

HELLER



4-axis
machining centres

H

H series

Tailor-made off the peg

| | |
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The perfect 4-axis machining centre must be configurable to your needs, produce reliably even under maximum loads and offer a fair price/performance ratio. Our solution: HELLER H series 4-axis machining centres. Reliable components that have been tried and tested in series production over many years, combined with high dynamics, ensure robust processes – even when pushed to the limit, 24/7 in 3-shift operation.



+

Key facts

- _horizontal 4-axis machining centres with pallet changer as standard
- _designed for high process stability and highly resilient right to the limits
- _top performance and short non-productive times for maximum productivity
- _high availability and longevity thanks to robust, reliable technology
- _24/7 series production, stand-alone or integrated into flexible manufacturing systems
- _short chip-to-chip times thanks to a fast tool changer and high axis dynamics
- _easy to automate with workpiece or pallet automation
- _horizontal spindle for optimum chip fall
- _highly standardised and individually configurable
- _suitable for a wide range of parts and materials
- _ideal for series production of small to medium batch sizes
- _wide range of sizes to suit almost any workpiece
- _broad range of powerful machining units with specific tool shank sizes

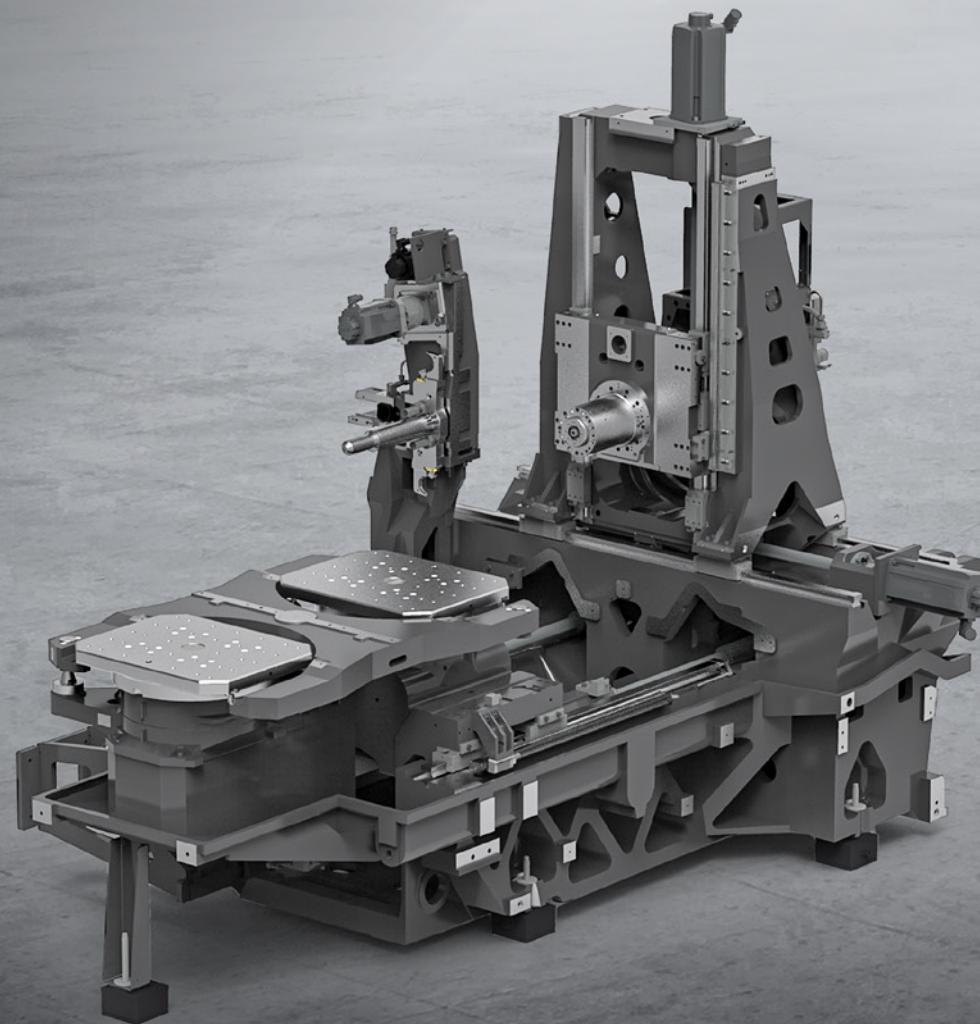
More information at: www.heller.biz/en/h



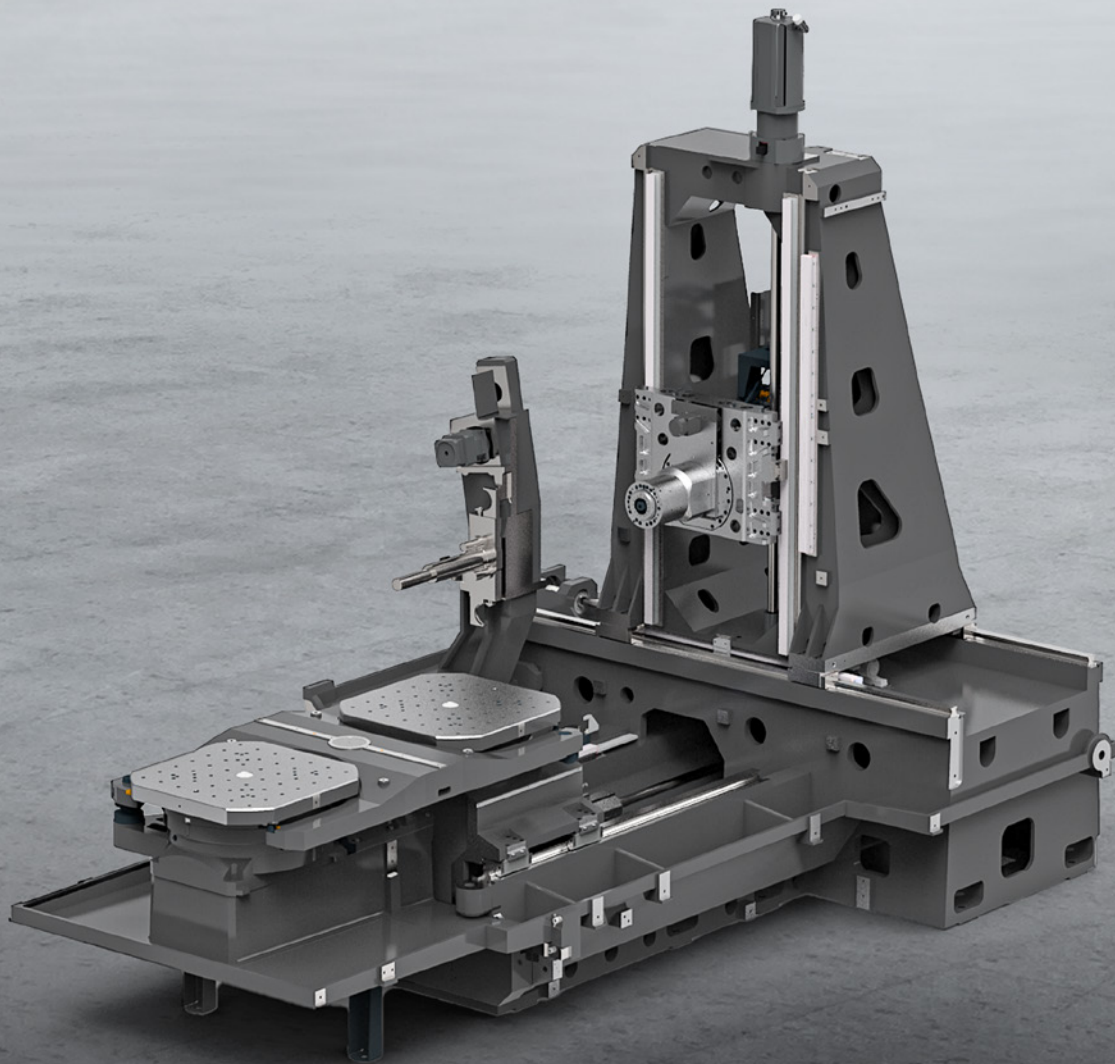
Machine concept

The foundation of productivity

The rigid design and topology-optimised structural components provide the foundation for the high cutting performance and accuracy of our H series 4 axis machining centres. So you get the best quality – and high productivity.



Size H 4000



Size H 8000

Basic structure

- _ high stability and damping in the force flow through topology-optimised cast iron structural components
- _ thermo-symmetric design and optimum distribution of forces
- _ wide range of rugged machining units
- _ wide choice of tool magazines, in chain-type or rack-type design
- _ tool changer with two NC axes for fast automatic tool change

Kinematics

- _ machine bed supporting the X and Z axes in cross bed design
- _ machine column moves in X-direction and supports the machining unit
- _ machining unit moves in Y-direction, compact and robustly integrated into the machine column
- _ rotary table moves in Z-direction and performs the feed motion
- _ NC rotary table [rotary axis B] rotates the workpiece continuously ($360,000 \times 0.001^\circ$)

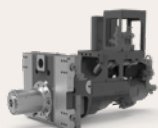
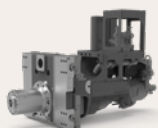
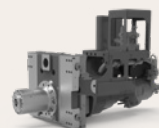

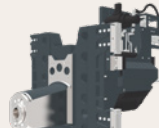
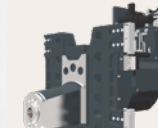
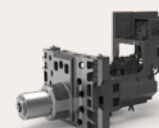
Drive concept

- _ linear axes with roller guides driven by ball screws for high feed forces
- _ direct absolute measurement systems (glass scales in linear axes) for highest precision and low positional tolerance
- _ optional SPEED equipment package for shortest idle times
- _ NC rotary feed table with large YRT bearing and automatic clamping for maximum stability and high tilting moments
- _ NC rotary feed table with gear drive for high torque and damping performance
- _ NC rotary feed table with direct drive for high dynamics and fast positioning (optional for H 2000 and H 4000)
- _ good milling behaviour also in the upper stroke positions due to two ball screws in the Z-axis and optimum design of the drive train

Highest precision

Spindles 'made by HELLER' are one of the highlights of our H series 4-axis machining centres. Our in-house manufacturing expertise ensures that they deliver the highest machining quality and, above all, process stability and maximum cutting performance. Special plus: the HELLER zero spindle system. If the worst comes to the worst, the machining spindle can be replaced quickly and easily.



| | | | H 2000 – H 4000 | | | H 5000 – H 8000 | | | |
|--|--------|-------------------|---|--|---|---|---|---|---|
| | | |  |  |  |  |  |  |  |
| | | | PC 63 i | DC 63 i | SC 63 i | HPC 100 G | PCe 100 G | PC 100 G | PC 100 i |
| Tool shank SK/BT for selected units available as alternative | | Size | HSK-A 63 | HSK-A 63 | HSK-A 63 | HSK-A 100 | HSK-A 100 | HSK-A 100 | HSK-A 100 |
| Speed | | min ⁻¹ | 12,000 | 16,000 | 18,000 | 6,000 | 8,000 | 8,000 | 10,000 |
| Power | S6 40% | kW | 45 | 56 | 45 | 60 | 60 | 43 | 45 |
| Torque | S6 40% | Nm | 228 | 180 | 103 | 2,292 | 1,146 | 822 | 360 |

Machining units 'made by HELLER'

- _ H 2000 – H 4000: 3 machining units with HSK-A 63 tool shank
- _ H 5000 – H 8000: 3 machining units with INLINE spindles and HSK-A 100 tool shank, 3 machining units with gearbox and HSK-A 100 tool shank
- _ H 10000 – H 16000: 5 machining units with HSK-A 100 tool shank
- _ compact overall design and robustly dimensioned spindle bearings for maximum cutting performance
- _ thermal stability and precision thanks to permanent cooling: precision cooling unit and thermal growth compensation of the spindle
- _ sturdy cast iron guide slide with high dynamic rigidity and damping
- _ slim spindle neck for perfect reach into the workpiece
- _ horizontal spindle for optimum chip fall

HELLER zero spindle system **1**

- _ easy replacement without time-consuming fine adjustment due to spindle set to zero dimension
- _ short repair times ensure maximum machine availability
- _ cost-effective solution for low TCO (Total Cost of Ownership)
- _ reduced spare parts costs due to the integrated zero spindle technology

Options

HELLER attachment head support (MSK)

- _ for the use of attachment heads, e.g. angular heads
- _ enlarged support basis with three-point rest
- _ integrated torque input and media transfer

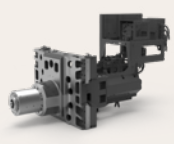
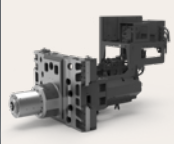
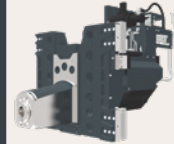
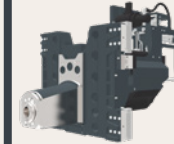
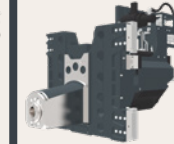
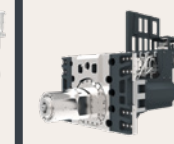
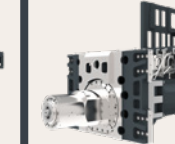
HELLER attachment head additional clamping*

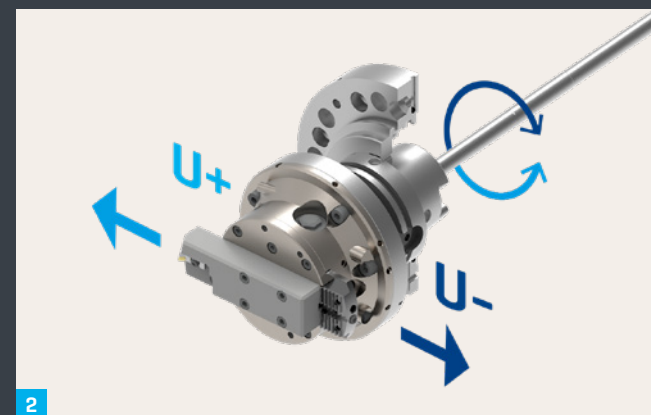
- _ for additional clamping of attachment heads on the attachment head support
- _ optimum stability when using attachment heads and under high process forces

HELLER facing slide system **2**

- _ for automatic adjustment of actuating tools
- _ actuation with a full-fledged NC axis [U] integrated in the machine control
- _ ideal for boring contours or facing work
- _ available for machining units with HSK tool shank

* not available for all machining units

| H 5000 – H 8000 | | H 10000 – H 16000 | | | | |
|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |
| DC 100 i | SC 100 i | HPC 100 G | PCe 100 G | PC 100 G | EEC 100 i | SC 100 i |
| HSK-A 100 | HSK-A 100 | HSK-A 100 | HSK-A 100 | HSK-A 100 | HSK-A 100 | HSK-A 100 |
| 12,000 | 13,000 | 6,000 | 8,000 | 8,000 | 12,500 | 12,500 |
| 45 | 45 | 60 | 60 | 43 | 38 | 52 |
| 400 | 228 | 2,292 | 1,146 | 822 | 242 | 166 |



Comprehensive tooling expertise

Short tooling and idle times are what you can rightly expect from our H series 4-axis machining centres. The tool changer with two NC axes ensures maximum precision and optimised motion sequences for fast tool change times. Combined with high axis dynamics this results in short chip-to-chip times.

| | | | H 2000 | H 4000 | H 5000 | H 6000 | H 8000 | H 10000 | H 14000 | H 16000 |
|---------------------------------------|---|--------|--------------------------|--------------------------|-----------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Chip-to-chip time^{1]} | t _{2,3} VDI 2852 POWER [SPEED] | s | 2.5 [2.2] | 2.8 [2.3] | 3.4 [3.0] | 3.6 [3.2] | 4.6 [4.4] | 5.5 | 6.7 | 6.7 |
| Tool weight^{2]} | | kg | 12 | 12 | 25 [35] | 25 [35] | 25 [35] | 25 [35] | 25 [35] | 25 [35] |
| Chain-type magazines | Magazine places | Number | 54 [80/160/240] | 54 [80/160/240] | 50 [100/150] | 50 [100/150] | 50 [100/150] | 50 [100/150] | 50 [100/150] | 50 [100/150] |
| | Tool length/ diameter ^{3]} | mm | 410/ Ø160 | 450/ Ø160 | 600/ Ø280 | 600/ Ø280 | 600 [800]/ Ø280 | 600 [800]/ Ø280 | 600 [800]/ Ø280 | 600 [800]/ Ø280 |
| | Tool shank | Size | HSK-A 63/ SK 40/BT 40 | HSK-A 63/ SK 40/BT 40 | HSK-A 100/ SK 50/BT 50 | HSK-A 100/ SK 50/BT 50 | HSK-A 100/ SK 50/BT 50 | HSK-A 100/ SK 50/BT 50 | HSK-A 100/ SK 50/BT 50 | HSK-A 100/ SK 50/BT 50 |
| Rack-type magazines | Magazine places | Number | [489] | [489] | [200/260/340/425] | [200/260/340/425] | [200/260/340/425] | [265/425] | [265/425] | [265/425] |
| | Tool length/ diameter ^{3]} | mm | [410/Ø 188] | [450/Ø 188] | [600/Ø 280] | [600/Ø 280] | [600/Ø 280] | [600/Ø 280] | [600/Ø 280] | [600/Ø 280] |
| | Tool shank | Size | [HSK-A 63] | [HSK-A 63] | [HSK-A 100/ SK 50/BT 50] | [HSK-A 100/ SK 50/BT 50] | [HSK-A 100/ SK 50] | [HSK-A 100/ SK 50] | [HSK-A 100/ SK 50] | [HSK-A 100/ SK 50] |

[] = Optional values 1] Applies to Siemens SINUMERIK 2] Consider total load capacity 3] With free adjacent places



1

Chain-type magazines 1

- _ 4 chain-type magazines with up to 240 positions for machines with HSK-A 63 [SK/BT]
- _ 3 chain-type magazines with up to 150 positions for machines with HSK-A 100 [SK/BT]
- _ sturdy tool holders mounted on both sides of a double chain for optimised traversing dynamics
- _ tool provisioning during machining for short tool-to-tool times
- _ rapid tool change for short chip-to-chip times
- _ two NC axes with lifting/swivelling principle for high dynamics and long-term precision
- _ sturdy double gripper for a secure hold with heavy tool weights and moments of weight
- _ tool shank in enclosed holders: protection against contamination and optimum hold during positioning
- _ workpiece loading station with optimum accessibility for ergonomic and rapid loading of tools
- _ integrated tool provisioning place for provision of the next tool during machining and short tool-to-tool times

Rack-type magazines 2

- _ 1 rack-type magazine with 489 positions for machines with HSK-A 63
- _ 4 rack-type magazines with up to 425 positions for machines with HSK-A 100 [SK/BT]
- _ small footprint due to space-saving positioning of the magazine alongside the machine [H 2000 - H 8000]
- _ tool handling with highly dynamic loader for rapid tool provisioning
- _ rapid tool change for short chip-to-chip times
- _ two NC axes with lifting/swivelling principle for high dynamics and long-term precision
- _ sturdy double gripper for a secure hold with heavy tool weights and moments of weight
- _ convenient operating panel at the tool loading station
- _ tool loading station with integrated rotary station with multiple positions for tool loading during machining

Tool changer

- _ two NC axes with lifting/swivelling principle for high dynamics and long-term precision
- _ sturdy double gripper for a secure hold with heavy tool weights and moments of weight
- _ tool shank in enclosed holders: protection against contamination and optimum hold during positioning
- _ workpiece loading station with optimum accessibility for ergonomic and rapid loading of tools
- _ integrated tool provisioning place for provision of the next tool during machining and short tool-to-tool times



2

High precision and process stability

Our H series 4-axis machining centres virtually know no bounds when it comes to workpiece size and weight. The machine's pallet changer concept permits a payload of up to 8 t. Even with this workpiece weight, the HELLER H series works to a high degree of precision.

| | | | H 2000 | H 4000 | H 5000 | H 6000 | H 8000 |
|----------------------------|------------------------|----|----------------|----------------|----------------|----------------|---------------------------|
| Type | | | Pallet changer | Pallet changer | Pallet changer | Pallet changer | Pallet changer |
| Clamping surface | Nominal size | mm | 400 x 500 | 500 x 630 | 630 x 630 | 630 x 630 | 800 x 800 [1,000 x 1,000] |
| Workpiece dimension | Diameter D Full circle | mm | Ø 720 | Ø 900 | Ø 900 | Ø 1,000 | Ø 1,400 |
| | Depth T x Width W | | 720 x 850 | 900 x 1,020 | 900 x 1,090 | 1,000 x 1,290 | 1,400 x 1,810 |
| | Height H | mm | 850 | 1,000 | 1,000 | 1,200 | 1,500 ¹⁾ |
| Clamping load | | kg | 800 | 1,400 | 1,400 | 1,400 | 2,000 |
| Load pallet changer | Total/load difference | kg | 1,200/600 | 2,000/1,000 | 2,000/1,000 | 2,000/850 | 4,000/2,000 ¹⁾ |
| Pallet change time | | s | 10 | 13 | 13 | 13 | 21 |

1) Consider limitations



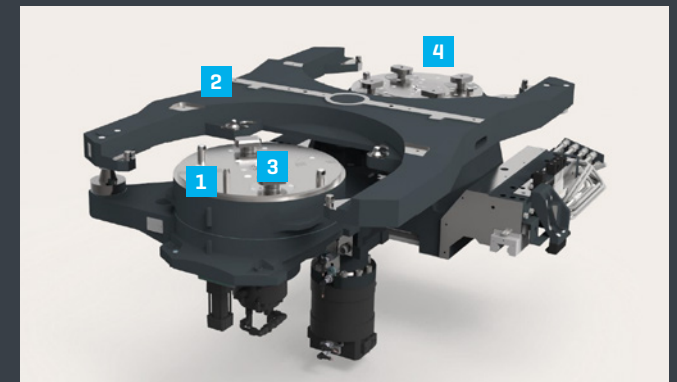
| H 10000 | H 14000 | H 16000 |
|--------------------------|--------------------------|--------------------------|
| Pallet changer | Pallet changer | Pallet changer |
| 1,000 x 1,000 | 1,000 x 1,000 | 1,250 x 1,600 |
| Ø 1,400 1,400 x 1,890 | Ø 1,400 1,650 x 2,690 | Ø 2,000 2,000 x 2,690 |
| 1,600 | 1,800 | 1,725 |
| 4,000 | 4,000 | 8,000 |
| 8,000/2,500 | 8,000/2,500 | 16,000/8,000 |
| 35 | 35 | 75 |

Pallet changer

- _ automatic pallet changer with lifting/swivelling principle
- _ high maximum load with robust, hydraulic drive
- _ optimum application of force to machine pallets due to the fork shape of the lift-and-swivel bridge
- _ consistently high tool change accuracy due to robust alignment elements and extensive blow-off of functional surfaces
- _ machine pallets with DIN hole pattern and standardised alignment elements for rapid mounting of clamping fixtures
- _ hydraulic pallet clamping for secure hold, even under high process forces

Options

- _ media interface for hydraulic clamping with up to 200 bar



- 1** Pallet location
- 2** Pallet mount
- 3** Media interface
- 4** Pallet clamping

Supply and disposal

Perfect solutions for flawless processes

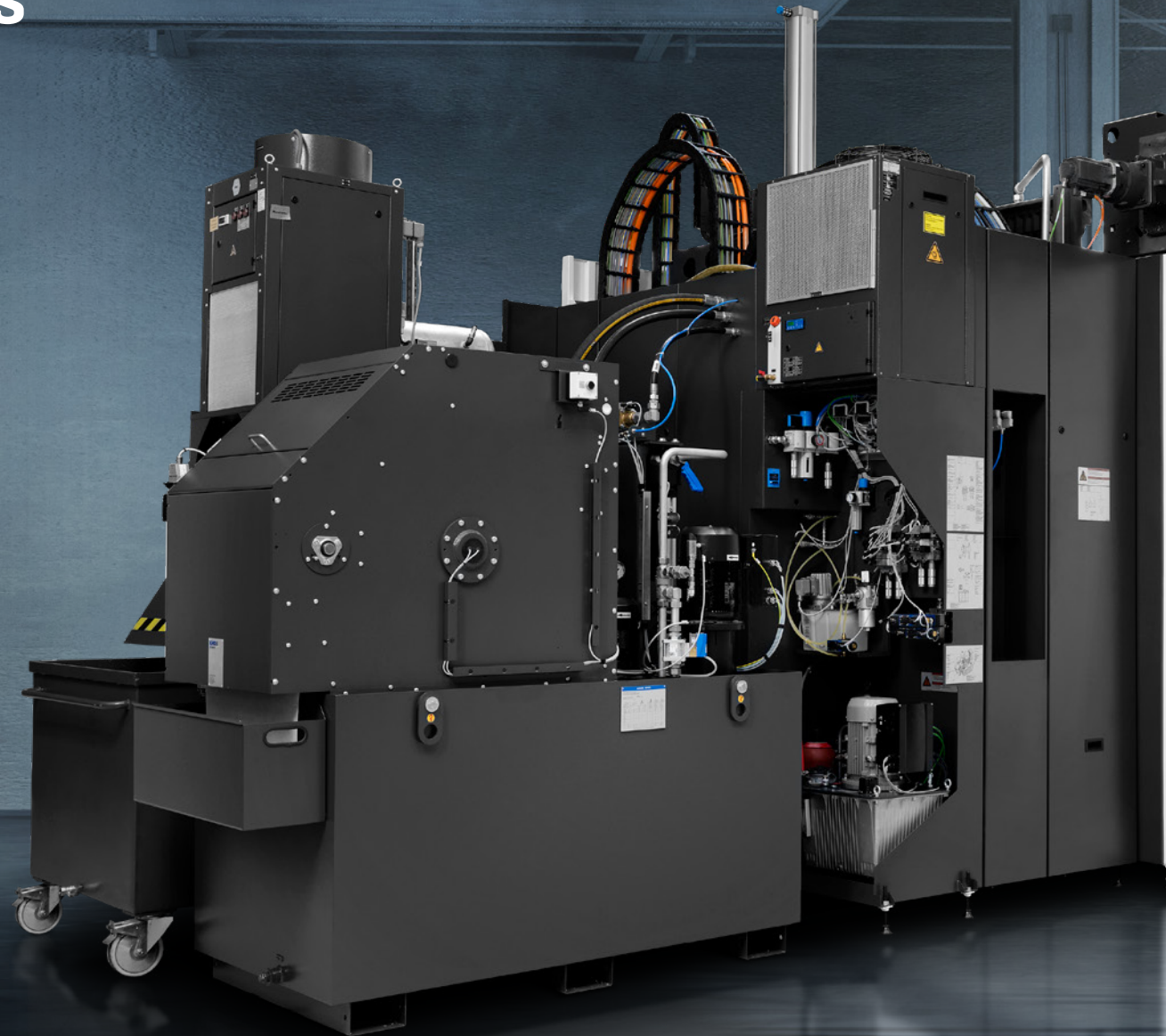
Milling produces chips. And this is particularly true of the H series 4-axis machining centres: these extremely robust and reliable machining centres are made for production. Wherever chips are produced, we provide efficient disposal solutions to ensure consistently high precision.

Cooling lubricant supply

- _ coolant units: paper band filter or backflush filter with high tank volumes available as options
- _ internal coolant supply (IKZ) through the tool with high pressure 50 bar (option: 70 bar with frequency converter [FU])
- _ internal coolant supply with up to 7 pressure steps freely programmable via NC program
- _ external tool cooling with integrated spindle flushing nozzles
- _ integrated work area shower with adjustable nozzles for optimum flushing of the work area and cooling of the workpiece

Options

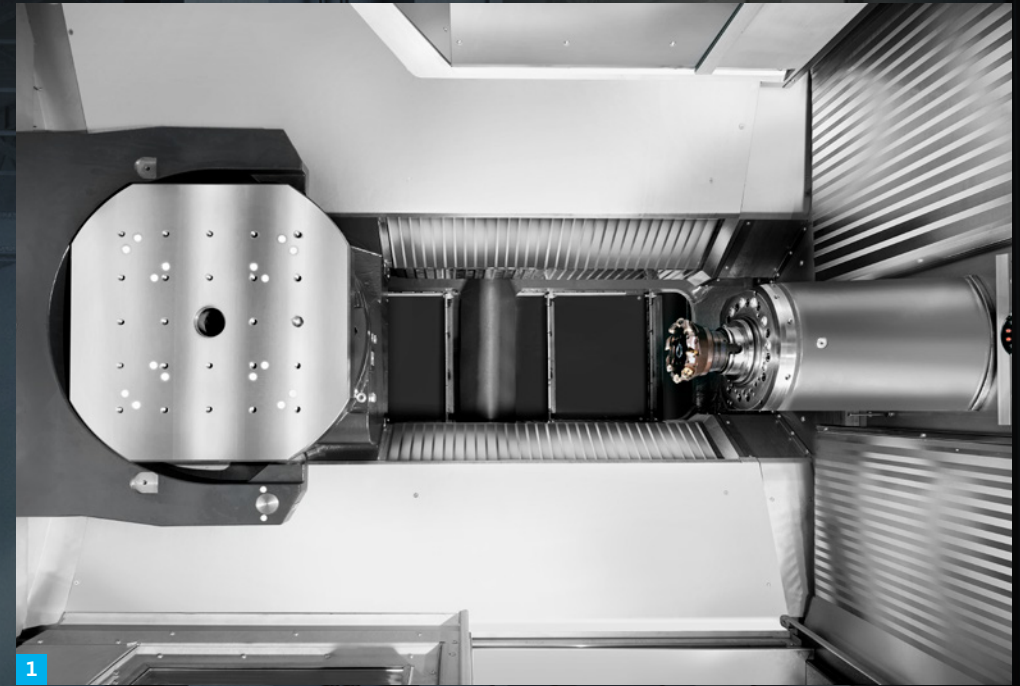
- _ coolant cooler for high thermal stability and precision
- _ coolant temperature control unit
- _ automatic filling of the coolant unit
- _ oil skimmer for separation of foreign oil from the cooling lubricant tank
- _ internal coolant supply IKZ 70 bar with frequency converter [FU]





Chip disposal

- _ H 2000 - H 6000: free chip fall below the spindle and quick disposal from the work area with central chip conveyor
- _ H 8000 - H 16000: chip disposal using spiral conveyors
- _ design: scraper or hinged belt conveyor (optional), selectable according to application
- _ work area flushing and shower to support rapid chip removal in machines with coolant units
- _ extraction unit (optional) for the removal of coolant mist from the work area
- _ steep side panels and concertina covers with self-cleaning effect to prevent chip deposits **1**



Media supply

- _ easy maintenance with optimum accessibility, all supply units at a glance **2**
- _ central oil-air lubrication for key components
- _ sealing air and selective blow-off of interfaces for continuous, smooth machine operation
- _ media interface for hydraulic workpiece clamping with up to 200 bar (optional)
- _ compressed air and water gun integrated into the machine housing at the workpiece loading station



Control technology

Full visibility of information – full control of manufacturing

Intuitive to operate, easy to program and with practical features that make everyday work easier – that's how a machine control should be. Our H series 4-axis machining centres offer a choice of state-of-the-art CNC controls from Siemens and Fanuc.





Machine control

Siemens SINUMERIK ONE

- _ H 2000 – H 8000:
Siemens SINUMERIK ONE
- _ H 10000 – H 16000:
Siemens SINUMERIK 840D sl
- _ main operating unit in console design, as standard on machine models H 2000 – H 8000*
- _ high-performance control for machining centres, meeting the highest standards of performance and machining precision
- _ optimally integrated and tailored to the requirements of HELLER machining centres
- _ digital drive technology and modern system architecture
- _ SINUMERIK Operate user interface for efficient machine operation
- _ HELLER Operation Interface for even greater ease of operation, as standard on machine models H 2000 – H 8000*

Fanuc 31i-B

- _ high-performance control for machining centres, meeting the highest standards of performance and machining precision
- _ operating elements optimally integrated into the machine's main operating unit
- _ digital drive controller and modern system architecture
- _ iHMI operating software for machine models H 2000 – H 8000
- _ Screen Display Function operating software for machine models H 10000 – H 16000
- _ highest standards of precision and reliability

HELLER Operation Interface*

- _ HELLER user interface with 4 functional areas for more information at a glance
- _ main operating unit in console design for optimum ease of operation on machines with Siemens control systems
- _ 24" screen and multi-touch function, ideal for displaying documents and drawings
- _ practice-oriented Xtends: HELLER extensions with additional functions
- _ machine control panel with pushbuttons and 3 overrides for optimum control in all operating situations
- _ third override reduces the rapid traverse speed, helping to eliminate the risk of a collision during manual operation

Options

- _ H 10000 – H 16000: main operating unit in console design with 24" screen, multi-touch function and HELLER Operation Interface
- _ main operating unit in panel design (ITC 2400)
- _ convenient operating panel at the tool loading station
- _ HT 2 or HT 10 handheld operating unit
- _ additional keyboard
- _ work area camera
- _ in-process tool monitoring (IPM)
- _ damage reduction
- _ tool requirements planning
- _ automatic loading/unloading sequence
- _ maintenance manager
- _ job management
- _ interpolation turning (IPT)
- _ PRODUCTION-Assist
- _ HELLER Services Interface (HSI) and other HELLER4Industry products

*As standard on machine models H 2000 – H 8000. Available as an option for H 10000 – H 16000.

Operation and maintenance

Optimal access to all work areas

Working with HELLER H series machines, you can feel every day how much engineering experience has gone into these 4-axis machining centres. Whether at the workpiece setting station, during tool loading, programming or maintenance – your comfort, safety and, above all, the productivity of your manufacturing operations are always in the foreground.





1



2



3



4

Operating station

- _ergonomically arranged operating elements and control screens **1**
- _good view into the work area thanks to large safety window
- _smooth-running, linear-guided work area door opens the work area roof in the operating area **2**
- _operating modes 2 and 3 included in the standard scope of supply

Options

- _handheld operating unit
- _screen blow-off device for a clear view when machining with coolant

Workpiece setting station **3**

- _large smooth-running doors for optimum access during loading and setup using a crane or other handling equipment
- _workpiece setting station, lockable at 90° indexing positions, with foot release, unlimited manual rotation
- _easy-to-reach operating elements and media guns, integrated into the machine enclosure

Options

- _automatically operated setting station door
- _automatically rotating NC setting station
- _software options: automatic loading and unloading sequence

Tool loading station **4**

- _ergonomically arranged operating elements
- _optimum-height insertion position with integrated unclamping function for easy handling
- _tool loading at the magazine while the spindle is running

Options

- _convenient operating panel at the tool loading station
- _tool loading during machining
- _tool coding with RFID chip
- _HELLER TRP (Tool Requirement Planning) for automatic generation of loading and unloading lists

Easy maintenance

- _all supply units at a glance with easy access
- _smooth-running doors and easy-to-remove sheet metal panels
- _easy and direct access to the control cabinet
- _quick-response HELLER spare part service

Options

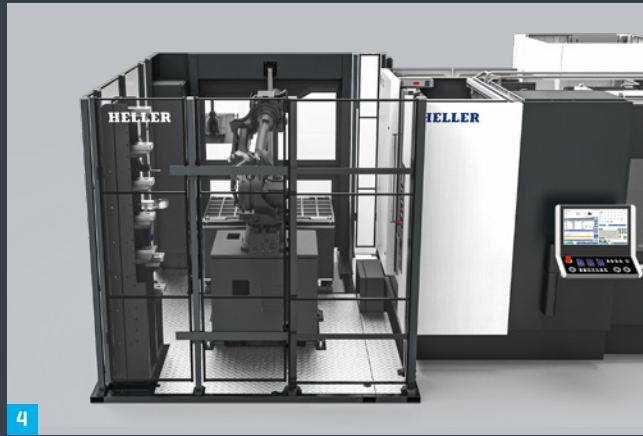
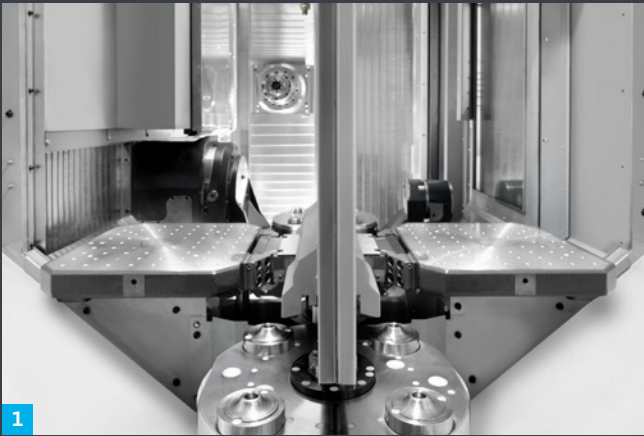
- _maintenance manager for maintenance planning and operator support at the machine
- _HELLER TPS (Total Productive Services): service agreements for inspection, maintenance and servicing



Automation solutions

Open to standards – flexible for customised solutions

The main purpose of automated manufacturing and production centres is to reduce downtime to optimise system availability. For this purpose, HELLER offers proprietary automation solutions that combine perfectly with the highly productive HELLER machining centres. Due to the wide variety of market requirements, this portfolio is complemented by a range of specialised solutions that HELLER is able to offer through best-in-class partnerships.



Pallet automation

Pallet changer 1

First automation level, integrated into the machine. Perfect for serial production with medium and large lot sizes.

Linear pallet storage 2

Automatic handling of pallets for optimised flexibility. Perfect for serial production with medium and large lot sizes.

Rotary pallet storage 3

Automatic handling of pallets for optimised flexibility with low space requirement. Perfect for serial production with medium and large lot sizes.



Workpiece automation

Robot 4

Automatic loading and unloading of workpieces, fixtures and pallets as well as automation of additional handling jobs. Perfect for serial production with medium and large lot sizes.

Linear gantry loader 5

Linking of plant components in production lines with maximum output. Perfect for serial production with short durations and highest production volume.

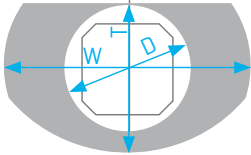



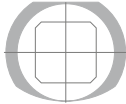





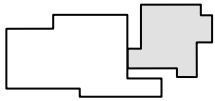
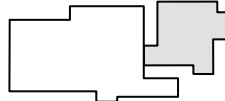
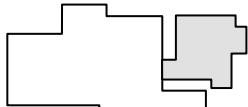
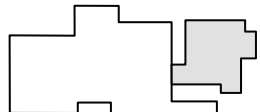


Tool automation

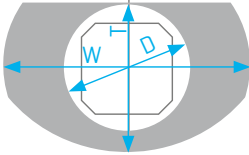
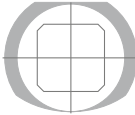

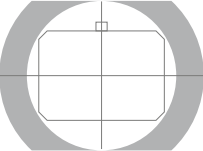





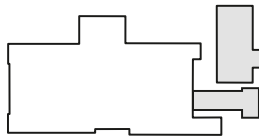
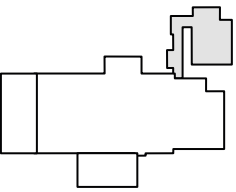
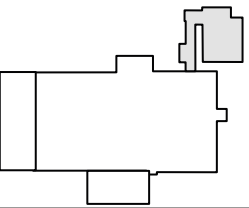
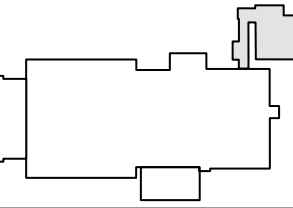
Background tool magazine 6

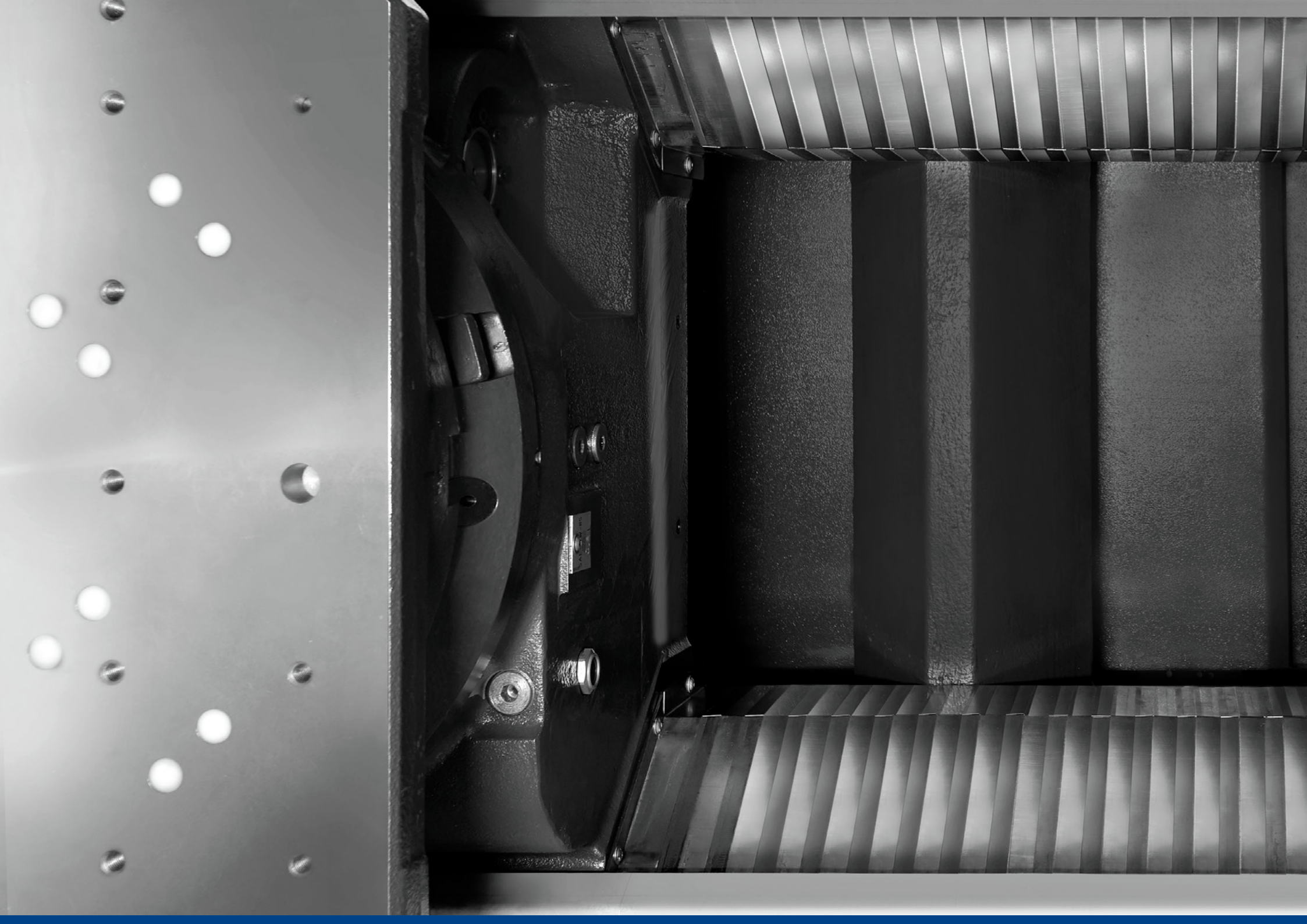
Central tool provision for several machines. Perfect for production systems with maximum of flexibility and automation.

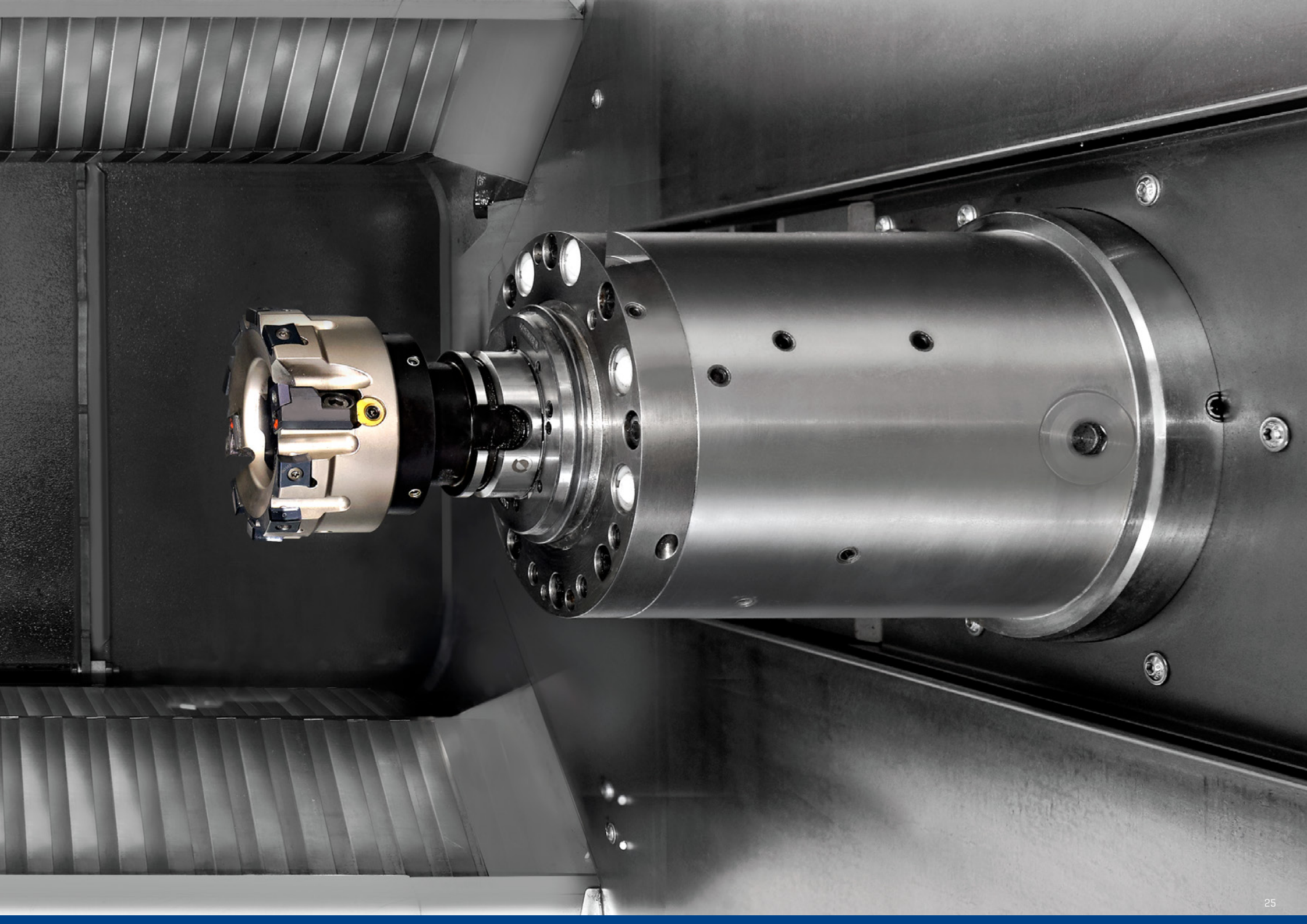
| Technical Data | | | H 2000 | H 4000 | H 5000 | H 6000 |
|---|--|------------------------------|---------------------------------|-----------------------------------|-------------------------|-------------------------|
| LINEAR AXES | | | | | | |
| Positioning range | X/Y/Z | mm | 630/630/630 | 800/800/800 | 800/800/800 | 1,000/1,000/1,000 |
| Rapid traverse speed | X/Y/Z POWER [SPEED] | m/min | 65 [80/80/90] | 65 [80/80/90] | 50 [65/65/72] | 50 [65/65/72] |
| Acceleration | X/Y/Z POWER [SPEED] | m/s ² | 8 [10/10/12] | 8 [8/8/12] | 5 [7/7/10] | 5 [7/7/10] |
| Feed forces | X/Y/Z S3 40% | kN | 10/10/15 | 10/10/15 | 15/15/20 | 15/15/20 |
| Positioning tolerance Tp / At⁴⁾ | X/Y/Z VDI/DGQ 3441 / ISO 230 POWER [SPEED] | mm | 0.005 | 0.005 | 0.005 | 0.008 |
| ROTARY AXES | | | | | | |
| NC rotary feed table | B Speed/Torque S3 40% | min ⁻¹ /Nm | 40/490 [100 ⁵⁾ /440] | 20/1,100 [100 ⁵⁾ /890] | 25/2,900 | 25/2,900 |
| Positioning tolerance Tp / At⁴⁾ | B VDI/DGQ 3441 / ISO 230 POWER [SPEED] | arcsec | 8 | 8 | 8 | 8 |
| MACHINING UNITS | | | | | | |
| Tool shank | SK/BT for selected units available as alternative | Size | HSK-A 63 | HSK-A 63 | HSK-A 100 | HSK-A 100 |
| Gear spindles | Type: Speed/Power S6 40%/ Torque S6 40% | min ⁻¹ / kW/Nm | | | [HPC: 6,000/60/2,292] | [HPC: 6,000/60/2,292] |
| | | | | | [PCe: 8,000/60/1,146] | [PCe: 8,000/60/1,146] |
| | | | | | PC: 8,000/43/822 | PC: 8,000/43/822 |
| Inline spindles | Type: Speed/Power S6 40%/ Torque S6 40% | min ⁻¹ / kW/Nm | [PC: 12,000/45/228] | [PC: 12,000/45/228] | [PC: 10,000/45/360] | [PC: 10,000/45/360] |
| | | | [DC: 16,000/56/180] | [DC: 16,000/56/180] | [DC: 12,000/45/400] | [DC: 12,000/45/400] |
| | | | SC: 18,000/45/103 | SC: 18,000/45/103 | [SC: 13,000/45/228] | [SC: 13,000/45/228] |
| TOOL MANAGEMENT | | | | | | |
| Chip-to-chip time¹⁾ | t _{2,3} VDI 2852 POWER [SPEED] | s | 2.5 [2.2] | 2.8 [2.3] | 3.4 [3.0] | 3.6 [3.2] |
| Tool weight²⁾ | | kg | 12 | 12 | 25 [35] | 25 [35] |
| Chain-type magazines | Magazine places | Number | 54 [80/160/240] | 54 [80/160/240] | 50 [100/150] | 50 [100/150] |
| | Tool length/diameter ³⁾ | mm | 410/Ø160 | 450/Ø160 | 600/Ø280 | 600/Ø280 |
| | Tool shank | Size | HSK-A 63/SK 40/BT 40 | HSK-A 63/SK 40/BT 40 | HSK-A 100/SK 50/BT 50 | HSK-A 100/SK 50/BT 50 |
| Rack-type magazines | Magazine places | Number | [489] | [489] | [200/260/340/425] | [200/260/340/425] |
| | Tool length/diameter ³⁾ | mm | [410/Ø188] | [450/Ø188] | [600/Ø280] | [600/Ø280] |
| | Tool shank | Size | [HSK-A 63] | [HSK-A 63] | [HSK-A 100/SK 50/BT 50] | [HSK-A 100/SK 50/BT 50] |

| Technical Data | | | H 2000 | H 4000 | H 5000 | H 6000 |
|-----------------------------|--|----|---|---|---|---|
| WORKPIECE MANAGEMENT | | | | | | |
| Type | | | Pallet changer | Pallet changer | Pallet changer | Pallet changer |
| Clamping surface | Nominal size | mm | 400 x 500 | 500 x 630 | 630 x 630 | 630 x 630 |
| Workpiece dimension |  | |  |  |  |  |
| | Diameter D Full circle Depth T x Width W | mm | Ø 720 720 x 850 | Ø 900 900 x 1,020 | Ø 900 900 x 1,090 | Ø 1,000 1,000 x 1,290 |
| |  | |  |  |  |  |
| | Height H | mm | 850 | 1,000 | 1,000 | 1,200 |
| Clamping load | | kg | 800 | 1,400 | 1,400 | 1,400 |
| Load pallet changer | Total/load difference | kg | 1,200/600 | 2,000/1,000 | 2,000/1,000 | 2,000/850 |
| Pallet change time | | s | 10 | 13 | 13 | 13 |
| MACHINE | | | | | | |
| Dimensions | approx. L x W x H Basic machine with standard chain-type magazine, coolant unit with paper band filter and platforms, if required. | mm | 6,300 x 2,550 x 3,400 | 6,700 x 2,950 x 3,500 | 7,300 x 3,380 x 3,900 | 7,650 x 3,500 x 4,300 |
| | approx. L x W x H Basic machine with standard chain-type magazine, coolant unit with backflush filter and platforms, if required. | mm | 6,300 x 2,750 x 3,400 | 6,700 x 3,150 x 3,500 | 7,300 x 3,380 x 3,900 | 7,650 x 3,500 x 4,300 |
| | | |  |  |  |  |
| Weight | approx. Basic machine with standard chain-type magazine, without coolant unit | t | 10 | 11 | 15 | 15 |
| CONTROL TECHNOLOGY | | | | | | |
| Machine control | | | Siemens SINUMERIK ONE / Fanuc 31i-B | | | |

| Technical data | | | H 8000 | H 10000 | H 14000 | H 16000 |
|---|--|------------------------------|-------------------------|-----------------------|-----------------------|-----------------------|
| LINEAR AXES | | | | | | |
| Positioning range | X/Y/Z | mm | 1,400/1,200/1,400 | 1,600/1,400/1,300 | 2,400/1,600/1,600 | 2,400/1,600/1,600 |
| Rapid traverse speed | X/Y/Z POWER [SPEED] | m/min | 50 [60] | 45 | 41/45/45 | 41/45/45 |
| Acceleration | X/Y/Z POWER [SPEED] | m/s ² | 4 [5.5/6/6] | 4 | 3 | 3/3/2 |
| Feed forces | X/Y/Z S3 40% | kN | 15/27 ⁶⁾ /20 | 15/15/20 | 15/15/20 | 15/15/20 |
| Positioning tolerance Tp / At⁴⁾ | X/Y/Z VDI/DGQ 3441 / ISO 230 POWER [SPEED] | mm | 0.008 [0.006] | 0.008 | 0.008 | 0.008 |
| ROTARY AXES | | | | | | |
| NC rotary feed table | B Speed/Torque S3 40% | min ⁻¹ /Nm | 10/2,900 | 10/3,000 | 10/3,000 | 8/3,000 |
| Positioning tolerance Tp / At⁴⁾ | B VDI/DGQ 3441 / ISO 230 POWER [SPEED] | arcsec | 8 [7] | 8 | 8 | 8 |
| MACHINING UNITS | | | | | | |
| Tool shank | SK/BT for selected units available as alternative | Size | HSK-A 100 | HSK-A 100 | HSK-A 100 | HSK-A 100 |
| Gear spindles | Type: Speed/Power S6 40%/ Torque S6 40% | min ⁻¹ / kW/Nm | [HPC: 6,000/60/2,292] | [HPC: 6,000/60/2,292] | [HPC: 6,000/60/2,292] | [HPC: 6,000/60/2,292] |
| | | | [PCe: 8,000/60/1,146] | [PCe: 8,000/60/1,146] | [PCe: 8,000/60/1,146] | [PCe: 8,000/60/1,146] |
| | | | PC: 8,000/43/822 | PC: 8,000/43/822 | PC: 8,000/43/822 | PC: 8,000/43/822 |
| Inline spindles | Type: Speed/Power S6 40%/ Torque S6 40% | min ⁻¹ / kW/Nm | [PC: 10,000/45/360] | | | |
| | | | [DC: 12,000/45/400] | [EEC: 12,500/38/242] | [EEC: 12,500/38/242] | [EEC: 12,500/38/242] |
| | | | [SC: 13,000/45/228] | [SC: 12,500/52/166] | [SC: 12,500/52/166] | [SC: 12,500/52/166] |
| TOOL MANAGEMENT | | | | | | |
| Chip-to-chip time¹⁾ | t _{2,3} VDI 2852 POWER [SPEED] | s | 4.6 [4.4] | 5.5 | 6.7 | 6.7 |
| Tool weight²⁾ | | kg | 25 [35] | 25 [35] | 25 [35] | 25 [35] |
| Chain-type magazines | Magazine places | Number | 50 [100/150] | 50 [100/150] | 50 [100/150] | 50 [100/150] |
| | Tool length/diameter ³⁾ | mm | 600 [800]/Ø 280 | 600 [800]/Ø 280 | 600 [800]/Ø 280 | 600 [800]/Ø 280 |
| | Tool shank | Size | HSK-A 100/SK 50/BT 50 | HSK-A 100/SK 50/BT 50 | HSK-A 100/SK 50/BT 50 | HSK-A 100/SK 50/BT 50 |
| Rack-type magazines | Magazine places | Number | [200/260/340/425] | [265/425] | [265/425] | [265/425] |
| | Tool length/diameter ³⁾ | mm | [600/Ø 280] | [600/Ø 280] | [600/Ø 280] | [600/Ø 280] |
| | Tool shank | Size | [HSK-A 100/SK 50] | [HSK-A 100/SK 50] | [HSK-A 100/SK 50] | [HSK-A 100/SK 50] |

| Technical data | | | H 8000 | H 10000 | H 14000 | H 16000 |
|-----------------------------|--|----|--|---|---|---|
| WORKPIECE MANAGEMENT | | | | | | |
| Type | | | Pallet changer | Pallet changer | Pallet changer | Pallet changer |
| Clamping surface | Nominal size | mm | 800 x 800 (1,000 x 1,000) | 1,000 x 1,000 | 1,000 x 1,000 | 1,250 x 1,600 |
| Workpiece dimension |  | |  |  |  |  |
| | Diameter D Full circle Depth T x Width W | mm | Ø 1,400 1,400 x 1,810 | Ø 1,400 1,400 x 1,890 | Ø 1,400 1,650 x 2,690 | Ø 2,000 2,000 x 2,690 |
| |  | |  |  |  |  |
| | Height H | mm | 1,500 ⁷⁾ | 1,600 | 1,800 | 1,725 |
| Clamping load | | kg | 2,000 | 4,000 | 4,000 | 8,000 |
| Load pallet changer | Total/load difference | kg | 4,000/2,000 ⁷⁾ | 8,000/2,500 | 8,000/2,500 | 16,000/8,000 |
| Pallet change time | | s | 21 | 35 | 35 | 75 |
| MACHINE | | | | | | |
| Dimensions | approx. L x W x H Basic machine with standard chain-type magazine, coolant unit with paper band filter and platforms, if required. | mm | 8,550 x 4,200 x 4,300 | 9,600 x 7,300 x 4,950 | 10,150 x 8,350 x 5,300 | 12,600 x 8,350 x 5,300 |
| | approx. L x W x H Basic machine with standard chain-type magazine, coolant unit with backflush filter and platforms, if required. | mm | 8,450 x 4,200 x 4,300 | 10,000 x 7,150 x 4,950 | 10,550 x 8,150 x 5,300 | 13,000 x 8,150 x 5,300 |
| | | |  |  |  |  |
| Weight | approx. Basic machine with standard chain-type magazine, without coolant unit | t | 27 | 32 | 34 | 52 |
| CONTROL TECHNOLOGY | | | | | | |
| Machine control | | | Siemens SINUMERIK ONE / Fanuc 31i-B | Siemens SINUMERIK 840D sl / Fanuc 31i-B | Siemens SINUMERIK 840D sl | |





Productivity over the full spectrum



4-axis machining centres

H

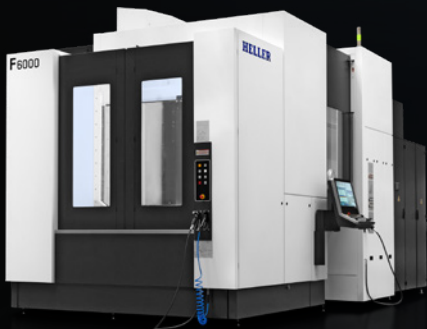
Tailor-made off the peg:
Flexibly configurable 4-axis machining centres with unbeatable productivity and unparalleled resilience



5-axis machining centres

HF

Productivity in 5 axes:
5-axis machining centres with the 5th axis in the workpiece for dynamic and productive machining

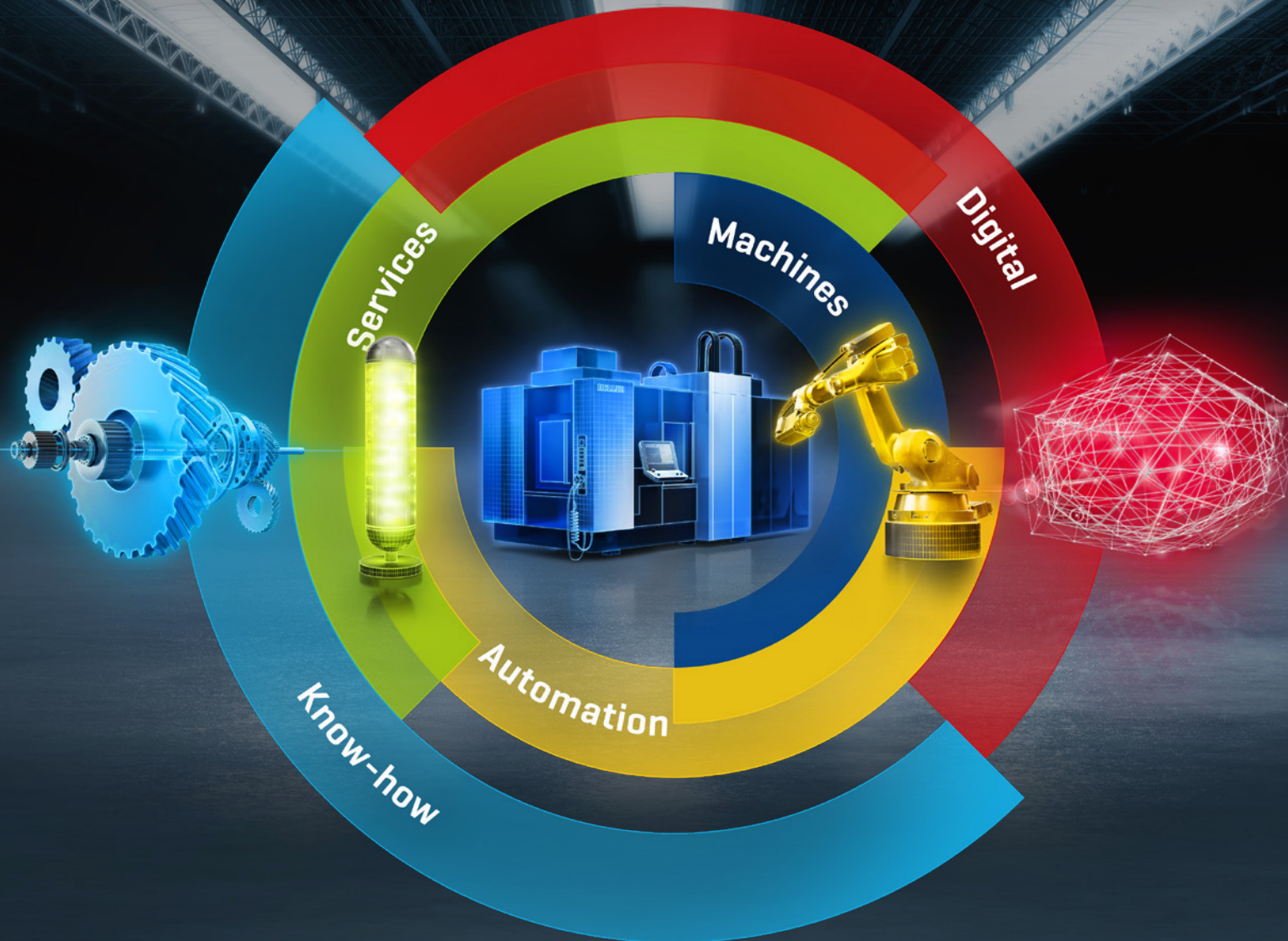


5-axis machining centres

F

The benchmark in 5 axes:
5-axis machining centres with the 5th axis in the tool for high-performance 5-sided and simultaneous 5-axis machining

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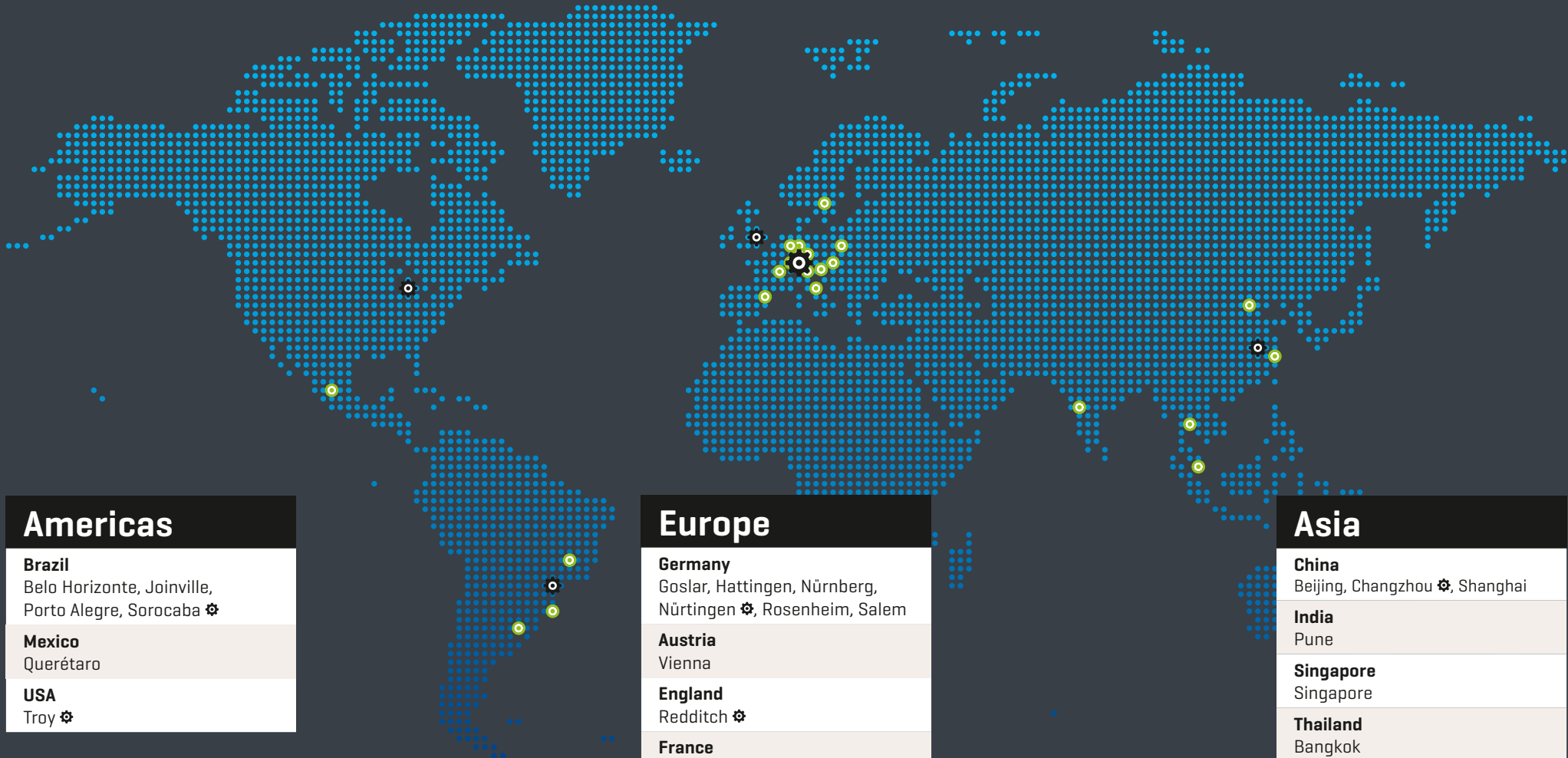
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Austria

Vienna

England

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