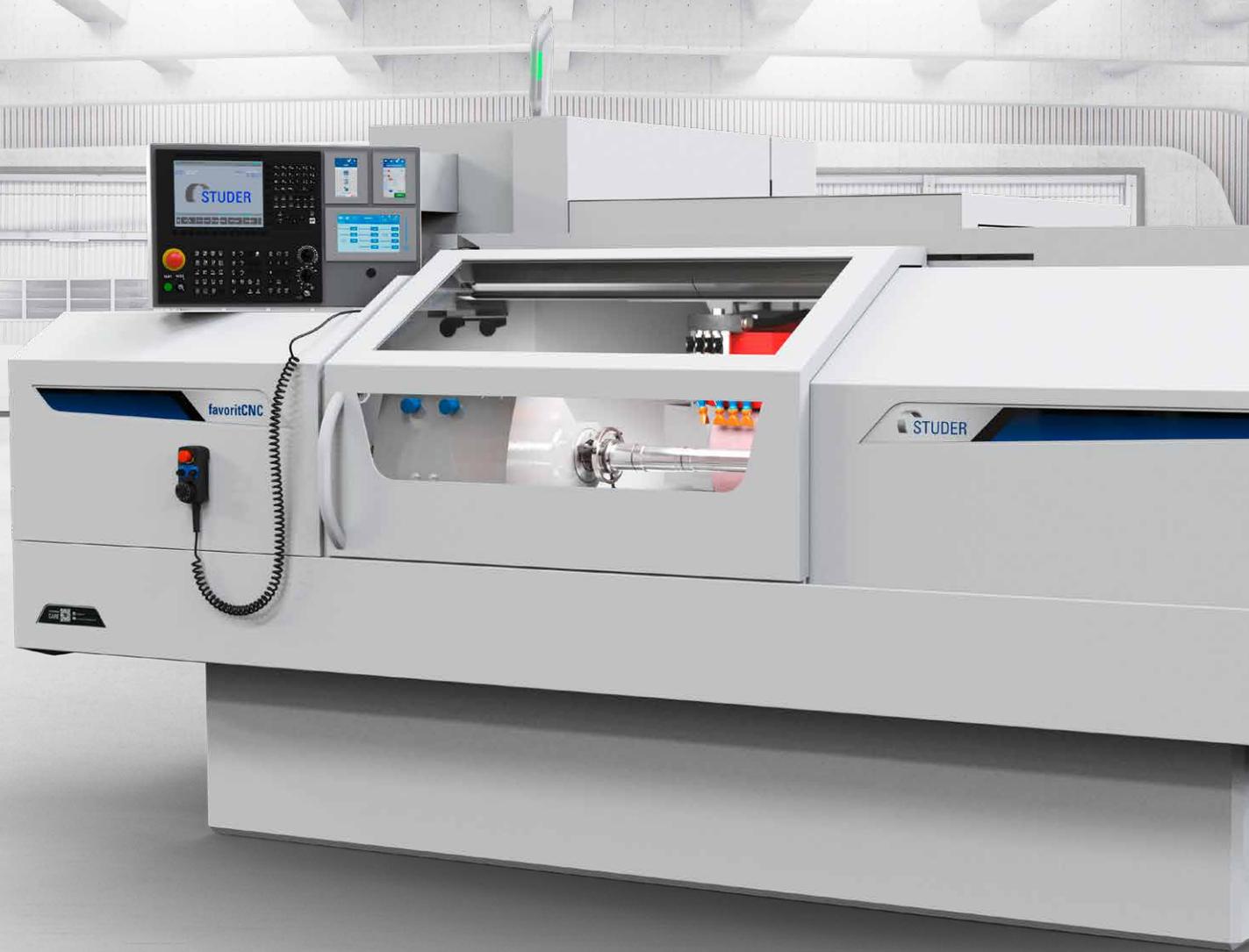


favoritCNC

UNIVERSAL CYLINDRICAL GRINDING MACHINE



 **STUDER**



APPLICATIONS

STUDER favoritCNC IN USE

The top performer in terms of value for money stands for many years of precision. The favoritCNC with 650 (25.6") or 1000 mm (39.4") distance between centers for universal use is easy and quick to program thanks to StuderPictogramming. Due to various options such as a measuring system, balancing system, contact detection, and longitudinal positioning, the machine can be easily adapted to other grinding tasks.



favoritCNC

DIMENSIONS

- Center distance 650/1000 mm (25.6"/39.4")
- Center height 175 mm (6.9")
- Max. Workpiece weight 80/120 kg (176/264 lbs)

HARDWARE

- Selectable wheelhead:
 - Fixed wheelhead, manually swiveling
 - Wheelhead with grinding wheel on the right with internal grinding (option)
- Fixed or swiveling table (up to 8.5°)
- External and internal grinding possible in one setup
- Granitan® S103 mineral-cast machine base
- Digital display of the swivel angle
- Automatic operating door
- Manual control unit for setup close to the grinding process

SOFTWARE

- Very simple programming thanks to StuderPictogramming
- StuderGRIND programming software (optional) for creating grinding and dressing programs on an external PC



YOUR BENEFIT

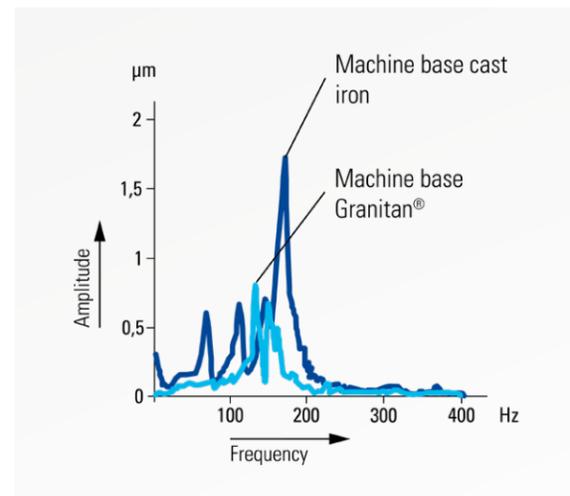
- Short machining time thanks to complete machining
- Maximum precision due to perfect interplay between hardware and software
- Intuitive, user-friendly, and efficient operation
- Ergonomic with good accessibility of grinding area
- Environmentally friendly thanks to targeted steps to reduce energy consumption and sustainable use

«The price hit for a large range of applications.»



GRANITAN® S103 MINERAL-CAST MACHINE BASE

The material structure developed by STUDER on the basis of the company's own formula, which has proved its worth over many years, is produced in a plant using the most modern industrial techniques. The excellent damping properties of the machine base ensure that an outstanding surface quality is achieved in the ground workpieces. The service life of the grinding wheel is also increased, leading to reduced downtimes. Temporary temperature fluctuations are largely offset by the favorable thermal behavior of Granitan®. This results in a high level of dimensional accuracy throughout the day. The guideway for the longitudinal and cross slides is molded directly into the machine base and coated with wear-resistant Granitan® S200 surfacing material. The guideways offer the highest possible accuracy through the entire speed range with high load capacity and dampening levels. Thanks to the robust and low-maintenance design, these excellent guideway properties remain virtually unchanged over time.



- More sustainable production compared to cast iron
- Vibration-damping
- Thermally stable
- Maximum guideway accuracy

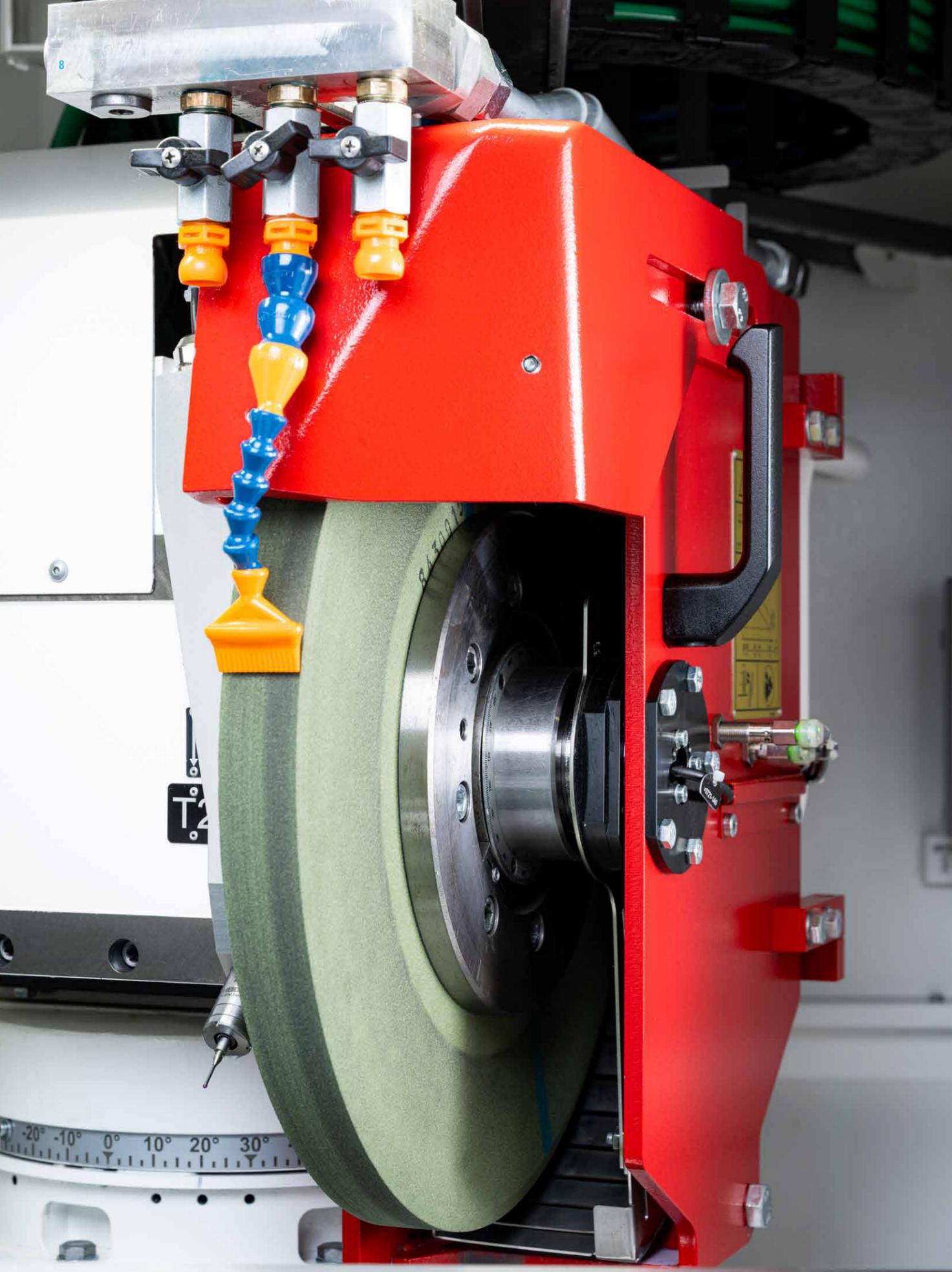
LONGITUDINAL AND CROSS SLIDES

The V and flat guideways with patented surface structure for the cross and longitudinal slides guarantee excellent accuracy and thus enable, as an example, high cylindricity values across the entire workpiece.

The slides are advanced by ball screws connected to a three-phase servo motor via torsion-resistant couplings.



- High geometrical traverse accuracy
- Auxiliary scale on the longitudinal slide for setup and resetting
- Effective protection of guideways



WHEELHEAD

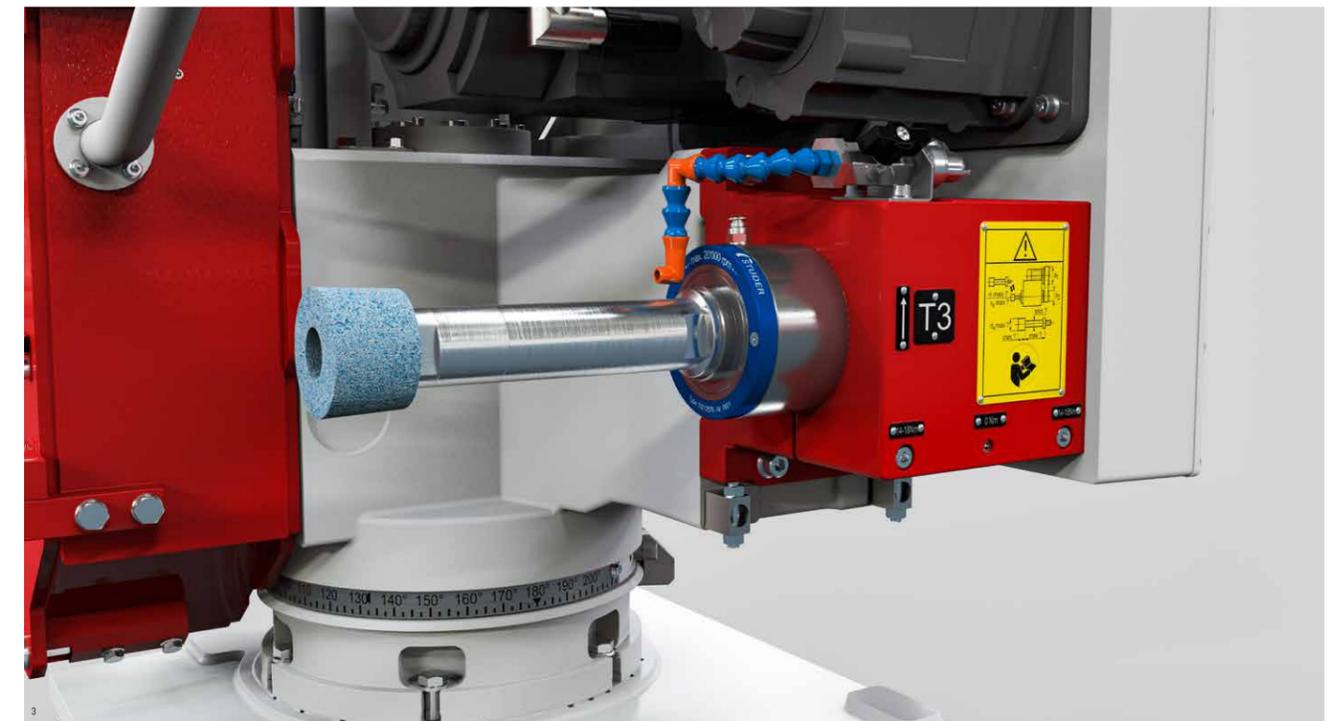
The wheelhead can be used for external and internal grinding; it can be equipped with an external grinding wheel (right) and an internal grinding spindle. Two variants are available: a fixed wheelhead, manually adjustable (0°/15°/30°), or optionally, a universal wheelhead with grinding wheel on the right and an internal grinding attachment (option) with manual swiveling using a 2.5° Hirth coupling.

Grinding wheel size

Diameter 500 mm (20"), width 63 (80F5) mm (2.48"/3.15" F5), bore 230 mm (8"). The drive power is max. 11.5 kW (15.4 hp). The cutting speed of maximum 50 m/s (9,840 sfpm) enables efficient metal removal rates in the grinding process. Optionally, a grinding wheel with a max. width of 110 mm/4,3" (F5) can also be used.

The speed of the belt-driven internal grinding spindle (lifetime grease lubrication) is infinitely variable. Spindles with speeds of 20 000, 40 000, and 60 000 rpm are available.

- Complete machining
- High power, max. 11.5 kW (15.4 hp)
- Cutting speed of up to 50 m/s (9840 sfpm)
- Internal grinding spindle with infinitely variable speed

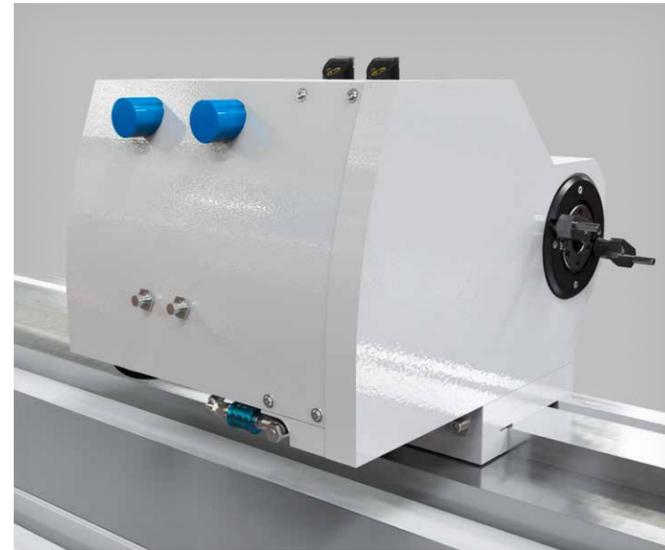


1 Wheelhead
2 Wheelhead variants
3 Internal grinding spindle

WORKHEAD

A universal workhead with MT5 fitting taper or a chuck workhead with MT4 fitting taper can be used. This makes both live spindle grinding and grinding between centers possible. The workpiece spindles are equipped with roller bearings, are low-maintenance, and offer excellent roundness accuracy of under 0.0004 mm (0.000,016"). The fine adjustment allows for cylindricity corrections in the micron range during live spindle operations. An air cushion lift-off facilitates movement of the workhead during setup and resetting.

- High roundness accuracy < 0.0004 mm (0.000,016")
- Large speed range of 1 to max. 1,500 rpm
- Cylinder correction (live spindle grinding)
- Air cushion lift-off



TAILSTOCK

Designed for the use of centers with morse taper 3, the high-precision barrel slides inside the tailstock housing. MT4 is also available as an option. The center pressure can be adjusted with the delicate precision required for grinding high-precision workpieces. The fine adjustment enables taper corrections in the range below a micron when grinding between centers.

In order to guarantee optimum thermal stability, the tailstock is flooded with cooling lubricant, as are the barrel and the diamond holder.

- Cylindricity correction
- Thermal stabilization by flooding
- Air cushion lift-off

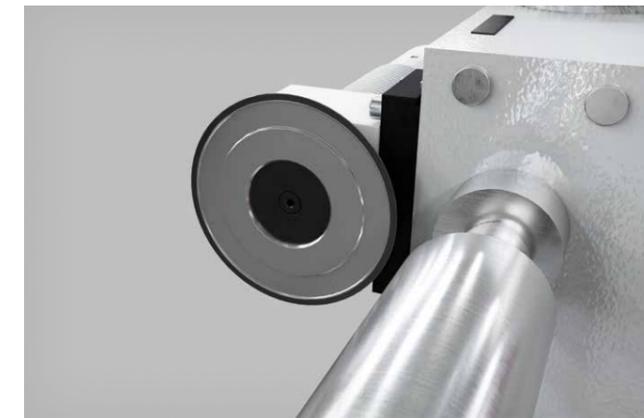


DRESSING

An easy-cutting grinding wheel is essential for cost-effective and high-quality grinding. STUDER offers a large selection of dressing units, in order to adapt the dressing process flexibly and optimally to the workpiece, tool, and material-specific properties. The grinding wheel profile and dressing parameters are easily defined via macros. Another STUDER speciality is the grinding wheel reference points (T-num-

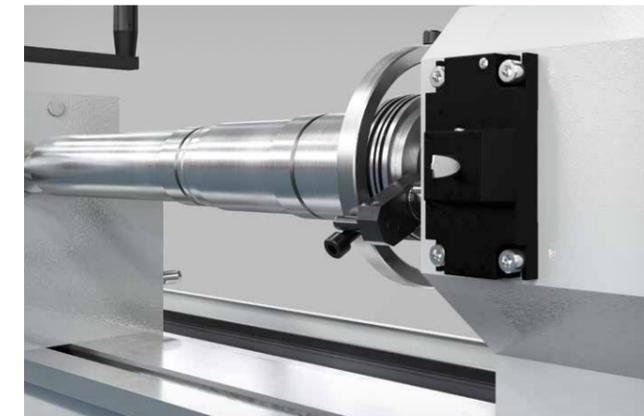
bers). This enables programming with nominal dimensions, considerably simplifying the creation of grinding programs.

A software package is available to fine tune the dressing process and includes additional dressing functions.



Rotary dressing

Rotating dressing tools are particularly suitable for dressing CBN grinding wheels.



Fixed dressing

The clamping surface is suitable for various fixed dressing tools. The diamond holder can also be optionally attached to the tailstock, workhead, or workpiece table.



Dressing holder in T-slot with fixed table

With a fixed workpiece table, the dressing holder is ideally secured in the T-slot.



MACHINE CONTROL AND OPERATION

The Fanuc Oi-TFP CNC control with active flat-panel color screen (10.4") is extremely reliable and optimally matched to the drive elements. The control cabinet is bolted to the machine bed. The electrical equipment complies with established safety standards and is EMC-tested.

All controls are clearly and ergonomically arranged. An important role is played by the manual control unit, which facilitates setup close to the grinding process. A special function involving electronic contact detection makes it possible to keep auxiliary times to a minimum.

- Manual control unit (with mechanical handwheel)
- EMC-tested control cabinet
- Ergonomically arranged controls
- StuderPictogramming



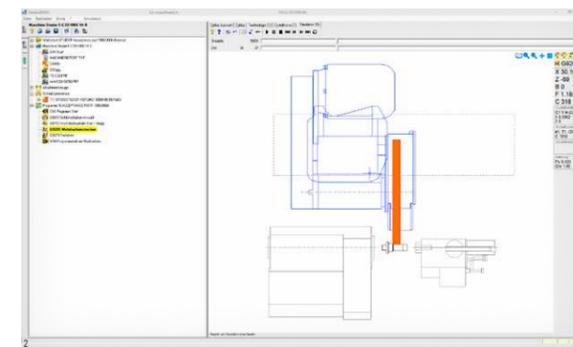
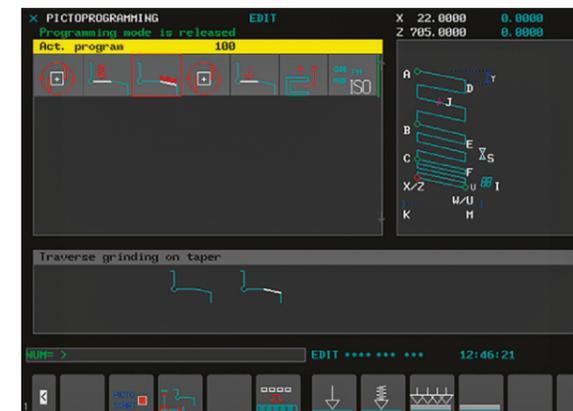
1 Machine control
2 Manual control unit

PROGRAMMING

The sophisticated mechanical engineering concept of the favoritCNC is complemented by a grinding software program developed in-house by STUDER and continuously optimized in cooperation with users.

The grinding software offers:

- StuderPictogramming: The operator sequences the individual grinding cycles and defines the grinding process.
- Free programming of grinding and dressing cycles for optimization of the grinding process.
- The StuderGRIND programming software enables programming on a PC or laptop.



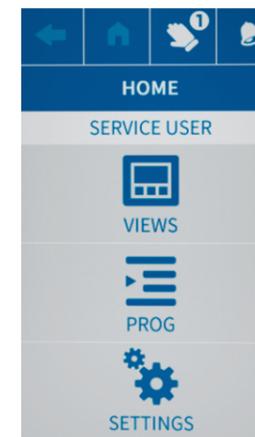
1 StuderPictogramming
2 StuderGRIND programming software

UPGRADE OPTIONS

The favoritCNC perfectly meets the high demands of our customers. Thanks to a manageable selection of options, upgrades can be quickly implemented to meet the requirements of the user.

The following options are available:

- Electronic contact detection
- Manual balancing
- «Micro functions»
- StuderGRIND offline programming station
- Simple BDE interface
- OPC UA interface
- Automatically actuated operating door
- B3 I/O loader interface





CUSTOMER CARE

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.

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



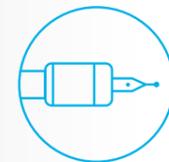
Prevention
Maintenance
Inspection



Service
Customer service
Customer consultation
HelpLine



Digital solutions
Remote Service
Service monitor
Production Monitor



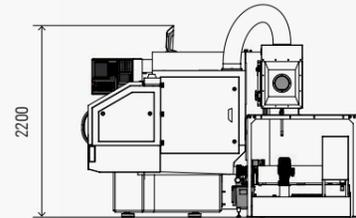
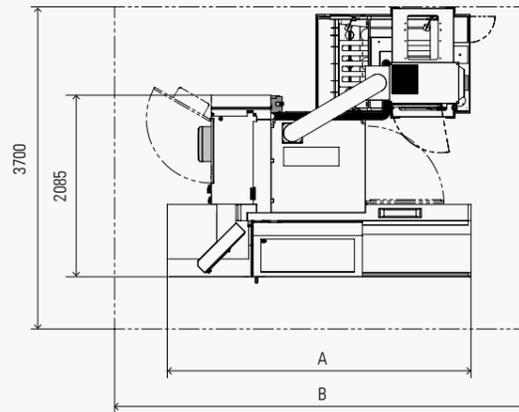
Material
Spare parts
Replacement parts
Accessories



Rebuild
Machine overhaul
Assembly overhaul



Retrofit
Modifications
Retrofits



| | A | B |
|------------------------------------|----------------------|----------------------|
| Center distance 650 mm (25.6") | 2 830 mm (111.5") | 4 350 mm (171.2") |
| Center distance 1000 mm (39.4") | 3 490 mm (137.4") | 4 700 mm (185") |

TOTAL WEIGHT

| | |
|---------------------------------|-----------------------|
| Center distance 650 mm (25.6") | 4 800 kg (10,582 lbs) |
| Center distance 1000 mm (39.4") | 5 300 kg (11,685 lbs) |

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, colors, 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 definitive for the equipping of the machines, and not any general data, information or illustrations.

TECHNICAL DATA

MAIN DIMENSIONS

| | |
|---------------------------------------|-------------------------|
| Distance between centers | 650/1 000 (25.6"/39.4") |
| Center height | 175 mm (6.9") |
| Max. workpiece weight between centers | 80/120 kg (176/264 lbs) |

CROSS SLIDE: X AXIS

| | |
|---|---|
| Max. travel | 285 mm (11.2") |
| Speed | 0.001–10 000 mm/min (0.000,04–394 ipm) |
| Resolution with direct measuring system | 0.00001 mm (0.4 mill") |

LONGITUDINAL SLIDE: Z AXIS

| | |
|---|---|
| Max. travel | 800/1 150 mm (31.5"/45.3") |
| Speed | 0.001–20 000 mm/min (0.000,04–788 ipm) |
| Resolution with direct measuring system | 0.00001 mm (0.4 mill") |
| Machine table swiveling range | Up to 8.5° |

WHEELHEAD

| Spindle layout | Fixed | Turret |
|--|---|---|
| Max. number of tools | 1 | 2 |
| Swivel axis | – | Hirth 2.5° manual |
| Swiveling range | 0°/15°/30° | –15° to +195° |
| Grinding wheel, Ø × width × bore | 500 × 63 (80F5) × 203 mm (20" × 2.5" (3.15" F5) × 8") | 500 × 63 (80F5) × 203 mm (20" × 2.5" (3.15" F5) × 8") |
| | 500 × 80 (110F5) × 203 mm (20" × 3.15" (4.3" F5) × 8") | 500 × 80 (110F5) × 203 mm (20" × 3.15" (4.3" F5) × 8") |
| Fitting taper | dia. 73 mm | |
| Drive power | max. 11.5 kW (15.4 hp) | |
| Circumferential speed | up to 50 m/s (9,840 sfpm) | |
| Internal grinding attachment for belt-driven spindles | dia. 100 mm | |
| Speeds | 20 000/40 000/60 000 rpm | |

CHUCK WORKHEAD

| | |
|---|------------------------|
| Speed range | 1–1 000 rpm |
| Fitting taper | MT4/Ø 70 mm |
| Bar capacity | dia. 26 mm (1.02") |
| Drive power | 1.8 kW (2.4 hp) |
| Load during live spindle grinding | 100 Nm (73.7 ft-lbs) |
| Roundness accuracy during live spindle grinding | 0.0001 mm (0.000,004") |
| Indirect measuring system, resolution | 0,0001° |

UNIVERSAL WORKHEAD

| | |
|---|------------------------|
| Speed range | 1–1 500 rpm |
| Fitting taper | MT5 |
| Bar capacity | dia. 30 mm (1.18") |
| Drive power | 1.8 kW (2.4 hp) |
| Load during live grinding | 70 Nm (51.5 ft-lbs) |
| Roundness accuracy during live spindle grinding | 0.0001 mm (0.000,004") |
| Indirect measuring system, resolution | 0,0001° |

TAILSTOCK

| | MT3/MT4 | MT4 |
|--|--------------------|--------------------|
| Fitting taper | MT3/MT4 | MT4 |
| Barrel stroke | 35 mm (1.38") | 60 mm (2.36") |
| Barrel diameter | 50 mm (1.97") | 50 mm (1.97") |
| Fine adjustment for cylindricity corrections | ±40 µm (± 0.0016") | ±40 µm (± 0.0016") |

CONTROL

Fanuc 0i-TFP

GUARANTEED WORKING PRECISION

| | |
|-----------------------------|------------------------|
| Straightness | |
| Gauge length 630 mm (24.8") | 0.0025 mm (0.000,1") |
| Gauge length 950 mm (37.4") | 0.0030 mm (0.000,120") |

CONNECTED LOADS

| | |
|----------------------|------------------------|
| Total connected load | 22 kVA |
| Air pressure | 5.5–7 bar (80–101 psi) |

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, tool and die, 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 out-of-round 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.

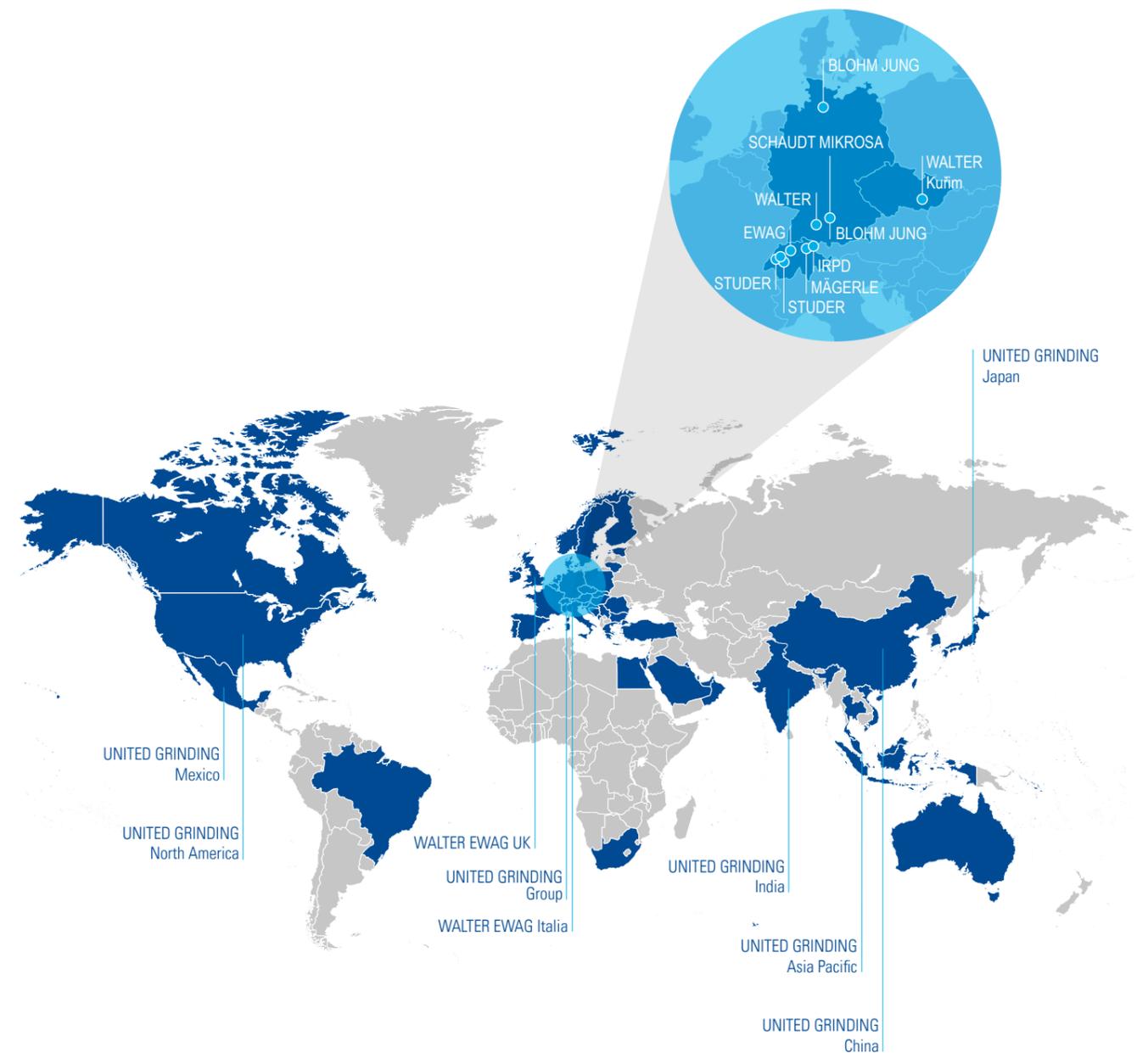


UNITED GRINDING GROUP

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 2300 employees at more than 20 manufacturing, service, and sales locations, the group is organized in a customer-oriented and efficient way.

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 – UNITED FOR YOUR SUCCESS»





Fritz Studer AG
3607 Thun
Switzerland
Tel. +41 33 439 11 11
info@studer.com
studer.com



ISO 9001
VDA6.4
certified

