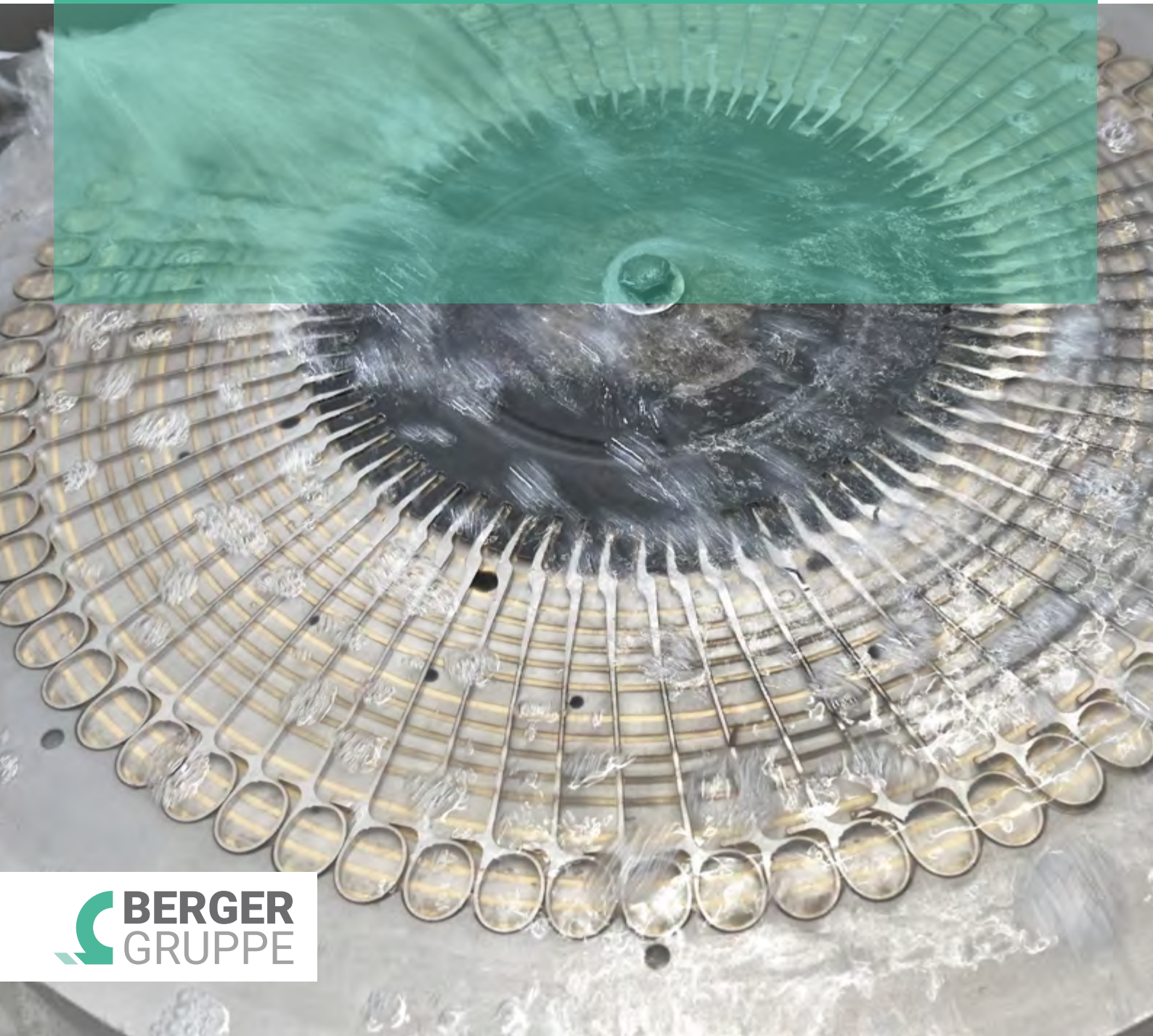




GRINDING MACHINES

FOR SINGLE WORKPIECES

grinding | sharpening | polishing | serrating





CONTENT

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GRINDING MACHINES FOR SINGLE WORKPIECES

WORKPIECES

MECHANICAL MACHINING OF WORKPIECES

Grinding, sharpening, glazing,
polishing and serrating

The Berger Gruppe offers a wide range of CNC
controlled machines for mechanical machining of
workpieces.



1

Knives

- Flat bevel and radii grinding p. 10 ff.
- Surface grinding p. 40 ff.
- Scalloped and serrated grinding p. 62 ff.
- Granton edge grinding p. 80 f.
- Hollow grinding p. 108 f.
- Back grinding p. 116 f.
- Sharpening p. 120 f.
- Glazing p. 110 f.



2

Scissors

- Flat bevel and radii grinding p. 10 ff.
- Surface grinding p. 40 ff.
- Scalloped and serrated grinding p. 62 ff.
- Back grinding p. 116 f.



3

Machine knives

- Flat bevel and radii grinding p. 10 ff.
- Surface grinding p. 40 ff.
- Scalloped and serrated grinding p. 62 ff.



4

Hand and garden tools

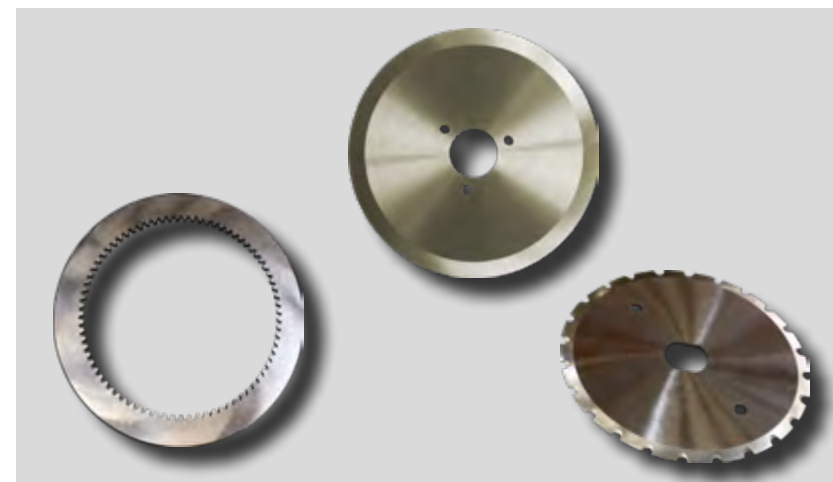
- Flat bevel and radii grinding p. 10 ff.
- Surface grinding p. 40 ff.
- Scalloped and serrated grinding p. 62 ff.
- Back grinding p. 116 f.



5

Surgical and manicure instruments

- Flat bevel and radii grinding p. 10 ff.
- Scalloped and serrated grinding p. 62 ff.
- Back grinding p. 116 f.



6

Circular knives

- Grinding of brake discs p. 54 f.
- Flat bevel grinding p. 56 ff.
- Serrated grinding p. 92 f.

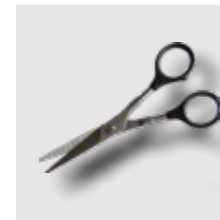
FLAT BEVEL GRINDING MACHINES

FLAT GRINDING BEVEL GRINDING RADII GRINDING

Flat bevel grinding machines – also called front side grinding machines – use a cup wheel to achieve flat, bevel and/or radii grinding on workpieces.



2



Depending on the size and geometry of the workpiece and the type of machining, different series are used.

- **BG/NT**: Flat bevel and radii grinding with a horizontal grinding spindle
- **DG/NT**: Flat bevel and radii grinding with a vertical grinding spindle for less space requirement
- **AS/H**: Flat bevel grinding with hydraulically driven grinding table
- **HSG**: Grinding of head surfaces on machine knives
- **HDS**: Double-sided flat grinding of single workpieces
- **FS**: Flat grinding of long knives

Examples of use (pictures)

1. Machining of sports knives with flat bevel grinding machine BG/RH/NT (picture 1)
2. Exemplary setup of a machining cell with flat bevel grinding machine BG/NT, robot loading and unloading and rotating bar magazine (picture 2)

FLAT BEVEL GRINDING MACHINES FRONT SIDE GRINDING MACHINES

Plane-side transverse or front-side deep grinding process

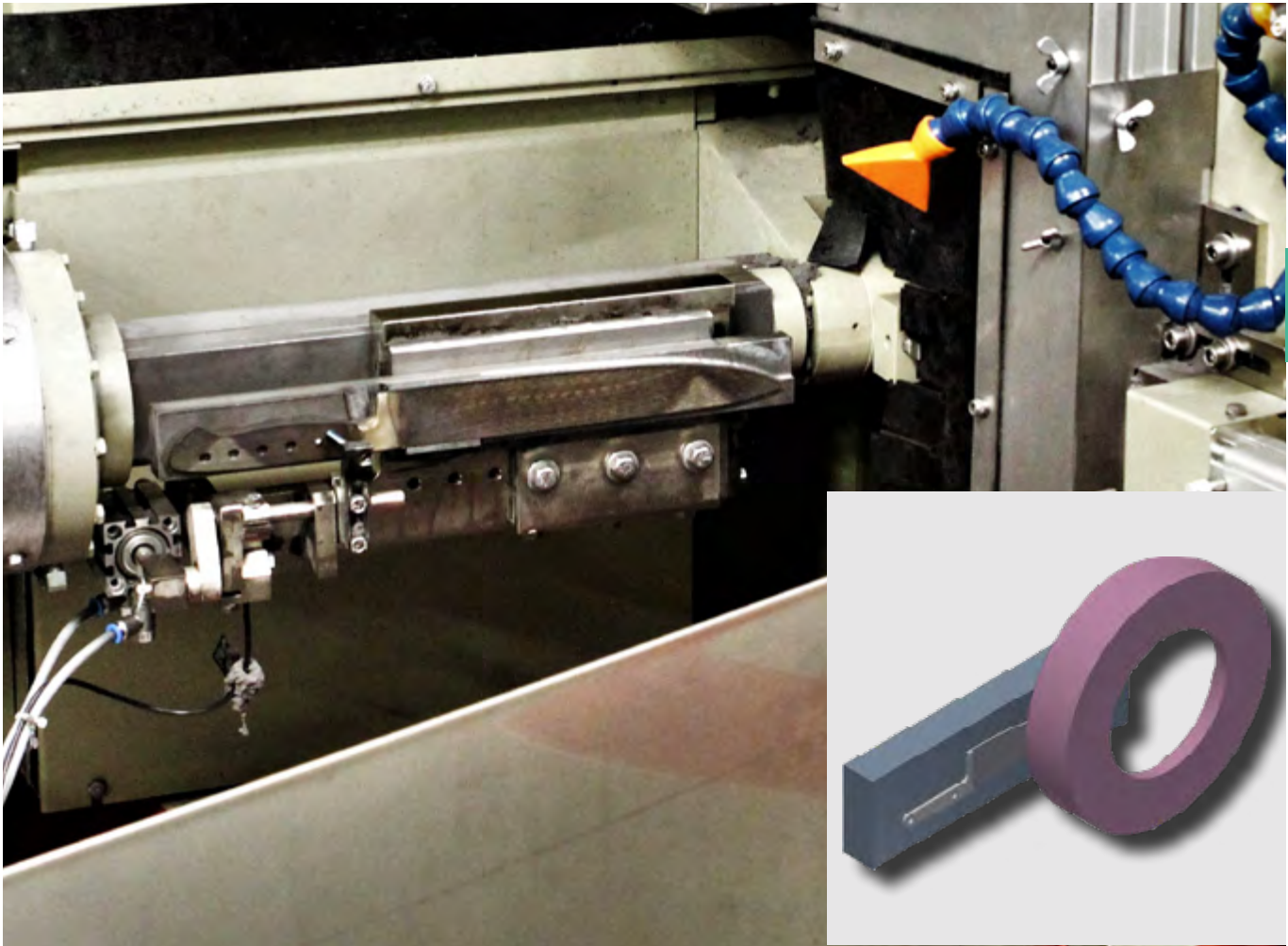
Surface grinding is a widely used grinding process for the machining of workpieces. It is mainly used for processing flat and plane workpieces. Surface grinding can be achieved both in deep grinding and pendulum grinding.

The flat bevel grinding machines – also known as front side grinding machines – process workpieces in plane-side transverse or front-side deep grinding. With a cutting speed of up to 50 m/s, a multi-sided smooth grinding of workpieces is achieved.

The workpiece is machined with the side faces of a cup grinding wheel. Depending on the diameter of the cup grinding wheel, workpieces with a grinding length of up to 1 200 mm can be processed.

If the workpiece is processed in a deep grinding process, a large amount of material can be removed and a good surface quality can be achieved.

[back to flat bevel grinding machines](#)

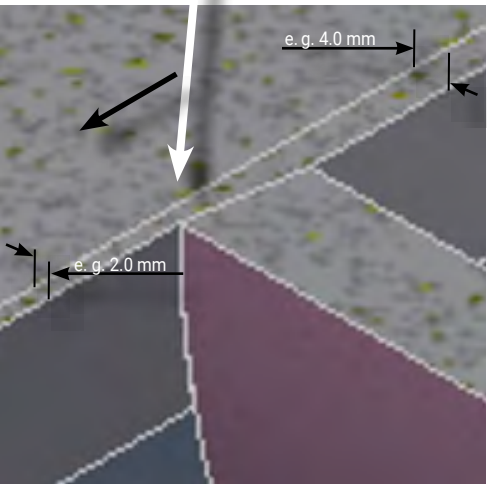
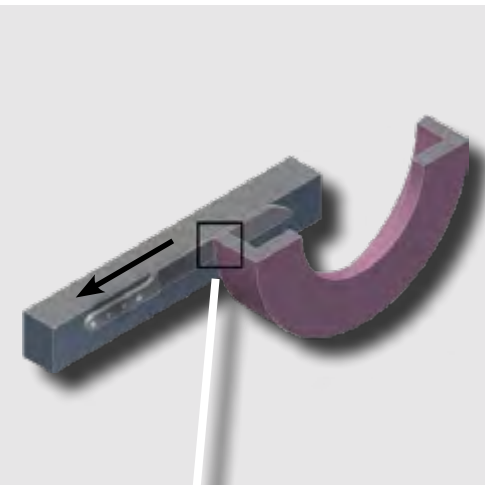


When grinding with the plane side grinding method, the material removal results in a bevel on the wall (drawing p. 9).

Depending on the task and the workpiece, different geometries can be processed.

The solution presented on page 8 involves five workpiece axes and one tool axis.

- Epoxy resin bonded grinding wheels with 450–710 mm Ø
- Feed speed 30–50 m/s
Feed 700–2 000 mm/min
- $\emptyset \quad Q'_w = 8\text{--}12 \text{ [mm}^3/(\text{mm s})]$
- max. $Q'_w = 25 \text{ [mm}^3/(\text{mm s})]$
- max. cutting weight 3–10 g/s



FLAT BEVEL GRINDING MACHINES BG

Flat bevel and radii grinding

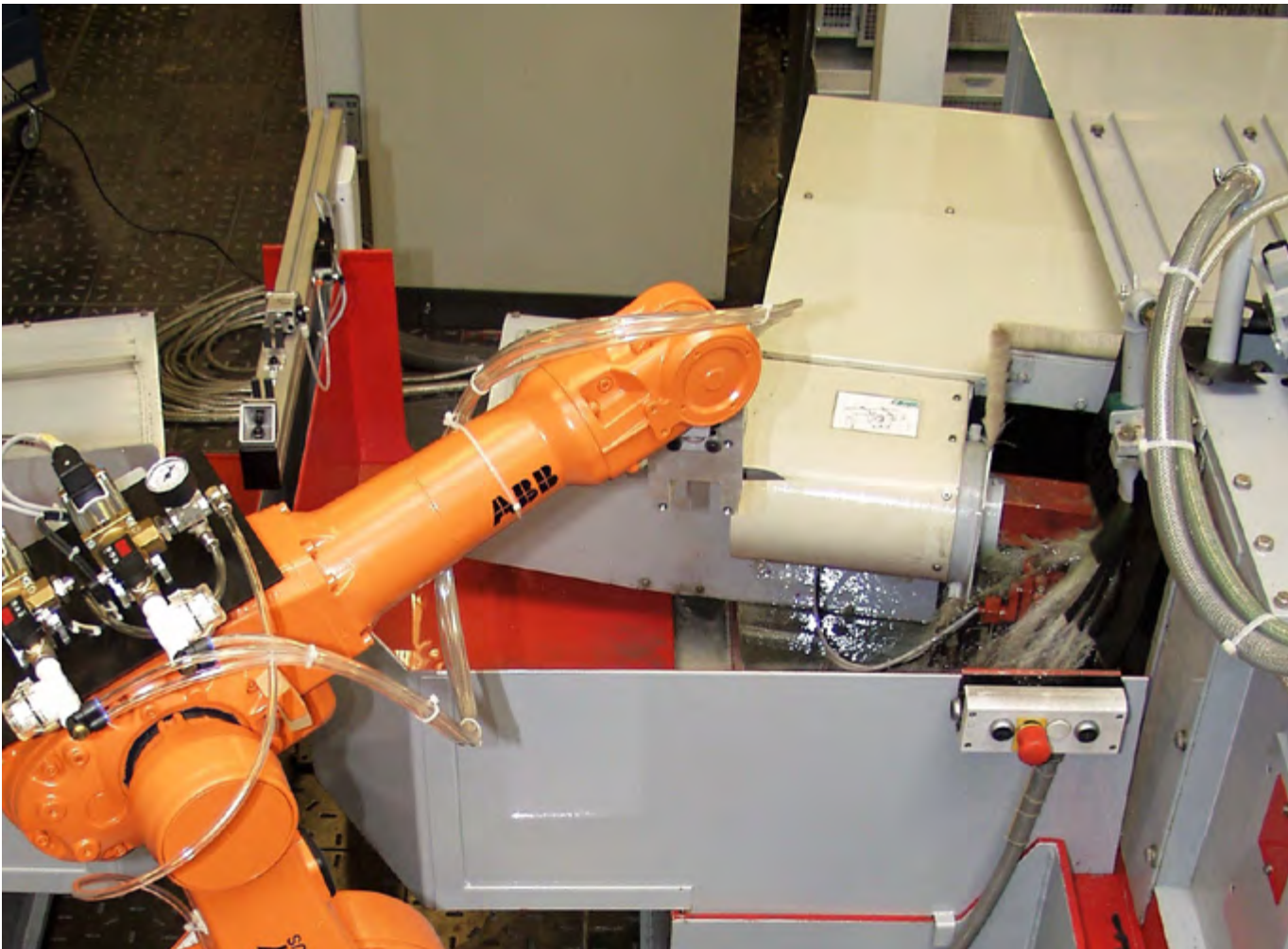
The CNC controlled grinding machines of the BG/NT series machine surfaces on knives, scissors, hand tools and related workpieces.

The machines can be equipped with grinding wheels of different diameters, depending on the size of the workpiece to be processed.

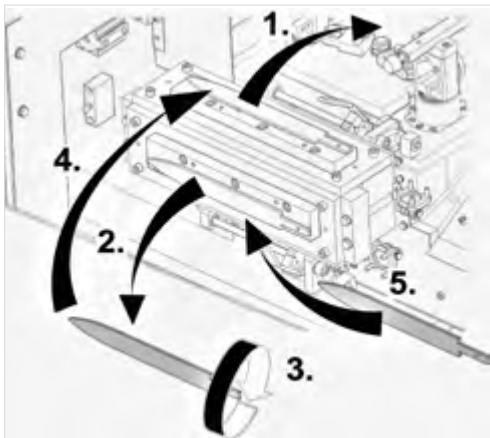
Different series are available:

- BG: complex geometries
- BG/DA: machine knives
- BG/RV: strongly curved workpieces
- BG/RV/YS: with support axis
- BG/RV/2SS: with 2 preset grinding spindles
- BG/V: knife blades with inclined bolster
- BG/ZA: simple geometries
- BG/VSS/V/RH: machine blades
- BG/RH: radii grinding

[back to flat bevel grinding machines](#)



- grinding length 150–1 000 mm (depending on model)
- grinding wheel Ø: 80–710 mm
- spindle drive 6,5–45 kW (depending on the model)
- cutting speed: up to 50 m/s
- digital Windows control
- measuring control integrated in CNC control with measuring probe, digital display of grinding wheel wear, determination of remaining life of grinding wheel
- grinding table in 30° inclined bed design, roller rail guide with direct path measuring system
- workpiece-dependent programming software and NC block
- AC servomotor
- automatic interval-controlled grease central lubrication with monitoring/fault indication



Blade exchange in clamping device

- prepared for mounting of clamping devices
- TeamViewer for diagnosis/remote control of CNC and PLC functions
- mounting flange for grinding wheel or grinding wheel segment 80–710 mm Ø (depending on model)

FLAT BEVEL GRINDING MACHINES BG

Surface grinding of complex geometries

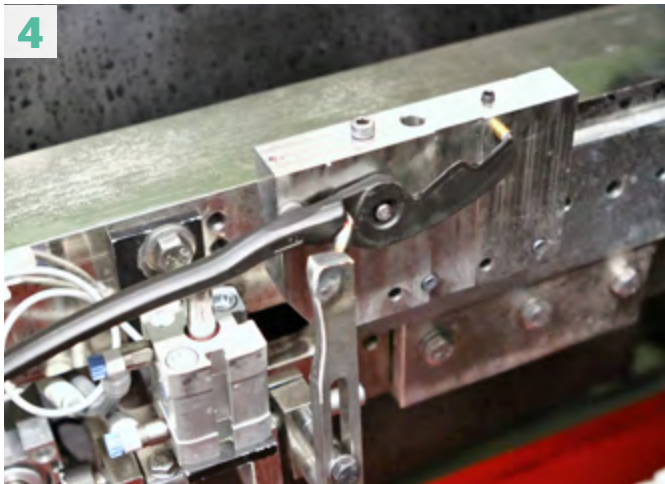
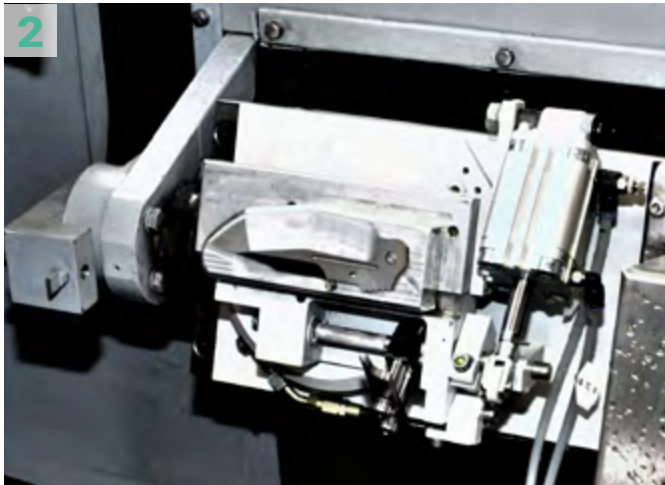
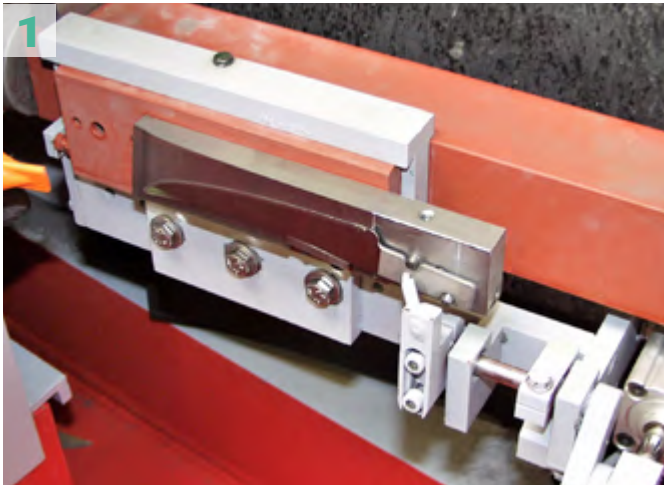
The BG is the most widely used flat bevel grinding machine of the Berger Gruppe. It achieves surface grinding on workpieces with complex geometries.

The grinding machine is equipped with four contour giving axes and one tool axis.

In contrast to the DG, the grinding machines of the BG/NT series work with a horizontal grinding spindle.

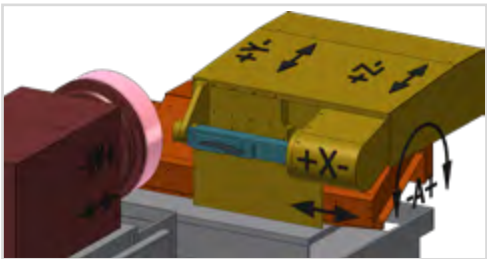
- four standard models with different grinding lengths up to 900 mm and workpiece Ø 250 mm
- grinding wheel or grinding segment Ø 80–710 mm
- spindle drive 6.5–45 kW
- spindle with backlash-free preloaded precision bearing, designed for peripheral speeds of up to 50 m/s
- five-axis CNC control
- horizontal grinding spindle
- Windows control with interface for robots, SPS, measuring technique and other applications

[back to flat bevel grinding machines](#)



- automatic, central grease lubrication system
- wear-free main axis drive with linear motor – thus rapid traverses of 80 m/min
- precise positioning without backlash due to direct measuring system
- compact precision gear with high rigidity for controlling the flange angle
- workpiece-oriented programming and NC block
- grinding table with four axes:
 - X-axis = main feed axis, grinding tables driven by linear motor
 - Y- and Z-axis = linear contact pressure axes against grinding wheel
 - A-axis = tilt axis/cutting edge angle
- W-axis = infeed axis grinding wheel, infinitely variable and freely programmable
- digital axis drives on preloaded ball screw and Z-axis or precision reduction gear A-axis, digital axis drive linear motor for X-axis

Axle arrangement BG



Examples of use (pictures)

1. BG2: grinding and sharpening of flex knives (picture 1)
2. BG2: grinding of sports knives (picture 2)
3. BG0: grinding of pocket knife parts, machining cell with Berger feeder and Fanuc robot (picture 3)
4. BG1: grinding of cable shears (picture 4)

FLAT BEVEL GRINDING MACHINES BG/DA

Grinding of machine knives

The CNC controlled flat bevel grinding machine of the series BG/DA is specially designed for grinding machine knives.

The grinding machine is equipped with three contour giving axes and one tool axis.

In addition to the technical data indicated at BG the machine is classified by the technical specifications as follows:

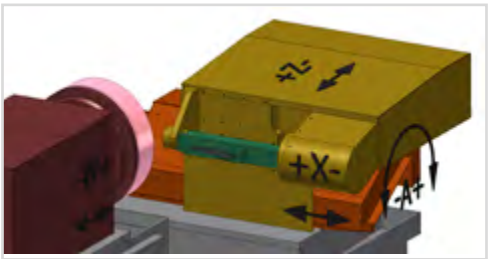
- grinding length 300–640 mm
- reception flange for grinding wheel: 80–710 mm Ø
- spindle drive 6.5–45 kW
- four-axis CNC control

[back to flat bevel grinding machines](#)



- precision mounted grinding spindle, designed for circumferential speed of up to 50 m/s
- grinding table with three axes:
 - X-axis = main feed axis of the grinding table, powered by a linear motor
 - Z-axis = linear pressing axis against grinding wheel
 - A-axis = tilt axis/grinding angle
- W-axis = infeed axis for grinding wheel, continuously adjustable and freely programmable
- digital drive for the axes, preloaded ball bearing spindle, Z-axis or precision reduction gear (A-axis), digital powered X-axis with linear motor

Axle arrangement BG/DA



Examples of use (pictures)

- Two flat bevel grinding machines of the series BG/DA, one left-hand and one right-hand machine with a maximum grinding length of 360 mm (picture 1)
- Processing cell for machine knives with BG/DA flat bevel grinding machine and milling center (picture 2)

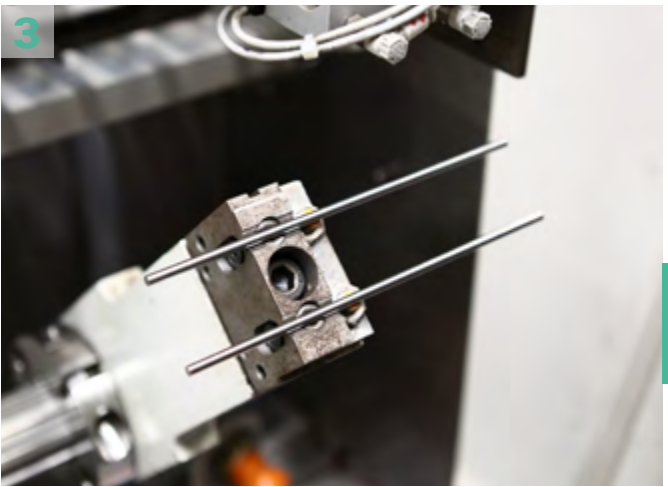
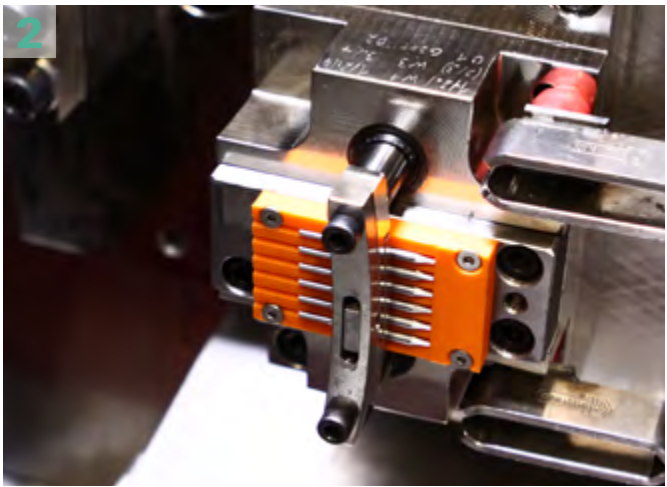
FLAT BEVEL GRINDING MACHINES BG/DA

Economic grinding of simple geometries

The CNC-controlled flat bevel grinding machine of the BG/DA series is designed for economical grinding of workpieces with simple geometries – in this case screwdriver blades.

- grinding length: 300 mm
- mounting flange for grinding wheel Ø of 450 mm
- spindle drive: 7,5 kW
- spindle with backlash-free preloaded precision bearing, designed for a peripheral speed of up to 50 m/s
- four-axis CNC control

[back to flat bevel grinding machines](#)



- digital Windows control Siemens
- measuring control with measuring probe integrated in CNC control, digital display of grinding wheel wear, determination of remaining grinding wheel service life
- grinding table in 30° inclined bed design, roller rail guide with direct path measuring system
- workpiece-dependent programming software
- AC servo motor
- automatic interval-controlled grease central lubrication with monitoring and fault indication
- prepared for mounting of clamping devices
- TeamViewer for diagnosis/remote control of CNC and PLC functions
- three-axis CNC grinding machine:
 - X-axis = main feed axis grinding table driven with linear motor
 - Z-axis = feed axis grinding wheel
 - Y-axis = linear pressure axis

- digital axis drive on preloaded ball screw Z-axis or precision reduction gear A-axis, digital axis drive Linear motor for X-axis

Examples of use (pictures)

1. Flat bevel grinding machine BG1/DA (picture 1)
2. Machining of microblades in cassette (picture 2)
3. Picking up the blanks (picture 3)
4. Machining of flat screwdrivers; simultaneous grinding of four surfaces: two screwdriver blades in six seconds (picture 4)
5. Removal of the machined workpieces (picture 5)

FLAT BEVEL GRINDING MACHINES BG/RV

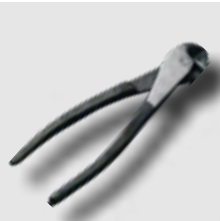
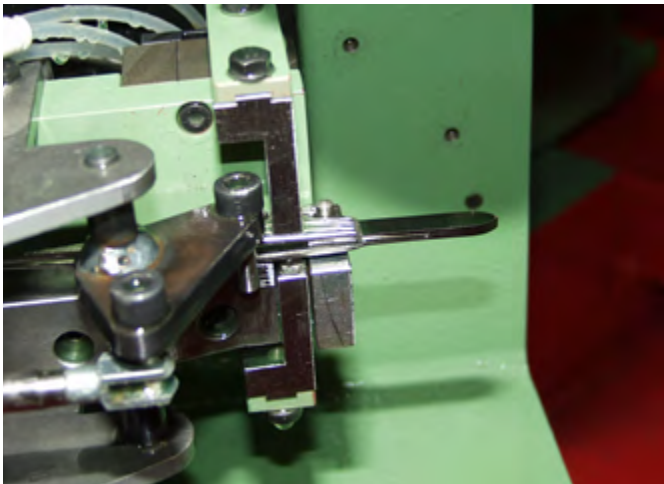
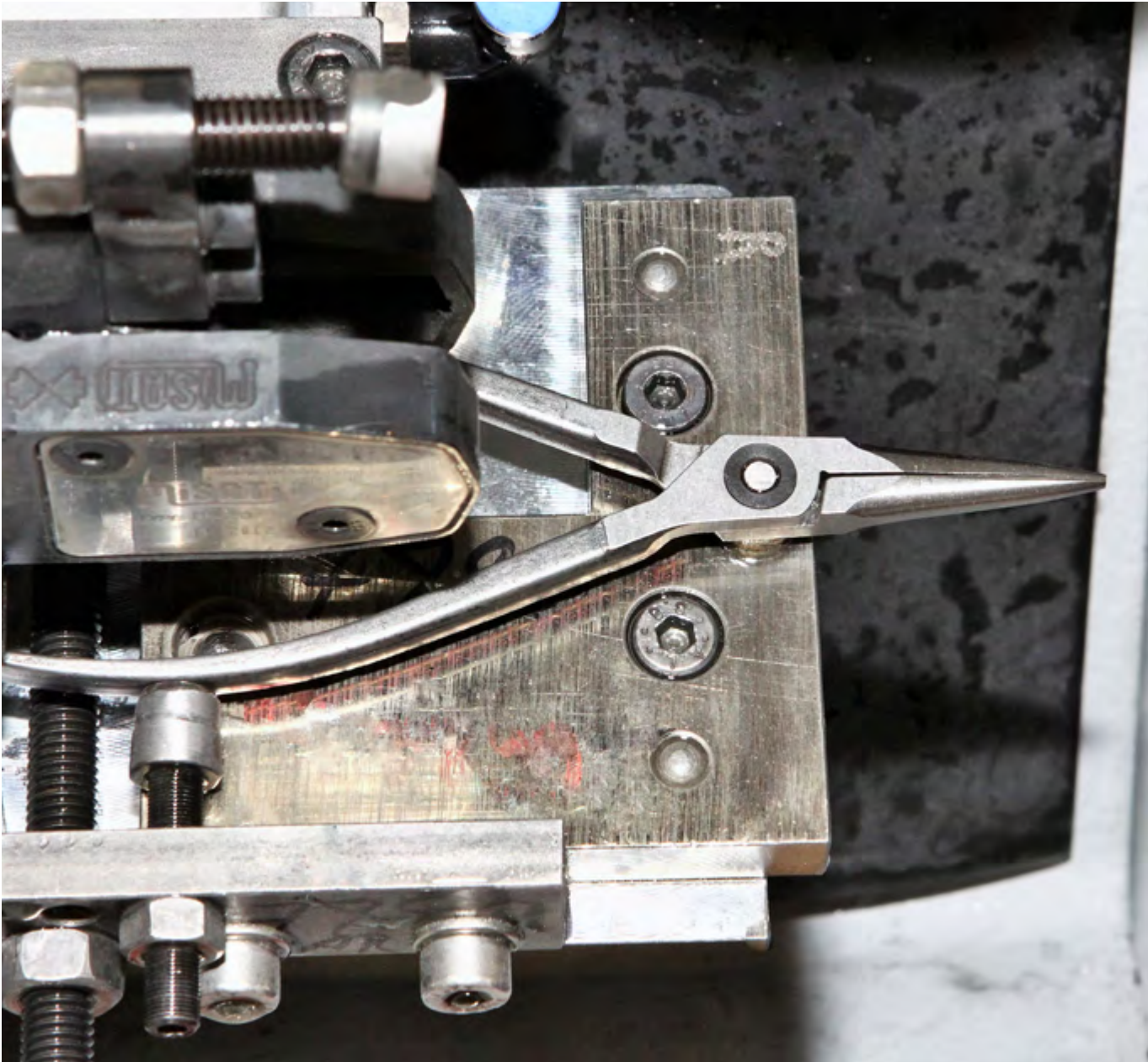
Grinding of extremely curved workpieces

The CNC controlled flat bevel grinding machine of the BG/RV series processes strongly curved radii.

Surgical scissors, manicure scissors, pliers, hooks on garden shears and similarly shaped workpieces can be processed.

The grinding machine is equipped with four contouring axes and one tool axis.

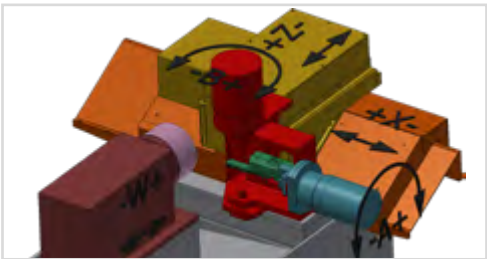
[back to flat bevel grinding machines](#)



In addition to the technical data listed in BG, the machine has the following technical specifications:

- grinding length 150 mm
- mounting flange for grinding wheels 80–200 mm Ø
- grinding spindle with precision bearings, directly driven by special motor, power 6.5 kW
- cutting speed: up to 50 m/s
- five-axis CNC control
- frequency converter for stepless control of spindle speed from 2000 to 6000 rpm, power 7.5 kW
- digital axis drives on preloaded ball screw, Z-axis or precision reduction gears (A and B axes), digital axis drive, linear motor for X-axis

Axle arrangement BG/RV



- grinding table with four axes:
 - X-axis = main feed axis, grinding table driven with linear motor
 - Z-axis = linear pressure axes against grinding wheel
 - A-axis = tilting axis/cutting angle
 - B-axis = rotary axis
- W-Achse = feed axis grinding wheel, infinitely variable and freely programmable

FLAT BEVEL GRINDING MACHINES BG/RV/YS AND BG/DA/YS

Additional support axis

For the BG/RV and BG/DA series, the Berger Gruppe offers the possibility of integrating an additional support axis.

With the YS support axis, it is possible, for example, to perform all-round machining on surgical instruments or follow-up machining on secateurs.

[back to flat bevel grinding machines](#)



The BG/RV grinding machine shown here operates in the standard version with 4 workpiece axes and an additional tool axis.

The additional support axis YS is another axis for positioning the workpiece.

Examples of use (pictures)

1. Flat bevel grinding machine of the series BG1/DA/RH/YS for subsequent machining of secateurs parts (picture 1)
2. Flat bevel grinding machine of the series BG0/RV/YS with additional support axis for all-round machining of surgical instruments (picture 2)
3. Flat bevel grinding machine of the series BG1/DA/RH/YS with additional support axis (picture 3)

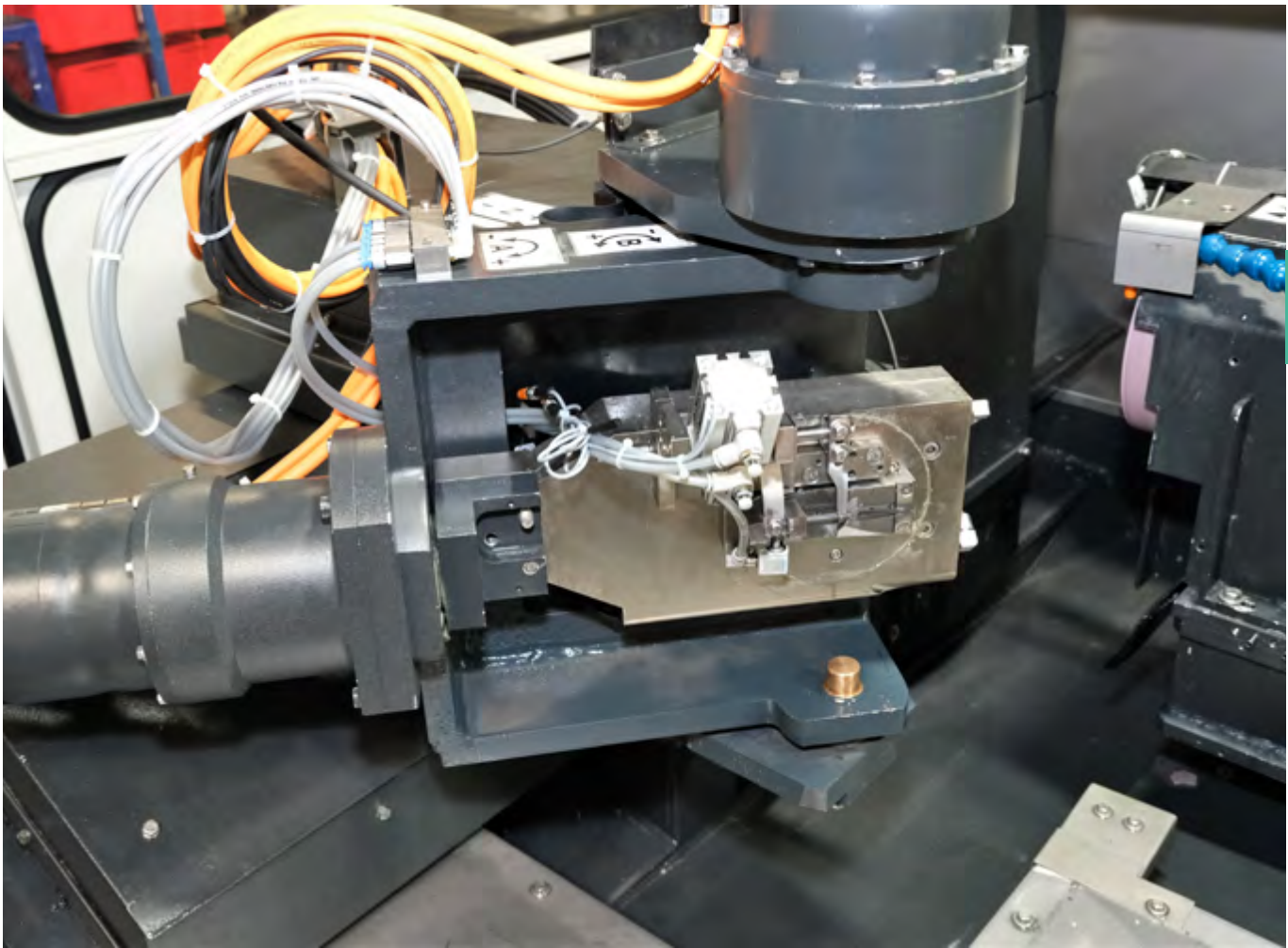
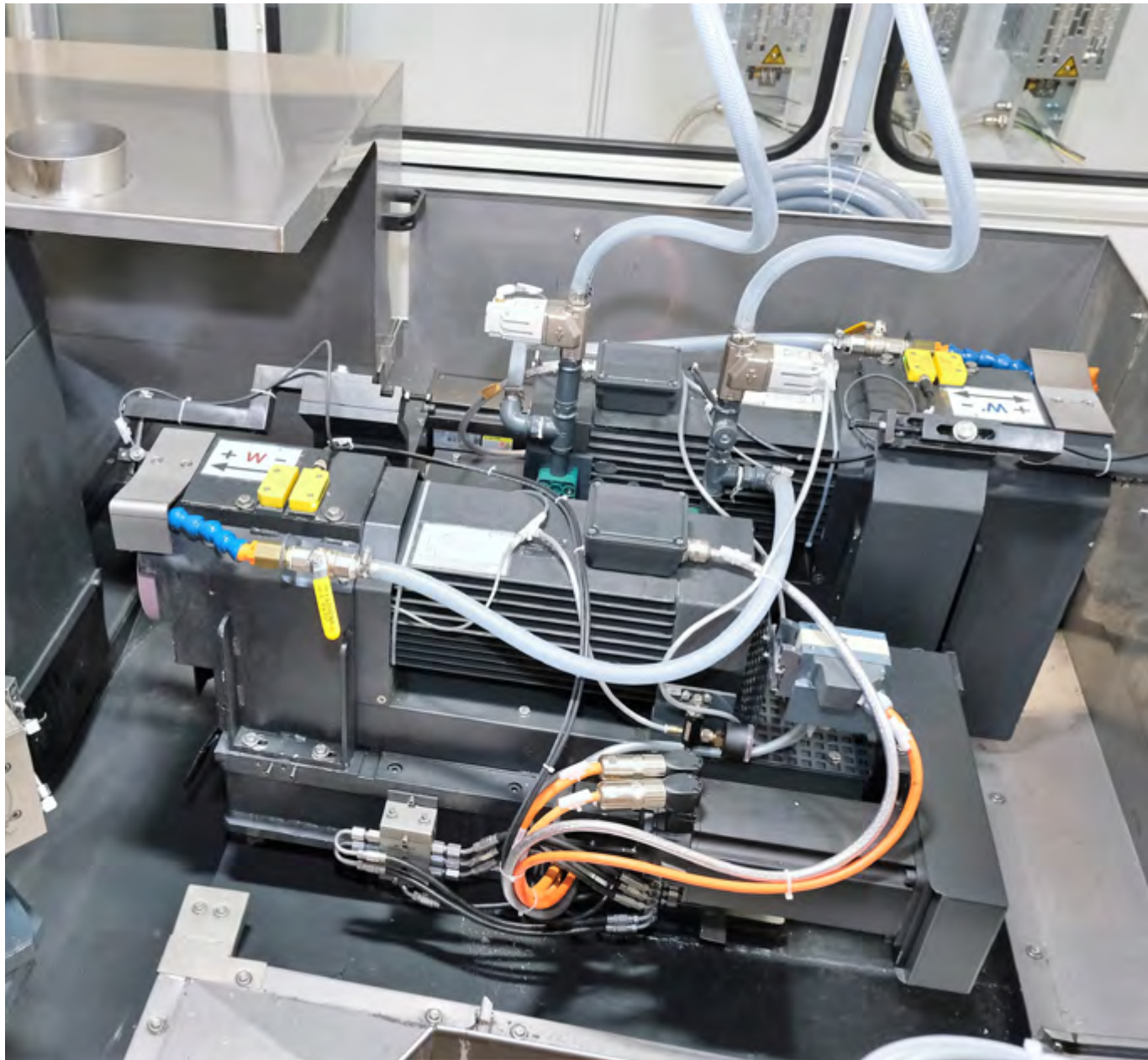


FLAT BEVEL GRINDING MACHINES BG/RV/2SS

Grinding with two tools

The flat bevel grinding machine of the series BG/RV/2SS can be equipped with two grinding heads for subsequent machining with two tools (e.g. for rough grinding and finishing). The grinding heads are mounted on a 180° rotary table.

[back to flat bevel grinding machines](#)



- 2 grinding spindles with precision bearings, directly driven by special motor, power 6.5 kW, mounted on 180° rotary table
- 2 frequency converters for stepless regulation of spindle speed from 2,000–6,000 rpm, power 7.5 kW
- 2 mounting flanges for grinding wheel Ø of 200 mm
- grinding table in 30° inclined bed design, roller rail guides with direct path measuring system digital 6-axis Windows control Andron
- grinding table with four axes:
 - X-axis (main feed axis grinding table)
 - Z-axis (linear pressure axis against the grinding wheel)
 - A-axis (tilting axis cutting edge angle)
 - B-axis (rotary axis) reinforced version
- W-axis and W' - axis (feed axes grinding wheel) infinitely variable and freely programmable
- AC servo motors with SERCOS interface
- digital axis drives on preloaded ball screw
- precision reduction gear or linear motor for X-axis
- Expert Mode programming software
- direct measuring system in the Z-axis

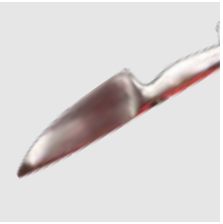
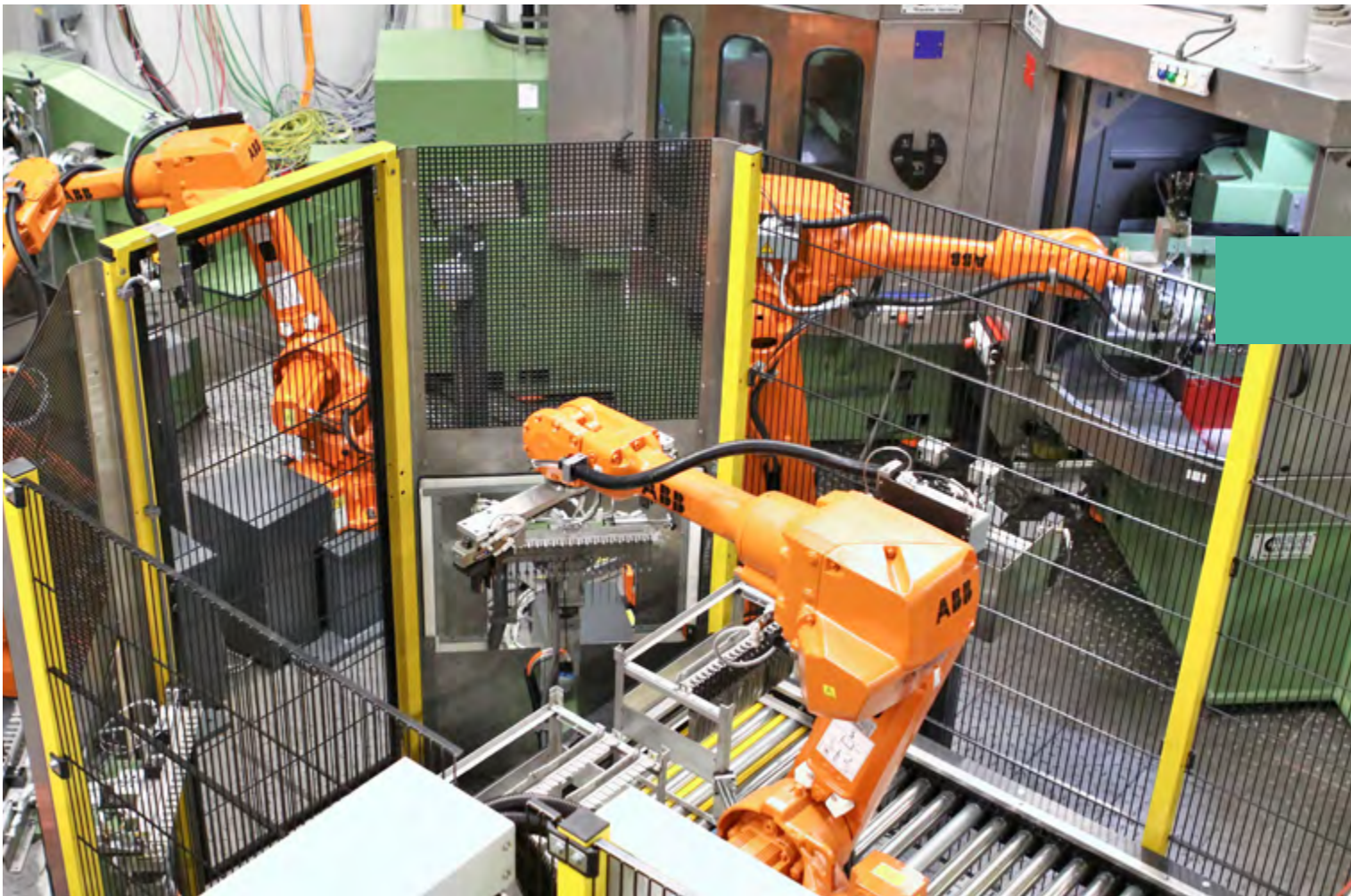
FLAT BEVEL GRINDING MACHINES BG/V

Grinding of knife blades with inclined or standard bolster

The flat bevel grinding machine of the BG/V series has been specially designed for grinding knife blades with inclined bolsters. However, it can also be used for workpieces with standard bolsters. The grinding machine is equipped with three contour giving axes.

- grinding length 300–640 mm
- reception flange for grinding wheel: 450–710 mm Ø
- grinding spindle drive motor 22–45 kW
- precision mounted grinding spindle, designed for circumferential speed of up to 50 m/s
- four-axis CNC control

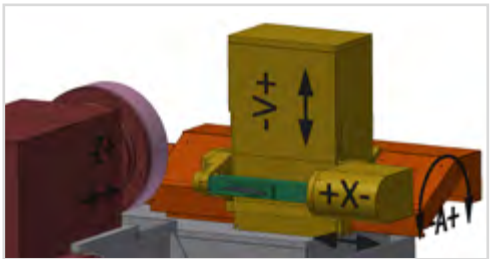
[back to overview BG/NT](#)



- grinding table with three axes:
 - X-axis = main feed axis, grinding table driven with linear motor
 - V-axis = vertical axis
 - A-axis = tilting axis/cutting edge angle
- Z-axis = infeed axis grinding wheel
- digital axis drives on preloaded ball screw, Z- and V-axis or precision reduction gear (A-axis), digital axis drive, linear motor for X-axis
- additional axis arrangement with wheel axis Z- and W-axis for grinding wheel compensation

The Z-axis is used as axis for grinding the workpieces. It is used when the stroke of the wheel axis is not sufficient to grind the workpieces. Examples of this are wide knives where both the face and the cutting edge are ground in one clamping

Axle arrangement BG/V



FLAT BEVEL GRINDING MACHINES BG/ZA

Economic grinding of simple geometries

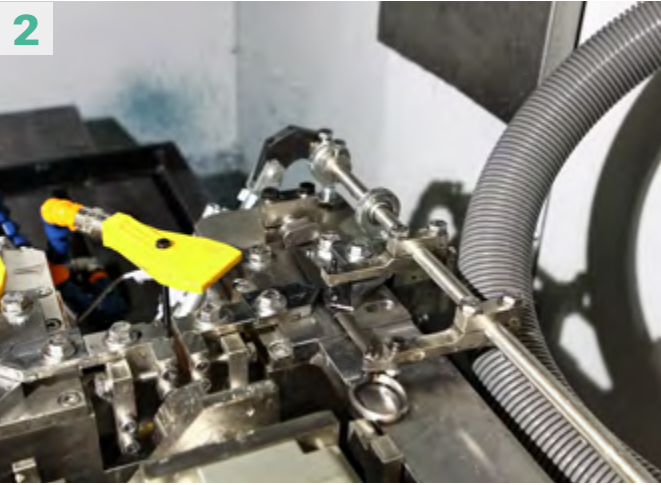
The CNC controlled flat bevel grinding machine of the series BG/ZA is designed for economic grinding of workpieces with simple geometries.

The grinding machine is equipped with three contour giving axes. It is comparable to the flat bevel grinding machine DG. Unlike the DG however, the BG/ZA has a horizontal grinding spindle.

In the cutlery industry, the BG/ZA is used, among other things, for grinding kebab knives or long knives.

Other applications include the grinding of garden shear parts, wood drills or straw chopper knives.

In the field of surgery, the BG1/ZA is used for grinding surgical tweezers and the inside shanks (branches) of surgical scissors.



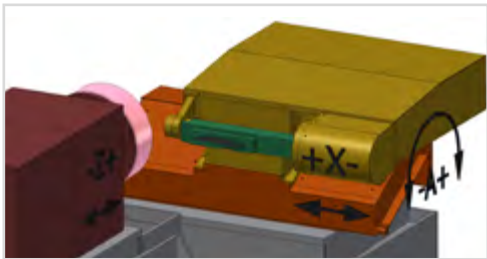
[back to overview BG/NT](#)



In addition to the technical data indicated at BG/NT the machine is classified by the technical specifications as follows:

- grinding length 300–640 mm
- reception flange for grinding wheel: 80–710 mm Ø
- spindle drive 6.5–45 kW
- precision mounted grinding spindle, designed for circumferential speed of up to 50 m/s
- three-axis CNC control
- grinding table with two axes:
 - X-axis = main feed axis of the grinding table, powered by a linear motor
 - A-axis = tilt axis/grinding angle
- Z-axis = infeed axis for grinding wheel
- digital drive for the axes, preloaded ball bearing spindle, Z-axis or precision reduction gear (A-axis), digital powered X-axis with linear motor

Axle arrangement BG/ZA



Examples of use (pictures)

- Processing cell for straw chopper knives with flat bevel grinding machine BG1/ZA, peripheral grinding machine WS4 as well as loading and unloading robot (pictures 1)
- Grinding of surgical scissors (pictures 2)
- Grinding of screwdrivers in cassettes (picture 3)
- Grinding of straw choppers (picture 4)
- Grinding of kebab knives (picture 5)

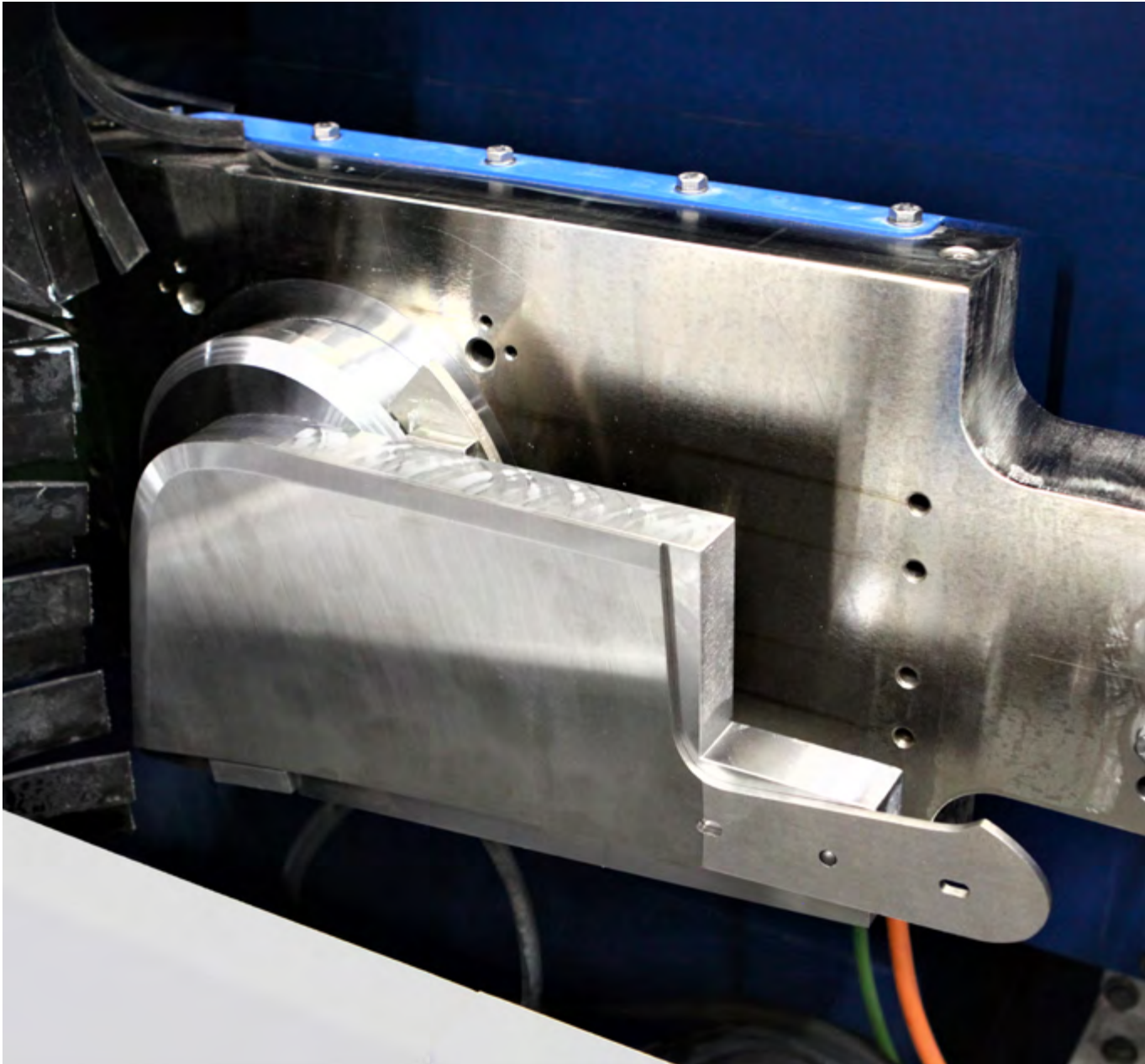
FLAT BEVEL GRINDING MACHINES BG/VSS/V/RH

Grinding with high flexibility

The flat bevel grinding machine of the series BG/VSS/V/RH grinds workpieces with great flexibility combined with high rigidity thanks to the combination of stone axis (Z-axis) to compensate for grinding wheel wear and additional infeed axis (W-axis).

A combination with an additional vertical axis (V-axis) and a rotary axis (C-axis) is realized.

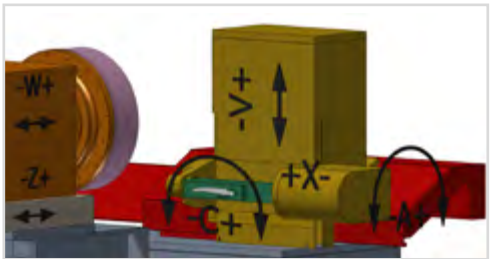
[back to overview BG/NT](#)



In addition to the technical data indicated at BG the machine is classified by the technical specifications as follows:

- grinding length 300–640 mm (option: 1 000 mm)
- mounting flange for grinding wheel Ø 200–710 mm (or segments)
- spindle drive 22–37 kW
- spindle with backlash-free preloaded precision bearing, designed for peripheral speeds of up to 50 m/s
- six-axis CNC control
- digital Windows control
- grinding table with four CNC axes:
 - X-axis = main feed axis, grinding table driven with linear motor
 - A-axis = tilting axis/cutting edge angle
 - C-axis = horizontal rotating axis (option)
 - V-axis = vertical axis (option)

Axle arrangement BG/VSS/V/RH



- W-axis = infeed axis grinding wheel to compensate for grinding wheel wear
- Z-axis = linear pressure axis against grinding wheel
- digital axis drives on preloaded ball screw or precision reduction gear A-axis, digital axis drive linear motor for X axis

FLAT BEVEL GRINDING MACHINES BG/RH

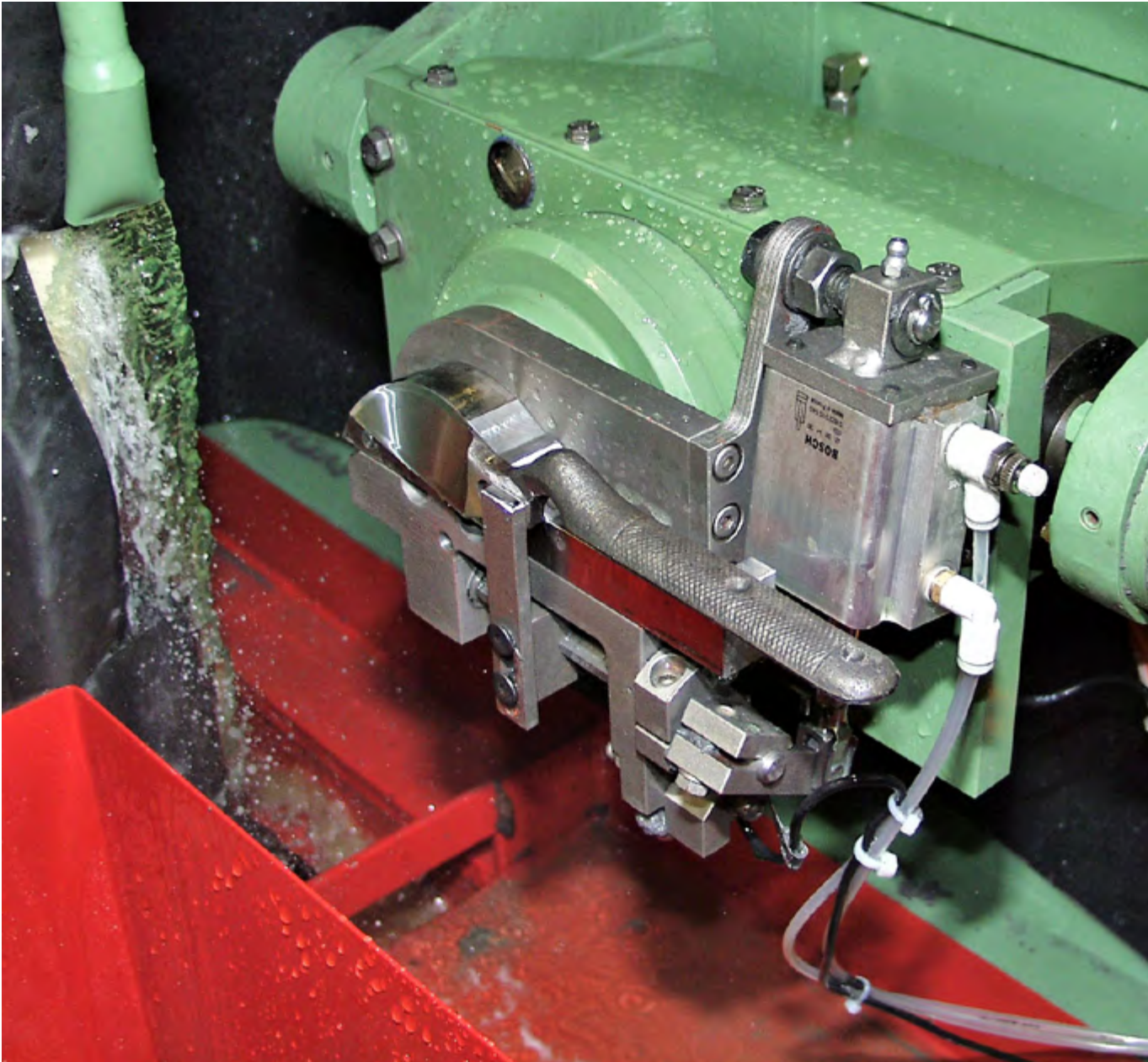
Radii grinding

The CNC controlled flat bevel grinding machine of the BG/RH series is designed for grinding curved cutting edges, e.g. on garden shears, pruning shears, hedge trimmers, axes, hand tools and circular blades.

It is equipped with up to five contouring axes and one tool axis.

The horizontal C axis (RH) can also be used on grinding machines of the BG/V, BG/VSS or BG/ZA series.

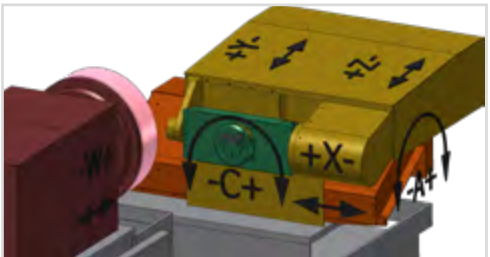
[back to overview BG/NT](#)



In addition to the technical data listed under BG, the machine has the following specifications:

- grinding length 300–640 mm
- mounting flange for grinding wheels Ø 80–710 mm
- spindle drive 6.5–45 kW
- cutting speed: up to 50 m/s
- spindle with backlash-free preloaded precision bearing, designed for peripheral speeds of up to 50 m/s
- digital axis drives on preloaded ball screw, Y- and Z-axis or precision reduction gear A- and C-axis, digital axis drive, linear motor for X-axis
- grinding table with five axes:
 - X-axis = main feed axis, grinding table driven with linear motor
 - Y- and Z-axis = linear pressure axis against grinding wheel
 - A-axis = tilt axis/cutting edge angle
 - C-axis = horizontal rotating axis
- W-axis = infeed axis grinding wheel, infinitely variable and freely programmable

Axle arrangement BG/RH



Examples of use (pictures)

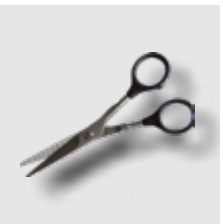
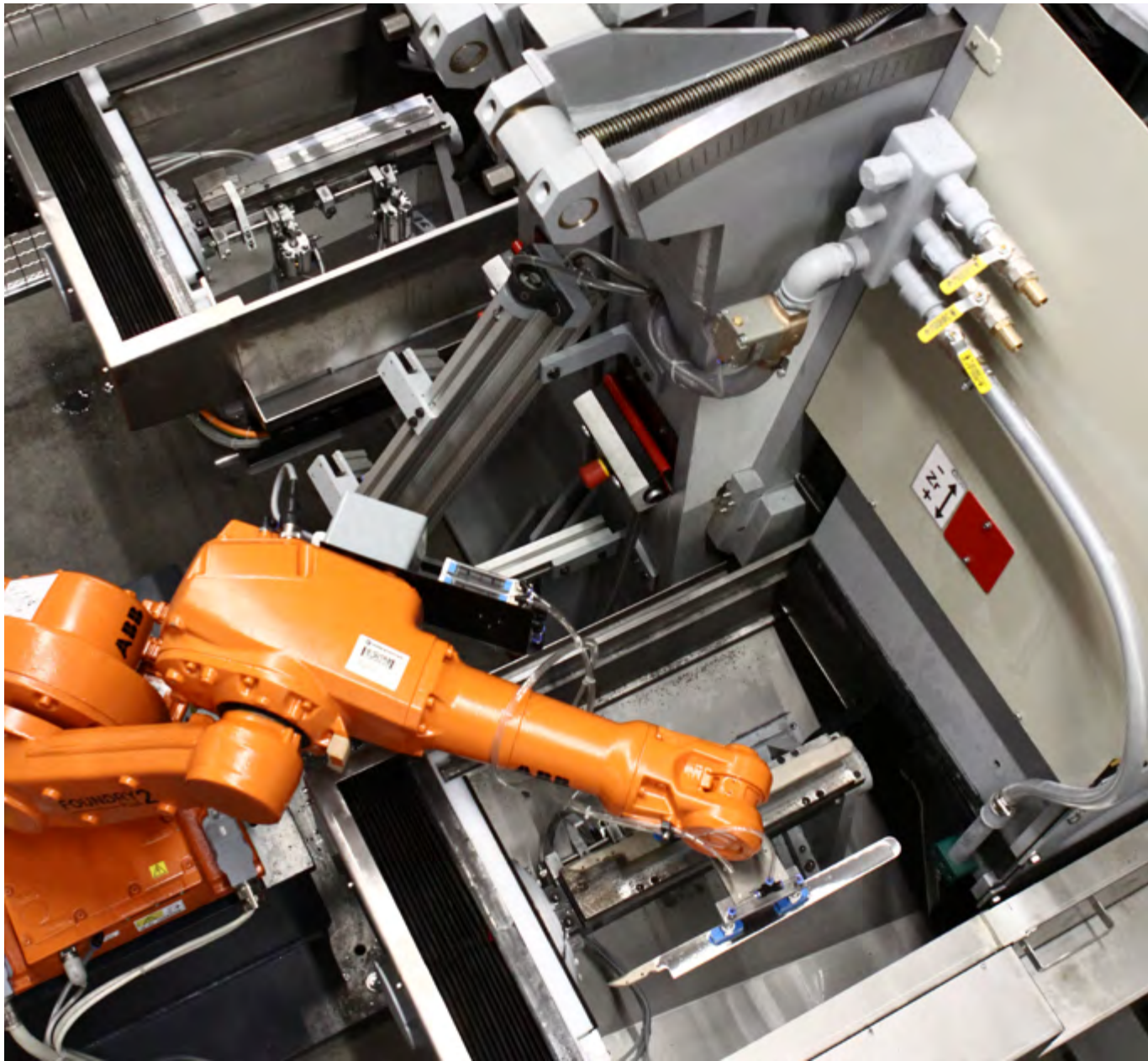
1. Processing cell for sports knives BG1/RH with two belt grinding stations BSS10, one polishing station P3, two double-deck magazine systems and drying station (picture 1)
2. Grinding of sport knives (picture 2)
3. Circular knives 360° with arc grinding (picture 3)
4. Processing of sports knives (picture 4)
5. Sports knives with orientation of grinding grooves perpendicular to contour (picture 5)

FLAT BEVEL GRINDING MACHINES DG

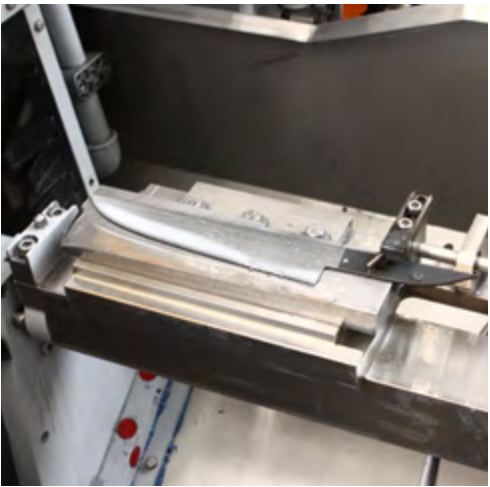
Surface grinding in the smallest space

The CNC grinding machine with three or four axes and a vertical grinding spindle is designed for grinding surfaces, e. g. on knives, scissors, hand tools and related workpieces.

[back to flat bevel grinding machines](#)



- 30 % less space required compared to horizontal arrangement of the grinding spindle
- good stability due to solid welded construction of the machine body
- avoidance of vibrations during machining by filling the machine body with mineral casting
- Windows control with interface for robots, SPS, measuring technique and others applications
- wear-free main axis drive with linear motor – thus rapid traverses of 80 m/min
- precise positioning without backlash due to direct measuring system
- compact precision gear with high rigidity for controlling the flange angle
- designed as single and double machine by using two separate machine bodies



Examples of use (pictures)

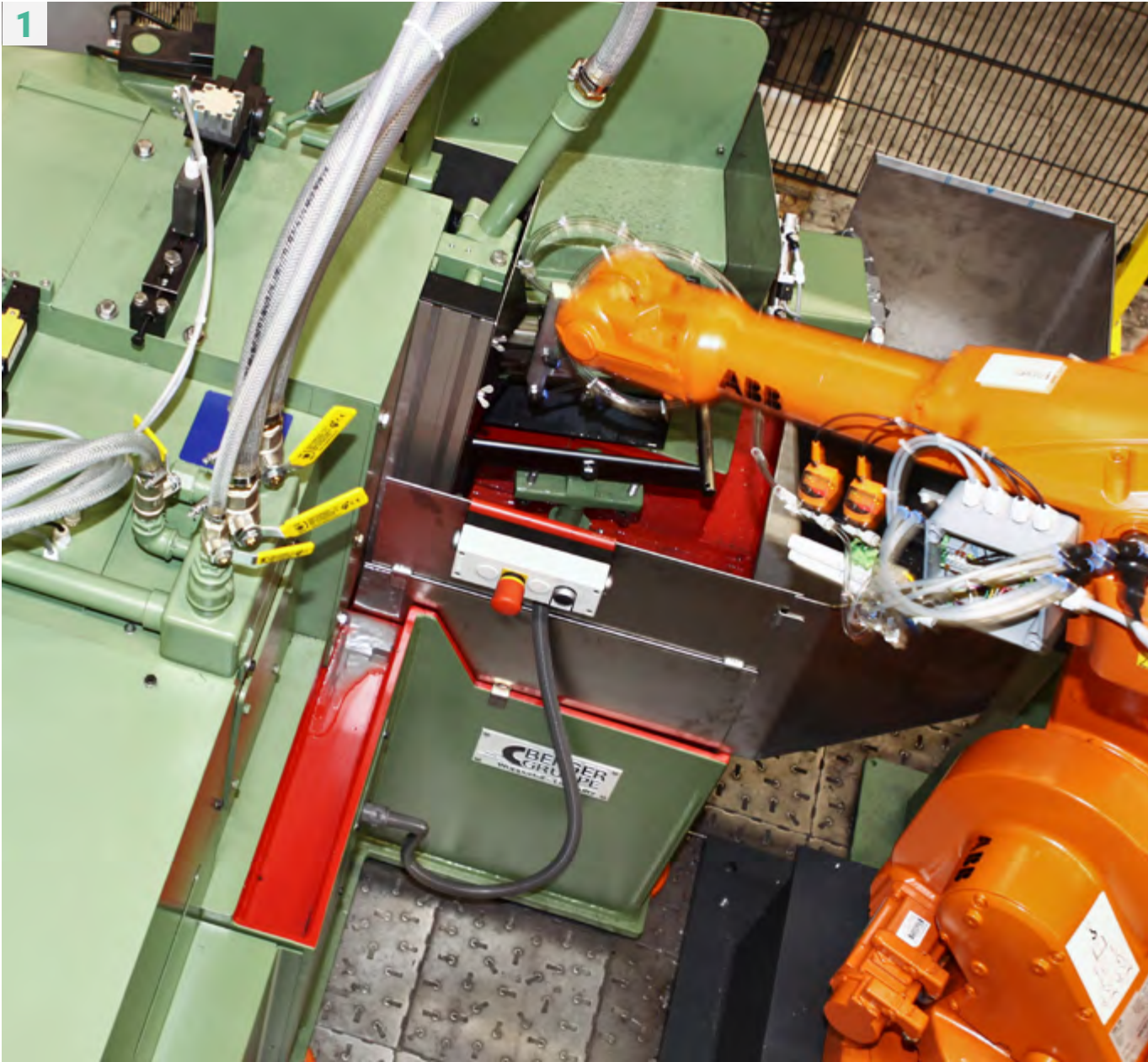
1. Grinding of knives with max. grinding length of 450 mm with DG2, loading and unloading via robot (picture 1)
2. DG1 with Berger Feeder, Fanuc robot grinding of pocket knife parts (picture 2)

FLAT BEVEL GRINDING MACHINES AS/H

Surface and bevel grinding

The flat bevel grinding machine with hydraulically driven grinding table is designed for the machining of knives, mechanical knives, scissors, hand and gardening tools and similar workpieces.

[back to flat bevel grinding machines](#)



AS1/H

- grinding length up to 255 mm
- grinding wheel Ø up to 350 mm
- drive 5.5 kW (7.5 PS), 15 kW (20 PS)
- designed for grinding table, pocket, kitchen, sport and hunting knives, secateurs and different hand tools such as axes, screwdrivers, chisels and pliers

AS1/2/H

- grinding length up to 255 mm
- grinding wheel Ø up to 450 mm
- drive 5.5 kW (7.5 PS), 15 kW (20 PS)
- designed for grinding table, pocket, kitchen, sport and hunting knives, secateurs and different hand tools such as axes, screwdrivers, chisels and pliers

AS2/H

- grinding length up to 415 mm
- grinding wheel Ø up to 500 mm
- drive 7.5 kW (10 PS), 18 kW (25 PS)
- designed for grinding big professional knives, hedge trimmers, axes and similar workpieces

AS2/3/H

- grinding length up to 415 mm
- grinding wheel Ø up to 700 mm
- drive 15 kW (30 PS), 30 kW (40 PS)
- designed for grinding heavy and wide workpieces with high material removal, e. g. cleavers, axes or mechanical knives

Examples of use (pictures)

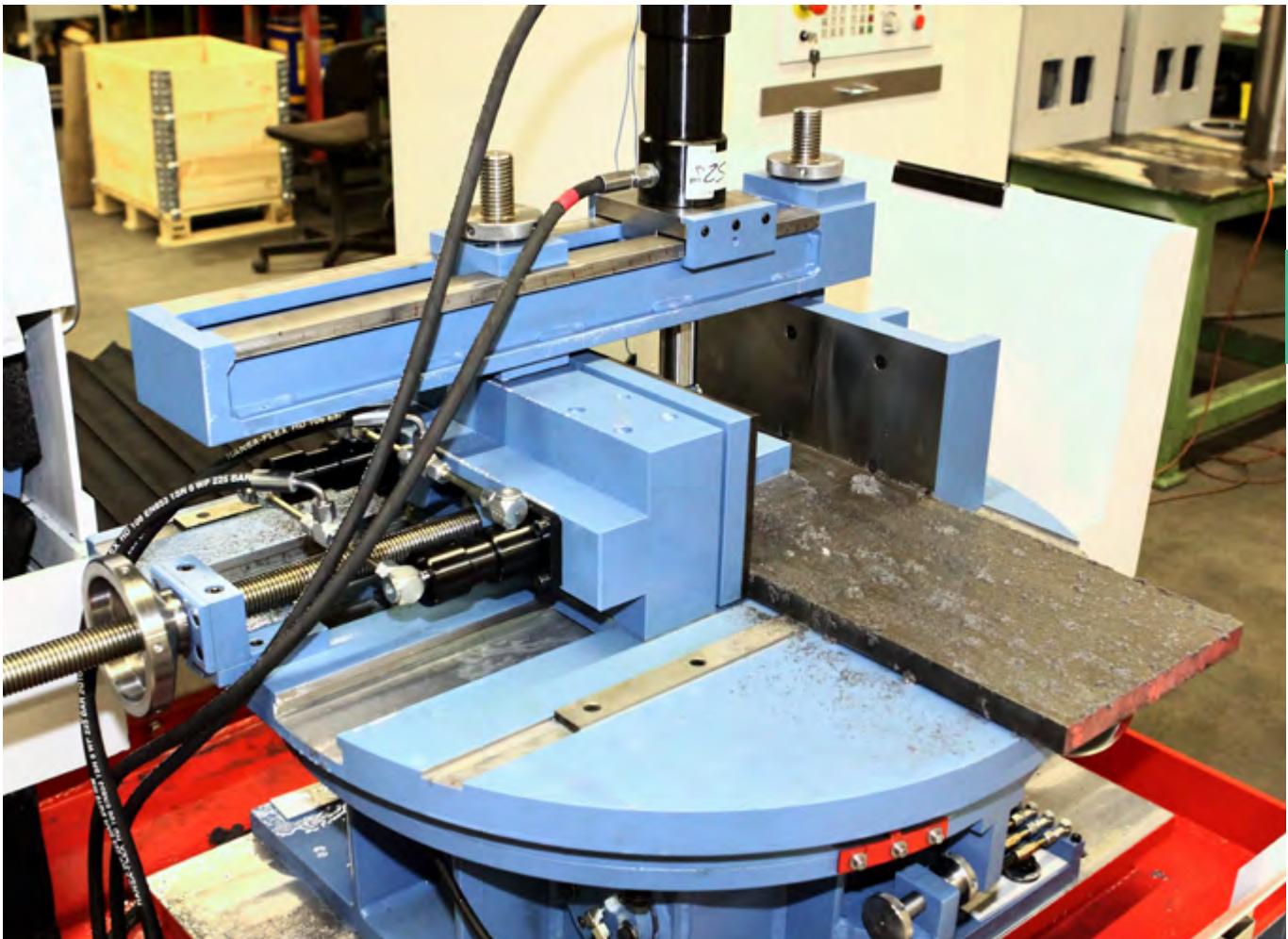
1. Flat bevel grinding machine AS/1/2 with robotic loading (picture 1)
2. Grinding machine AS2/H with extended stroke of 560 mm (picture 2)

FLAT BEVEL GRINDING MACHINES HSG

Grinding of the head surface of machine knives

CNC controlled flat bevel grinding machine designed for lateral grinding of mechanical knives and similar workpieces

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- machine frame as a solid welded construction
- slide mounted on linear roller guides for moving the grinding head, driven by wear-free linear motor, max. stroke 600 mm, traverse speed 0.1–10 m/min, continuously adjustable, guides protected by gaiters
- precision mounted horizontal grinding spindle, outer Ø 250 mm, segment flange Ø 600 mm for the reception of segments
- drive 22 kW, cutting speed up to 30 m/s, displacement of the grinding spindle on ball screw driven by servomotor, step by step and continuously
- solid grinding table adjustable from 0–45°, fixed stop at 0° position, manual adjustment via worm and worm-wheel, scales in 1° and 15' partition
- hydraulic clamping device to fix knives from 300 × 200 mm against clamping jaw
- hydraulically driven clamping jaw, stroke approx. 5 mm, manually adjustable at knife width, hydraulic clamping cylinder from above

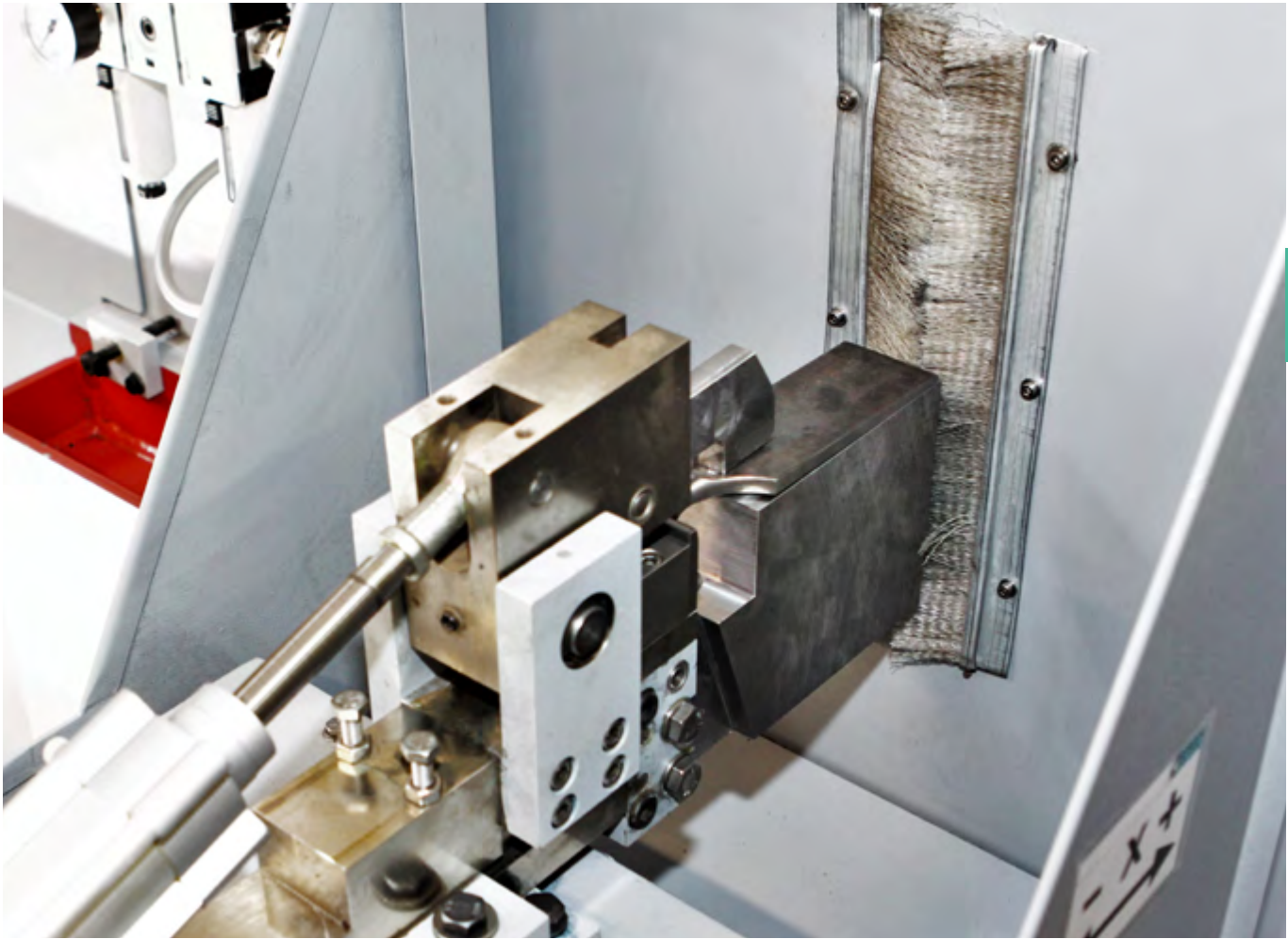
FLAT BEVEL GRINDING MACHINES HDS

Double-sided flat grinding

The HDS CNC grinding machine achieves efficient, double-sided surface grinding of parallel surfaces, e.g. on wrenches, pliers, hammers, chisels, swords, with three axes.

It can also achieve surface grinding on conical surfaces – e.g. on adjustable wrenches in single grinding (e.g. pliers) or in throughfeed (e.g. swords).

[back to flat bevel grinding machines](#)



- grinding wheel diameter 400–700 mm
- automatic grinding wheel compensation with two independently operating measuring systems
- CNC control or hydraulic system
- central grease lubrication system
- designed for wet processing with grinding emulsion
- two grinding wheels for bilateral processing
- different automatic loading systems

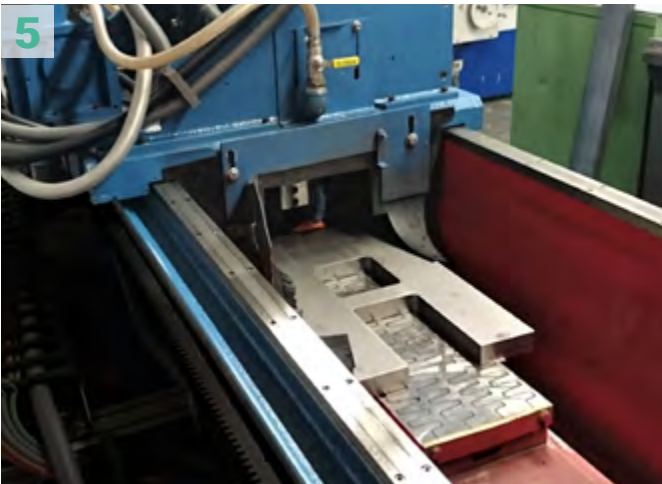


TRAVELLING HEAD FLAT GRINDING MACHINE FS

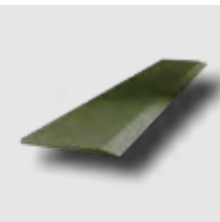
Flat grinding of machine knives

The CNC controlled traveling head flat grinding machine achieves surface grinding on long knives with a maximum length of 4000 mm with up to four axes.

- grinding length: up to 4 000 mm
- grinding height: 200 mm (or on request)
- cup/segment grinding wheel Ø: 450 mm
- segment head Ø: 450 mm
- grinding motor: 30 kW, 1 000 rpm
- cutting speed: up to 50 m/s
- four-axe CNC control (one tool and three workpiece axes)
- programmable angle adjustment with electronic locking
- tactile measuring system for grinding wheel wear compensation (optional)
- magnetic table with 4 magnets of 1,000 × 250 mm, single magnet with demagnetization unit
- carriage speed 0–60 m/min programmable
- good access to the grinding chamber of the carriage through lateral opening



[back to flat bevel grinding machines](#)



- four-axe digital CNC control
 - X-axis (carriage) with gear rack in connection with servomotor and gear unit
 - Z-axis (moving of the vertical feed / plunge grinding) on preloaded ball gearing spindle by a brushless AC servomotor, stroke app. 200 mm
 - A'- + A-axis (tool carrier block), swiveling at grinding angle (option) with precision planetary gear and servo direct drive
- coolant supply through hollow shaft in the grinding spindle for internal cooling of the grinding segments
- A-axis/A'-axis: two servomotor gearbox units, each at the end of the shaft for precise angle adjustment or with servomotor
- carriage driven by precision servo gearbox and rack
- double-sided cover with bellows
- 45 mm precision roller linear guide for the carriage
- vertical carriage with ball screw and servomotor
- vertical guide with precision roller linear guidance
- continuous, programmable adjustment
- automatic interval-controlled central grease lubrication with control and fault indication
- designed for wet grinding

Examples of use (pictures)

- Access to change segments from the front (picture 1)
- Travelling head flat grinding machine of the series FS (picture 2)
- Mounting of grinding segments / segment head (picture 3)
- Travelling head of a travelling head flat grinding machine of the series FS70/4000 (picture 4)
- Version with fixed magnet (picture 5)

TRAVELLING HEAD FLAT GRINDING MACHINE FS

Surface grinding with peripheral grinding wheel

The CNC-controlled travelling head flat grinding machine achieves surface grinding on long knives with a peripheral grinding wheel. The maximum grinding length is 4 000 mm and the grinding height is 200 mm.

Differing from the flat grinding machine shown on the previous two pages, the FS110/400/P has the following technical specifications:

- peripheral grinding wheel: Ø 400 mm x max. 80 mm width, inner diameter 127 mm

- infeed: Stepless
- tactile measuring system for grinding wheel wear compensation (optional)
- magnetic table with three magnets of 1 350 x 250 mm each, stationary
- travelling head speed: 0-30 m/min programmable
- travelling head with oscillation stroke, oscillation with 450 mm stroke via additional carriage in connection with servo motor/ ball screw drive

[back to flat bevel grinding machines](#)



Flat grinding on long knives with loading on both sides

The travelling head flat grinding machine of the series FS110/160/2 achieves flat grinding on long knives. The grinding machine is equipped with two independent cutter bars, each with a magnet, so that four grinding surfaces can be machined in two setups.

- grinding length: 2 x 1 600 mm
- magnetic table: 2 x 1 600 mm x 250 mm
- grinding height: max. 250 mm
- grinding spindle: 37 kW, 1 500 rpm
- grinding tool: 14 grinding segments, flange Ø 710 mm
- travelling head speed: 0-60 m/min programmable
- infeed steps infinitely programmable
- travelling head designed to accommodate three grinding spindles/grinding stations
- 4-axis CNC control

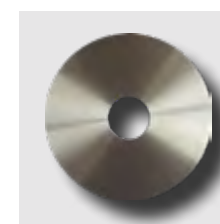
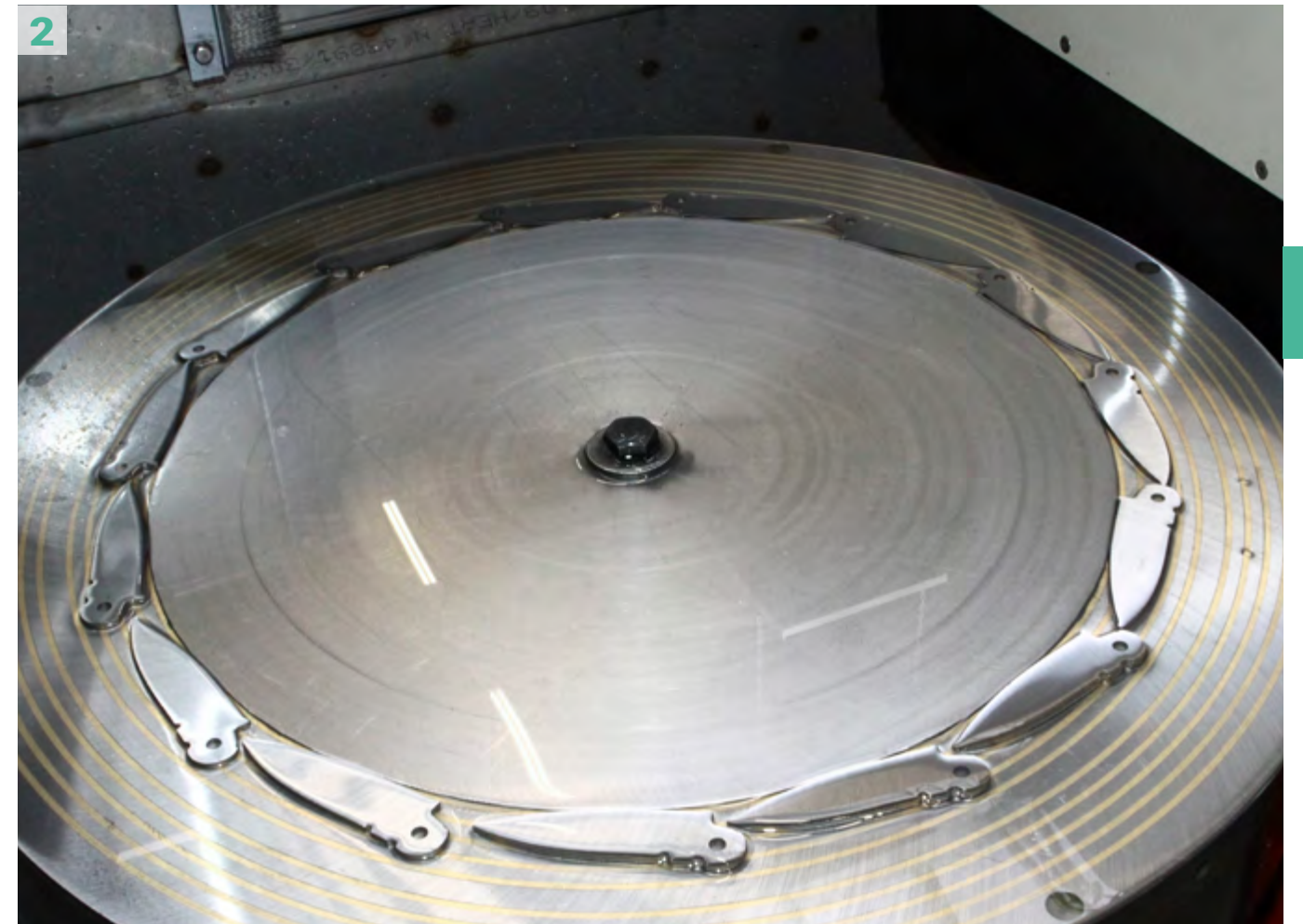
Examples of use (pictures)

- Travelling head flat grinding machine of the series FS110/400/P with peripheral grinding wheel (picture 1)
- Travelling head flat grinding machine of the series FS110/160/2 with loading on both sides (picture 2)

ROTARY TABLE GRINDING MACHINES

FLAT GRINDING BEVEL GRINDING CHAMFER GRINDING

Rotary table grinding machines of different series achieve single and/or double-sided flat grinding, chamfer grinding or surface and bevel grinding on workpieces.



Depending on the size and geometry of the workpiece, different series are used:

- **DRG** for flat grinding on flat or conical surfaces
- **DRTS** with vertical rotary table for flat grinding on flat workpieces
- **RTS** for flat and bevel grinding on single workpieces
- **RTF** for surface grinding of discs and circular knives
- **RMS** for bevel grinding on circular knives with programmable angle setting
- **VR** for bevel grinding on circular knives with manual angle setting

Examples of use (pictures)

1. Surface and bevel grinding on agricultural knives with RTS3/2 (picture 1)
2. Flat grinding on sports knives with DRG (picture 2)

ROTARY TABLE GRINDING MACHINES

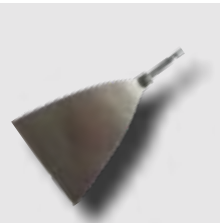
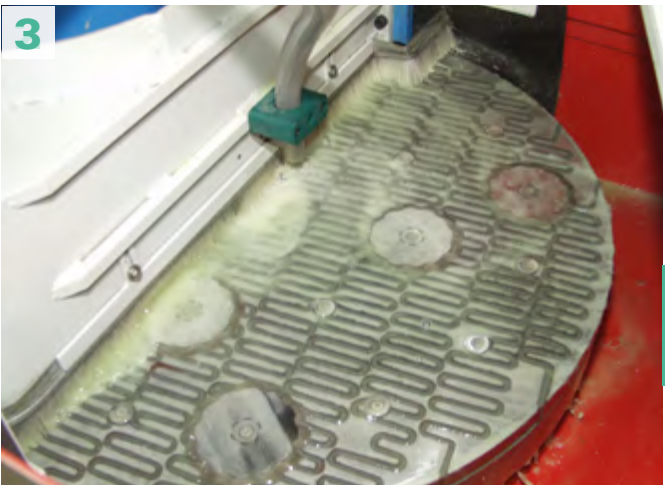
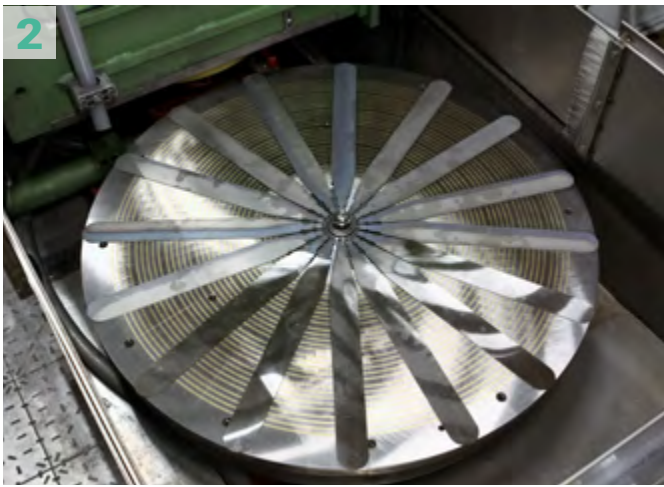
DRG

Flat grinding

The two-axis CNC double rotary table grinding machine processes flat or tapered surfaces on a variety of workpieces, such as table knives, wood chisels, the inside of scissors, spatulas or connecting rods, with high productivity.

- grinding table Ø: up to 450 mm
- spindle drive: up to 45 kW
- cutting speed: up to 50 m/s
- two-axle CNC control
- vertical and horizontal CNC axis

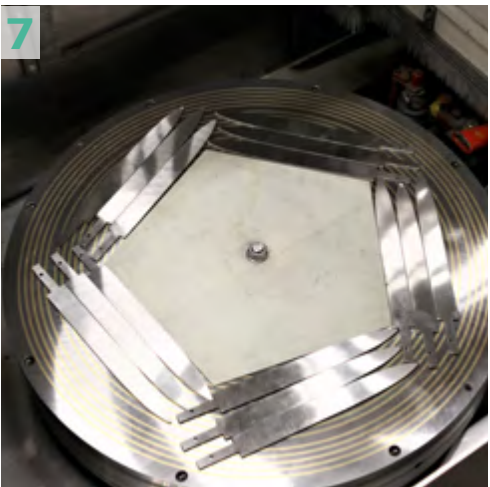
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- possibility to set nominal part dimensions on circular tables with up to four independent gage controls
- electromagnets with interchangeable pole plates
- mechanical, hydraulic or pneumatic clamping fixtures
- table diameter 500–800 mm
- automatic interval-controlled grease central lubrication with monitoring and fault indication

Example of use (pictures)

1. Rotary table grinding machine of the series DRG (picture 1)
2. Grinding of kitchen spatulas (picture 2)
3. Flat grinding of machine knives (picture 3)
4. Grinding of surgical clamps (picture 4)
5. Grinding of connecting rods (picture 5)
6. Grinding of the inner sides of shears with additional heel (picture 6)
7. Grinding of professional knives (picture 7)

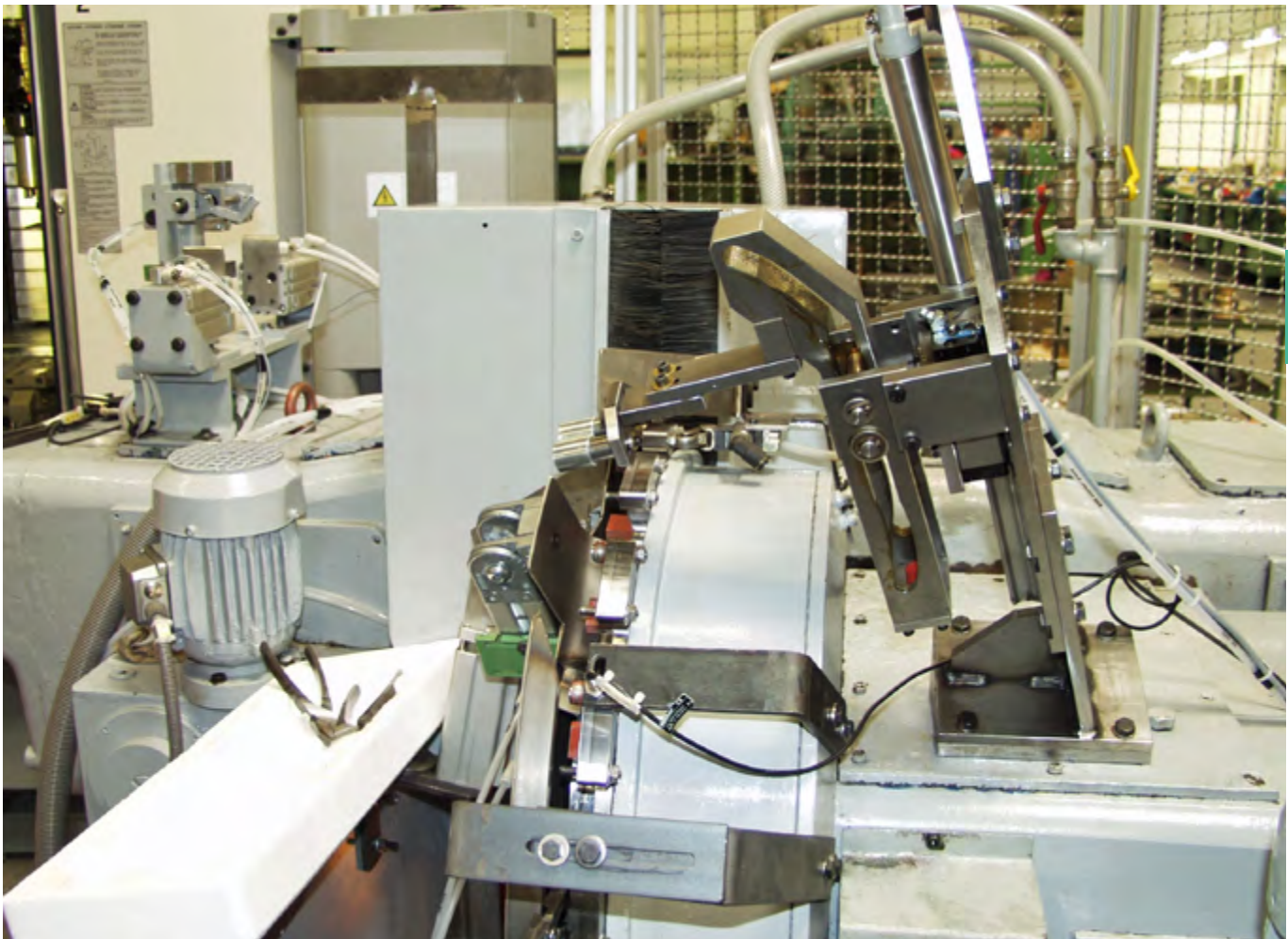


ROTARY TABLE GRINDING MACHINES DRTS

Double-sided flat grinding of parallel surfaces

The DRTS rotary table grinding machine works with a vertical rotary table. It achieves double-sided flat grinding on parallel surfaces – e.g. on spanners, pliers, hammers, chisels or similarly shaped workpieces, chisels or similarly shaped workpieces.

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- continuous grinding process
- vertical rotary grinding table
- grinding wheel diameter 400–700 mm
- CNC control or with mechanical drive
- central grease lubrication system
- designed for wet processing with grinding emulsion
- two grinding wheels for bilateral processing
- different automatic loading systems

ROTARY TABLE GRINDING MACHINES SERIES RTS

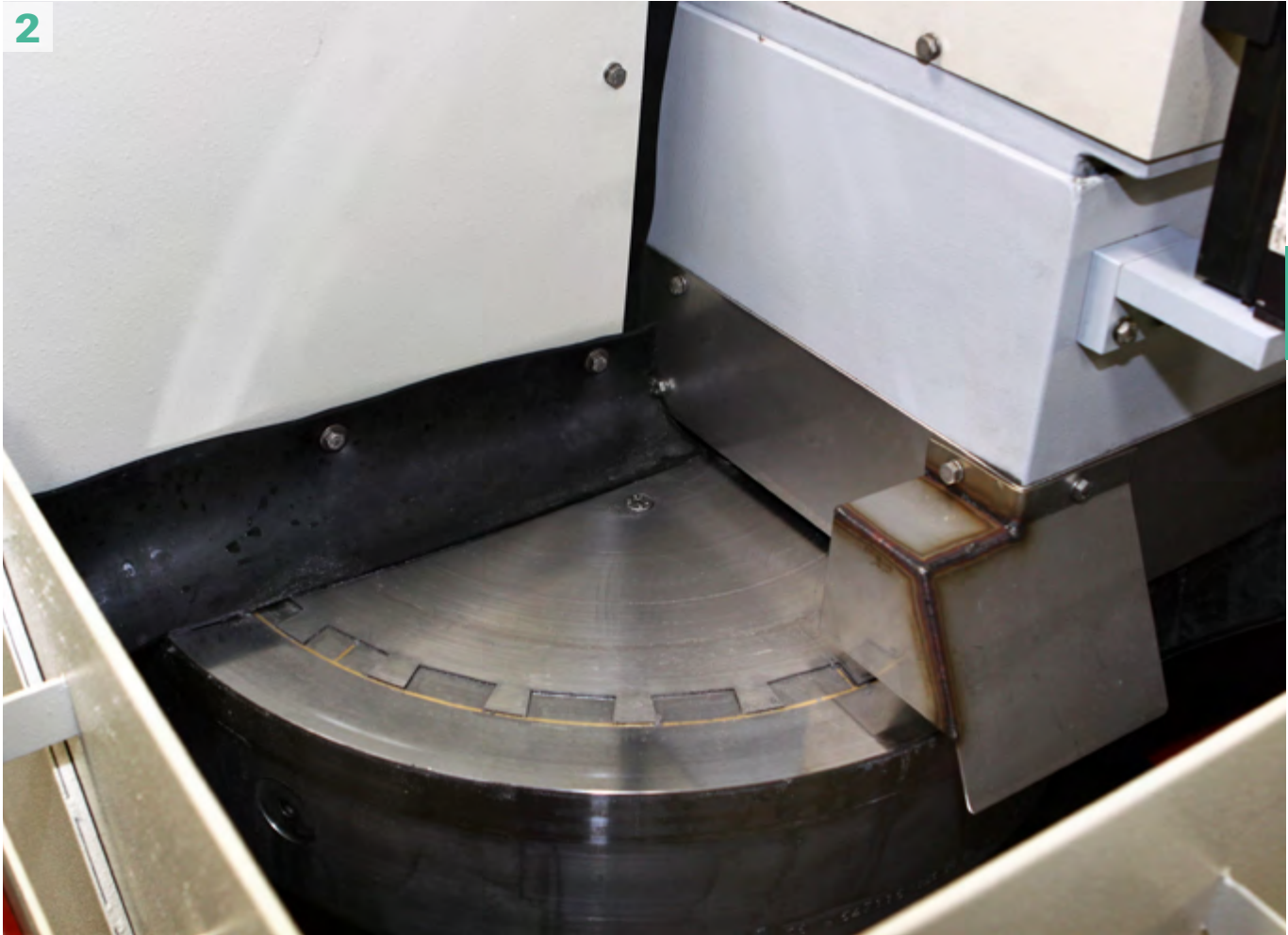
Surface grinding

The RTS rotary table grinding machine is equipped with a vertically adjustable spindle and achieves economical surface and bevel grinding, e.g. on machine knives, pocket knife parts or hand tools in a throughfeed process.

Basically, there are three different sizes depending on the grinding wheel diameter, table diameter and spindle drive.

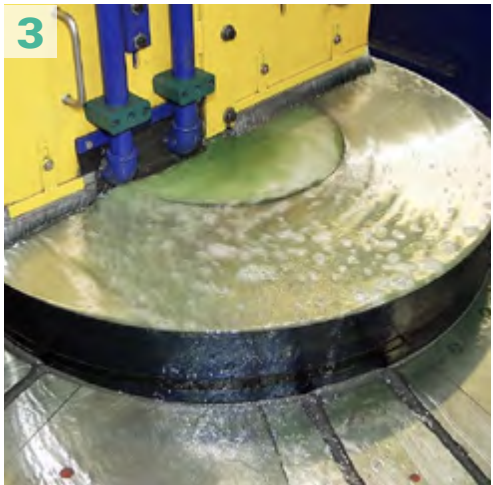
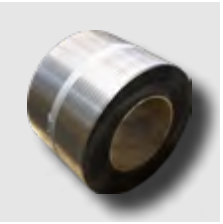
- grinding wheel-Ø: 600 mm
- grinding motor: 37–55 kW
- cutting speed: up to 50 m/s
- two-axle CNC control
- rotary table speed, variable up to 18 rpm
- CNC vertical axes
- mechanical fixture plates or electromagnetic pole plates 600–1 200 mm Ø
- mechanical measuring sensor to gauge the grinding wheel and to adapt to the wear (option: motor adjustment with digital indication)
- adapter flange for grinding wheel Ø 600 mm

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Examples of use (pictures)

1. Grinding machine of the series RTS3/2 with device for grinding mower knife edges with automatic loading/unloading and rotary module (picture 1)
2. Rotary table grinding machine of the RTS2 series for surface grinding of machine knives for the textile industry; measuring probe with direct measuring system also for interrupted grinding (picture 2)
3. Rotary table grinding machine RTS3 with six single magnets for surface grinding of coils (picture 3)



ROTARY TABLE GRINDING MACHINES

RTS3/2

Economic surface grinding of machine knives

The heavy-duty grinding machine RTS3/2 is equipped with up to two vertically adjustable spindles and achieves an economical surface and bevel grinding, e.g. on large machine knives and agricultural knives in a continuous process.

- cutting speed: up to 50 m/s
- four-axe CNC control
- CNC vertical axis
- 1 000 mm electromagnet with segment pole pitch for continuous surface grinding
- CNC adjustment of the measuring control
- automatic loading/unloading with magazine storage
- two grinding wheels with 600 mm Ø
- two 55 kW grinding spindles

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Examples of use (pictures)

1. + 2. Grinding machine RTS3/2 with device for grinding mower knife blades with automatic loading/unloading and rotary module (picture 1 and 2)

3. Surface grinding of mower blades with rotary table grinding machine of the series RTS3/2 (picture 3)

4. Surface grinding on agricultural knives with rotary table grinding machine of the series RTS3 with horizontal rotary axis for loading (picture 4)



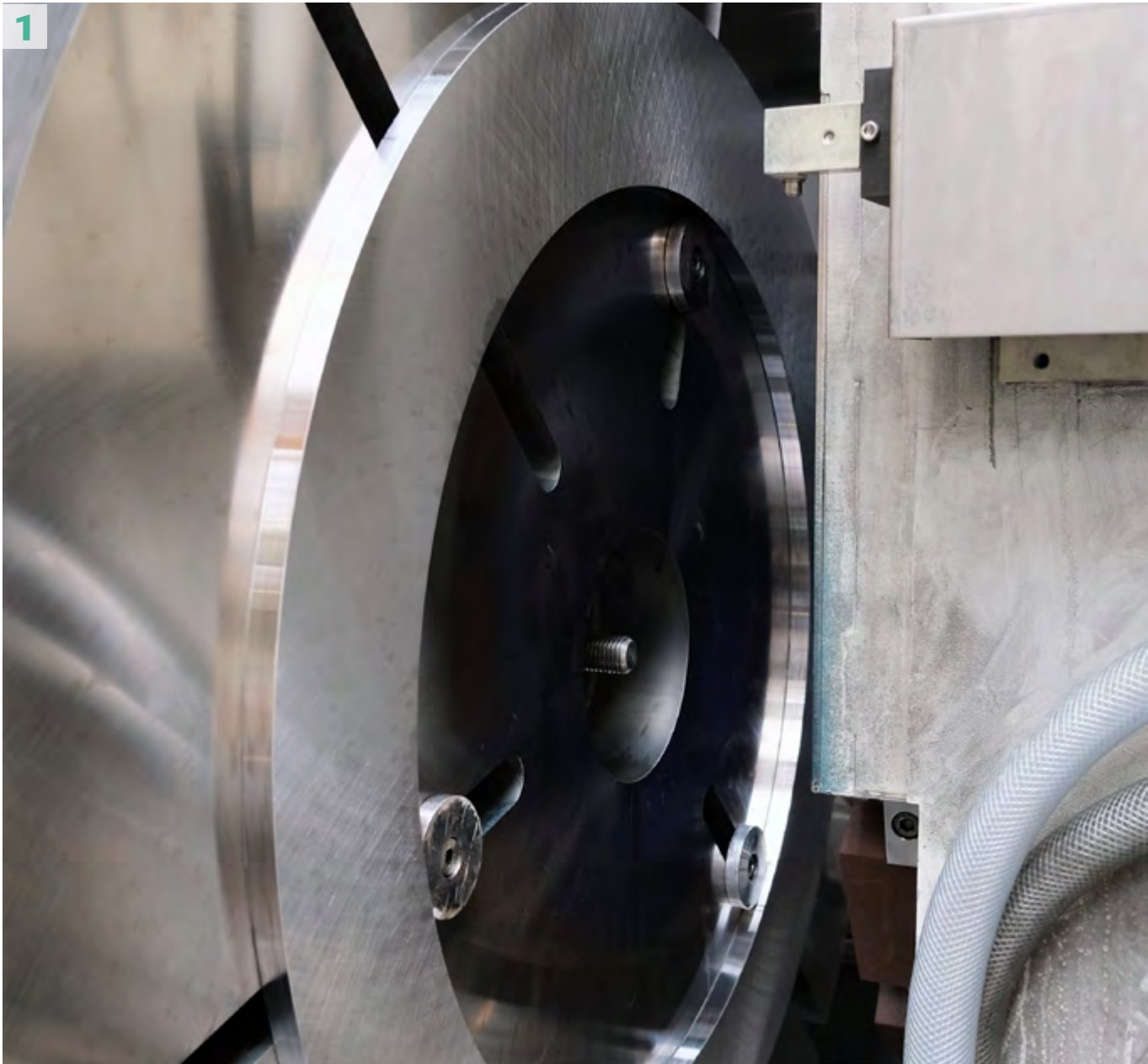
ROTARY TABLE GRINDING MACHINES

RTF

Grinding of discs and circular knives

The CNC grinding machine of the RTF series is designed for grinding brake and clutch discs, circular blanks, circular blades and similarly shaped workpieces.

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- workpiece diameter up to 1100 mm
- main engine 45 kW
- special precision bearing of the grinding spindle, designed for peripheral speed of 25–40 m/s
- mounting flange for grinding wheels with 350 diameter
- single axis NC control (infeed axis for grinding wheel)
- preparation for wet grinding
- electronic measuring control type BEM digital / diamond for compensation of grinding wheel wear by means of carbide probe with pneumatic lift-off
- infinitely variable control of the number of spindles from 25 to 40 m/s, allowing the use of plastic grinding wheels with different cutting speeds

Examples of use (pictures)

1. Grinding of brake and clutch discs (picture 1)
2. Rotary table grinding machine RTF (picture 2)

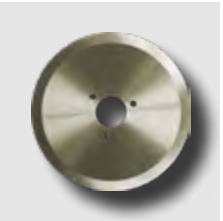
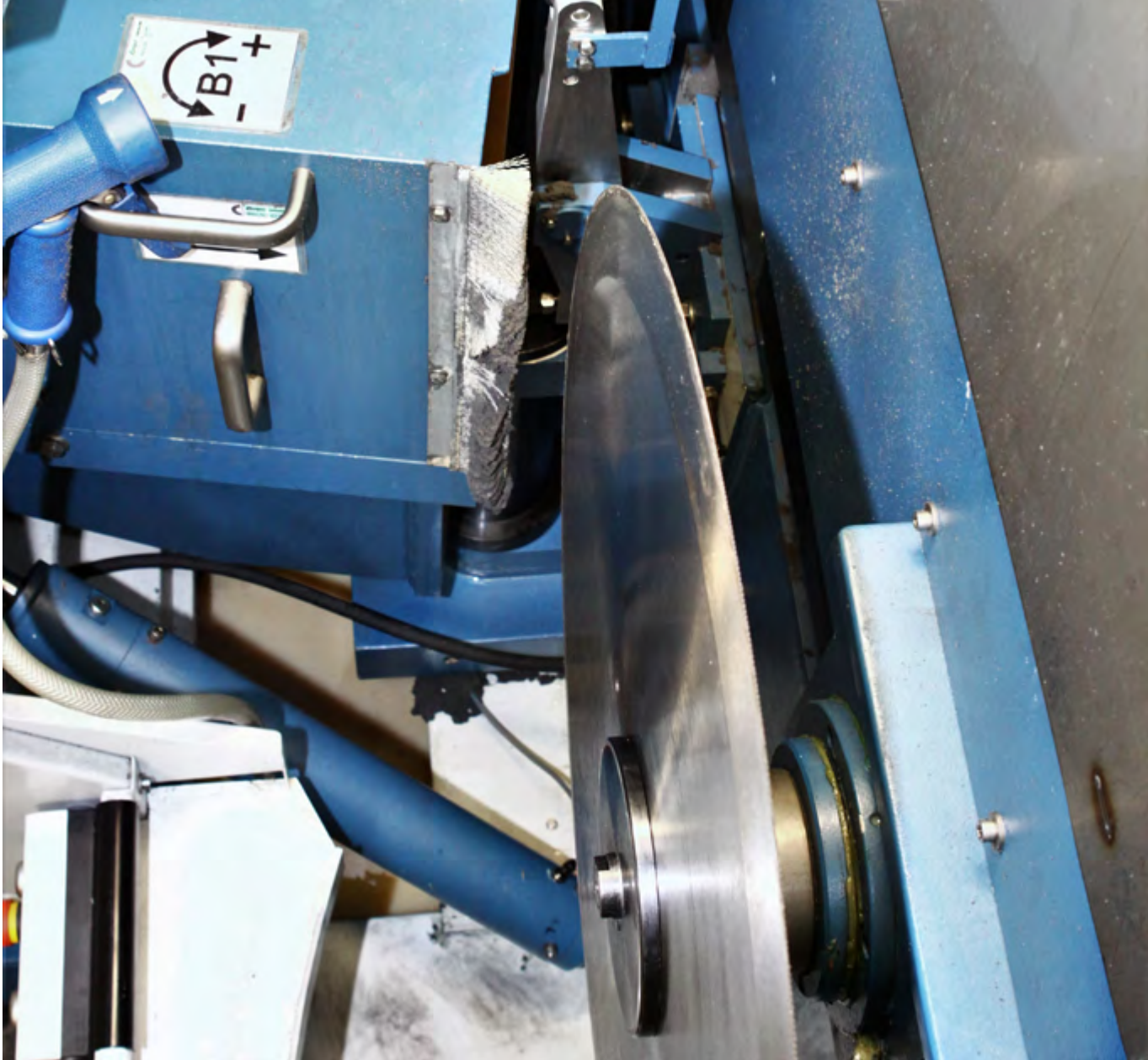
ROTARY TABLE GRINDING MACHINES RMS

Cutting edge grinding of circular and
cutter knives with arc grinding method

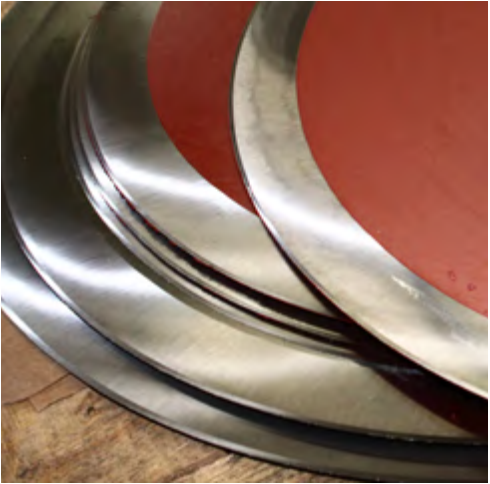
The CNC grinding machine RMS grinds cutting
edges and chamfers on circular knives with
three or four axes using a cup wheel for high
stock removal. The angle setting is programm-
able for subsequent machining.

- workpiece Ø: up to 1 000 mm
- grinding wheel Ø: 400 mm
- spindle drive: up to 11 kW
- cutting speed: up to 45 m/s
- three-axle CNC control

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- rotation speed of the workpiece adjustable 100–240 rpm
- headstock with cup grinding wheels with 450 mm Ø
- automatic tactile compensation of the grinding wheel wear
- automatic diameter measurement
- simple, direct programming with input of workpiece data/parameters
- CNC controlled adjustment of the angle range 0°–30° with hydraulic clamping
- clamping of workpieces via permanent magnet, electromagnet, mechanical or pneumatic device



ROTARY TABLE GRINDING MACHINES RMS/RSP

Cutting edge grinding of circular knives with arc grinding method

The machining cell consisting of a robot with grinding spindle and a two-axis CNC grinding machine achieves a cutting edge grinding on circular knives.

- headstock with cup grinding wheels with 450 mm Ø
- tactile stone wear compensation
- automatic diameter measurement

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1
Mounting of circular knives with additional seventh axis integrated in robot control



2
Production cell with four-sided safety fence



3
Diameter measurement for regrinding



4
Different models of circular knives

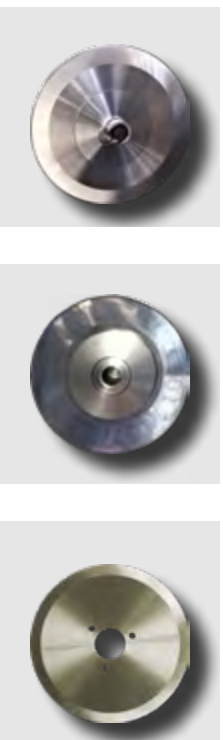
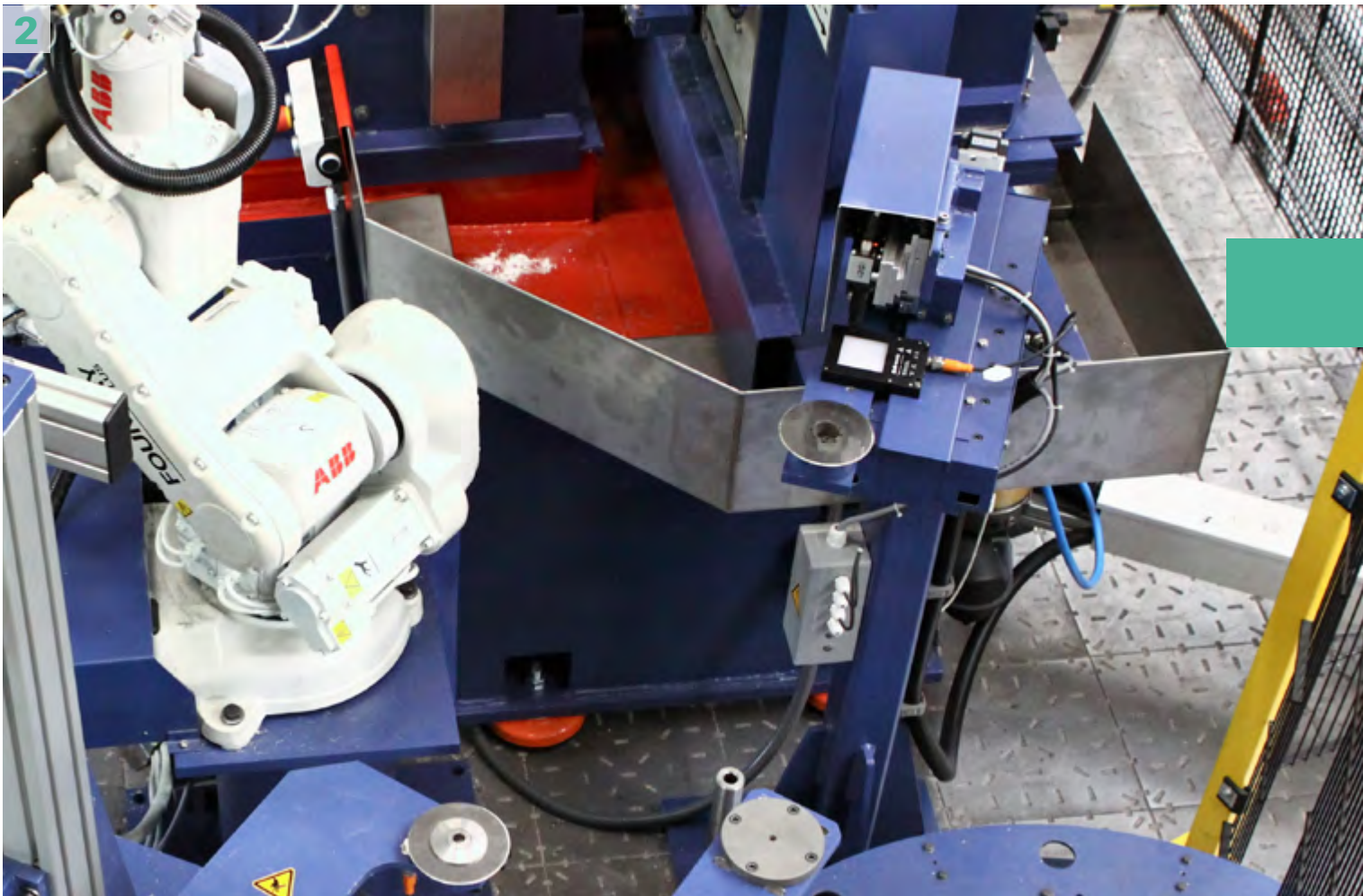
ROTARY TABLE GRINDING MACHINES VR

Cutting edge grinding of circular knives with arc grinding method

The CNC grinding machine VR is designed for grinding cutting edges and chamfers on circular knives with a maximum diameter of 400 mm using a cup wheel for high chip removal.

- cutting speed: up to 50 m/s
- two-axle CNC control
- tactile measuring system for wear compensation of the cup grinding wheel
- polishing station for polishing the cutting edge
- camera measuring system for measuring the outer diameter and residual thickness of the cutting edge
- robot loading and unloading system (option)
- workpiece Ø: 50–400 mm
- grinding wheel Ø: 300–400 mm
- spindle drive: 15 kW

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- simple, direct programming with input of workpiece data/parameters
- manually adjustable cutting edge angle up to 45°
- automatic compensation of the grinding wheel wear
- clamping of workpieces via permanent magnet, electromagnet, mechanical or pneumatic devices
- rotation speed of the workpiece adjustable
- robot-controlled loading system with stacking magazine
- simultaneous, additional deburring possible with bevel grinding

Examples of use (pictures)

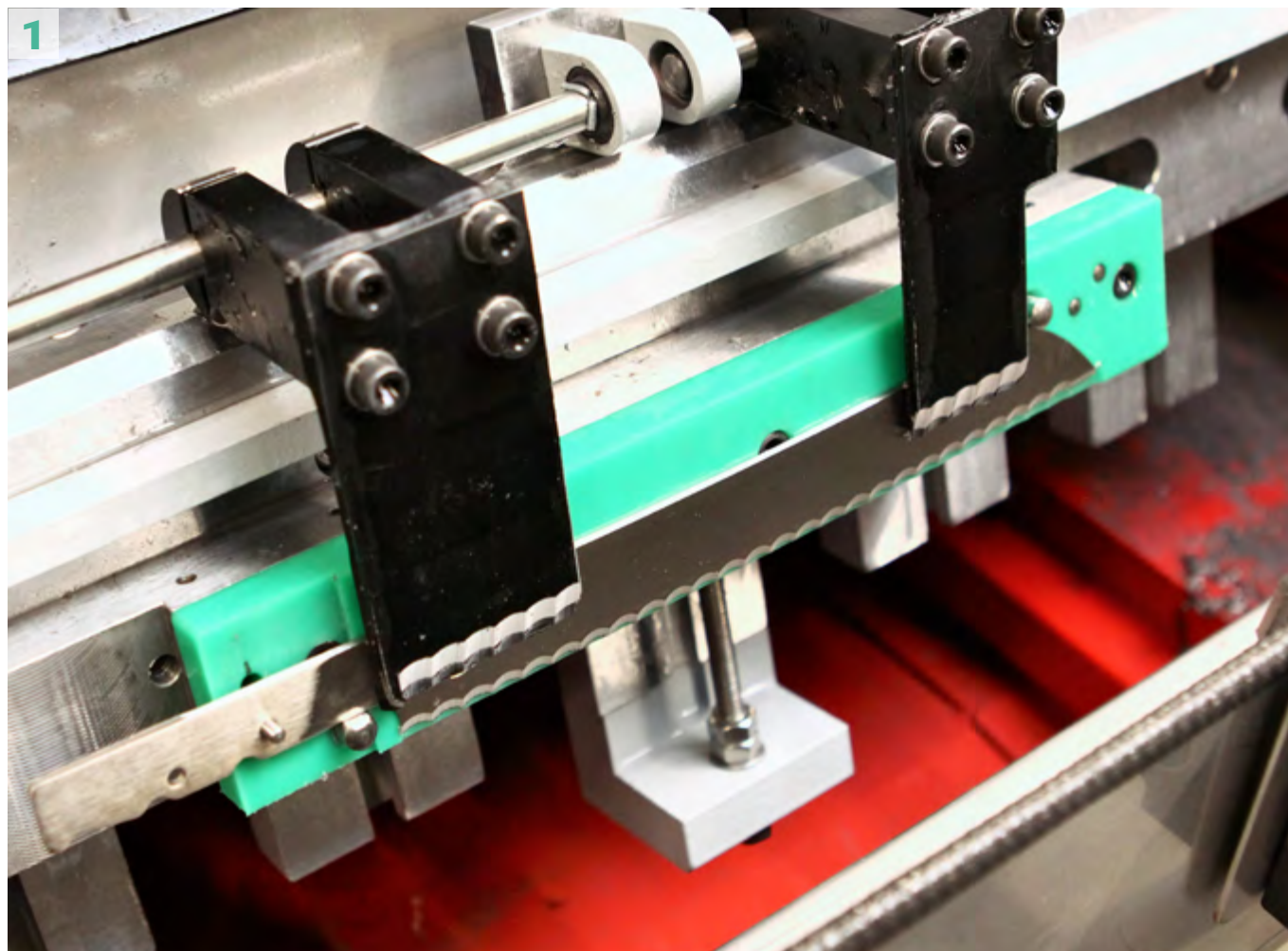
1. Grinding machine VR2/NT (picture 1)
2. Rotary table grinding machine VR0 combined with chamfer polishing machine FPV for bevel grinding and polishing (picture 2)
3. Workpiece pick-up by means of a clamping mandrel (picture 3)
4. Arc grinding of circular knives (picture 4)



PERIPHERAL GRINDING MACHINES

FLUTED EDGE, SCALLOPED AND SERRATED GRINDING

The peripheral grinding machines are designed for surface, bevel and serrated grinding on circular knives as well as scalloped and serrated grinding on knife blades and similarly shaped workpieces.



Depending on the size and geometry of the workpiece, different series are used:

- **RFS/NT** for surface and bevel grinding on circular knives, saw blades or circular blanks in pendulum or plunge grinding mode
- **PH/PB/NT** for scalloped and serrated grinding on knives up to 600 mm grinding length
- **WS** for scalloped, serrated and granton edge grinding on knives, machine knives and industrial blades
- **WSM** for scalloped and serrated grinding on knives, scissors, machine knives and similar shaped workpieces
- **KS** for granton edge grinding on knife blades
- **WSL** for scalloped, serrated and fine serrated grinding on knives
- **RVZ** for serrated grinding on circular knives

Examples of use (pictures)

1. Scalloped and granton edge grinding on bread knives with peripheral grinding machine of the series WSM2 (picture 1)
2. Serrated grinding of circular knives with peripheral grinding machine of the series RVZ (picture 2)

PERIPHERAL GRINDING MACHINES

Circumferential, longitudinal and deep grinding processes

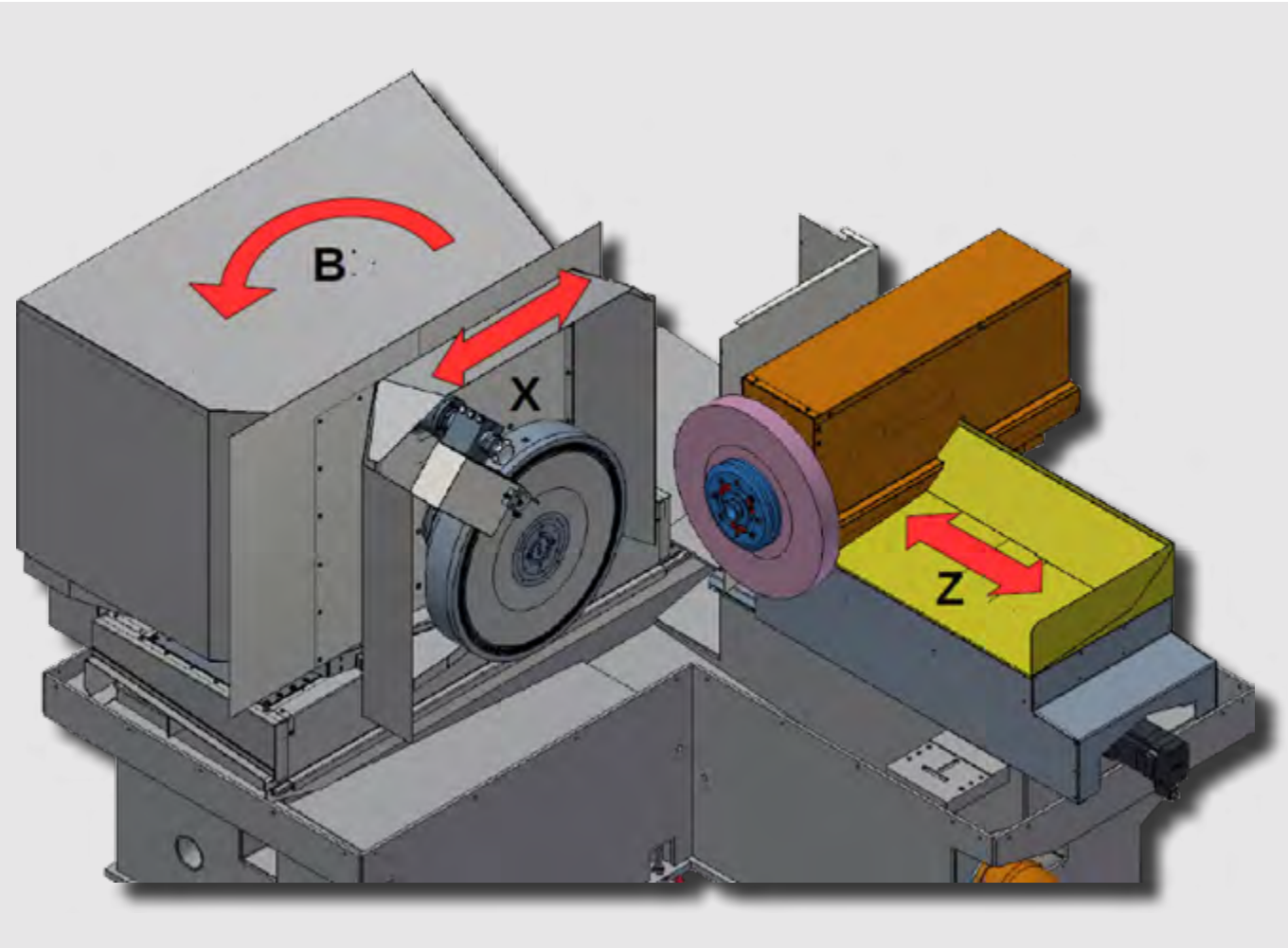
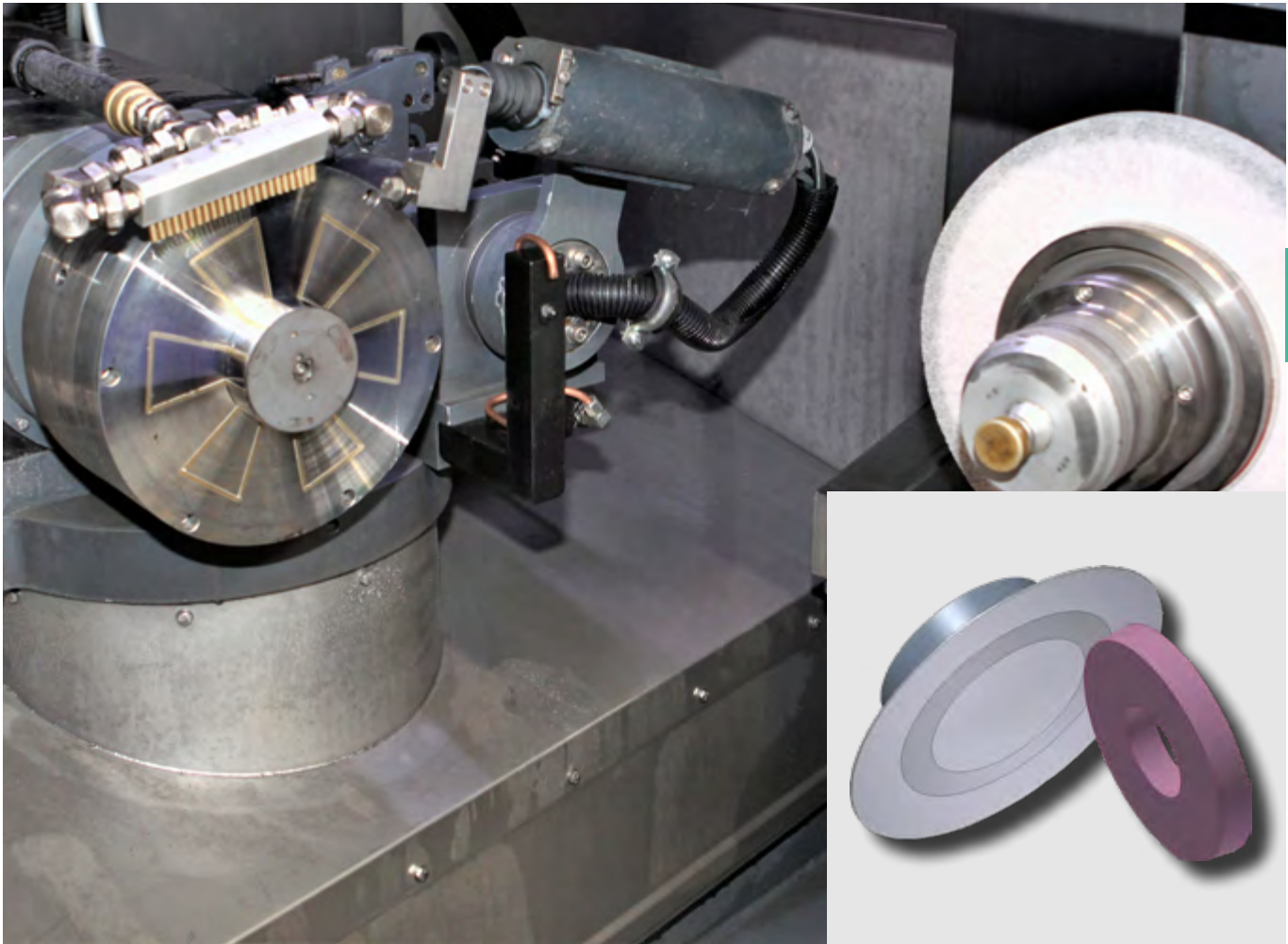
Peripheral grinding machines achieve surface, bevel or serrated grinding on workpieces. The effective area of the longitudinal grinding is the circumference of the grinding wheel.

Depending on the workpiece and the desired material removal rate, the grinding process is either pendulum or creepfeed grinding.

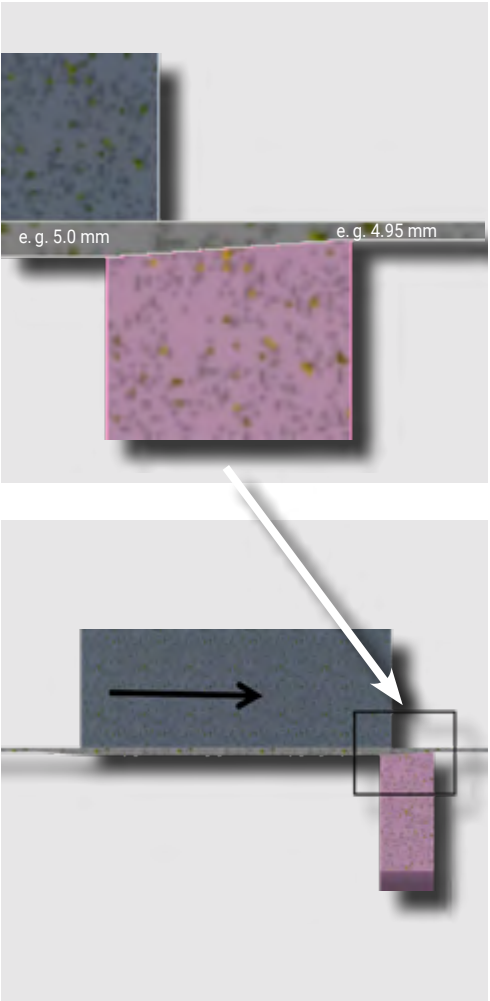
If the workpiece is processed in a deep grinding process, a large amount of material can be removed and a good surface quality can be achieved.

Peripheral grinding wheels are used when a serrated or scalloped grinding and/or a pointed tothing have to be achieved on machine knives.

[back to peripheral grinding machines](#)



- bakelite or ceramic-bonded grinding wheel with 200–600 mm Ø
- cutting speed 30–65 m/s
- feed rate 100–2 500 mm/min
- $\emptyset Q'w = 3\text{--}12.5 \text{ [mm}^3\text{/(mm s)]}$.
- max. $Q'w = 35 \text{ [mm}^3\text{/(mm s)]}$.
- max. cutting weight 16.5 g/s



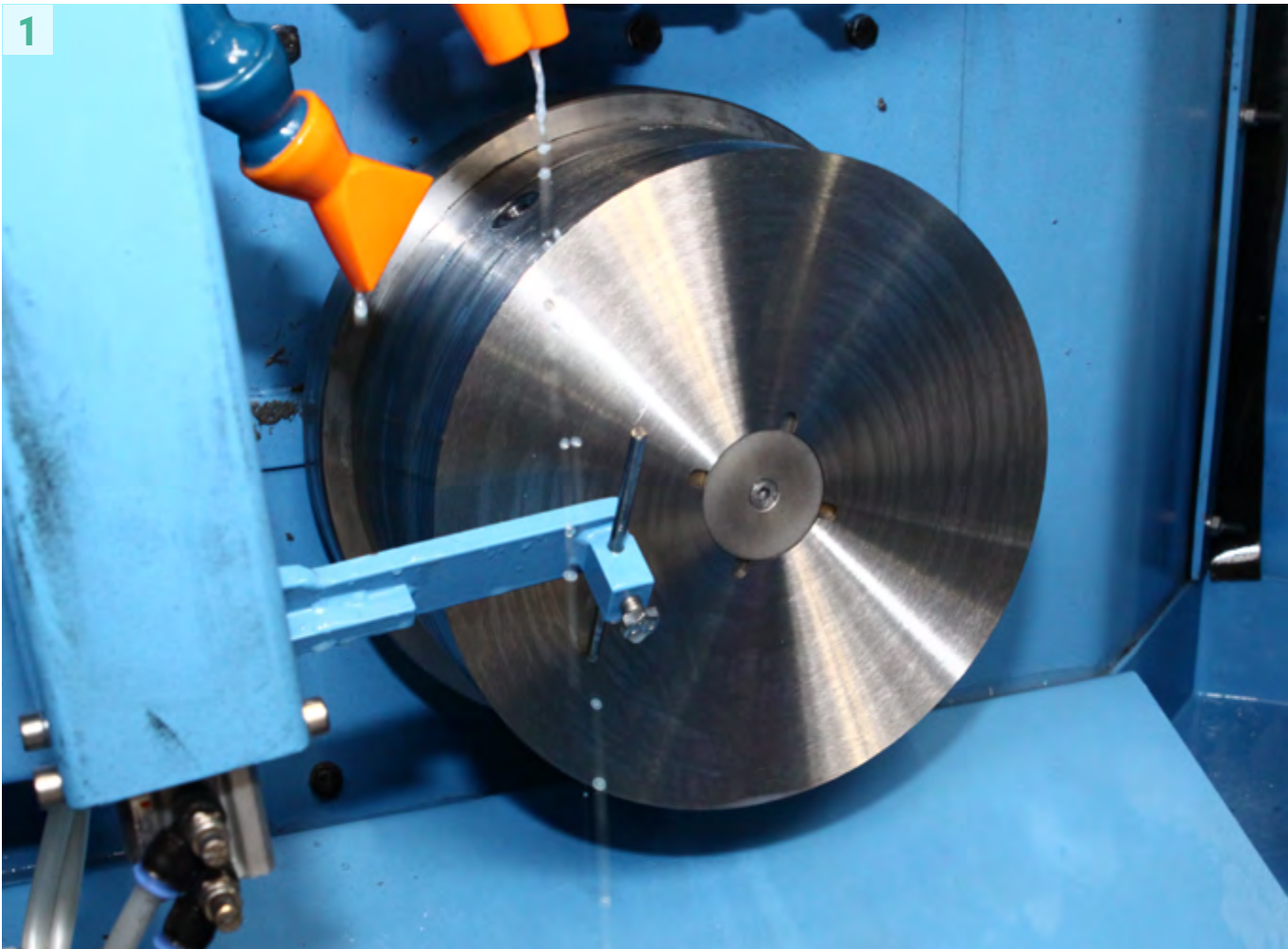
PERIPHERAL GRINDING MACHINES RFS

Surface and bevel grinding of circular knives

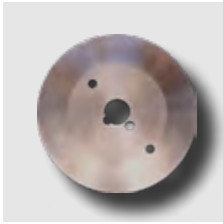
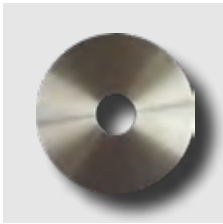
The CNC grinding machine RFS/NT is designed for grinding surfaces, cutting edges and contours on circular knives, saw blades, circular blanks and logs using the pendulum or plunge-cut method.

- workpiece Ø: 50 mm (RFS2) up to 1100 mm (RFS5)
- grinding wheel Ø: up to 600 mm
- spindle drive: up to 75 kW
- cutting speed: up to 63 m/s
- CNC control with up to three axes

- linear motor in main axis for oscillating the workpiece spindle
- direct probing measuring system for thickness measurement or tactile measuring system for grinding wheel wear compensation
- automatic grinding wheel radio control
- CNC diamond roll dresser (optional)
- horizontal movement of the grinding wheel via AC servo motor with preloaded ball screw
- automatic compensation of the travels after each dressing cycle and adaptation to the preset circumferential speed via frequency converter integrated in the control



[back to peripheral grinding machines](#)



- simple, direct programming via input of workpiece data/parameters
- processing of subsequent grinding in one clamping in connection with an additional grinding axis
- circular knives taken up in rotating workpiece holder and held by mechanical clamping devices via permanent magnet or electromagnet
- rotating workpiece holders infinitely variable via servo motor or frequency converter
- different dressing systems, permanent or interval controlled
- processing of interrupted grinding in connection with measuring system "Marposs"

Examples of use (pictures)

- Surface grinding of circular knives with RFS (picture 1)
- RFS2 with robot loading and unloading (picture 2)
- RFS2 with cleaning system (picture 3)
- RFS3 with robot loading and unloading (picture 4)
- RFS4 with robot loading and unloading (picture 5)

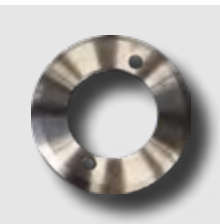
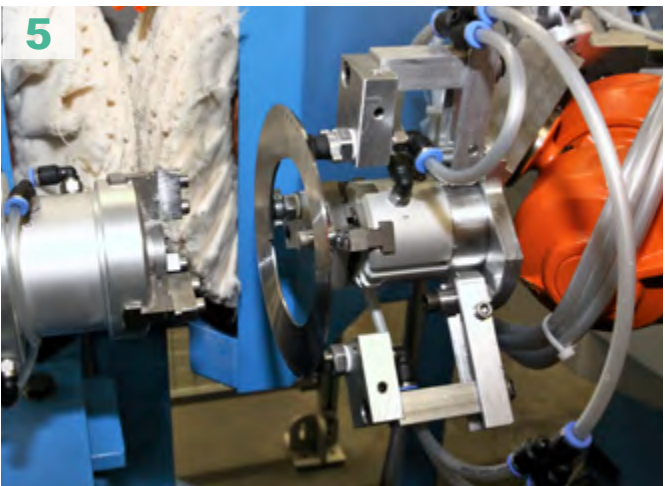
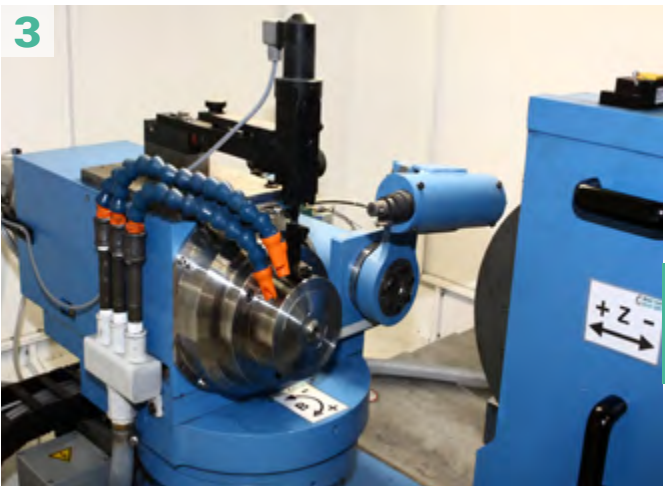
PERIPHERAL GRINDING MACHINES RFS/RT

Surface and edge grinding
of circular knives

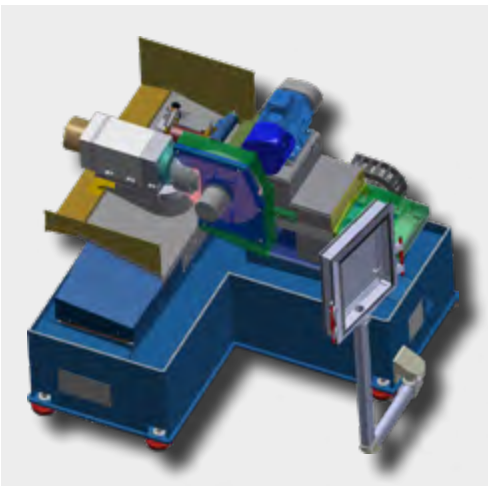
The four-axis CNC grinding machine RFS/RT achieves surface and cutting edge grinding on circular knives with up to 300 mm Ø with high concentricity and surface grinding accuracy.

- workpiece Ø: up to 500 mm
- grinding wheel Ø: up to 500 mm
- spindle drive: up to 22 kW
- cutting speed: up to 63 m/s
- four-axe CNC control

[back to peripheral grinding machines](#)



- workpiece spindle on rotary table driven with high-precision torque motor
- linear motor in main axis for oscillating the workpiece spindle with magnetic or mechanical clamping
- direct probing measuring system for thickness measurement of circular knives
- automatic grinding wheel radio control
- high concentricity and surface grinding accuracy
- magnetic clamping, mandrel with clamping plate or tie rod with clamping plate
- needle nozzles with cooling lubricant pressure cooling > 9 bar



Examples of use (pictures)

1. Peripheral grinding machine of the series RFS2/RT (picture 1)
2. Pick-up of workpiece (picture 2)
3. + 4. Machine assembly with workpiece/tool (pictures 3 + 4)
5. Drying of circular knives (picture 5)

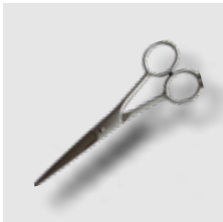
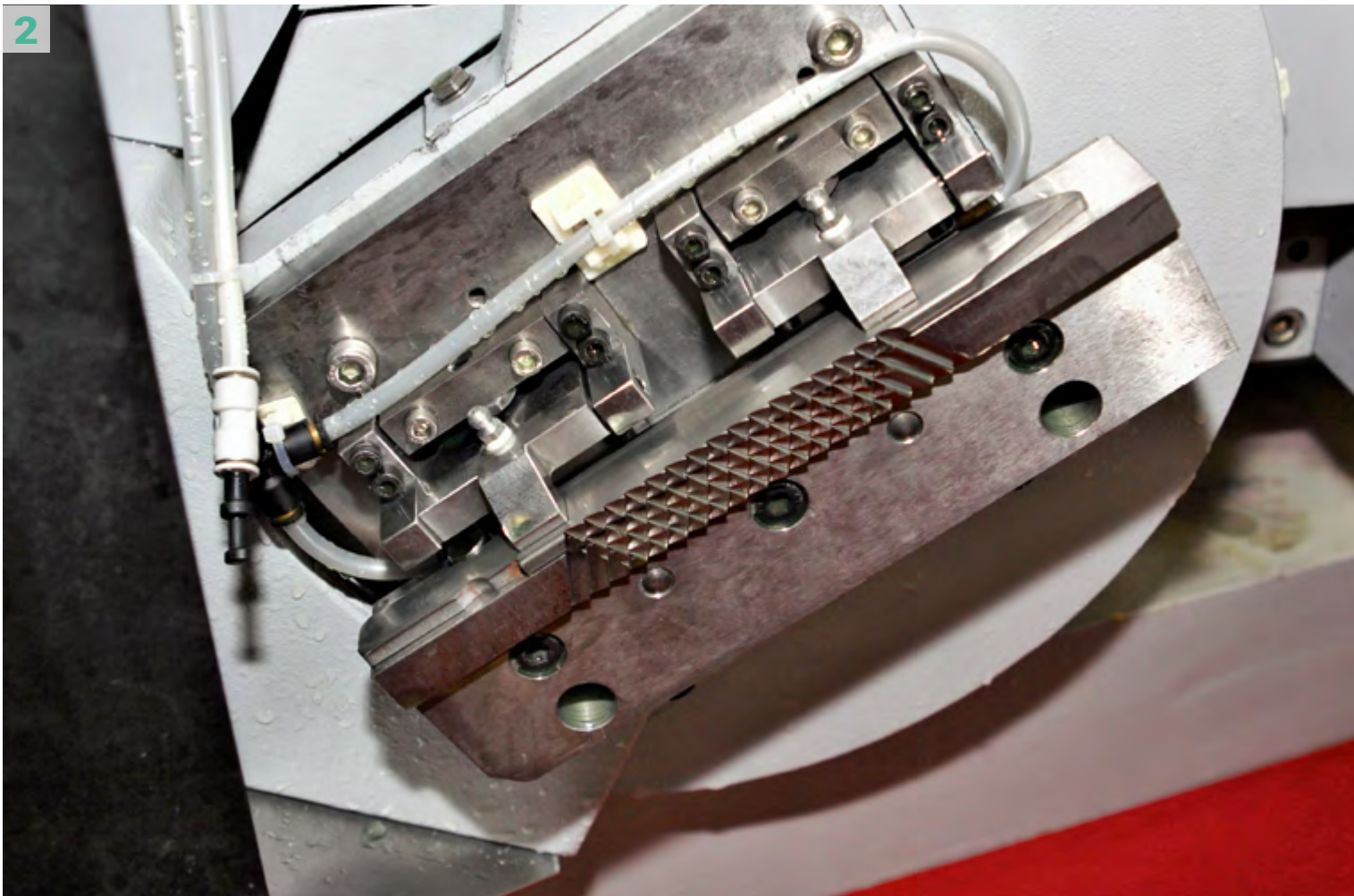
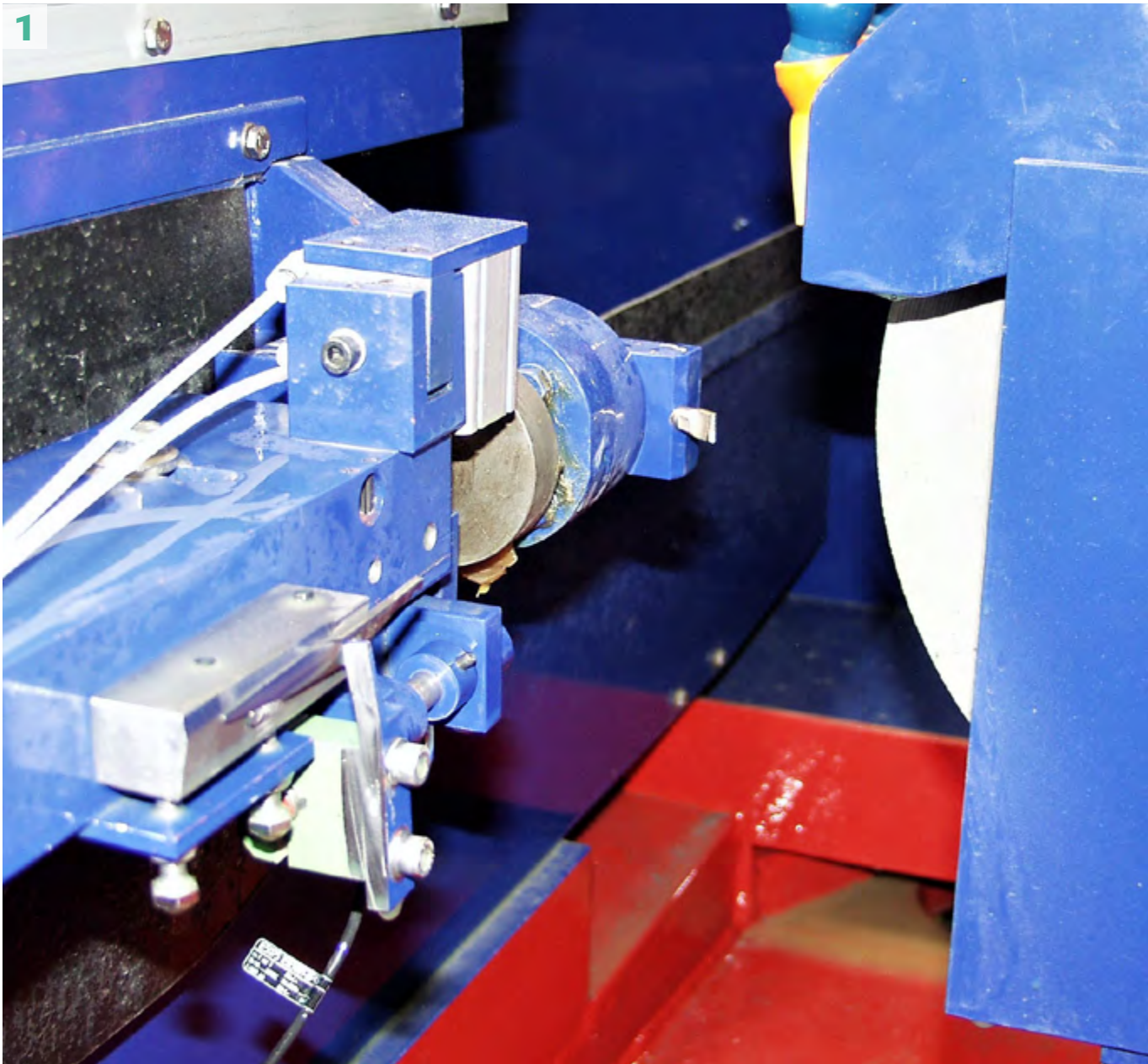
PERIPHERAL GRINDING MACHINES PB/PB

Surface grinding

The CNC-controlled peripheral grinding machine grinds with three- to five-axis grinding table the crowned outside and the hollow inside of the of scissors.

- grinding wheel Ø: up to 400 mm
- grinding wheel width: up to 130 mm
- spindle drive: 11–18 kW
- cutting speed: up to 50 m/s
- three- to five-axe CNC control

[back to peripheral grinding machines](#)



- dresser of grinding wheel with diamond-coated dressing roll or diamond fleece
- frequency converter for infinitely variable control of spindle speed
- automatic interval-controlled grease central lubrication with monitoring and fault indication
- automatic loading/unloading with robot (option)

Examples of use (pictures)

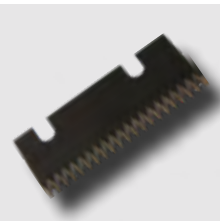
1. Convex grinding of outer and inner sides of hair scissors (picture 1)
2. Staggered tooth grinding in the back of bayonets (picture 2)
3. Grinding of the crowned outer side of scissors (picture 3)
4. Grinding of the hollow side in the recess with 150 mm hollow radius (picture 4)

PERIPHERAL GRINDING MACHINES PB/PB

Surface grinding

The PH/PB CNC-controlled peripheral grinding machine, equipped with an additional vertical axis, achieves contour grinding on workpieces.

[back to peripheral grinding machines](#)



- grinding wheel width: up to 130 mm
- X-axis travel: up to 640 mm
- grinding wheel Ø: 400 mm (up to 300 mm to be processed)
- spindle drive: 11 kW
- four-axis CNC control
- frequency converter for stepless control of the spindle speed
- three-axis grinding table
 - X-axis = main feed with linear motor
 - A-axis = tilting axis/cutting angle
 - V-axis = vertical axis
- Z-axis = horizontal traversing axis on grinding wheel or dresser
- dresser with driven profile roller or single-grain diamond
- automation in connection with robot loading



Application example: Pliers

- two milling stations
- peripheral grinding machine PH/PB
- Berger Feeder
- camera measuring system

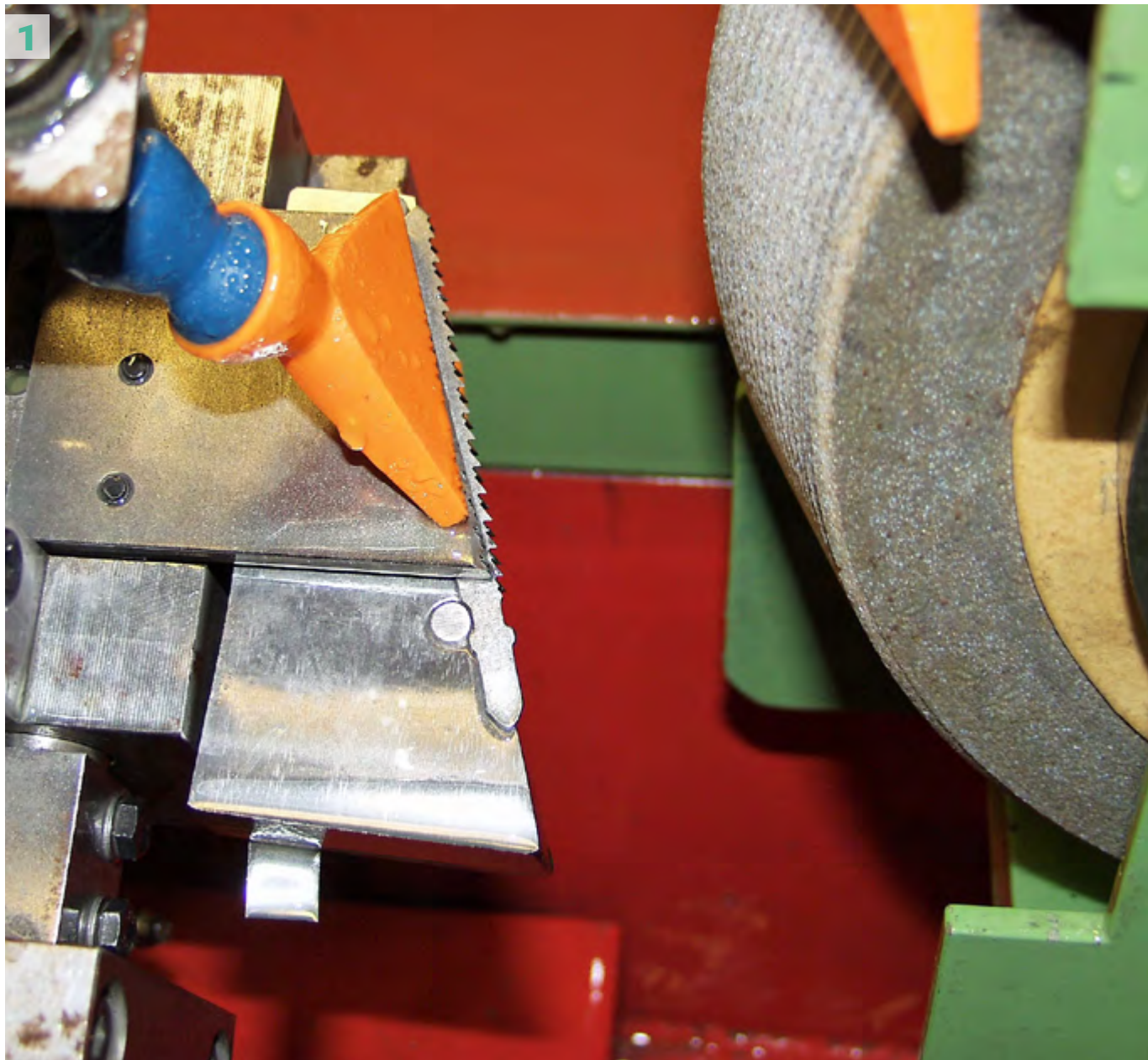
PERIPHERAL GRINDING MACHINES WS

Serrated grinding, plunge grinding and through-feed grinding

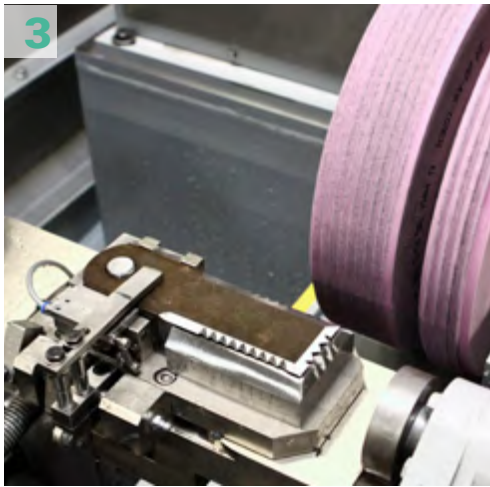
The WS CNC peripheral grinding machine is designed with up to three axes for plunge grinding of serrations on knives, surgical blades, scissors or comparable workpieces.

- grinding wheel Ø: 300 mm
- grinding wheel width: 100 mm
- spindle drive: up to 11 kW
- cutting speed: up to 45 m/s
- three- to five-axis CNC control

[back to peripheral grinding machines](#)



- CNC control with display for operator guidance / programming of up to three axes
- horizontal traverse of the grinding wheel via servo motor and preloaded ball screw
- simple, direct programming via the input of parameters / workpiece data
- interval-controlled dressing of the grinding wheel via diamond-coated profile roller or programmable single-grain diamonds
- automatic compensation of travels after each dressing cycle as well as adaptation to preset peripheral speed via frequency converter integrated in the control system
- programmable traverse on straight grinding wheel
- grinding wheel mounted on cross table for plunge grinding and through-feed grinding (WS6)
- cross tooth grinding on saws in conjunction with vertical and swivel axis for saws up to 650 mm length in indexing operation



Examples of use (pictures)

1. Production of saws, cross tothing with additional vertical and swivel axis (picture 1)
2. Production of gouge blades in conjunction with camera measuring station and automatic loading and unloading (picture 2 + 3)

PERIPHERAL GRINDING MACHINES

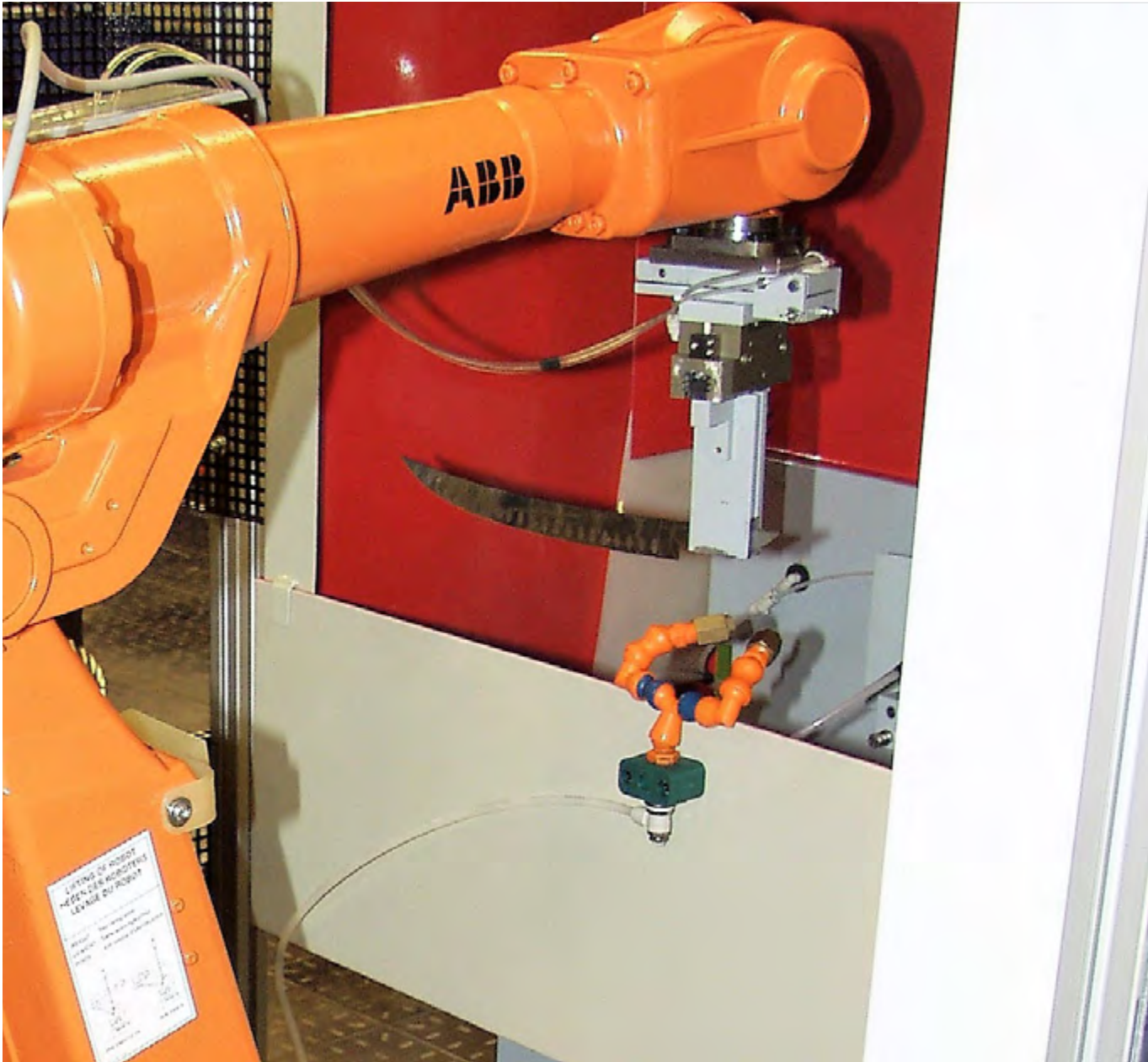
WSM

Scalloped and serrated grinding

The CNC peripheral grinding machine with up to three axes is designed for infeed grinding of gear teeth on knives (e. g. bread or steak knives), scissors, machine knives or comparable workpieces.

- grinding wheel width: up to 360 mm
- grinding wheel Ø: 300 mm
- spindle drive: 18 kW
- cutting speed: up to 45 m/s
- CNC control with up to three axes

[back to peripheral grinding machines](#)



- simple, direct programming via input of workpiece data/parameters
- CNC control with display for operation/programming
- horizontal traverse of the grinding wheel via servo motor and preloaded ball screw
- max. standard machining length 360 mm (other lengths as option)
- simple, direct programming via the input of parameters/workpiece data
- interval-controlled dressing of the grinding wheel via diamond-coated profile roller, dressing roller made of tool steel or programmable single grain diamond
- programmable movement of the workpiece on a straight grinding wheel (e. g. for steak knives) using a six-axle robot
- automatic compensation of the travels after each dressing cycle as well as adaptation to preset circumferential speed via frequency converter integrated in the control
- vertical workpiece movement to the grinding wheel possible

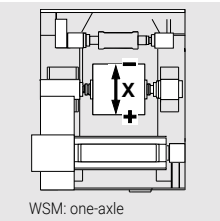
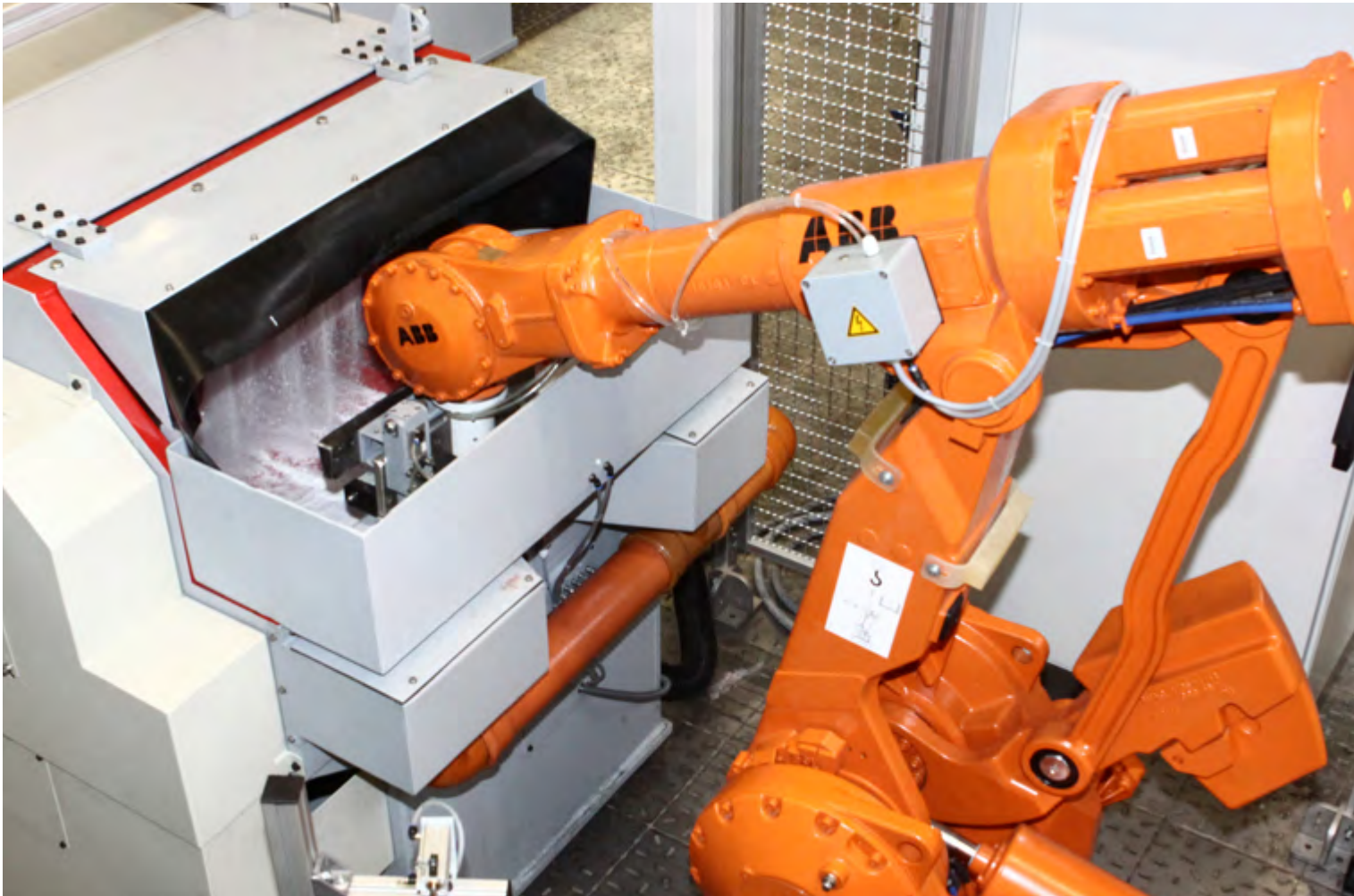
PERIPHERAL GRINDING MACHINES

WSM – SERIES

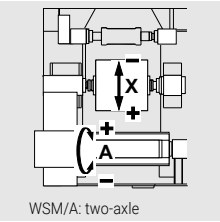
WSM

- single axis CNC grinding machine
- mounting of the workpieces in pneumatic clamping and swiveling device
- dressing of the grinding wheel via diamond-coated profile roller, dressing roller made of tool steel

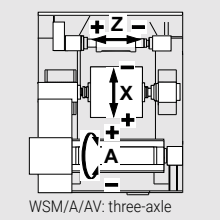
[back to peripheral grinding machines](#)



WSM: one-axis



WSM/A: two-axis



WSM/A/AV: three-axis

WSM/Robot

- single axisl CNC grinding machine
- movement of workpiece against straight grinding wheel with six-axis robot

WSM/A

- two-axis CNC grinding machine
- A-axis 360° rotary for simultaneous grinding and loading/unloading of workpieces
- scaling down of nonproductive time to 1 s
- dressing of the grinding wheel by diamond coated shape roll made of tool-steell

WSM/A/AV

- three-axis CNC grinding machine
- A-axis 360° rotatable
- programmable dressing of grinding wheel by displaceable dresser (Z-axis) with rotating or fixed tool



Examples of use (pictures)

1. WSM/A: Granton edge grinding (picture 1)
2. WSM/Robot: Programming interface for robot programming (picture 2)
3. WSM/A/AV: A-axis 360° rotatable (picture 3)

PERIPHERAL GRINDING MACHINES KS

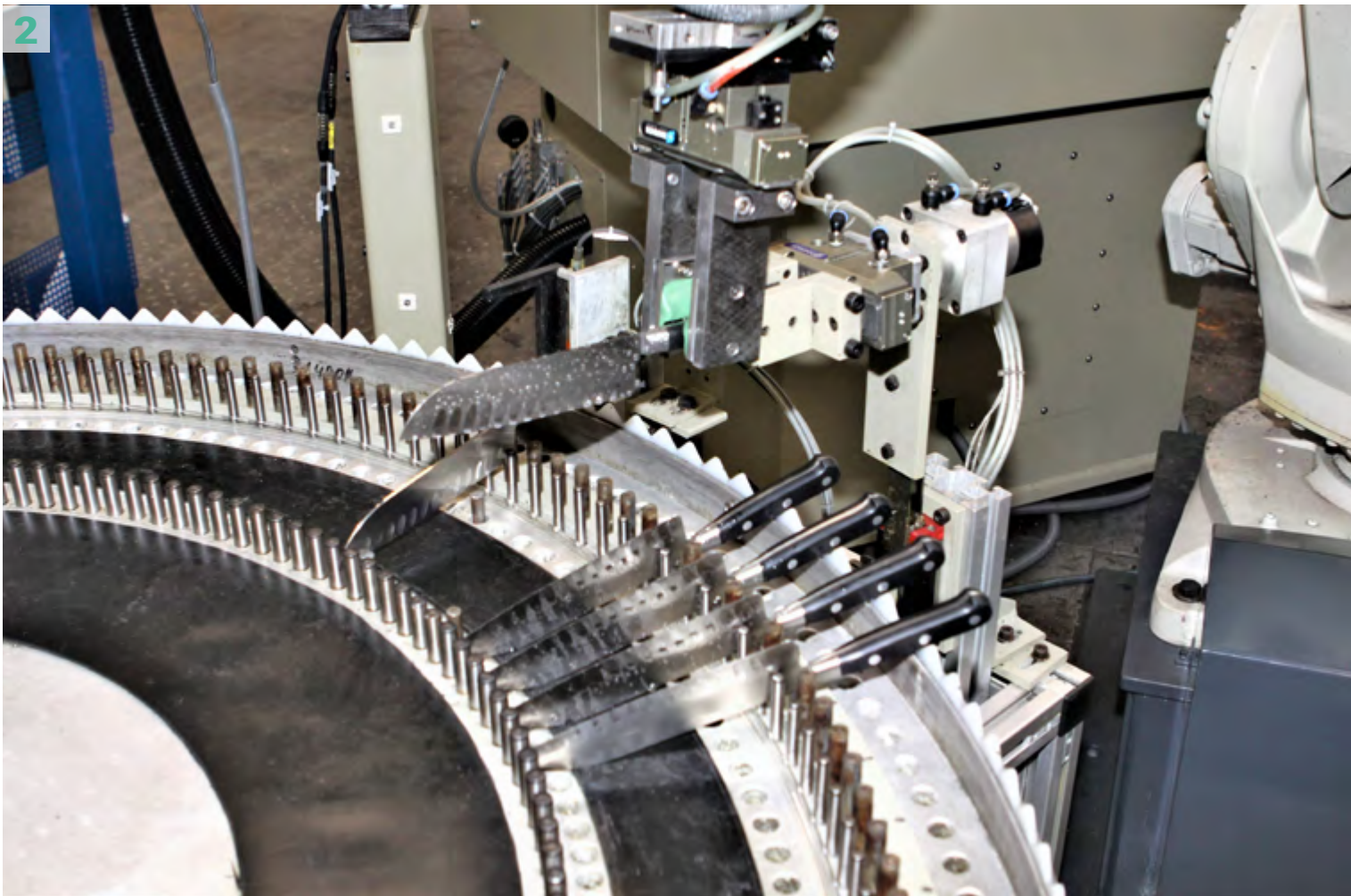
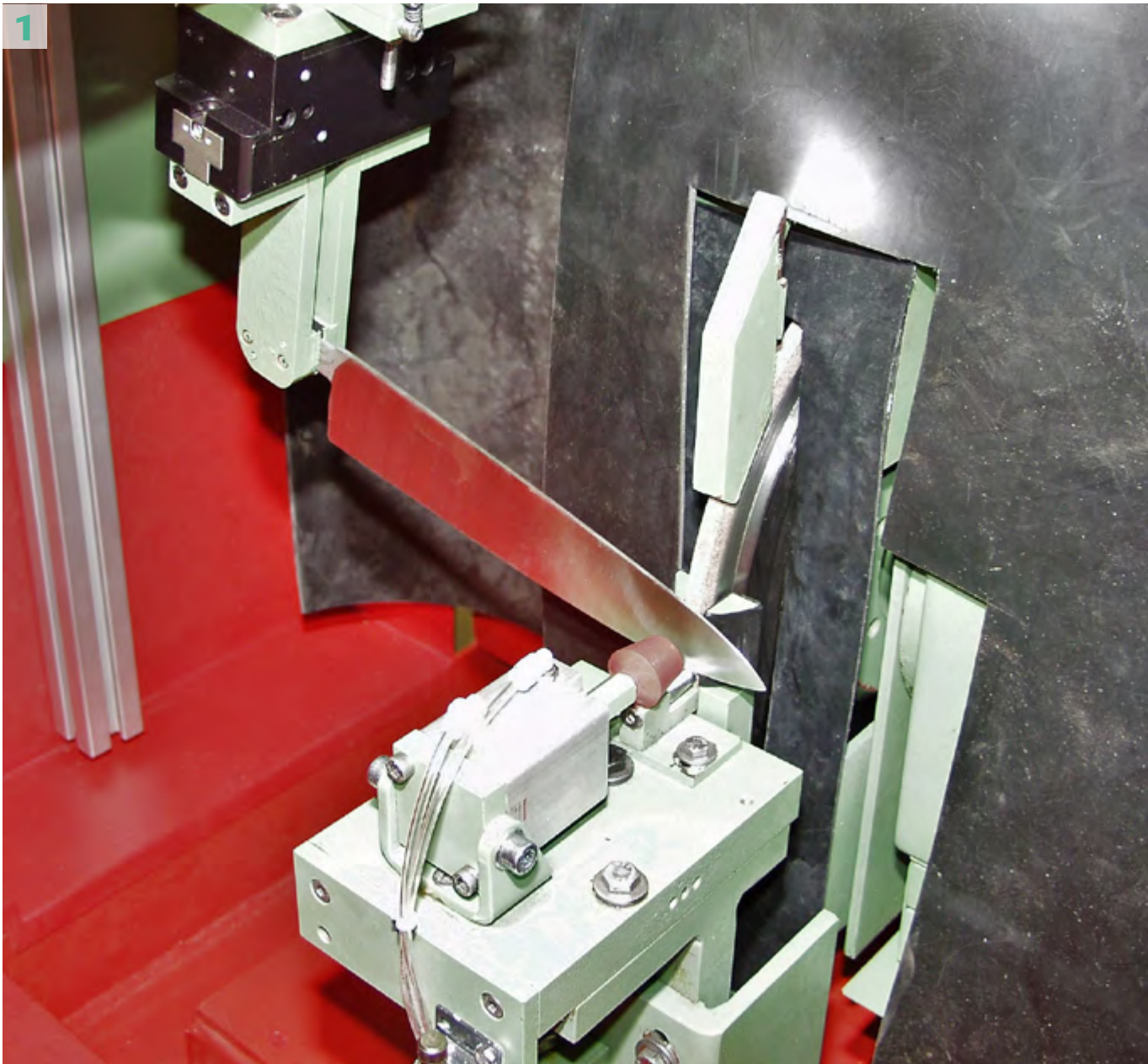
Fluted edge grinding of knife blades

The peripheral grinding machines KS achieve a fluted edge grinding at knife blades.

Often the machine is combined with a robotic system RSP or a peripheral grinding machine of the series WSM or WS.

The machine is designed for grinding knives with a cutting edge of up to 350 mm length.

[back to peripheral grinding machines](#)



- grinding spindle driven by special motor of 7.5 kW
- grinding wheel Ø 300 mm × width according to design of fluted edge
- additional vertical axis possible
- frequency inverter for continuous adjustment of the spindle up to 60 m/s
- dressing of CBN disc with diamond coated profile (Ø 80 mm)
- dressing wheel drive 1.5 kW/2 800 rpm
- movement of the knife guided via robot
- pneumatically activated clamping device for fluted edge / scalloped grinding
- prepared for wet grinding



Examples of use (pictures)

1. Fluted edge grinding of knife blades with peripheral grinding machine of the series KS (picture 1)
2. Robot loading and unloading (picture 2)
3. KS version with additional vertical axis for additional blade geometry (third workpiece picture at the left) (picture 3)

PERIPHERAL GRINDING MACHINES

WSL

Scalloped and serrated grinding

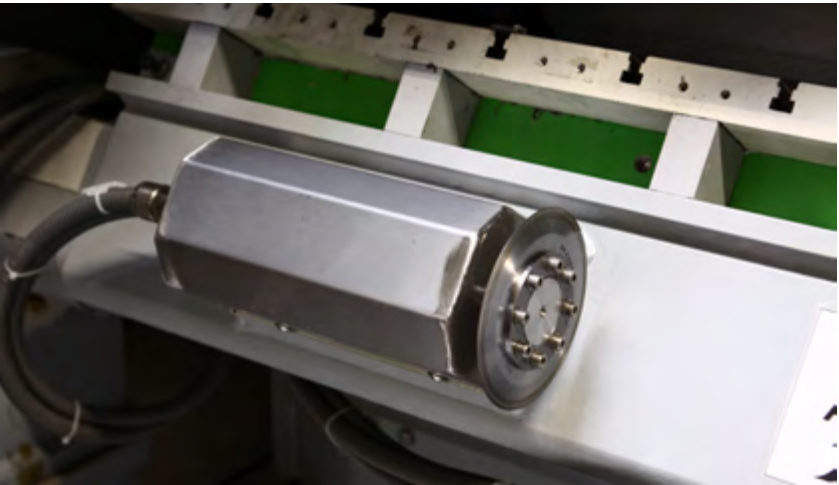
The grinding station of the WSL series is used as a module in different machines to achieve a scalloped and serrated grinding.

By interpolation of the Y and Z axes the grinding machines of the WSL series achieve any desired cutting edge angle.

Depending on the application, the following series are offered:

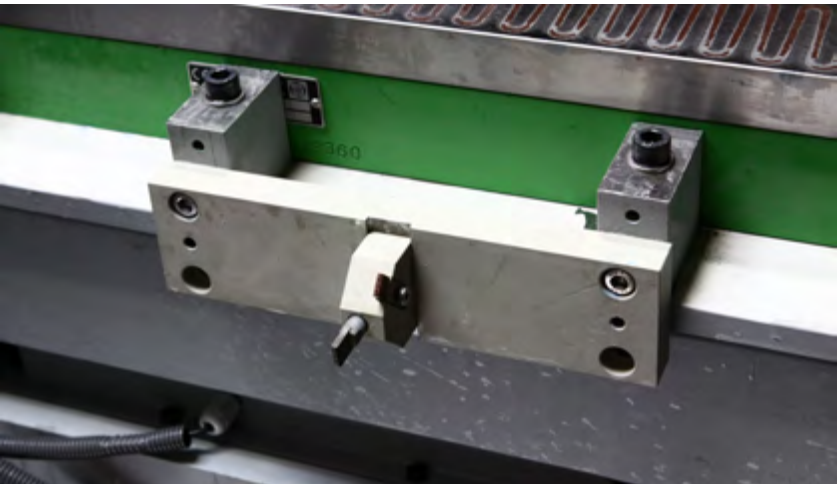
- WSL2 (p. 84 f.)
- WSL3 (p. 86 f.)
- WSL4 (p. 88 f.)
- WSL5 (p. 90 f.)
- BWSL (see catalogue for steel strip grinding machines)

[back to peripheral grinding machines](#)



1

Rotating dresser (PCD grinding wheel) for programmable dressing



2

Fixed single point dresser for programmable dressing



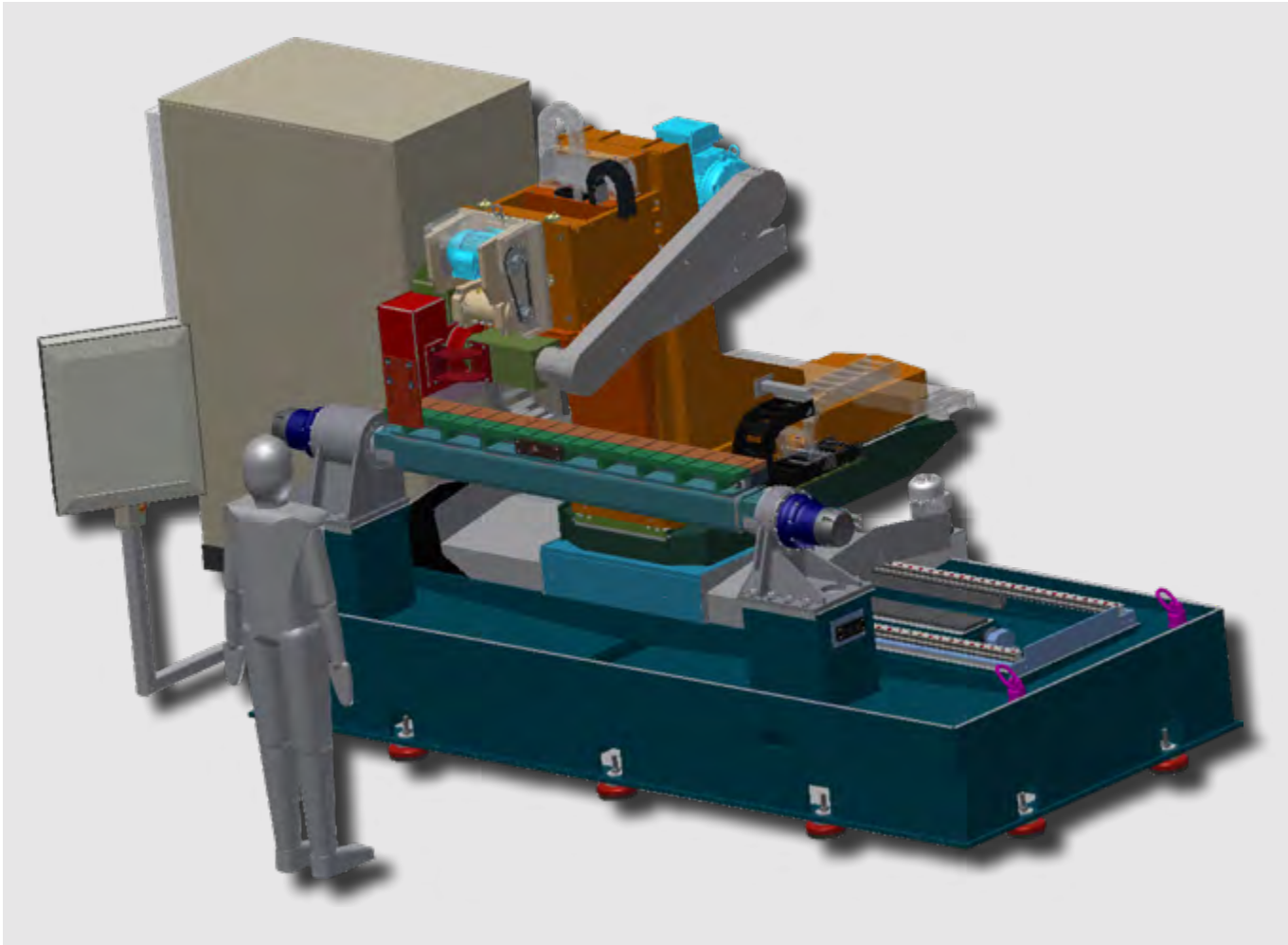
3

Clamping for tothing of circular blades up to 200 mm Ø



4

Swiveling of the grinding station to achieve relief grinding, additional clamping device for larger relief grinding



PERIPHERAL GRINDING MACHINES

WSL2

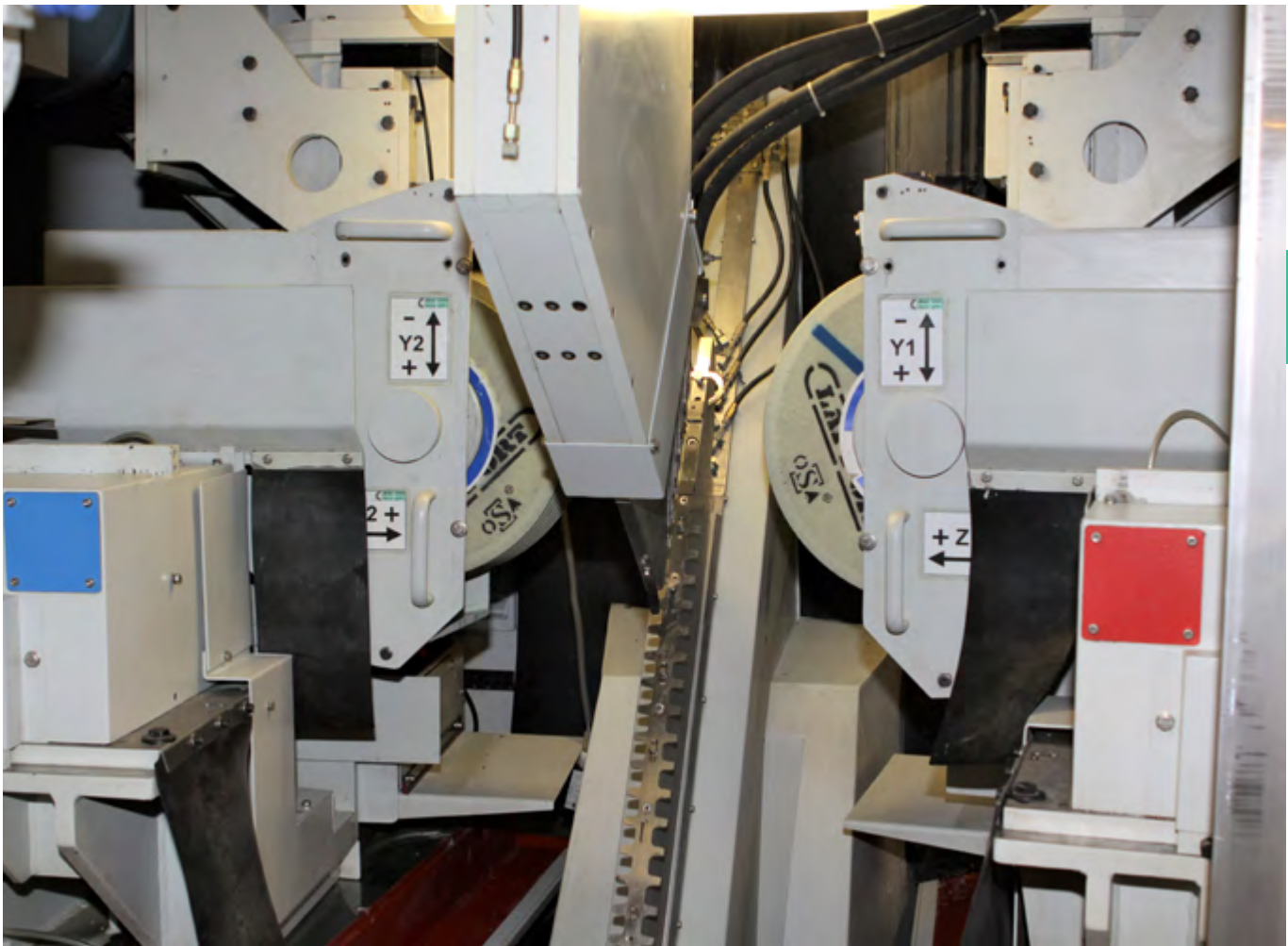
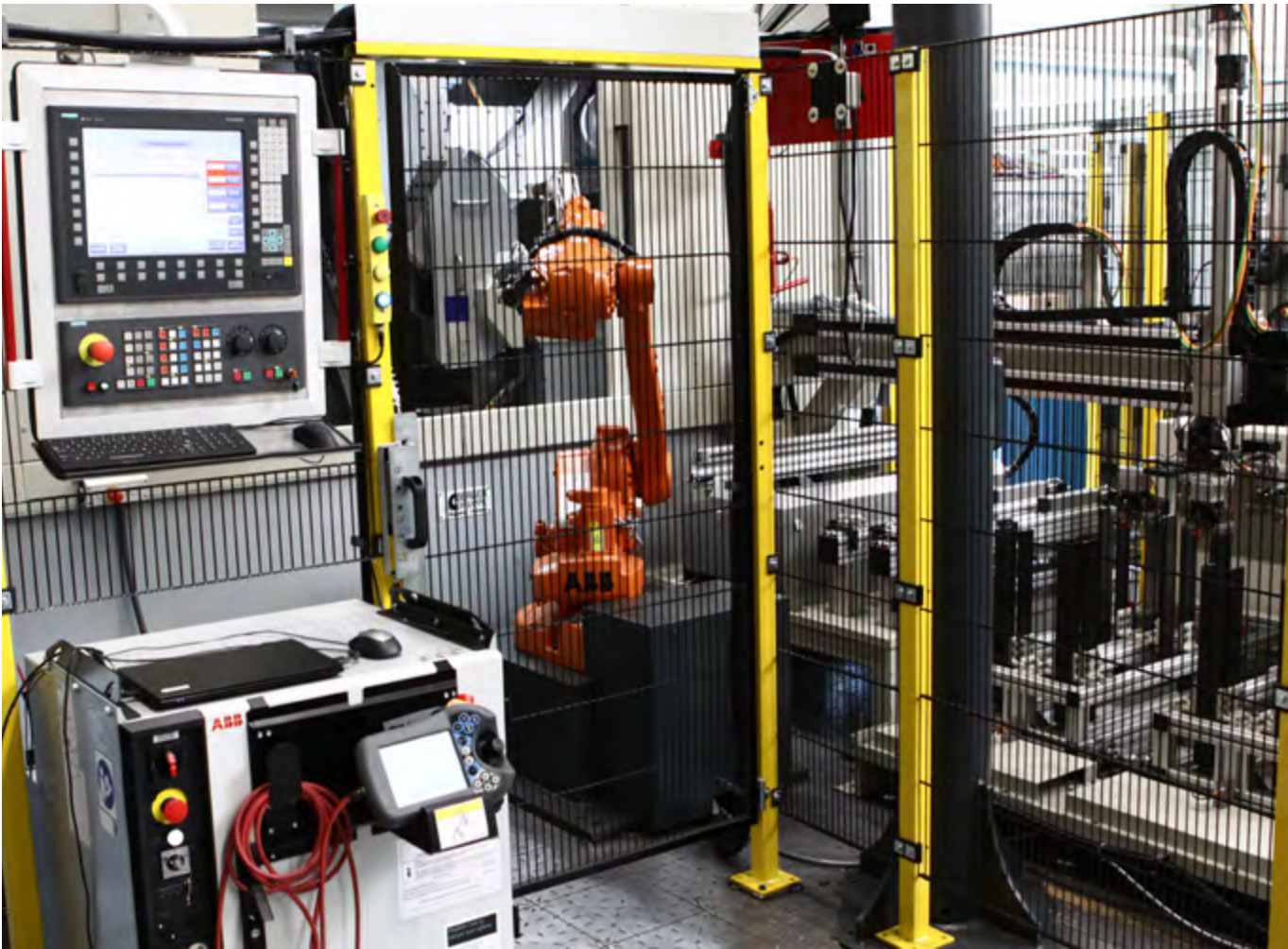
Scalloped and serrated grinding on hedge trimmer blades

The WSL2 CNC peripheral grinding machine is designed for grinding hedge trimmer blades with a length of up to 750 mm.

The machining cell is equipped with two two-axis peripheral grinding stations of the series WSL2 and a loading and unloading robot.

- grinding length: up to 750 mm
- grinding wheel Ø: 450 mm
- grinding wheel width: 120 mm
- spindle drive: 22 kW
- cutting speed: up to 45 m/s
- two-axle CNC control

[back to peripheral grinding machines](#)



- CNC feed axis for displacing/indexing the hedge trimmer blades with 750 mm stroke
- CNC axis for programmable cutting angle adjustment from 30°–45
- grinding spindle with precision-bearing shaft and mounting flange for grinding wheels
- dressing/profiling the grinding wheel with diamond-coated profile roller 80 mm Ø; drive 1.5 kW
- dressing intervals programmable with automatic compensation of wheel wear
- grinding station each equipped with a vertical slide for grinding movement and a horizontal slide for moving against workpiece/profile roll
- loading and unloading via robot



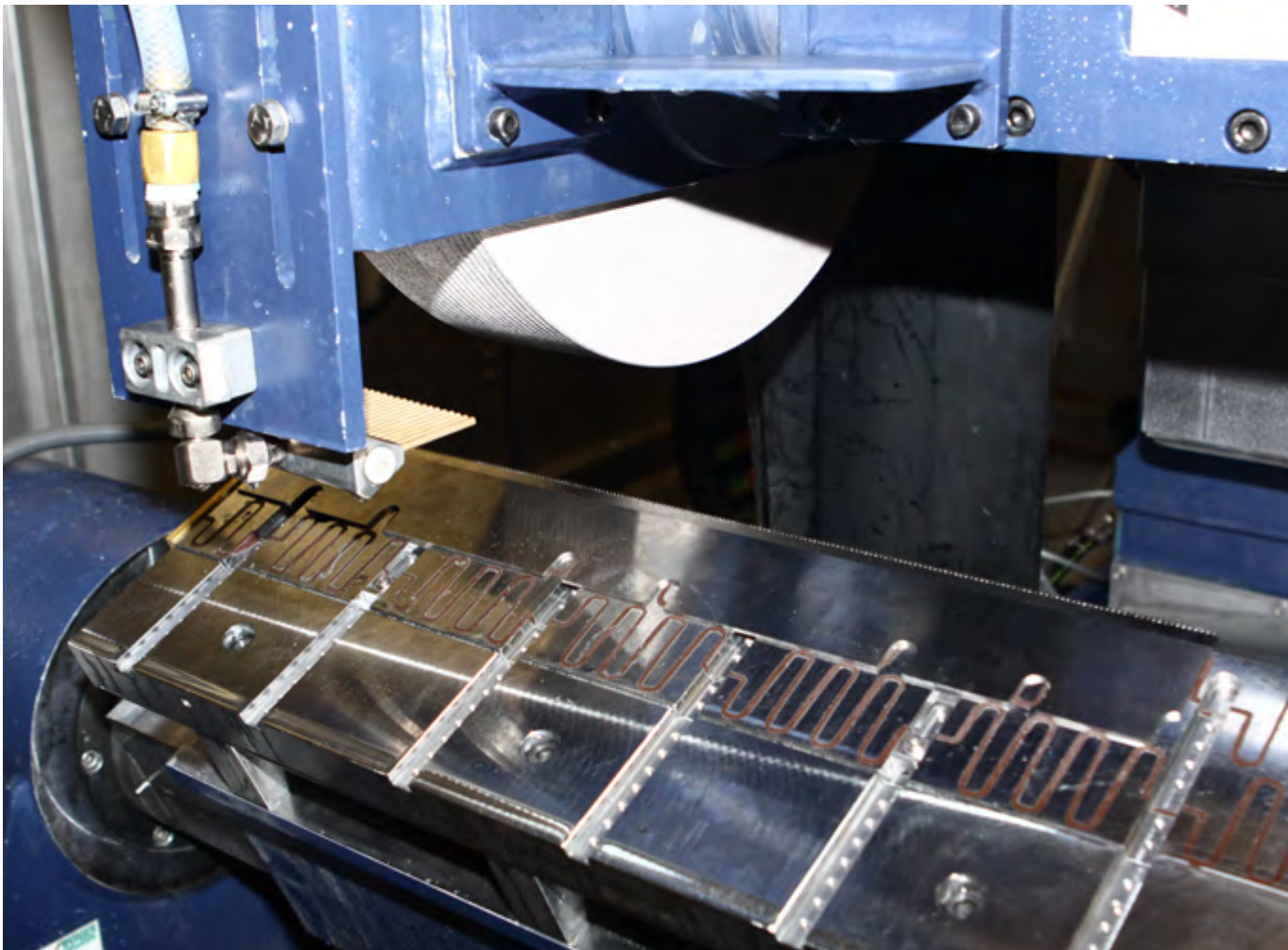
PERIPHERAL GRINDING MACHINES WSL3

Knives with smooth, scalloped or pointed serrated cutting edge

The CNC grinding machine WSL3 processes with up to seven axes knives with a maximum length of 1 800 mm and achieves toothing on circular knives with up to 250 mm Ø (optional).

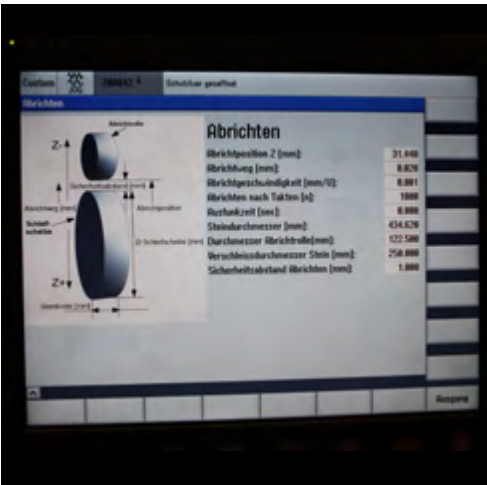
- grinding length: up to 1 800 mm
- grinding wheel Ø: 450 mm: (usable up to 250 mm Ø)
- grinding wheel width: up to 100 mm
- special motor 15 kW with precision-bearing shaft and mounting flange for grinding wheels
- cutting speed: up to 45 m/s
- up to seven axes (four CNC axes for moving the peripheral grinding wheel)
- magnetic clamping table for long knives up to 1 800 mm length
- double-sided CNC angle adjustment of the magnetic clamping table
- direct drive of the grinding wheel
- diamond dresser
- orthogonal creepfeed grinding or plunge grinding
- grinding spindle on CNC rotary table for relief grinding of serrations
- programmable, constant peripheral speed with decreasing pulley diameter 30–45 m/s

back to [peripheral grinding machines](#)



Scalloped and serrated grinding

- dressing/profiling of the grinding wheel with diamond-coated profile roller 140 mm Ø, drive 0.75 kW; dressing intervals pre-programmable with automatic compensation of wheel wear
- dressing with single grain diamond
- grinding station each equipped with one vertical slide and one horizontal slide:
 - Y axis = vertical slide for grinding movement
 - Z axis = horizontal slide for moving against workpiece/profile roll
- CNC-axis traversing via AC servo motor with preloaded ball screw spindles
- achieving any desired cutting edge angle by interpolation of Y and Z axis
- automatic interval-controlled central grease lubrication with monitoring and fault indication



PERIPHERAL GRINDING MACHINES

WSL4

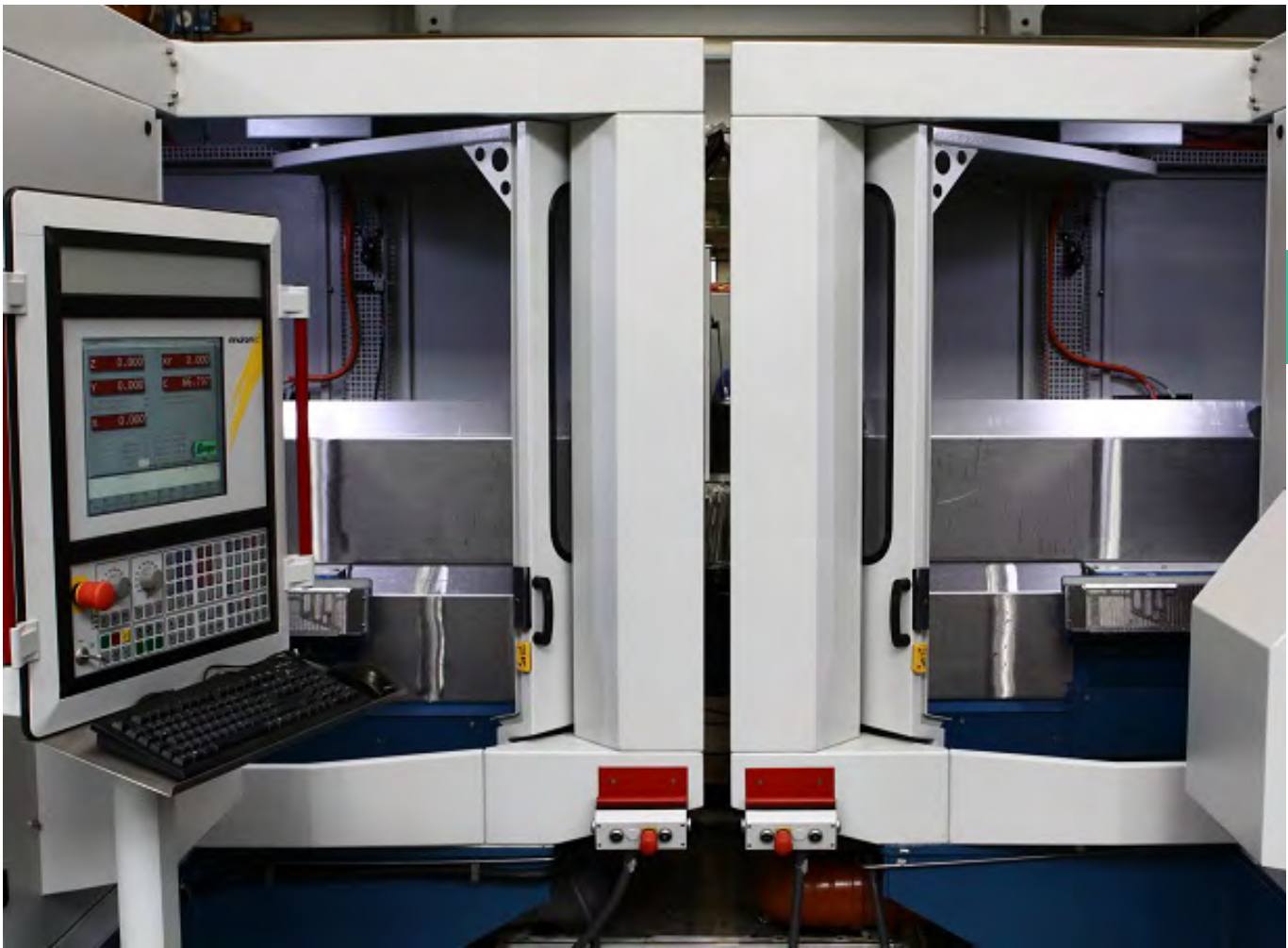
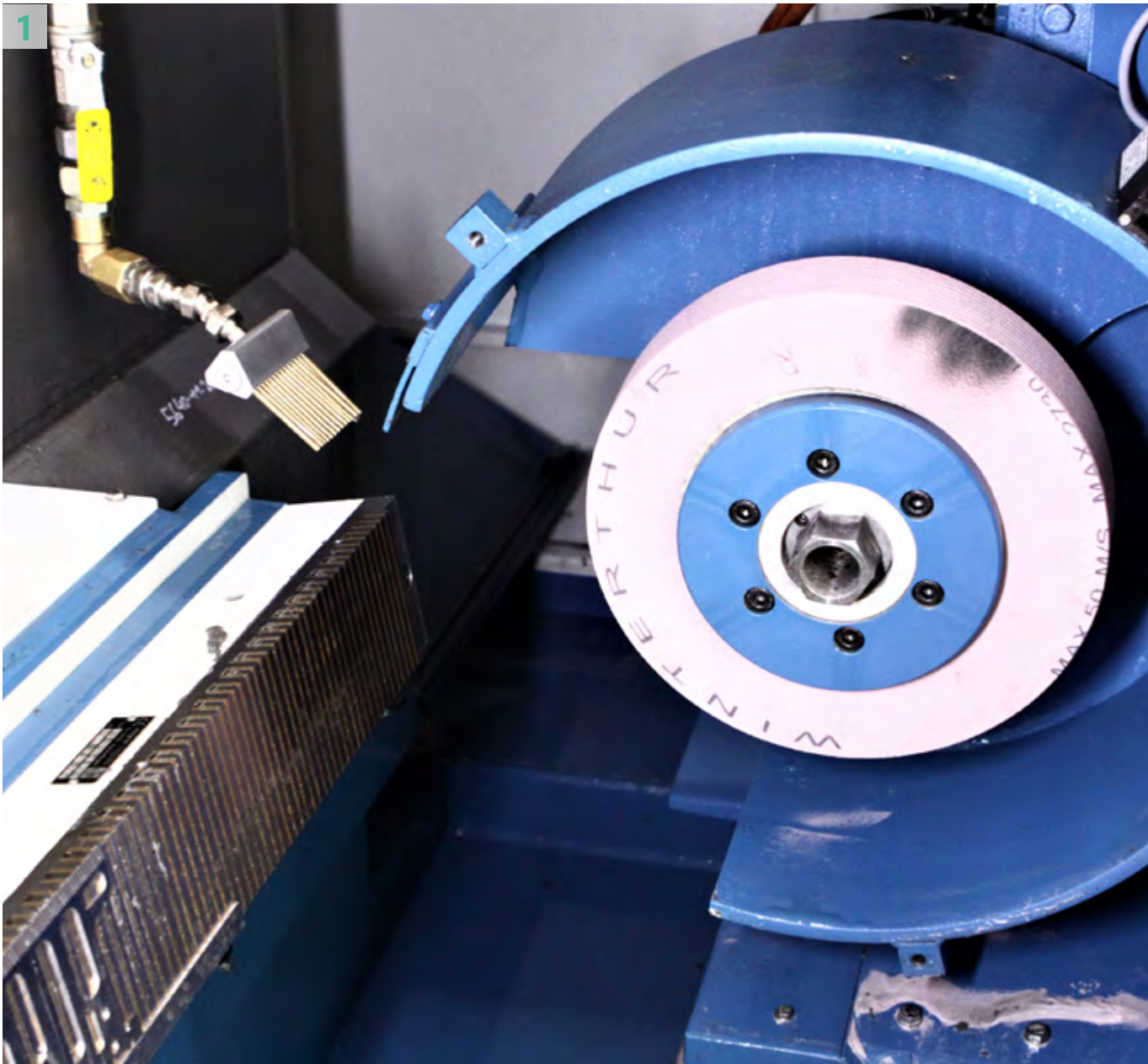
Serrated grinding – straight or with relief grinding

The double-sided CNC grinding machine WSL4 achieves serrated grinding on machine knives with relief grinding.

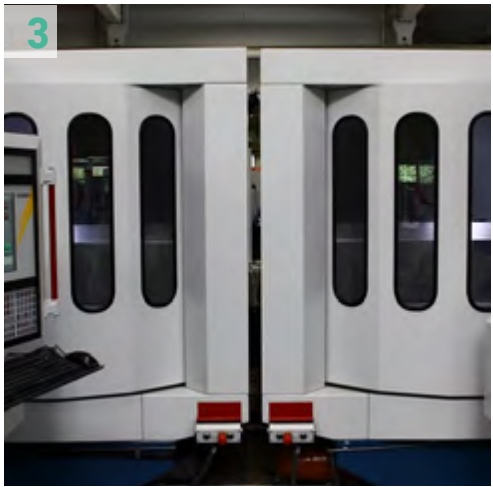
- grinding length: up to 600 mm
- grinding wheel Ø: 450 mm
- grinding wheel width: 110 mm

- spindle drive: 18.5 kW
- cutting speed: up to 45 m/s
- five CNC axes
- dressing device with diamond dressing wheel for individual tooth profiles (rapid prototyping)
- vertical and horizontal axes with CNC adjustment for relief grinding

[back to peripheral grinding machines](#)



- grinding table with additional X-axis in 30° inclined bed design
- encapsulation of the grinding station
- grinding station series WSL
- grinding of knives with straight or serrated cutting edge at programmable angle
- dressing of grinding wheels for frequently used tooth profiles with dressing device for mounting diamond-coated dressing rolls
- optionally with two-axis CNC dresser for user-friendly programming of tooth forms via menu
- this allows fast grinding of almost any tooth profile on long knives, even for small quantities or prototypes (especially pointed or scalloped serration)
- serrating of circular knives possible by additional rotation axis (C axis)
- additional B axis ($\pm 20^\circ$) for generating a relief grinding (WSL3)



Examples of use (pictures)

1. Peripheral grinding machine of the series WSL4 for serrated grinding of machine knives (picture 1)
2. Serrated grinding of machine knives with relief grinding (picture 2)
3. Peripheral grinding machine of the series WSL4 with encapsulation (picture 3)

PERIPHERAL GRINDING MACHINES

WSL5

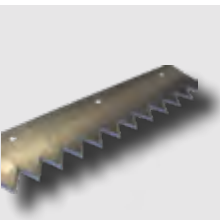
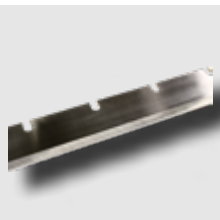
Serrated grinding on saw blades

The presented peripheral grinding machine is designed for serrated grinding of saw blades with a maximum length of 650 mm.

Grinding is performed in a package with a thickness of up to 40 mm. Approximately 45 saws (depending on the material thickness) can be ground in one package.

- grinding length 150–650 mm
- grinding wheel-Ø: 500 mm with HSK receptacle (hollow shank taper receptacle)
- grinding wheel width: 130 mm
- spindle drive: 80 kW
- cutting speed: 30–50 m/s
- five-axis CNC control (Siemens)

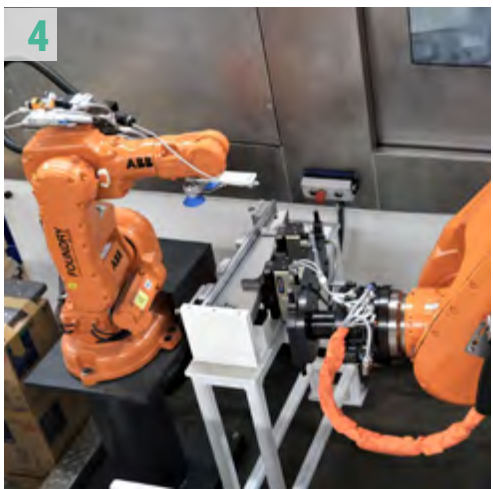
[back to peripheral grinding machines](#)



- workpiece length: 150–650 mm
- workpiece thickness: 0.4–1.3 mm
- two grinding stations with one vertical and two horizontal slides, one rotation axis -40°–0° for grinding saw blades in a package
- automatic change of dressing system
- automatic change of grinding wheel
- exchangeable dressing system
- automatic central lubrication system
- coolant supply with programmable adjustment
- loading and unloading of the saw packages

Examples of use (pictures)

1. Insertion of saw package into peripheral grinding machine WSL5 (picture 1)
2. Gripper change from workpiece gripper to grinding wheel gripper (picture 2)
3. Grinding wheel exchange (picture 3)
4. Deposit of the saw package and separation of the saws by means of a spreading magnet integrated in the second robot (picture 4)



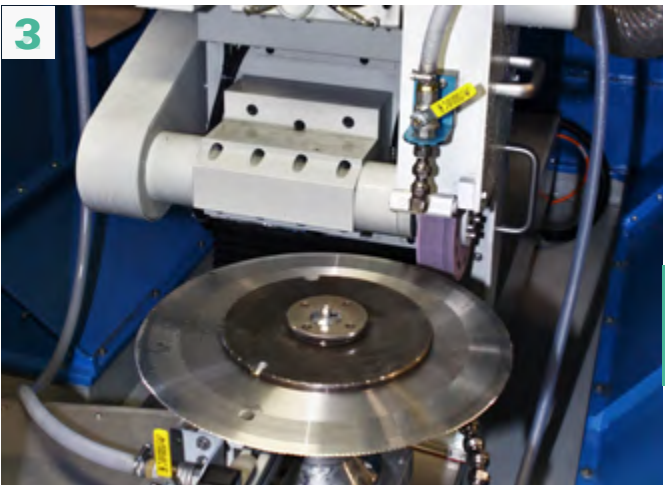
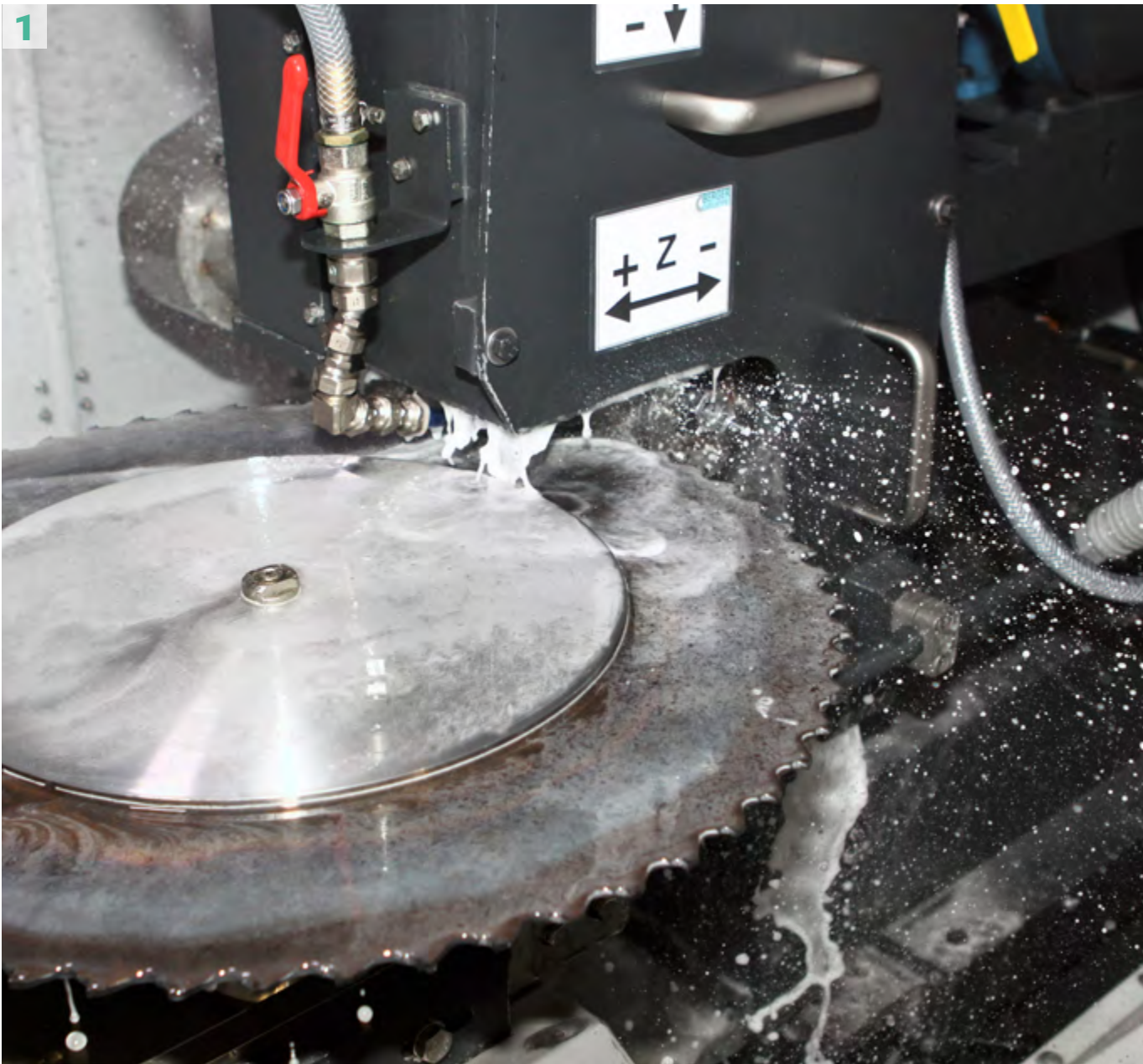
PERIPHERAL GRINDING MACHINES RVZ

Serrated grinding on circular and cutter knives

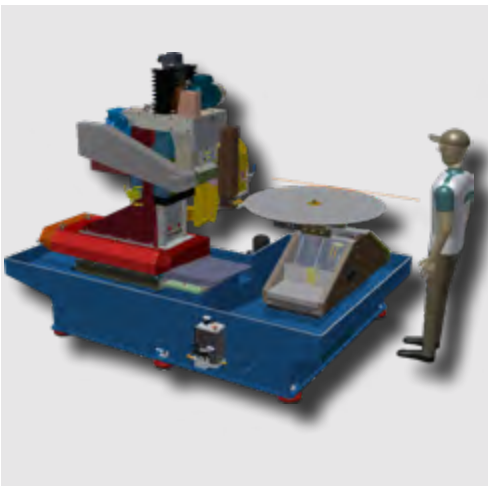
The CNC controlled serrated grinding machine is designed for processing circular and cutter knives as well as for grinding plate seats on basic bodies of circular saws.

- workpiece Ø: up to 1 000 mm
- grinding wheel Ø: 300 mm
- spindle drive: 7.5 kW
- cutting speed: up to 45 m/s
- four-axe CNC control for programming the machine and the tooth profile

[back to peripheral grinding machines](#)



- diamond roll and single grain dresser
- following the contour on straight grinding wheel
- automatic diameter measurement
- serrated grinding of cutter knives (option)
- grinding the panel seats on the base bodies of circular saws in deep grinding
- CNC servo motor gear unit
- single point dresser
- diamond roller dresser
- grinding spindle with precision-bearing shaft
- grinding station designed for wet processing



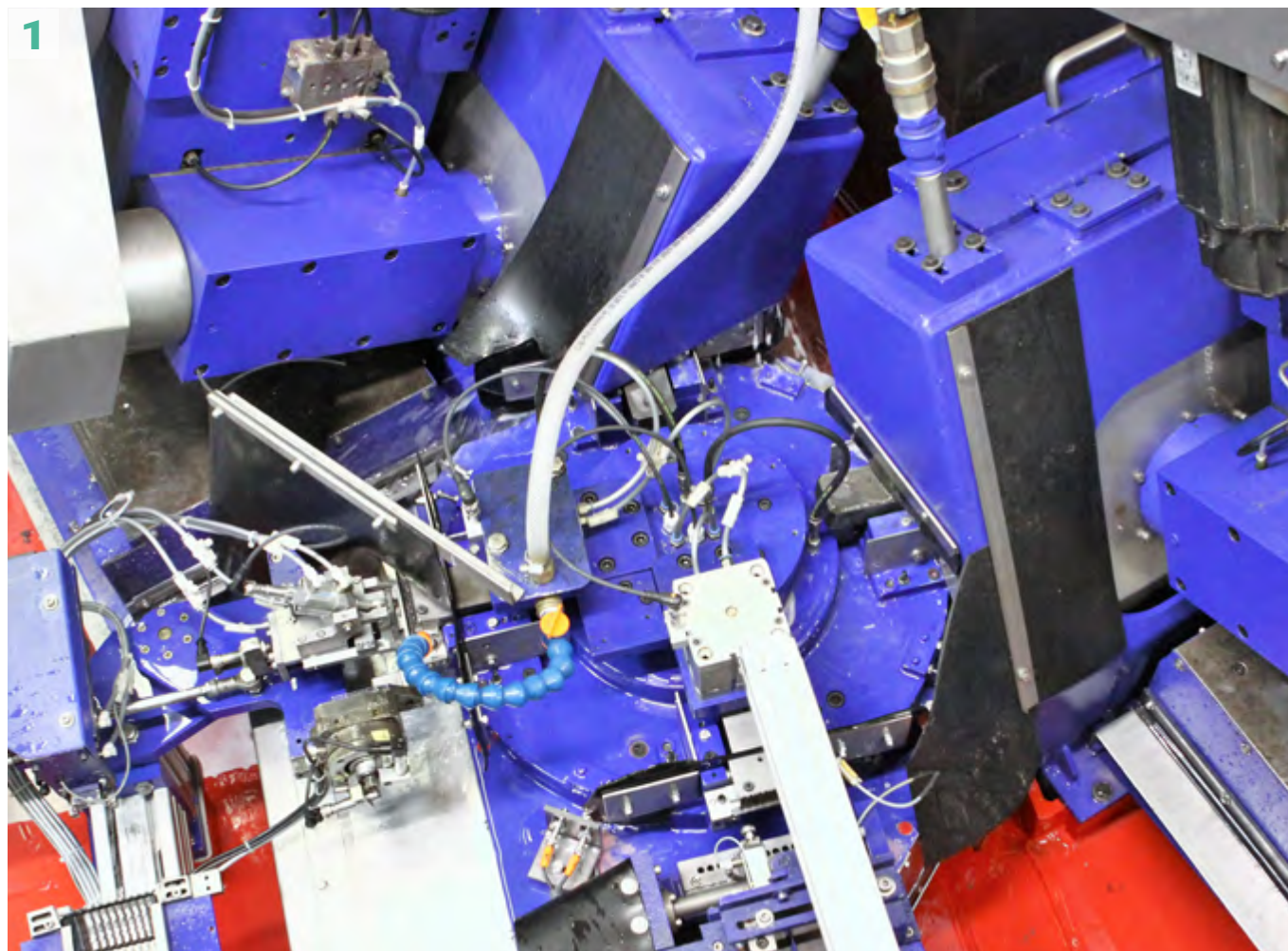
Examples of use (pictures)

- 1. Serrated grinding of circular knives (picture 1)
- 2. + 3. Peripheral grinding machine of the RVZ series (pictures 2 + 3)
- 4. + 5. Different geometries (pictures 4 + 5)

ROTARY INDEX TABLE GRINDING MACHINES

WORKING WITH MULTIPLE STATIONS

The rotary index table grinding machines are designed for different machining operations. High productivity is achieved through parallel machining on several machining stations.



Depending on the type of machining, different series are used:

- **RST** for grinding, serrated grinding and polishing of blades
- **KBR** for complete edge processing of workpieces
- **ZS** for grinding of tines

Examples of use (pictures)

1. Rotary index table grinding machine RST6 for serrated grinding of jigsaw blades (picture 1)
2. Rotary index table grinding machine RST4 for grinding scalpel blades (picture 2)

ROTARY INDEX TABLE GRINDING MACHINES

RST

Single and serrated grinding

CNC rotary index table grinding machines in various configurations for grinding e.g. steak knives, jigsaws or a cutting edge including serration

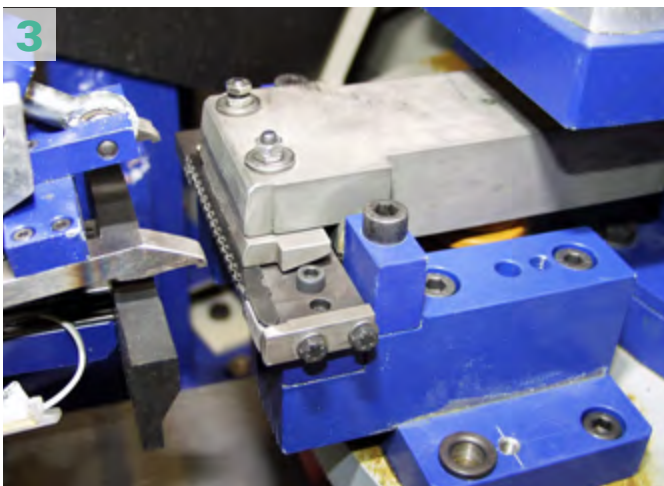
- CNC rotary table grinding machines in various configurations for grinding e.g. steak knives, jigsaws or a cutting edge including serration
- Corresponding grinding stations assigned to a precision rotary table
- Working with the grinding station in pull grinding with a cup wheel (grinding stations SS0 or SS1) or in plunge grinding with grinding station of the WSL series

- Manual as well as automatic loading and unloading systems can be integrated

Depending on the requirements, different series are used:

- RST2: grinding kitchen and steak knives (picture 1)
- RST4: grinding scalpel blades (pictures 2)
- RST6: serrated grinding of jigsaw blades (picture 3)
- RST8: scalpel blade grinding and polishing (picture 4)

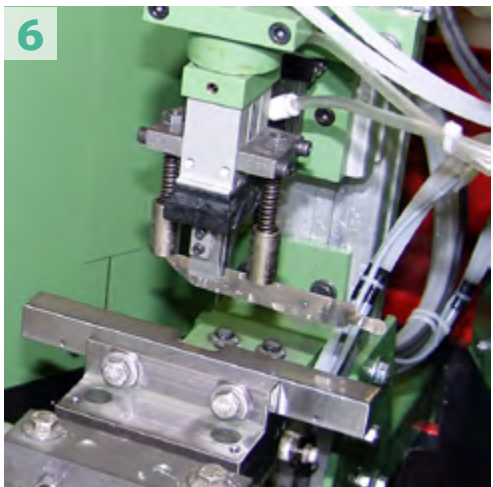
[back to rotary index table grinding machines](#)



RST2: grinding of steak knives

In the rotary index table grinding machine RST2 a grinding station of the series WSL is integrated. The RST2 is designed for grinding kitchen and steak knives.

- three WSL series single-axis grinding stations for peripheral grinding
- cutting angle via workpiece support
- feeding via stack magazine
- workpiece separation
- workpiece feeding via pick and place unit
- 180° turning device
- precision rotary table
- ejector
- output approx. 550-600 knives/hour



Examples of use (pictures)

1. Rotary index table grinding machine RST2 (picture 5)
2. Grinding of kitchen and steak knives (picture 6)

ROTARY INDEX TABLE GRINDING MACHINES

RST4

Single grinding of scalpel blades

CNC rotary index table grinding machine series RST4 designed for processing scalpel blades in single grinding method

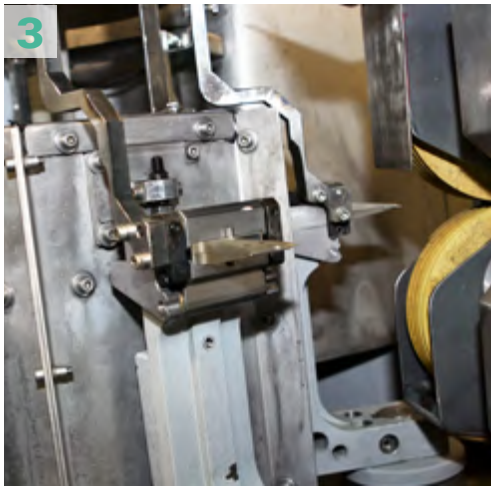
- eight position rotary grinding tables for indexing
- two spiral grinding stations

- two rotary modules for spiral grinding stations 1 and 2 with CNC-axis for both rotary modules, integrated into the CNC control (B-axis)
- six mechanical clamping devices
- six workpiece supports exchangeable depending on the model

[back to rotary index table grinding machines](#)



- workpiece feeding by pneumatic pick & place unit to feed scalpel blades to the magazine storage
- feeding magazine consisting of two vertical stacking magazines
- workpiece unloading by pneumatic pick- & place unit to unload scalpel blades from the station and to store it in the unloading magazine
- unloading magazine composed of two magazine swords
- ten-axle CNC control



Examples of use (pictures)

1. Corresponding grinding stations assigned to a precision rotary table (picture 1)
2. CNC rotary table grinding machine with four processing stations for grinding of scalpel blades in pull grinding (picture 2)
3. Working of the grinding and polishing stations in pull grinding method with spiral grinding wheels (picture 3)

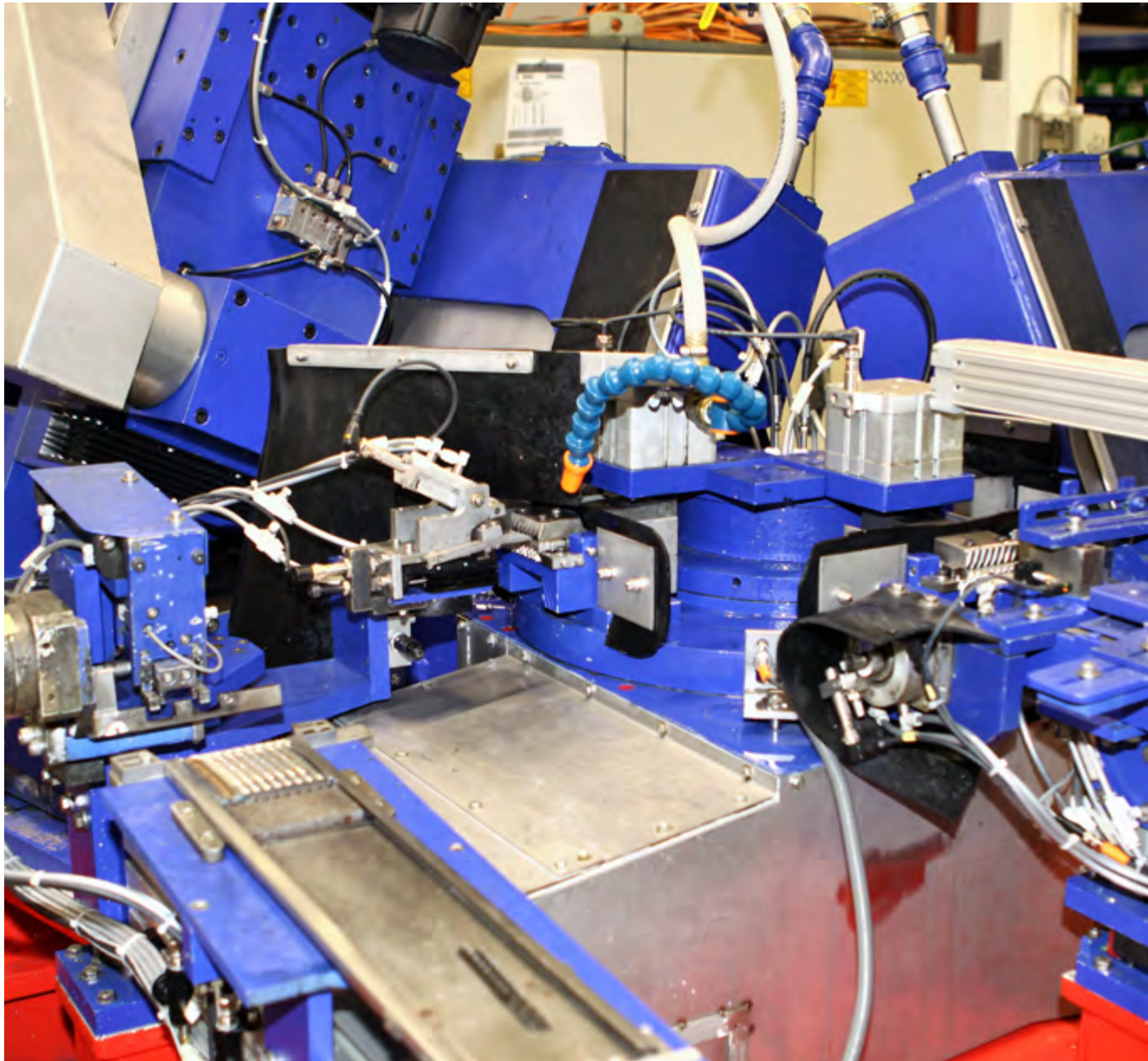
ROTARY INDEX TABLE GRINDING MACHINES

RST6

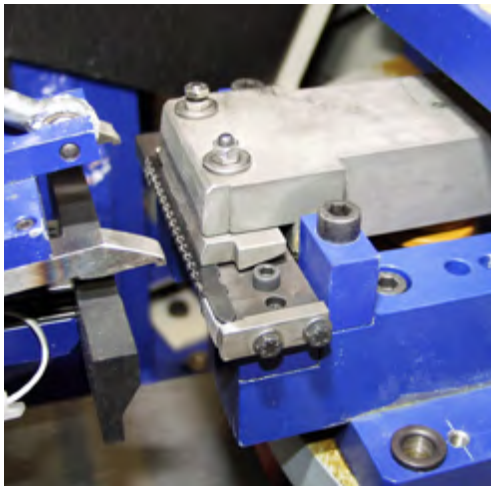
Serrated grinding of jigsaws

Rotary index table grinding machines in various configurations are designed for grinding steak knives, jigsaws, blades with serrations and similar workpieces.

[back to rotary index table grinding machines](#)



- two grinding stations of the series WSL
- positioning of the grinding station for staggered tooth system e. g. in 25°
- positioning of the grinding station for relief grinding
- feeding by stacking magazine with loading capacity of 1,000 mm
- separating of workpieces
- feeding of workpieces by pick & place unit
- precision rotary index table with four positions
- unloading into stacking magazine
- capacity: app. 300–350 jigsaw blades/hour



RUNDTAKTTISCH-SCHLEIFMASCHINEN

RST8/S

Grinding and polishing of scalpel blades

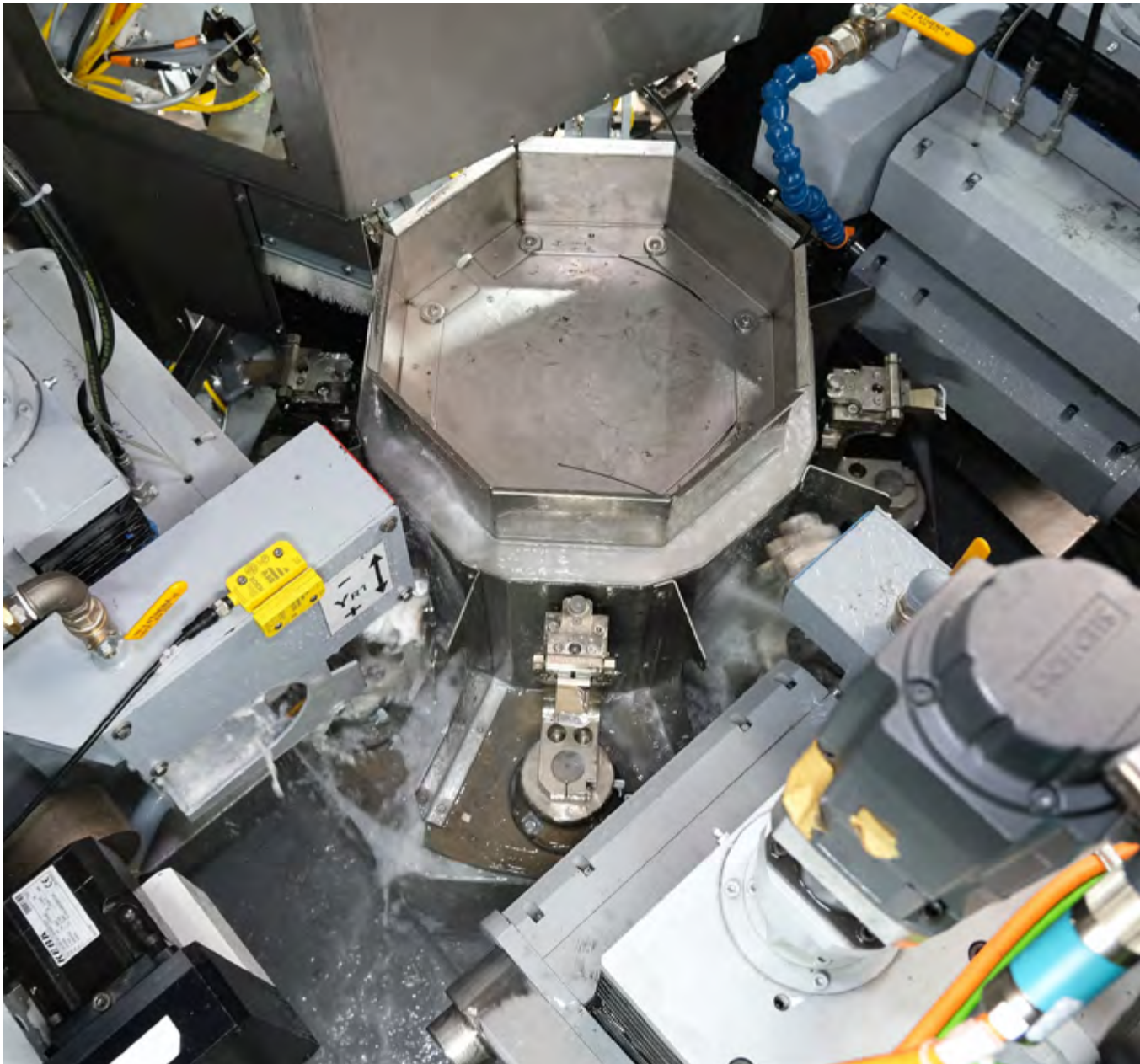
The RST8/S rotary table grinding machine is designed for grinding and polishing scalpel blades of various shapes.

The precision rotary indexing table is equipped with eight positions and a servo motor for indexing.

Three CNC axes are integrated into the grinding machine for the three rotary modules.

Two grinding stations of the WSL series achieve a double-sided grinding of the cutting edges in the angle range of 14°-35°.

[back to rotary index table grinding machines](#)



- two WSL series grinding stations, each with three CNC axes:
 - Z-axis: grinding movement horizontal/ cross stroke
 - Y-axis: vertical axis
 - X-axis: infeed axis
- polishing station with six CNC axes:
 - $Y_1 + Y_2$ -axis (independent vertical movement of the spiral wheels)
 - Z-axis grinding movement horizontal/ cross stroke
 - X-axis (infeed axis)
 - SP + SP¹ spindle axes for electrical synchronization
- dressing device with fixed, rotating diamond dressing roll
- dressing intervals pre-programmable with automatic compensation of wheel wear
- tool loading via CNC-controlled Pick & Place unit
- loading and unloading rotary table with each six magazines and loading capacity of approx. 500 workpieces
- 20-axis CNC control
 - CNC rotary table axis
 - 3 CNC axes for rotary motion
 - 2 grinding stations with 3 CNC axes each
 - 1 polishing station with 6 CNC axes
 - 1 unloading system with 2 CNC axes
 - 1 loading system with 2 CNC axes
- OPC-UA server for output of input and output signals
- processing stations designed for wet processing

ROTARY INDEX TABLE GRINDING MACHINES

KBR

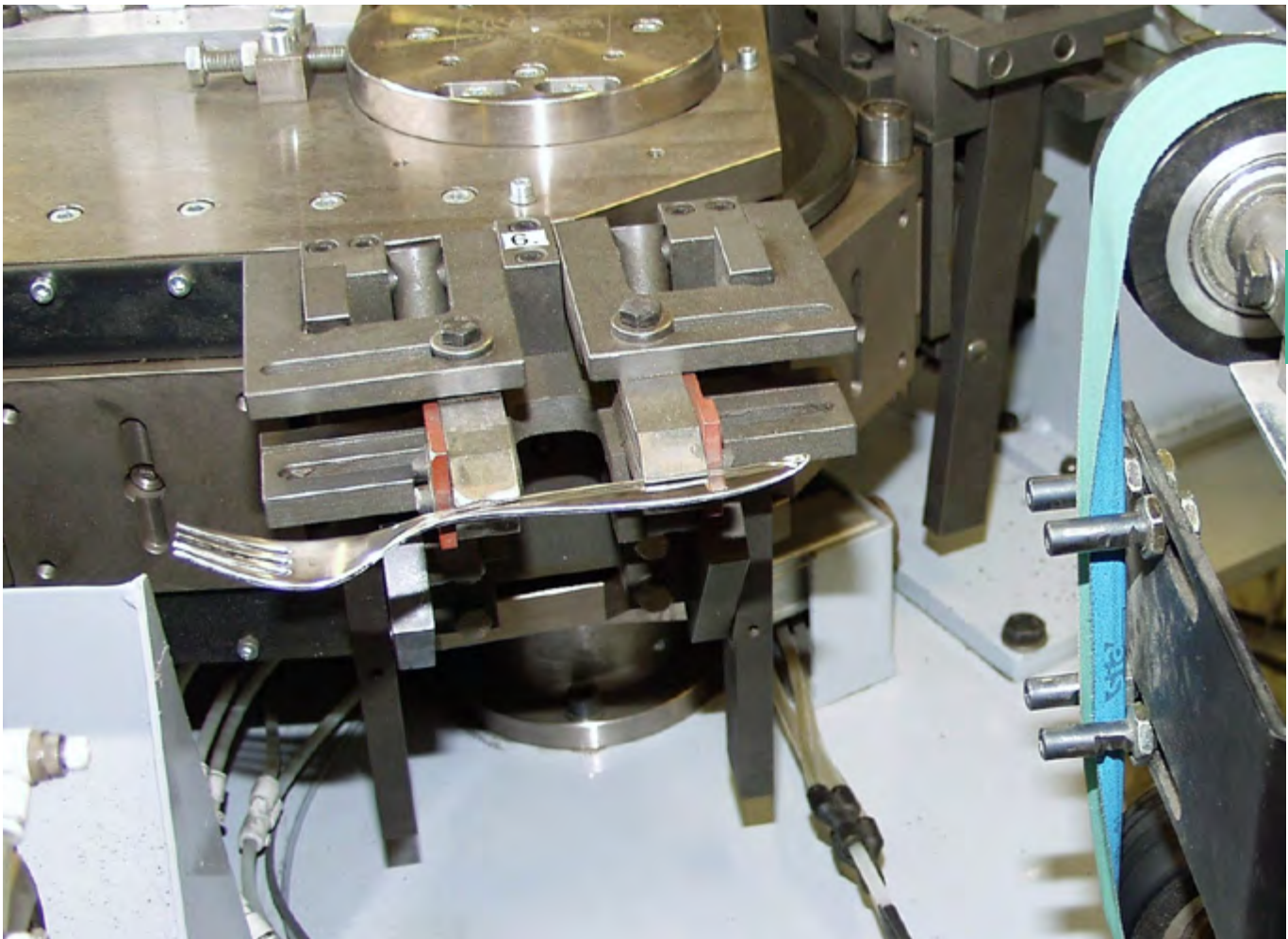
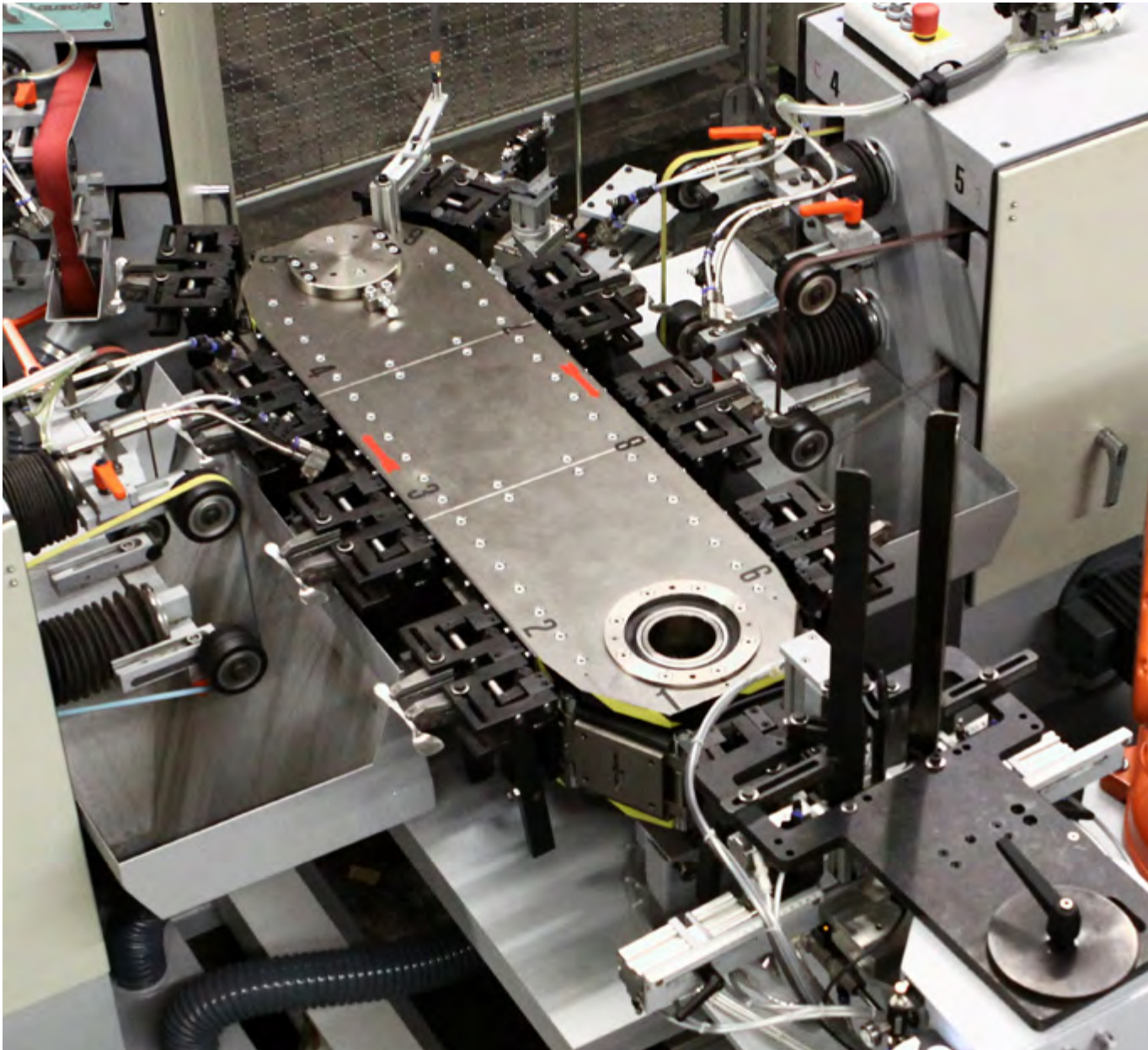
Grinding of workpiece edges

The rotary index table grinding machine KBR6 realizes a complete edge machining all-around the workpiece with a machine which consists of two one-sided and two double-sided belt grinding stations.

The KBR6/robot is a further development of the grinding machine KBR6. A six-axle robot is integrated into the system processing complex geometries at handle and bowl.

This unique solution offers the possibility to machine completely all kind of cutlery forms in one line.

[back to rotary index table grinding machines](#)

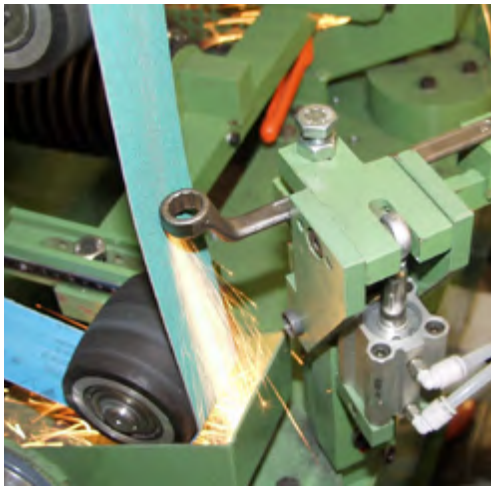


Example of use: machining of spoons and forks

- complete solution for cutlery items by the integration of end machining
- automatic loading and unloading
- number and configuration of the working stations variable depending on the scope of work

Example of use: machining of wrenches

- six belt grinding stations: two stations for the machining of the ring and four stations for the machining of the side parts
- intermediate transfer from ring to wrench machining
- manual or automatic loading possible
- conventional and controlled equipment available



ROTARY INDEX TABLE GRINDING MACHINES ZS

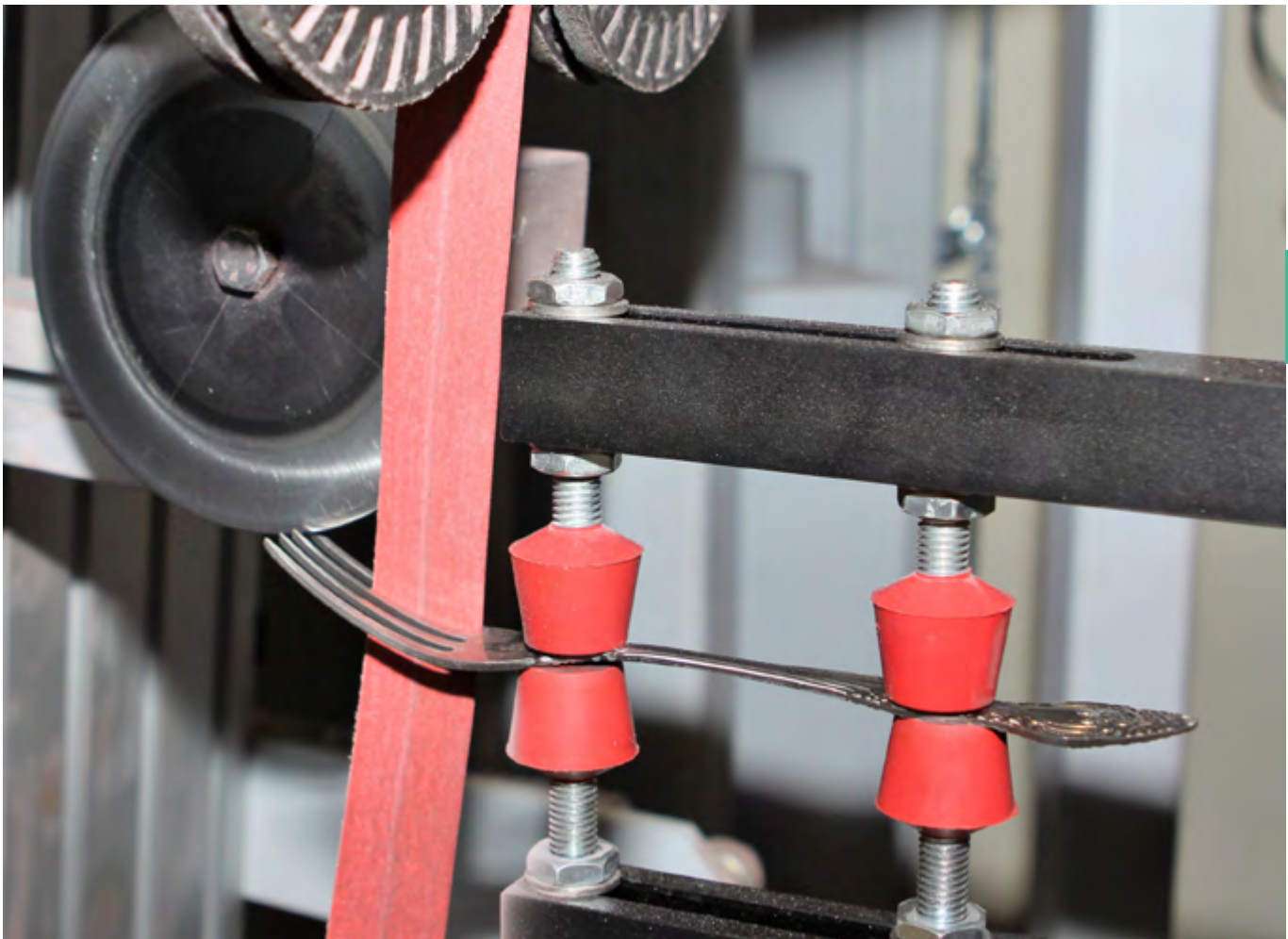
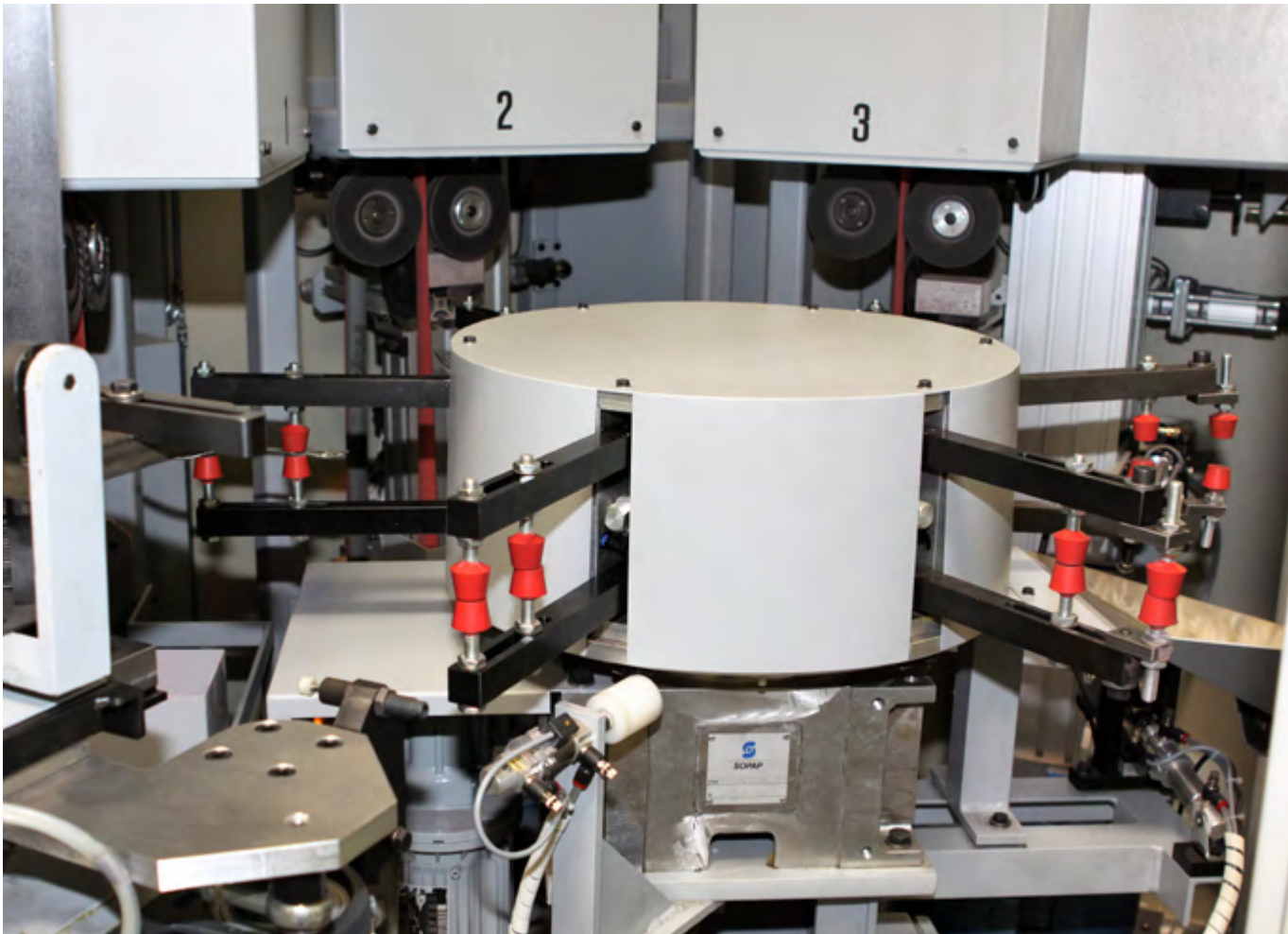
Grinding of tines

The grinding line of the series ZS machines forks with two, three or four tines. By the use of a folded grinding belt the run-out radius is ground cleanly.

The system consists of three belt grinding stations, one rotary table and one separate automatic loading and unloading station with stacking device.

PLC control system and operator device with display enable a simple and quick set-up.

[back to rotary index table grinding machines](#)



Two different grinding procedures can be preset:

- grinding of one tine interspace per station
- rough grinding of all tines in the first station, final grinding in the second station and polishing in the third station

Technical data for ZS/R3:

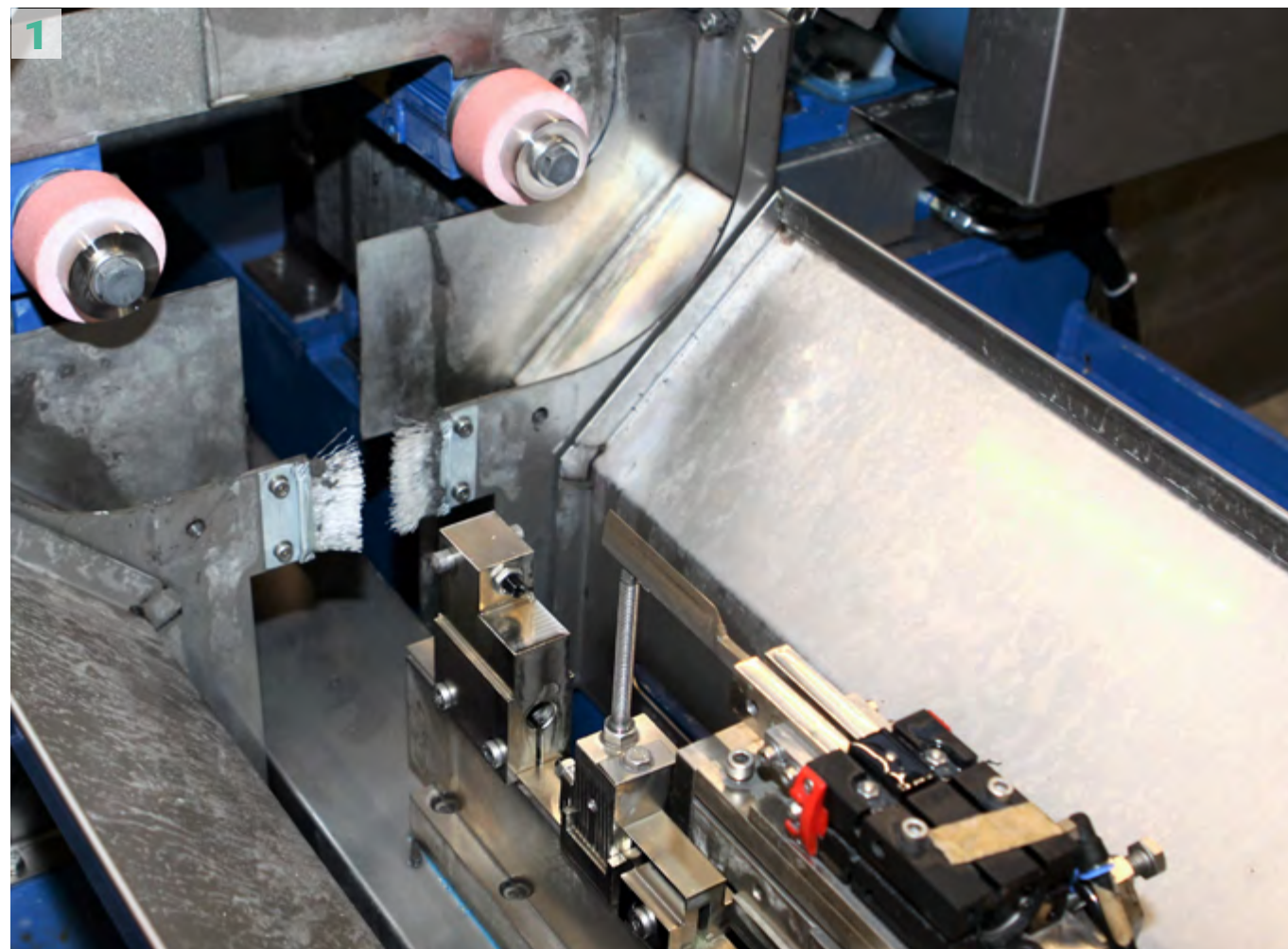
- grinding belt dimension: max. 3500 long
- total connected load: 3 x 3 kW
- weight of the machine: 2300 kg
- dimensions (l x w x h): 2300 mm x 2300 mm x 2200 m

HOLLOW GRINDING MACHINES

HG

HOLLOW GRINDING OF KNIFE BLADES

The CNC grinding machine HG achieves with four axes a double-sided hollow grinding on kitchen knives, steak knives, hunting and sport knives, pocket knives etc. as well as on hand tools (e. g. jigsaw blades).



- programming with contour caliper installed on the grinding machine
- grinding wheel outside diameters: 80 mm, 125 mm, 175 mm, 200 mm or 220 mm
- spindle motors completely closed and equipped with moisture protection
- two digital measurement controls integrated into the CNC control to supervise the wear of the grinding wheels
- integration of a CNC controlled scotch brite station in order to polish the piece in the same clamping
- wheel wear is automatically compensated after each grinding cycle with a digital measuring system
- automatic central grease lubrication system
- digital four-axle Windows controllers (X, Y, and the two spindle axes)
- grinding length up to 430 mm
- sensor programming, probing of contour shape and direct generating of necessary program data
- grinding wheels activated by special motors with precision mounted spindles
- grinding with two cup wheels, each wheel at an angle of 45° to the blade
- thereby a consistent hollow bevel shape over the entire wheel life
- dimension of the grinding wheel depending on blank thickness, bevel width and thickness

Examples of use (pictures)

- 1 Hollow grinding of razor blades (picture 1)
- 2 HG2 with integrated Scotch-Brite-Station, clamping for one-sided hollow grinding (picture 2)
- 3 Hollow grinding of hunting knives with automatic loading and unloading (picture 3)
- 4 Hollow grinding of professional knives (picture 4)
- 5 Hollow grinding machine HG with automatic feeding (picture 5)

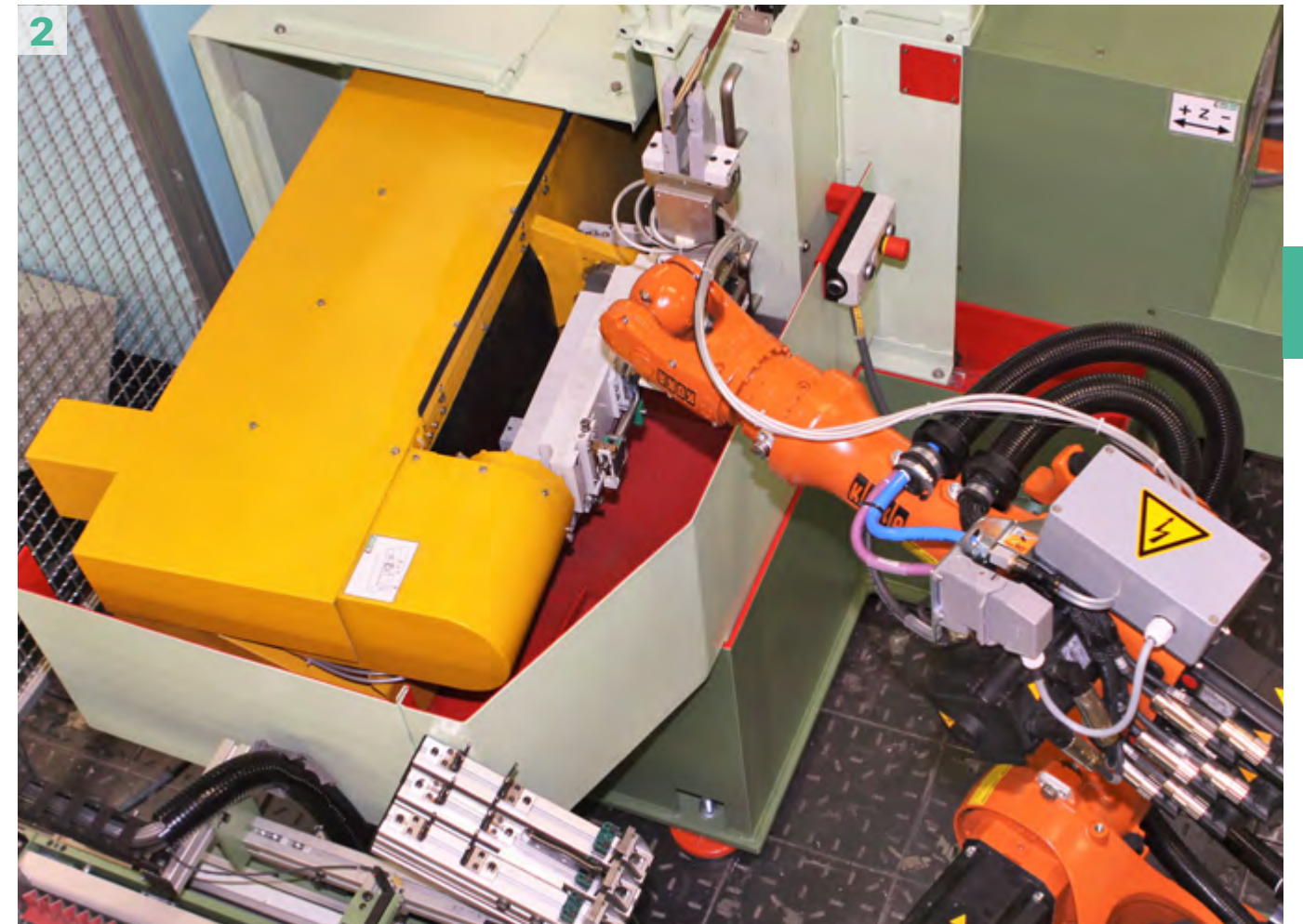
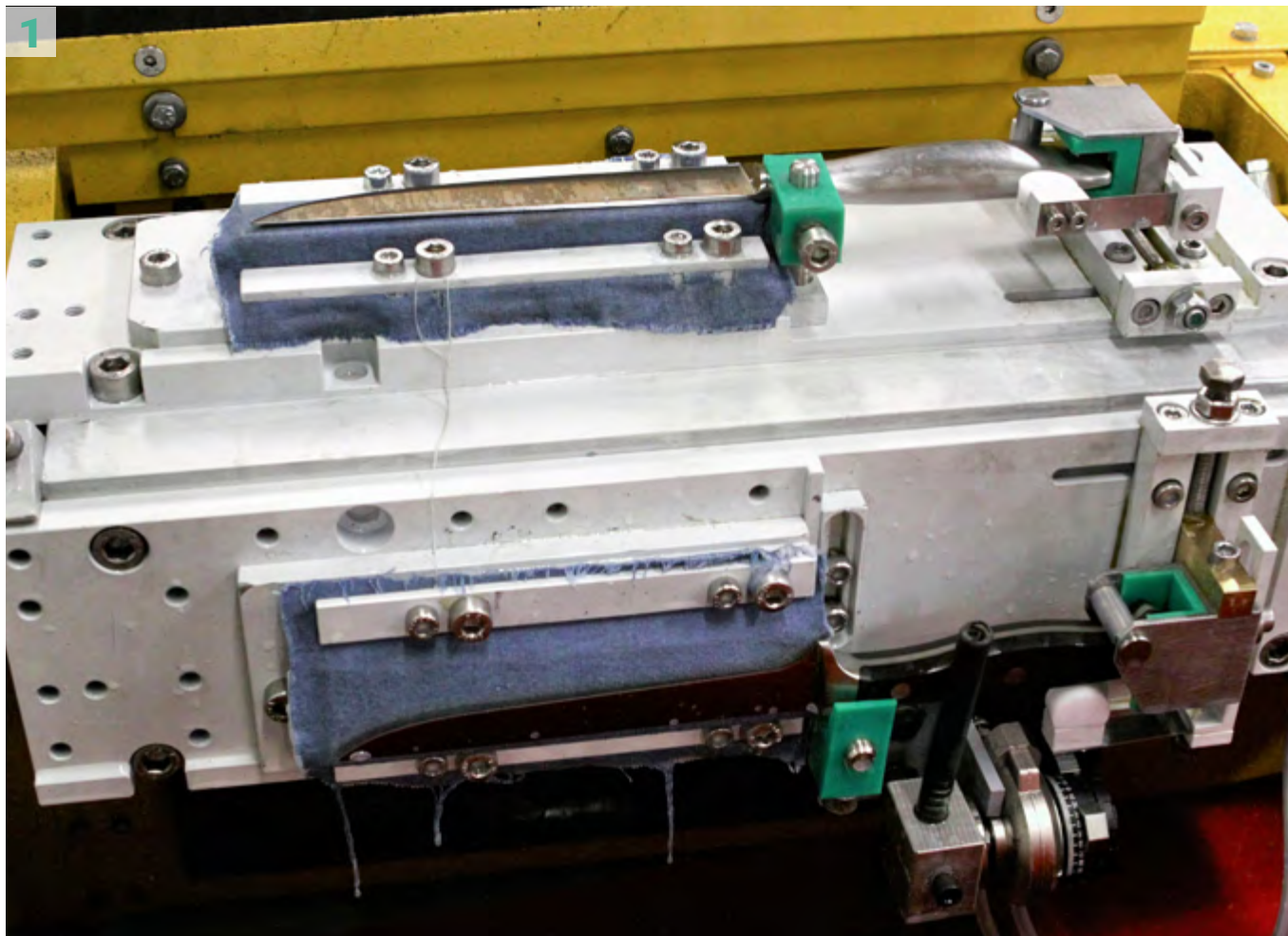
GLAZING MACHINES

PLM

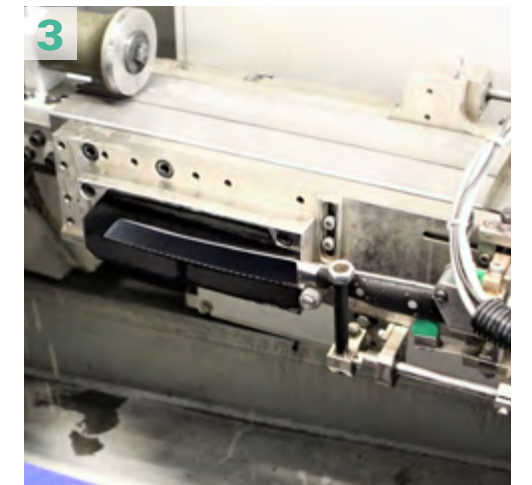
GLAZING OF KNIFE BLADES

CNC controlled glazing machine with three axes designed for finishing ground knife blades.

- short set-up and changeover times
- high quality and repeat accuracy
- economical processing of very small series



- machining length max. 480 mm
- simple, direct programming with input of workpiece data/parameters
- designed for glazing discs with Ø 530 mm or 795 mm
- automatic paste feed for fat glazing or set up for wet glazing
- workpiece data transfer from CNC controlled grinding machine BG
- machining of several surfaces in one clamping
- dressing to profile the wheel



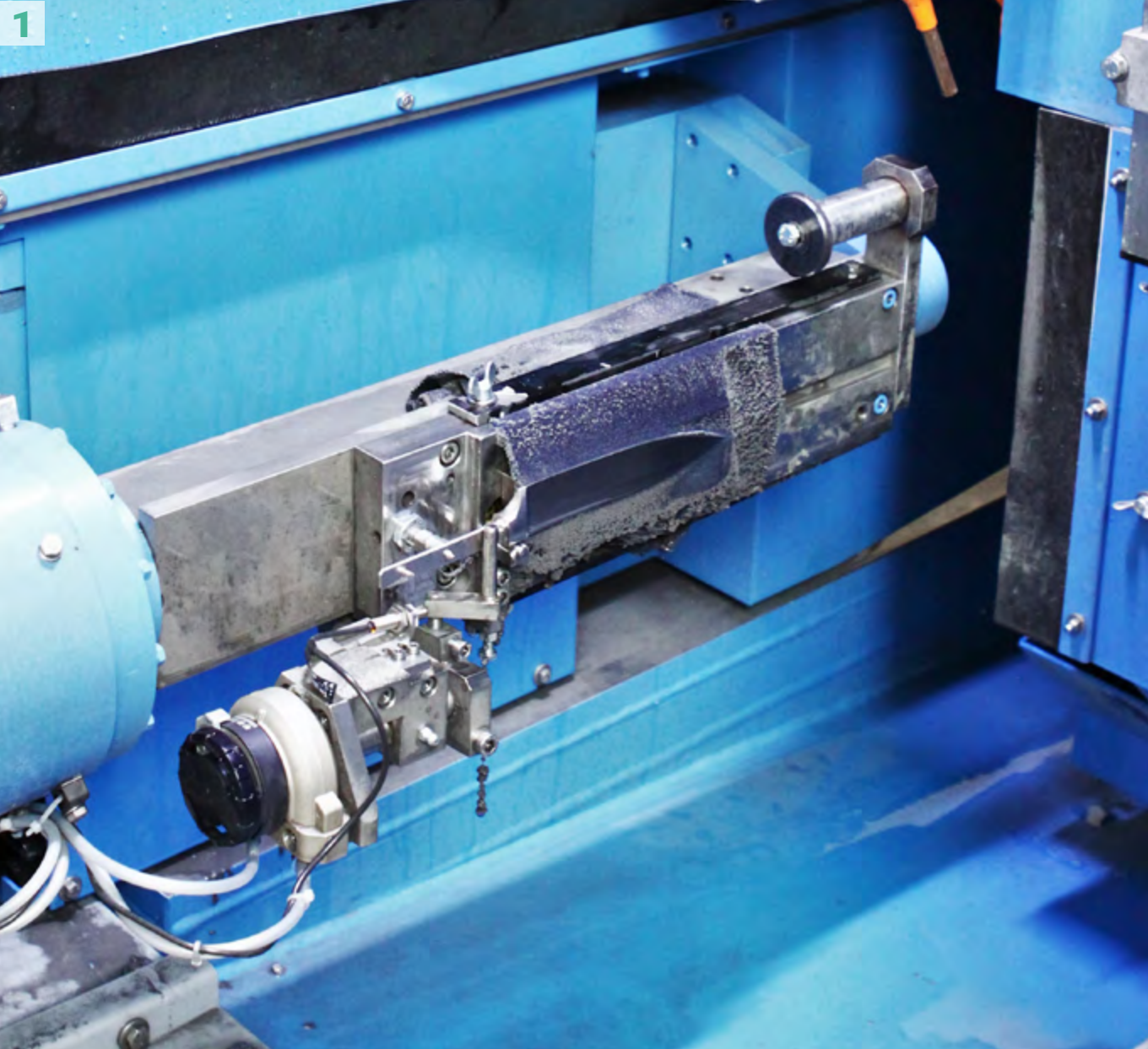
Examples of use (pictures)

1. Workpiece carrier block 180° for different workpieces, which are called up in a programmable manner (Model A and Model B) (picture 1)
2. PLM2 with robot loading and unloading (picture 2)
3. Shaping of kitchen knives with dressing device for profiling the disc (picture 3)

GLAZING MACHINES PLM2/V

Glazing of knife blades
with inclined bolster

CNC the PLM2/V series glazing machines can be equipped with an additional vertical axis and are this optimized for glazing knife blades with inclined bolster.



Examples of use (pictures)

- 1. PLM2/V glazing machine with additional V-axis for machining a inclined bolster (picture 1)
- 2. PLM2/V grinding machine and BG3/V series flat bevel grinding machine with full enclosure (picture 2)
- 3. Glazing machine PLM2/V combined with a flat bevel grinding machine of the series BG3/V (picture 3)



GLAZING MACHINES
PLM2/E/H

Mechanical glazing of knife blades

The hydraulic plating machine is designed for the mechanical glazing of ground knife blades.



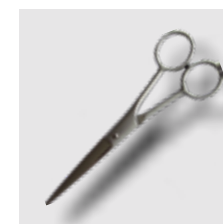
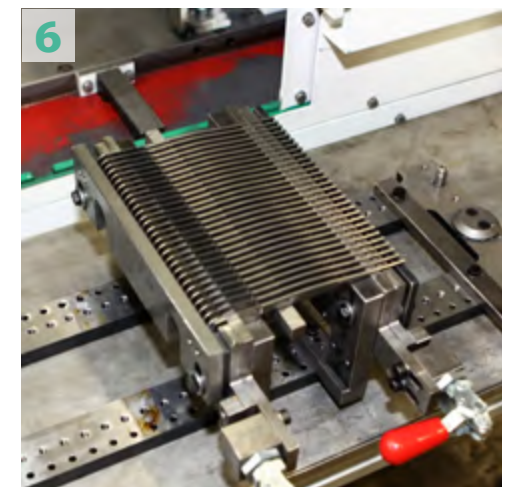
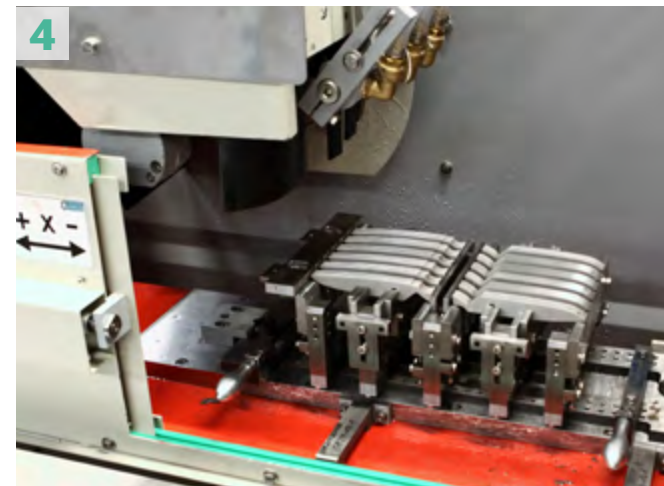
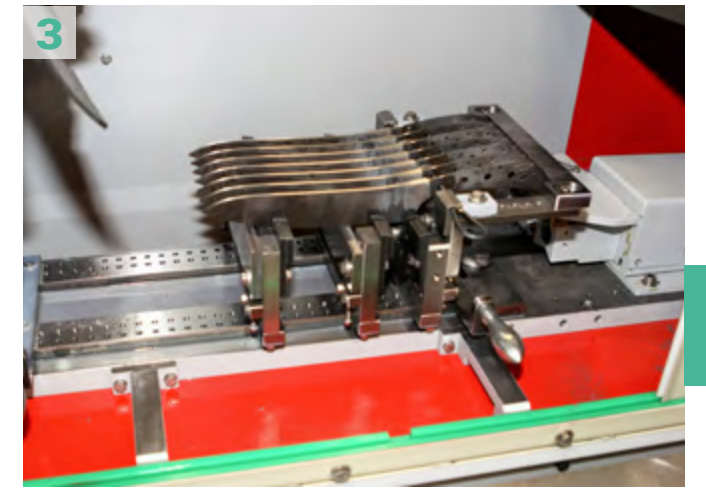
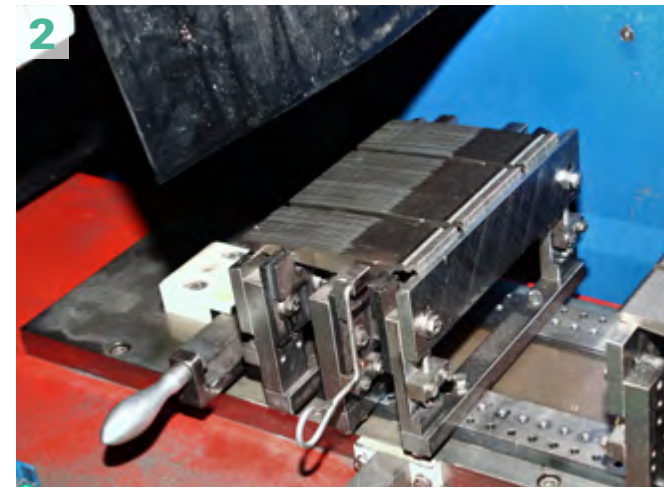
- main motor of 5.5 kW/7 HP for spindle drive
- frequency converter for stepless adjustment of the spindle speed
- equipped for plastisols with Ø 530 mm
- compensation of the wear of the pelting disc manually by hand wheel
- manual adjustment of the clamp feed -10° and +10° via scale
- pneumatically driven contact pressure device, manually adjustable via pressure control valve

CONTOUR GRINDING MACHINES

CG

CONTOUR GRINDING

The CNC belt or stone grinding machines of the CG series are designed with two axes for contour grinding of tweezers, knives, scissors, hand tools and comparable workpieces.



- CNC wet belt grinding machine with belts with a length of 3.500 mm x 200 mm
- 15 kW, up to 4000 rpm
- contact roller holder in two versions: 80–200 mm diameter or 30–100 mm with additional counter bearing
- grinding stroke up to 550 mm, grinding width 180 mm
- automatic magazine recognition for subsequent processing of different workpieces
- interval controlled, automatic grease central lubrication
- automatic oscillation of the grinding belt
- adjustable strap arm 0–45°
- sensor programming by scanning of the contour and direct export of the recorded dimensions to the programming interface, use of raw or finished parts
- magazine identification system for automatic program calling
- remote maintenance, diagnosis and troubleshooting via TeamViewer
- different magazine constellations for processing scissors or tweezers, e. g. loading of scissors

Examples of use (pictures)

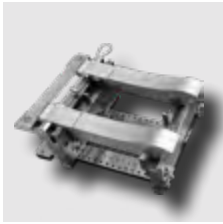
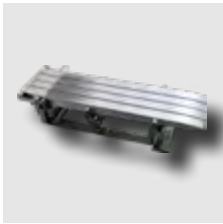
- 1 Contour grinding machine CG1 (picture 1)
- 2 Magazine for scissors, double row for top and bottom in sequence (picture 2)
- 3 Magazine for forged knives with spacer (picture 3)
- 4 Magazine for scissors, use of small contact rollers for smaller radii (picture 4)
- 5 Integration of provided magazine (picture 5)
- 6 Magazine for tweezers (picture 6)

CONTOUR GRINDING MACHINES CG3

Back grinding on knife blades
with a length of up to 550 mm

The contour grinding machine of the CG3
series grinds knife backs with a maximum
length of 550 mm in a package.

[back to contour grinding machines](#)



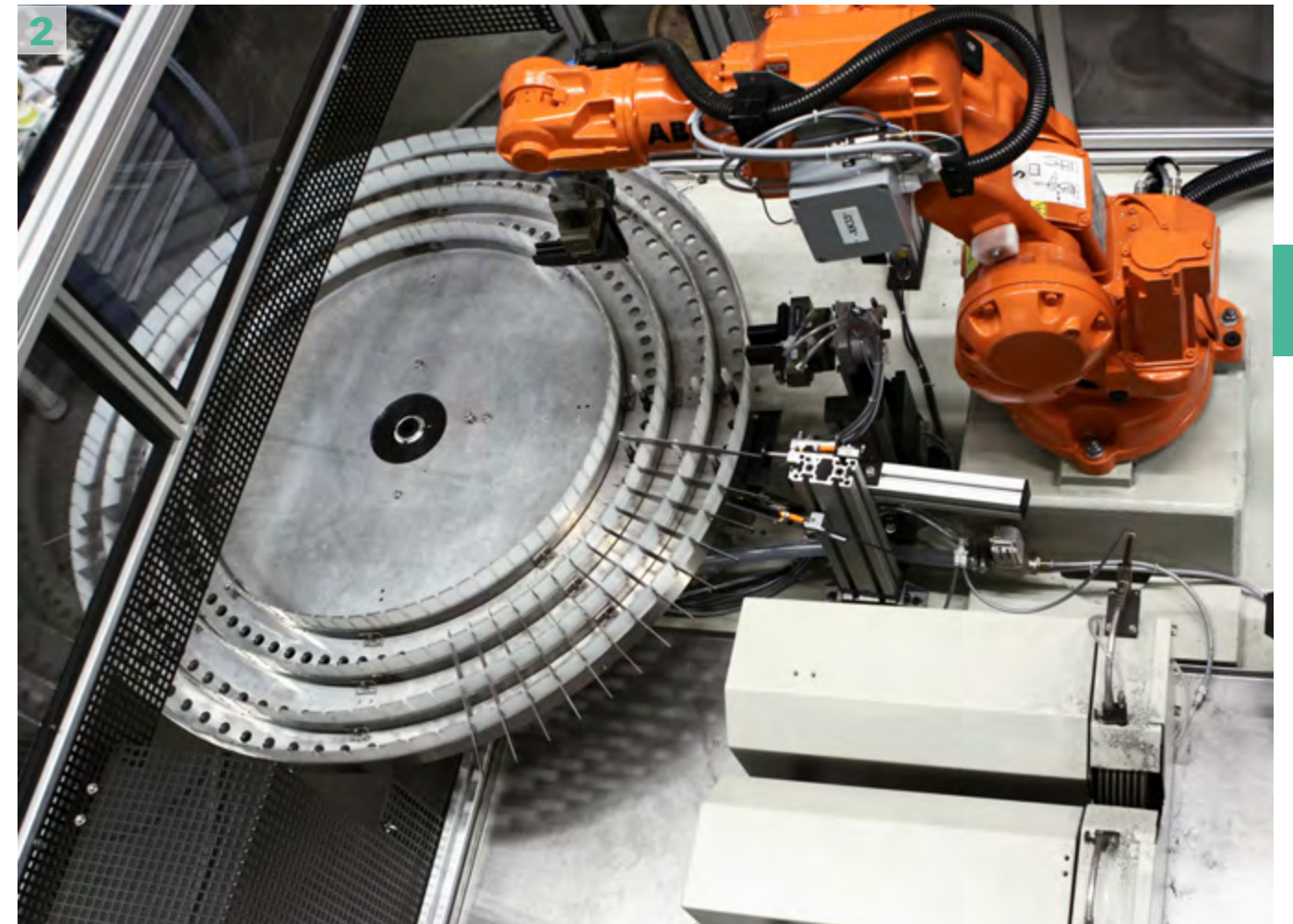
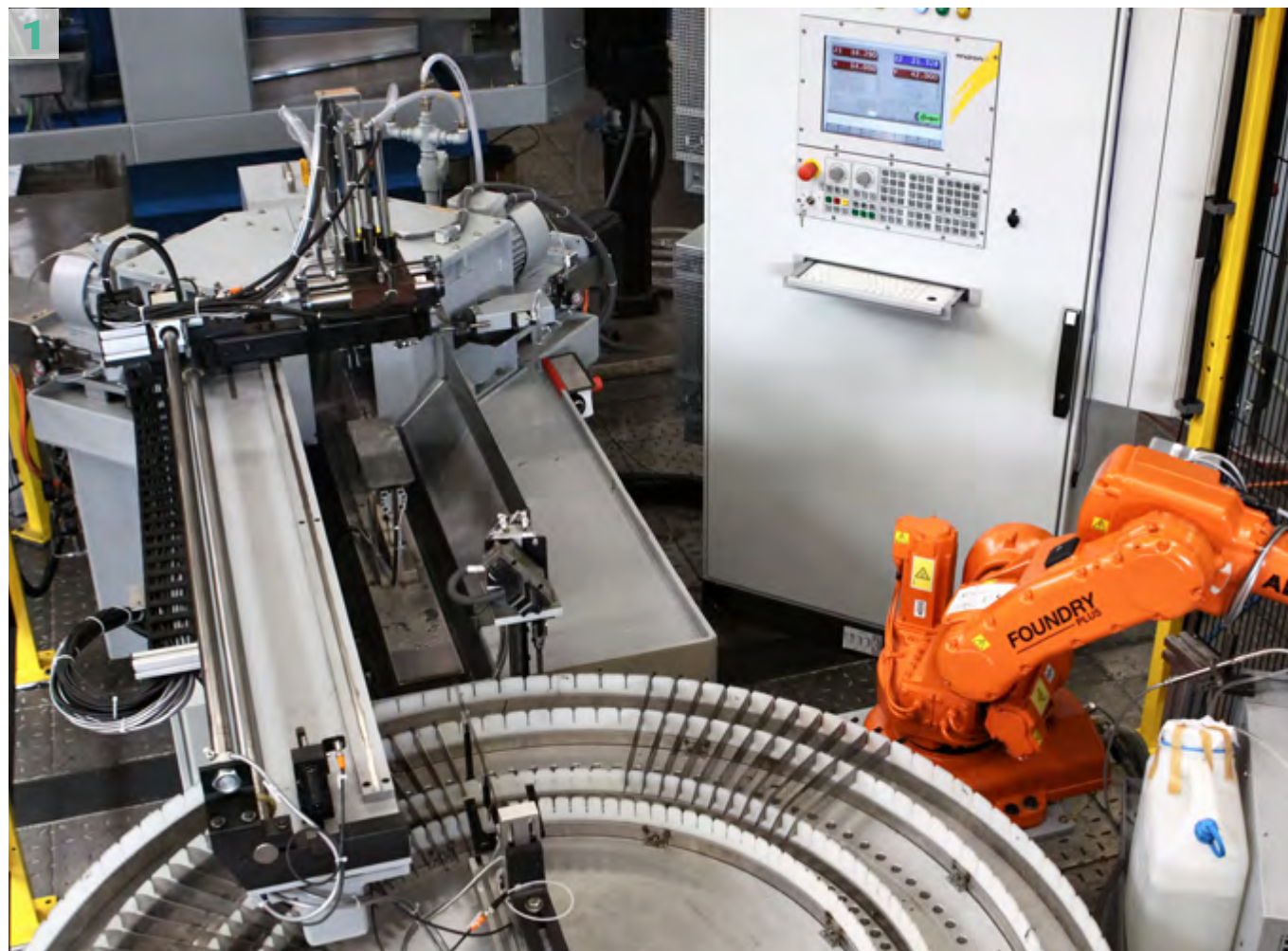
- horizontal grinding stroke max. 600 mm (X-axis)
- vertical grinding stroke max. 200 mm (Y-axis)
- grinding width 180 mm
- pneumatic belt tensioning arm for belts with 3500 mm x 200 mm
- contact wheels with 100 mm Ø (other diameters on request)
- drive motor 15 kW
- automatic oscillation of the sanding belt
- horizontal and vertical carriage with TURCITE-covered dovetail guide and adjustable guides
- 2-axis CNC grinding machine
 - X-axis = longitudinal stroke
 - Y-axis = vertical stroke
- AC servo motor
- Digitally driven axes with preloaded ball screws, controlled via servo motor or precision reduction gearbox

SHARPENING MACHINES

SM

SHARPENING OF KNIFE BLADES

The CNC sharpening machine of the SM series is equipped with up to three axes for sharpening blades and mounted knives.



- two servomotors for driving coated CBN spiral wheels with a diameter of 200 mm
- digital synchronization
- mechanical adjustment for cutting edge angle 20°–50°, alternatively programmable via additional CNC axis
- designed for manual machining or in combination with a robot

Examples of use (pictures)

1. HG series hollow grinding machine in combination with SM sharpening machine: grinding and sharpening in one production cell (picture 1)
2. SM automatic sharpening system with six-axis robot, a spiral sharpening machine, an indexing rotary magazine and a laser measuring system for checking the position of the blade and setting the program (picture 2)
3. Sharpening machine SM (picture 3)

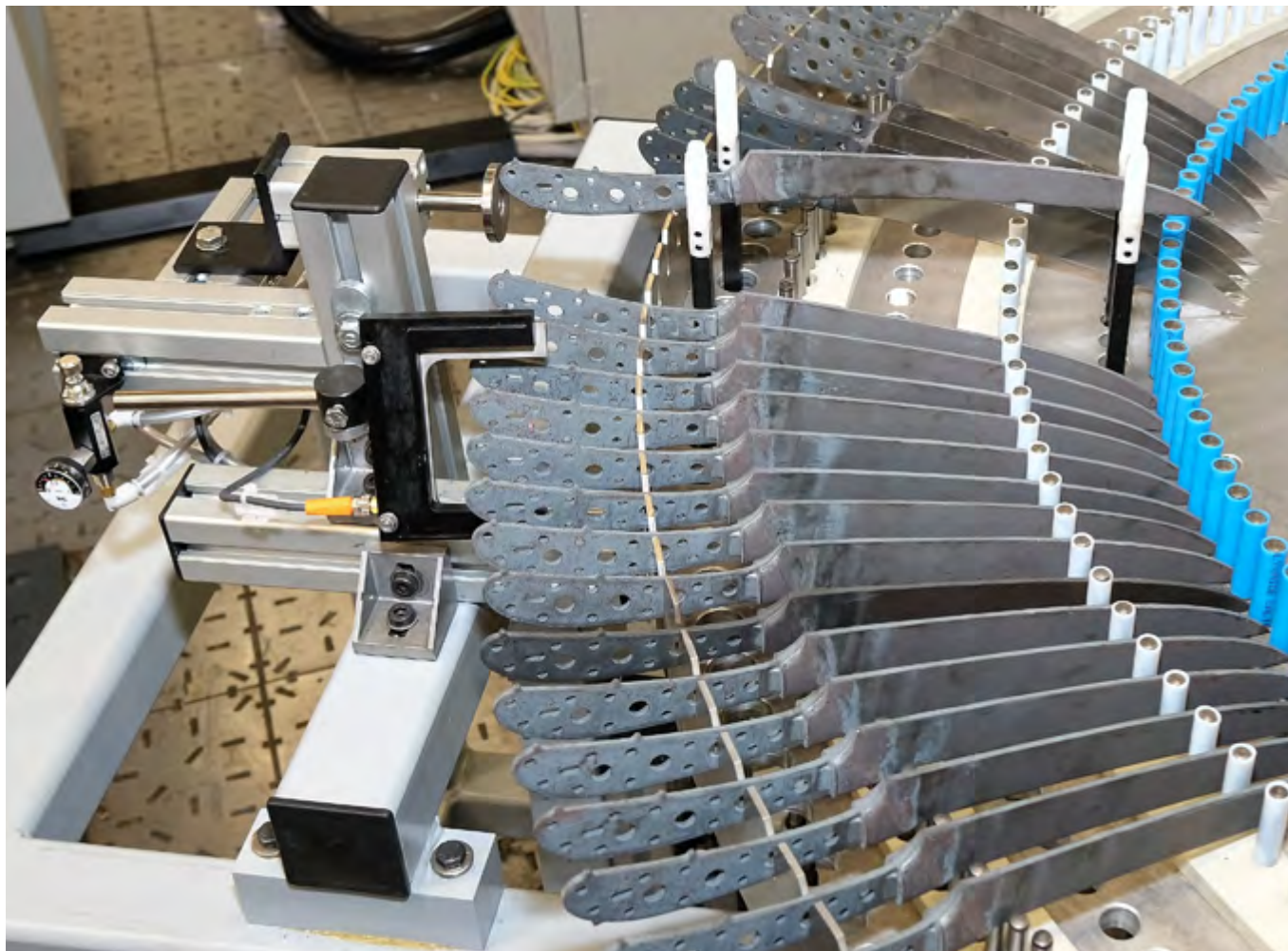


ACCESSORIES

FOR GRINDING MACHINES

CLEANING DRESSING MAGAZINING

The Berger Gruppe offers a wide range of accessories for grinding machines for single workpieces, some of which can be retrofitted.



The following accessories are available for grinding machines for single workpieces:

- abrasives
- [cleaning systems](#)
- [coolant systems](#)
- [dressing systems](#)
- exhausting devices
- fixtures
- full enclosure
- [magazine systems](#)

ACCESSORIES

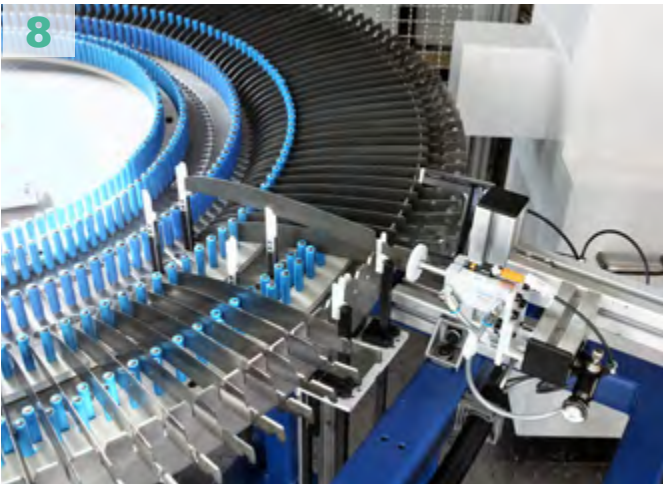
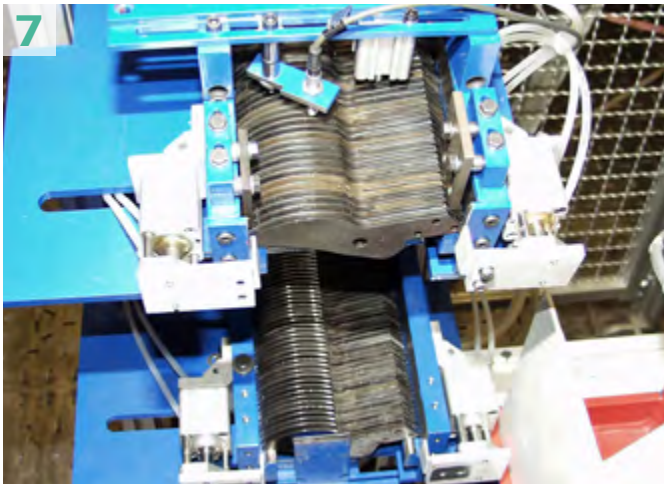
Magazine systems

Machining cells with CNC grinding machines can be equipped with different feeding and magazine systems for stackable and non-stackable workpieces.

The design of the loading/unloading magazine depends on various requirements:

- required magazine capacity
 - shape of the workpiece
 - variety of workpiece shapes/dimensions
 - integration in the preceding stage of production or subsequent processing
 - in which way the pieces are orientated
- indexing rotary magazines
 - indexing chain magazines storing conical material
 - indexing vertical rotary magazines
 - circulating bar magazines
 - guiding bulk material by:
 - circular conveyor
 - Berger Feeder

A wide variety of magazine systems are available to you, such as:



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Examples of use (pictures):

1. **Berger Feeder:** unordered feeding (here of garden shears parts) via conveyor belt in connection with camera system (picture 1)
2. **Circulating chain magazine:** loading magazine for tongs (picture 2)
3. **Circular conveyor:** unordered feeding of workpieces (picture 3)
4. **Schäfer box:** removal of workpieces (here scissors) from a Schäfer box (picture 4)
5. **Chain magazine:** feeding of wrenches to the HDS3 rotary table grinding machine (picture 5)
6. **Indexing rotary table magazine:** unloading magazine for non-stackable workpieces – in this case garden shear parts (picture 6)
7. **Stacking magazine:** for flat material (in this case garden shears parts), loading capacity of 500–2,000 mm, adjustable length stops (picture 7)
8. **Rotary table magazine** (picture 8)
9. **Bar magazine for scissors** (picture 9)



ACCESSORIES

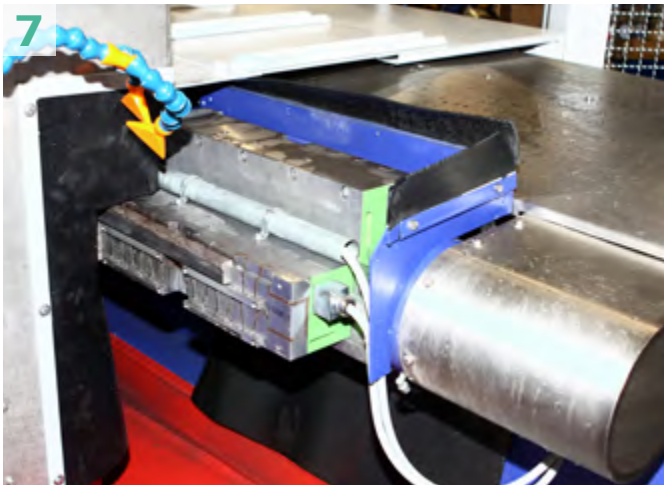
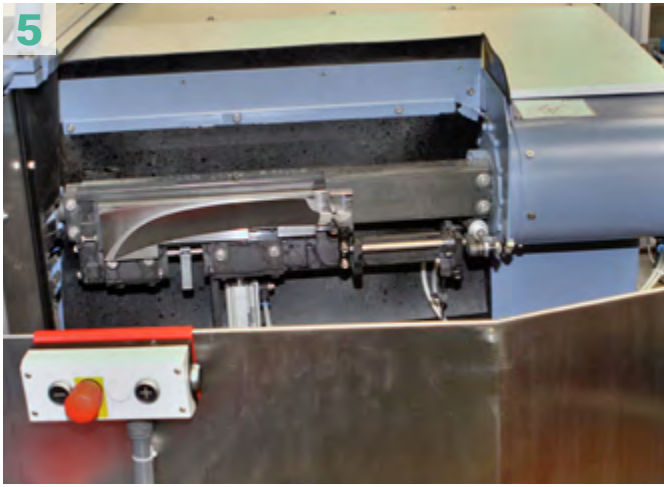
Dressing systems

Depending on the machine type or the application, there are different dressing systems for grinding or polishing wheels, such as the two-axis CNC dresser for profiling the grinding wheel or the diamond-coated dressing roll for peripheral grinding machines of the WSM2 series.

Examples of use (pictures)

- 1. Two-axe CNC dresser for profiling the grinding wheel (picture 1)
- 2. Driven diamond coated dresser for consistent quality of the bolster (picture 2)
- 3. Diamond coated dressing roll designed for WSM2 series peripheral grinding machines (picture 3)
- 4. Traversable single-grain/contour dresser (e. g. WSM2) (picture 4)

[back to accessories](#)



Fixtures

The Berger Gruppe offers a wide range of mechanical, hydraulic and pneumatic clamping devices for grinding and polishing machines for single workpieces.

Examples of use (pictures)

- 5. Clamping device with additional clamping finger (picture 5)
- 6. Pressure roller programmable via CNC control (picture 6)
- 7. Electromagnetic workpiece holder integrated in a flat bevel grinding machine BG (picture 7)
- 8. Workpiece fixture for flat bevel grinding machines of the BG series (picture 8)

Full enclosure

Full enclosure designed for flat bevel grinding machines, peripheral grinding machines and/or glazing machines (pictures 9 + 10)



ACCESSORIES

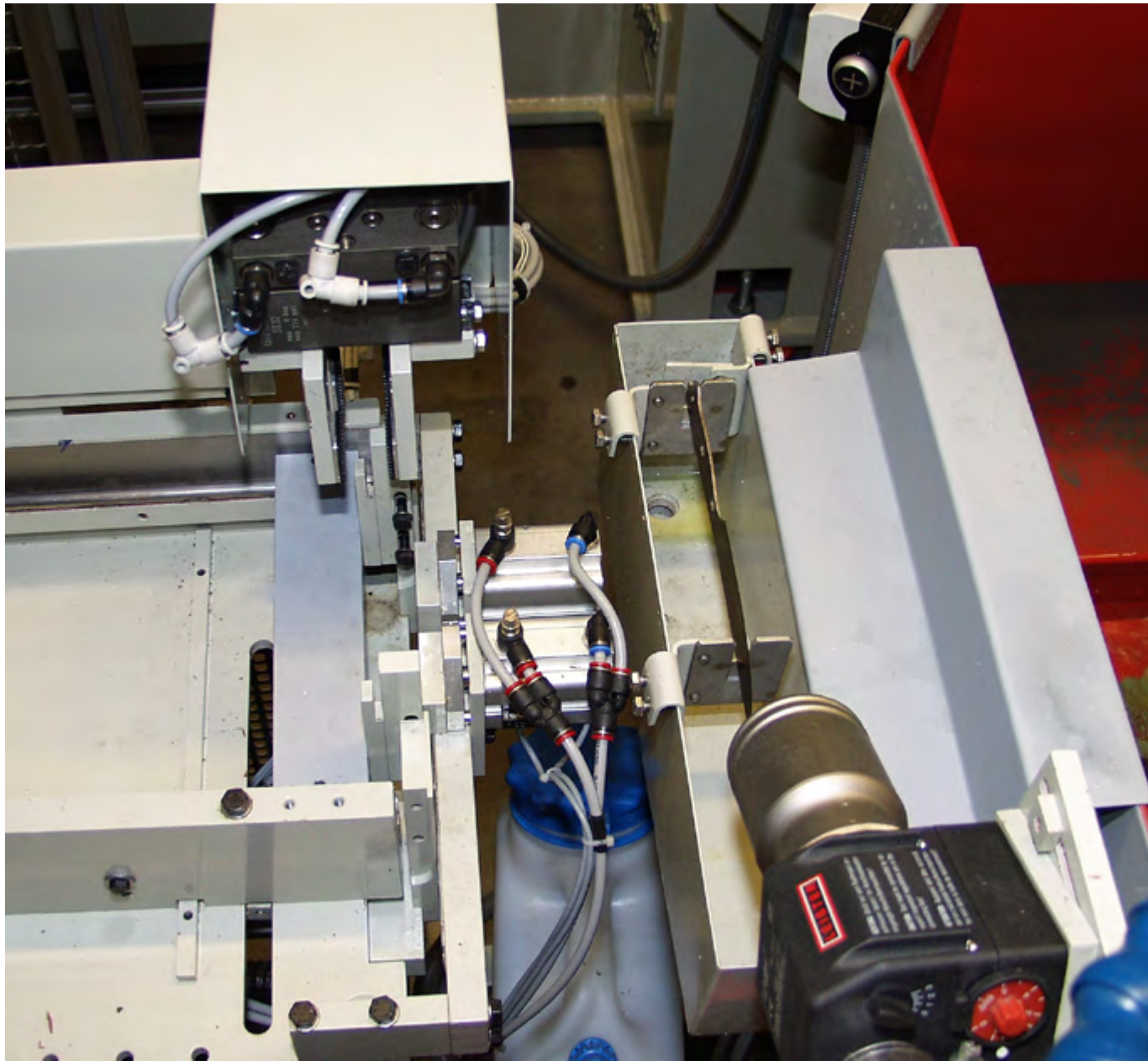
Cleaning systems

The Berger grinding machines can be combined with different cleaning systems.

The workpiece is positioned in a transport chain. Cleaning and drying take place in different steps.

As an alternative, the workpiece can also be positioned by a loading and unloading robot. Here, the workpiece is cleaned and dried and finally stacked into a stacking magazine.

[back to accessories](#)



Coolant systems

A wide range of different cooling water systems for grinding emulsion is offered in combination with Berger machines. The design of these systems depends primarily on the requirements for water quantity, water pressure and degree of purity.

Different purification stages can be employed:

- magnetic separators
- paper and/or fleece filters
- micro filters

These components can be combined according to requirements.

In addition, the following are available for installation:

- flow monitors (to monitor coolant fluid level)
- magnetic switches (water level/stop)
- float switches (control of the level)
- cooling unit for constant temperature of the coolant

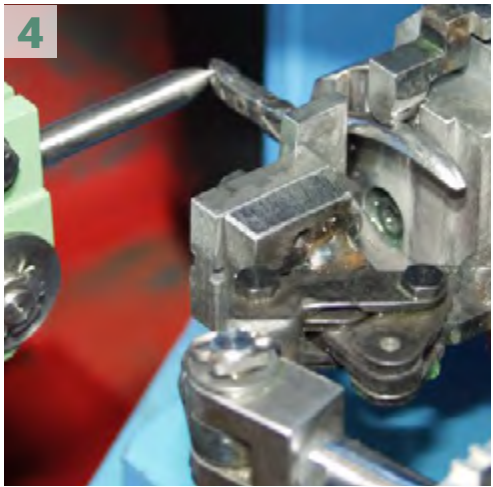
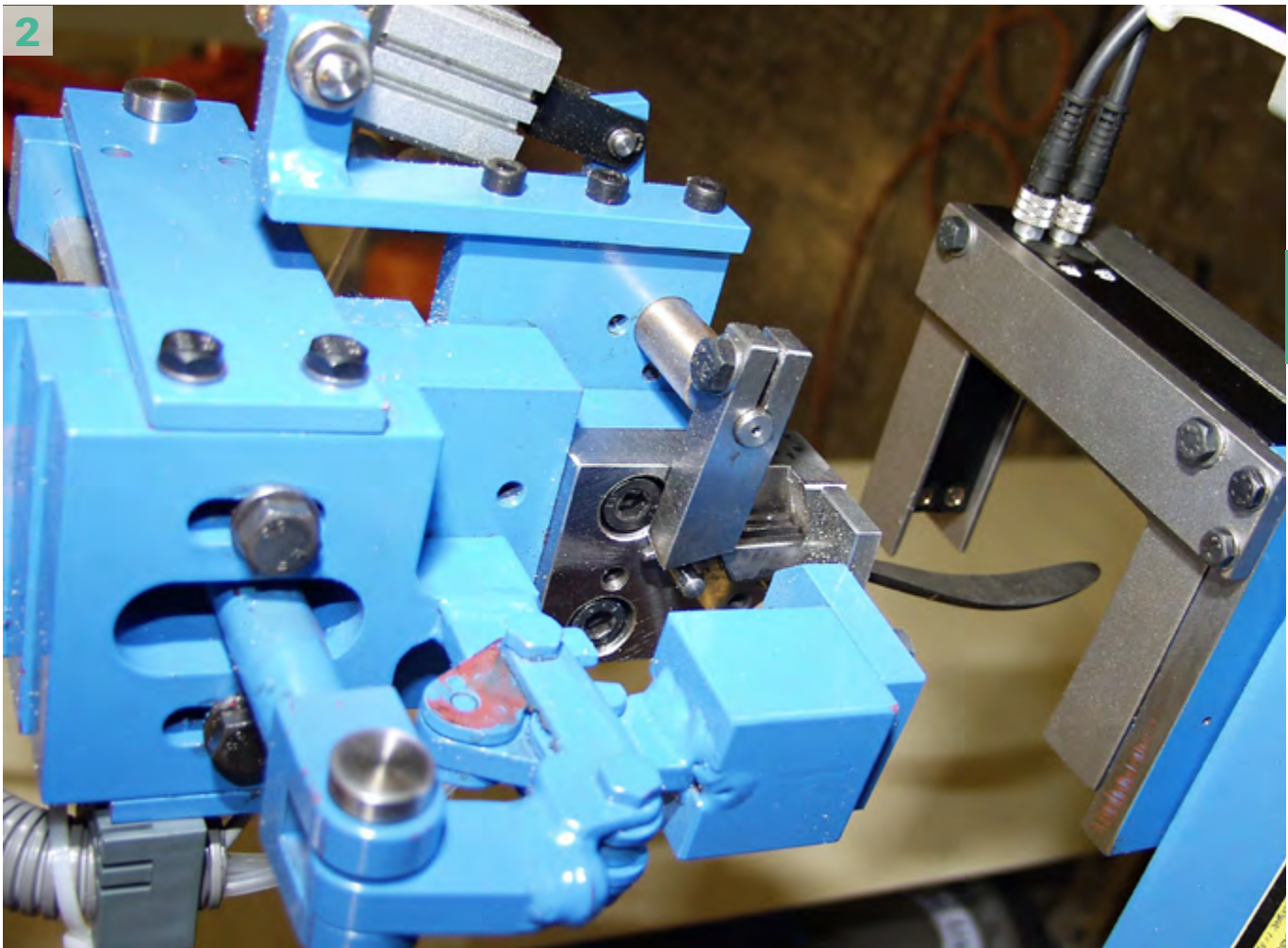
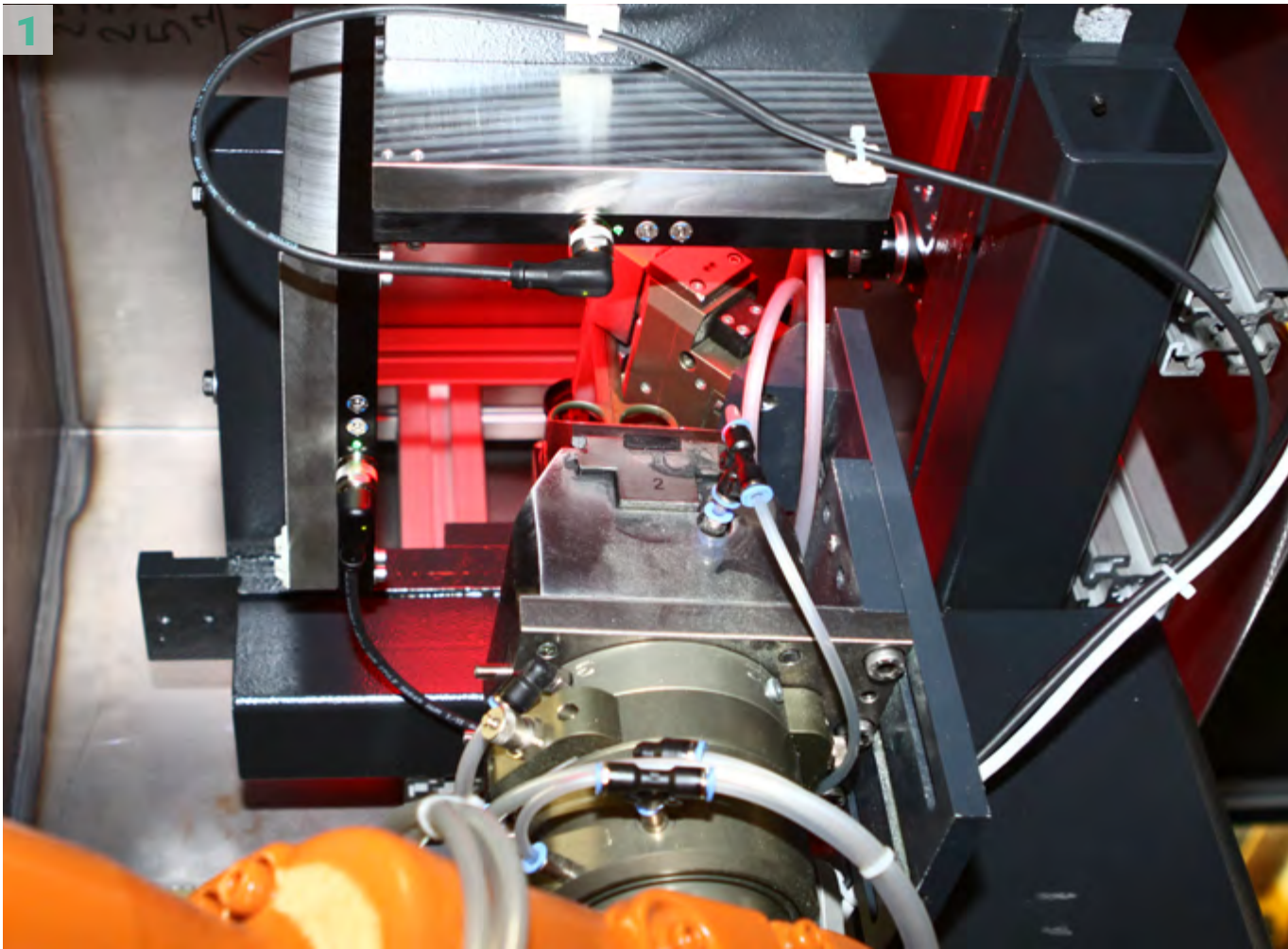
ACCESSORIES

Measuring technique

Development of standard measuring systems for various applications for the measurement and compensation of automated dimensions / contours

- measuring systems for automated contour identification and measuring of surgical articles
- compensation of tolerances of forged parts
- suitable for machines of CG1 and BG0/RV series and various robots
- robot automation and process connection with grinding or bending machines

[back to accessories](#)



Examples of use (pictures)

1. camera measuring system for measuring surgical scissors (picture 1)
2. laser measuring system for robotic cell for external measurement of surgical forceps parts (picture 2)
3. camera measuring system for robot cells for position recognition of tweezers (picture 3)
4. measuring system for automatic center measurement of surgical forceps with BG grinding machine (picture 4)

ACCESSORIES

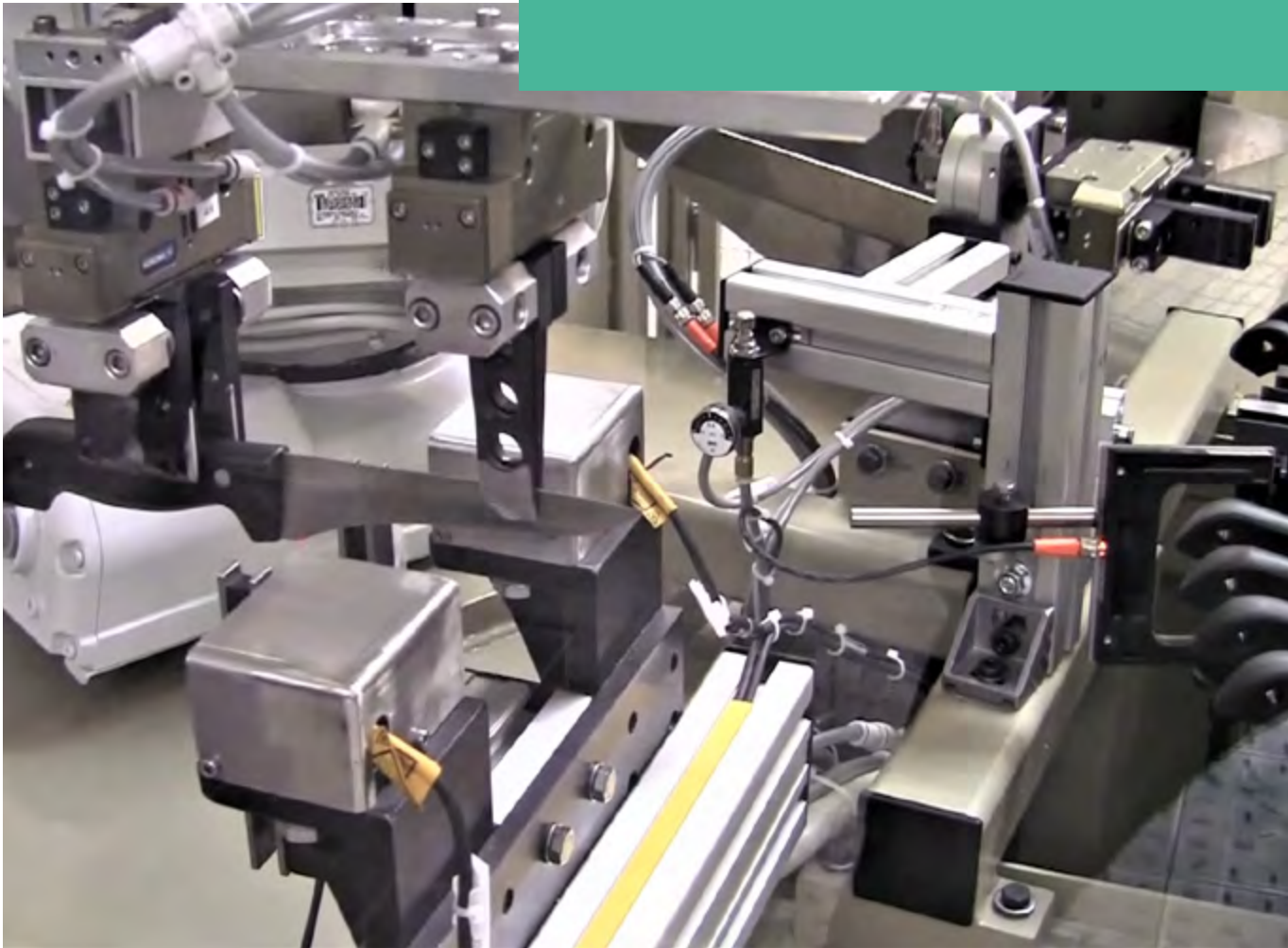
BEM measuring control

A BEM measuring system can be integrated into a Berger grinding machine with automatic grinding wheel infeed.

- measuring probes in different versions, e.g. AE Acoustic Emission or with diamond

- detection of the grinding wheel position for automated compensation of grinding wheel wear

The illustration below shows the measuring control type BEM in conjunction with a dressing device for knives with bolster.



Camera/laser measurement technology for sharpening

Measuring program for measuring the ground blade consisting of

- measurement of the twist in the gripper
- measurement of the distortion in the X-direction (from the handle to the tip)
- measurement of the cutting edge path (top view)
- further customer or user-specific solutions

ACCESSORIES

Abrasives

The Berger Gruppe produces and sells a wide range of grinding wheels.

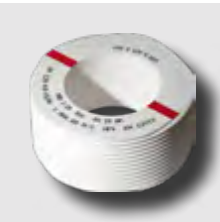


Grinding wheels



Grinding wheels are available in different different qualities and dimensions:

- magnesite-bonded grinding wheels
- epoxy-bonded grinding wheels
- polyester-bonded grinding wheels



These grinding wheels can be used on both Berger and comparable grinding and gralzing machines.



The Berger Gruppe also offers 2-zone grinding wheels and glazing wheels.

Company	_____
Contact	_____
E-Mail	_____
Phone/Fax	_____

WORKPIECE

Workpieces
Number of pieces
Lot size
Number of models
Pattern
Drawing

TREATMENT

☐ Contour grinding
☐ Back grinding
☐ Surface grinding
☐ Bevel grinding
☐ Hollow grinding
☐ Glazing

☐ Polishing
☐ Scalloped grinding
☐ Serration grinding
☐ Grinding of the bolster
☐ Grinding of the handle
☐ Sharpening

MACHINE

Autom. loading and unloading
Autonomy, capacity magazine
Cooling water system
Coolant flow monitoring
Solenoid valve for water start/stop
Chiller for coolant system
Coolant tank
Exhausting device
Connection
Enclosure
Protective fence
Voltage
Preference control
Robot preference
Start-up
Transportation
Warranty extension

☐ centralized ☐ decentralized

☐ single-shell ☐ double-shell

☐ centralized ☐ decentralized

☐ Andron ☐ Siemens ☐ Bosch
☐ ABB ☐ KUKA
☐ at the customer's