

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

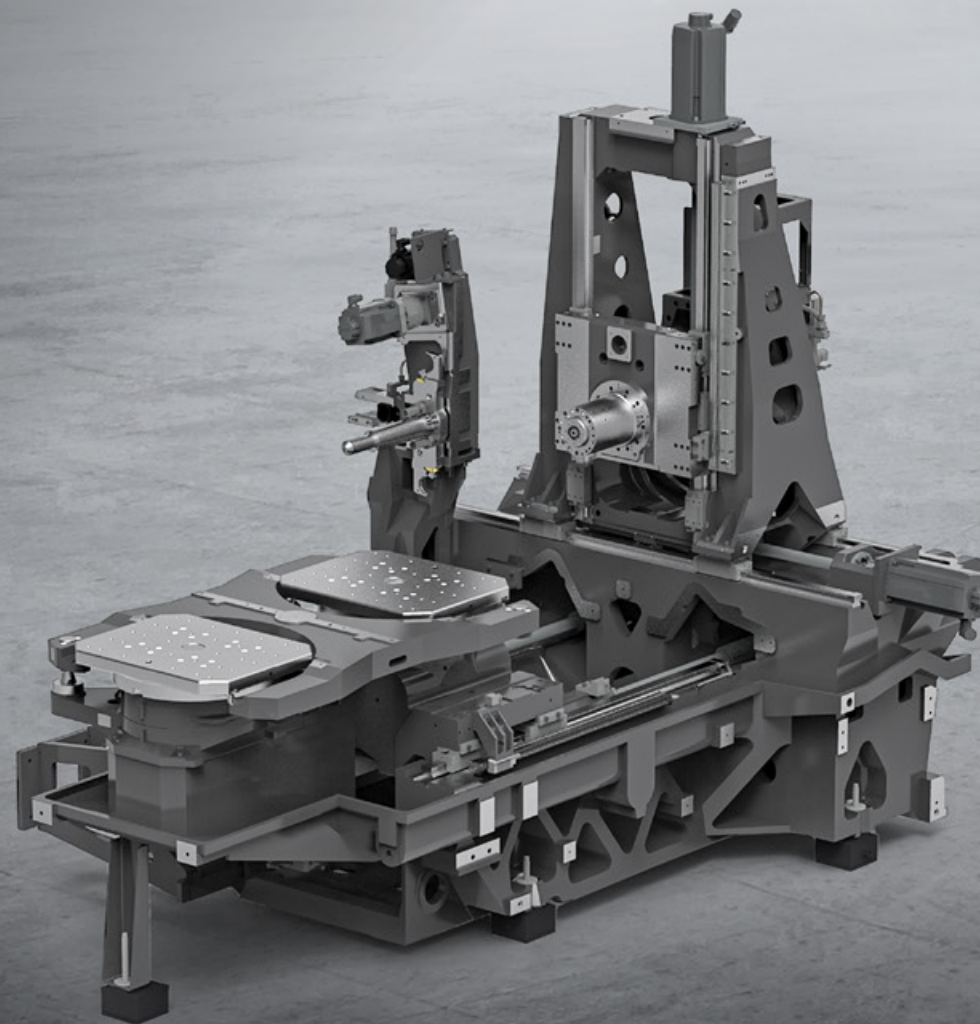
More information at: www.heller.biz/en/h



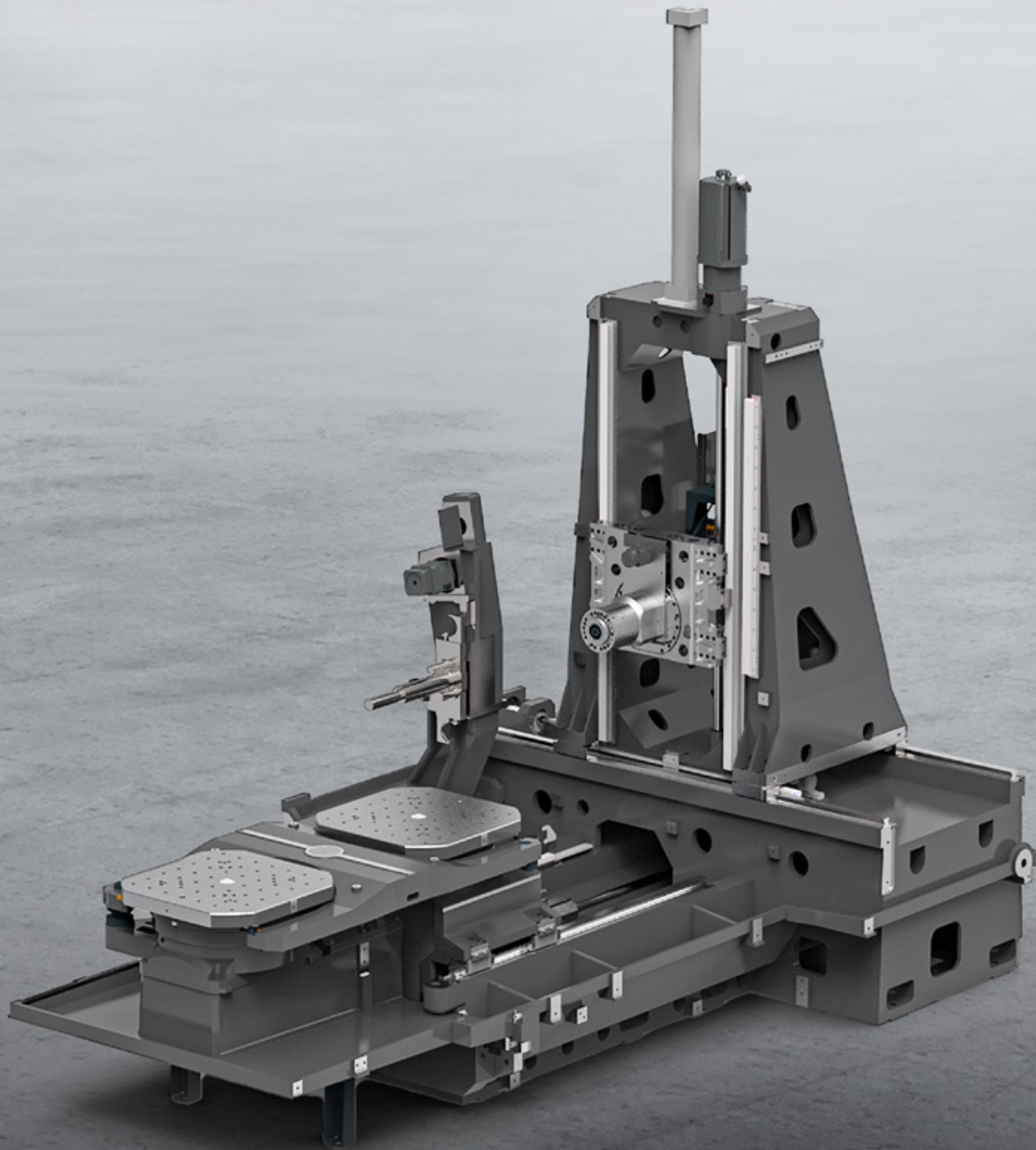
Machine concept

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 ($360,000 \times 0.001^\circ$)







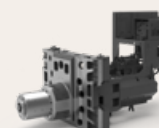
Drive concept

- _ 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 6000			
									
			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 6000: 3 machining units with INLINE spindles and HSK-A 100 tool shank, 3 machining units with gearbox and HSK-A 100 tool shank
- _ H 8000 – 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

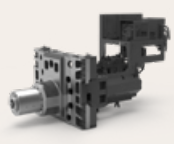
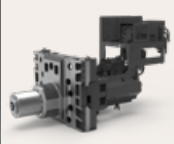
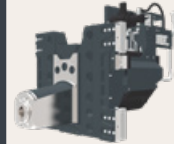
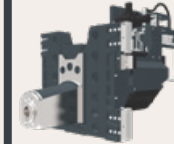
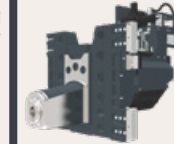
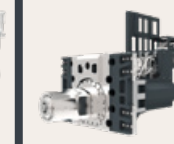
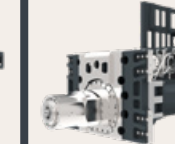
HELLER attachment head additional clamping*

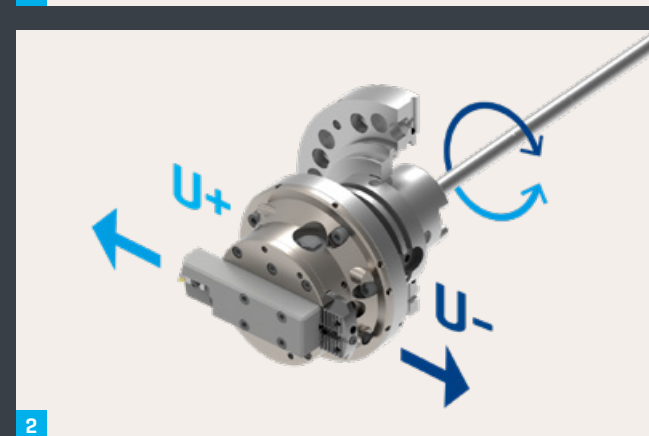
- _ for additional clamping of attachment heads on the attachment head support
- _ optimum stability when using attachment heads and under high process forces

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 6000		H 8000 – 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 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]	4.5 [4.3]	5.5	6.7	6.7
Tool weight²⁾		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	[375]	[375]	[265/425]	[265/425]	[265/425]	[265/425]	[265/425]	[265/425]
	Tool length/diameter ³⁾	mm	410/Ø188	450/Ø188	600/Ø280	600/Ø280	600/Ø280	600/Ø280	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	HSK-A 100/ SK 50	HSK-A 100/ SK 50	HSK-A 100/ SK 50	HSK-A 100/ SK 50

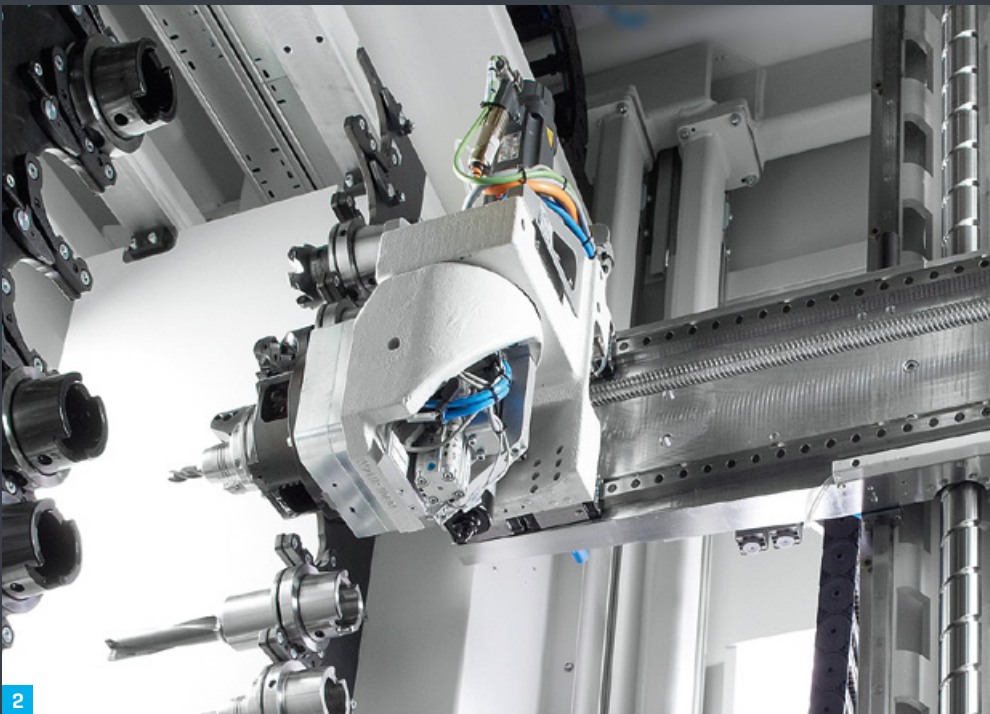
[] = Optional values **1)** Applies to Siemens SINUMERIK **2)** Consider total load capacity **3)** With free adjacent places



1

Chain-type magazines 1

- _ 4 chain-type magazines with up to 240 positions for machines with HSK-A 63 [SK/BT] available
- _ 3 chain-type magazines with up to 150 positions for machines with HSK-A 100 [SK/BT] available
- _ 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



2

Rack-type magazines 2

- _ 1 rack-type magazine with 375 positions for machines with HSK-A 63
- _ 2 rack-type magazines with up to 425 positions for machines with HSK-A 100 [SK/BT] available
- _ 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

Workpiece management

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
Workpiece dimension	Diameter D / 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	Ø 1,250/ 1,250 x 1,540
	Height H	mm	850	1,000	1,000	1,200	1,400
Clamping load	POWER [SPEED]	kg	800	1,400	1,400	1,400	2,000 [1,250]
Load pallet changer	POWER [SPEED] Total/load difference	kg	1,200/600	2,000/1,000	2,000/1,000	2,000/850	4,000 [2,500] / 1,500 [1,250]
Pallet change time		s	10	13	13	13	21



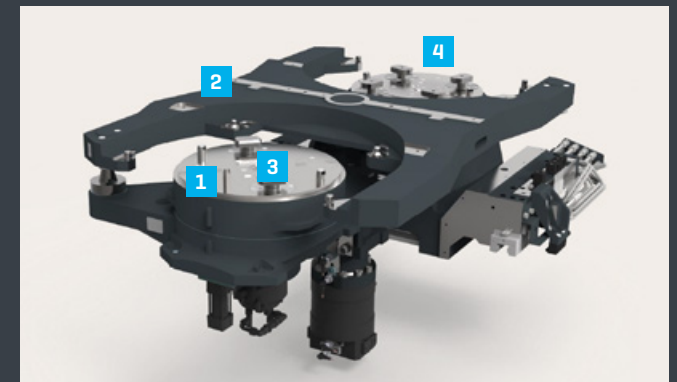
H 10000	H 14000	H 16000
Pallet changer	Pallet changer	Pallet changer
1,000 x 1,000	1,000 x 1,000	1,250 x 1,600
Ø1,400/ 1,400 x 1,890	Ø1,400/ 1,650 x 2,690	Ø2,000/ 2,000 x 2,690
1,600	1,800	1,725
4,000	4,000	8,000
8,000/2,500	8,000/2,500	16,000/8,000
35	35	75

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 60 bar [H 8000 - H 16000], 80 bar [H 2000 - H 6000] or 200 bar [optional]



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

Supply and disposal

Perfect solutions for flawless processes

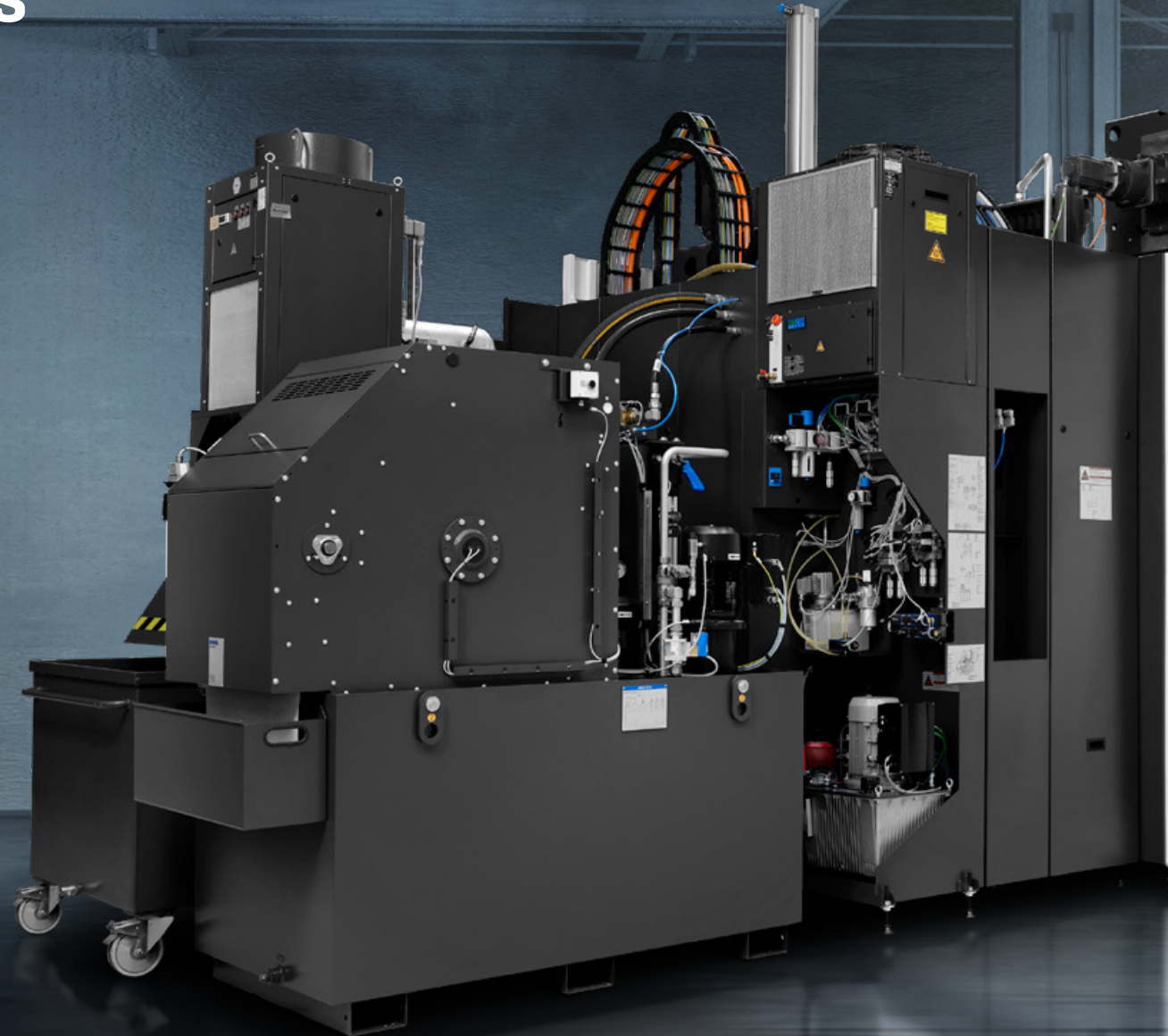
Milling produces chips. And this is particularly true of the H series 4-axis machining centres: these extremely robust and reliable machining centres are made for production. Wherever chips are produced, we provide efficient disposal solutions to ensure consistently high precision.

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

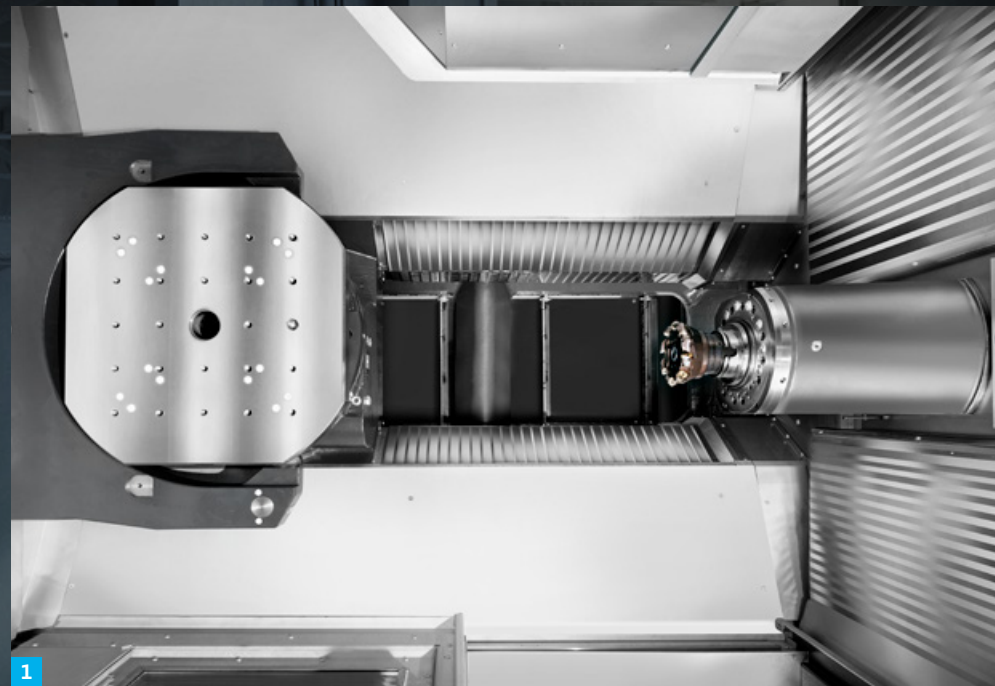
Options

- _ 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 and a cross-conveyor
- _ 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 60 bar [H 8000 – H 16000], 80 bar [H 2000 – H 6000] or 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 / 840D sl

- _ H 2000 – H 6000:
Siemens SINUMERIK ONE
- _ H 8000 – H 16000:
Siemens SINUMERIK 840D sl
- _ main operating unit in console design, as standard on machine models H 2000 – H 6000*
- _ 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 6000*

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 6000
- _ Screen Display Function operating software for machine models H 8000 – H 16000
- _ highest standards of precision and reliability

HELLER Operation Interface*

- _ HELLER user interface with extended range of functions
- _ 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
- _ HELLER Operation Interface with 4 function areas for extra information at a glance
- _ practice-oriented Xtends: HELLER extensions with additional functions
- _ machine control panel with pushbuttons and 3 overrides for optimum control in all operating situations

Options

- _ H 8000 – H 16000: main operating unit in console design with 24" screen, multi-touch function and HELLER Operation Interface
- _ convenient operating panel at the tool loading station
- _ handheld operating unit
- _ HELLER4Industry Connect and other products
- _ pallet management system for multiple setups
- _ alternative strategy
- _ job management
- _ automatic loading/unloading sequence
- _ interpolation turning
- _ friction stir welding

*As standard on machine models H 2000 – H 6000. Available as an option for H 8000 – 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

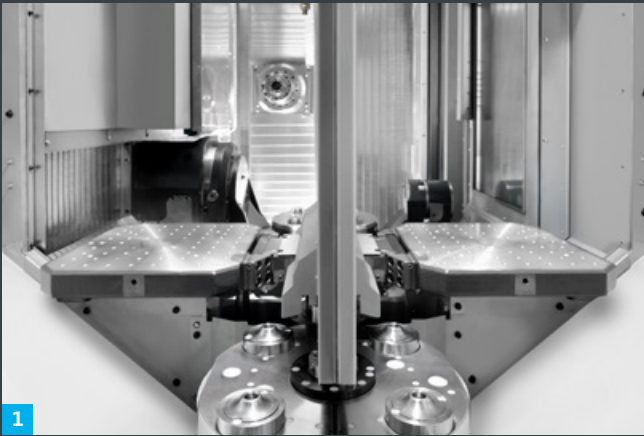
- _maintenance manager for maintenance planning and operator support at the machine
- _HELLER TPS (Total Productive Services): service agreements for inspection, maintenance and servicing

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.



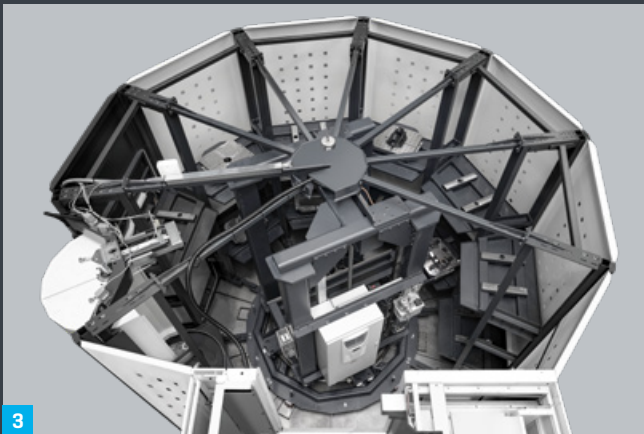
Workpiece automation

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.

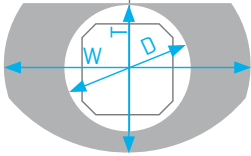



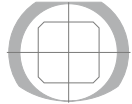
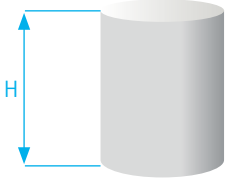




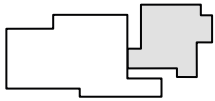
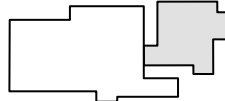
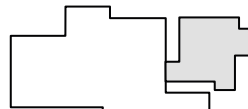
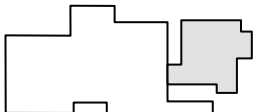


Tool automation

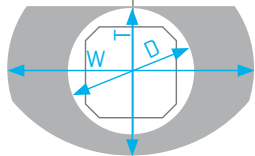

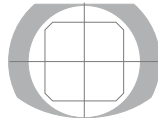
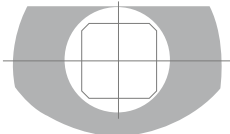
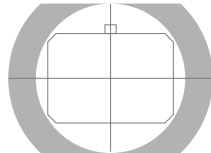
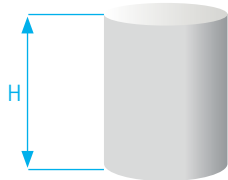




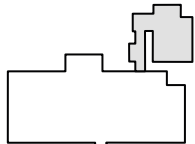
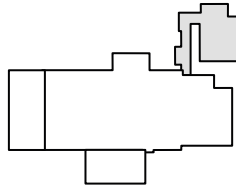
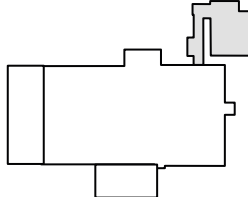
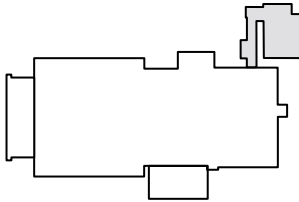
Background tool magazine 6

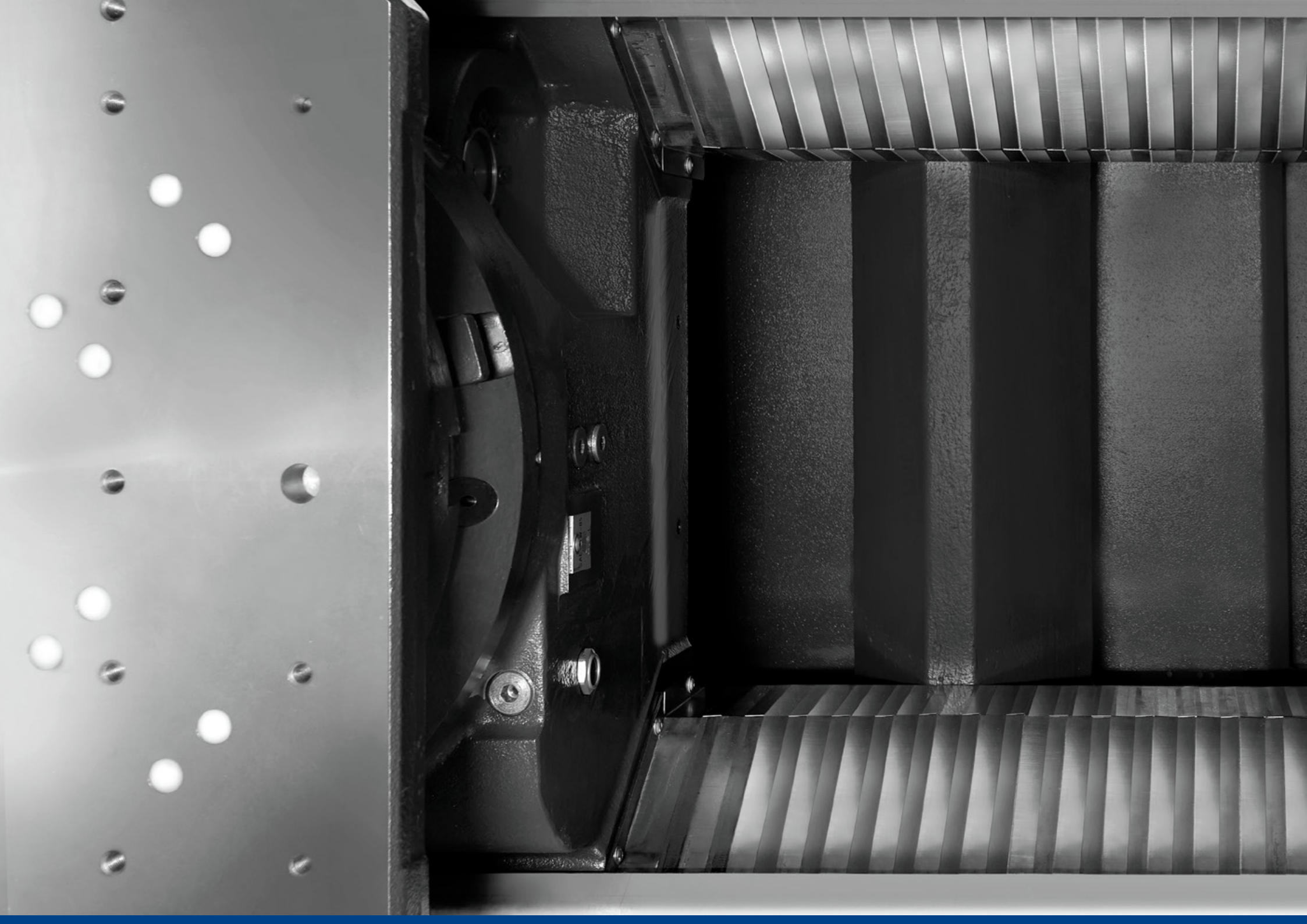
Central tool provision for several machines. Perfect for production systems with maximum of flexibility and automation.

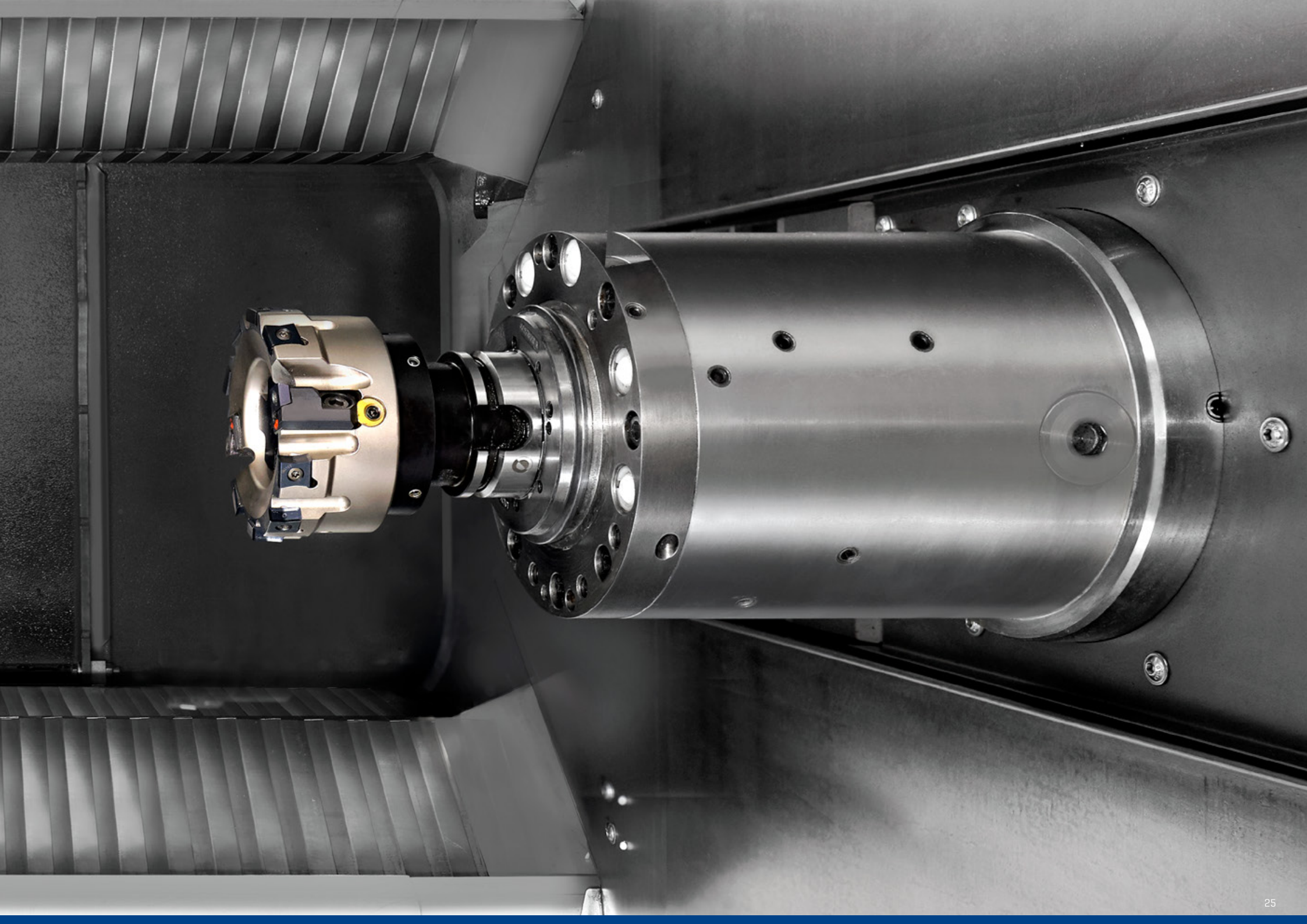
Technical Data			H 2000	H 4000	H 5000	H 6000
LINEAR AXES						
Positioning range	X/Y/Z	mm	630/630/630	800/800/800	800/800/800	1,000/1,000/1,000
Rapid traverse speed	X/Y/Z POWER [SPEED]	m/min	65 [80/80/90]	65 [80/80/90]	50 [65/65/72]	50 [65/65/72]
Acceleration	X/Y/Z POWER [SPEED]	m/s ²	8 [10/10/12]	8 [8/8/12]	5 [7/7/10]	5 [7/7/10]
Feed forces	X/Y/Z S3 40% POWER [SPEED]	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	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	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
Variants	Type: Speed/Power S6 40%/ Torque S6 40%	min ⁻¹ / kW/Nm			[HPC: 6,000/60/2,292] [PCe: 8,000/60/1,146] PC: 8,000/43/822	[HPC: 6,000/60/2,292] [PCe: 8,000/60/1,146] PC: 8,000/43/822
			[PC: 12,000/45/228] [DC: 16,000/56/180] SC: 18,000/45/103	[PC: 12,000/45/228] [DC: 16,000/56/180] SC: 18,000/45/103	[PC: 10,000/45/360] [DC: 12,000/45/400] [SC: 13,000/45/228]	[PC: 10,000/45/360] [DC: 12,000/45/400] [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	[375]	[375]	[265/425]	[265/425]
	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 / 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	POWER [SPEED]	kg	800	1,400	1,400	1,400
Load pallet changer	POWER [SPEED] 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	1,250/1,200/1,100	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]	4	3	3/3/2
Feed forces	X/Y/Z S3 40% POWER [SPEED]	kN	15/15/20 [15]	15/15/20	15/15/20	15/15/20
Positioning tolerance Tp / At⁴⁾	X/Y/Z VDI/DGQ 3441 / ISO 230	mm	0.008	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	arcsec	8	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
Variants	Type: Speed/Power S6 40%/ Torque S6 40%	min ⁻¹ / kW/Nm	[HPC: 6,000/60/2,292] [PCe: 8,000/60/1,146] PC: 8,000/43/822 [EEC: 12,500/38/242] [SC: 12,500/52/166]	[HPC: 6,000/60/2,292] [PCe: 8,000/60/1,146] PC: 8,000/43/822 [EEC: 12,500/38/242] [SC: 12,500/52/166]	[HPC: 6,000/60/2,292] [PCe: 8,000/60/1,146] PC: 8,000/43/822 [EEC: 12,500/38/242] [SC: 12,500/52/166]	[HPC: 6,000/60/2,292] [PCe: 8,000/60/1,146] PC: 8,000/43/822 [EEC: 12,500/38/242] [SC: 12,500/52/166]
TOOL MANAGEMENT						
Chip-to-chip time¹⁾	t _{2,3} VDI 2852 POWER [SPEED]	s	4.5 [4.3]	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	[265/425]	[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	1,250 x 1,600
Workpiece dimension						
	Diameter D / Depth T x Width W	mm	Ø1,250/1,250 x 1,540	Ø1,400/1,400 x 1,890	Ø1,400/1,650 x 2,690	Ø2,000/2,000 x 2,690
						
	Height H	mm	1,400	1,600	1,800	1,725
Clamping load	POWER [SPEED]	kg	2,000 [1,250]	4,000	4,000	8,000
Load pallet changer	POWER [SPEED] Total/load difference	kg	4,000 [2,500] / 1,500 [1,250]	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	7,700 x 5,850 x 4,850	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	8,100 x 5,700 x 4,850	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	24	32	34	52
CONTROL TECHNOLOGY						
Machine control			Siemens SINUMERIK 840D sl / Fanuc 31i-B			Siemens SINUMERIK 840D sl





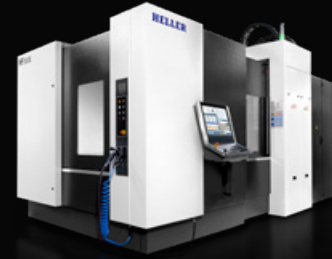
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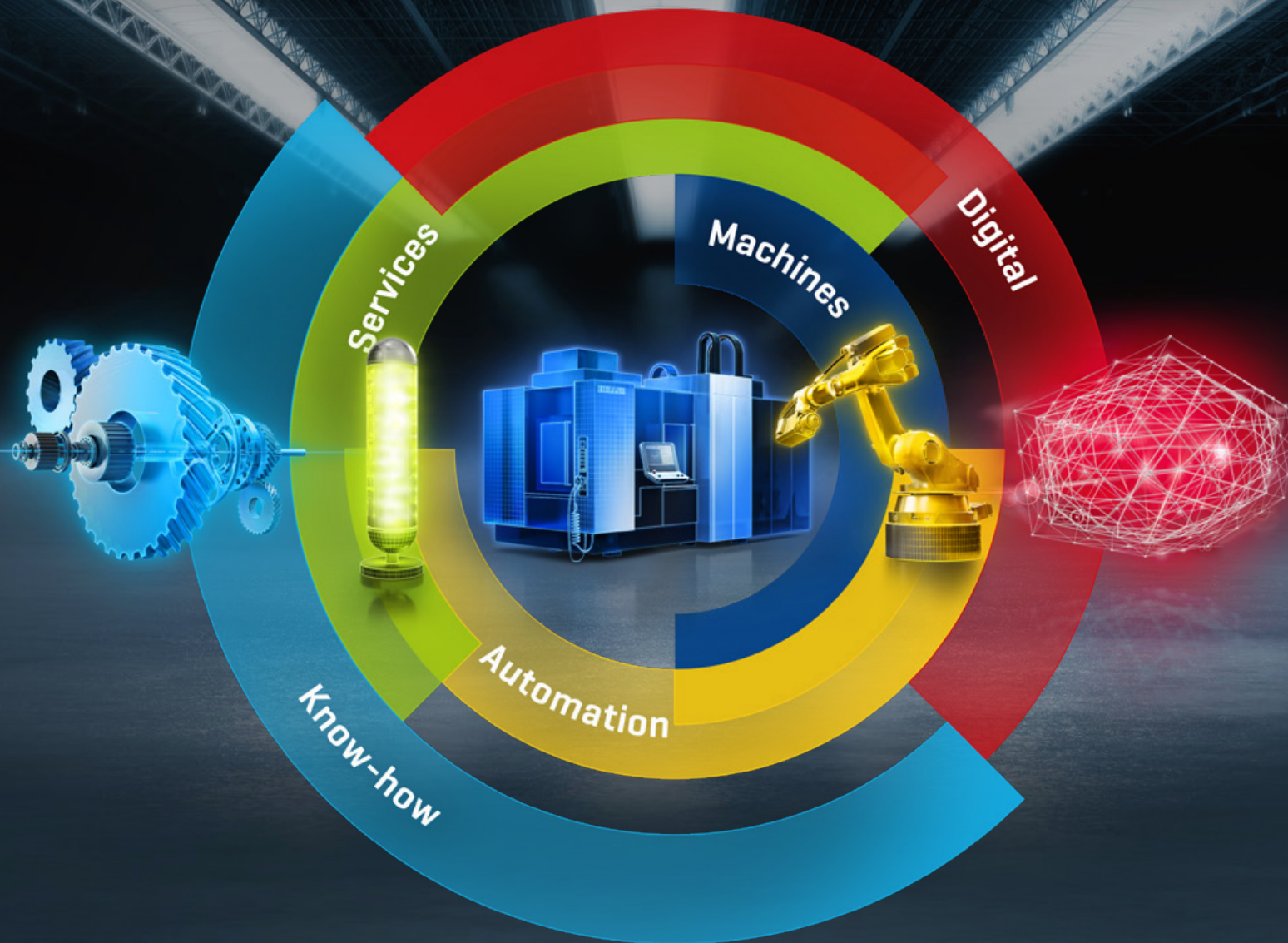


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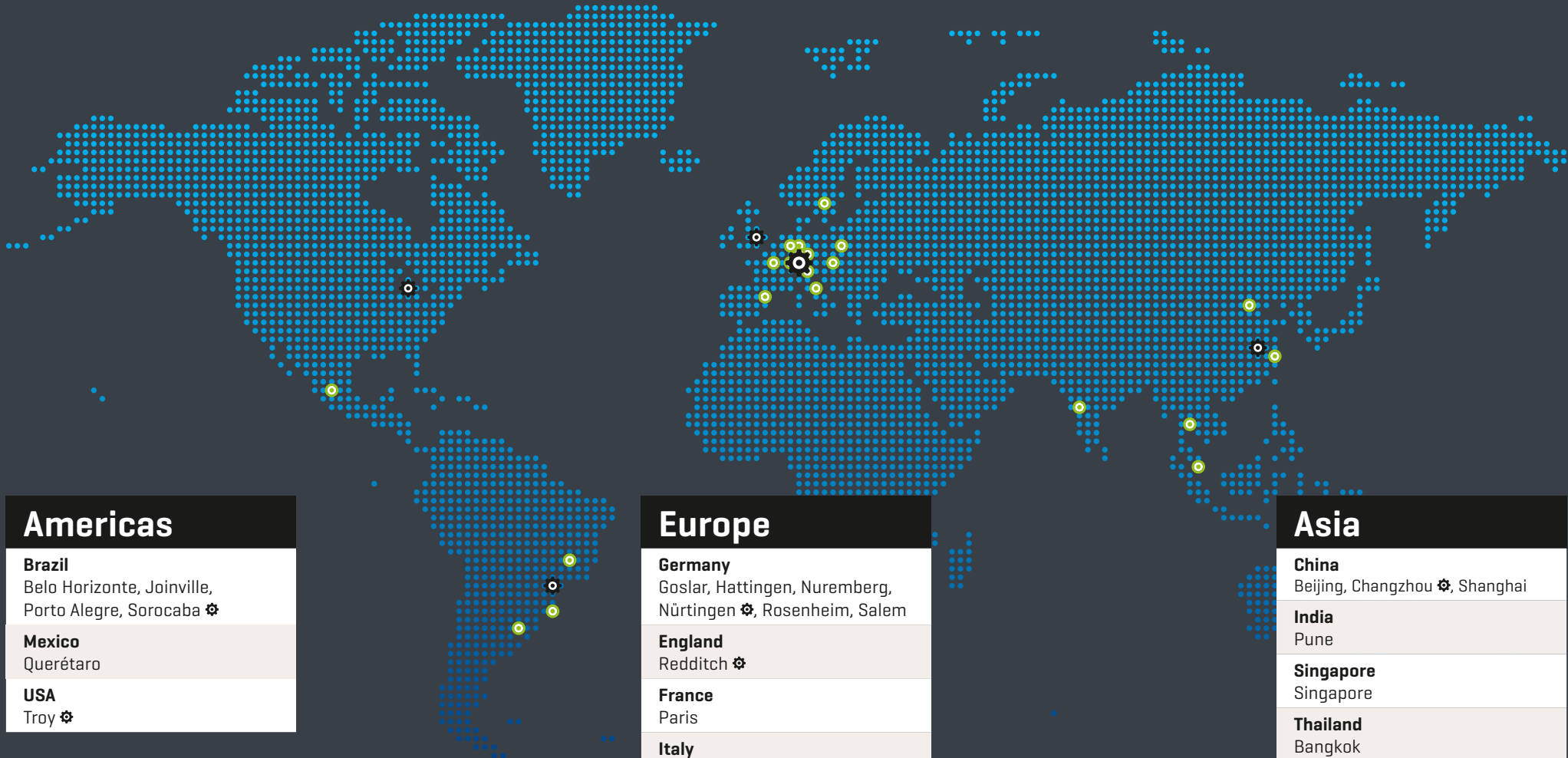
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