The UNITED GRINDING Group is one of the leading manufacturers of precision machines for grinding, eroding, lasering, measuring and combination machining. We offer our customers comprehensive services worldwide.
UNITED GRINDING Group

UNITED GRINDING Group

With a turnover of around EUR 700 million, the UNITED GRINDING Group is one of the world’s leading manufacturers of precision grinding, eroding, laser cutting, measuring and combination machining equipment. With about 2,500 employees at more than 20 production, service and sales locations, the Group combines optimum efficiency with customer proximity.

With its eight corporate brands MÄGERLE, BLOHM, JUNG, STUDER, SCHAUDT, MIKROSA, WALTER and EWAG, UNITED GRINDING offers a broad range of application knowledge, a large product portfolio and comprehensive services for flat and profile grinding, cylindrical grinding and tool machining.

The history of the Group companies stretches back over one hundred years, during which over 150,000 machines have been manufactured and delivered worldwide. Many years of experience and broad technological expertise make the UNITED GRINDING Group a reliable and competent solution provider for demanding production tasks.

The innovative technologies developed by the companies of the UNITED GRINDING Group have a wide range of applications, from single-item production to mass production, from small businesses to large corporations, and are in use across a wide range of industries. We focus on the automotive and automotive supply industries as well as medicine, aerospace, tools, tool and mould making, transport and heavy industry, mechanical engineering, energy and precision mechanics.

Our ultimate goal in everything we do is to make a contribution to the success of our customers.

Under the “UNITED GRINDING Digital Solutions™” brand we supply products and services for Industry 4.0 applications. UNITED GRINDING Digital Solutions™ services streamline and simplify processes, help prevent unplanned machine downtime and ensure efficient use of resources.

Market
- A global market leader
- Close to our customers worldwide
- Strong global brands

Finance
- Independent
- Reliable partner
- Entrepreneurial focus

Product
- Wide-ranging application expertise
- Wide-ranging product portfolio
- Wide-ranging service portfolio

Employees
- Most valuable asset
- At home all over the world
- Experts
Our customers

Automotive & suppliers

A small technical revolution is taking place in automotive engineering. Vehicles of the future must be considerably more economical, safer and more reliable. Machine tools that guarantee cost-effective machining of increasingly more complex components are essential in production. Our extensive know-how guarantees tailor-made production solutions.

Typical applications:
- Engine: crankshafts, camshafts, balance shafts, piston pins, bushings
- Valve train: valves, valve guides, rocker arms shafts, tappets
- Injection system: needles, pump pistons, shafts
- Turbocharger: rotor shafts
- Transmission: shafts, shanks, differential components
- Chassis: shock absorbers, journals, brake system
- Steering: steering racks, pistons, worms, pinions, shafts
- Auxiliary units: starters, water pumps, generators, air-conditioning compressors, hydraulic pumps

Medical

The highest machining quality is a natural prerequisite for the production of surgical instruments or prostheses. We draw on our vast experience to develop the required mechanical engineering technology for the high-precision machining of these parts. Our engineers always attach great importance to process reliability, detailed accuracy and cost effectiveness.

Typical applications:
- Surgical tools
- Dentistry
- Motors for surgical instruments
- Knee prostheses
- Hip prostheses
- Medical drills, bone drills

Aerospace

The aerospace industry is an innovation driver: many central aircraft components are continually being further developed. With their reliability and long working life, our grinding machines score highly in the manufacture of such components. These are crucial competitive advantages, particularly in complex production processes for sophisticated components.

Typical applications:
- Engine components
- Hydraulic pumps, pistons and pinions
- Hydraulic control valves
- Control engineering for control systems
- Chassis components
- Transmission components
- Rivets
- Bolts
- Bearings

Tooling

High-performance precision tools are the key to cost-effective production processes. Precision, speed and safety are essential aspects of their manufacture – especially with extremely hard substrates. Our experts in tool machining develop highly accurate mechanical engineering components for grinding, ending, lasering and measuring – for any application.

Typical applications:
- Cutting tools made from HSS, HM, CBN, etc. for milling, turning and drilling
- Screw taps
- Tool holders
- Collet chucks
- Step drills
- PCD drills
- PCD mills
- Carbide end mills
- Indexable inserts
- Tools for woodworking

Dies & moulds

The manufacture of dies and tools is a job for specialists – the process is characterised by small batch sizes and short changeover times. At the same time, moulds are becoming ever more complex and their materials ever harder. We have a wide range of machines available for this demanding task. Our tailor-made production solutions guarantee flexibility and cost effectiveness.

Typical applications:
- Injection moulds of PET bottles
- Moulds for beverage cans
- Biotechnology equipment
- Punches for tablet production
- Injection needles and cannula injection moulds
- Ejector tools

Transportation & heavy industry

Precise and efficient machining of large components – this is the central production challenge of transportation and heavy industry. When manufacturing components for high-speed trains, construction machinery or railway axles, our machines guarantee extremely precise results despite an extremely "harsh environment".

Typical applications:
- Engine components for marine, railway and construction vehicles
- Transmission components for marine, railway and construction vehicles
- Hydraulic motors and components
- Hydraulic valves for heavy-duty vehicles
- Transmission pumps
- Railway axles

Machine manufacturers

Competition from new markets, plus the demand for ever more efficient production solutions – the general machine tool industry is constantly facing new challenges. We offer our customers crucial competitive advantages with innovative, efficient and cost-effective grinding machines for manufacturing various components and tools.

Typical applications:
- Spindles for machine tools
- Clamping systems
- Roller bearings
- Engine shafts
- Rolling mills
- Pumps
- Print rolls
- Chain pins
- Eccentrics

Energy

Whether wind turbine, compressor or rotor shaft: every micrometre counts in component production for the energy industry. This determines the efficiency of the entire technology. Extreme precision machining is therefore a feature of our machines. They also stand for energy efficiency: we design sustainable solutions for sustainable energy technology.

Typical applications:
- Components for wind turbines (shafts, actuating gears)
- Components for large motors for power generation
- Compressor components
- Rotor shafts
- Heavy-duty transmissions for energy installations

Precision engineering

The special importance of the concepts “Precision” and “Surface quality” in precision mechanics is self-explanatory. What is more, extremely exacting materials are used in applications such as clock production. We engineer efficient and reliable grinding machines for precision mechanics – maximum quality is always guaranteed for minimum sized components.

Typical applications:
- Watch cases
- Measuring instruments
- Thread gauges
- Micrometer gauges

Medical

Typical applications:
- Compression pumps
- Pneumatic systems
- Valves
- Controls
- Gauges
- Measuring devices
- Medical instruments

Automotive & suppliers

Typical applications:
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- Rotor shafts
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Precision engineering

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Typical applications:
- Watch cases
- Measuring instruments
- Thread gauges
- Micrometer gauges
Our brands

- MÄGERLE
- STUDER
- WALTER
- IRPD
- BLOHM
- SCHAUDT
- EWAG
- MIKROSA

Surface and profile  | Cylindrical  | Tooling  | Service and additive manufacturing
---|---|---|---
MÄGERLE  | STUDER  | WALTER  | IRPD
BLOHM  | SCHAUDT  | EWAG  | MIKROSA
JUNG

25 % of delivered machines
50 % of delivered machines
25 % of delivered machines

- Own companies/branches
- Sales and service partners
Surface and profile grinding expertise

The MÄGERLE, BLOHM and JUNG brands, with their extensive range of high-precision surface and profile grinding machines, offer the prerequisite for delivering an optimal and cost-effective solution for your production tasks.

You can benefit from the extensive know-how gained from system solutions implemented throughout the world and the systematic implementation of goals and visions. Synergies from the collaboration between the three brands will give you an edge over your international competitors. Market-oriented innovations with added value, which you can use to your advantage.
MÄGERLE embodies the coexistence of tradition and progress

Mägerle AG Maschinenfabrik, established in 1929, builds high-performance grinding systems for handling simple and complex surface and profile grinding tasks. As a turnkey supplier, MÄGERLE is a technology leader in highly efficient special applications. Great emphasis is placed on customer individuality and flexibility. The stable machine design, geared towards high performance and longevity, is a distinctive feature of MÄGERLE grinding machines. In all MÄGERLE series emphasis is placed on low-maintenance, heat-resistant and water-cooled spindle drives. They demonstrate their performance and versatility daily in demanding applications in the turbine industry, aerospace, the hydraulics industry and the energy sector, as well as for machine manufacturers and toolmaking. All industries that make the highest demands in respect of mechanical, ergonomic and operational qualities.

MÄGERLE MFP 30
Compact solution for high productivity

The compact 5-axis grinding centre MFP 30 from Mägerle is ideally suitable for grinding complex geometries, as typically in the guide vanes and rotor blades or heat shields of aircraft turbines. The workpieces to be machined are loaded ergonomically into the workspace directly from the front. The powerful drive of the high-performance spindle enables a combination of different grinding processes. Broad machining contours with high rates of removal can be realised with sturdy tool holders.

- Suitable for multiple-side and complete machining
- 12-piece or 24-piece tool changer
- Table dresser
- Grinding, milling, drilling and measuring in a single clamping
- Opt. Tool internal cooling
- 5/6-axis grinding centre

<table>
<thead>
<tr>
<th>MFP 30</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis</td>
<td>Longitudinal stroke mm</td>
</tr>
<tr>
<td></td>
<td>Travel speed mm/min</td>
</tr>
<tr>
<td>Y-axis</td>
<td>Vertical stroke mm</td>
</tr>
<tr>
<td></td>
<td>Travel speed mm/min</td>
</tr>
<tr>
<td>Z-axis</td>
<td>Transversal stroke mm</td>
</tr>
<tr>
<td></td>
<td>Travel speed mm/min</td>
</tr>
<tr>
<td>Power of grinding wheel spindle drive S6-40% ED kW</td>
<td>26</td>
</tr>
<tr>
<td>Rpm range max. rpm</td>
<td>0...12,000</td>
</tr>
<tr>
<td>Number and type of quick-release spindles n × type</td>
<td>1 × HSK-B80</td>
</tr>
<tr>
<td>Profile rolling device, roll width, max. mm</td>
<td>307</td>
</tr>
<tr>
<td>Tool changer positions n/pos</td>
<td>12/24</td>
</tr>
<tr>
<td>Grinding wheel dimensions (outer Ø × B × hole Ø) mm</td>
<td>300×60×76.2</td>
</tr>
<tr>
<td>Tool length max. mm</td>
<td>180</td>
</tr>
<tr>
<td>NC combination – rotary/swivel axes n/axes</td>
<td>3/3</td>
</tr>
</tbody>
</table>
MÄGERLE MFP 50
High flexibility for demanding applications

The MÄGERLE MFP-50 combines flexibility and performance in a compact design. As a 5 or 6-axis system, this CD grinding and machining centre shows its top form when dealing with challenging workpieces. The intelligent design principle takes production quality, safety and cost efficiency to a new level. The coolant nozzle, controllable via two axes, allows unrestricted freedom of movement and precise positioning of the coolant jet.

- Suitable for multiple-side and complete machining
- 24-position tool changer
- 2-axis overhead dresser
- Grinding, milling, drilling and measuring in a single clamping
- Opt. Tool internal cooling
- 5/6-axis grinding centre

MÄGERLE MFP 51
High flexibility for demanding applications

The sturdy grinding centre features an integrated tool changer in portal design with 66 positions. The magazine is loaded flexibly with different grinding wheels, diamond rollers, measuring probes and tools for drilling and milling. The large capacity of the tool changer enables efficient machining of several different workpieces without having to intervene in the tooling.

- Suitable for multiple-side and complete machining
- 66-position tool changer
- Automatic tool and dressing roller change
- Grinding, milling, drilling and measuring in a single clamping
- Opt. Tool internal cooling
- Opt. automatic nozzle changer
- 5/6-axis grinding centre

### Specifications

#### MFP 50

<table>
<thead>
<tr>
<th>Axis</th>
<th>Description</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis</td>
<td>Longitudinal stroke</td>
<td>mm</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>Travel speed</td>
<td>mm/min</td>
<td>0...30,000</td>
</tr>
<tr>
<td>Y-axis</td>
<td>Vertical stroke</td>
<td>mm</td>
<td>650</td>
</tr>
<tr>
<td></td>
<td>Travel speed</td>
<td>mm/min</td>
<td>0...20,000</td>
</tr>
<tr>
<td>Z-axis</td>
<td>Transverse stroke</td>
<td>mm</td>
<td>650</td>
</tr>
<tr>
<td></td>
<td>Travel speed</td>
<td>mm/min</td>
<td>0...20,000</td>
</tr>
<tr>
<td></td>
<td>Maximum continuous power of grinding spindle drive</td>
<td>kW</td>
<td>25/50</td>
</tr>
<tr>
<td></td>
<td>RPM max.</td>
<td>rpm</td>
<td>0...10,000</td>
</tr>
<tr>
<td></td>
<td>Number and type of quick-release spindles</td>
<td>n × type</td>
<td>1 × HSK-A80</td>
</tr>
<tr>
<td></td>
<td>V-axis profile crushing device, roll width, max.</td>
<td>mm</td>
<td>215</td>
</tr>
<tr>
<td></td>
<td>Tool changer positions</td>
<td>n/pos</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Grinding wheel dimensions (Ø × W × ø)</td>
<td>mm</td>
<td>300×60×76.2</td>
</tr>
<tr>
<td></td>
<td>Tool length max.</td>
<td>mm</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>NC combination – rotary/swivel axes</td>
<td>n/axes</td>
<td>2/3</td>
</tr>
</tbody>
</table>

#### MFP 51

<table>
<thead>
<tr>
<th>Axis</th>
<th>Description</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis</td>
<td>Longitudinal stroke</td>
<td>mm</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>Travel speed</td>
<td>mm/min</td>
<td>0...50,000</td>
</tr>
<tr>
<td>Y-axis</td>
<td>Vertical stroke</td>
<td>mm</td>
<td>650</td>
</tr>
<tr>
<td></td>
<td>Travel speed</td>
<td>mm/min</td>
<td>0...30,000</td>
</tr>
<tr>
<td>Z-axis</td>
<td>Transverse stroke</td>
<td>mm</td>
<td>650</td>
</tr>
<tr>
<td></td>
<td>Travel speed</td>
<td>mm/min</td>
<td>0...30,000</td>
</tr>
<tr>
<td></td>
<td>Maximum continuous power of grinding spindle drive</td>
<td>kW</td>
<td>25/50</td>
</tr>
<tr>
<td></td>
<td>RPM max.</td>
<td>rpm</td>
<td>0...12,000</td>
</tr>
<tr>
<td></td>
<td>Number and type of quick-release spindles</td>
<td>n × type</td>
<td>2 × HSK-A80</td>
</tr>
<tr>
<td></td>
<td>V-axis profile crushing device, roll width, max.</td>
<td>mm</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Tool changer positions</td>
<td>n/pos</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>Grinding wheel dimensions (Ø × W × ø)</td>
<td>mm</td>
<td>300×60×76.2</td>
</tr>
<tr>
<td></td>
<td>Tool length max.</td>
<td>mm</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>Nozzle changer positions (optional)</td>
<td>n/pos</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>NC combination – rotary/swivel axes</td>
<td>n/axes</td>
<td>2/3</td>
</tr>
</tbody>
</table>
MÄGERLE MFP 100
Fully automatic complete machining of complex workpieces

With the MFP 100 Mägerle AG Maschinenfabrik is expanding the MFP series with an extremely flexible variant. The new grinding centre is distinguished by its high working speed, quick tool change and extendible tool changer. MÄGERLE designed the MFP 100 especially for markets that require cost-effective and precise multiple-side machining of heavy and complex workpieces in a single clamping. With a spindle power of 50 kW and its generously designed work area, the new MÄGERLE grinding centre is ideal for machining turbine stator and rotor vanes as well as heat shields in the aviation and energy industries.

- Suitable for multiside and complete machining
- Tool magazine with 30/60 positions
- Dual double gripper tool change system
- Automatic nozzle changer
- Tool internal cooling
- Tool database

 Specifications:
- X-axis Longitudinal stroke: 1,000 mm
- Travel speed: 0…40,000 mm/min
- Y-axis Vertical stroke: 900 mm
- Travel speed: 0…30,000 mm/min
- Z-axis Transverse stroke: 750 mm
- Travel speed: 0…30,000 mm/min
- Grinding wheel spindle drive – max. power: 50 kW
- Rpm range max.: 0…10,000 rpm
- Anzahl und Typ Schnellspannspindeln: n x Typ 2 x HSK 800
- Tool changer positions: n/pos 30/60
- Grinding wheel dimensions (Ø × W × ø): 300 × 100 × 76.2 mm
- Werkzeuglänge max.: 280 mm
- Nozzle changer positions (optional): n/pos 8
- NC-dividing device swivelling axes: n/axes 2/3

MÄGERLE MFP surface and profile grinding machine

With the MFP series, Mägerle comprehensively covers the requirements for surface and profile grinding machines. These machines specialize in creep feed grinding as well as profile and surface grinding operations using the pendulum method. They demonstrate their full performance potential in applications where workpieces must be produced in large batches and with high stock removal volumes in the customary high MÄGERLE precision. Thanks to their robust construction, the machines in the MFP series also master these requirements in hard 24/7 continuous operation.

The Mägerle MFP series has a modular design. Table lengths and vertical strokes across a large range can be freely combined with different additional axes and special components. This flexible modular system enables diverse machine configurations, which are precisely geared to the specific user requirements.

- High removal volume with high precision
- Demanding continuous operation 24/7
- Modular system for different table sizes and vertical strokes
- Configurable (user specific)
- Optional additional spindle/swivelling spindle

 Specifications:
- X-axis Longitudinal stroke: 800, 1,250, 1,600, 2,200, 2,600 mm
- Travel speed: 0…30,000 mm/min
- Y-axis Vertical stroke: 450, 650, 750, 900 mm
- Travel speed: 0…10,000 rpm
- Z-axis Transverse stroke: 350, 500, 750, 900, 900 mm
- Travel speed: 0…10,000 rpm
- Grinding wheel spindle drive – power: 25 kW
- Rpm range: 20 m/min

<table>
<thead>
<tr>
<th>MFP</th>
<th>080</th>
<th>125</th>
<th>160</th>
<th>220</th>
<th>260</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis Longitudinal stroke</td>
<td>mm</td>
<td>800</td>
<td>1,250</td>
<td>1,600</td>
<td>2,200</td>
</tr>
<tr>
<td>Travel speed</td>
<td>mm/min</td>
<td>0…30,000</td>
<td>0…30,000</td>
<td>0…30,000</td>
<td>0…30,000</td>
</tr>
<tr>
<td>Y-axis Vertical stroke</td>
<td>mm</td>
<td>450</td>
<td>650</td>
<td>750</td>
<td>900</td>
</tr>
<tr>
<td>Travel speed</td>
<td>mm/min</td>
<td>0…10,000</td>
<td>0…10,000</td>
<td>0…10,000</td>
<td>0…10,000</td>
</tr>
<tr>
<td>Z-axis Transverse stroke</td>
<td>mm</td>
<td>350</td>
<td>500</td>
<td>750</td>
<td>900</td>
</tr>
<tr>
<td>Travel speed</td>
<td>mm/min</td>
<td>0…10,000</td>
<td>0…10,000</td>
<td>0…10,000</td>
<td>0…10,000</td>
</tr>
<tr>
<td>Grinding wheel spindle drive – power</td>
<td>kW</td>
<td>25</td>
<td>50</td>
<td>75</td>
<td>115</td>
</tr>
<tr>
<td>Rpm range</td>
<td>rpm</td>
<td>5,000 (8,000)</td>
<td>5,000 (8,000)</td>
<td>5,000 (8,000)</td>
<td>5,000 (8,000)</td>
</tr>
</tbody>
</table>

1) optionally 20 m/min 2) dependent on size
MÄGERLE MGC FT with stationary workpiece carrier

Highest load bearing capacity for large and heavy workpieces

MÄGERLE MGC FT

The MGC grinding centre with stationary table is designed for the high-precision processing of large and heavy workpieces. With a broad range of different table sizes and vertical strokes, this machine meets the highest requirements in respect of load bearing capacity. Like all models in the MGC series, this grinding centre is also based on the proven modular concept. Thanks to its variety of configurations with one or several spindles in a horizontal or vertical arrangement as well as a multitude of additional components, the MGC with fixed console is also one of the front-runners in its category with regard to flexibility.

MÄGERLE MGC ST with swivelling table

Maximum productivity in batch production

MÄGERLE MGC ST

Like its sister systems in the MFP series, the MÄGERLE Grinding Center delivers superb results for creep feed grinding with high removal capacities as well as for profile and surface grinding. In its swivelling table version, the MGC is also designed with the maximum ejection capacity. The 180° swivelling table allows loading and unloading of workpieces while machining is in operation. Non-productive times for workpiece change are thus largely eliminated. This results in maximum productivity for small and large batches, as well as in special applications. The MGC with swivelling table, in conjunction with the automatic loading and unloading system, frees up additional reserves. The openly accessible swivelling table also provides the ideal interface.

### MÄGERLE MGC FT

<table>
<thead>
<tr>
<th>Table Size</th>
<th>X-axis</th>
<th>Y-axis</th>
<th>Z-axis</th>
<th>Spindle Drive</th>
<th>Rpm Range</th>
<th>Fixed Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>080</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td>kW</td>
<td>rpm</td>
<td>mm × mm</td>
</tr>
<tr>
<td></td>
<td>800</td>
<td>450</td>
<td>500/750</td>
<td>25/50/75</td>
<td>5 000(8 000)</td>
<td>800 × 500</td>
</tr>
<tr>
<td>130</td>
<td>1,300</td>
<td>650</td>
<td>500/750</td>
<td>50/75/115</td>
<td>10 000(15 000)</td>
<td>1300 × 750</td>
</tr>
<tr>
<td>140</td>
<td>1,400</td>
<td>900</td>
<td>750</td>
<td>50/75/115</td>
<td>10 000(15 000)</td>
<td>1400 × 750</td>
</tr>
<tr>
<td>210</td>
<td>2,100</td>
<td>–</td>
<td>750</td>
<td>50/75/115</td>
<td>10 000(15 000)</td>
<td>2100 × 750</td>
</tr>
</tbody>
</table>

### MÄGERLE MGC ST

<table>
<thead>
<tr>
<th>Table Size</th>
<th>X-axis</th>
<th>Y-axis</th>
<th>Z-axis</th>
<th>Spindle Drive</th>
<th>Rpm Range</th>
<th>Fixed Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>130</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td>kW</td>
<td>rpm</td>
<td>mm × mm</td>
</tr>
<tr>
<td></td>
<td>1,300</td>
<td>450</td>
<td>500/750</td>
<td>25/50/75</td>
<td>5 000(8 000)</td>
<td>1300 × 750</td>
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<tr>
<td>140</td>
<td>1,400</td>
<td>650</td>
<td>500/750</td>
<td>50/75/115</td>
<td>10 000(15 000)</td>
<td>1400 × 750</td>
</tr>
<tr>
<td>210</td>
<td>2,100</td>
<td>900</td>
<td>750</td>
<td>50/75/115</td>
<td>10 000(15 000)</td>
<td>2100 × 750</td>
</tr>
<tr>
<td>260</td>
<td>2,600</td>
<td>–</td>
<td>750</td>
<td>50/75/115</td>
<td>10 000(15 000)</td>
<td>2600 × 750</td>
</tr>
<tr>
<td>330</td>
<td>3,300</td>
<td>–</td>
<td>750</td>
<td>50/75/115</td>
<td>10 000(15 000)</td>
<td>3300 × 750</td>
</tr>
</tbody>
</table>

1) optionally 20 m/min  2) dependent on size
UNITED GRINDING
PRODUCT RANGE
UNITED GRINDING
PRODUCT RANGE
UNITED GRINDING
PRODUCT RANGE

MÄGERLE MGC RV with rotary table and vertical spindle
Huge versatility at the highest performance level

MÄGERLE MGC RH with rotary table and horizontal spindle
First-class results for Hirth gears and curvic couplings

MÄGERLE MGC RH
With table diameters of up to 2.5 metres and a maximum load-bearing capacity of 12 tons, the MGC rotary table grinding centre is unequalled throughout the world. Well-known companies in the power turbine industry rely on this powerful concept. This grinding centre is unrivalled, particularly when it comes to machining turbine blades with Hirth gears and curvic couplings of the highest quality. The direct-drive rotary table mounted on hydrostatic bearings ensures the necessary precision, with a positioning accuracy of less than three angular seconds.

- Rotary table with load-bearing capacity of up to 12 tons
- Hirth gears and curvic couplings of the highest quality

<table>
<thead>
<tr>
<th>MGC RH</th>
<th>140</th>
<th>210</th>
<th>260</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis Longitudinal stroke mm</td>
<td>1,400</td>
<td>2,100</td>
<td>2,600</td>
</tr>
<tr>
<td>Travel speed mm/min 0...20,000</td>
<td>0...20,000</td>
<td>0...20,000</td>
<td></td>
</tr>
<tr>
<td>Y-axis Vertical stroke mm</td>
<td>450</td>
<td>650</td>
<td>900</td>
</tr>
<tr>
<td>Travel speed mm/min 0...10,000</td>
<td>0...10,000</td>
<td>0...10,000</td>
<td></td>
</tr>
<tr>
<td>Z-axis Transverse stroke mm</td>
<td>500/575</td>
<td>500/575</td>
<td>500/575</td>
</tr>
<tr>
<td>Travel speed mm/min 0...10,000</td>
<td>0...10,000</td>
<td>0...10,000</td>
<td></td>
</tr>
<tr>
<td>V-axis profile crushing device, roll diameter mm 600</td>
<td>600</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Roll drive AC drive rpm 6,000</td>
<td>6,000</td>
<td>6,000</td>
<td></td>
</tr>
<tr>
<td>Grinding wheel spindle drive – power kW 30</td>
<td>30</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Rpm range 5,000</td>
<td>5,000</td>
<td>5,000</td>
<td></td>
</tr>
<tr>
<td>Grinding wheel peripheral speed m/s 35</td>
<td>35</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Grinding wheel dimensions Ø × W mm 400/500/600</td>
<td>400/500/600</td>
<td>400/500/600</td>
<td></td>
</tr>
</tbody>
</table>

MÄGERLE MGC RH with rotary table and horizontal spindle
First-class results for Hirth gears and curvic couplings

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With table diameters of up to 2.5 metres and a maximum load-bearing capacity of 12 tons, the MGC rotary table grinding centre is unequalled throughout the world. Well-known companies in the power turbine industry rely on this powerful concept. This grinding centre is unrivalled, particularly when it comes to machining turbine blades with Hirth gears and curvic couplings of the highest quality. The direct-drive rotary table mounted on hydrostatic bearings ensures the necessary precision, with a positioning accuracy of less than three angular seconds.

- Rotary table with load-bearing capacity of up to 12 tons
- Hirth gears and curvic couplings of the highest quality

<table>
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<tr>
<th>MGC RH</th>
<th>140</th>
<th>210</th>
<th>260</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis Longitudinal stroke mm</td>
<td>1,400</td>
<td>2,100</td>
<td>2,600</td>
</tr>
<tr>
<td>Travel speed mm/min 0...20,000</td>
<td>0...20,000</td>
<td>0...20,000</td>
<td></td>
</tr>
<tr>
<td>Y-axis Vertical stroke mm</td>
<td>450</td>
<td>650</td>
<td>900</td>
</tr>
<tr>
<td>Travel speed mm/min 0...10,000</td>
<td>0...10,000</td>
<td>0...10,000</td>
<td></td>
</tr>
<tr>
<td>Z-axis Transverse stroke mm</td>
<td>500/575</td>
<td>500/575</td>
<td>500/575</td>
</tr>
<tr>
<td>Travel speed mm/min 0...10,000</td>
<td>0...10,000</td>
<td>0...10,000</td>
<td></td>
</tr>
<tr>
<td>V-axis profile crushing device, roll diameter mm 600</td>
<td>600</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Roll drive AC drive rpm 6,000</td>
<td>6,000</td>
<td>6,000</td>
<td></td>
</tr>
<tr>
<td>Grinding wheel spindle drive – power kW 30</td>
<td>30</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Rpm range 5,000</td>
<td>5,000</td>
<td>5,000</td>
<td></td>
</tr>
<tr>
<td>Grinding wheel peripheral speed m/s 35</td>
<td>35</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Grinding wheel dimensions Ø × W mm 400/500/600</td>
<td>400/500/600</td>
<td>400/500/600</td>
<td></td>
</tr>
</tbody>
</table>

MÄGERLE MGC RV with rotary table and horizontal spindle
Versatility with the highest production quality level is the outstanding strength of this vertical grinding machine. It demonstrates its capabilities particularly in the manufacture of bearing rings, where optimum runout characteristics are required for maximum smooth running. Equipped with rotary table and fully automatic tool changer, this vertical grinding machine can master other functions in addition to grinding. Whether turning, milling, drilling, reaming or boring, this system delivers the same impressive results. The vertically arranged spindle swivelling in the range of ± 50° offers plenty of space for machining a wide variety of workpieces. An interchangeable spindle measuring probe guarantees that each individual workpiece is machined in a single clamping with consistently high perfection.

- Suitable for multi-process machining
- Fully automatic tool changer
- Turning, milling, drilling or drill-finishing in a single clamping
- Interchangeable spindle measuring probe

<table>
<thead>
<tr>
<th>MÄGERLE MGC RV</th>
<th>140</th>
<th>210</th>
<th>260</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis Longitudinal stroke mm</td>
<td>1,400</td>
<td>2,100</td>
<td>2,600</td>
</tr>
<tr>
<td>Travel speed mm/min 0...20,000</td>
<td>0...20,000</td>
<td>0...20,000</td>
<td></td>
</tr>
<tr>
<td>Y-axis Vertical stroke mm</td>
<td>450</td>
<td>650</td>
<td>900</td>
</tr>
<tr>
<td>Travel speed mm/min 0...10,000</td>
<td>0...10,000</td>
<td>0...10,000</td>
<td></td>
</tr>
<tr>
<td>Z-axis Transverse stroke mm</td>
<td>500/575</td>
<td>500/575</td>
<td>500/575</td>
</tr>
<tr>
<td>Travel speed mm/min 0...10,000</td>
<td>0...10,000</td>
<td>0...10,000</td>
<td></td>
</tr>
<tr>
<td>V-axis profile crushing device, roll diameter mm 600</td>
<td>600</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Roll drive AC drive rpm 6,000</td>
<td>6,000</td>
<td>6,000</td>
<td></td>
</tr>
<tr>
<td>Grinding wheel spindle drive – power kW 30</td>
<td>30</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Rpm range 5,000</td>
<td>5,000</td>
<td>5,000</td>
<td></td>
</tr>
<tr>
<td>Grinding wheel peripheral speed m/s 35</td>
<td>35</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Grinding wheel dimensions Ø × W mm 400/500/600</td>
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<td>400/500/600</td>
<td></td>
</tr>
</tbody>
</table>

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- Suitable for multi-process machining
- Fully automatic tool changer
- Turning, milling, drilling or drill-finishing in a single clamping
- Interchangeable spindle measuring probe
MÄGERLE MGC Special
Tailor-made grinding centres for user-specific requirements

The standardised MÄGERLE modular concept can be freely configured to provide individual solutions. Grinding centres which are completely tailored to specific customer requirements are developed within the scope of a proven product range. Single and multiple spindle systems with a horizontal or vertical arrangement can be combined as desired with stationary workpiece carriers, swivelling table or rotary table, in any dimensions. The result in all cases is a made-to-measure machine which meets the demanding requirements for manufacturing quality in the automotive, aviation and hydraulic sectors, in turbine construction and mechanical engineering, as well as in the roller bearing and tool industry, while ensuring optimal cost-effectiveness.

- Single and multiple spindle systems
- Optimum cost effectiveness and manufacturing quality in a wide range of applications
- Round/swivel/stationary table variants

### MÄGERLE MGC Special

Tailor-made grinding centres for user-specific requirements

<table>
<thead>
<tr>
<th>X-axis</th>
<th>Longitudinal stroke max.</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel speed</td>
<td>mm/min</td>
<td>5,500</td>
</tr>
<tr>
<td>Y-axis</td>
<td>Vertical stroke</td>
<td>mm</td>
</tr>
<tr>
<td>Travel speed</td>
<td>mm/min</td>
<td>0 … 10 000</td>
</tr>
<tr>
<td>Z-axis</td>
<td>Transverse stroke</td>
<td>mm</td>
</tr>
<tr>
<td>Travel speed</td>
<td>mm/min</td>
<td>0 … 10 000</td>
</tr>
<tr>
<td>Spindle configurations</td>
<td>Horizontal, vertical, swivelling spindle(s), special spindles</td>
<td></td>
</tr>
<tr>
<td>Spindle configurations</td>
<td>Multiple spindle configurations</td>
<td></td>
</tr>
</tbody>
</table>

1) optionally up to 20 m/min and dependent on size

**MGC Special**

### MGC with extended machine configurations

<table>
<thead>
<tr>
<th>X-axis</th>
<th>Longitudinal stroke max.</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel speed</td>
<td>mm/min</td>
<td>5,500</td>
</tr>
<tr>
<td>Y-axis</td>
<td>Vertical stroke</td>
<td>mm</td>
</tr>
<tr>
<td>Travel speed</td>
<td>mm/min</td>
<td>0 … 10 000</td>
</tr>
<tr>
<td>Z-axis</td>
<td>Transverse stroke</td>
<td>mm</td>
</tr>
<tr>
<td>Travel speed</td>
<td>mm/min</td>
<td>0 … 10 000</td>
</tr>
<tr>
<td>V-axis profile device, roll width</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>Grinding wheel spindle drive - power</td>
<td>kW</td>
<td></td>
</tr>
<tr>
<td>Rpm range</td>
<td>rpm</td>
<td>0 … 30 000</td>
</tr>
<tr>
<td>Grinding wheel dimensions (Ø)</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>Rotary table diameter</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>Rotary table variants</td>
<td>Rotary indexing table, rotary table with hydrostatic bearings and direct drive</td>
<td></td>
</tr>
<tr>
<td>Spindle configurations</td>
<td>Vertical, swivelling spindle(s), special spindles</td>
<td></td>
</tr>
</tbody>
</table>

1) optionally up to 20 m/min and dependent on size
BLOHM and JUNG – two brands, one philosophy

BLOHM grinding machines have been used worldwide since 1924, wherever productivity, performance and precision are required. They are developed in Hamburg and produced in a modern manufacturing facility to high quality standards. More than 15,000 delivered machines reflect the international recognition of the BLOHM brand. This accumulated experience and ongoing collaboration with colleges as well as in European research projects form the basis for the company’s special grinding expertise in the area of surface and profile grinding. The product range includes standard machines for individual and small batch production, as well as customised production machines.

JUNG machines are small and medium-sized grinding machines for fine finishing of precision parts for industry sectors such as die & mould, automotive or general machine manufacturers.

The JUNG brand has been considered one of the top names worldwide for highest precision and surface quality in surface and profile grinding since 1919. More than 19,000 machines delivered internationally have established a high standard in grinding operations and form the basis for the company’s outstanding reputation for precision, durability and reliability.

JUNG machines are small and medium-sized grinding machines for fine finishing of precision parts for industry sectors such as die & mould, automotive or general machine manufacturers.

BLOHM and JUNG – two brands, one philosophy

BLOHM PLANOMAT HP
Cutting-edge technology for surface and profile grinding

BLOHM PLANOMAT HP
High infed speeds and accelerations and the use of high-precision re-circulating ball screws with digital drives distinguish the PLANOMAT HP series. Virtually maintenance-free linear guideways, linear scales for the Y and Z-axis and a powerful grinding wheel spindle drive with 15 kW (optionally 24.5 kW) complete the concept. The machine bed, travelling column, table and grinding head of the PLANOMAT HP are made of grey cast iron, guaranteeing excellent rigidity and damping. The rigidity and weight have been further optimised using 3D-CAD with finite element calculations. This design principle guarantees high precision and a long working life.

- Modular system
- High quality components made from grey cast iron
- Thermal and vibration engineering characteristics optimised via finite element calculation
- Precision linear guideways
- High quality, ground ball-type linear drives

BLOHM PLANOMAT HP CNC
The BLOHM PLANOMAT HP CNC is available with the SIEMENS 840D solution line. A wide range of grinding and dressing programs opens up all surface and profile grinding options.

Accessories such as table-mounted dressing devices, single-axis dividing devices, horizontal grinding arms, vertical grinding spindles, internal grinding attachments and measuring probes enable a wide range of application for the PLANOMAT HP.

<table>
<thead>
<tr>
<th>PLANOMAT HP</th>
<th>408</th>
<th>412</th>
<th>608</th>
<th>612</th>
<th>616</th>
<th>620</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grinding range</td>
<td>mm</td>
<td>400 x 800</td>
<td>400 x 1,200</td>
<td>600 x 800</td>
<td>600 x 1,200</td>
<td>600 x 1,600</td>
</tr>
<tr>
<td>Table clamping surface with additional areas</td>
<td>mm</td>
<td>400 x 1,200</td>
<td>400 x 1,600</td>
<td>600 x 1,200</td>
<td>600 x 1,600</td>
<td>600 x 2,000</td>
</tr>
<tr>
<td>Distance between table and spindle centre</td>
<td>mm</td>
<td>900</td>
<td>1,300</td>
<td>900</td>
<td>1,300</td>
<td>1,700</td>
</tr>
<tr>
<td>X-axis</td>
<td>mm/min</td>
<td>30</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Y-axis</td>
<td>mm/min</td>
<td>30</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Z-axis</td>
<td>mm/min</td>
<td>30</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Grinding wheel spindle drive, variable</td>
<td>kW/rpm</td>
<td>15/1000</td>
<td>15/1000</td>
<td>15/1000</td>
<td>15/1000</td>
<td>15/1000</td>
</tr>
<tr>
<td>Grinding wheel dimensions (Ø x W x ø)</td>
<td>mm</td>
<td>400 x 30</td>
<td>100 x 127</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
BLOHM PROFIMAT MC
The compact production solution

The PROFIMAT MC is an exceptionally compact and high-performance production machine for flexible technological applications. Machine-specific accessories open up a broad field of application. Different spindle variants enable a wide range of application. The six-axis CNC profile grinding machines can be equipped with a horizontal spindle for drive capacities up to 62 kW, and alternatively with a stationary or an NC-swivelling vertical spindle with grinding spindle speeds of up to 120 000 revolutions per minute.

- Travelling column design
- Rigid machine structure thanks to generous guide spacings
- High infeed speeds and accelerations
- RazorTec®, the new grinding wheel cleaning process

<table>
<thead>
<tr>
<th>PROFIMAT</th>
<th>MC 607</th>
<th>MC 610</th>
<th>MC 610 VS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grinding range mm</td>
<td>600 × 700</td>
<td>600 × 1000</td>
<td>600 × 1000</td>
</tr>
<tr>
<td>Table diameter mm</td>
<td>–</td>
<td>–</td>
<td>600 × 1000</td>
</tr>
<tr>
<td>X-axis column longitudinal travel, max. mm</td>
<td>700</td>
<td>1 000</td>
<td>1 000</td>
</tr>
<tr>
<td>Y-axis grinding head vertical travel mm</td>
<td>650</td>
<td>550</td>
<td>1) 800</td>
</tr>
<tr>
<td>Z-axis column transverse travel mm</td>
<td>520</td>
<td>520</td>
<td>520</td>
</tr>
<tr>
<td>A-axis, dividing device, swivelling range (opt.) degrees</td>
<td>+ 105 / - 90</td>
<td>+ 105 / - 90</td>
<td></td>
</tr>
<tr>
<td>C-axis, dividing device, swivelling range (opt.) degrees</td>
<td>360</td>
<td>360</td>
<td></td>
</tr>
<tr>
<td>V-axis, stroke of head dressing device (opt.) mm</td>
<td>127</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Grinding wheel spindle drive, variable kW/rpm</td>
<td>– up to 62/8 000</td>
<td>– up to 62/8 000</td>
<td>– up to 62/8 000</td>
</tr>
<tr>
<td>Grinding wheel dimensions (Ø × W × ø max.) mm</td>
<td>500 × 200 × 127</td>
<td>500 × 200 × 127</td>
<td>500 × 100 × 127</td>
</tr>
</tbody>
</table>

1) Optional 800 mm

BLOHM PROFIMAT RT
The compact production solution

The high-performance PROFIMAT RT is the perfect grinding solution for the production of large batch sizes and for series production. Equipped with a rotary indexing table, it reduces auxiliary times thanks to loading and unloading during the grinding process. Low set-up costs combined with high efficiency and the possibility of simple adaptation of automatic workpiece change systems set benchmarks in modern and cost-effective production.

- Rotary indexing table diameter 1 000 mm
- Travelling column design
- Rigid machine structure thanks to generous guide spacings
- High infeed speeds and accelerations

<table>
<thead>
<tr>
<th>PROFIMAT</th>
<th>RT 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grinding range mm</td>
<td>–</td>
</tr>
<tr>
<td>Table diameter mm</td>
<td>1 000</td>
</tr>
<tr>
<td>X-axis column longitudinal travel, max. mm</td>
<td>1 000</td>
</tr>
<tr>
<td>Y-axis grinding head vertical travel mm</td>
<td>550</td>
</tr>
<tr>
<td>Z-axis column transverse travel mm</td>
<td>520</td>
</tr>
<tr>
<td>A-axis, dividing device, swivelling range (opt.) degrees</td>
<td></td>
</tr>
<tr>
<td>C-axis, dividing device, swivelling range (opt.) degrees</td>
<td></td>
</tr>
<tr>
<td>V-axis, stroke of head dressing device (opt.) mm</td>
<td>127</td>
</tr>
<tr>
<td>Grinding wheel spindle drive, variable kW/rpm</td>
<td>up to 62/8 000</td>
</tr>
<tr>
<td>Grinding wheel dimensions (Ø × W × ø max.) mm</td>
<td>500 × 200 × 127</td>
</tr>
</tbody>
</table>

1) Optional 800 mm
**BLOHM PROFIMAT XT**
The benchmark for efficiency in profile grinding

**BLOHM PROFIMAT XT**
The PROFIMAT XT builds on the experience and quality of the hugely successful PROFIMAT MT. Higher axis speeds, higher accelerations and increased system rigidity – the combination of enhanced influential factors inevitably results in greater productivity with higher component quality at the same time. These properties distinguish the PROFIMAT XT as a study and powerful production grinding machine. With an extensive range of accessories, the PROFIMAT XT can be optimally adapted to all customer requirements.

- Modular system
- High-quality components made from ductile cast
- Thermal and vibration engineering characteristics optimised via finite element calculation
- Precision linear guideways
- High quality, ground ball-type linear drives

**FIT – Four integrated technologies**

**PROFIMAT XT**

<table>
<thead>
<tr>
<th></th>
<th>408</th>
<th>412</th>
<th>608</th>
<th>612</th>
<th>620</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grinding range (W x L)</strong> mm</td>
<td>400 x 800</td>
<td>400 x 1,200</td>
<td>600 x 1,200</td>
<td>600 x 1,700</td>
<td>600 x 2,000</td>
</tr>
<tr>
<td><strong>Table clamping surface with additional areas</strong> mm</td>
<td>400 x 1,300</td>
<td>400 x 1,750</td>
<td>600 x 1,300</td>
<td>600 x 1,700</td>
<td>2,500</td>
</tr>
<tr>
<td><strong>Distance between table and spindle centre</strong> mm</td>
<td>970</td>
<td>970</td>
<td>970</td>
<td>970</td>
<td>970</td>
</tr>
<tr>
<td><strong>X-axis</strong> table longitudinal travel, max. mm/mm/min</td>
<td>1,100</td>
<td>1,100</td>
<td>1,500</td>
<td>1,500</td>
<td>2,300</td>
</tr>
<tr>
<td><strong>Infeed speed</strong> mm/min</td>
<td>30...40 000</td>
<td>30...40 000</td>
<td>30...40 000</td>
<td>30...40 000</td>
<td>30...40 000</td>
</tr>
<tr>
<td><strong>Y-axis</strong> grinding head vertical travel mm/min</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Infeed speed</strong> mm/min</td>
<td>4...10 000</td>
<td>4...10 000</td>
<td>4...10 000</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Z-axis</strong> column transverse travel mm/min</td>
<td>360</td>
<td>360</td>
<td>560</td>
<td>560</td>
<td>560</td>
</tr>
<tr>
<td><strong>Infeed speed</strong> mm/min</td>
<td>4...10 000</td>
<td>4...10 000</td>
<td>4...10 000</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>V-axis, stroke of head dressing device (opt.)</strong> mm</td>
<td>160</td>
<td>160</td>
<td>160</td>
<td>160</td>
<td>160</td>
</tr>
</tbody>
</table>

- Grinding wheel spindle drive, variable kW/rpm | 44/8 000 (option 62/9 000) |
- Grinding wheel dimensions (Ø x W x ø) mm | 400 x 160 x 127 (option 400 x 200 x 203.2) |

**BLOHM PROFIMAT MT**
The benchmark for efficiency in profile grinding

**BLOHM PROFIMAT MT**
The PROFIMAT MT has been systematically developed as a robust, high-performance profile grinding machine for flexible technological applications. The PROFIMAT MT flexible powerhouse is the right choice for applications where the production process requires high metal removal rates. High speeds and varied applications characterise this machine. With an extensive range of accessories, the PROFIMAT MT can be optimally adapted to all customer requirements. CD, IPD and all CBN grinding processes are easily possible on the PROFIMAT MT.

- Modular system
- High-quality components made from ductile cast
- Thermal and vibration engineering characteristics optimised via finite element calculation
- Precision linear guideways
- High quality, ground ball-type linear drives

**FIT – Four integrated technologies**

**PROFIMAT MT**

<table>
<thead>
<tr>
<th></th>
<th>408</th>
<th>412</th>
<th>608</th>
<th>612</th>
<th>616</th>
<th>620</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grinding range (W x L)</strong> mm</td>
<td>400 x 800</td>
<td>400 x 1,200</td>
<td>600 x 800</td>
<td>600 x 1,200</td>
<td>600 x 1,600</td>
<td>600 x 2,000</td>
</tr>
<tr>
<td><strong>Table clamping surface with additional areas</strong> mm</td>
<td>400 x 1,200</td>
<td>400 x 1,600</td>
<td>600 x 1,200</td>
<td>600 x 1,600</td>
<td>600 x 2,000</td>
<td>600 x 2,400</td>
</tr>
<tr>
<td><strong>Distance between table and spindle centre</strong> mm</td>
<td>970</td>
<td>970</td>
<td>970</td>
<td>970</td>
<td>970</td>
<td>970</td>
</tr>
<tr>
<td><strong>X-axis</strong> table longitudinal travel, max. mm/mm/min</td>
<td>900</td>
<td>900</td>
<td>1,300</td>
<td>1,300</td>
<td>1,700</td>
<td>2,100</td>
</tr>
<tr>
<td><strong>Infeed speed</strong> mm/min</td>
<td>30...40 000</td>
<td>30...40 000</td>
<td>30...40 000</td>
<td>30...40 000</td>
<td>30...40 000</td>
<td>30...40 000</td>
</tr>
<tr>
<td><strong>Y-axis</strong> grinding head vertical travel mm/min</td>
<td>560 (option 800)</td>
<td>560 (option 800)</td>
<td>560 (option 800)</td>
<td>560 (option 800)</td>
<td>560 (option 800)</td>
<td>560 (option 800)</td>
</tr>
<tr>
<td><strong>Infeed speed</strong> mm/min</td>
<td>4...3,750</td>
<td>4...3,750</td>
<td>4...3,750</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Z-axis</strong> column transverse travel mm/min</td>
<td>320</td>
<td>320</td>
<td>520</td>
<td>520</td>
<td>520</td>
<td>520</td>
</tr>
<tr>
<td><strong>Infeed speed</strong> mm/min</td>
<td>4...4 000</td>
<td>4...4 000</td>
<td>4...4 000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>V-axis, stroke of head dressing device (opt.)</strong> mm</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>130</td>
</tr>
<tr>
<td><strong>Grinding wheel spindle drive, variable kW/rpm</strong></td>
<td>44/8 000 (option 62/9 000)</td>
<td>44/8 000 (option 62/9 000)</td>
<td>44/8 000 (option 62/9 000)</td>
<td>44/8 000 (option 62/9 000)</td>
<td>44/8 000 (option 62/9 000)</td>
<td>44/8 000 (option 62/9 000)</td>
</tr>
<tr>
<td><strong>Grinding wheel dimensions (Ø x W x ø)</strong> mm</td>
<td>560 x 200 x 127 (203.2)</td>
<td>560 x 200 x 127 (203.2)</td>
<td>560 x 200 x 127 (203.2)</td>
<td>560 x 200 x 127 (203.2)</td>
<td>560 x 200 x 127 (203.2)</td>
<td>560 x 200 x 127 (203.2)</td>
</tr>
</tbody>
</table>
**PROKOS XT**

The PROKOS XT is the ideal grinding machine for the automated machining of complex workpieces. This multiple-axis grinding centre can also execute drilling and milling operations, in addition to grinding. A special highlight: the unique SmartCAM software ensures complete CAD consistency, from the planning phase through to the NC program.

- Complete machining in a single clamping
- Significantly shorter processing times
- Maximum productivity
- Reduced thermal loading of the workpiece through speed stroke grinding
- Tool changer with 24 positions
- Collision testing through prior simulation (SmartCAM)
- Can also be used as a fully automated cell with robot, loading, cleaning and measuring station

**PROKOS XT**

<table>
<thead>
<tr>
<th>Workpiece size</th>
<th>mm</th>
<th>300 × 300 × 300</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis Table longitudinal travel</td>
<td>mm</td>
<td>450</td>
</tr>
<tr>
<td>Infeed</td>
<td>mm/min</td>
<td>120,000</td>
</tr>
<tr>
<td>Y-axis Grinding head vertical travel</td>
<td>mm</td>
<td>450</td>
</tr>
<tr>
<td>Infeed</td>
<td>mm/min</td>
<td>25,000</td>
</tr>
<tr>
<td>Z-axis Grinding head transverse travel</td>
<td>mm</td>
<td>900</td>
</tr>
<tr>
<td>Infeed</td>
<td>mm/min</td>
<td>50,000</td>
</tr>
<tr>
<td>Grinding wheel spindle drive, variable</td>
<td>kW/rpm</td>
<td>35/4,300</td>
</tr>
<tr>
<td>Speed, max.</td>
<td>rpm</td>
<td>12,000</td>
</tr>
<tr>
<td>A-axis Swivelling grinding spindle indexing speed</td>
<td>degrees</td>
<td>120</td>
</tr>
<tr>
<td>B-axis Indexing table on machine table indexing speed</td>
<td>rpm</td>
<td>20</td>
</tr>
<tr>
<td>Grinding wheel dimensions (Ø × W × ø)</td>
<td>mm</td>
<td>300 × 50 × 76,2</td>
</tr>
</tbody>
</table>

**J600**

With the J600 JUNG presents a modern surface and profile grinding machine for the highest precision and surface quality in production. This machine offers a host of potential applications - from individual component production through to small batch production in all industries. The machine realises its full potential particularly when grinding demanding die and mould applications.

- All important elements are made from grey cast iron
- Proven cross-slide design
- X-axis with hydrodynamic EasySlide guideway
- Additional electronic handwheel in the area of the work area door for the X, Y and Z-axis
- Polygon grinding
- Unique head-mounted dresser PA-K37

**J600**

<table>
<thead>
<tr>
<th>Grinding range</th>
<th>mm</th>
<th>300 × 600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnetic clamping plate</td>
<td>mm</td>
<td>300 × 600</td>
</tr>
<tr>
<td>Table clamping surface with additional areas</td>
<td>mm</td>
<td>300 × 1,000</td>
</tr>
<tr>
<td>Distance between table and spindle centre</td>
<td>mm</td>
<td>150…580</td>
</tr>
<tr>
<td>Table loading with magnetic clamping plate, max.</td>
<td>kg</td>
<td>400</td>
</tr>
<tr>
<td>Table height above floor</td>
<td>mm</td>
<td>925</td>
</tr>
<tr>
<td>X-axis Table longitudinal travel, max.</td>
<td>mm</td>
<td>700</td>
</tr>
<tr>
<td>Infeed speed</td>
<td>mm/min</td>
<td>30…50,000</td>
</tr>
<tr>
<td>Y-axis Grinding head vertical travel, max.</td>
<td>mm</td>
<td>450</td>
</tr>
<tr>
<td>Infeed speed</td>
<td>mm/min</td>
<td>4…5,000</td>
</tr>
<tr>
<td>Z-axis Cross slide transverse travel, max.</td>
<td>mm</td>
<td>345</td>
</tr>
<tr>
<td>Infeed speed</td>
<td>mm/min</td>
<td>4…4,000</td>
</tr>
<tr>
<td>Grinding wheel spindle drive, variable</td>
<td>kW/rpm</td>
<td>8.5/1,500</td>
</tr>
<tr>
<td>Speed, max.</td>
<td>rpm</td>
<td>5,000</td>
</tr>
<tr>
<td>Grinding wheel dimensions (Ø × W × ø)</td>
<td>mm</td>
<td>150…300 × 14…50 × 76,2</td>
</tr>
</tbody>
</table>
BLOHM and JUNG software

Production software
BLOHM production software is optimally aligned with the requirements of series production. It enables customised workpiece programs to be created quickly and easily. The software is also perfectly suited to small batches, thanks to its simple and quick-to-learn programming.

The modular software can be adapted to your specific requirements through additional cycles. We offer optimised program packages for different technologies, such as broaching, for example.

Your advantages:
- User-friendly with high level of programming convenience
- Flexible and open to adaptations
- Simple set-up with mobile manual control unit
- SIEMENS 840D solution line CNC control system

Tailor-made die and mould solutions
The CNC control system is a combination of the proven SIEMENS 840D solution line and the program modules developed by JUNG for the die and mould industry. The software is especially suitable for individual component and small batch production on the J600 or the PLANOMAT HP.

Your advantages:
- Cost-effective and flexible
- User-friendly and flexible
- Various optional grinding programs: Rough machining, plunge grinding, guideway grinding Z/Y and XY, Z-axis transverse positioning, face grinding, punch grinding with foot

EasyProfile
The EasyProfile control system is a combination of the SIEMENS 840D solution line and the innovative operator interface developed by BLOHM. The clear, menu-guided structure of the software is simple and self-explanatory.

Your advantages:
- Optimised operator guidance using smart keys
- Intuitive operation
- Quick adaptation of dressing and grinding cycles through parameters with graphic support
- No NC knowledge required
- Fixed programs for workshop-compliant handling by skilled workers
- 12” touch screen colour display

GripsProfile
GripsProfile is a software extension for all BLOHM and JUNG machines. With the help of this option, users can quickly and easily create the contours for a grinding wheel to be profiled. 13 standard profiles are available in the basic version of the software. Any profiles can be created with the full version and the additional CAD tool. Guideway grinding tasks in the longitudinal and transverse direction can also be easily handled. All that is needed to do this is a CAD drawing. The optional distortion of profiles, e.g. for relief grinding of broaches and broach plates, is possible with this software.
Cylindrical grinding expertise

Core competence, three strong brands: STUDER, SCHAUDT and MIKROSA combine very sound knowledge regarding all aspects of technology and the user benefits of cylindrical grinding. The innovative power of the three brands is reflected in a body of knowledge of unique quality. Whatever the specific requirements, an expert partner is always at your side, consistently taking care of your application tasks.
STUDER has been cultivating the Art of Grinding since 1912

The name STUDER stands for more than 100 years of experience in the development and production of precision cylindrical grinding machines. “The Art of Grinding” is our passion, maximum precision our claim, and unrivalled Swiss quality our standard.

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 our 100 years of know-how in relation to the grinding process. Our customers include companies from the machine tool industry, automotive engineering, die and mould, the aerospace industry, pneumatics/hydraulics, electronics/electrical engineering, medical technology, the watch industry and job order production. They value maximum precision, safety, productivity and longevity. 24 000 manufactured and delivered systems make us both the market and technology leader in universal, external, internal and non-circular grinding. Around 800 employees, including 80 apprentices, work day in, day out to ensure that “The Art of Grinding” will continue to remain closely linked to the name STUDER in the future.

STUDER conventional cylindrical grinding machines S20 | S30

STUDER S20 is the compact universal cylindrical grinding machine with electromechanical drives for the production of small, precise workpieces in individual and small batch production.

- Cross slide with wheelhead for external grinding with right grinding wheel and mounting surface for internal grinding attachment
- Automatic grinding cycles for plunge and traverse grinding
- Machine table with swivelling range of 30° and 15°

STUDER S30 is the universal cylindrical grinding machine with hydraulic drives for the production of medium-sized, precise workpieces in individual and small batch production.

- Turret wheelhead for external and internal grinding
- Automatic grinding cycles for plunge and traverse grinding
- Swivelling machine table
- Machine bed made of Granitan®

<table>
<thead>
<tr>
<th></th>
<th>S20</th>
<th>S30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance between centres mm</td>
<td>400/650</td>
<td>650/1 000</td>
</tr>
<tr>
<td>Grinding length mm</td>
<td>400/650</td>
<td>650/1 000</td>
</tr>
<tr>
<td>Height of centres mm</td>
<td>100</td>
<td>125/175/225</td>
</tr>
<tr>
<td>Workpiece weight kg</td>
<td>20</td>
<td>130</td>
</tr>
<tr>
<td>X-axis track system mm</td>
<td>25</td>
<td>280</td>
</tr>
<tr>
<td>Z-axis track system mm</td>
<td>425/650</td>
<td>700/1 000</td>
</tr>
<tr>
<td>Grinding wheel dimensions (Ø × W × ø) mm</td>
<td>350 × 32 (50) × 127</td>
<td>400 × 62 (80) × 127</td>
</tr>
<tr>
<td>Grinding wheel spindle drive kW</td>
<td>3</td>
<td>5.5/7.5</td>
</tr>
</tbody>
</table>
STUDER universal cylindrical grinding machines
favorit | S33 | S31 | S41

STUDER favorit
This CNC universal cylindrical grinding machine is designed for the individual and batch production of short to long workpieces. Various options such as measuring control, balancing system, ground face detection and longitudinal positioning allow it to be adapted subsequently to other grinding tasks.

- Distance between centres 400 / 650 / 1000 / 1600 mm
- Wheelhead selectable:
- Turret wheelhead with wheel on right or left and an internal grinder. Automatic swivelling with 3° Hirth serration.
- External wheelhead with wheel on the right, 0° / 15° / 30°
- External and internal grinding in a single clamping
- Mineral casting machine bed made of Granitan® S103

STUDER S31
A machine for complex and flexible grinding tasks. With a high-resolution B-axis of 0.00005°, the swivelling wheelhead enables external, internal and surface grinding in a single clamping. Experience the revolutionary StuderGuide® guide system with its damping components in the direction of movement.

- Distance between centres 400 / 650 / 1000 / 1600 mm
- Wheelhead selectable with:
- Infinite B-axis
- B-axis with 1° Hirth serration
- Dual F-groove integrated in the worktable for dresser
- Thermal stability thanks to innovative column temperature control
- StuderWIN software with StuderTechnology

STUDER S33
Universal and flexible: You can retool the S33 from grinding between centres to live grinding in record time. Even complex workpieces can be ground in just one clamping. The grinding head with two motor spindles makes this possible. You can also benefit from a large selection of wheelhead variants.

- Distance between centres 400 / 650 / 1000 / 1600 mm
- Wheelhead selectable:
- Turret wheelhead with up to 2 external grinding spindles and 1 internal grinding spindle. Automatic swivelling with 1° Hirth serration.
- External wheelhead with wheel on the right, 0° / 15° / 30°
- C-axis for the workhead, enabling form and thread grinding
- Short setup and conversion times with STUDER Quick-Set
- Standardised interfaces for loader and peripheral devices

STUDER S41
The S41 CNC universal cylindrical grinding machine is designed for grinding of complex workpieces in individual component, small batch and large batch production systems. It has fast, high-precision linear drives in the X and Z-axis. The direct drive of the B-axis reduces the swivelling time and increases positioning accuracy.

Features of the STUDER S41:
- StuderGuide® guide system in X and Z-axis with linear drive
- Large selection of grinding head variants with direct drive and 0.00005° resolution
- A variety of workpiece spindle heads are available for different grinding tasks
- Machine bed made of Granitan® S103
- Ergonomically arranged controls
- The StuderWIN operator interface creates a stable programming environment and contributes to efficient use of the machine

<table>
<thead>
<tr>
<th>favorit</th>
<th>S33</th>
<th>S31</th>
<th>S41</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance between centres mm</td>
<td>400 / 650 / 1000 / 1600</td>
<td>400 / 650 / 1000 / 1600</td>
<td>1000 / 1600</td>
</tr>
<tr>
<td>Grinding length mm</td>
<td>400 / 650 / 1000 / 1600</td>
<td>400 / 650 / 1000 / 1600</td>
<td>1000 / 1600</td>
</tr>
<tr>
<td>Height of centres mm</td>
<td>175</td>
<td>175</td>
<td>225 / 275</td>
</tr>
<tr>
<td>Workpiece weight kg</td>
<td>150</td>
<td>150</td>
<td>250</td>
</tr>
<tr>
<td>X-axis track system mm</td>
<td>370</td>
<td>370</td>
<td>350</td>
</tr>
<tr>
<td>Z-axis track system mm</td>
<td>500 / 800 / 1150 / 1750</td>
<td>500 / 800 / 1150 / 1750</td>
<td>1150 / 1750</td>
</tr>
<tr>
<td>Grinding wheel dimensions (Ø × W × ø) mm</td>
<td>500 × 63 (80) × 203</td>
<td>500 × 63 (80) × 203</td>
<td>500 × 80 (100) × 203</td>
</tr>
<tr>
<td>Grinding wheel spindle drive kW</td>
<td>7.5</td>
<td>7.5</td>
<td>15</td>
</tr>
</tbody>
</table>
STUDER production external cylindrical grinding machines  
S11 | S22

STUDER S11
The production external cylindrical grinding machine for small parts. With a mounting area of less than 1.8 m², it is extremely compact and will fit in any workshop. The StuderWIN/focus operator interface creates a stable programming environment and contributes to efficient use of the machine.

- Grinding wheel arrangement 0° or 20°
- X and Z-axis are designed as a cross slide
- The workpiece table is bolted permanently to the machine
- High-speed grinding option (HSG) with peripheral speeds up to 140 m/s

STUDER S22
The S22 is a production platform which is precisely configured for individual grinding tasks. The S22 can be perfectly integrated into a production line. It allows medium-sized workpieces to be machined with different technologies – from conventional cylindrical grinding through form and thread grinding to high-speed grinding (HSG) with peripheral speeds up to 140 m/s.

- Cross slide X: Pre-tensioned hydrostatics with linear motor or anti-friction guideways with ball-type linear drive
- Longitudinal slide Z: Hydrostatics with linear motor or guideway with patented surface structure and ball-type linear drive
- Additional NC-axis for profiling the grinding wheel
- Integrated loading unit or load cells for loading and unloading from left, right or above

<table>
<thead>
<tr>
<th>Distance between centres</th>
<th>mm</th>
<th>200</th>
<th>650 (1,100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grinding length</td>
<td>mm</td>
<td>80 – 150</td>
<td>600</td>
</tr>
<tr>
<td>Height of centres</td>
<td>mm</td>
<td>125</td>
<td>175/225</td>
</tr>
<tr>
<td>Workpiece weight</td>
<td>kg</td>
<td>3</td>
<td>150</td>
</tr>
<tr>
<td>X-axis track system</td>
<td>mm</td>
<td>210</td>
<td>310</td>
</tr>
<tr>
<td>Z-axis track system</td>
<td>mm</td>
<td>210</td>
<td>210</td>
</tr>
<tr>
<td>Grinding wheel dimensions (Ø × W × ø)</td>
<td>mm</td>
<td>500 × 63 × 203 bis 610 × 160 × 305</td>
<td></td>
</tr>
<tr>
<td>Grinding wheel spindle drive</td>
<td>kW</td>
<td>4.5</td>
<td>15</td>
</tr>
</tbody>
</table>

STUDER S242 fine machining centre

STUDER S242
The S242 combined machine tool ideally combines the technologies of cylindrical grinding and hard turning. The S242 produces small to medium-sized workpieces. External/internal grinding and hard turning in a single clamping reduce primary processing and auxiliary times. This machine enables highly efficient precision machining of shafts and chuck components with a high manufacturing quality and production reliability, and is therefore the most cost-effective production method for machining high-precision hardened workpieces.

- Two or three cross slides with the option of an external grinding wheel, up to three internal grinding spindles or a turret
- Turret: 8|12 tool positions; optional: powered tools for drilling and milling
- Workhead: synchronous motor spindle
- Tailstock slide, optional: synchronous motor spindle
- In-process gauging: length positioning, length and diameter measurements

<table>
<thead>
<tr>
<th>Distance between centres, max.</th>
<th>mm</th>
<th>400/1,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grinding length, max.</td>
<td>mm</td>
<td>1,000</td>
</tr>
<tr>
<td>Height of centres</td>
<td>mm</td>
<td>90/125</td>
</tr>
<tr>
<td>Workpiece weight</td>
<td>kg</td>
<td>60</td>
</tr>
<tr>
<td>X-axis track system</td>
<td>mm</td>
<td>220</td>
</tr>
<tr>
<td>Z-axis track system</td>
<td>mm</td>
<td>850 – 1,600</td>
</tr>
<tr>
<td>Grinding wheel dimensions (Ø × W × ø)</td>
<td>mm</td>
<td>400 × 50/80 × 120</td>
</tr>
<tr>
<td>Grinding wheel spindle drive</td>
<td>kW</td>
<td>8/12</td>
</tr>
</tbody>
</table>

STUDER S11

Cylindrical
STUDER internal cylindrical grinding machines
S121 | S131 | S141 | S151

STUDER S121
The S121 universal internal cylindrical grinding machine with an exceptional price/performance ratio is the ideal machine for internal, surface and external grinding of chuck components. It is equipped either with a fixed grinding spindle or with two spindles on a turret.

- Spindle turret with two grinding spindles or one fixed spindle
- One grinding spindle can be equipped with an external grinding wheel
- External and internal grinding in a single clamping
- Taper corrections on the workhead
- Compact machine
- Good accessibility

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Length of parts, max.</th>
<th>mm</th>
<th>300</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grinding length, internal max.</td>
<td>mm</td>
<td>175</td>
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<tr>
<td></td>
<td>Grinding length, external max.</td>
<td>mm</td>
<td>100</td>
</tr>
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<td></td>
<td>Swing diameter above table</td>
<td>mm</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>Spindles on turret up to max.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HF spindle Ø</td>
<td>mm</td>
<td>100/120/140</td>
</tr>
<tr>
<td></td>
<td>External grinding wheel Ø max.</td>
<td>mm</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>X-axis track system</td>
<td>mm</td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>Z-axis track system</td>
<td>mm</td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>Taper corrections on workhead</td>
<td>manual</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Load on spindle nose</td>
<td>Nm</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>Machine weight</td>
<td>kg</td>
<td>4,400</td>
</tr>
</tbody>
</table>

STUDER S131 | S141 | S151
The S131/S141/S151 CNC universal internal cylindrical grinding machines include a host of sophisticated technical features, such as the revolutionary StuderGuide® guideway system, high-precision axis drives with linear motors, extremely fast direct drive of the grinding spindle turret and automatic swivelling of the workpiece table.

- Short changeover times and quick reprogramming of the control help to reduce auxiliary times, making the machines an attractive solution for the production of individual components as well as small and large batches. Great attention has been paid to ergonomics.

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Length of parts including clamping device max.</th>
<th>mm</th>
<th>300/700/1,300</th>
<th>700/1,300</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grinding length, internal max.</td>
<td>mm</td>
<td>160</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>Grinding length, external max.</td>
<td>mm</td>
<td>125</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>Swing diameter above table</td>
<td>mm</td>
<td>250</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>Spindles on turret up to max.</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Speed / HF spindle Ø</td>
<td>mm</td>
<td>24 000 – 120 000</td>
<td>6 000 – 120 000</td>
</tr>
<tr>
<td></td>
<td>External grinding wheel Ø max.</td>
<td>mm</td>
<td>250</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>X-axis track system</td>
<td>mm</td>
<td>350</td>
<td>425</td>
</tr>
<tr>
<td></td>
<td>Z-axis track system</td>
<td>mm</td>
<td>400</td>
<td>500/700</td>
</tr>
<tr>
<td></td>
<td>Taper corrections on workhead</td>
<td>manual</td>
<td>(-10 +20) x 15</td>
<td>(-10 +20) x 15</td>
</tr>
<tr>
<td></td>
<td>Load on spindle nose</td>
<td>Nm</td>
<td>300</td>
<td>400/500</td>
</tr>
<tr>
<td></td>
<td>Machine weight</td>
<td>kg</td>
<td>5 200</td>
<td>7 000/9 000/12 000</td>
</tr>
</tbody>
</table>
STUDER radius internal cylindrical grinding machines

**STUDER S121**

The internal cylindrical grinding machines with interpolating B-axis in the segment of internal, external, taper and radius grinding for extremely flexible machining of chuck components. Thanks to offline simulation programming and the sophisticated set-up philosophy, set-up time is significantly reduced.

- Spindle turret with two grinding spindles or one fixed spindle or two parallel spindles
- B-axis with automatic swivel
- C-axis for the workhead, enabling form and thread grinding

**STUDER S131 | S141**

The S131/S141 are especially suitable for grinding complex workpieces from very hard materials such as tungsten carbide, ceramic and sapphire as well as for general grinding tasks. Their optimal stability and stiffness makes it possible to grind diameters, cones and transitional radii (in the pendulum process by interpolation of the B and X/Z axes) in polished surface quality. The machines are ideal for the production of dies, especially in the packaging industry, in which primarily hard metal and ceramics are processed. Furthermore, hydraulic components can be produced, such as axial pump pistons, guide plates, and housings made from hardened steel, cast iron and copper. In addition, the production of complex workpieces with several cones larger than 20° to 90° is possible in a single clamping. The primary application areas here include watchmaking and medical technology using extracted materials, such as industrial ceramics, sapphire and carbide, as well as the production of human implants made from ceramic and titanium for the shoulder, knee and hip.

- Spindle turret with up to four grinding spindles
- Fully automatic B-axis with direct drive
- Swivel range from -60° to +91°
- C-axis for the workhead enables form and thread grinding
- It can be configured for any conceivable internal grinding task

---

### STUDE S121

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swing diameter above table</td>
<td>300</td>
</tr>
<tr>
<td>Grinding length, max.</td>
<td>165/250</td>
</tr>
<tr>
<td>Linear spindles up to max.</td>
<td>2</td>
</tr>
<tr>
<td>Spindles on turret up to max.</td>
<td>2</td>
</tr>
<tr>
<td>HP spindle Ø</td>
<td>100/125</td>
</tr>
<tr>
<td>External grinding wheel Ø max.</td>
<td>250 / 300</td>
</tr>
<tr>
<td>X-axis track system</td>
<td>350</td>
</tr>
<tr>
<td>Z-axis track system</td>
<td>400</td>
</tr>
<tr>
<td>B-axis track system</td>
<td>20 to 90°</td>
</tr>
<tr>
<td>Load on spindle nose</td>
<td>300</td>
</tr>
<tr>
<td>Machine weight</td>
<td>5 050</td>
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</table>

### STUDE S131 | S141

<table>
<thead>
<tr>
<th>Specification</th>
<th>S131</th>
<th>S141</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swing diameter above table</td>
<td>300</td>
<td>400</td>
</tr>
<tr>
<td>Grinding length/diameter, internal max.</td>
<td>165/100</td>
<td>205/400</td>
</tr>
<tr>
<td>Grinding length/diameter, external max.</td>
<td>120/160</td>
<td>120/160</td>
</tr>
<tr>
<td>Spindles on turret up to max.</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>HP spindle Ø</td>
<td>100/125</td>
<td>100/125</td>
</tr>
<tr>
<td>External grinding wheel Ø max.</td>
<td>250 / 300</td>
<td>250 / 300</td>
</tr>
<tr>
<td>X-axis track system</td>
<td>350</td>
<td>500</td>
</tr>
<tr>
<td>Z-axis track system</td>
<td>400</td>
<td>500</td>
</tr>
<tr>
<td>B-axis track system</td>
<td>20 to 90°</td>
<td>20 to 90°</td>
</tr>
<tr>
<td>Load on spindle nose</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Machine weight</td>
<td>5 700</td>
<td>7 400</td>
</tr>
</tbody>
</table>
STUDER production internal cylindrical grinding machines S110 | S122

STUDER production internal grinding machines set new standards in the internal, surface and external grinding of chucking components. The modular, flexible spindle arrangement enables optimal dimensioning of the machines for individual component production through to large-scale production. Both integrated and autonomous loading systems are possible.

**STUDER S110**
- HF or belt-driven spindles
- One external grinding wheel
- External and internal grinding in a single clamping
- StuderSIM simulation software can be used for the creation and simulation of grinding programs on the machine control or on a PC
- Integrated or autonomous loading systems

**STUDER S122**
- StuderGuide® guide system with linear drive
- Up to three HF grinding spindles in a linear arrangement (for internal or external machining)
- Arbou deflection compensation
- C-axis for the workhead, enabling form and thread grinding
- Automatic taper corrections on the workhead

---

**StuderWIN**
The StuderWIN operating system is designed in such a way that the operator can set up the machine efficiently and achieve cost-effective production without having to go into the menus in depth. The most important information is available at first glance.

- Economical set-up times thanks to quick and reliable set-up
- Move simply and quickly to the workpiece program

---

**STUDER Software**

- **StuderTechnology**
  - Grinding technology support, simulation, cost and time calculation

- **StuderThread**
  - The thread grinding software turns the universal cylindrical grinding machine into a thread grinding machine.

- **StuderDress**
  - Efficient profiling and unprofiling of grinding wheels.

- **StuderGRIND**
  - Workpiece-oriented program creation and data storage.
  - Cycle-related visualisation of the grinding tools on the workpiece.

- **StuderContour**
  - Profiling grinding with automatic number of cutting passes, convex grinding, contour grinding.

- **StuderFormHSM**
  - Non-circular grinding software for simple applications.

- **StuderQuick-Set (option)**
  - The “Studer Quick-Set” function allows the machine to be reset in extremely short times with the help of an electronic measuring probe. All relevant points are registered using the teach-in procedure in a guided set-up process. The operator simply needs to touch the workpiece briefly with the probe, and all of the grinding wheels are immediately ready for use again, regardless of the angle at which they are being used. “Quick-Set” precisely converts all grinding wheel reference points. The repetitive, time-consuming touching of all grinding wheels is eliminated. As a result, set-up times and the associated unproductive dwell times can be reduced by up to 90%.

- **StuderForm**
  - Non-circular grinding software for simple applications.

- **StuderCoordinate**
  - For internal grinding of completely eccentric geometries such as holes, notches, etc.

With StuderTechnology, the grinding process is far more efficient and higher quality than with “empirical values”.

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**S110 S122**

<table>
<thead>
<tr>
<th>Feature</th>
<th>S110</th>
<th>S122</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of parts, max.</td>
<td>230</td>
<td>120</td>
</tr>
<tr>
<td>Grinding length, max.</td>
<td>120</td>
<td>170</td>
</tr>
<tr>
<td>Swing diameter above table</td>
<td>204</td>
<td>220</td>
</tr>
<tr>
<td>Linear spindles up to max.</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>HF spindle Ø</td>
<td>45/60/80/100/120</td>
<td>100/120</td>
</tr>
<tr>
<td>Belt-driven spindle Ø</td>
<td>160</td>
<td>150</td>
</tr>
<tr>
<td>External grinding wheel Ø max.</td>
<td>305</td>
<td>150</td>
</tr>
<tr>
<td>X-axis track system</td>
<td>450</td>
<td>350</td>
</tr>
<tr>
<td>Z-axis track system</td>
<td>200</td>
<td>350</td>
</tr>
<tr>
<td>ø-axis setting angle (manual)</td>
<td>± 2 (opt. ±1°)</td>
<td>0.1 (opt. automatic)</td>
</tr>
<tr>
<td>Load on spindle nose</td>
<td>150</td>
<td>25/500</td>
</tr>
<tr>
<td>Machine weight</td>
<td>2000</td>
<td>4400</td>
</tr>
</tbody>
</table>
STUDER Automation

STUDER offers the easy-Load and easyLoadNC standard loaders for external and universal cylindrical grinding machines. Thanks to their modular design, they can be precisely adapted to the respective machine application and machining processes. Indexed conveyors or pallets can be used for the part infeed and outfeed.

ecoLoad is an integrated handling concept for the S22 production cylindrical grinding machine. Depending on the application, the workpieces are provided on a rotary table or are transferred by means of a shuttle to the integrated loader with V-grippers.

The smartLoad is an integrated loader for the S11, which picks up the parts outside the machine, loads them into the clamping system and places the parts outside the machine again. This function can be combined with various peripherals and offers a wide range of possible applications.
SCHAUDT – cylindrical, non-circular and cam form grinding made to measure

Since 1906 SCHAUDT has been the brand for the automotive and suppliers industry. It offers sophisticated technological solutions for cylindrical, non-circular and eccentric grinding. Our highly experienced experts also have unparalleled expertise in the high-precision grinding of long and heavy workpieces like they are required, for example, for roll grinding. Within this broad application range you obtain everything from a single source from SCHAUDT – application development, technology, assembly and sales.

A long tradition and cutting-edge precision and quality place Schaudt Mikrosa GmbH among today’s global market and technology leaders.

SCHAUDT CamGrind series

The high productivity external cylindrical grinding machines CamGrind S, CamGrind L and CamGrind XL are specially designed for grinding camshafts, gear shafts and other shaft-type workpieces. The machine configuration is optimally tailored to your requirements, depending on the production task and production conditions. Bores, shoulders, cones, chamfers, grooves, polygons, multifaceted parts, cams, eccentrics, etc. can all be machined highly efficiently – in timed production, in conjunction with other grinding machines or in a single clamping. The machines are designed for grinding with CBN wheels and can be operated with emulsion or oil as cooling lubricant.

### SCHAUDT CamGrind series

<table>
<thead>
<tr>
<th></th>
<th>S</th>
<th>L1</th>
<th>L2</th>
<th>XL</th>
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</thead>
<tbody>
<tr>
<td>Number of machining slides</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Grinding length (mm)</td>
<td>650</td>
<td>650/1/100/2 000</td>
<td>650</td>
<td>1,050 – 1,600</td>
</tr>
<tr>
<td>Height of centres (mm)</td>
<td>175</td>
<td>220</td>
<td>220</td>
<td>220</td>
</tr>
<tr>
<td>Workpiece weight, max. (kg)</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Grinding wheel dimensions (Ø x W) (mm)</td>
<td>480 x 80</td>
<td>480 x 80</td>
<td>480 x 80</td>
<td>480 x 80</td>
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<tr>
<td>Grinding wheel spindle drive (kW)</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>52</td>
</tr>
</tbody>
</table>

SCHAUDT high productivity CBN grinding machines CamGrind

- Modular precision machines for circular and non-circular grinding of shaft-type parts up to 2 000 mm in length
- Swivel-in spindle technology for grinding concave profiles
- High productivity multiwheel technology
- The consistent use of CBN grinding wheels results in extremely short grinding times, a long workpiece service life and optimum grinding results.
- Proven WOP-S programming software for grinding cylindrical and non-circular workpiece contours with user-oriented set-up interface
- Robot automation
SCHAUDT high-precision CBN grinding machines
ShaftGrind

SCHAUDT ShaftGrind series
The high productivity external cylindrical grinding machines ShaftGrind S and ShaftGrind L are specially designed for the precise and highly productive grinding of shaft-type workpieces. The smallest machine in the series is the ShaftGrind S. This versatile production grinding machine is equipped with a compact cross slide and is ideal for grinding smaller workpieces such as cam tubes with a length of up to 650 mm. The ShaftGrind L is available as a one or two-slide machine and works with shaft-type parts with a length of up to 1,100 or 650 mm. This high productivity grinding machine offers completely new design possibilities for cylindrical machining in medium to large series production. The machines are designed for grinding with CBN wheels and can be operated with emulsion or oil as cooling lubricant.

- Compact cross slide machine
- Modular precision machines for cylindrical grinding of shaft-type parts up to 2,000 mm in length
- High productivity multi-wheel technology
- The use of CBN grinding wheels results in extremely short grinding times, increased workpiece durability and optimum grinding results.
- Proven WOP-S programming software for grinding cylindrical workpiece contours with user-oriented set-up interface
- Robot automation

### ShaftGrind S
- Number of machining slides: 1
- Grinding length: 650 mm
- Height of centres: 175 mm
- Workpiece weight, max.: 50 kg
- Grinding wheel dimensions (Ø × W): 480 × 80 mm
- Grinding wheel spindle drive: 40 kW

### ShaftGrind L1
- Number of machining slides: 1
- Grinding length: 650/1,100 mm
- Height of centres: 220 mm
- Workpiece weight, max.: 50 kg
- Grinding wheel dimensions (Ø × W): 340 – 480 × 80 mm
- Grinding wheel spindle drive: 40 kW

### ShaftGrind L2
- Number of machining slides: 2
- Grinding length: 650 mm
- Height of centres: 220 mm
- Workpiece weight, max.: 50 kg
- Grinding wheel dimensions (Ø × W × ø): 400 – 480 × 80 mm
- Grinding wheel spindle drive: 40 kW

SCHAUDT FlexGrind universal cylindrical grinding machines

SCHAUDT FlexGrind series
Thanks to its modular design, the FlexGrind is the ideal universal cylindrical grinding machine for the high-precision production of long and heavy workpieces. A variety of grinding operations, such as external and internal cylindrical grinding, cylindrical and non-circular grinding, thread grinding and traverse grinding, are available for complete machining of different workpiece geometries. The DIATRONIC absolute measuring head makes the FlexGrind unique in this machine class. It enables in-process gauging for different diameters during grinding.

- Table slide machine
- 9 wheelhead variants
- High-precision B-axis
- Workhead with maximum rigidity and suitable for heavy workpieces
- Constant rigidity for long, slender workpieces thanks to bridge type steady rest

### FlexGrind M
- Grinding length: 2,000/3,000/4,000 mm
- Height of centres: 290/310/355 mm
- Workpiece weight, max.: 500/1,200 kg
- Grinding wheel dimensions (Ø × W × ø): 600/750/900 × 125/200/300 mm
- Grinding wheel spindle drive: 30 kW
Your advantages

- Higher accuracies
- Direct measurement during the process at the grinding positions (depending on grinding angle of the spindles)
- Automatic operation possible without manual corrections
- Compensation of error sources such as temperature fluctuations

The FlexGrind features a diameter and length measuring system DIATRONIC 22. This automatic measuring head allows flexibility and quality assurance to be increased decisively during automatic machining. The measurement of different diameters during the grinding process is unique for this class of machine. The measuring range extends from 160 or 200 mm/Ø over the entire grinding length here. That means the measuring head controls the grinding process.

Programming is really easy, as the DIATRONIC measuring system is integrated directly in the user interface. The FlexGrind therefore enables high-precision production of large, heavy workpieces, as resultant thermal, static and dynamic influences are corrected immediately during grinding.
MIKROSA – Top quality in centerless external cylindrical grinding

The MIKROSA brand has been synonymous worldwide with centerless external cylindrical grinding in the premium range since 1878. For over 130 years, MIKROSA has custom-built machines that deliver the highest precision and reliability. Due to the modular design of the machine you obtain a solution with handling and automation individually tailored to your grinding task. The technology spectrum extends from precision plunge grinding in many different variations to high-productivity through grinding. Our unique strength lies in combining machine units, automation components and process technology to create high productivity grinding systems. This allows you to machine a large variety of workpieces, from small jet needles through to large shafts.

MIKROSA centerless external cylindrical grinding machines KRONOS

The name stands for the highest precision for small workpieces. Special features include mass production, synchronization of workpieces or grinding wheel offset. The cross-slide systems for the grinding and regulating wheel side enable huge flexibility during grinding. The KRONOS S is specifically designed for the use of zirconium and CBN grinding technology.

- Compact design with integrated control cabinet
- Mineral casting machine bed made of Granitan® S103
- Cross slide system on grinding and regulating wheel side
- Infeed and throughfeed grinding
- 15°/6° angled infeed grinding
- Infeed grinding in mass production
- Oscillation grinding
- Grinding of several operations in one cycle by offsetting the workpiece or grinding spindle

**MIKROSA KRONOS S 125 | S 250**

- Workpiece diameter Ø mm 0.5…30 1.5…35
- Max. workpiece length, max. for infeed grinding mm 120 245
- Grinding wheel dimensions (Ø × W × ø) mm 400 × 125 × 203.2 450 × 250 × 203.2
- Grinding wheel spindle drive kW 11/15 15
- Regulating wheel (Ø × W × ø) 250 × 125 × 127
- Regulating spindle drive kW 5 5
- Rpm range, continuously adjustable 5…500
- Dressing speed rpm 1 000
MIKROSA centerless external cylindrical grinding machines KRONOS

**MIKROSA KRONOS M 250**

The KRONOS M can be perfectly adapted to any grinding task, thanks to its modular design with 6 (optionally 7) CNC axes. The machine can be equipped with an overhanging grinding spindle. The high-precision grinding spindles mounted on roller bearings or hydrodynamic bearings achieve grinding wheel peripheral speeds of 63 m/s as standard, with optional CBN technology of 120 m/s. In combination with the CBN high-speed technology the cycle time of the machine is thus significantly reduced and the cost effectiveness considerably increased.

- 3-slide system
- Patented arrangement of swivel-type and upper slide on one guide system for high system rigidity
- NC functionality for simple and reducible generation of the hyperbolic profile of the regulating wheel
- Modular dressing system for stationary and rotating dressing tools
- MIKROSA software with special operator interface for centerless grinding. Optional additional software modules such as HEUREEKA for optimising the grinding zone geometry
- Special solution: Special machine for grinding tapered rollers

**KRONOS M 250**

<table>
<thead>
<tr>
<th>Workpiece diameter Ø (mm)</th>
<th>1.5...100</th>
<th>4.5...35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. workpiece length, max. for infeed grinding (mm)</td>
<td>245</td>
<td>56</td>
</tr>
<tr>
<td>Grinding wheel dimensions (Ø × W × ø)</td>
<td>610 × 250 × 304.8</td>
<td>610 × 400 × 304.8</td>
</tr>
<tr>
<td>Grinding wheel spindle drive (kW)</td>
<td>22</td>
<td>37</td>
</tr>
<tr>
<td>Regulating wheel (Ø × W × ø)</td>
<td>350 × 250 × 127/152</td>
<td>310 × 420 × 204.5</td>
</tr>
<tr>
<td>Regulating spindle drive (kW)</td>
<td>5.7</td>
<td>5.7</td>
</tr>
<tr>
<td>RPM range, continuously adjustable (rpm)</td>
<td>5...600</td>
<td>5...600</td>
</tr>
<tr>
<td>Dressing speed (rpm)</td>
<td>600</td>
<td>600</td>
</tr>
</tbody>
</table>

**MIKROSA KRONOS L 660**

Strong, dynamic and flexible are typical attributes of this machine, which was developed especially for machining large workpieces. It features a host of technical improvements such as optimised coolant return, an inner lining inside the full housing to encapsulate the work area and optional hydrodynamic grinding and regulating spindles. The infeed of both slides is enabled by servo drive, via a pre-tensioned and backlash-free recirculating ball screw. Exact positioning of the infeed axes is ensured by linear measuring systems installed as standard.

- Mineral casting machine bed made of Granitan® S103
- 2-slide system
- Grinding and regulating wheel width up to 660 mm
- Modular dressing system for stationary and rotating dressing tools, optionally also with acoustic touch sensor
- Standardised interfaces for loader and peripheral devices

**KRONOS L 660**

<table>
<thead>
<tr>
<th>Workpiece diameter Ø (mm)</th>
<th>5...250</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. workpiece length, max. for infeed grinding (mm)</td>
<td>805</td>
</tr>
<tr>
<td>Grinding wheel dimensions (Ø × W × ø)</td>
<td>660 × 660 × 304.8</td>
</tr>
<tr>
<td>Grinding wheel spindle drive (kW)</td>
<td>51/95</td>
</tr>
<tr>
<td>Regulating wheel (Ø × W × ø)</td>
<td>400 × 660 × 203.2</td>
</tr>
<tr>
<td>Regulating spindle drive (kW)</td>
<td>12</td>
</tr>
<tr>
<td>RPM range, continuously adjustable (rpm)</td>
<td>5...300</td>
</tr>
<tr>
<td>Dressing speed (rpm)</td>
<td>700</td>
</tr>
</tbody>
</table>
SCHAUDT and MIKROSA software

**SCHAUDT WOP-S programming interface**
Programming cylindrical and non-circular workpiece contours is quick and easy with the WOP-S programming system from SCHAUDT. From just a few inputs WOP-S creates harmonic speed profiles, which can be variably adapted. Combination machining of concave and convex profiles in a single clamping with the highest precision is therefore possible.

**MIKROSA HEUREEKA:**
Software for optimisation of the grinding zone geometry
- Software for calculation of the optimum machine or grinding slot geometry, e.g. for optimisation of the circularity and cylindricity
- Helpful tool for analysis and planning of the grinding process
- HEUREEKA can optionally be integrated into the KRONOS machine control system

Graphic representation of cam profiles with WOP-S

HEUREEKA software for planning and analysis of the grinding zone geometry

Speed profiles for synchronous machining of two cams
Tool machining expertise

The constant development of new, increasingly complex and more precise tools for different sectors of industry presents a challenge for the manufacturers of tool processing machines. The close synergetic cooperation between the WALTER and EWAG brands rises to this challenge. It ensures a competitive technological edge thanks to the implementation of innovative machine concepts with cutting-edge operating software.
UNITED GRINDING PRODUCT RANGE

WALTER tool grinding and eroding machines
Optical CNC measuring machines and measuring equipment

Since 1919, Walter Maschinenbau GmbH has ranked among the world’s leading manufacturers of CNC machines for grinding and/or eroding, tools for the metal and wood industries, as well as rotationally symmetrical production parts. The production range is supplemented by CNC measuring machines for complete, non-contact measurement of complex precision tools and rotationally symmetrical parts with recorded accuracy in a single clamping.

Our grinding and measuring expertise is incorporated into the development of our own software. We also offer comprehensive “tool machining” services. Together with our sister company Ewag AG and its broad product range for the production of indexable inserts, including innovative laser machine tools, we see ourselves as a system and solution provider for tool machining. Our customer orientation and our global sales and service network with its own branches and staff have been valued by our customers for decades.

With the new “FINE PULSE TECHNOLOGY” eroding concept, new standards are being set for PCD tools in terms of surface quality, edge flexibility and process reliability. It is now installed as standard in all two-in-one eroding and grinding machines.

### WALTER HELITRONIC VISION DIAMOND 400 L
The high-end solution for the eroding of CBN/PCD tools and the alternating grinding of HSS/HM tools in volume production. Based on a low-vibration gantry design which includes mineral castings and linear drives in X, Y and Z axes as well as torque motors in A and C axes. Belt spindles with one or two spindle ends or motor spindle with a spindle end are optionally available. Various loader types and grinding wheel/electrode changers are also optionally available.

### WALTER HELITRONIC POWER DIAMOND 400
Within the HELITRONIC family, the HELITRONIC POWER DIAMOND 400 with wheel/electrode changer has a particular strength – eroding of PCD/CBN tools and grinding of HM/HSS tools with step-switching as desired. Tool diameter from 3 to 360 mm, machining length up to 520 mm, workpiece weight up to 50 kg. The new generation of our “two-in-one” all-rounder: With electrode or wheel changer and motor spindle for up to 8 electrodes/grinding wheel sets. High productivity with the flexibility to meet individual customer requirements – these are the hallmarks of the HELITRONIC POWER DIAMOND 400. In combination with our FINE PULSE TECHNOLOGY, it is setting new standards for surface quality and precision with a wide range of materials.

### WALTER HELITRONIC DIAMOND EVOLUTION
The HELITRONIC DIAMOND EVOLUTION is a highly efficient solution from our portfolio for eroding PCD/CBN tools and grinding HM/HSS tools in one clamping – and with a minimal footprint.

### VISION DIAMOND 400 L | POWER DIAMOND 400 | DIAMOND EVOLUTION

<table>
<thead>
<tr>
<th></th>
<th>VISION DIAMOND 400 L</th>
<th>POWER DIAMOND 400</th>
<th>DIAMOND EVOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis</td>
<td>mm</td>
<td>500</td>
<td>650</td>
</tr>
<tr>
<td>Y-axis</td>
<td>mm</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>Z-axis</td>
<td>mm</td>
<td>700</td>
<td>720</td>
</tr>
<tr>
<td>Fast feed X, Y, Z</td>
<td>m/min</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Workpiece, max.</td>
<td>mm</td>
<td>320/400</td>
<td>315</td>
</tr>
<tr>
<td>Workpiece length, max. diameter</td>
<td>mm</td>
<td>310</td>
<td>520</td>
</tr>
<tr>
<td>Workpiece length, max.</td>
<td>mm</td>
<td>350</td>
<td>380</td>
</tr>
<tr>
<td>Face grinding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workpiece weight, max.</td>
<td>kg</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Grinding wheel diameter, max.</td>
<td>mm</td>
<td>254</td>
<td>254</td>
</tr>
<tr>
<td>Rotation electrode, diameter</td>
<td>mm</td>
<td>6 – 200</td>
<td>up to 150</td>
</tr>
<tr>
<td>Two-spindle drive, max.</td>
<td>kW</td>
<td>30</td>
<td>36</td>
</tr>
<tr>
<td>Grinding spindle, speed</td>
<td>rpm</td>
<td>0 – 10,500</td>
<td>0 – 10,500</td>
</tr>
</tbody>
</table>
**WALTER HELITRONIC tool grinding machines**

**WALTER HELITRONIC MICRO**
The HELITRONIC MICRO achieves high-precision grinding results for tools in the diameter range from 0.1 to 12.7 mm in production and from 3 to 12.7 mm in resharpening. As an automatic 5-axis CNC machine it is ideal for the complete machining of complex geometries of micro tools in a single clamping. All axes are equipped with linear or torque drives and are controlled by integrated, high-resolution measuring systems. These generate precise movements, combined with high dynamics. The high speed workpiece A-axis with a max. speed of 1,000 rpm gives the HELITRONIC MICRO a precise cylindrical grinding capacity, particularly for step tools.

- Low-vibration, solid mineral casting gantry design
- Linear axes X, Y, Z with linear drives
- Linear axis X, with ball-type linear drive
- Rotating axes A, C with torque motors
- Motor spindle with three spindle ends
- Up to three grinding wheels per spindle end
- Production and/or resharpening
- Fully automated complete machining in a single clamping
- Integrated robot loader

**WALTER HELITRONIC MINI POWER**
With an identical machine design to the HELITRONIC POWER, the HELITRONIC MINI POWER ensures cost-effective machining for small tool diameters, thanks to minimal travel and its small space requirement. It is the first choice when it comes to the flexible production and resharpening of rotationally symmetrical tools and production parts from a diameter of 1 mm.

- Low-vibration, solid cast iron gantry design
- Linear axes X, Y, Z with ball-type linear drives
- Rotation axes A, C with worm drives
- Belt-driven spindle with two spindle ends
- Up to three grinding wheels per spindle end
- Production and/or resharpening
- Complete machining in a single clamping
- Glass scales
- Various loader types and grinding wheel changers optionally available

**WALTER HELITRONIC MINI AUTOMATION**
Tool grinding machine with 5 CNC-controlled axes, specially developed for the high-volume production of cutters, drills, step drills, step tools, woodworking tools, profile tools, etc. made of tungsten carbide, HSS, ceramic, cermet or CBN with diameter between 1 and 16 mm.

- Machine base in solid grey cast iron gantry design
- Belt-driven spindle with 2 spindle ends, NCT cone with flat face
- Up to 3 grinding wheels per spindle end
- Robot loader for max. 1,500 tools (pallets not included)
- Automatic clamping cylinder
- Automatic table top
- Glass scales
- Torque motor

**WALTER HELITRONIC BASIC**
The HELITRONIC BASIC is a precision grinding machine with 5 CNC axes, the HELITRONIC BASIC sharpens and grinds a broad range of precision tools for the metal and wood industries with the highest precision and quality. Short set-up and auxiliary times ensure cost effectiveness from a lot size of 1, even in minimally manned multi-shift operation. There is virtually no task that cannot be efficiently produced with this machine. It is therefore the first choice for resharpening companies and newcomers to the world of premium tools. Its field of application includes all rotationally symmetrical tools for machining tools for metal and wood industries, special tools and parts with complex geometries.

- Grinding of rotationally symmetrical tools for the metal and wood industry
- Resharpening and/or production
- Complete machining in a single clamping
- Materials: HSS, HM, cermet, ceramic
- Optional eco-loader

**WALTER HELITRONIC ESSENTIAL**
The HELITRONIC ESSENTIAL 5-axis CNC tool grinding machine is the best choice within the HELITRONIC family when it comes to the flexible resharpening and production of rotationally symmetrical tools and production parts in the dimension range specified below. The machine guarantees cost-effective tool grinding for a diameter from 1–100 mm and up to a total length of 255 mm.

- Machine bed in solid grey cast iron gantry design
- Ball-type linear drives in X, Y, Z
- Worm gear drives in A, C
- Infinitely variable grinding wheel spindle drive with digital AC servo motor
- Optional top-loader

---

**UNITED GRINDING PRODUCT RANGE**

**WALTER HELITRONIC MINI**

**WALTER HELITRONIC ESSENTIAL**

**WALTER HELITRONIC MINI AUTOMATION**

**WALTER HELITRONIC BASIC**

**WALTER HELITRONIC MICRO**

**WORKPIECE**

**WORKPIECE**

**WORKPIECE**

**WORKPIECE**

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<table>
<thead>
<tr>
<th>MICRO</th>
<th>MINI POWER</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis</td>
<td>mm</td>
</tr>
<tr>
<td>Y-axis</td>
<td>mm</td>
</tr>
<tr>
<td>Z-axis</td>
<td>mm</td>
</tr>
<tr>
<td>Fast feed X, Y, Z</td>
<td>m/min</td>
</tr>
<tr>
<td>Workpiece, max. diameter</td>
<td>mm</td>
</tr>
<tr>
<td>Workpiece length, max.</td>
<td>mm</td>
</tr>
<tr>
<td>Workpiece length, max.</td>
<td>mm</td>
</tr>
<tr>
<td>Face grinding</td>
<td></td>
</tr>
<tr>
<td>Workpiece weight, max.</td>
<td>kg</td>
</tr>
<tr>
<td>Grinding wheel diameter, max.</td>
<td>mm</td>
</tr>
<tr>
<td>Two-spindle drive, max.</td>
<td>kW</td>
</tr>
<tr>
<td>Grinding spindle, speed</td>
<td>rpm</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>MINI AUTOMATION</th>
<th>BASIC</th>
<th>ESSENTIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis</td>
<td>mm</td>
<td>350</td>
</tr>
<tr>
<td>Y-axis</td>
<td>mm</td>
<td>200</td>
</tr>
<tr>
<td>Z-axis</td>
<td>mm</td>
<td>470</td>
</tr>
<tr>
<td>Fast feed X, Y, Z</td>
<td>m/min</td>
<td>15</td>
</tr>
<tr>
<td>Workpiece, max. diameter</td>
<td>mm</td>
<td>100</td>
</tr>
<tr>
<td>Workpiece length, max.</td>
<td>mm</td>
<td>255</td>
</tr>
<tr>
<td>Workpiece length, max.</td>
<td>mm</td>
<td>185</td>
</tr>
<tr>
<td>Face grinding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workpiece weight, max.</td>
<td>kg</td>
<td>30</td>
</tr>
<tr>
<td>Grinding wheel diameter, max.</td>
<td>mm</td>
<td>150</td>
</tr>
<tr>
<td>Two-spindle drive, max.</td>
<td>kW</td>
<td>2 × 4/7 × 8</td>
</tr>
<tr>
<td>Grinding spindle, speed</td>
<td>rpm</td>
<td>0 – 10,500</td>
</tr>
</tbody>
</table>
WALTER HELITRONIC tool grinding machines

WALTER HELITRONIC VISION 700 L
The HELITRONIC VISION 700 L is a high-performance tool grinding machine with 5 CNC-controlled axes and grinding wheel changer for tools up to a total length of 700 mm (up to 550 mm machining length) and max. 200 mm diameter. The application range encompasses the efficient production of cutters, drills, step tools, woodworking tools, profiling cutters or profiling tools in all standard materials such as HM, HSS, ceramic, cermet and CBN. The machine is particularly suitable for machining long drills and tools clamped between centres, such as e.g. large hob cutters. With the “Automation table top” option, which has up to two independently moveable slides, tools can be supported and precisely guided along their entire length.

- Highly flexible solution for tool application ranges of max. 700 mm total tool length
- Grinding wheels up to a diameter of max. 254 mm possible
- Highly efficient linear technology and mineral casting gantry design for optimal rigidity, damping and precision

WALTER HELITRONIC VISION 400 L
The HELITRONIC VISION has been a global benchmark for the production of precision tools for metal and wood applications. This success story is continued with the HELITRONIC VISION 400 L. Its linear technology makes it an efficient and very productive companion and its robust gantry construction in mineral cast concrete guarantees perfect tool surfaces and shape accuracy. The machine’s range of applications encompasses all rotationally symmetrical tools for machining tools for metal and wood industries, special tools and the machining of complex geometries in a single clamping.

- Grinding of rotationally symmetrical tools for the metal and wood industry
- Production and/or resharpening
- Also for high-volume production in resharpening companies
- Fully automated complete machining in a single clamping
- Materials: HSS, HM, cermet, ceramic
- Linear axes X, Y, Z with linear drives
- Rotating axes A, C with torque motors
- Available with a ball-type linear drive
- Various loader types and grinding wheel changers optionally available

<table>
<thead>
<tr>
<th>VISION 700 L</th>
<th>VISION 400 L</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis</td>
<td>mm</td>
</tr>
<tr>
<td>Y-axis</td>
<td>mm</td>
</tr>
<tr>
<td>Z-axis</td>
<td>mm</td>
</tr>
<tr>
<td>Fast feed X, Y, Z</td>
<td>m/min</td>
</tr>
<tr>
<td>Workpiece, max. diameter</td>
<td>mm</td>
</tr>
<tr>
<td>Workpiece length max., peripheral grinding</td>
<td>mm</td>
</tr>
<tr>
<td>Workpiece length max., face grinding</td>
<td>mm</td>
</tr>
<tr>
<td>Workpiece weight, max.</td>
<td>kg</td>
</tr>
<tr>
<td>Grinding wheel diameter, max.</td>
<td>mm</td>
</tr>
<tr>
<td>Two-spindle drive, max.</td>
<td>kW</td>
</tr>
<tr>
<td>Grinding spindle, speed</td>
<td>rpm</td>
</tr>
</tbody>
</table>

WALTER HELITRONIC POWER 400
The HELITRONIC POWER 400 with wheel changer is the powerful top version with maximum flexibility for medium to large series. It stands for top quality worldwide for the production and resharpening of rotationally symmetrical tools in one clamping, even with complex geometries. Diameter range from 3 to 315 mm, machining length up to 520 mm, workpiece weight up to 50 kg. In combination with the grinding wheel changer, a wide variety of loading systems and the motor spindle, it sets new standards in terms of productivity and flexibility.

- Grinding of rotationally symmetrical tools for the metal and wood industry.
- Production and/or resharpening
- Fully automated complete machining in a single clamping
- Materials: HSS, HM, cermet, ceramic
- Various loader types and grinding wheel changers optionally available
- Available with a ball-type linear drive

<table>
<thead>
<tr>
<th>POWER 400</th>
<th>POWER</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis</td>
<td>mm</td>
</tr>
<tr>
<td>Y-axis</td>
<td>mm</td>
</tr>
<tr>
<td>Z-axis</td>
<td>mm</td>
</tr>
<tr>
<td>Fast feed X, Y, Z</td>
<td>m/min</td>
</tr>
<tr>
<td>Workpiece, max. diameter</td>
<td>mm</td>
</tr>
<tr>
<td>Workpiece length max., peripheral grinding</td>
<td>mm</td>
</tr>
<tr>
<td>Workpiece length max., face grinding</td>
<td>mm</td>
</tr>
<tr>
<td>Workpiece weight, max.</td>
<td>kg</td>
</tr>
<tr>
<td>Grinding wheel diameter, max.</td>
<td>mm</td>
</tr>
<tr>
<td>Two-spindle drive, max.</td>
<td>kW</td>
</tr>
<tr>
<td>Grinding spindle, speed</td>
<td>rpm</td>
</tr>
</tbody>
</table>
UNITED GRINDING
PRODUCT RANGE

WALTER HELICHECK optical CNC measuring machines
Manual tool measuring devices HELISET and HELISET PLUS

WALTER HELICHECK
PRO | PRO L | PLUS | PLUS L

When it comes to the fully automatic, complete measurement of complex geometries, the HELICHECK PRO | PRO L CNC and HELICHECK PLUS | PLUS L measuring machines are the global benchmark in the macro and micro ranges respectively. With certified accuracy, they set standards in productivity, quality and precision in modern tool production for a tool diameter from 1 to 150 mm in the macro range and 0.1 to 100 mm in the micro range, a tool length up to 330 or 730 mm for the L versions and a tool weight of up to 35 kg. The 4-axis CNC measuring machines are suitable for non-contact complete measurement of precision tools, grinding wheels, rotationally symmetrical parts and flat parts.

• Optional robot loader

WALTER HELICHECK
PRECISION | ADVANCED

Fully automatic measuring machines HELICHECK PRECISION | ADVANCED for rotationally symmetrical tools in a diameter range from 2 to 330 mm, a tool length up to 420 mm and a tool weight up to 25 kg. The HELICHECK PRECISION and HELICHECK ADVANCED measure even complex geometries on rotationally symmetrical tools with a repeatability precision of 1.5 μ in a fully automatic, non-contact, non-wearing and precise process. Both machines offer added value with the measurement of production equipment such as grinding wheels and diamond dressing rolls.

WALTER HELICHECK 3D

Scan the tool. Create a 3D model. Measure. Compare. The generation of 3D models of tools and production parts has never been easier, quicker or better. The new HELICHECK 3D with state-of-the-art laser technology is the first choice when time is a factor in scanning and digitising. Whether your requirement is the measurement of key parameters or comparison with the master model: HELICHECK 3D is the solution!

WALTER HELISET PLUS

Manual measuring instrument that is ideal for optimising the processing time by up to 30% when machining complex tools. For this purpose, the HELISET PLUS is integrated into the production process, allowing measurement operations that were previously carried out during tool preparation or in the eroding machine to be carried out during machining operation on the HELISET PLUS measuring instrument.

• Clear user interface
• Intuitive touch screen operation
• Real-time image using reflected light for fast positioning of the measuring points
• Representation of the previously measured tool blades
• Can be operated by every user immediately and without programming
• Integrated data output via XML to the Walter WindowMode of the eroding machine or the HELICHECK measuring machine
• Measuring of grinding wheels

WALTER HELISET

Manual measuring device for the measurement of grinding wheel sets. Measure grinding wheels conveniently, quickly and precisely, thereby reducing machine downtime. While the grinder is producing tools, the next grinding wheel set can be prepared offline.

• Fast manual measurement of grinding wheels and tools
• No programming effort
• Minimal training requirement
• Single-handed quick adjustment
• Manual fine adjustment
• All wheel shapes selectable and measurable via drop-down menu
• Intuitive user interface
• 22” colour monitor

<table>
<thead>
<tr>
<th>HELICHECK 3D</th>
<th>HELISET PLUS</th>
<th>HELISET</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis (mm)</td>
<td>270</td>
<td>–</td>
</tr>
<tr>
<td>Y-axis (mm)</td>
<td>465</td>
<td>–</td>
</tr>
<tr>
<td>Z-axis (mm)</td>
<td>325</td>
<td>–</td>
</tr>
<tr>
<td>A-axis (deg)</td>
<td>360</td>
<td>–</td>
</tr>
<tr>
<td>Workpiece Ø (mm)</td>
<td>295</td>
<td>350 up to 350</td>
</tr>
<tr>
<td>Workpiece length (mm)</td>
<td>420</td>
<td>420</td>
</tr>
<tr>
<td>Workpiece weight (kg)</td>
<td>25</td>
<td>–</td>
</tr>
<tr>
<td>Measuring accuracy as per VDI/VDE 2617</td>
<td>E1=1.4 μ/300</td>
<td>–</td>
</tr>
<tr>
<td>Length measurement, repeatability precision</td>
<td>μm</td>
<td>± 1</td>
</tr>
<tr>
<td>Measuring system total resolution</td>
<td>μm</td>
<td>0.25</td>
</tr>
<tr>
<td>Glass scales for linear axes</td>
<td>μm</td>
<td>0.004</td>
</tr>
<tr>
<td>Rotary encoder for rotation axis A</td>
<td>degrees</td>
<td>0.0005</td>
</tr>
</tbody>
</table>
UNITED GRINDING
PRODUCT RANGE

WALTER

WALTER HELITRONIC TOOL STUDIO
Software for the production and resharpening of tools

HELITRONIC TOOL STUDIO is one of the most modern and flexible software systems in the field of tool grinding. More than 30 years of software experience are continually incorporated into its further development. All knowledge gained from grinding trials is used directly for development of the software.

Now also available: Eroding in HELITRONIC TOOL STUDIO

- Greater clarity
- Maximum flexibility
- Collision-free grinding
- Click & Edit
- Integrated measuring function
- Free scaling

WALTER MEASUREMENT TECHNOLOGY SOFTWARE
For fully automatic measurement of rotationally symmetrical tools, production equipment such as grinding wheels, dressing rollers as well as indexable inserts and profiling cutters.

The precision and productivity of modern tool processing are closely intertwined with tool expertise on the one hand and special measuring technology on the other. WALTER HELICHECK CNC measuring machines are renowned for their precise measuring results and are used worldwide by leading machine manufacturers. They provide reliable data in certified accuracy for the optimisation of production processes. The software has been developed in collaboration with the world’s leading machine manufacturers.

- Quick Check Modular – the standard flexible, intelligent WALTER software
- Quick Check Grinding Wheels – for perfect grinding results
- TEACH-IN MODE – for extended inspection tasks
- EASY CHECK – innovative tool measurement technology with fully automatic profile recognition
- Viascan – for accurate contour detection
- Viatif – target/actual comparison enables fast profile control
- DXF Generator – create DXF files for unknown contours
- Form Tool Compensation (FTC) – correction software
The origins of Ewag AG can be traced back to the year 1946. As supplier to the Swiss watch and clock industry, Ewag has always given priority to the associated high precision requirements in the development of its tool grinding machines. Today, Ewag machines are used in more than forty countries worldwide, in fields of application such as the watch and clock industry, the dental, electrical, automotive and aviation industries, as well as in the manufacture of precision micro-components. Ewag is considered one of the world’s leading manufacturers of high-precision tool grinding machines.

Our product portfolio includes manual machines for grinding and re-grinding tools, CNC machines for grinding tungsten carbide, CBN and PCD and for machining rotational and indexable insert geometries, as well as our new laser technology. Together with our sister company Walter Maschinenbau GmbH in Tübingen, Germany, we see ourselves as a system and solution provider for complete tool machining, and are able to offer an extensive product range which includes grinding, eroding, laser, measuring and software.

Our customer orientation and our global sales and service network with its own branches and staff have been valued by our customers for decades.

EWAG manual and CNC-controlled tool grinding machines and laser processing machines

EWAG WS 11 / WS 11-SP
The EWAG WS 11 is particularly suitable for the manufacture and re-grinding of high-precision micro tools and production parts made of tungsten carbide, steel or other materials. The unique kinematics of the machine enables the manual machining of a wide variety of geometries. The grinding process can be observed and monitored with the optical measuring system in a single clamping. The EWAG WS 11-SP is a further development of the well-proven WS 11. Its kinematics allows cylindrical and conical tools with straight and helical tooling to be ground and measured in a single clamping.

- Linear axes X, Y, (V), Z
- Rotary axes A, B, C, D
- Optical measuring system for visible metal removal process and control measurements
- Option: video measurement system

EWAG RS 15
A precision tool grinding machine for the efficient manufacture and re-sharpening of cutting tools made of tungsten carbide, cermet, ceramic, PCB, PCD and other materials. The wide variety of accessories enables problem-free grinding of indexable inserts and/or rotational tools.

- Linear axes X, Y, Z
- Rotary axes A, B, C
- Measurement in the production process with projector and digital display
- Grinding and measuring in a single clamping
- Integrated dressing of grinding wheels
- Adjustable contact pressure for super-hard materials
- Rotationally symmetrical tools up to 200 mm in diameter
- Indexable inserts
- Option: video measurement system

<table>
<thead>
<tr>
<th></th>
<th>WS 11</th>
<th>WS 11-SP</th>
<th>RS 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-axis, spindle inclination</td>
<td>degrees</td>
<td>-135 to +30</td>
<td>800</td>
</tr>
<tr>
<td>B-axis, swept angle, max.</td>
<td>degrees</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>X-axis</td>
<td>degrees</td>
<td>350</td>
<td>400</td>
</tr>
<tr>
<td>X-axis transverse adjustment</td>
<td>mm</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Y-axis height adjustment</td>
<td>mm</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>V-axis, grinding stroke position axis</td>
<td>mm</td>
<td>-</td>
<td>150</td>
</tr>
<tr>
<td>Z-axis, feed stroke horizontal</td>
<td>mm</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Cross-slide, clamping area</td>
<td>mm</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cross-slide U</td>
<td>mm</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Cross-slide W</td>
<td>mm</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Grinding wheel spindle drive</td>
<td>kW</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Speeds, continuously adjustable</td>
<td>rpm</td>
<td>2,500 to 8,000</td>
<td>2,500 to 8,000</td>
</tr>
<tr>
<td>Workhead spindle drive</td>
<td>kW</td>
<td>0.37</td>
<td>0.37</td>
</tr>
<tr>
<td>Speed, continuously adjustable</td>
<td>rpm</td>
<td>100 to 1,300</td>
<td>100 to 1,300</td>
</tr>
<tr>
<td>Grinding wheel diameter, max.</td>
<td>mm</td>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>
The PROFILE LINE is the grinding centre for the efficient production of highly complex interchangeable cutting inserts, preferably from pre-sintered carbide blanks. High efficiency and autonomous multi-shift operation of the machine are ensured by the following features:

- Proven gantry design
- EWAG tooling expertise (smart chucks)
- Innovative ProGrind and HELITRONIC
- Vision system for part recognition
- Compatible with custom pallets
- Smart integrated 6-way wheel changer
- For exchangeable cutting inserts

The PROFILE LINE is the grinding centre for indexable inserts such as plunging, milling, turning, profile and peripheral grinding, as well as all common cutting materials. A multitude of clamping systems, which can be docked onto the machine via a plug & play interface, offers complete freedom in the choice of tools, their sequence, flexible lot sizes and minimal setup times.

The COMPACT LINE is the tool grinding machine for indexable inserts such as plunging, milling, turning, profile and peripheral grinding in a single clamping. Its flexibility in terms of tool types, tool geometry and cutting edge material in the specified dimension range is virtually unparalleled. The star-shaped grinding spindle support with up to 12 grinding wheels is used, depending on the tool’s complexity.

The EWAMATIC LINEAR focuses on users’ individual requirements and challenges. It can perform a large variety of grinding operations in a single clamping. Its flexibility in terms of tool types, tool geometry and cutting edge material in the specified dimension range has become a commercial reality for the first time. This process results in a significantly increased removal capacity, an improved surface quality as well as improved cutting edge roughness, in comparison with the conventional cup wheel grinding process.

The INSERT LINE represents a new class of performance in the peripheral grinding of indexable inserts. Thanks to the latest drive and control technology as well as the High Speed Machining (HSM) grinding function, peripheral grinding of indexable inserts has become a commercial reality for the first time. This machine is for focused laser beginners. The beam source is based on robust fibre laser technology. Ultra-hard cutting materials in particular (e.g. CVD, PCD, etc.) have a far higher absorption of green laser light (532 nm), in comparison with conventional infrared laser light (1064 nm), as the photon energy is doubled. The highly efficient machining process occurs in one clamping.

The LASER LINE ULTRA is designed for the efficient production of highly complex indexable inserts such as plunging, milling and turning. The Adaptive Laser.grind Process technology offers a new method for edge dressing, significantly improving the machining process. The beam source is based on robust fibre laser technology and offers 5-CNC-axis machine tool plus superimposed 3-CNC-axis laser beam guidance and Direct drives in the linear axes. The LaserSoft combines laser and machine control and offers Direct 3D CAD/CAM interface and Fastest programming from envelope contour (e.g. DXF).

The LASER LINE PRECISION offers the fastest production of highly complex indexable inserts and the most precise dressing of cutting tools. Its Adaptive Laser.grind Process technology offers a new method for edge dressing, significantly improving the machining process. The Laser unit provides direct 3D CAD/CAM interface and Fastest programming from envelope contour (e.g. DXF).
EWAG Software

EWAG Standard Application Framework

ProGrind – more than just software

Innovation calls for innovative software. ProGrind and LaserSoft customer-oriented software from the EWAG company will completely fulfill your highest expectations. Programs can be created quickly and easily on all EWAG CNC machines according to a standardised philosophy. The input masks are supported by 3D graphics. Thanks to Ethernet, the machines can be integrated into your company network. Our specialists also have access for diagnosis and maintenance.

Highlights:

• **3D simulation on the COMPACT LINE**
  From a 3D simulation of the programmed tool, the operator can immediately see the possible consequences of a parameter change. This means that errors can be avoided in advance and productivity increased.

• **NUMROTOplus on the EWAMATIC LINEAR**
  The optional NUMROTO software is an extensive software program for the production and resharpening of different tools. Its combination with ProGrind leaves virtually nothing to be desired in the production of complex tools.

• **ISO standard shapes on the INSERT LINE**
  Programming of ISO geometries with the associated variable and constant clearance angles can be easily selected using input masks. The set-up effort is thus reduced to a minimum.

• **3D model programming on the LASER LINE ULTRA and LASER LINE PRECISION**
  For machining complex 3D structures, the tool geometry is imported in an established 3D data format and deconstructed into the individual erosion layers. Machining strategy and scanner parameters for the layer removal can be defined and stored in a machining file.
Additive Manufacturing Technologies

A wide variety of generative production processes are available covering an extraordinary range of performance and application areas. The guidelines presented in this brochure provide an insight into the possibilities and requirements of additive manufacturing and make it clear how and when these technologies can be put to good use.

We focus on the production of industrial metal or plastic prototypes as well as (small) series manufacturing of complex and individualized components. We focus on additive production processes, in particular Selective Laser Sintering (SLS), Selective Laser Melting (SLM) and 3D printing.

We also offer individual technology and process consulting, reverse engineering, 3D scanning and services for the design and production of sophisticated components.

Our customers

IRPD’s customers include both investment and consumer goods companies, such as:

Industry
From prototypes to small series – our partners include automotive, energy, aerospace, transportation & heavy industry, tool and mould making, precision mechanics and mechanical engineering.

Marketing & communication
Sustainably integrate your corporate values into your individual advertising and POS solutions.

Architecture & art
Your new home – tangible within just a few days. Imagined art becomes reality.

Medicine & orthopaedics
Models for pre-operative planning, drilling jigs, training models, orthoses and prostheses, implants and implant preparation.

Flexibility and cost-efficiency during development are key competitive factors. Irpd AG is a leader in methods and technologies that lead to a reduction in the development time of new products. The use and further development of additive production processes, so-called “layer manufacturing technologies”, are among our core competencies. For 20 years we have manufactured finished components in St. Gallen, Switzerland. In the early days of the company’s history, the focus was on research and development of additive technologies.

In 2015, inspire AG (ETH Zurich) and the UNITED GRINDING Group co-founded the joint venture IRPD. IRPD is the competence centre for additive manufacturing of the UNITED GRINDING Group.
### 4. STRATEGY WORKSHOP
**Construction and design – first part produced**

<table>
<thead>
<tr>
<th>DAY 4-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
</tr>
<tr>
<td>Voucher</td>
</tr>
<tr>
<td>Development</td>
</tr>
<tr>
<td>Cost-effectiveness</td>
</tr>
<tr>
<td>Implementation</td>
</tr>
<tr>
<td>Coaching IRPD</td>
</tr>
</tbody>
</table>

### 3. IDEATION WORKSHOP
**Participants suggest parts; evaluation of the ideas**

<table>
<thead>
<tr>
<th>DAY 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
</tr>
<tr>
<td>Production</td>
</tr>
<tr>
<td>Coaching IRPD</td>
</tr>
</tbody>
</table>

### 2. BASICS+
**AM basics & Research – ready for AM construction**

<table>
<thead>
<tr>
<th>DAY 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
</tr>
<tr>
<td>Ideas competition</td>
</tr>
<tr>
<td>Discussion</td>
</tr>
<tr>
<td>Research</td>
</tr>
<tr>
<td>Coaching IRPD</td>
</tr>
</tbody>
</table>

### 1. BASICS
**AM basics – possibilities and limits**

<table>
<thead>
<tr>
<th>DAY 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLS</td>
</tr>
<tr>
<td>SLA</td>
</tr>
<tr>
<td>3D</td>
</tr>
<tr>
<td>VDD</td>
</tr>
<tr>
<td>VAK</td>
</tr>
<tr>
<td>Print</td>
</tr>
<tr>
<td>Technologies</td>
</tr>
<tr>
<td>Possibilities</td>
</tr>
<tr>
<td>Limits</td>
</tr>
</tbody>
</table>

#### Do you Think Additive®?

Are you interested in additive manufacturing and would you like to take advantage of the numerous advantages of these new methods for your company? IRPD offers modular workshops. Our experts will guide you and your team step by step into tomorrow’s world of additive manufacturing. On an individual basis, the courses can also be adapted to match your company’s existing or planned projects.

More information about Think Additive® workshops is available here: [www.irpd.ch/Workshop](http://www.irpd.ch/Workshop)
UNITED GRINDING machines are designed to fulfill customer requirements for as long as possible, operate cost-effectively, function reliably and be constantly available. From ‘Start up’ through to ‘Retrofit’ – our Customer Care is there for you throughout the working life of your machine. Over 50 professional HelpLines and more than 300 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.

Customer Care

Service

Customer service – Your advantages:
- Fast response times thanks to locally based service technicians
- Rapid troubleshooting
- Quick and effective problem solving

Customer consultation – Your advantages:
- Quick and effective problem solving
- Individual consultation free of charge

HelpLine – Your advantages:
- Personal contact
- Increased machine availability thanks to fast response times

Material

Spare parts – Your advantages:
- Fast and flexible response to your requirements
- Fitting accuracy and process reliability thanks to original spare parts
- High precision is maintained

Replacement parts – Your advantages:
- Lower costs when purchasing replacement parts
- Fast problem-solving
- Replacement parts that are a perfect fit

Accessories – Your advantages:
- Customisation of your machine
- Accessories that are a perfect fit

Digital Solutions™

Remote Service
- Service request at the touch of a button
- Increased availability of your system
- Minimise downtimes

Service Monitor
- Structured maintenance planning
- Easier maintenance thanks to guides and instructions
- Maintenance documentation available online

Production Monitor
- Information and key data about your machines – around the clock
- Support for your planners and production staff
- Data for optimisation of availability and utilisation

Retrofit

Conversions – Your advantages:
- Use your machine for new applications
- Extended service life of the machine
- Retraining of employees on a new machine unnecessary

Retrofits – Your advantages:
- Retrofitting of components to the current state of the art
- Preservation of your machine’s value
- Your machine remains in situ

Machine trade-in – Your advantages:
- No disposal costs
- Use of the latest technology through replacement acquisition
- Free assessment of the old machine
- The old machine is taken away when the new machine is delivered
- We cover the cost of the return shipping

Start up

Commissioning – Your advantages:
- Smooth start to production
- Optimal basic knowledge
- Trained staff

Warranty extension – Your advantages:
- Ability to plan
- Financial security at low additional costs

Start up

Qualification

Training – Your advantages:
- Learning of processes under real conditions
- Trained and motivated staff
- Increased productivity
- Lower risk of a machine failure due to incorrect operation

Production support – Your advantages:
- Increase in your company’s know-how
- Support of your production team by our specialists
- Increased productivity

Prevention

Maintenance – Your advantages:
- Increased machine availability thanks to reduced downtime
- Higher and more constant production quality
- Well-founded statements on the machine condition
- Cost transparency thanks to flat rate

Inspection – Your advantages:
- Early identification of defects
- Service tasks easier to schedule
- Increased machine availability thanks to reduced downtime

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- We cover the cost of the return shipping
Digital Solutions™ – Digital Solutions™ allows you to keep everything under control – no matter what the application.

Remote Service
Highly efficient: the UNITED GRINDING Remote Service Package. Remote Service offers prompt, system-specific support by Service experts: efficient and with the utmost safety.

Your machines and systems are your capital. For your company to operate economically, the value added chain must function smoothly. Faster, system-specific support by specialists is nowadays more important than ever. Complex systems and rising cost pressures call for optimal availability and rapid service. With Remote Service, we offer you an integral solution enabling optimal support for your machinery. Secure internet connections allow expert support with just a click – all without travel times. Remote Service lets you boost the efficiency of your production.

Service Monitor
The UNITED GRINDING Service Monitor knows when recommended maintenance work is due in the operating log, and points this out to you reliably and promptly.

The Service Monitor utilizes a clear traffic light system to indicate when maintenance is due (operationally dependent and fixed maintenance intervals according to operating manual) for all connected machines. You can see in the Service Monitor when what maintenance work needs to be carried out, while providing extensive information concerning required tools, replacement and wearing parts as well as instructions for each machine.

Production Monitor
Everything under control: The UNITED GRINDING Production Monitor gives you an instant overview of the current situation in your production – irrespective of time and place.

The Production Monitor assists you as a reliable 24/7 monitoring service. Operating times and non-productive times, unit numbers or malfunction times are typically shown in real time. The Production Monitor is both an ideal aid for experts in their specific field as well as for planners or production managers focused on a global overview. You simply call up the most important data for each machine directly via the app on your smartphone and report the fault directly via a service request to the corresponding UNITED GRINDING employee.

Digital Solutions™ – Digital Solutions™ allows you to keep everything under control – no matter what the application.
Precision and passion for your success!

We offer you the best quality in products and services – this is the claim of all company brands of the UNITED GRINDING Group.

To ensure that we fulfill this claim, we work according to our corporate philosophy, PuLs®. PuLs® stands for precision and passion.

In all that we do, our focus is on you and your needs. The goal of PuLs® is to ensure that we work with the utmost efficiency internally, so that we can offer you the best quality service. Waiting times, surpluses, unnecessary movement of materials and superfluous processes – these are classic examples of inefficient organisation. With the aid of PuLs® we avoid all kinds of waste and continuously optimise our products, services and processes. PuLs® uses various lean methods based on the principles of Lean Six Sigma. PuLs® is a customised program and not an off-the-peg concept. All processes are geared towards your requirements. Our top corporate goal is to make you, our customers, even more successful.

A number of examples illustrate this: Thanks to PuLs®, we handle orders efficiently and effectively for our customers. We have reduced machine downtimes to a minimum with PuLs®. We have also reduced processing times in production. You therefore receive your machine earlier and can start your own value creation process more quickly.

We live precision and passion! PuLs® is anchored into all aspects of our business and used in all companies of the UNITED GRINDING Group. “How can it be done better and with less expense?” Thanks to PuLs®, this challenge is not restricted to production, but extends through all areas of the company, including research and development, sales, administration and Customer Care. The programme’s success lies in the fact that it includes all parties involved – both our employees and you, as our customers.
UNITED GRINDING Group worldwide

Surface and profile

Mägerle AG Maschinenfabrik
Almirinistraße 50
CH-8320 Fehraltorf, Switzerland
Tel. +41 43 355 66 00
Fax +41 43 355 66 00
sales@maegerle.com

Blohm Jung GmbH
Kurt-A.-Körber-Chaussee 63 – 71
21033 Hamburg, Germany
Tel. +49 40 33481 2000
Fax +41 43 355 66 00
sales-hh@blohmjung.com

Blohm Jung GmbH
Jahrnstraße 80 – 82
73037 Göppingen, Germany
Tel. +49 716 1612 0
Fax +49 716 1612 170
sales-gp@blohmjung.com

Cylindrical

Fritz Studer AG
3602 Thun, Switzerland
Tel. +41 33 439 11 11
Fax +41 33 439 11 12
info@studer.com

Schaudt Mikrosa GmbH
Saarländer Straße 25
04179 Leipzig, Germany
Tel. +49 341 4971 0
Fax +49 341 4971 500
sales@schaudtmikrosa.com

StuderTec K.K.
Matsumoto Bldg., 2nd floor
4-10-8, Omorikita, Ota-ku
Tokyo 143-0016, Japan
Tel. +81 3 6801 6140
Fax +81 3 6662 6970
info.jp@studer.com

Tooling

Walter Maschinenbau GmbH
Jopeistraße 5
72072 Tübingen, Germany
Tel. +49 7071 9393 0
Fax +49 7071 9393 695
info@walter-machines.com

Ewag AG
Industriestraße 4
69434 Gutenlik, Switzerland
Tel. +41 32 613 31 31
Fax +41 32 613 31 15
info@ewag.com

Walter KwFim s.r.o.
Blaininská 129
86434 Kuřim, Czechia
Tel. +420 541 2319 52
info.wkc@walter-machines.com

Walter Ewag Asian Pacific Pte. Ltd.
25 International Business Park
#01-5356 German Centre
609916 Singapore
Tel. +65 65 6281 01
Fax +65 65 6281 02
info.sg@walter-machines.com

Walter Ewag UK Ltd.
B 13 Holly Farm Business Park
Hanley CV6 1NF Kenilworth,
Warwickshire, Great Britain
Tel. +44 1926 4850 47
Fax +44 19 26 4850 49
info.uk@walter-machines.com

Additive Manufacturing

Irpd AG
Lecherfeldstrasse 3
9014 St. Gallen, Switzerland
Tel. +41 71 274 7310
Fax +41 71 274 7311
sales@irpd.ch

United Grinding North America, Inc.
2 000 United Grinding Blvd.
Miamisburg, OH 45342, USA
Tel. +1 937 859 1975
Fax +1 937 859 1115
customercare@grinding.com

United Grinding Mexico S.A. de C.V.
Blvd. Bernardo Quintana N° 7 301
Df. 1003
Querétaro, Qro. 76079, Mexico
Tel. +52 555 509 7739
customercare@grinding.com

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