



# UNIVERTOR **V**

Multifunctional vertical turning center





As flexible as your manufacturing tasks -  
360° turning solutions from WEISSER

Just as chameleons can adapt to their environment, WEISSER's precision turning machines and multifunctional turning centers adapt to the customer's workpieces in the best possible way. In addition, WEISSER keeps an eye on the complete manufacturing process and offers the most economical solution for all requirements with its TURNKEY solutions.

# UNIVERTOR V

## Next generation turning center

The UNIVERTOR V offers outstanding manufacturing competence for diverse workpiece applications at highest productivity, continuous accuracy and finishing precision. In contrast to many other machine tools in the market, the UNIVERTOR V convinces with an outstanding performance and excellent precision in this machine category. Due to its high machine stability, the series is predestined for hard turning operations. Short cycle times enable high piece numbers and maximum economic efficiency. Therefore, WEISSER combines the manufacturing processes specified for the respective applications with the original WEISSER pick-up system and customized automation concepts to create a perfect, process-reliable system solution.



## Conceptual advantages UNIVERTOR V

- Left and right machine variants
- Machine columns with very good stiffness behavior and optimized damping properties due to remaining sand in the model
- Linear guides designed in high accuracy and preload classes in all machine axes
- All linear guides and feed drives arranged outside the working area for protection against chips
- Direct path measuring systems in all machining axes
- High dynamics of all machine axes
- Optimum chip fall to the bottom
- Self-built turning spindles with very good concentricity and axial runout accuracy values
- Easy installation and removal of the turning spindle in the event of repairs
- Main spindle A6 or A8 according to DIN 55026 possible
- Interface in tool turret VDI or BMT
- Simplified chuck change due to large working area opening and defined chuck change aid position
- Faster throughput times due to modular system
- Large work area and long traverse paths with compact machine external dimensions
- Optimum setup friendliness and short non-productive times thanks to good accessibility, storage options and compact axis geometry in conjunction with improved axis accelerations
- Additional storage space for tools and utensils directly on the machine

## Options

- Integrated measuring probe
- Driven tools (for drilling operations)
- 4-axis machining (by additional turret on cross slide unit)
- Additional internal grinding unit
- Additional external grinding unit
- Combination of turning and grinding in smallest space



 Modular design

**V1000**

Ø 800, L 450

**V600**

Ø 550, L 300

**V400**

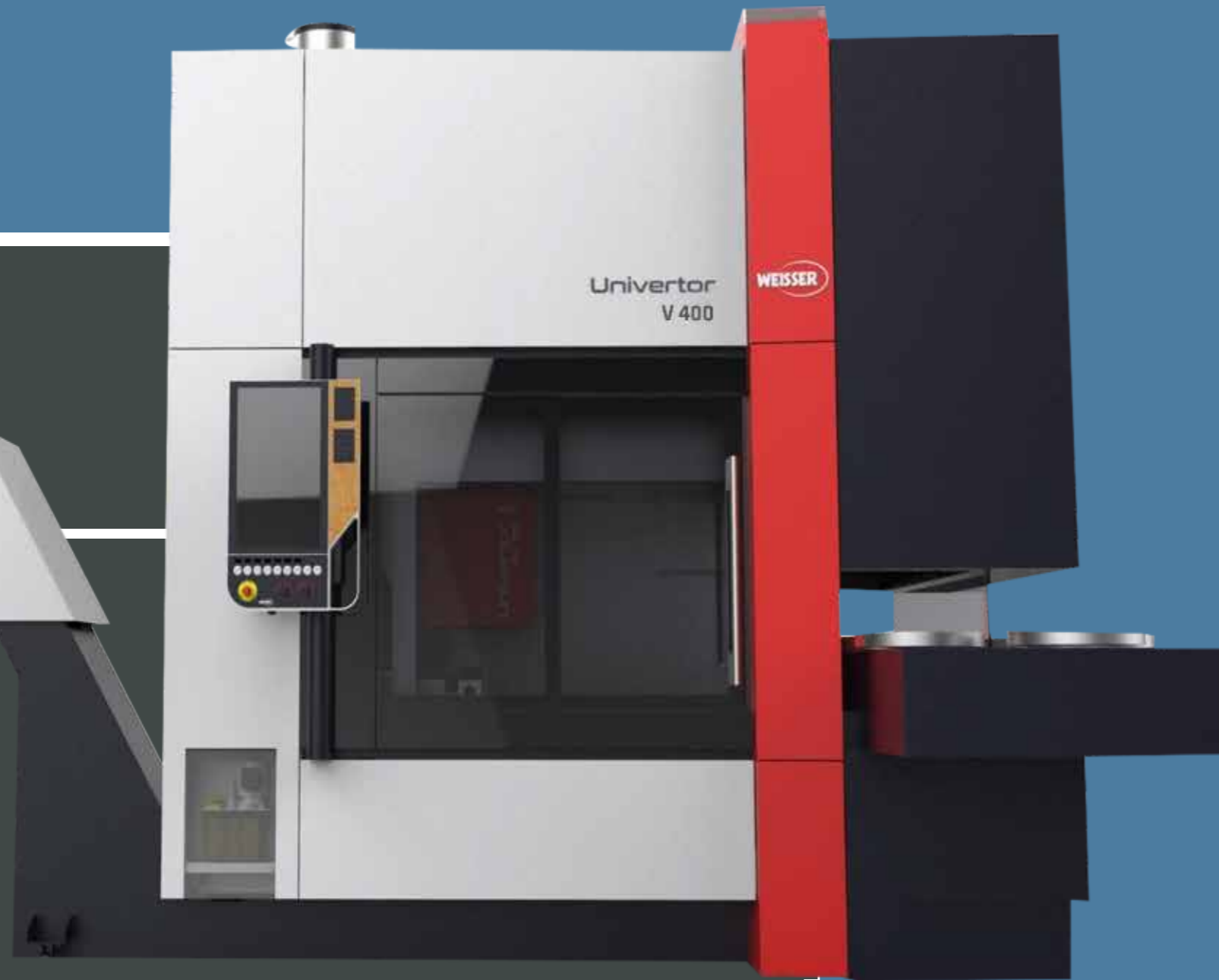
Ø 350, L 250

**V260**

Ø 200, L 150

**V160**

Ø 80, L 120

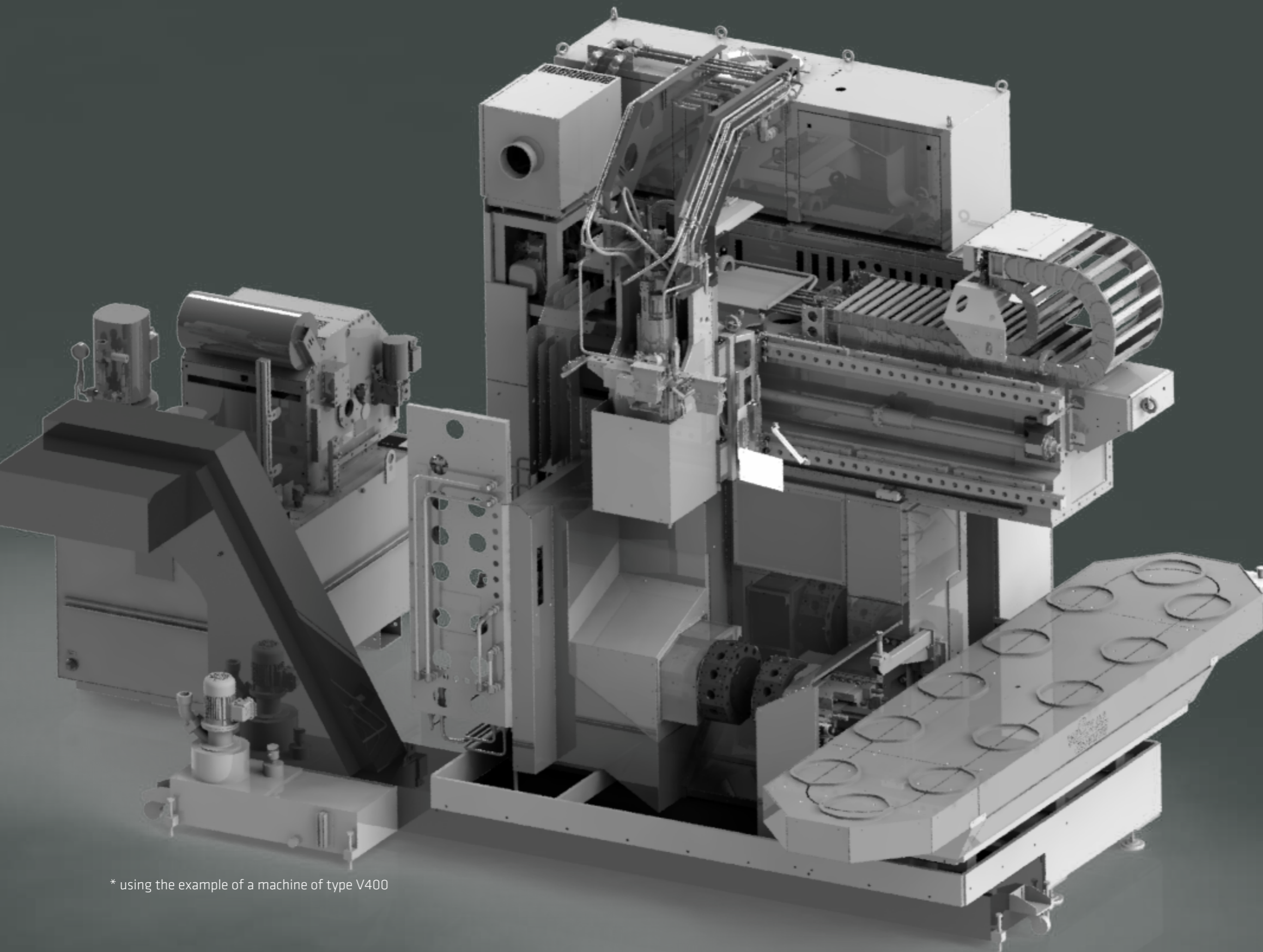


Workpiece diameter >

Workpiece length >



# Design V\*



## Base machine

One-piece machine structure made of high quality cast iron. Heavily ribbed machine base.

## Main spindle

Maintenance-free spindle motor in digital drive technology.

- Spindle bearing:  $\varnothing$ : 120 mm
- Spindle flange: A8 according DIN 55026

## Tool turret

- 8- / 12-position with electric drive
- Standard interface VDI or BMT
- Optional tool drive

## Variable automation interface

- E.g. for drag frame
- NC controlled
- 12 drag frames

## Technical extensions

- Possibility of 4-axis machining
- Grinding spindle (inside and outside)
- Multi-spindle drilling heads
- Lifting steel holder

\* using the example of a machine of type V400

# Application examples

Bringing the application advance to the road...

Differential housings, brake discs, pistons: components manufactured on WEISSER machines can be found in countless vehicles. Intelligent production processes require innovative technologies and reliable, highly accurate machining centers designed for high-performance use. Therefore, WEISSER's precision turning machines and multifunctional turning centers are built with the highest level of technical maturity and high accuracy. This gives customers the assurance that nothing stands in the way of their production of safety-relevant components.



# Automation

## Transport systems

The automation options with different transport systems (e.g. pallet conveyor, drag frame, friction roller conveyor, etc.) offer highly variable application possibilities. Depending on the design, they can be adapted to the shape and weight of the workpieces to be transported. A variety of linking tasks, maximum flexibility and easy maintenance are part of the countless advantages offered by these customized automation solutions.

## Robot automation

Robot automation offers a highly flexible loading and unloading method for your machine. Machining solutions with robot automation are configured according to the customer's requirements, so that related processes (e.g. measuring, signing, aligning) can also be operated in a space-saving manner and offer maximum availability.



# Technical Highlights

## Original WEISSER synchronous motor spindle with direct drive technology

More than 160 years of experience in development, design and own production of motor spindles carried out an unmatched competence potential, which is beneficial for WEISSER customers,

especially when it comes to:

- Process safety
- High technical availability
- Maximum productivity
- Excellent manufacturing quality

## Highest precision and accuracy

Measuring of all components and units relevant for the accuracy - despite high basic accuracies the individual components are „finely assembled“. As a result, mechanical deviations during assembly are minimized and wear is reduced. This ensures a high long-term stability of the complete machine system.





# Technologies

## 4-axes machining

Highly productive simultaneous machining in one machine with two powerful disk turrets (4-axes). Intelligent technology processes and the combination of different machining steps offer high savings potential. Working with two tools simultaneously shortens the machining times of the workpiece and reduces the cost per part.

## Rotational turning

With the rotation turning process developed and patented by WEISSER, precisely machined surfaces can be generated with twist-free finishing precision and thus replace the expensive grinding operations. The simultaneous rotation of workpiece and tool cutting edge reduces the machining time by up to 77 % compared with hard turning.



# Technologies

## Hard turning

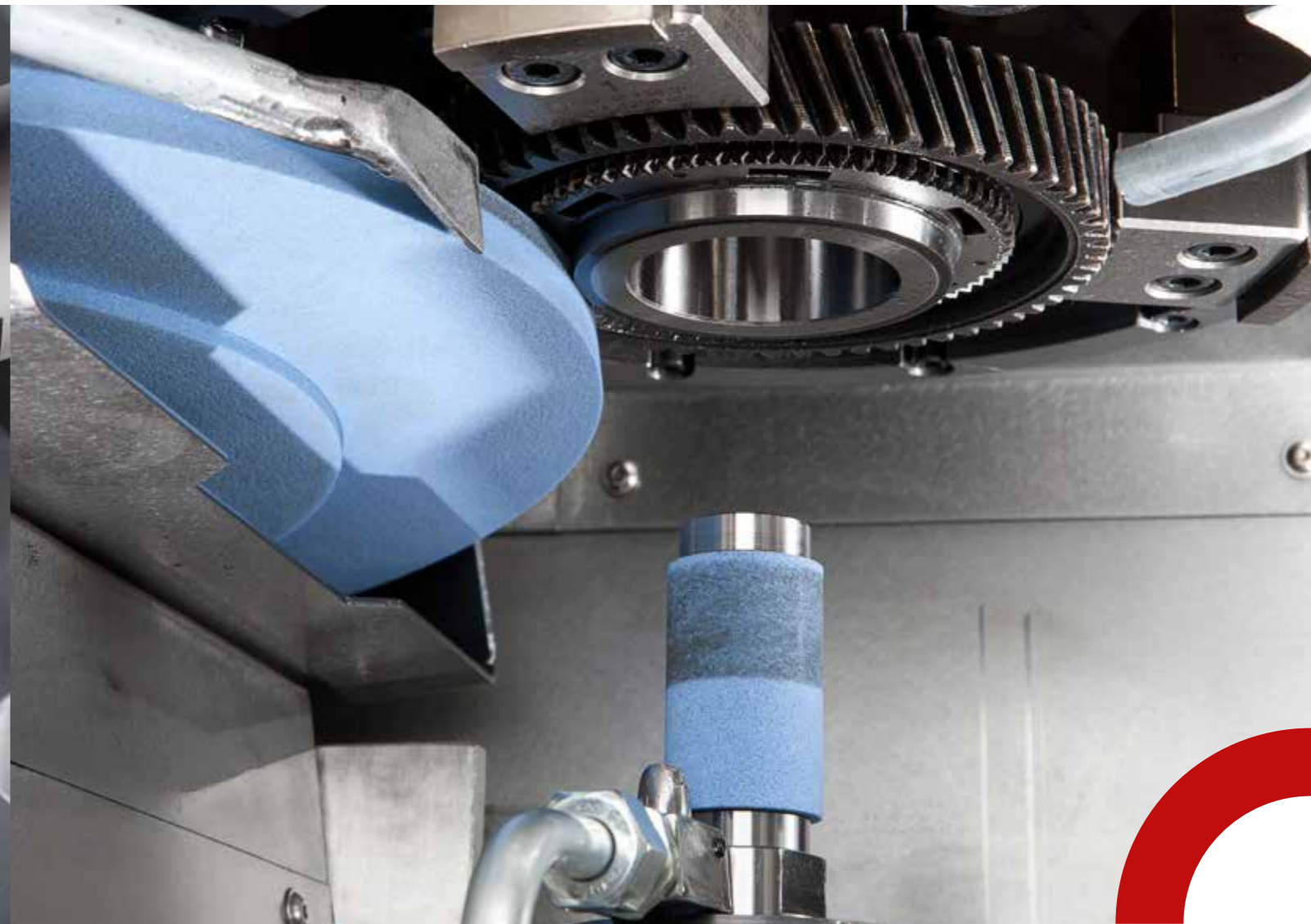
Hard turning describes the turning of steel with a hardness of more than 45 HRC. It is an efficient alternative for grinding hardened workpieces. The advantages of this process are shorter cycle, set-up and tooling times as well as the relatively lower investment costs and the options of wet and dry machining.

## Out-of-round turning

3 times capacity with WEISSER HOT system for shorter piece times and lower piece costs. The technology enables the highly productive machining of a wide range of workpieces, such as pistons for combustion engines, camshafts, polygonal profiles or the production of polygon shapes (shaft-hub connections) with process-oriented perfection.

## Internal / external grinding

Machining with the technology of external and internal cylindrical grinding in one machine is exemplary for perfect hard fine machining of rotationally symmetrical workpieces. In order to achieve optimum cycle times, this machining technology can be combined with hard turning or rotational turning processes.



### Intelligent technology processes and complete Turnkey systems

WEISSER machining centers with integrated technology concepts are the solution to demands for shorter process times, productivity and process safety. Shorter cycle times and the associated lower unit costs are decisive competitive factors, especially when manufacturing high quantities. WEISSER turnkey solutions not only score at high quantities but also at small quantities with high set-up flexibility. We pass this competitive advantage on to our customers. With the

experience of more than 160 years of development, construction and realization of customized machines, our engineers develop today the most economical solution upon your requirements. The development of the complete production process provides you full cost transparency and helps you to solve complex tasks in an optimal way. With three steps to success. WEISSER Turnkey.

Typical, machine-specific workpieces with cycle time and technical challenges.

#### OFFER PHASE AND PLANNING PHASE

- Process requirements
- Production boundary conditions
- Machine requirements & machine type
- Workpiece clamping / Tools
- MFU features
- Terms of acceptance
- Delivery instructions
- Processing strategy
- Inspection of critical MFU characteristics
- Number of fixings
- Number of spindles
- Design of the machine system
- Workpiece loading and automation
- Clamping device
- Tools

#### IMPLEMENTATION PHASE

- Construction and integration of the workpiece-specific
  - Clamping fixtures
  - Tools
  - Automation
- Approval process of the tooling plan, layout plan, etc.
- The verification procedure of the process capability through
  - the preliminary acceptance at WEISSER
  - the final acceptance at the customer

#### TARGET PHASE

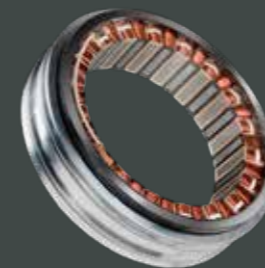
- Assistance with production startup and support
- Training in operation, programming and maintenance
- Service e.g. with preventive maintenance, spare part support, qualified service personnel, etc.



Differential housing

##### Machining in several clamping positions

- Outside and inside turning operations
- Various drilling processes
- Machining of the ball possible with special tools
- Cycle time: approx. 120 seconds



Stator housing

##### Machining of a stator carrier in two clamps

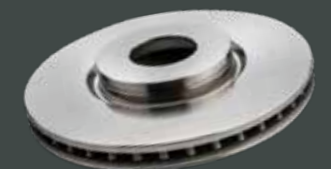
- Two independent working areas for OP10 and OP20
- Two motor spindles
- Measuring probe
- Individual clamping devices
- Cycle time: 80 to 90 seconds depending on the processing time



Axle drive wheel

##### Complete machining with soft turning, drilling and tapping

- Two independent working areas for OP10 and OP20
- Two motor spindles
- Wet machining with coolant
- Drill breakage control
- Special clamping devices
- Cycle time: approx. 120 seconds



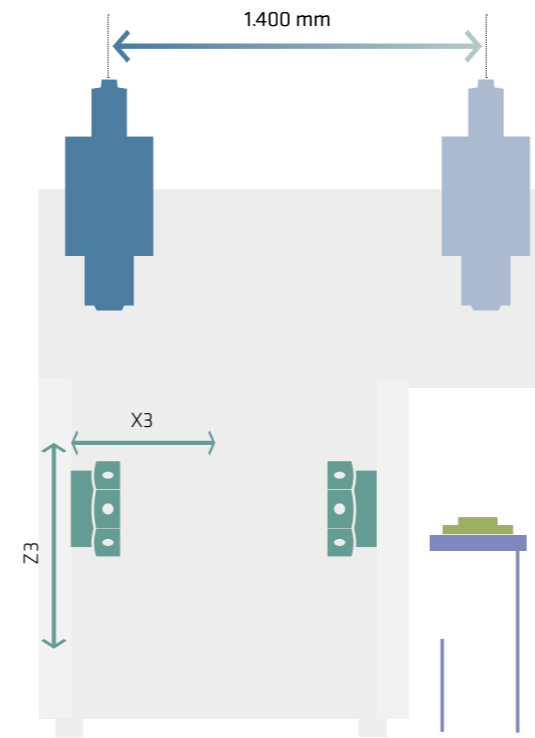
Brake disc

##### Machining of brake discs in four clamping positions on two machines

- Two pending spindles
- Units driven for bore machining
- Dry machining
- Ventilated, unventilated and lightweight brake discs
- Cycle time: 45-50 seconds



# Technical Data V400



Max. Turning diameter	mm	350	Tool turret		
Max. Chuck diameter	mm	400	Number of tools		8 / 12
Max. Feed force X/Z (100 % CDF)	kN	8 / 10	Tool holder	DIN ISO 10889 / (69880)	Ø 40 / 50
Working stroke X1-axis	mm	1.400 / 1.850	Tool flight circle	mm	880
Working stroke Z1-axis	mm	400	Max. Speed	rpm	6.000 torque drive / 12.000 speed drive
Working stroke X3-axis	mm	240	Max. Drive power	kW	28,5 torque drive / 23,5 speed drive
Working stroke Z3-axis	mm	210	Max. Torque (10% CDF)	Nm	85 torque drive / 56 speed drive
Max. Process speed X/Z	m/min	75 / 30	Swivel range B-axis	Degree	-
Ball screw diameter X1/Z1	mm	50 / 40	Dimensions		
Main spindle			Dimensions basic machine (LxWxH)	mm	3.100 x 2.500 x 3.000
Spindle flange	DIN55026	A6 / (A8)	Weight	kg	approx. 11.000
Spindle bearing diameter	mm	120			
Drive power 100 % CDF	kW	29,1 / (35,1)			
Drive power 40 % CDF	kW	30 / (40)			
Rated speed	rpm	1.050 / (780)			
Max. Speed	rpm	4.500 / (3.500)			
Torque 100 % CDF	Nm	265 / (430)			
Torque 40 % CDF	Nm	340 / (610)			



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