KUNZMANN®
FRÄSMASCHINEN

BA 1100
BA 1300
BA 1500

VERTICAL MACHINING CENTER

KUNZMANN-FRAESMASCHINEN.DE

SOLID AND POWERFUL

CONCEPT

- State-of-the art vertical machining center
- Modular C-frame construction for optimum customization
- Universal use in single part and batch production for small and medium lot sizes
- Spacious and easily accessible working area with long axes despite compact machine dimensions
- Low machine height despite long Z axis

DESIGN

- FEM-optimized cast components reduce machine weight and thus guarantee optimum stability
- Large clamping table with 6 transverse T-grooves and grooved surface (groove distance: 100 mm)
- Optimum stability and inherent rigidity still allow highly dynamic axis movements
- Large and clearance-free linear guideways and ball screws in all axes
- Standard equipment includes slat-band conveyor and 38-pocket tool changer

MACHINE ACCURACY

- Ground and clearance-free ball screws in all axes for high-precision positioning and repeatability
- Constant machine geometry due to thermo-symmetric machine construction
- Actively cooled main spindle and cooled main spindle drive
- Additional covers over cast components in the working area reduce temperature influence through coolant

ERGONOMICS

- Easily accessible and open working area due to wide front slide doors
- Direct table access by crane
- Movable and height-adjustable control panel and electronic handwheel facilitate machine setup and retooling
- Comfortable clamping table height; table can be closely driven to front doors for machine loading (see **fig. 1**)
- Smooth, inclined interior surfaces facilitate chip drain and cleaning
- Service-friendly arrangement of maintenance-relevant components

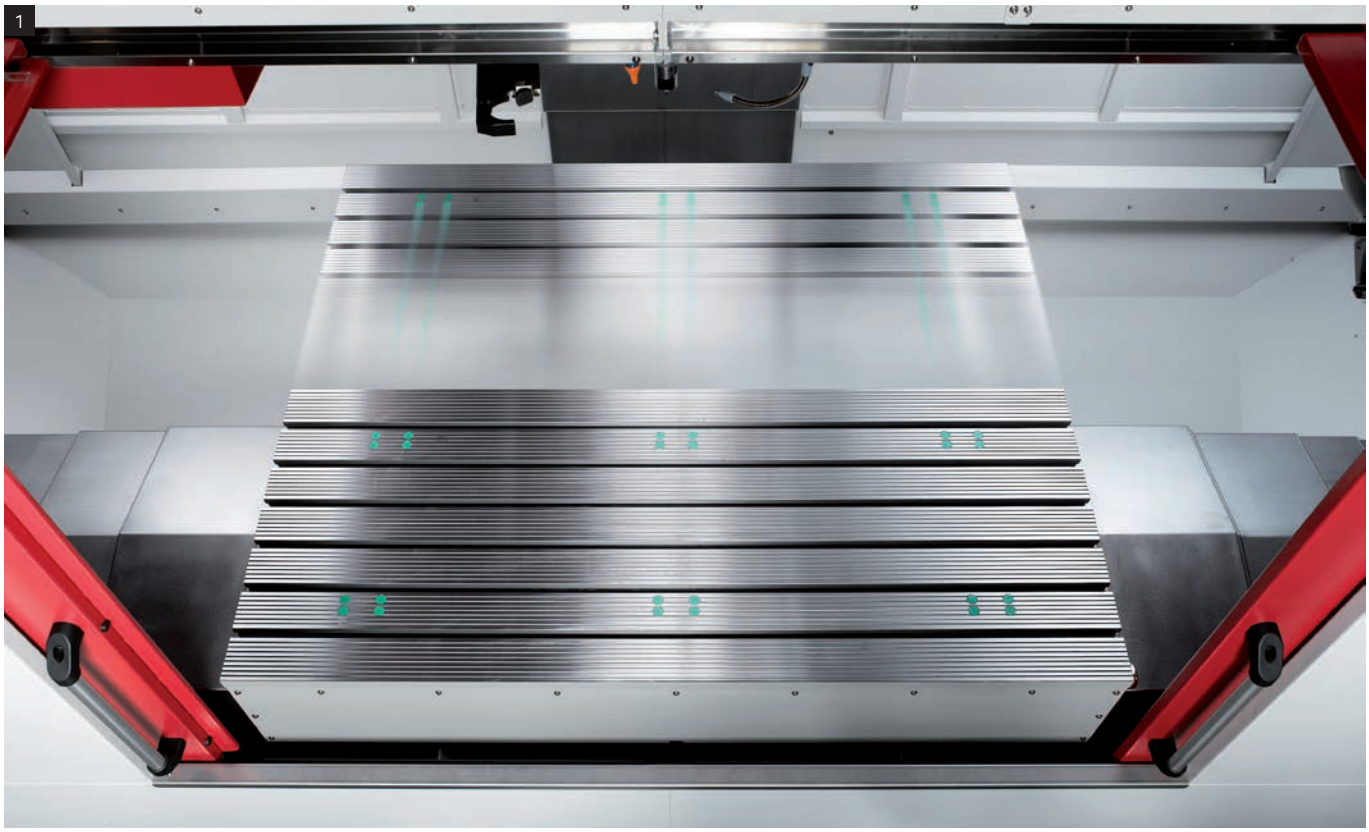
OPERATIONAL MODES

You may choose between three operational modes using a key switch. Your individual key management ensures that only designated operators use the machine in accordance with their qualification.

1. Automatic Mode
Full functionality of contouring control with closed doors

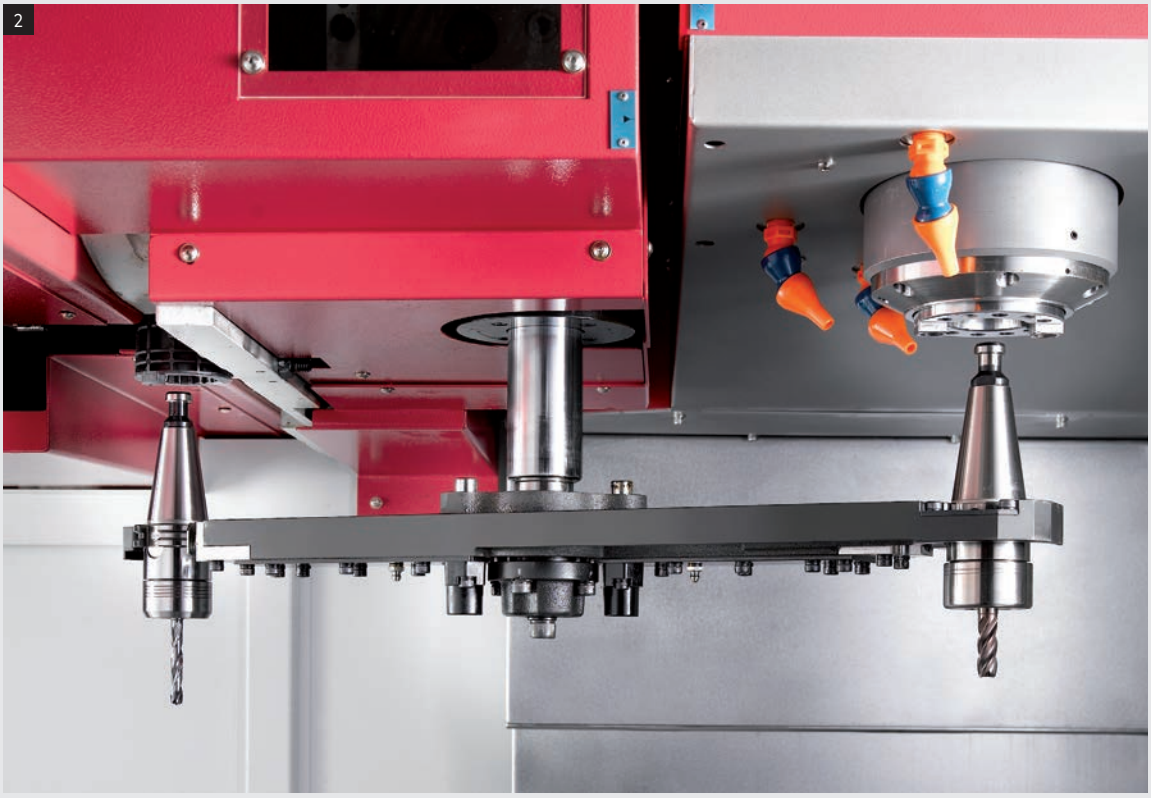
2. Setup Mode
Spindle activation and simultaneous driving of single axis

3. Intervening Mode
Spindle activation and simultaneous driving of various axes (interpolating motions) for intervening in the program run, e.g.



Direct access to working area – large 750-mm Y axis

Fast tool changer – machine with belt-driven spindle



VERSATILE AND CUSTOMER-ORIENTED

SPINDLE TYPES

▸ BELT-DRIVEN SPINDLE 8,000 OR 10,000 RPM

The standard machining center is equipped with a rugged belt-driven spindle with 8,000 rpm.

- Tool taper: SK 40

▸ IN-LINE SPINDLE 14,000 RPM

The directly driven spindle provides high torques and rotational speeds and is thus perfect for operations with large chip volumes at low to medium infeed depth and normal traversing speeds.

- Tool taper: SK 40 or HSK 63-A

▸ IN-LINE SPINDLE 18,000 RPM

The directly driven spindle provides high torques and rotational speeds and is thus perfect for operations with large chip volumes at low infeed depth and high traversing speeds.

- Recommended for 3D and finishing operations
- Tool taper: HSK 63-A

CHIP MANAGEMENT

▸ SLAT-BAND CONVEYOR

For long steel chips, balls of chips, and wool chips as well as short, dry chips at high chip volumes

▸ REGULATED CHIP BATH RINSING

Adjustable performance levels for optimum cleaning of the machine interior – The pump complies with the premium European energy efficiency class IE5.

▸ RINSING GUN

Coolant rinsing gun for cleaning work pieces and machine interior

▸ LATERAL ACCESS TO WORKING AREA

Additional service doors on both machine sides for cleaning and maintenance

CONVENIENCE FUNCTIONS

▸ MAINTENANCE TIME MONITORING

The machine control monitors and timely reports due maintenance services to avoid malfunctions and provide for a high machine availability.

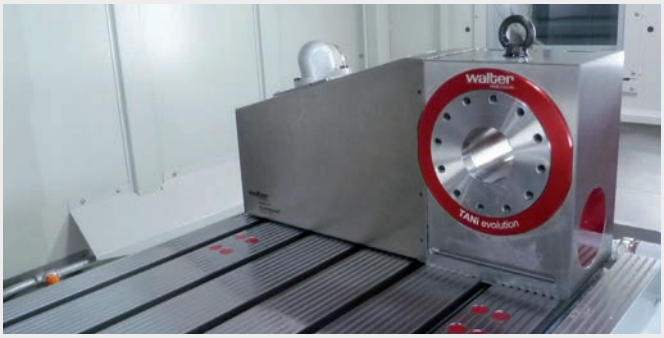
▸ AUTOMATIC FEED REDUCTION AFR

The control constantly monitors the spindle load during operation. If the set load is exceeded, AFR automatically and gradually adjusts the feed rate.

Advantages of AFR:

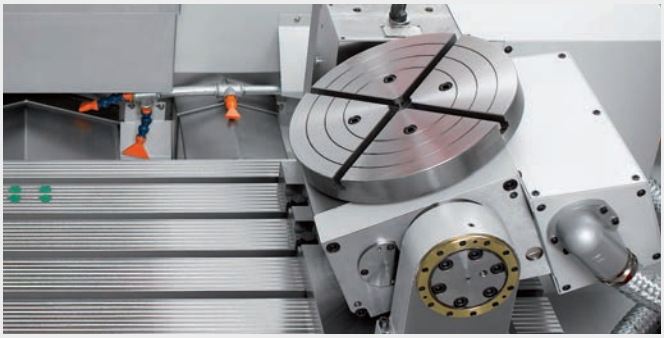
- Individual spindle load setting for each tool
- Tool monitoring protects spindle and machine mechanics
- Prevents damage to tool, work piece, and machine/spindle due to an overload

ADDITIONAL AXES



▸ CNC DIVIDING UNITS (A OR C AXIS) Fig. ↑

- Versatile dividing units of different types and sizes
- Free positioning on machine table
- Easy mounting and demounting by machine operator
- Rotational range: 360°



▸ CNC DIVIDING UNITS (A / C AXIS) Fig. ↑

With the swinging rotary table, the 3-axis machine can be turned into a 5-axis simultaneous machine.

- Positioning on right or left side of machine table
- Cable-free working area due to interface on machine table side
- Room for additional tools

HEIDENHAIN TNC7 BASIC

Compact control with 19" screen and intuitive control panel

HEIDENHAIN's TNC7 BASIC allows for an intuitive machine operation via clearly structured and context-sensitive user interfaces and softkeys for frequently used functions. The electronic handwheel HR 510 FS supports the operator in setting up and retooling the machine.

HEIDENHAIN TNC7

High-end control with large 24" screen, extensive keyboard, and integrated track ball

Ergonomic machine operation is guaranteed by the angled and rotatable control panel. The large screen makes the individual configuration of the HEIDENHAIN interface highly convenient. The electronic handwheel HR 510 FS supports the operator in setting up and retooling the machine.

OPTIONS

TOOL CHANGER (FIG. 1)

Fast double-arm tool changer with short tool change times

- **38 pockets (standard)**
- **60 pockets**

INTERNAL COOLING (FIG. 2)

- **Coolant through spindle – 25 bar**
- **Coolant through spindle – 40 bar**
- Tool-specific pressure setting of 25 or 40 bar
- Includes low-maintenance filter unit

SUCTION UNIT (FIG. 3)

- **Connection to central system**
- **Machine-specific low-maintenance filter system**

DIRECT PATH MEASURING

For constant and precise processing:

- **Absolute linear encoders, sealing-air protected in all linear axes**
- **Rotary encoder in the rotary axes**

TOUCH PROBE SYSTEMS (FIG. 4)

- **Workpiece measuring (infrared probe)**
- **Tool measuring and wear control**

AUTOMATION

- **Automatic slide doors**
  Opening and closing of front doors at program end via M function/button
- **Handling systems**
  Clamping systems and pallet changer

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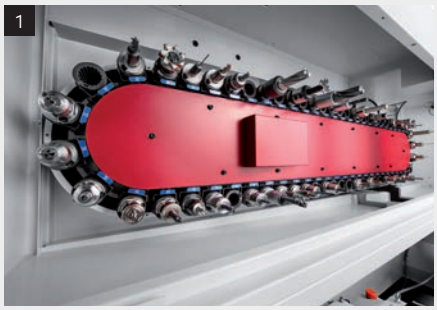

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COOLANT PROCESSING (FIG. 5)

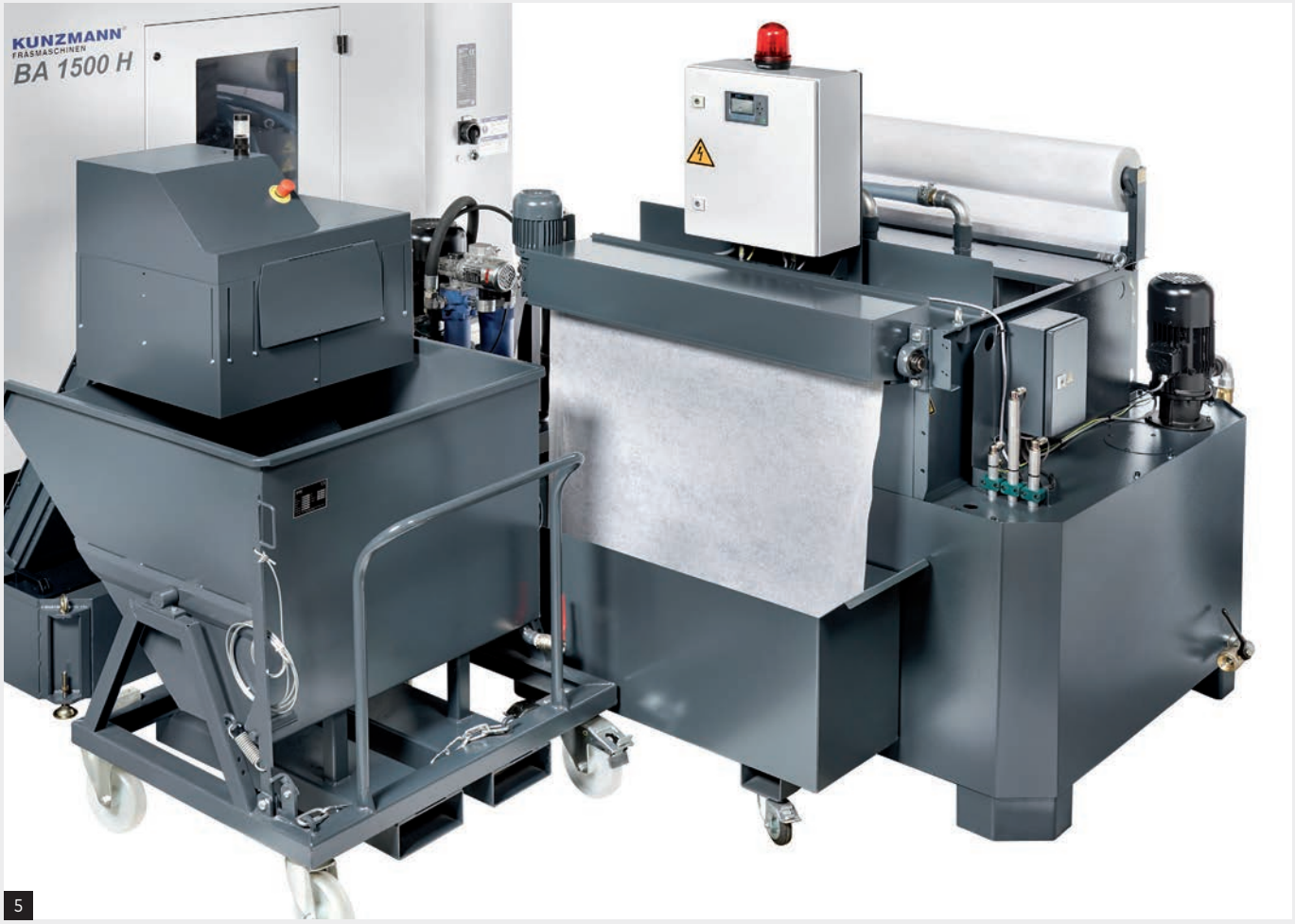
- **External band filter system with additional coolant capacity**
  Separation of gray water into particles (milling dust/chips/...) and pure coolant: The full flow filter increases coolant durability by exfiltrating dirt and chips and thus ensures machine availability.
- **Oil skimmer**

ADDITIONAL COOLING OPTIONS

- **External air cooling**
- **Minimum quantity lubrication system**

SUPPORT SERVICE

- **Hotline/KUNZMANN Remote Service**

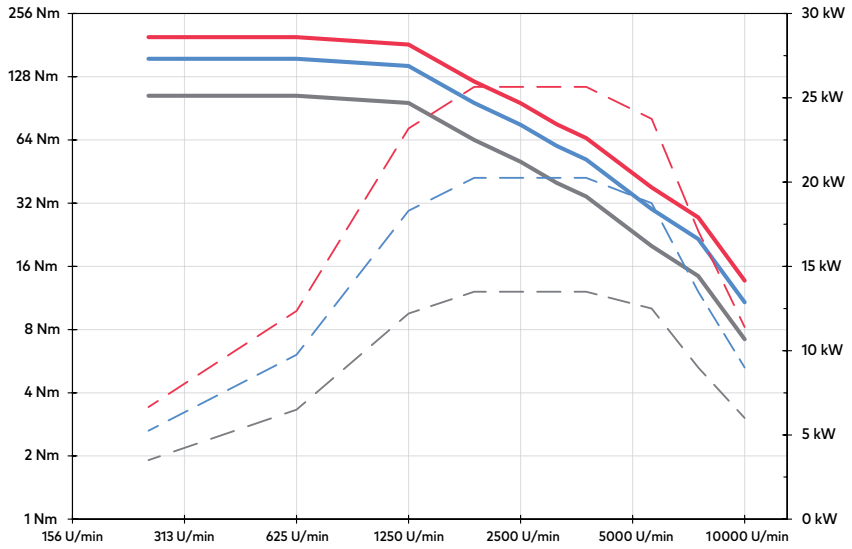


SPEED-TORQUE PERFORMANCE CHARTS

BELT-DRIVEN SPINDLE 8,000 AND 10,000 RPM

- **Performance**
  - **12 kW (100% of duty cycle)***
  - **23 kW (25% of duty cycle)***
- **Torque**
  - **96 Nm (100% of duty cycle)***
  - **182 Nm (25% of duty cycle)***

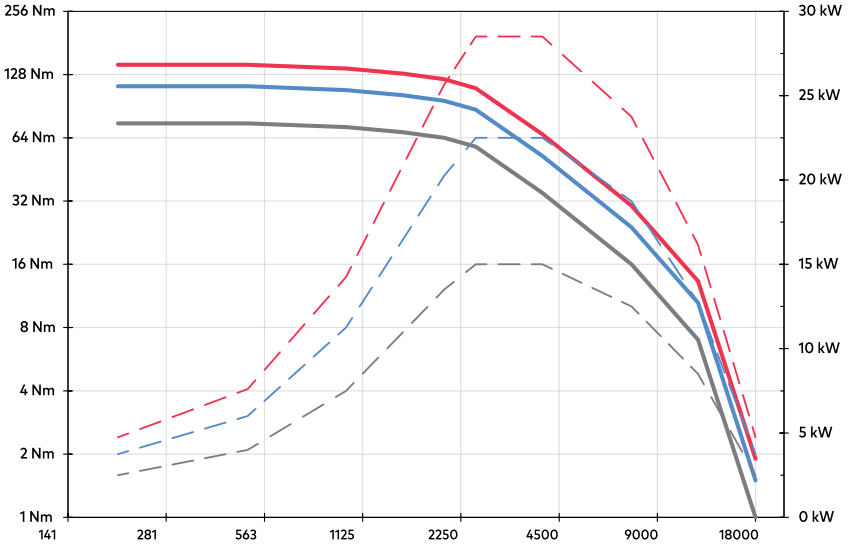
*(at 1,250 rpm)



IN-LINE SPINDLE 14,000 AND 18,000 RPM

- **Performance**
  - **13.5 kW (100% of duty cycle)***
  - **25.5 kW (25% of duty cycle)***
- **Torque**
  - **64 Nm (100% of duty cycle)***
  - **122 Nm (25% of duty cycle)***

*(at 2,000 rpm)



KUNZMANN STATEVIEWER PREMIUM

KUNZMANN StateViewer is our PC software solution for digitalization and interconnection of machines and factory equipment.

StateViewer functions:

Cockpit
- Display of current machine information, actual machine state, and process data
- Help request / messenger functions
- (Group) individual licensing of machine access

Information Desk
- All important information on a single click

Service Manager
- All-in-one: error messages, maintenance status, services shop, wear and spare parts
- Creation of service file and service request on a single click
- Automatic maintenance log for each machine (with manual entry option)

Offline Functions
- Organization and Information Desk for additional machines and equipment

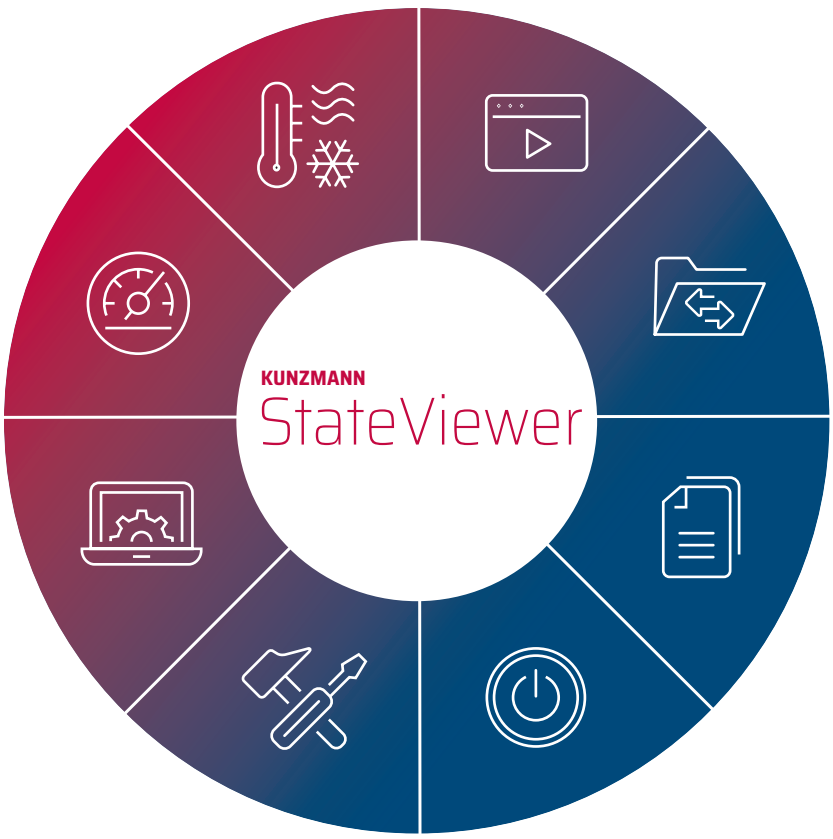
CONTROL MEDIA POINT CMP

All important machine documentation is digitally available in the control:

- Operating instructions
- Control manuals
- Electric circuit diagram
- Electric partlist / mechanic partlist
- KUNZMANN video tutorials

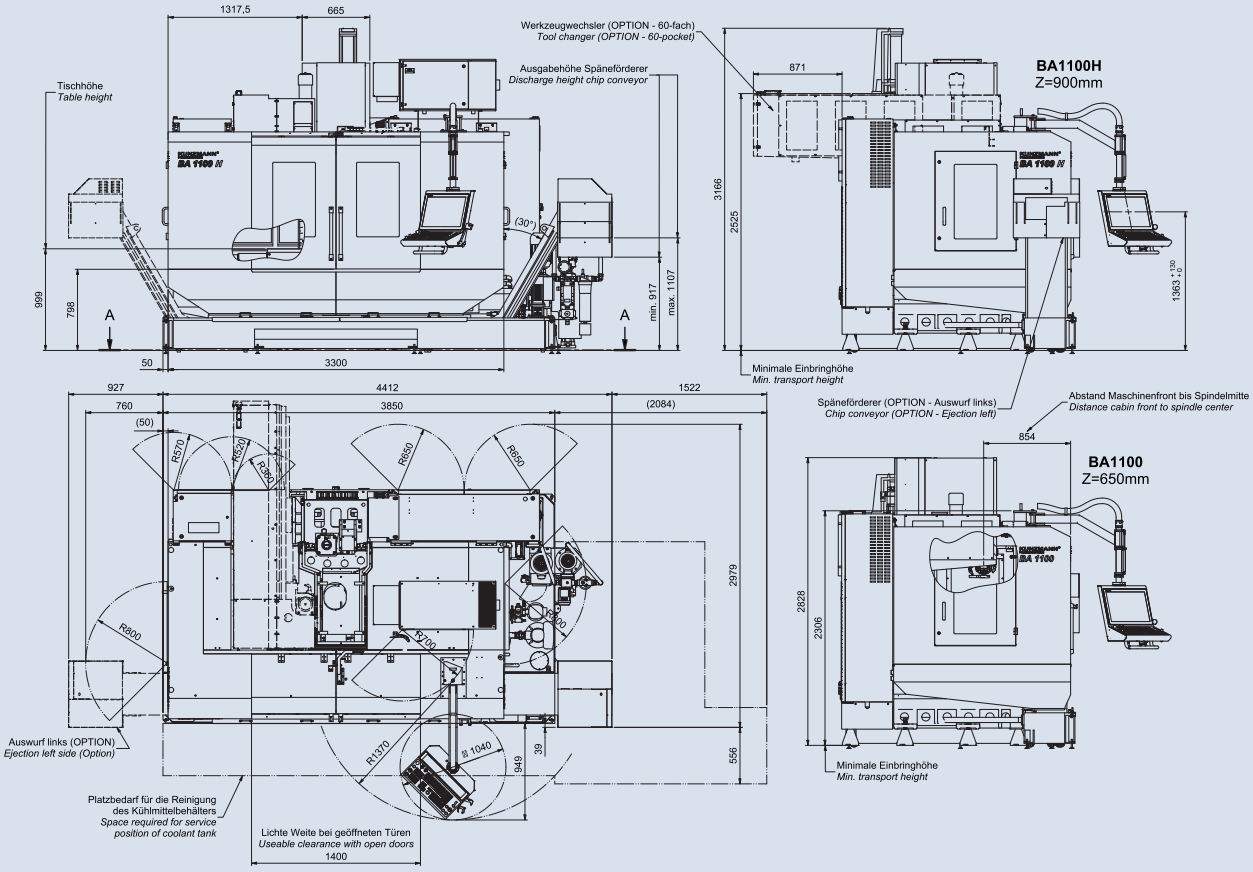
OPTIMIZED CONTOUR MILLING OCM

OCM facilitates trochoidal milling. This highly dynamic milling strategy is a procedure with considerably reduced time and tool wear.



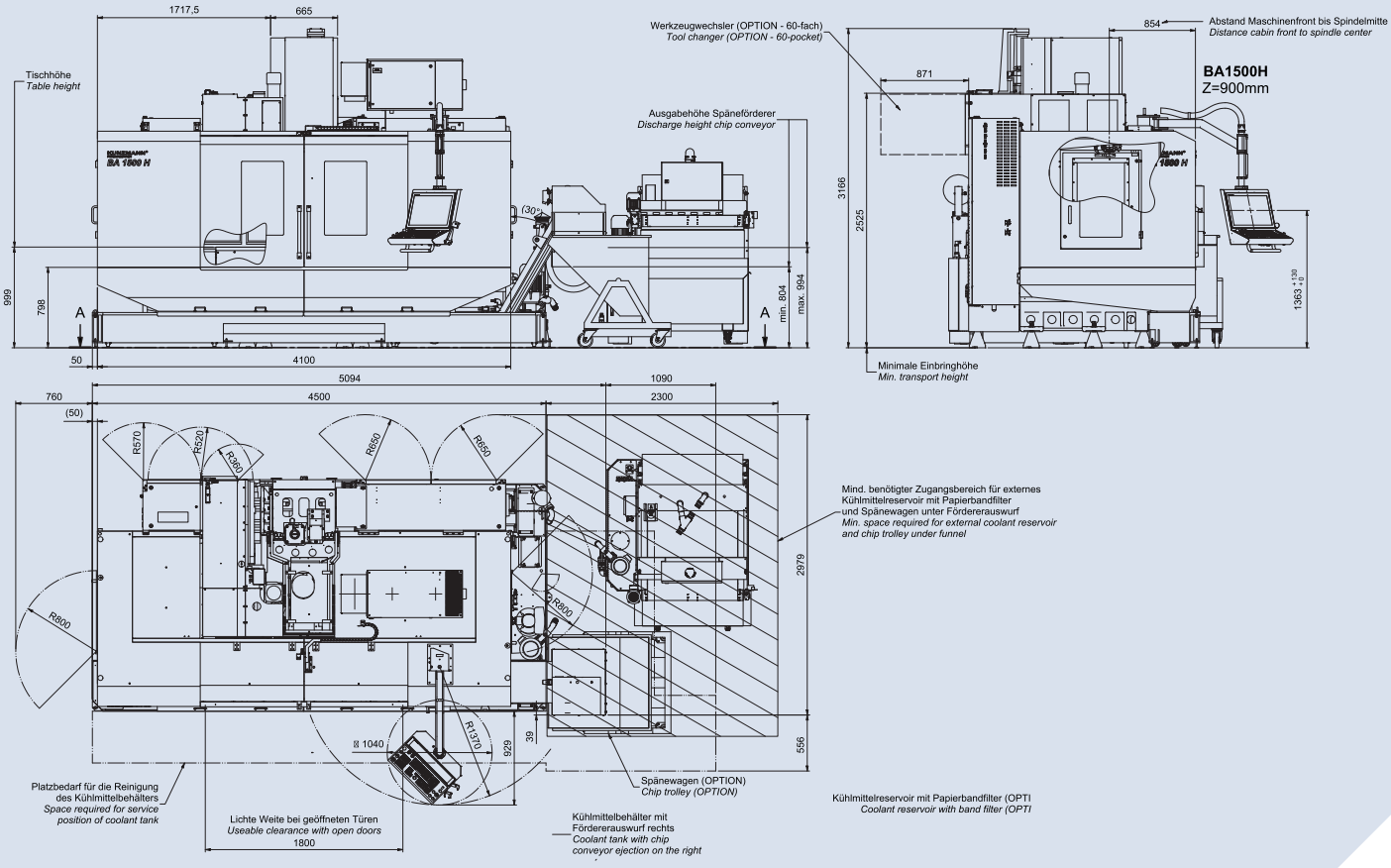
BA 1100

BA 1100 / BA 1100 H



BA 1300

BA 1300 / BA 1500



TECHNICAL DATA

STANDARD EQUIPMENT

- Vertical milling spindle SK 40 (belt-driven spindle)
- FEM-optimized cast construction in cross slide design
- Linear guideways
- Full protection cabin
- Pneumatic counterbalance adjustment
- Automatic central lubrication
- Tool taper cleaning by air through spindle
- Spindle cooling
- External cooling
- Automatic Feed Reduction AFR
- Clamping table
- 38-pocket tool changer
- Slat-band chip conveyor
- Coolant system
- Chip rinsing gun
- Rotatable und height-adjustable control panel

OPTIONS

- Tool taper HSK 63-A
- 60-pocket tool changer
- In-Line spindle
- 25- / 40-bar internal cooling
- Suction unit
- Paper band filter unit
- Touch probe systems
- Linear encoders
- Dividing head
- KUNZMANN StateViewer Premium

Visit our Website

Working range	longitudinal, X axis	1100 / 1300 / 1500 mm
	cross, Y axis	750 mm
	vertical, Z axis	650 / 900 mm
Main drive	**Milling head**	
*at 1,500 rpm	perf. at 100% of duty cycle*	12 kW
**at 2,000 rpm	perf. at 25% of duty cycle*	23 kW
	In-Line spindle	
	perf. at 100% of duty cycle**	13.5
	perf. at 25% of duty cycle**	25.5
Spindle speed	Belt-driven spindle	8,000 rpm
	Belt-driven spindle	10,000 rpm
	In-Line spindle	14,000 rpm
	In-Line spindle	18,000 rpm
Feed	X and Y axis	30 m/min
	Z axis	45 m/min
Tool taper	Belt-driven spindle 8,000 / 10,000	SK 40 DIN 69871
	In-Line spindle 14,000	SK 40 DIN 69871 HSK 63-A, DIN 69893-1
	In-Line spindle 18,000	HSK 63-A, DIN 69893-1
Tool changer	Pockets	38 / 60
	Change time	5 s
	Chip-to-chip time	10 s
Clamping table	BA 1100 (H)	1350x 700 mm
	BA 1300 / BA 1500 (H)	1750x 700 mm
Operating voltage	Voltage / frequency	400 V / 50 Hz
Controls	HEIDENHAIN	TNC7 basic 19"
	HEIDENHAIN	TNC7 24"
Power consumption	Depending on equipment	≥ 35 kVA
Installation weight	BA 1100 (H)	approx. 8,900 / 9,000 kg
	BA 1300 / BA 1500 (H)	approx. 9,500 kg

KUNZMANN® FRÄSMASCHINEN

KUNZMANN Maschinenbau GmbH
Tullastraße 29-31, 75196 Remchingen
Phone: +49 (0) 7232 / 36 74-0
Fax: +49 (0) 7232 / 36 74-74
E-mail: info@kunzmann-fraesmaschinen.de
www.kunzmann-fraesmaschinen.de

- Manufacturer of universal milling machines and vertical machining centers
- Expert technology consulting
- Customized application technology
- Individual programming trainings
- Fast and convenient after-sales support

Our strong partner

WEILER

Technical changes reserved – as of 7/2023, design: DEEGDESIGN