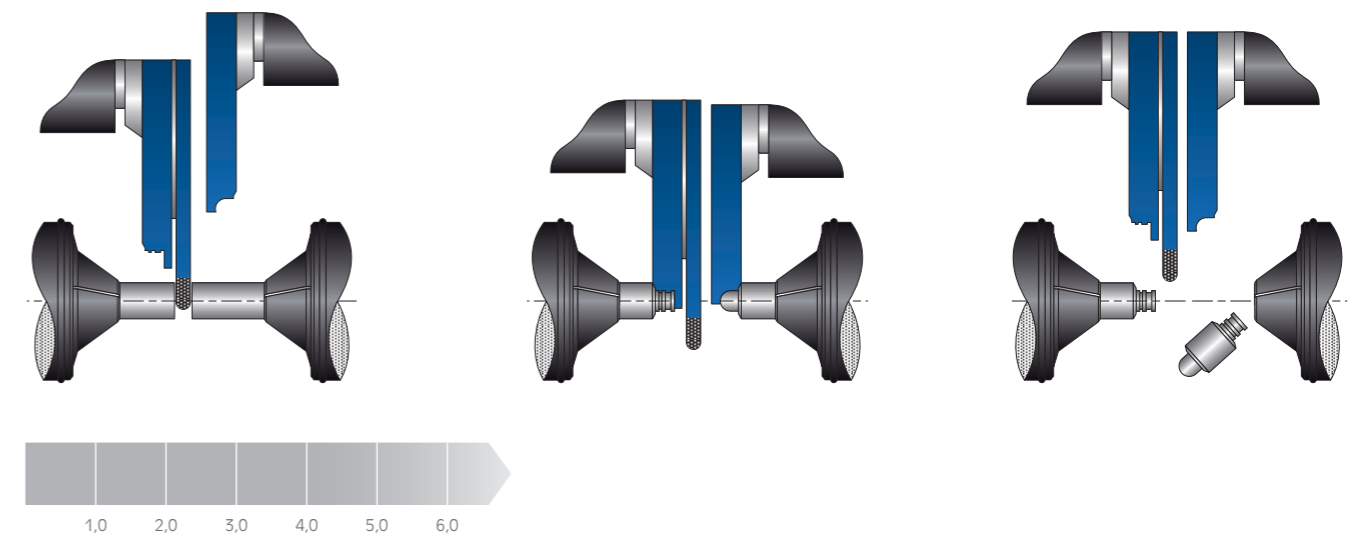


HIGH-SPEED PLUNGE-CUT GRINDING

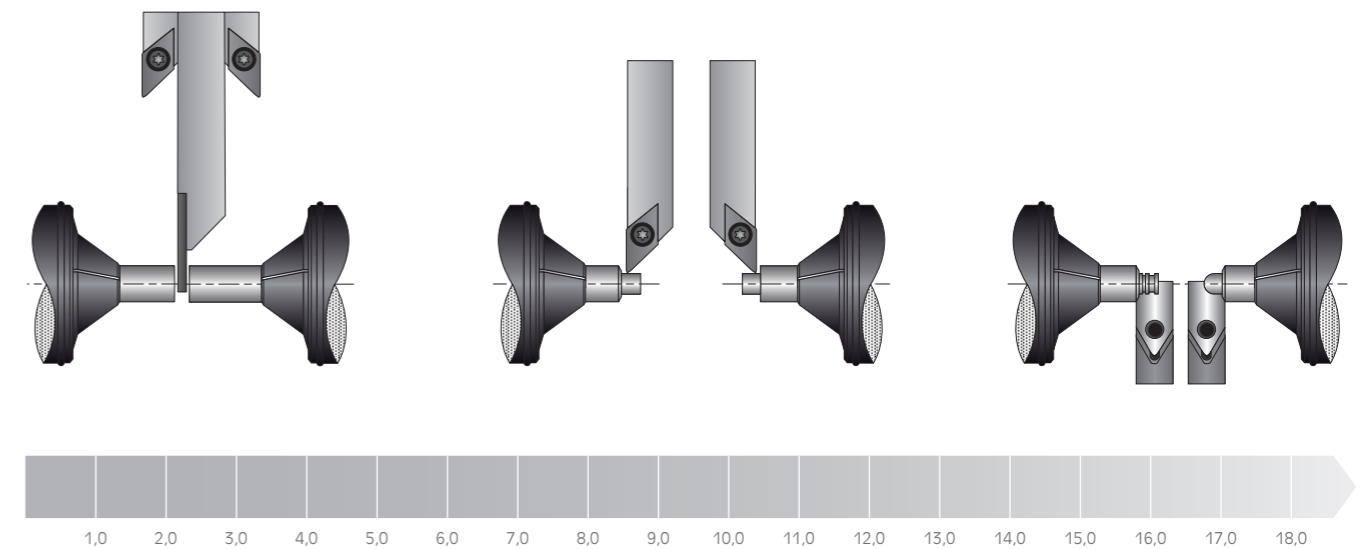
Minimal grinding times can be achieved with GRINDSTAR. This new kind of grinding method can be used both with CBN and diamond as an abrasive. Especially when dealing with large production volumes, this opens up scope for enormous savings. The machine is fitted with innovative coolant technology which helps to extend tool life. Machine availability is more than 96 %. Two different grinding methods are used in the machine: Firstly plunge-cut grinding/profile grinding, and secondly cut-off grinding. The essential synergy effect

is achieved by combining the two methods in a single clamping set-up. It is also possible to collate similar parts, known as part families, to allow economical grinding to be achieved when working with smaller batch sizes.

GRINDING



TURNING



UNIQUE ECONOMY



HIGHLIGHTS

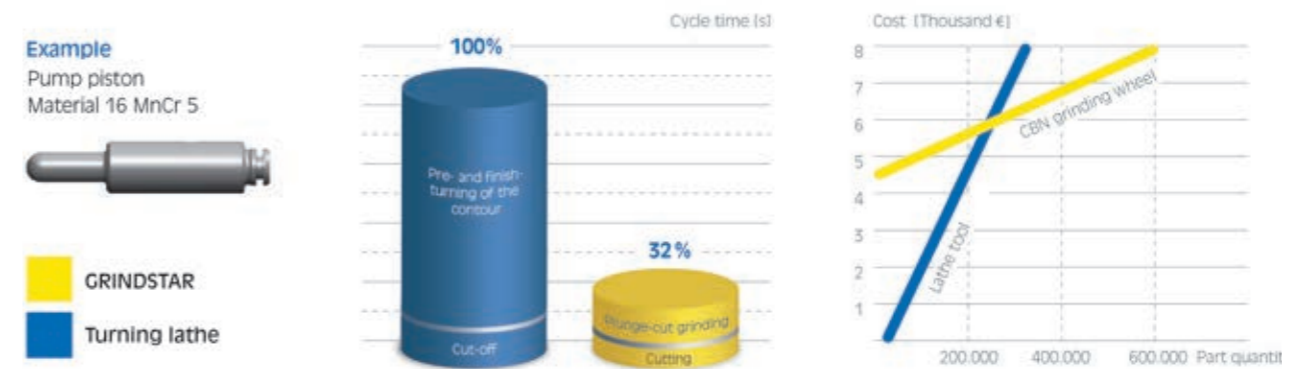
- Minimal piece costs due to:
 - Shorter grinding times through plunge cut grinding of the entire contour
 - Long grinding wheel service life
 - High process reliability
 - Simultaneous grinding of the front and back
 - Reduced downtimes
- Customer-specific process and technology configuration
- Grinding of difficult-to-machine and hardened materials possible
- No chip removal problems, as small chips are transported away by the cooling medium
- Machine availability greater than 96 %
- Low-manned production and cost benefits due to grinding directly from bar stock
- No burr formation

GREATER QUALITY AND MACHINE AVAILABILITY

Using a profiled grinding wheel permits plunge-cut grinding of the entire workpiece contour within an extremely short processing period. In terms of quality, finished workpieces demonstrate substantially greater dimensional stability compared to conventional turning methods.

ONE MACHINE TO REPLACE MANY INDIVIDUAL STEPS

Complete grinding in a single machine significantly reduces process risks and unproductive time. Manufactured parts are up to 100% guaranteed to be free of burrs. Convex or level face ends can also be produced. And even difficult-to-machine materials impossible to machine using a lathe can also be ground. Soft and hard grinding are also possible.



Economy comparison: Grinding - Turning

	Lathe	GRINDSTAR
Energy costs	100 %	100 %
Investment costs	100 %	80 %
Personnel costs	100 %	50 %
Space requirements	100 %	40 %
Piece costs	100 %	75 %



The costs per produced workpiece are up to 25% lower with GRINDSTAR.



EQUIPMENT AND OPTIONS

SIMULTANEOUSLY SWITCHED WORKPIECE SPINDLES

The two synchronized workpiece spindles ensure optimum workpiece transfer for profile grinding and cutting off. Their speed can be steplessly adjusted depending on the application from 1 - 6,000 rpm. A hydraulically actuated collet chuck provides impressive ultra-precise concentricity.



STEADIES FOR GREATER GRINDING PRECISION

The two steadies arranged right and left ensure reliable support.



AUTOMATIC GRINDING WHEEL BALANCING SYSTEM

To ensure optimum grinding results, the grinding wheels are balanced using a balancing system integrated in the grinding spindle.



TORSION-RESISTANT MACHINE STAND

The machine base has a torsion-resistant, low-tension design which ensures a high level of rigidity for the grinding process. The inclined bed ensures the optimum discharge of chips and minimal tension due to ultra-low thermal expansion.

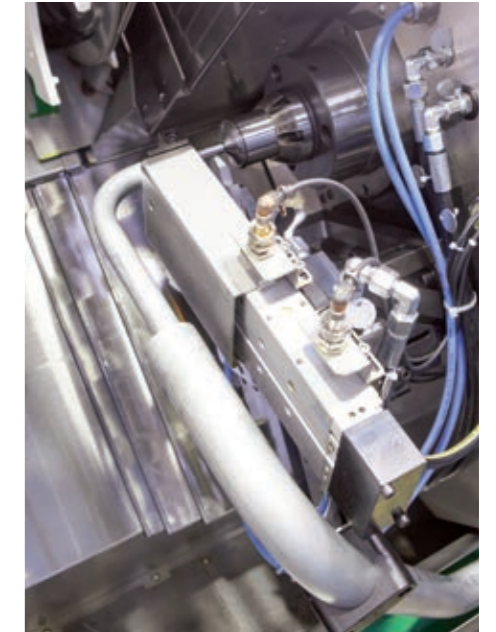


EFFICIENT PUMP UNITS

The two highly efficient pump units cool the workpiece during the grinding process and flush the grinding wheel free of chips. Frequency converters are optionally available for energy optimization.

METICULOUSLY DESIGNED MATERIAL AND WORKPIECE HANDLING

The bar feeder – with a capacity of up to 4 meters in the standard version and optionally up to 6 meters – takes care of the storage and infeed of bar stock. The bar feeder also removes bar material remnants. A pneumatically controlled pressure valve is used for reliable monitoring of the workpiece end position. It is integrated in the right-hand secondary spindle. Automated removal of finish ground workpieces from the machine is performed using a part catcher and conveyor belt.



EASY-TO-PROGRAM CONTROL SYSTEM

The machine is equipped with CNC path control. Its modular hardware and software makes programming tangibly simpler by simulating the familiar operation of a lathe. This ensures efficient and flexible application while cutting down on time required for familiarization.



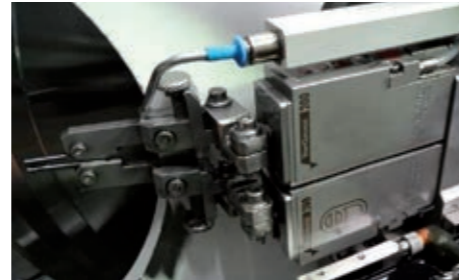
VARIABILITY OF ABRASIVE

Depending on the application, galvanically bonded CBN or diamond is used as an abrasive. Once the grinding wheels come to the end of their long service life, the steel base body can be recoated.



SPECIFIC MEASUREMENT SYSTEMS

The measurement systems are also individually adjusted to the various workpieces and customer specifications. The measurement methods used allow captured measured values to be evaluated and used for measurement correction in line with the prepared measurement strategy.



SAFETY THROUGH FULL PROTECTIVE COVER

The full protective cover ensures complete encapsulation of the work area and complies with general safety regulations. A pressure relief valve is integrated in the cover.



FIRE PROTECTION AND LTA AIR FILTER

In case of an explosion, the machine interior is automatically hermetically sealed, suffocating a fire before it has a chance to spread. If required, extinguishers (CO₂ or water mist systems) and exhaust air purification systems can be additionally installed. A competent partner for fire protection and filtration solutions is LTA Lufttechnik GmbH, which also belongs to the JUNKER Group and which researches, develops and produces filtration systems for industrial air purification.



FIELDS OF COMPETENCE

TECHNOLOGY CENTERS

The JUNKER Technology Centers in Nordrach, Germany and in Holice in the Czech Republic offer a wide selection of grinding machines for demonstrations and customer-specific grinding tests. These facilities give potential buyers and customers the chance to be impressed by the technical and economic performance of JUNKER and ZEMA grinding machines and test them on their own workpieces.

SERVICE

The company group's growing sales and servicing network ensures satisfied customers the world over. JUNKER Premium Service acts swiftly and with outstanding expertise wherever its customers are around the globe. Available round the clock, this service provides the assurance of planning security for customers: The highly qualified team will find the right solution no matter what the problem.

ENERGY EFFICIENCY

A key indicator for the efficiency of a machine tool is the amount of energy required for a good part. This value is continuously falling in grinding machines from JUNKER, as ever more grinding steps are possible in a single machine, downtimes are reducing and precision continues to increase. Within the framework of energy management, potential for savings is continuously recognized and utilized. Examples include frequency-regulated components, recovered braking energy or the optimized sealing air requirement of self-developed grinding spindles.

PRODUCTION LINES

JUNKER can offer comprehensive references for the design and implementation of production lines tailored perfectly to customer requirements. As general contractor, JUNKER attaches enormous importance to standardized interfaces, for instance to workpiece transport, coolant systems or measurement devices. This enhances efficiency and ensures the long-term interaction of all plant components.

NON-STANDARD SOLUTIONS

A new grinding technology challenge for JUNKER? "Tell us what your grinding assignment is and we will supply the perfect machine." The engineers and technicians of the JUNKER team are able to draw on an enormous fund of technological expertise to put together bespoke solutions to address every conceivable application. Top priority: Increasing the quality of workpieces, reducing cycle times.

TECHNICAL DATA

GRINDSTAR	
Grinding spindle	2 x 30 kW
Grinding wheel diameter	520 mm
Grinding wheel width	max. 50 mm
Cutting speed max.	170 m/s
Abrasive	CBN / diamond
Workpiece spindle	7,5 kW / 1-6.000 U/min
Secondary spindle	7,5 kW / 1-6.000 U/min
Workpiece clamping	Hydraulic
Cooling lubricant	Standard grinding oil
Achievable accuracy levels	IT 6 / Cmk > 2
Grinding length	max. 400 mm (100 mm for complete grinding)
Bar capacity	2 - 20 mm (special collet chuck 2 -40 mm)
Axes: X1, Z1, X2, Z2	CNC
Max. feed rate	X = 18 m/min; Z = 36 m/min
Connected load	75 kVA
Machine dimension	2400 x 1800 x 2100 mm
Weight	ca. 4.500 kg

MATERIAL	DIAMOND	CBN
Carbide/carbide-steel alloy	•	
Construction steel/case-hardened steel/heat-treated steel		•
High-speed steel		•
Ball bearing steel		•
Hot and cold work steel		•
High-alloy steel		•
Special alloys (e.g. Hastelloy, Inconel, Nimonic)		•
Cast iron	•	•
Wear-resistant build-up welds	•	•
Ceramic oxide and ceramic materials	•	
Curable plastics, fiberglass reinforced plastics	•	

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