

UNIVERTOR AM

Multifunctional vertical turning center



UNIVERTOR AM Series

Multifunctional UNIVERTOR AM precision turning centers are one of the best machine tools of their class worldwide in terms of their compact design, stability and reliability.

Whether medium or large series, whether light or heavy, whether aluminium, cast iron, steel or titanium, whether dry or wet machining - regardless of the production task set, WEISSER covers a wide range of applications with the UNIVERTOR AM series.

The UNIVERTOR AM series offers outstanding manufacturing competence for various workpiece applications at highest productivity, continuous accuracy and finishing precision.

In contrast to many other machine tools on the market, the UNIVERTOR AM series convinces by an outstanding performance and excellent precision within

this machine category. Due to its high machine stability, the series is predestined for hard turning. Short cycle time allow high quantities and a maximum of economic efficiency.

High production quality is achieved through sophisticated complete machining. Therefore, WEISSER combines the manufacturing processes specified for the respective applications with the original WEISSER Pick-Up system (patented) and customer-specific automation concepts to a perfect, process-reliable system solution.

Conceptional advantages:

- Highly ribbed monobloc machine base
- Extremely high stiffness and thermal stability
- Long travels despite compact external machine dimensions
- Direct drives / Guide ways outside the work area
- Precision linear guide ways in horizontal and vertical direction
- Maintenance-free three-phase servo drives
- High rapid traverse speeds



Machine models

UNIVERTOR AM-1

The modular designed single-spindle vertical Pick-Up precision turning center UNIVERTOR AM-1 can be flexibly adapted to the machining of different batch sizes and technologies.



UNIVERTOR AM-2

Two-spindle Pick-Up precision turning center with its two independent work areas allows machining in the first and second clamping or synchronous production in one clamping.



Product Competence

UNIVERTOR AM-1 / AM-2

High-precision, lowest cost per piece and multifunctional production. The modular designed vertical precision turning centers of the UNIVERTOR AM are highly flexible and predestined for the complete machining of different batch sizes at lowest piece costs. Technology integration of turning, hard turning, grinding, drilling, milling in one working area enable high workpiece quality, contour accuracy and surface quality. In addition, set-up, tooling, programming and idle times are significantly reduced. Highly productive simultaneous machining in one machine with up to two powerful disk turrets achieve intelligent technological processes.

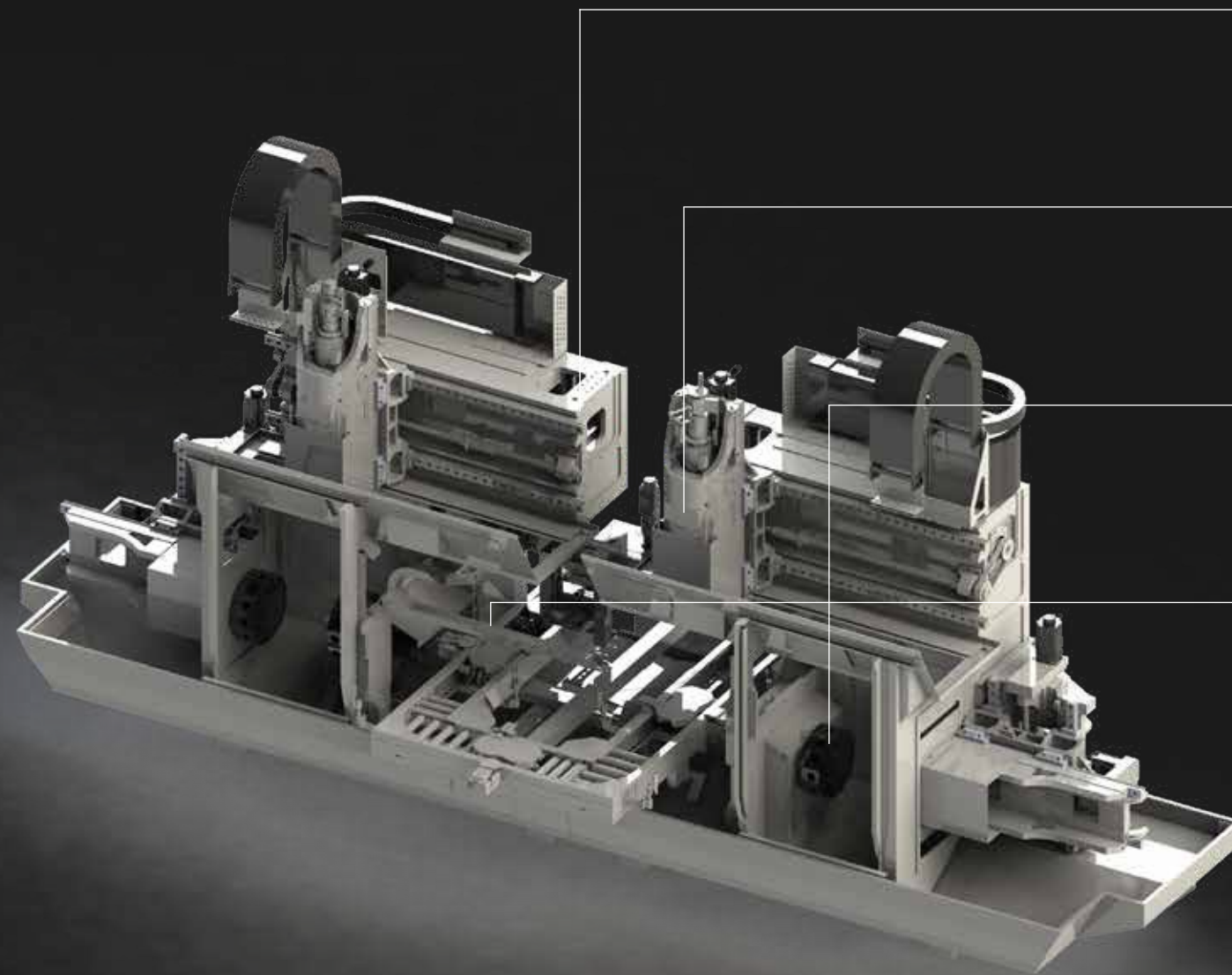


UNIVERTOR AM-TM

As an extension to the UNIVERTOR AM series the AM-TM is a single-spindle Pick-Up precision turning center with milling spindle and disc turret. An excellent accessibility to the clamping devices, tools and the Pick-Up position as well as a good view into the working area for process observation make this machine a multi-axis all-rounder.



Conceptual design



BASIC MACHINE

One-piece machine assembly made of high-quality grey cast iron heavy ribbed machine base.

MAIN SPINDLE

Maintenance-free spindle motor with digital drive technology.

- Spindle bearing \varnothing : 4,72 inch / 120 mm
- Spindle flange: A8 according to DIN 55026

TOOL TURRET

- 12-fold with electric drive
- Standard interface VDI
- Optional tool drive

INTEGRATED PART HANDLING

- NC-controlled X- and Z-axis
- pneumatically operated parallel gripper
- Turning gripper 0° - 180

TECHNICAL EXTENSIONS

- Possibility of 4-axes machining
- Grinding spindle
- Multi-spindle drill heads
- Lift-off steel holder

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.



Further automation solutions from WEISSER:

- Original WEISSER Pick-Up system
- Shuttle solutions
- Integrated part handling
- Loading cell

Technical Highlights

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.



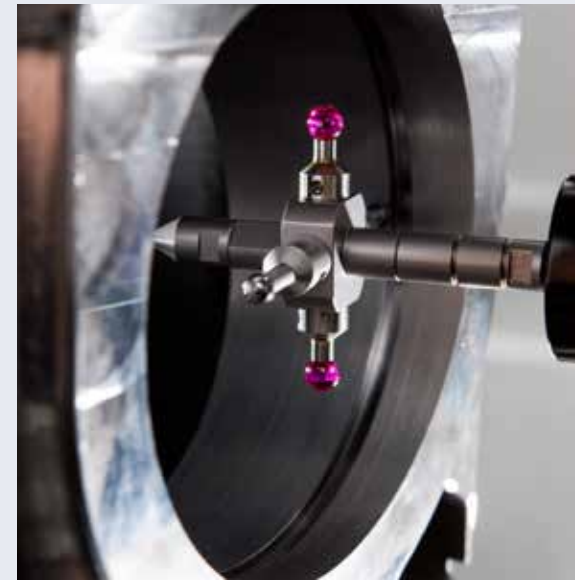
Out-of-round turning

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.



Mechanical zero

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.



WEISSER synchronous motor spindle

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



Technologies

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.



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.



Internal/external grinding

The complete machining from the combined processes of hard turning, internal and external cylindrical grinding in one machine is exemplary for perfect hard fine machining of rotationally symmetrical workpieces.



Gear cutting (hobbing)

Integration of a hobbing module, being the only method to manufacture internal and external gears with different helix angles and directions in a single machining center. This manufacturing process combines hobbing and slotting by continuous hobbing with maximum feed rate.



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 custo-

mers. 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 four steps to success. WEISSER Turnkey.



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.

WEISSER IoT Solutions

Digitization / Industry 4.0

Intelligence, efficiency, individuality, speed, connectivity - these are the central statements associated with Industry 4.0. Thanks to WEISSER's broad portfolio of Industry 4.0 solutions your machine can be connected to the digital world. By reducing downtimes, you can increase the efficiency of your machine, keep it up to date by constant software updates and maintain the quality of your workpieces by keeping the machine always updated and the parameters in standard.



WEISSER Cloud CorE

Through our cloud platform you can access your machine from anywhere. By interlinking the entire assembly line, you can optimally plan your production and derive organizational measures. And should a problem occurs, your WEISSER service partner can be contacted directly. Our aim is to carry out a preventive maintenance (Predictive Maintenance PdM), so that you can recognize in advance when refilling is required and detect a leak at an early stage due to a non-continuous decrease of operating materials.



Workpieces

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



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



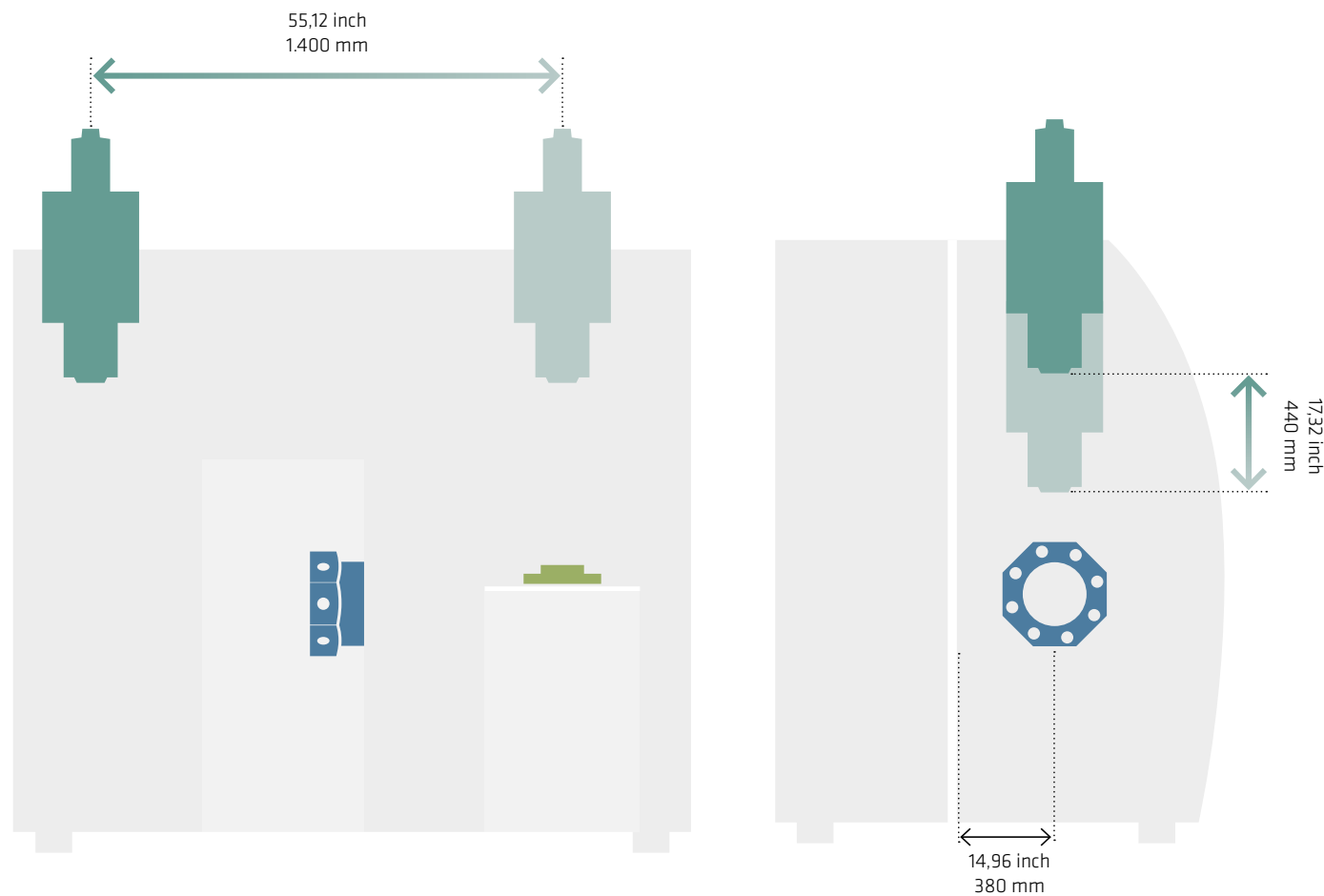
Brake disc

Machining of brake discs in four clamping positions on two machines

- Counter spindle or two pending spindles
- NC Pick-Up double turning unit
- Units driven for bore machining
- Dry machining
- Ventilated, unventilated and lightweight brake discs
- Cycle time: 45-50 seconds

Technical data

UNIVERTOR AM 1L



Technical data

		AM-1	AM-2
Max. turning diameter	inch / mm	14,17 / 360	14,17 / 360
Max. chuck diameter	inch / mm	16,14 / 410	16,14 / 410
Max. Feed force X/Z (40 % CDF)	kN	8 / 10	8 / 10
Working stroke X/Z-axis	inch mm	55,12 / 17,32 1.400 / 440	55,12 / 17,32 1.400 / 440
Max. Process speed X/Z	ipm m/min	2.362,20 / 1.181,10 60 / 30	2.362,20 / 1.181,10 60 / 30
Ball screw diameter X1/Z1	inch mm	1,57 / 1,57 40 / 40	1,57 / 1,57 40 / 40
Number of tools		12	12
Tool holder		VDI40 / 50 / Capto	VDI40 / 50 / Capto
Tool flight circle	inch / mm	29,13 / 740	29,13 / 740

Main spindle

Spindle bearing diameter	inch / mm	4,72 / 120	4,72 / 120
Spindle flange	DIN55026	A8	A8
Drive power 100 % CDF	kW	35,1	35,1
Drive power 40 % CDF	kW	40	40
Rated speed	rpm	780	780
Max. Speed	rpm	3.500	3.500
Torque 100 % CDF	Nm	430	430
Torque 40 % CDF	Nm	610	610

Internal grinding spindle

Drive power 100 % / 60% CDF	kW	15 / 18	15 / 18
Torque 100 % / 60% CDF	Nm	4,7 / 5,7	4,7 / 5,7
Spindle bearing diameter	inch / mm	1,77 / 45	1,77 / 45
Max. Speed	rpm	45.000	45.000
Rated speed	rpm	30.000	30.000
Tool holder		D28 / 43	D28 / 43

External grinding

Drive power 100 % / 60% CDF	kW	11,5 / 14	11,5 / 14
Torque 100 % / 60% CDF	Nm	39,7 / 49	39,7 / 49
Spindle bearing diameter	inch / mm	3,15 / 80	3,15 / 80
Max. Speed	rpm	6.000	6.000
Rated speed	rpm	2.700	2.700
Tool holder		Mounting cole Ø 73	Mounting cole Ø 73

Dimensions

Dimensions basic machine (LxWxH)	inch mm	133,86 x 101,85 x 125,59 3.400 x 2.587 x 3.190	212,60 x 101,85 x 125,59 5.400 x 2.587 x 3.190
Weight	lbs / kg	24.250,85 / 11.000	46.297,08 / 21.000



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