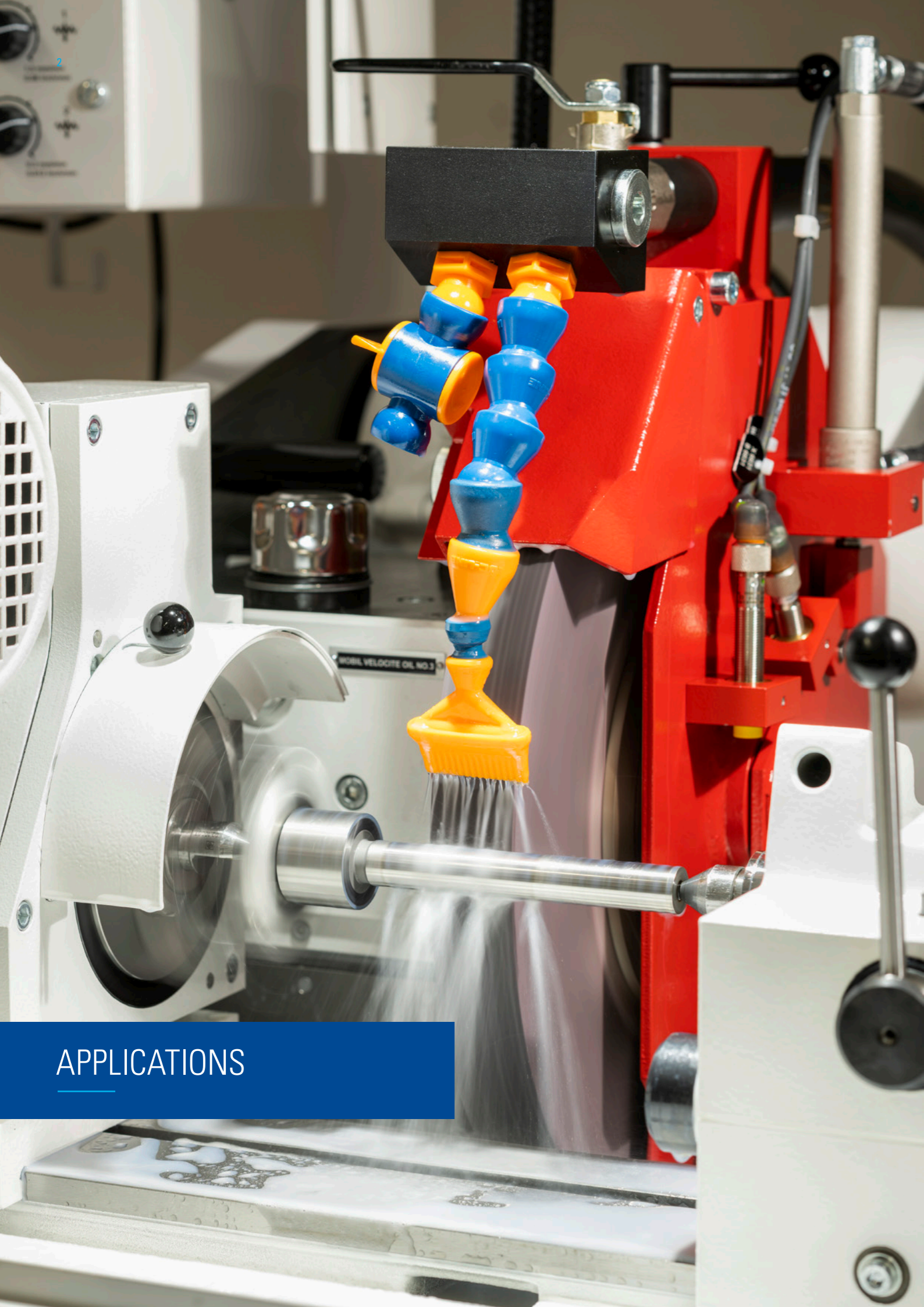


S20

CONVENTIONAL UNIVERSAL CYLINDRICAL
GRINDING MACHINE



 **STUDER**



STUDER S20 IN USE

The S20 is designed for grinding workpieces in single-part and small-batch production. It is suitable for use in any industry where small precision parts are made. This simple and cost-effective machine has a proven SPC control system. It is very easy to operate, and can be reset in next to no time. The tried and tested design allows the specialist to fully concentrate on the grinding process.

APPLICATIONS



S20

DIMENSIONS

- Distance between centers 450/650 mm (15.7"/25.6")
- Center height 100 mm (3.94")
- Max. workpiece weight 20 kg (44 lbs)

FEATURES

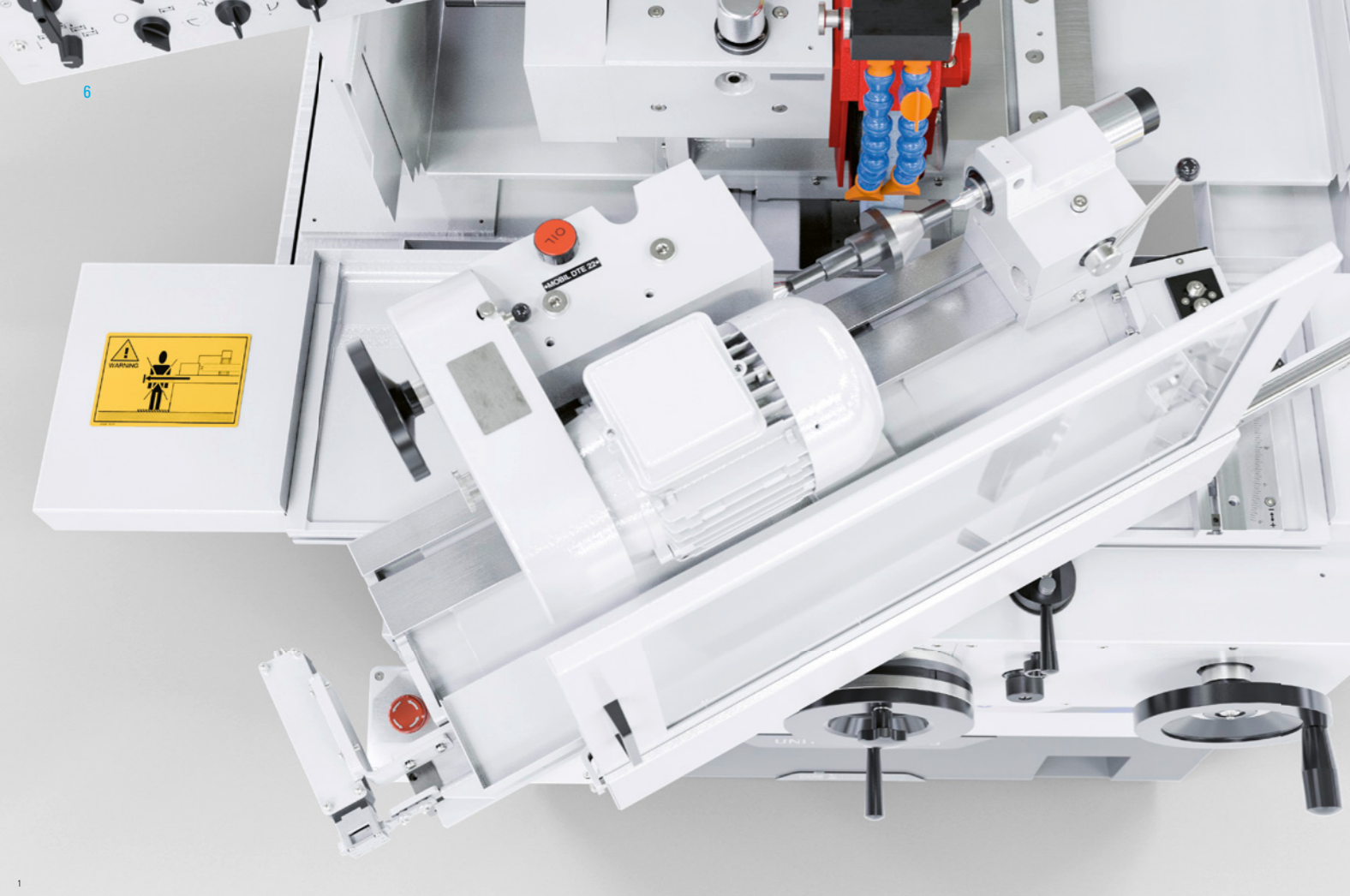
- Cross slide with wheelhead for external grinding, with grinding wheel on right and mounting surface for the internal grinding attachment (option)
- Wheelhead with manual swiveling to 0°, 15°, 30°
- Table with swiveling range of:
 - up to 30° for 400 mm (15.7") distance between centers
 - up to 15° for 650 mm (25.6") distance between centers
- Workhead with hydrodynamic bearing for grinding between fixed centers or live spindle grinding
- Tailstock with adjustable center pressure and fine adjustment for quick and easy cylindricity correction
- Control cabinet permanently connected to the machine. Can be expanded for measuring system and contact sensors.
- Automatic grinding cycles for plunge and traverse grinding
- Automatic grinding cycle with automatic switch-off function
 - Rapid infeed
 - Grinding feed
 - Spark-out
- Rapid retraction of the feed handwheel to the set grinding allowance
- Plunge and traverse grinding with or without rapid infeed
- Compact design
- Wide range of accessories

“The compact for small precision components.”

YOUR BENEFIT

- Pre-installed automated grinding cycles for efficient grinding
- Electromechanically controlled
- Swiveling range of machine table up to 30° for high-precision taper grinding
- Contact sensors for automatic switchover from rapid approach to grinding feed
- Compact machine with a small footprint
- Short setup time
- Exceptional value for money





LONGITUDINAL AND CROSS SLIDES

- Vibration-damping
- Swiveling range of up to 30°

The slides rest completely on the guideways of the machine base through the entire traversing range. You benefit from excellent straightness of <math>< 0.0015 \text{ mm (0.000,060")}</math> over a length of 380 mm (14.9").

The cross slide with pretensioned needle guides features exceptional repeatability. The cross slide infeed is infinitely variable.

The longitudinal slide features a high-precision, ground V and flat guideway that is optimal for the distribution of forces. The table's large swiveling range is a particular advantage. It is 30° for a distance between centers of 400 mm (15.7") and 15° for a distance between centers of 650 mm (25.6"). Fine adjustment and sine stop for the longitudinal slide to enable precise taper adjustment are optionally available.



- 1 Longitudinal slide
- 2 Fine adjustment and sine stop
- 3 Handwheel and reversing

THE MACHINE BASE

The heavily ribbed machine base made of a special casting has a substructure of hydraulic concrete. Damping elements between the machine base and substructure ensure good absorption of external vibrations.

- Manually/automatically switchable longitudinal feed
- Proven mechanical system

WHEELHEAD AXIS X

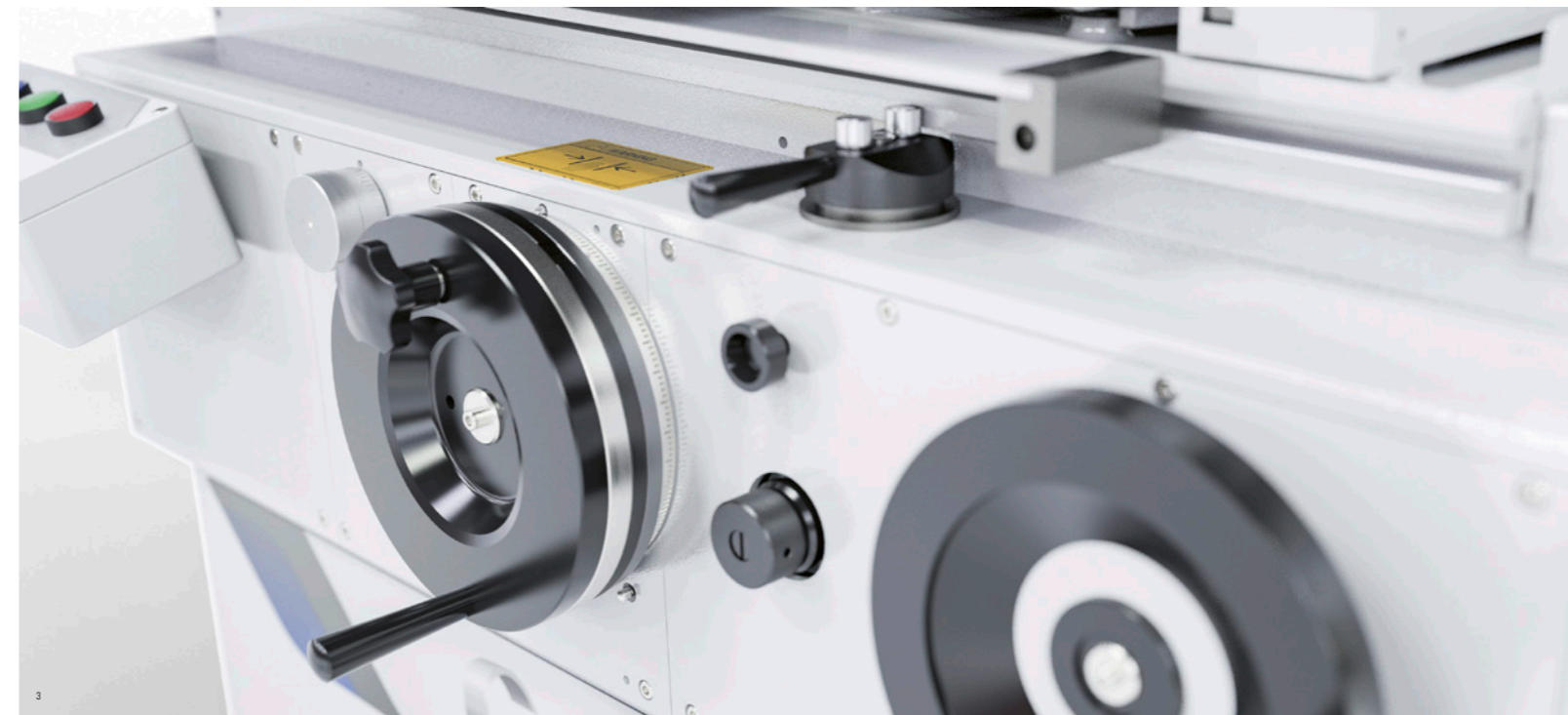
Infinitely variable feed. The cross slide is equipped with a low-maintenance, hydraulic rapid approach mechanism. The preloaded, effectively covered needle guideways ensure a precise fine adjustment. Optionally available contact sensors enable a high contact speed and thus saves time.

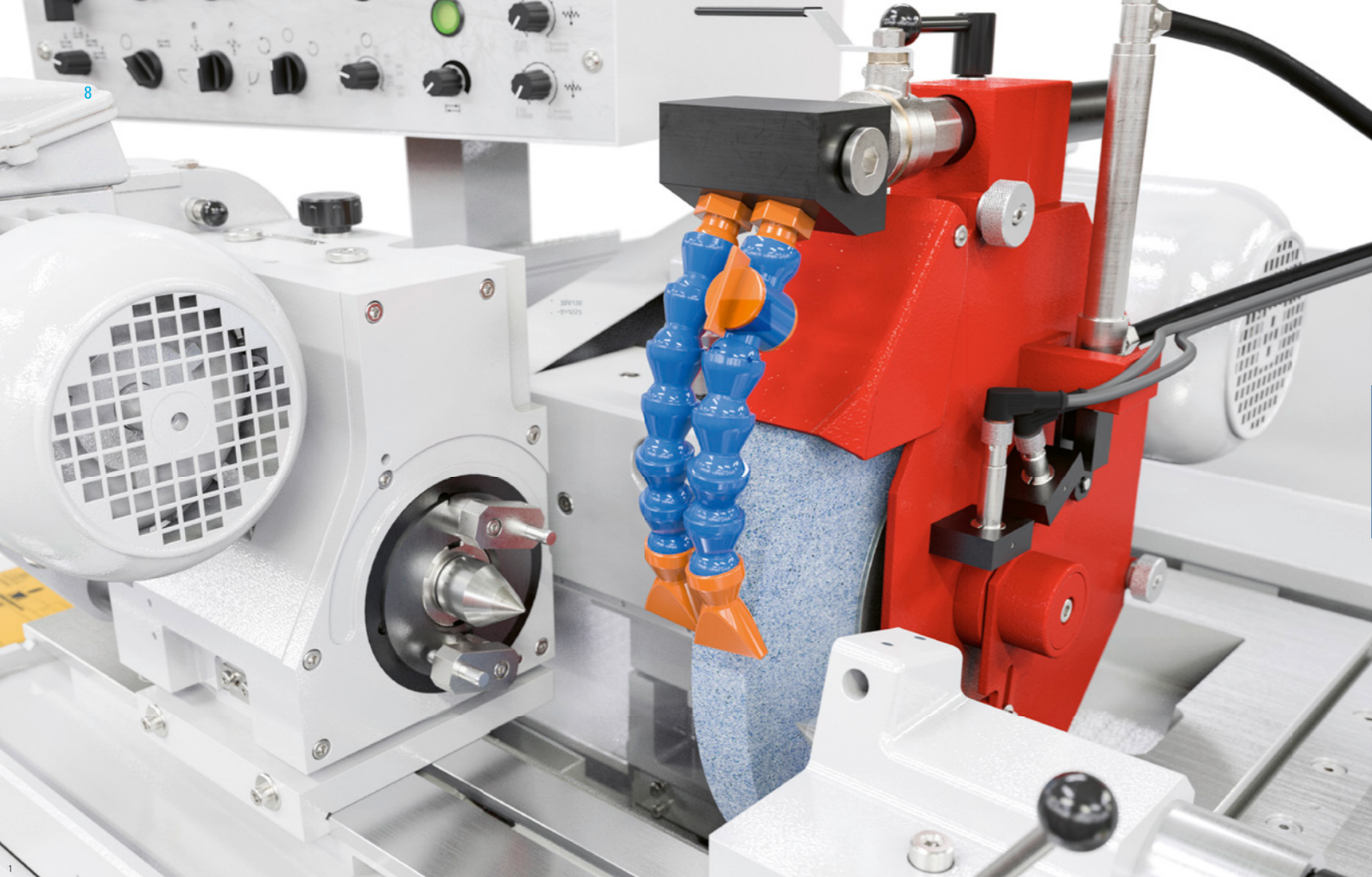
- Hydraulic unit outside of the machine
- Second, slow infeed speed (option)

LONGITUDINAL AXIS Z

The longitudinal slide is driven through a handwheel, travel 15 mm (0.59") per revolution, or automatically by means of an electric motor via a ball screw.

- The reversing stops are set mechanically
- Digital position display (option)





WORKHEAD

- Grinding between centers and live spindle grinding
- High roundness accuracy

The workhead enables grinding between fixed centers or live spindle grinding. The powerful workpiece spindle, which is relieved of belt tension, rotates in a hydrodynamic multi-surface plain bearing. Roundness during live spindle grinding is 0,0003 mm (0.000,012") as an option 0,0002 mm (0.000,008").

The workhead has a stepped drive with an AC motor. An infinitely variable drive with a frequency converter is optionally available.

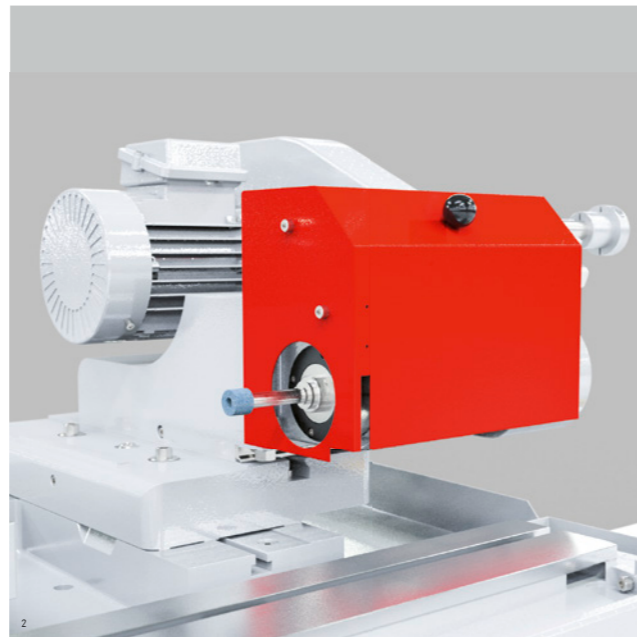


WHEELHEAD

- Flexible
- Compact
- Internal grinding attachment

The external wheelhead with grinding wheel right is set up on the cross slide. The wheelhead can be swiveled. The set to fixed angles are 0°, 15°, and 30°. The hydrodynamic plain bearing of the external grinding spindle guarantees many years of excellent run-out with minimal wear and low maintenance. The play does not need to be adjusted. The wheelhead features an extremely impressive run-out.

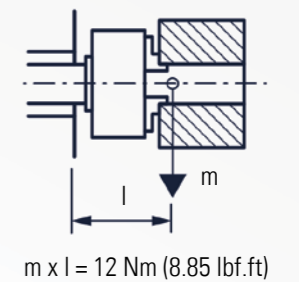
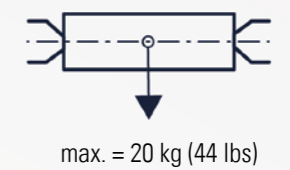
Belt-driven spindles are used for the internal grinding attachment. Maximum speed range: 20,000, 40,000, and 60,000 rpm.



TAILSTOCK

- Excellent stability
- Adjustable center pressure
- Cylindricity correction

The rigid tailstock has a generously dimensioned barrel that glides in an effectively protected roller cage. The center pressure can be very finely adjusted. Hysteresis-free fine adjustment enables rapid and simple cylindricity corrections in the range of $\pm 40 \mu\text{m}$ ($\pm 0.0015''$), as is required when machining high-precision workpieces.





CUSTOMER CARE – WE ARE HERE FOR YOU

Our products are designed to meet customer demands for as long as possible, to operate efficiently, reliably, and be available at any time.

From «start up» to «retrofit» – our Customer Care is there for you throughout the working life of your machine. That's why over 200 expert service contacts working around the world in 10 different languages are available locally.

- We provide fast, uncomplicated support.
- We help to increase your productivity.
- We work professionally, reliably, and transparently.
- We provide professional solutions to your problems.

MACHINE CONTROL AND OPERATION

The control cabinet is permanently connected to the machine. This means it is ready for operation immediately. The control unit is reliable and requires no maintenance. The clear panel layout guarantees optimum ease of operation.

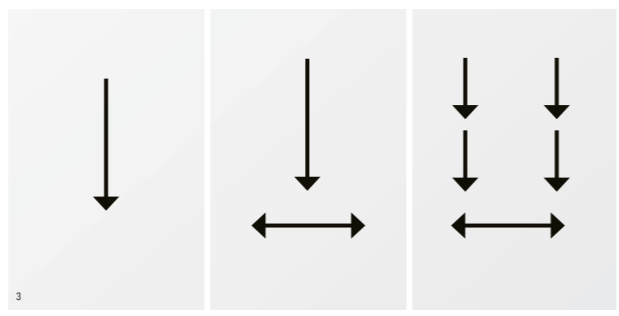
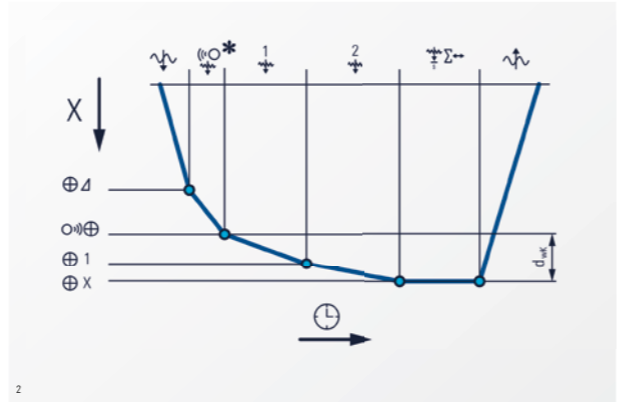
Automatic grinding cycles with automatic switch-off function

- Rapid infeed
- Grinding feed
- Spark-out
- Rapid retraction of the rapid infeed and infeed handwheel to the preset grinding allowance

Grinding Programs

- Plunge grinding with oscillation of the longitudinal slide or traverse grinding with continuous infeed
- Traverse grinding with infeed on the left, right, or both ends of the stroke

Contact sensors are used for automatic switchover from infeed to grinding feed. Together with this contact detection, touching speeds of 1-15 mm/min (0.04–0.6 ipm) can be achieved with the machine. Use of this option reduces grinding and setup times to a minimum.



1 Machine control with position display
 2 Graphical display of the grinding infeed
 3 Grinding program infeed options

UNITED GRINDING DIGITAL SOLUTIONS™

We develop solutions to support you in simplifying processes, boosting your machines' efficiency and increasing overall productivity under the «UNITED GRINDING Digital Solutions™» brand.

We are continuously expanding our solution portfolio in the key areas of CONNECTIVITY, USABILITY, MONITORING, and PRODUCTIVITY to make your work in the digital age significantly easier.

Find out more about UNITED GRINDING Digital Solutions™ services on our website in the Customer Care section.



Start up
 Commissioning
 Warranty extension



Qualification
 Training
 Product support



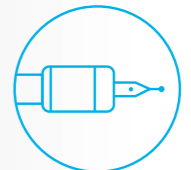
Prevention
 Maintenance
 Inspection



Service
 Customer service
 Customer consultation
 HelpLine



Digital solutions
 Remote Service
 Service monitor
 Production Monitor



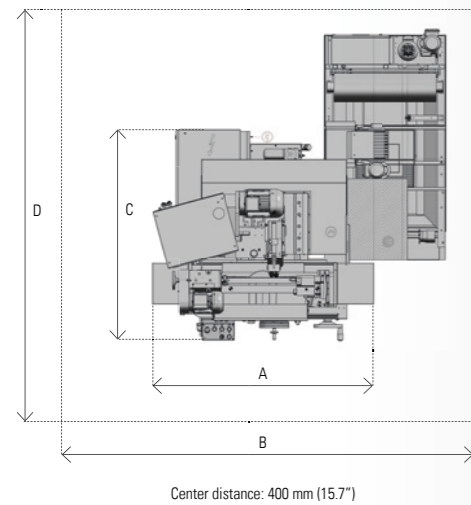
Material
 Spare parts
 Replacement parts
 Accessories



Rebuild
 Machine overhaul
 Assembly overhaul

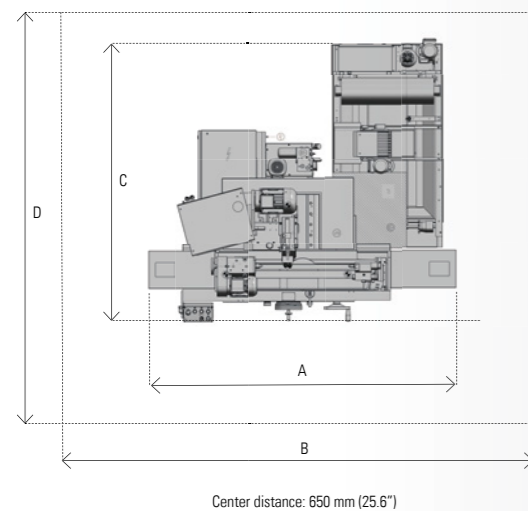


Retrofit
 Modifications
 Retrofits



DIMENSIONS

A	B	C	D
1,520 mm (59.8")	2,890 mm (113.8")	1,450 mm (57.1")	2,980 mm (117.3")



DIMENSIONS

A	B	C	D
2,332 mm (91.8")	3,170 mm (124.8")	1,450 mm (57.1")	2,980 mm (117.3")

TECHNICAL DATA

MAIN DIMENSIONS

Distances between centers	400 / 650 mm (15.7" / 25.6")
Centre height:	100 mm (3.94")
Max. workpiece weight between centers	20 kg (44 lbs)

CROSS SLIDE: X AXIS

Rapid approach travel	30 mm (1.18")
Max. travel	25 mm (0.98") [plunge depth 1,9 mm (0.7") / 5 mm (0.2") Option]
Feed travel with handwheel	25 mm (0.98")
Feed rate 1 (standard)	0,03 – 1,5 mm/min (0.0012 – 0.06 ipm)
Feed rate 2 (option)	0.02 – 0.3 mm/min (0.0008 - 0.012 ipm)
Spark-out time	adjustable
Contact speed (option)	1-15 mm/min (0.04 – 0.6 ipm)

LONGITUDINAL SLIDE: Z AXIS

Max. travel	400 / 650 mm (15.7" / 25.6")
Speed	100-2000 mm/min (3.94 – 78.7 ipm)
Smallest automatic travel	approx. 1 mm (0.04")
Reverse delay	0-5 s
Machine table swivelling range	30° / 15°

WHEELHEAD

Swivel angle	0° / 15° / 30°
Fitting taper	Ø 44, 1:5.715
Driving power	3 kW (4 hp)
Grinding wheel right, dia. x width x bore	14" x 2" (F1) x 5"
Circumferential Speed	30 m/s (5905 sfpm)

Internal grinding attachment for belt-driven spindles (option)

Mounting bore	80 mm
Speeds	20,000/40,000/60,000 rpm
Drive power	1.5kW (2 hp)

UNIVERSAL WORKHEAD

Speeds	80/175/380/800 rpm
Continuously adjustable speed range (option)	30-1,200 rpm
Fitting taper	MT 4
Spindle bore (feedthrough)	24 mm (0.95")
Swivel range	0 – 90°
Drive power	0,55 kW (0.73 hp)
Load, live spindle grinding	12 Nm (9 ft lbs)
Roundness accuracy, live spindle grinding	0,0003 / 0,0002 mm (0.000,012 / 0.000,008")

TAILSTOCK

Fitting taper	MT2
Travel of barrel	20 mm (0.79")
Diameter of barrel	32 mm (1.26")
Fine adjustment for cylindricity corrections	±40 µm (± 0.0016")

CONTROL UNIT

PLC control unit

GUARANTEED WORKING PRECISION

Surface straightness	
Gauge length 380 mm (14.97")	0,0015 mm (0.000,06")
Gauge length 630 mm (24.82")	0,0025 mm (0.000,10")

CONNECTED LOAD

Total connected load	8 kVA
Air pressure	5.5 - 7 bar (79.7 - 101.5 psi)
Total weight	
Center distance 400 mm / 15.7"	1 600 kg (3 520 lbs)
Center distance 650mm / 26"	1,900 kg

The information given is based on the technical levels of our machine at the time of this brochure going to print. We reserve the right to further develop our machines technically and make design modifications. This means that the dimensions, weights, colours, etc. of the machines supplied can differ. The diverse application possibilities of our machines depend on the technical equipment specifically requested by our customers. The equipment specifically agreed with the customer is therefore exclusively binding for the equipping of the machines, and not any general data, information, or illustrations.

FRITZ STUDER AG

The name STUDER stands for more than 110 years of experience in the development and production of precision cylindrical grinding machines. "The Art of Grinding." is our passion, highest precision is our aim and top Swiss quality is our benchmark.

Our product line includes both standard machines, as well as complex system solutions in high-precision cylindrical grinding for machining small and medium-sized workpieces. In addition we offer software, system integration and a wide range of services. As well as receiving a complete tailor-made solution, the customer also benefits from over 110 years of know-how in relation to the grinding process.

Our customers include companies from the machine tool industry, automotive engineering, tool and die makers, the aerospace industry, pneumatics/hydraulics, electronics/electrical engineering, medical technology, the watch industry, and job shops. They value maximum precision, safety, productivity, and longevity. As one of the market and technology leaders in universal, external, internal cylindrical, and contour grinding, with 25,000 systems delivered, STUDER has stood for precision, quality, and durability for decades. STUDER's products and services include hardware, software, and a wide range of services in the pre-sales and after-sales sector.

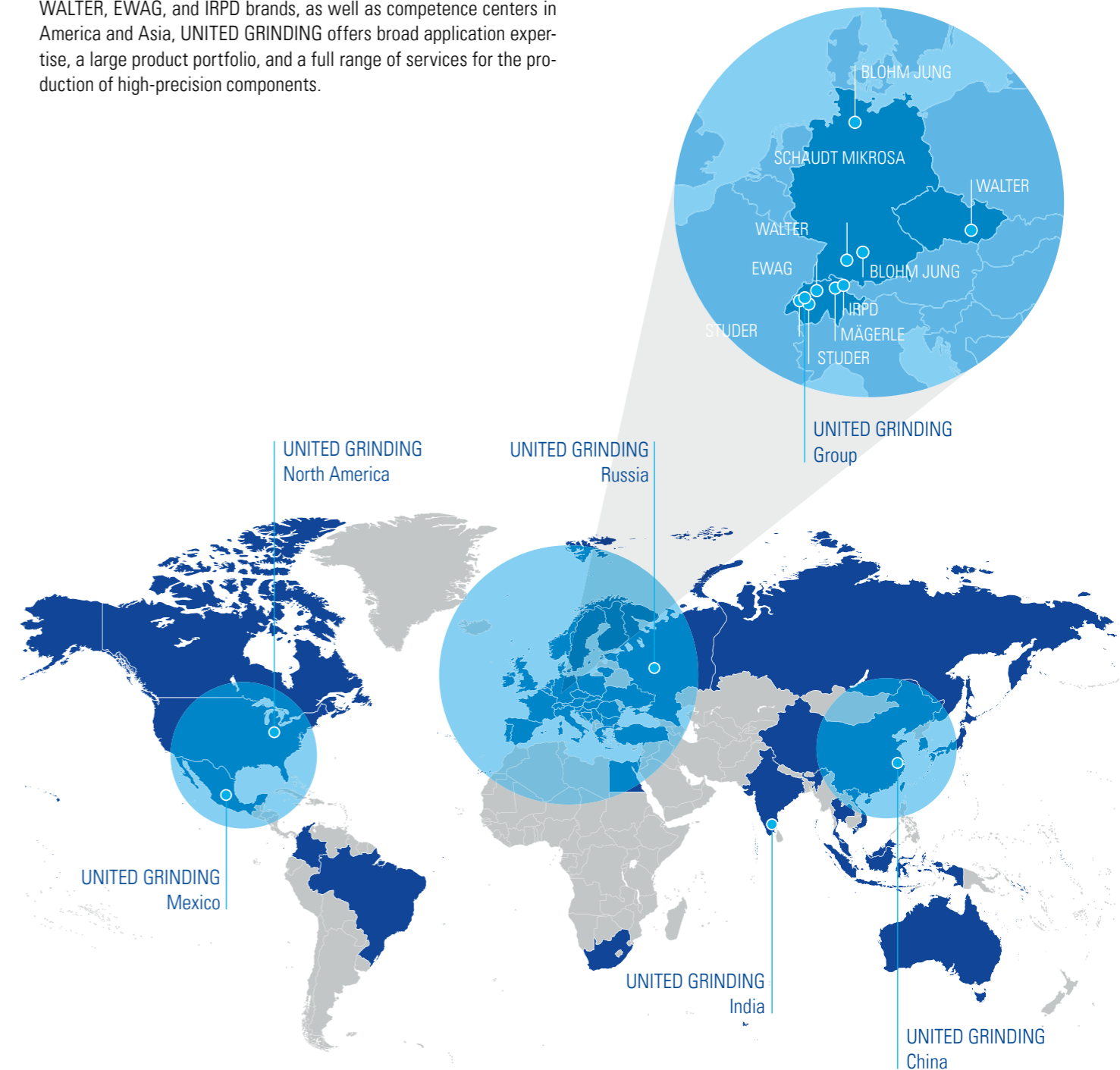


UNITED GRINDING GROUP

UNITED GRINDING Group is one of the world's leading manufacturers of grinding, eroding, laser, and measuring machines as well as machine tools for additive manufacturing. With roughly 2,500 employees at more than 20 manufacturing, service, and sales locations, the Group has an effective and customer-centric organization.

Through its MÄGERLE, BLOHM, JUNG, STUDER, SCHAUDT, MIKROSA, WALTER, EWAG, and IRPD brands, as well as competence centers in America and Asia, UNITED GRINDING offers broad application expertise, a large product portfolio, and a full range of services for the production of high-precision components.

"We want to make our customers even more successful"





Fritz Studer AG
3602 Thun
Switzerland
Phone +41 33 439 11 11
info@studer.com
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