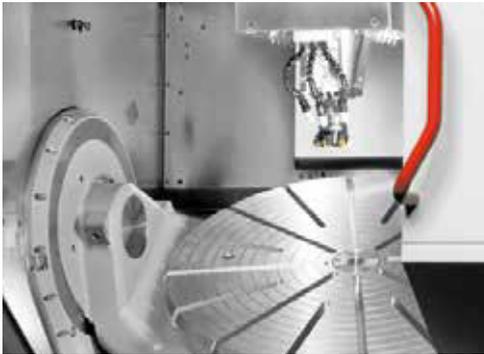
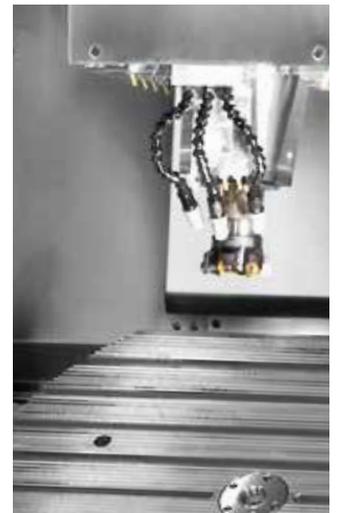
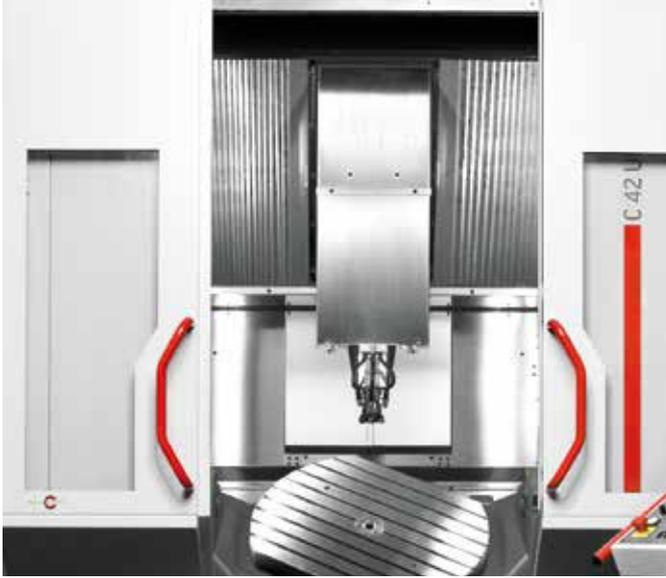


C 42

www.hermle.de



Milling at its best: Hermle machines are often at the forefront when it comes to optimized results.

The proverbial Hermle precision in combination with process consulting and project management has made us an important machine manufacturer in nearly all key sectors:

From large complex components to the very smallest components in the high-tech sector. Versatile applications, uncompromising results Hermle – the original.



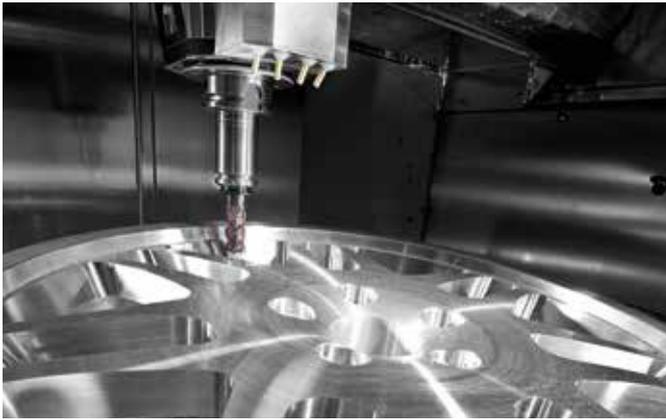
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01 Industry sectors

Hermle is at home in all sectors. For us, ensuring the highest precision and reliable machining is always paramount. Machining centres are made for daily operation, whether as linked linear segments in production or as stand-alone workshop machinery.

Automotive industry



Precision mechanics



Medical engineering



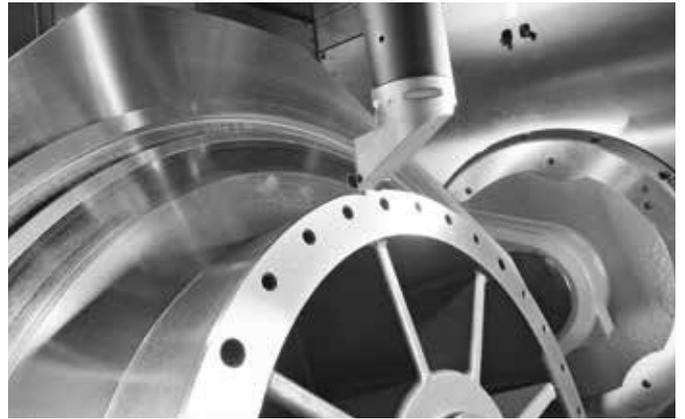
Motor sports and racing



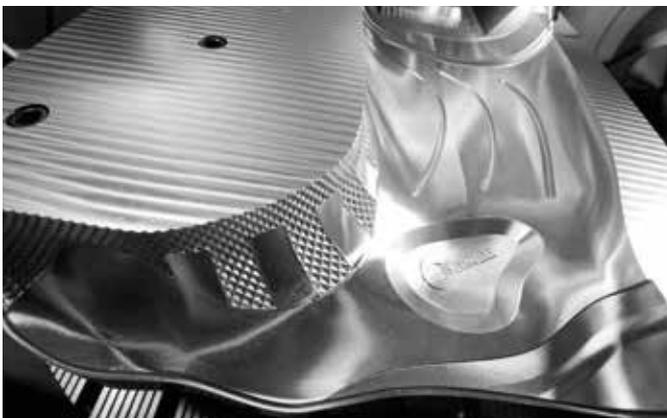
Aerospace industry



Machine construction



Tool and mould construction



Subcontractor industry



02

The machine

The C 42: a highly dynamic machining centre designed consistently for 5-axis/5-side machining. Features galore to ensure high-precision, economical parts production. Numerous automation solutions extend the application range many times over.

TECHNICAL DATA

Traverse X-Y-Z:	800 - 800 - 550 mm	
Speed:	15000 / 18000 / 25000 / 42000 rpm	
Rapid linear traverse X-Y-Z (dynamic):	45 (60) - 45 (60) - 40 (60) m/min	
Linear acceleration X-Y-Z (dynamic):	6 (10) m/s ²	
Control unit:	TNC 640 / S 840 D sl	
Rigid clamping table:	1050 x 805 mm	
Max. table load:	2000 kg	
Swivelling rotary tables:		
Machining table with worm:	Ø 440 mm	Ø 800 x 630 mm
Swivelling range:	+/- 130°	+/- 130°
A axis speed:	25 rpm	15 rpm
C axis speed:	30 rpm	25 rpm
Max. table load:	450 kg	850 kg
Machining tables with torque:	Ø 440 mm	Ø 800 x 630 mm
Swivelling range:	+/- 130°	+/- 130°
A axis speed:	55 rpm	25 rpm
C axis speed:	65 rpm	65 rpm
Max. table load:	450 kg	1400 kg





02.1

The machine . MT



Combines highly dynamic milling/turning simultaneously in up to 5 axes:
Thanks to the revolutionary MT design, all turning operations can be performed even with the machining table swivelled. The C 42 U MT machining centre can also process workpieces up to 1400 kg in weight.

TECHNICAL DATA

<i>Traverse X-Y-Z:</i>	800 - 800 - 550 mm
<i>Speed:</i>	15000 / 18000 rpm
<i>Rapid linear traverse X-Y-Z (dynamic):</i>	45 (60) - 45 (60) - 40 (60) m/min

<i>Linear acceleration X-Y-Z (dynamic):</i>	6 (10) m/s ²
---------------------------------------------	-------------------------

<i>Control unit:</i>	TNC 640 / S 840 D sl
----------------------	----------------------

Swivelling rotary table:

<i>Machining table with torque:</i>	Ø 750 mm
<i>Swivelling range:</i>	+/- 130°
<i>A axis speed:</i>	25 rpm
<i>C axis speed:</i>	800 rpm
<i>Max. turning table load:</i>	700 kg
<i>Max. milling table load:</i>	1400 kg

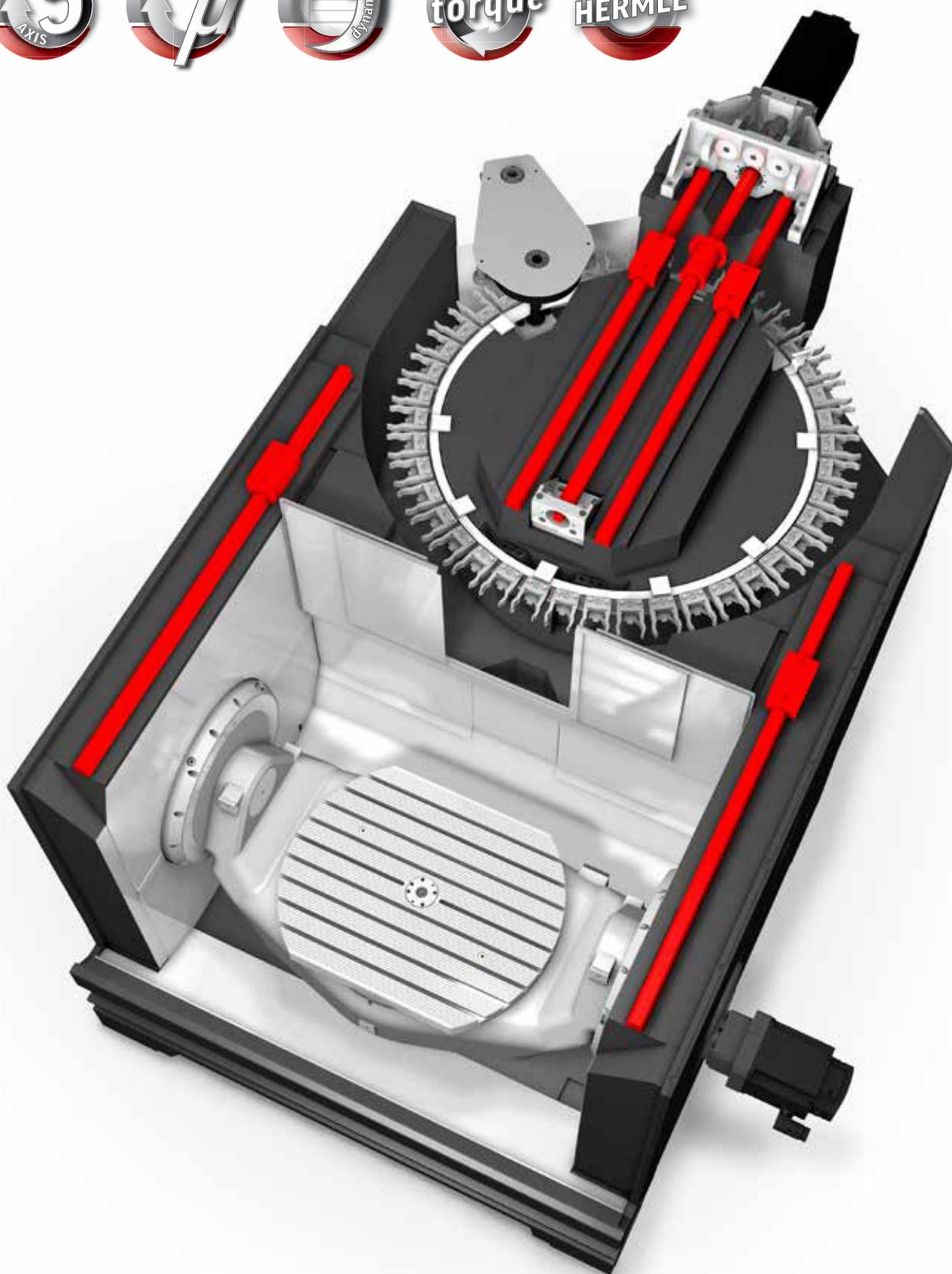
- Fully integrated rotary technology
- Integrated balancing system
- Reinforced cabin top
- Production booth
- Milling operations: 5-side machining/up to 5 axes simultaneous machinings
- Turning operations: Horizontal/vertical turning, up to 5 axes simultaneous machinings

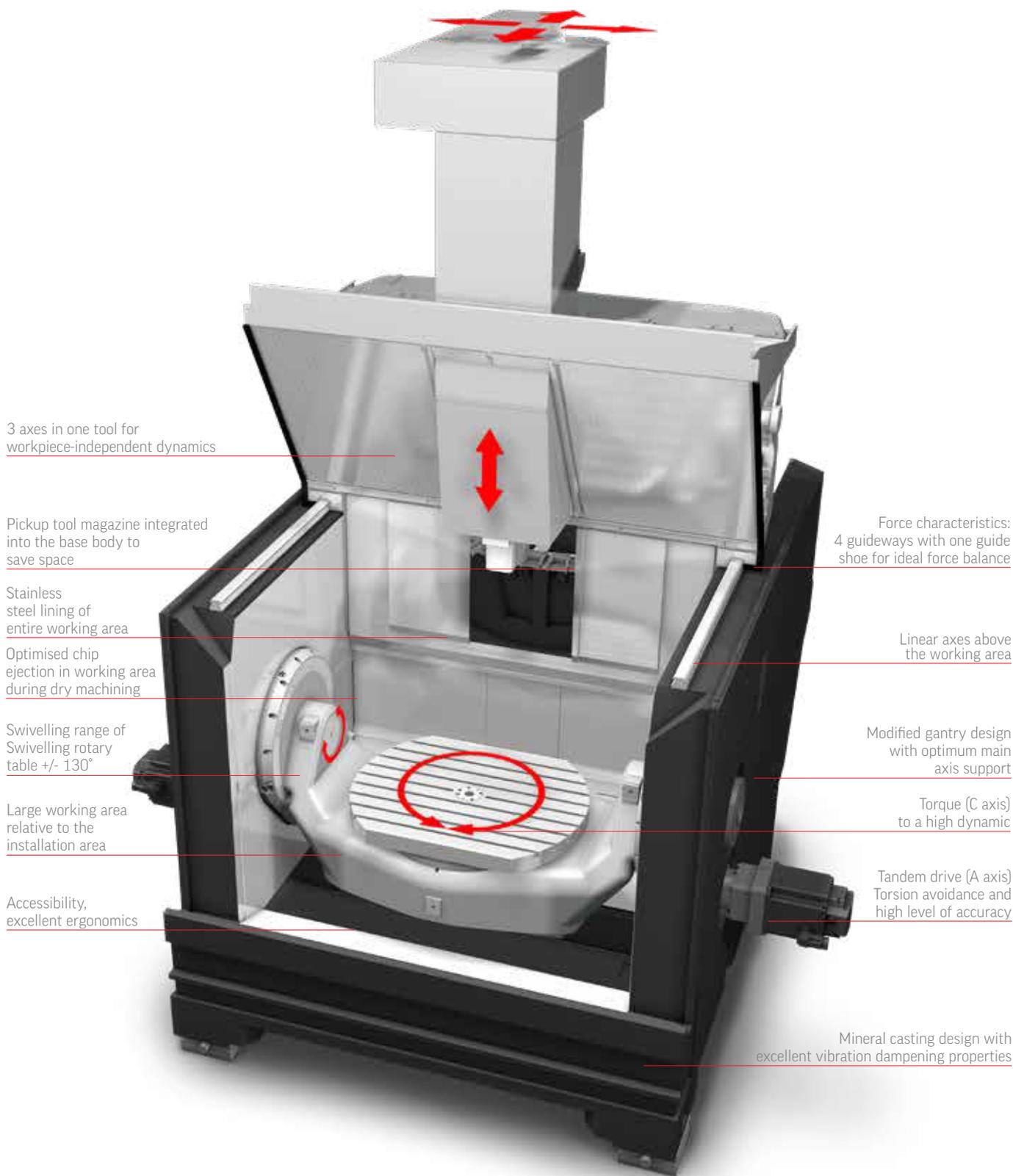




02.2

A new dimension of dynamics





3 axes in one tool for workpiece-independent dynamics

Pickup tool magazine integrated into the base body to save space

Stainless steel lining of entire working area

Optimised chip ejection in working area during dry machining

Swivelling range of Swivelling rotary table +/- 130°

Large working area relative to the installation area

Accessibility, excellent ergonomics

Force characteristics: 4 guideways with one guide shoe for ideal force balance

Linear axes above the working area

Modified gantry design with optimum main axis support

Torque (C axis) to a high dynamic

Tandem drive (A axis) Torsion avoidance and high level of accuracy

Mineral casting design with excellent vibration dampening properties

02.3

The workpiece

Many important points must be observed in order to guarantee that every workpiece is machined perfectly. For this reason, Hermle has been working on perfecting and optimising the machining process for many years. This is the reason that the C 42 is now equipped with:

- The largest working area relative to the installation area
- The largest swivelling range of workpieces in the working area
- Utilisation of the entire traverse range
- A large collision circle between the table flanges

THE WORKPIECE DIMENSION

- Unlimited crane top loading to above the table centre
- When loading the crane the tool spindle moves to the tool magazine - this means the working area is completely clear and accessible
- Extensive automation solutions for optimum workpiece handling



3-axis

800 x 800 x 550 mm

max. 2000 kg



5-axis/MT

Ø 800 x 560 mm

max. 1400 kg

MT: max. 700 / 1400 kg

Collision circle Ø 990 mm

max. vertical table clearance 700 mm



3-axis machining

5-axis machining



02.4 Ergonomics

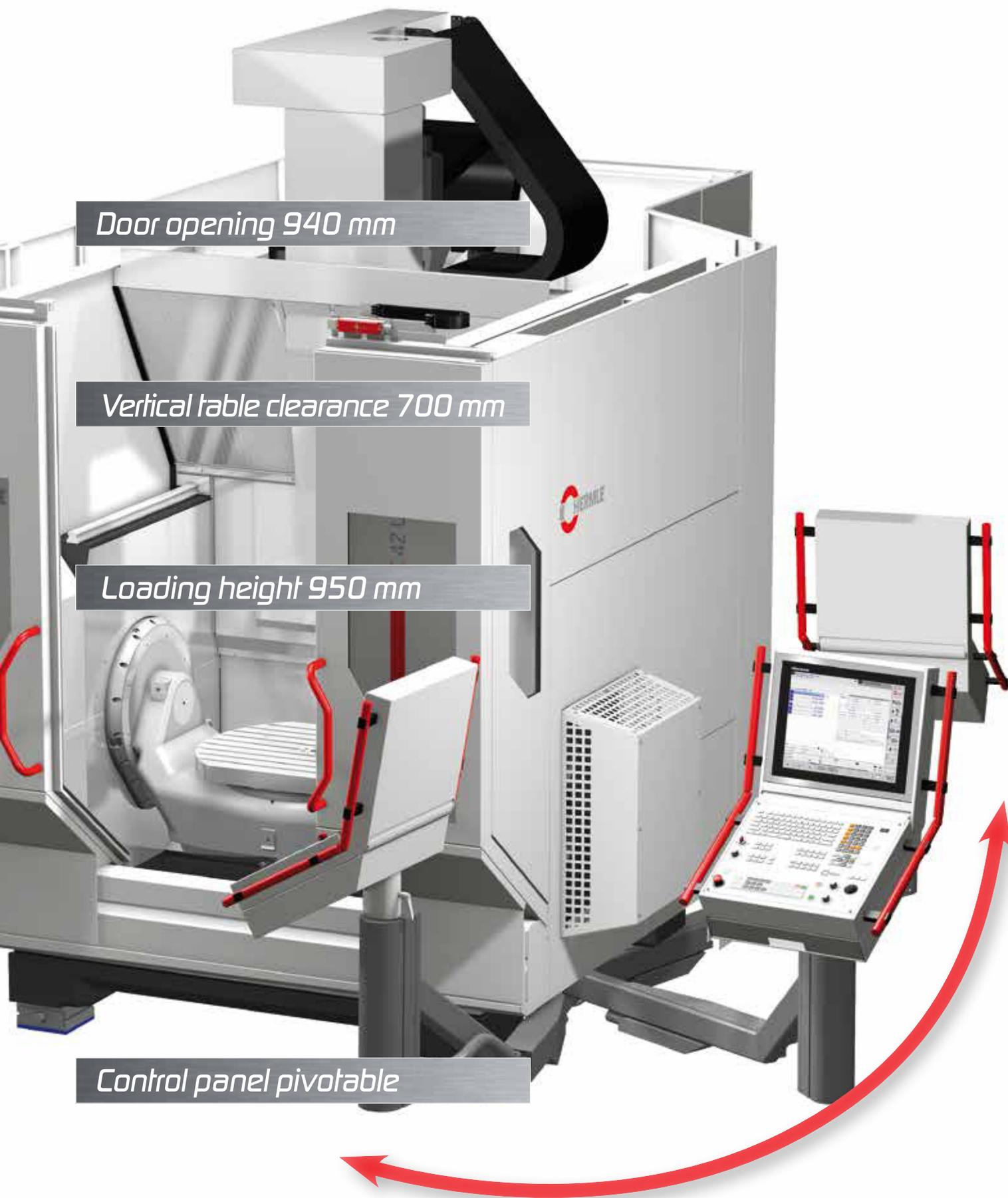
Built for daily use: The Hermle C 42 can be ergonomically adapted for every machine operator for optimum ease of use, simple operation and uncomplicated maintenance.

HIGHLIGHTS

- Ergonomic control panel:
 - Adjustable height +/- 100 mm
 - Tilting screen 5 - 35°
 - 19" Touch screen
 - Control panel pivotable from the tool loading point to the working area
- Optimum loading height
- Crane loading
- Minimum interval between machining table and operator
- Large door opening
- Lockable fluid cabinet

Screen pivotable
by up to 30 °C





Door opening 940 mm

Vertical table clearance 700 mm

Loading height 950 mm

Control panel pivotable

02.5

Table variants

Hermle's swivelling rotary table has revolutionised the concept of 5-axis machining. The C 42 also relies on 5-axis operation and takes full advantage of its advantages. These include worm gears on the entry-level table and torque drive on the highly dynamic version. All machining tables are manufactured exclusively and entirely at our plant in Gosheim.

Uncompromised perfection: This drive design accesses the gear on the table housing directly and so completely eliminates shaft torsion. This is the only way to achieve the highest precision for both one-sided and tandem drives.



TECHNICAL DATA

High degree of freedom in working area

- *Very high table load (up to 1400 kg with the highest accuracy)*
- *No accumulation of chips on the machining table (swivel table)*
- *Swivelling axis A and rotary axis C are located within the workpiece (U-shape)*
- *Torsion prevented by tandem drive*
- *Wide spacing between results in a very large collision circle in the working area*
- *High swivelling range for undercuts*

Worm table

- *Generously dimensioned worm gear*
- *Low torsion attachment*
- *Direct, absolute measuring system*

Torque table

- *High dynamics on the A and C axes*
- *No wear*
- *Direct, absolute measuring system*

Made in Germany – made in Gosheim: The C 42 table variants stand for the highest quality and optimum material usage from the cast housing to the installed gearbox and torque motors. At our main plant in Gosheim, these machining tables are laying the foundations for the precision, accuracy and quality of the machined surfaces.

Hermle's swivelling rotary tables are equipped with cutting-edge drive technology for high dynamic during 5-axis machining as the slowest axis determines the speed of 5-axis simultaneous milling.

With high-performance drive technology in the rotary axes (A axis / C axis), loads of up to 1400 kg can be positioned quickly and above all with great precision.

DRIVE TECHNOLOGY

- *Centric load on the swivelling rotary table*
- *Drive directly on table housing = low torsion A axis*
- *Direct, absolute measuring system*
- *Good maintenance accessibility*
- *A axis integrated in machine bed*

One-sided drive

- *Mechanical drive on right of table housing*



Tandem drive

- *Mechanical tandem drive to left and right of table housing*



Swivelling rotary table

Drive type of C axis: Worm

The swivelling rotary table "Worm" almost comes up to the standards of the torque table, apart from the dynamics. It is an ideal introduction to the world of 5-axis technology.



Secondary clamping plates 930 x 490



Zero-point clamping systems/pallet clamping systems

Clamping surface:	Ø 440 mm
T grooves:	parallel 5 / 14 H7
Swivelling range:	+/- 130°
Drive type of C axis:	Worm
Speed - rotary axis C:	30 rpm
Speed - swivelling axis A (one-sided drive):	25 rpm
Maximum table load (one-sided drive):	450 kg
Secondary clamping plates (option)	
T grooves:	parallel 7 / 14 H7



Clamping surface:	Ø 800 x 630 mm
T grooves:	parallel 9 / 14 H7
Swivelling range:	+/- 130°
Drive type - rotary axis C:	Worm
Speed - rotary axis C:	25 rpm
Speed - swivelling axis A (one-sided drive):	15 rpm
Maximum table load (one-sided drive):	850 kg

Swivelling rotary table

Drive type of C axis: Torque



The "Torque" swivelling rotary table provides the ideal conditions for highly dynamic 5-axis and simultaneous 5-axis machining.



Secondary clamping plates 920 x 490



Zero-point clamping systems/pallet clamping systems



Clamping surface:	Ø 440 mm
T grooves:	parallel 5 / 14 H7
Swivelling range:	+/- 130°
Drive type - rotary axis C:	Torque
Speed - rotary axis C:	65 rpm
Speed - swivelling axis A (tandem drive):	55 rpm
Maximum table load (tandem drive):	450 kg
Secondary clamping plates (option)	
T grooves:	parallel 7 / 14 H7



Zero-point clamping systems/pallet clamping systems



Clamping surface:	Ø 800 x 630 mm
T grooves:	parallel 9 / 14 H7
Swivelling range:	+/- 130°
Drive type - rotary axis C:	Torque
Speed - rotary axis C:	65 rpm
Speed - swivelling axis A (tandem drive):	25 rpm
Maximum table load (tandem drive):	1400 kg

Swivelling rotary table . MT

Drive type of C axis: Torque



Zero-point clamping systems/pallet clamping systems

Clamping surface:	Ø 750 mm
Swivelling range:	+/- 130°
Swivelling axis A speed:	25 rpm
A-axis drive mode:	Tandem
Speed - rotary axis C:	800 rpm
Drive type of C axis:	Torque
Max. turning table load:	700 kg
Max. milling table load:	1400 kg
T grooves:	star 16/14 H7

Rigid clamping table

Clamping surface: 1050 x 805 mm



Equipped with the rigid clamping table, the machine can deal with clamping weights of up to 2000 kg - ideal for 3-axis machining of large, bulky and heavy workpieces.
T grooves: parallel 12/14 H7



02.6

Tool spindles



The C 42 can be equipped with two-piece or compact spindles. All tool spindles can be replaced quickly and easily in case of failure.

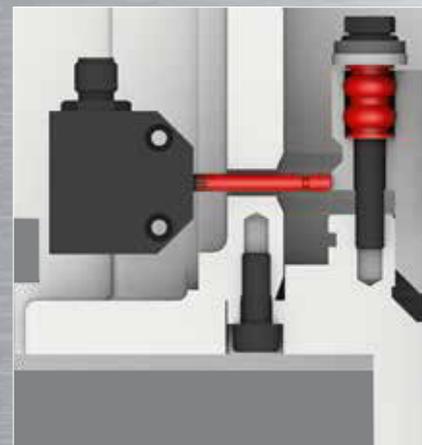
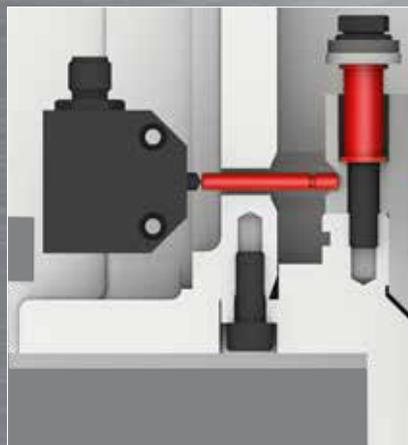
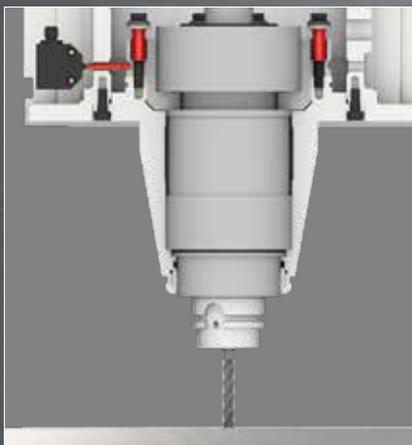
With the different speed ranges and tool holding fixtures the tool spindles are suitable for a wide variety of machining tasks. Like the machining tables, all tool spindles are manufactured exclusively and entirely at our plant in Gosheim.

TECHNICAL DATA

- High-tech tool spindles for demanding milling processes
- Slim-end tool spindle for machining deep cavities
- Few projecting edges (prevention of collision)
- Two-part tool spindle (faster, easier replacement)
- Collision protection (collision sleeves) prevents damage in 50 % of collisions

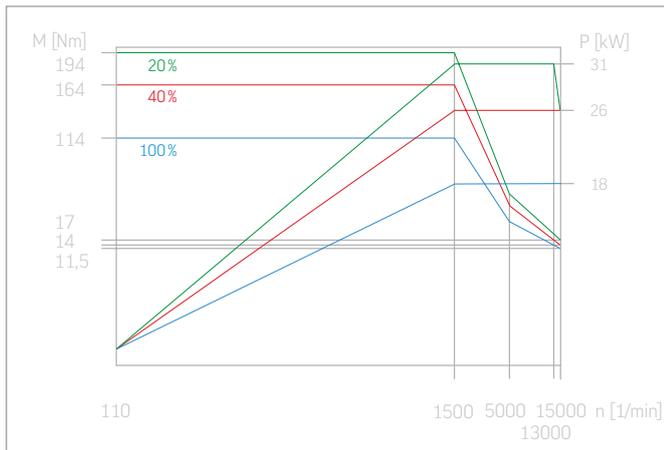
Collision protection with collision inquiry

Each tool spindle has several collision sleeves which compensate collision energy in the Z direction.





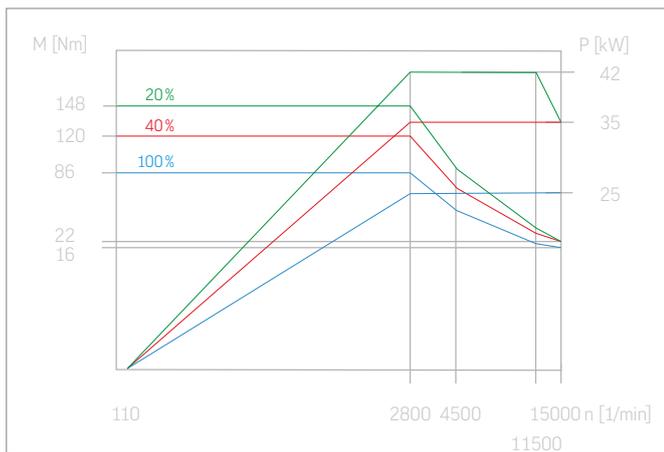
Tool spindle 15000 rpm



Maximum spindle speed: 15000 rpm
Main power 20% c.d.f.: 31 kW
Torque 20% c.d.f.: 194 Nm
Tool holding fixture: HSK A 63
Tool holding fixture MT: HSK T 63*
Tool spindle: two-piece
Collision protection: collision sleeves

* No compression sleeves

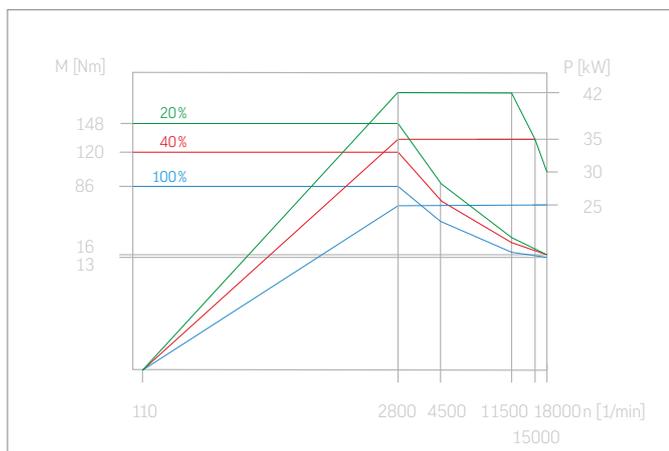
Tool spindle 15000 rpm



Maximum spindle speed: 15000 rpm
Main power 20% c.d.f.: 42 kW
Torque 20% c.d.f.: 148 Nm
Tool holding fixture: SK 40
Tool spindle: two-piece
Collision protection: collision sleeves



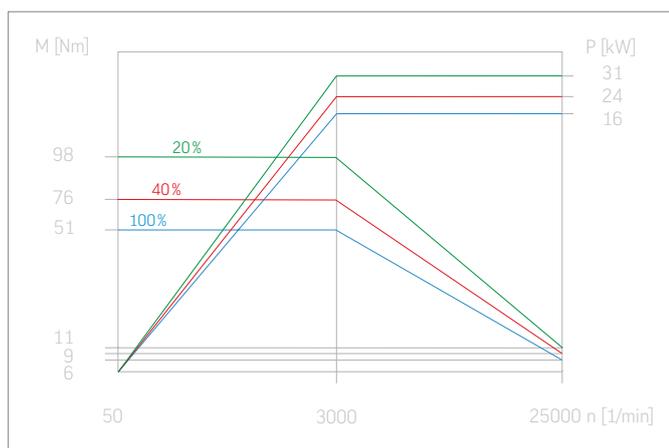
Tool spindle 18000 rpm



Maximum spindle speed:	18000 rpm
Main power 20% c.d.f.:	42 kW
Torque 20% c.d.f.:	148 Nm
Tool holding fixture:	HSK A 63
Tool holding fixture MT:	HSK T 63*
Tool spindle:	two-piece
Collision protection:	collision sleeves

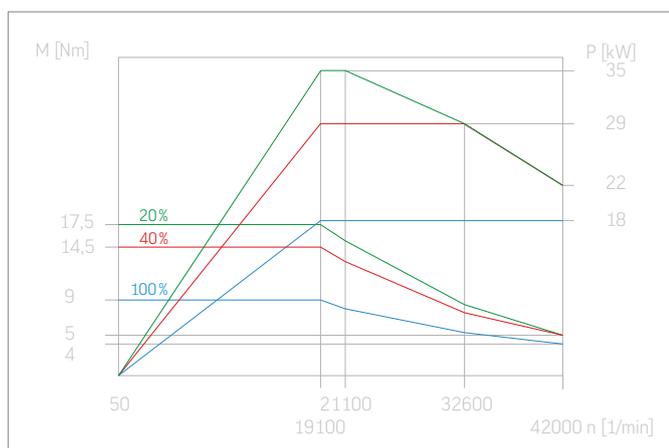
* No compression sleeves

Tool spindle 25000 rpm



Maximum spindle speed:	25000 rpm
Main power 20% c.d.f.:	31 kW
Torque 20% c.d.f.:	98 Nm
Tool holding fixture:	HSK A 63
Tool spindle:	compact

Tool spindle 42000 rpm



Maximum spindle speed:	42000 rpm
Main power 20% c.d.f.:	35 kW
Torque 20% c.d.f.:	17,5 Nm
Tool holding fixture:	HSK E 40
Tool spindle:	compact

02.7

Tool magazine

The C 42's tool magazine holds up to 42 tools in the standard version and is integrated into the machine bed to save space. It can be filled from the side by swivelling the control panel to the loading point.



TECHNICAL DATA

Pick-up magazine

Integration into the machine bed

Excellent accessibility

Control panel pivotable to the loading point

Covers for tool holding fixture

Tool changer (pick-up)

Interface:	SK 40 / HSK A 63	HSK E 40
Interface MT:	HSK A 63 / HSK T 63	
Magazine pockets:	42	42
Max. tool weight:	8 kg	2,5 kg
Max. tool diameter:	Ø 80 with corresponding adjacent pocket allocation Ø 125 mm	
Max. tool length:	300 mm	300 mm
Max. magazine load:	168 kg	105 kg
Chip-to-chip time:	approx. 4.5 s	approx. 4.5 s

Additional tool magazine ZM 50 / ZM 88 k



Magazine pockets:	50 / 88
Max. tool weight:	
SK 40 / HSK A 63 /	
HSK T 63:	8 kg
HSK E 40:	2.5 kg
Max. tool diameter:	Ø 80,
	with corresponding adjacent
	pocket allocation Ø 125 mm
Max. tool length:	300 mm

Additional tool magazine single



Magazine pockets:	192
Max. tool weight:	8 kg
Max. tool diameter:	Ø 80,
	with corresponding adjacent
	pocket allocation Ø 125 mm
Max. tool length:	300 mm

Additional tool magazine double



Magazine pockets:	462
Max. tool weight:	8 kg
Max. tool diameter:	Ø 80,
	with corresponding adjacent
	pocket allocation Ø 125 mm
Max. tool length:	300 mm

02.8

Control unit

The C 42 can be equipped with two types of control unit. All control units provide diverse program functions. Hermle simplifies programming and operation still further with comprehensive extra features.

Heidenhain

Milling and turning using one control unit

Heidenhain TNC 640

- Dynamic Efficiency – Active Chatter Control (ACC), Adaptive Feed Control (AFC), trochoidal milling
- Dynamic Precision – Cross Talk Compensation (CTC), Active Vibration Damping (AVD), Load Adaptive Control (LAC)
- Further special turning cycles are integrated such as roughing, finishing, grooving and threading
- Easy to switch from milling to turning mode
- TFT colour touch screen 19"
- Keyboard unit with full keyboard, integrated trackball, USB and Ethernet interfaces
- Fully digital with HSCI interface and EnDat interface
- Programming in Heidenhain plain text or per DIN/ISO
- Standard drilling and milling cycles
- Touch probe system cycles
- Free contour programming
- Special functions for fast 3D machining
- Automatic calculation of cutting data
- Pallet management
- Software option Kinematic Opt (Measurement cycle for improving accuracy of rotational and swivelling operations)



For further advantages and detailed technical data, please see the Heidenhain brochures.

Siemens

Milling and turning using one control unit

Siemens S 840 D sl

- 19" TFT colour flat screen
- Keyboard unit with full keyboard, additional panel with integrated trackball, key-operated switch and buttons, USB and Ethernet interfaces
- Complete and flexible diagnostics and service concept
- All inverter and control components are connected with each other by the Drive-Cliq-Interface
- Including shell transformation, 5-axis transformation, process-oriented measuring, 3D tool radius compensation and Spline-Interpolation
- Incl. software option Kinematic Opt (Measurement cycle for improving accuracy of rotational and swivelling operations)
- Tool management for all machines HOTS
- The S 840 D sl is also equipped for turning mode and can handle all integrated milling and turning processes
- Operating Interface OPERATE with ShopMill
- SINUMERIK MDynamics incl. Advanced Surface
- High Speed Settings - CYCLE832



For further advantages and detailed technical data, please see the Siemens brochures.



02.8

Control unit

Hermle control tools



Hermle "Tool Management Control"

Simple, Hermle tool management for Heidenhain controls.



Hermle "Operate-Tool-System"

Simple, Hermle tool management for the Siemens S 840 D sl.



Hermle "Automation Control System"

Simple, Hermle order management software.



Hermle "Wear Diagnosis System"

Machine status is continually monitored by the Hermle wear diagnosis system. It facilitates rapid machine diagnostics and status-oriented detection of maintenance tasks.



Hermle "Information-Monitoring-Software"

The "Information-Monitoring-Software" is used to display the live status of machines and send events via e-mail.

Hermle setups

Standard

Standard

- Standard setting.
- Switches back to the standard setting after a different setup has been used.

Heavy duty machining

Heavy duty machining

- For roughing in conjunction with high milling power.
- Greater machining performance possible thanks to reduced machine vibration (depending on the tool and the selected technology data).

High production

Production

- Quicker machining with programs which have many cycle calls or subprograms.



02.9

The details

The C 42 is built using an elegant cassette panel construction. This high-tech building block concept is used throughout from the standard machine to the flexible manufacturing system. The machining centre can be transported without any disassembly and set up without a foundation. Furthermore, all units are arranged for easy maintenance and servicing.

HIGHLIGHTS

Comprehensive fluid technology

Optimised chip management

Diverse cooling lubricant units

Scraper belt conveyor

Slat conveyor

We provide the correct method of chip removal from the working area for all kinds of chips



Space-saving chip conveyor arrangement



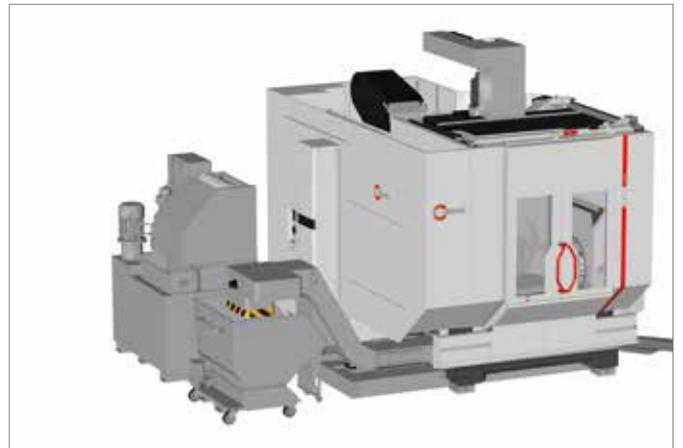
Chip drawer



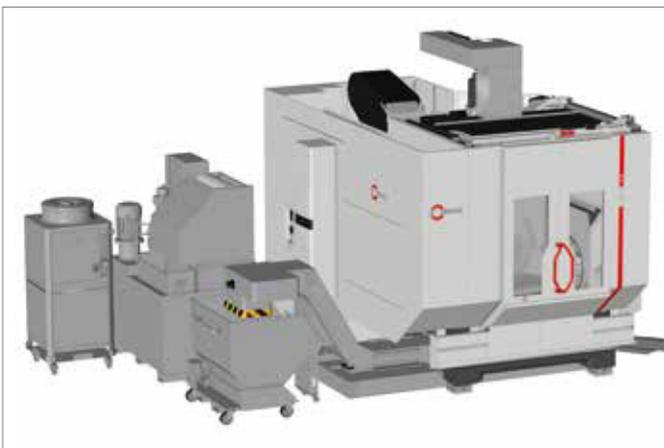
Chip conveyor



Chip conveyor with internal cooling lubricant supply ICS 40



Chip conveyor with internal cooling lubricant supply ICS 80

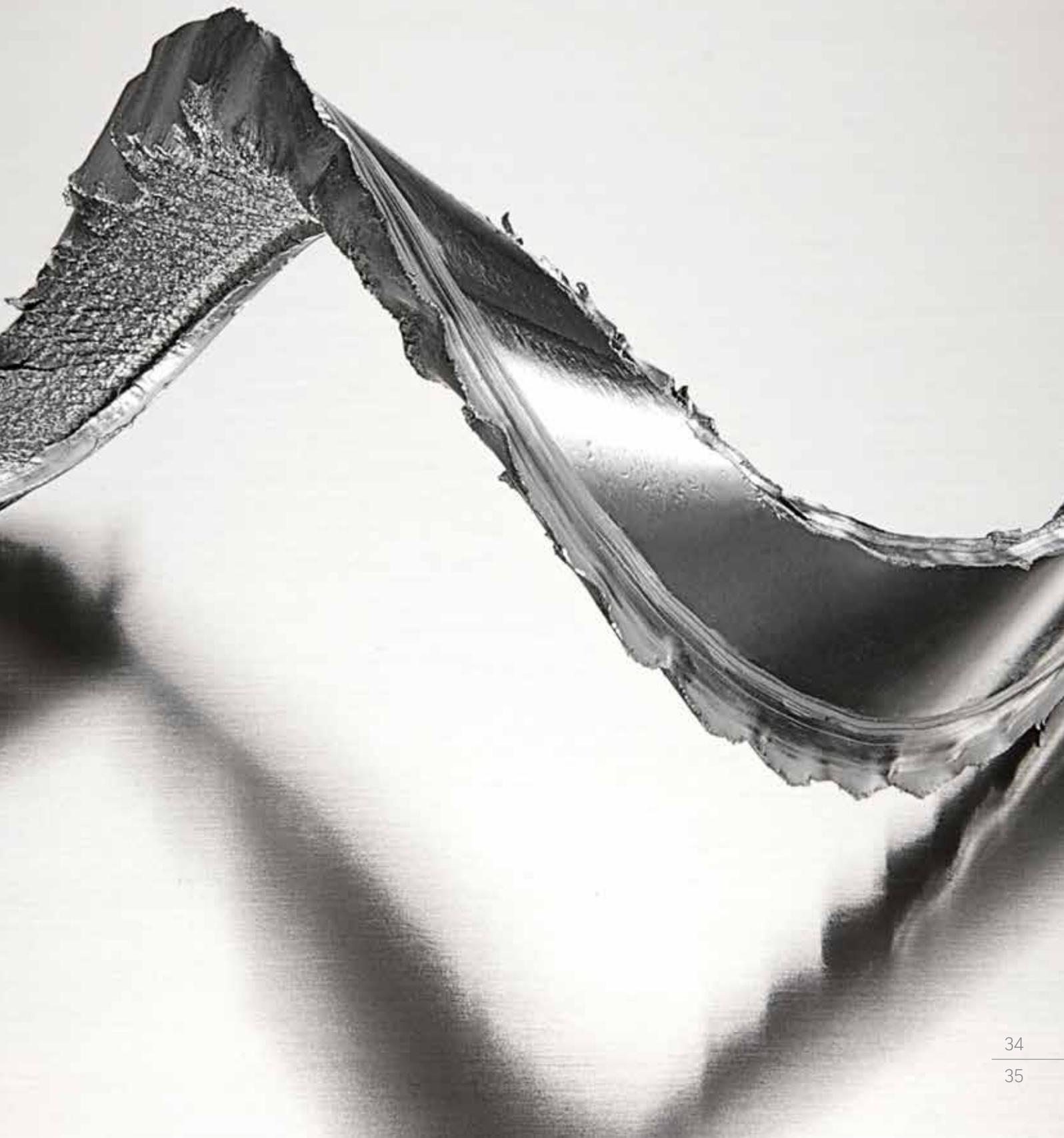


Chip conveyor with internal cooling lubricant supply ICS 80 and recooling unit

03

Technical data . C 42





03.1

Technical data . C 42

Working area	Traverse	X axis	800 mm
	Traverse	Y axis	800 mm
	Traverse	Z axis	550 mm
	Rapid linear traverse (dynamic)	X-Y-Z	45 - 45 - 40 m/min (60 - 60 - 60 m/min)
	Linear acceleration (dynamic)	X-Y-Z	6 (10) m/s ²
	Linear feed force	X-Y-Z	8500 N
	Max. vertical table clearance		700 mm
	Max. workpiece diameter		Ø 800 mm
	Max. workpiece height		560 mm
	Collision circle (A axis) in 0° position		Ø 990 mm
Main spindle drive	Speed	15000 rpm	HSK A 63 ○
	Main power/Torque	20% c.d.f.	31 kW / 194 Nm
	Speed (MT variants)	15000 rpm	HSK T 63 ○
	Main power/Torque	20% c.d.f.	31 kW / 194 Nm
	Speed	15000 rpm	SK 40 ○
	Main power/Torque	20% c.d.f.	42 kW / 148 Nm
	Speed	18000 rpm	HSK A 63 / HSK T 63 ●
	Main power/Torque	20% c.d.f.	42 kW / 148 Nm
	Speed	25000 rpm	HSK A 63 ○
	Main power/Torque	20% c.d.f.	31 kW / 98 Nm
Speed	42000 rpm	HSK E 40 ○	
Main power/Torque	20% c.d.f.	35 kW / 17,5 Nm	
Speed (MT variants)	18000 rpm	HSK A 63 / HSK T 63 ●	
Main power/Torque	20% c.d.f.	42 kW / 148 Nm	
Control unit	Heidenhain		TNC 640 ●
	Siemens		Sinumerik 840 D sl ○
Tool changer (pick-up)	Interface	SK 40 / HSK A/T 63 ●	HSK E 40 ○
	Magazine pockets	42 items	42 items
	Chip-to-chip time	approx. 4.5 s	approx. 4.5 s
	Max. tool length	300 mm	300 mm
	Max. tool diameter	Ø 80 mm	Ø 80 mm
	with corresponding adjacent pocket allocation	Ø 125 mm	Ø 125 mm
	Max. magazine load	168 kg	105 kg
	Extension of tool storage capacity	Additional tool magazine ZM 50	
Additional tool magazine ZM 88 k			Additional 88 pockets ○
Additional tool magazine single ZM 192			Additional 192 pockets ○
Additional tool magazine double ZM 462			Additional 462 pockets ○
Interface		SK 40 / HSK A 63 / HSK T 63	HSK E 40
Max. tool diameter in the additional tool magazine		Ø 80 mm	Ø 80 mm
with corresponding adjacent pocket allocation		Ø 125 mm	Ø 125 mm
Max. tool weight			8 kg 2.5 kg

Table variants *

Swivelling rotary table	Ø 800	Ø 800	Ø 440
Clamping surface	Ø 800 x 630 mm	Ø 800 x 630 mm	Ø 440 mm
Swivelling range	+/- 130°	+/- 130°	+/- 130°
C-axis drive mode	Worm	Torque	Torque
Swivelling axis A speed			
One-sided drive	15 rpm	-	-
Tandem drive	-	25 rpm	55 rpm
Rotary axis C speed	25 rpm	65 rpm	65 rpm
Max. table load			
One-sided drive	850 kg	-	-
Tandem drive	-	1400 kg	450 kg
Parallel T grooves	9 / 14 H7	9 / 14 H7	5 / 14 H7
Secondary clamping plates	-	-	920 x 490 mm
Parallel T grooves	-	-	7 / 14 H7
Swivelling rotary table	Ø 440	MT variants	Rigid Clamping table
Clamping surface	Ø 440 mm	Ø 750 mm	1050 x 805 mm
Swivelling range	+/- 130°	+/- 130°	-
C-axis drive mode	Worm	Torque	-
Swivelling axis A speed			
with one-sided drive	25 rpm	-	-
Tandem drive	-	25 rpm	-
Rotary axis C speed	30 rpm	800 rpm	-
Max. table load			2000 kg
One-sided drive	450 kg	-	-
Tandem drive milling	-	1400 kg	-
Tandem drive turning	-	700 kg	-
Parallel T grooves	5 / 14 H7	-	12 / 14 H7
Star-shaped T grooves		16 / 14 H7	
Secondary clamping plates	930 x 490 mm	-	-
Parallel T grooves	7 / 14 H7	-	-

*All machining tables available on demand

- Included in standard delivery
- Available upon request

Positional uncertainty	P in X-Y-Z axes according to VDI/DGQ 3441 (calculated at a constant ambient temperature of 20 °C +/-1 °C. Our products are subject to the German Export Law and require authorization since the attainable precision may be less/greater than 6 µm.)	0.008 mm	●
Chip drawer	Removable chip drawer		●
Chip conveyor	Scraper belt or hinge conveyor ejection height ejection height chip cart	at least 940 mm 450 l	○ ○
External cooling lubricant supply	With chip drawer and cooling lubricant tank Cooling lubricant tank capacity	390 l	●
Internal cooling lubricant supply with paper band filter	Capacity of standard tank	100 l	100 l ○
	Capacity of cooling lubricant tank	570 l	1100 l
	Pressure (manually adjustable up to)	max. 40 bar / 27 l/min	max. 80 bar / 30 l/min
	Mains connection (ICS)	-	400 V / 50 Hz
	Power consumption (ICS)	-	16.5 kVA
	Power consumption (ICS with recooling unit)	-	22.5 kVA
Hydraulics	Operating pressure	120 bar	●
Central lubrication	Minimum grease lubrication quantity		●
Connected loads (machine)	Mains connection	400 V / 50 Hz	
	Power consumption C 42	53 kVA	
	Power consumption C 42 MT	57 kVA	
	Compressed air	6 bar	
Weight	(standard version without optional extras, attachments, workpieces and cooling lubricant)	Approx. 13.5 t	

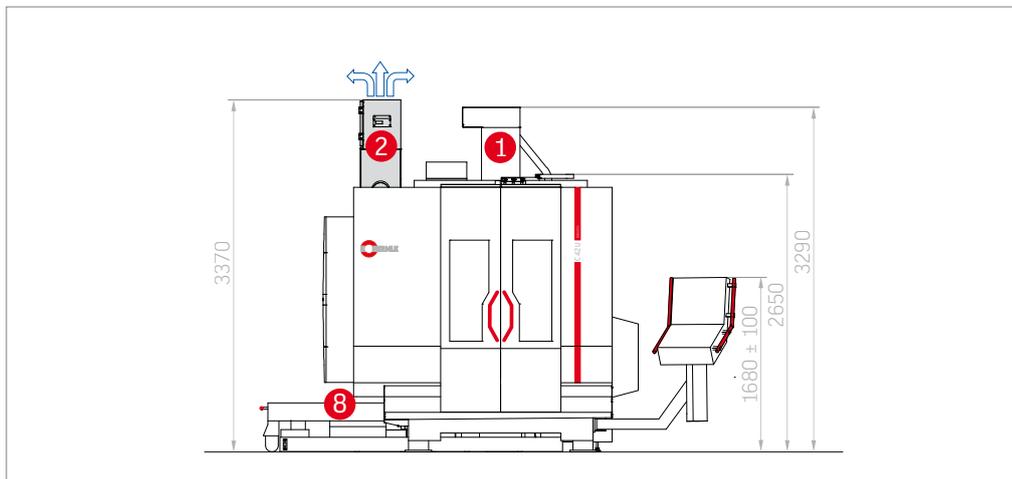
- Included in standard delivery
- Available upon request



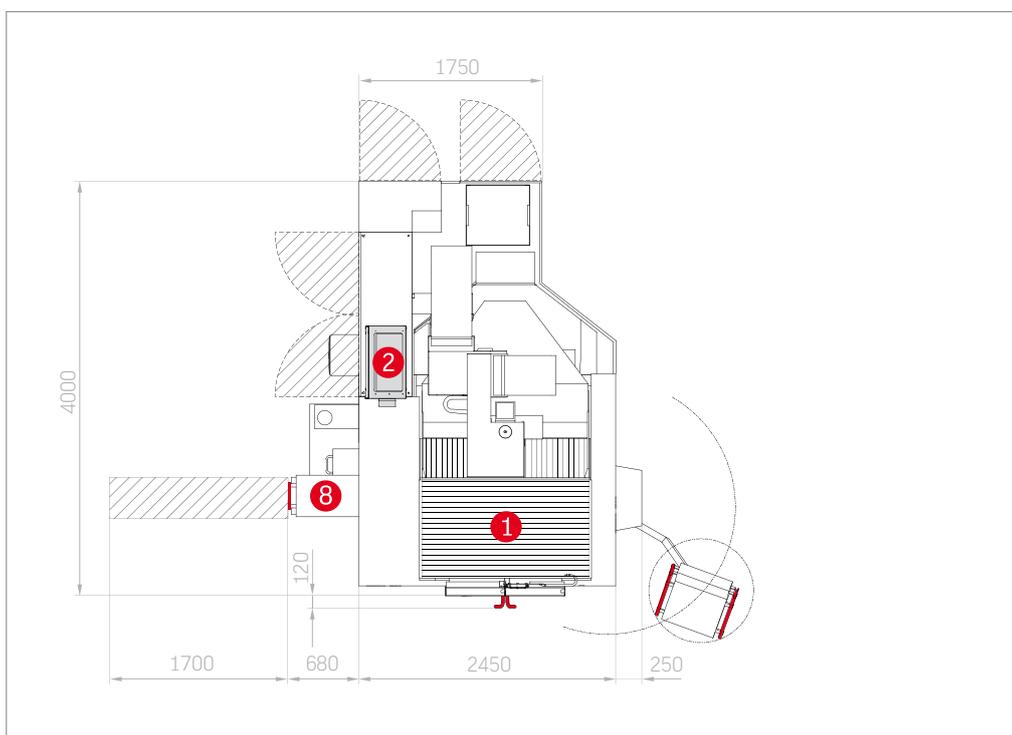
03.2 Options

The C 42 is prepared for anything: Numerous optional extras make machining even more efficient and powerful in real applications and enable you to optimise your work with the machining centre still further.

C 42 standard machine dimensions



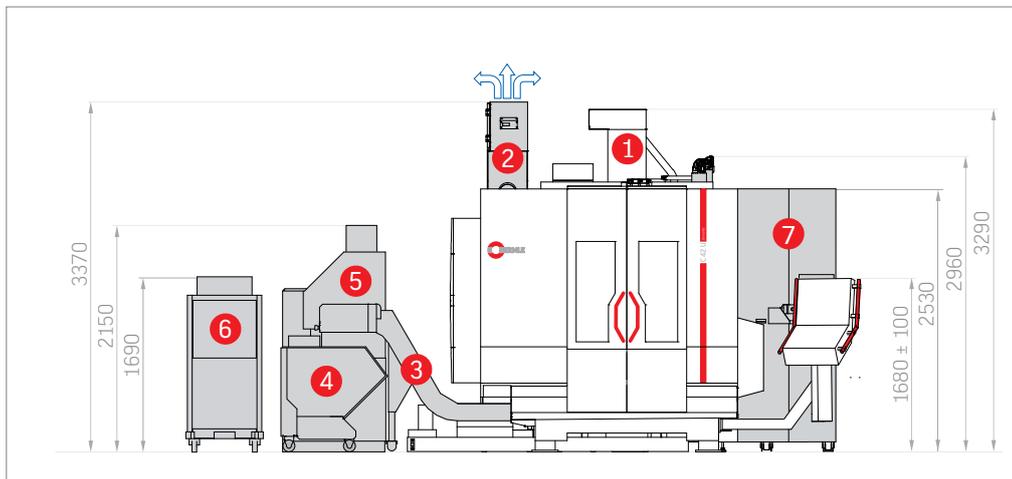
- 1 Machining center
- 2 Emulsion mist extraction
- 8 Chip drawer



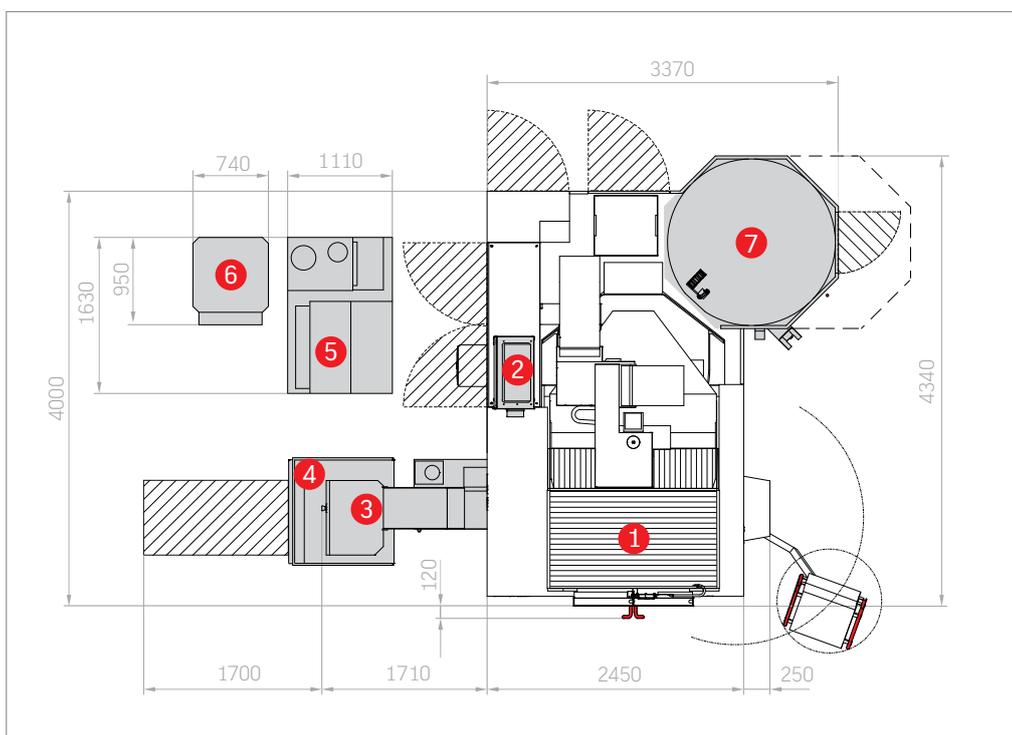
Options

- External blow air
- Automatic cabin door
- Automatic cabin top
- Collection of operating data
- Bed flushing
- Hand-held control module
- Heat compensation
- Emulsion mist extraction system
- Precision packages
- Graphite machining packages
- Internal blow air
- Internal cooling lubricant supply
- Comfort control panel
- Touch probe
- Touch probe preparation
- Pallet clamping system
- Pallet storage
- Pallet changer
- Production cabin
- ICS recooling unit
- Visibility improvement unit
- Signal lamp
- Chip conveyor
- Chip drawer
- Coolant nozzle
- Chip cart
- Sealing air for scales
- Laminated safety glass panes
- Tool breakage monitoring / measurement
- Additional magazine

C 42 dimensions . Additional tool magazine ZM 50 / ZM 88 k



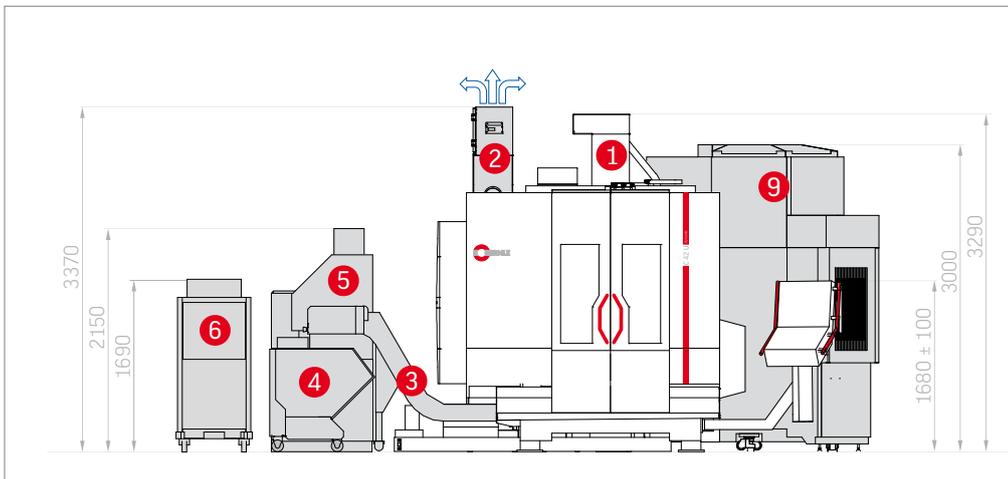
- 1 Machining center
- 2 Emulsion mist extraction
- 3 Chip conveyor
- 4 Chip cart
- 5 Internal cooling lubricant supply
- 6 ICS recooling unit
- 7 Additional tool magazine ZM 50 / ZM 88 k



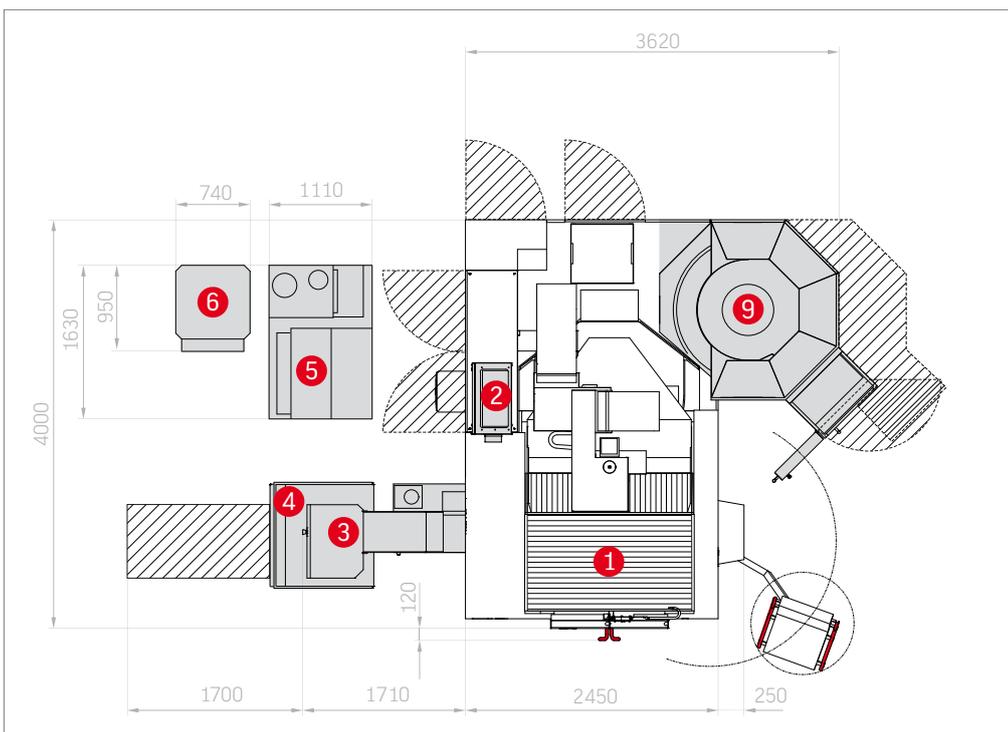
Options

- External blow air
- Automatic cabin door
- Automatic cabin top
- Collection of operating data
- Bed flushing
- Hand-held control module
- Heat compensation
- Emulsion mist extraction system
- Precision packages
- Graphite machining packages
- Internal blow air
- Internal cooling lubricant supply
- Comfort control panel
- Touch probe
- Touch probe preparation
- Pallet clamping system
- Pallet storage
- Pallet changer
- Production cabin
- ICS recooling unit
- Visibility improvement unit
- Signal lamp
- Chip conveyor
- Chip drawer
- Coolant nozzle
- Chip cart
- Sealing air for scales
- Laminated safety glass panes
- Tool breakage monitoring / measurement
- Additional magazine

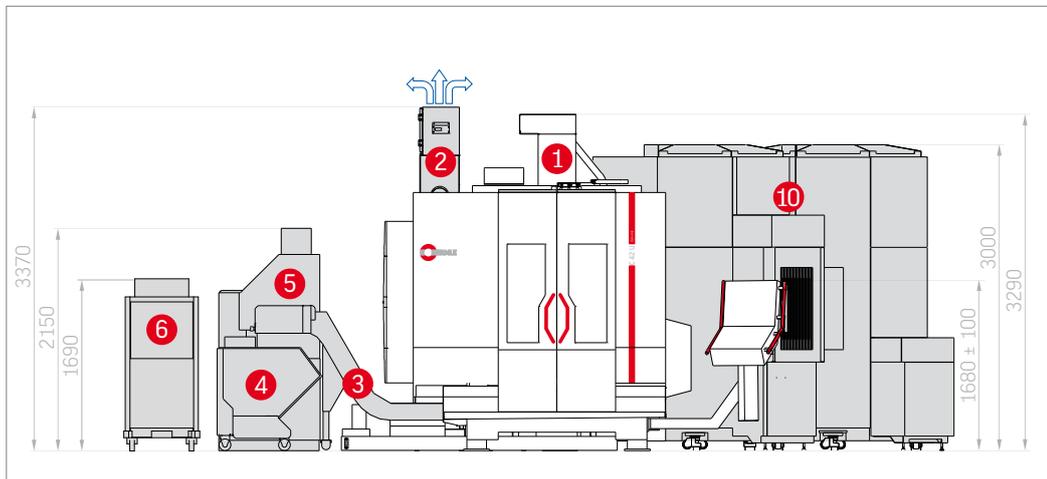
C 42 dimensions . Additional tool magazine single



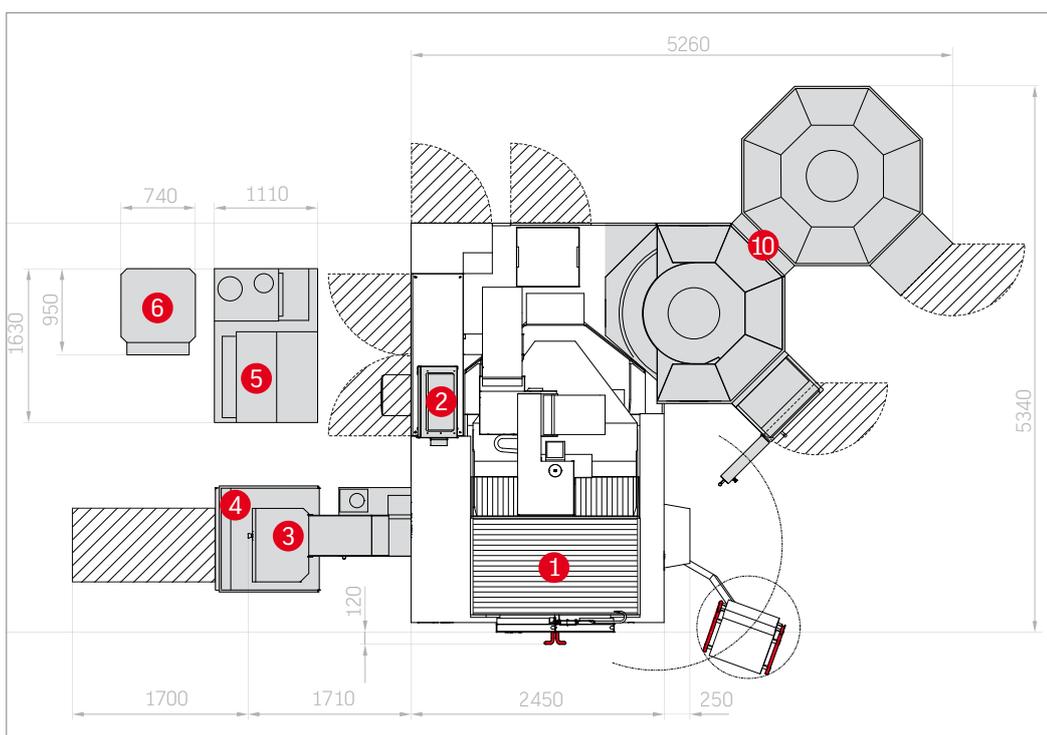
- 1 Machining center
- 2 Emulsion mist extraction
- 3 Chip conveyor
- 4 Chip cart
- 5 Internal cooling lubricant supply
- 6 ICS recooling unit
- 9 Additional tool magazine single



C 42 dimensions . Additional tool magazine double



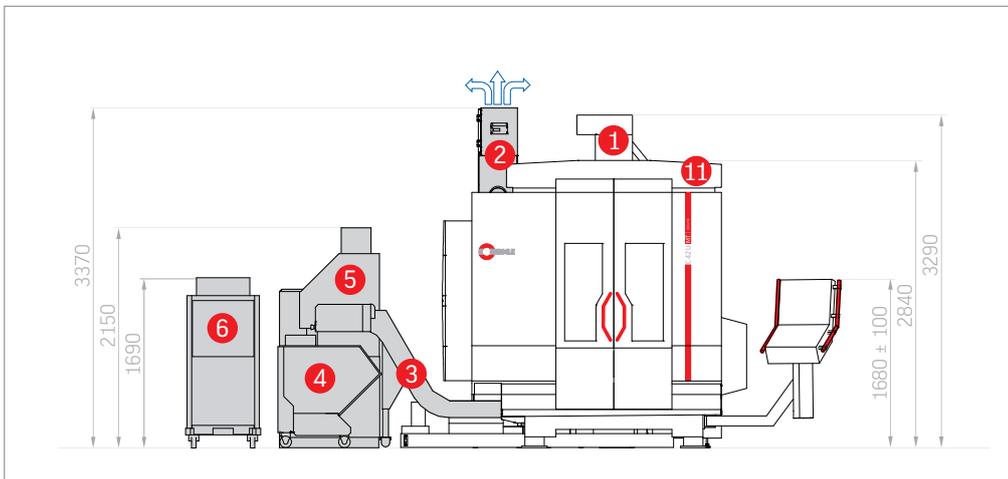
- 1 Machining center
- 2 Emulsion mist extraction
- 3 Chip conveyor
- 4 Chip cart
- 5 Internal cooling lubricant supply
- 6 ICS recooling unit
- 10 Additional tool magazine double



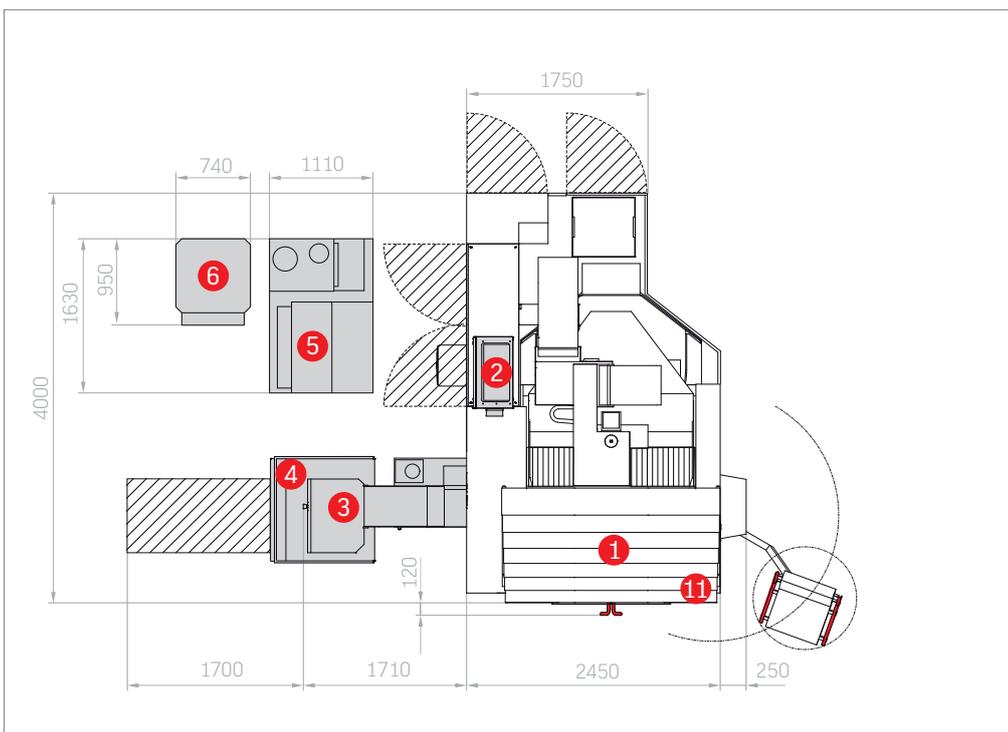
Options

- External blow air
- Automatic cabin door
- Automatic cabin top
- Collection of operating data
- Bed flushing
- Hand-held control module
- Heat compensation
- Emulsion mist extraction system
- Precision packages
- Graphite machining packages
- Internal blow air
- Internal cooling lubricant supply
- Comfort control panel
- Touch probe
- Touch probe preparation
- Pallet clamping system
- Pallet storage
- Pallet changer
- Production cabin
- ICS recooling unit
- Visibility improvement unit
- Signal lamp
- Chip conveyor
- Chip drawer
- Coolant nozzle
- Chip cart
- Sealing air for scales
- Laminated safety glass panes
- Tool breakage monitoring / measurement
- Additional magazine

C 42 U MT dimensions



- 1 Machining center
- 2 Emulsion mist extraction
- 3 Chip conveyor
- 4 Chip cart
- 5 Internal cooling lubricant supply
- 6 ICS recooling unit
- 11 Reinforced cabin top





04.1 Automation . C 42



Everybody is talking about automation, but it's much more than just a trend. We ourselves have changed from being a machine manufacturer to a process provider because we believe that the decisive criterion for automated efficiency is integration of the entire environment. In keeping with this philosophy, we are continuing what began with economical pallet changing and intelligent handling systems with highly advanced robot solutions. Therefore, we have long been capable of converting machines into flexible manufacturing cells.



Robot system with pallet racks



Robot system loading the machine



RS 2 Kombi robot system setup station and rack arrangement



04.1 Automation . C 42



Our pallet changer is setting new standards for parallel setup in our highly dynamic machining centres. A further increase in productivity allows for more adaptable storage systems. Machining centres can be set up via pallet storage for production-oriented machine runs with minimum operator interference/without operator interference or for customer-specific runs using a wide range of parts. Furthermore, multiple machining centres can be linked to form a complete manufacturing system.



Pallet changer PW 850

Technical data PW 850 . Compact pallet changer

- Repeating accuracy: < 0.01 mm
- Broad hinged double doors with optimum access to the setup station
- Side access door with direct access to working area
- Control panel swivels across machine working area
- Can be equipped with double or triple storage

- Pallet dimensions / workpiece sizes

400 x 400 / Ø 500 mm

500 x 500 / Ø 630 mm

630 x 630 / Ø 800 mm

MT: Ø 750 mm

- Pallet spaces

Without storage: 3

With double storage: 5

With triple storage: 6

- Transport weight

With double storage: max. 850 kg incl. pallet

With triple storage: max. 600 kg incl. pallet



Pallet changer PW 850



04

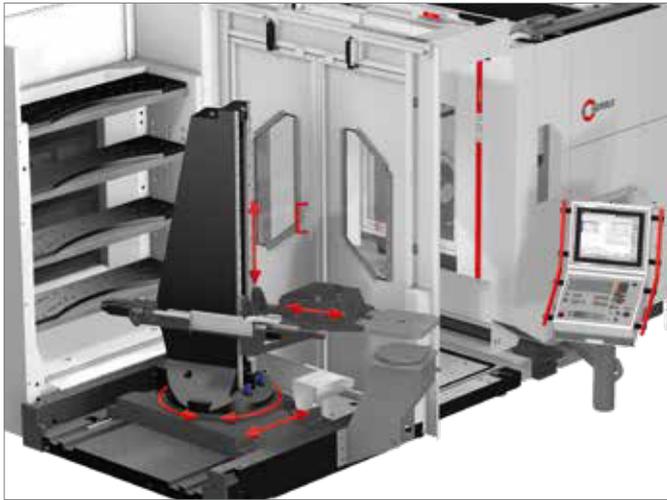
Automation . C 42

The new HS flex handling system is an automation solution providing cost-effective entry into machining centre automation. The HS flex handling system is an automation solution providing cost-effective entry into machining centre automation. The front-sided adaptation ensures a space-saving layout with direct connection to the machining centre. The large intermediate space provides direct access to the working area for manual operator activities. In automatic mode, a double door blocks operator access; and in setup mode, access to the handling system. The customisable pallet storage modul offers numerous combination options for a large range of parts. A second pallet storage modul can be additionally integrated in the handling system, thus enhancing the storage of parts significantly.

The Hermle Automation-Control-System (HACS), which is operated via an integrated touch panel, provides an ideal platform for intuitive operation and control of the handling system.



HS flex with two pallet storage moduls and setup station, adapted on a machining centre C 42 U.



Function and movement concept of the handling system. Compact design and space-saving arrangement with optimum access for the machine operator.

YOUR ADVANTAGES

- Automation solution for enhanced storage of pallets
- Optimised, operator-friendly access to the machining centre
- Large configurable pallet storage modul
- Additional, configurable pallet storage modul
- Lateral setup station (optionally rotatable)
- Touch pad with integrated operating software HACS
- No floor anchorage required
- Easy and quick installation and commissioning

Technical data . HS flex:

Pallet storage	rack storage module 1	rack storage module 2
Rack storage locations	From 6 to 25 rack storage locations for each rack storage module. The rack storage modules can be configured in many different variants and mixed operation is also possible (different workpiece and pallet dimensions). The maximum workpiece dimensions to be processed and table loads of the respective machine model are relevant.	
Pallet dimensions	max. 500 x 400 mm	
Workpiece height	max. 625*	The workpiece height per rack level depends on the selected rack storage module variants.
Transport weight incl. pallet	max. 450 kg**	
Pallet weight	min. 20 kg	
Pallet change time	max. 50 s	

* Please pay attention to the maximum permitted workpiece height.

** Please pay attention to the maximum permitted table load.

04.2 All components. From a single source.

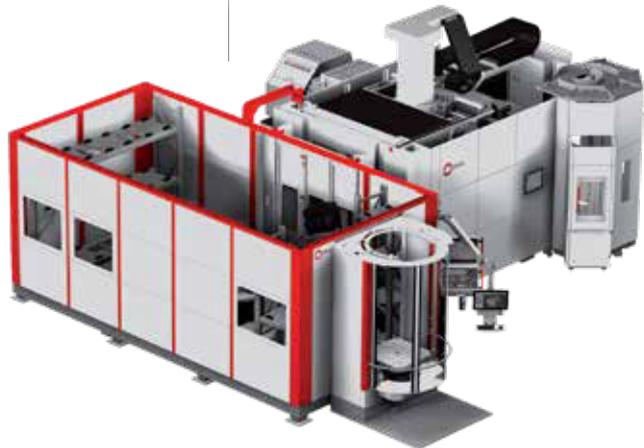
Hermle - milling at its best. We stand for

- Machining centres and automation solutions from a single source.
- High system expertise during planning, installation and maintenance.
- 3-, 4- and 5-axis machining centres for which we ourselves manufacture and install all components including table units, main spindles and entire sheet metal enclosures.
- Automation solutions from pallet changing systems and pallet storage, tool magazines and flexible manufacturing systems to custom turnkey solutions.

RS 2 robot system



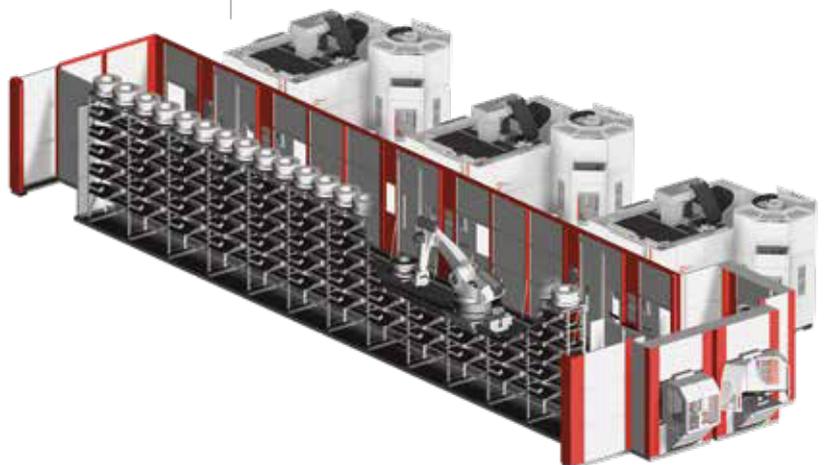
RS 3 robot system



RLS 800



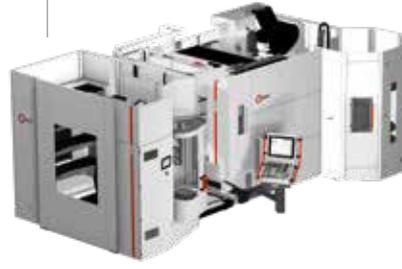
RS Linear robot system



Pallet changer PW 850



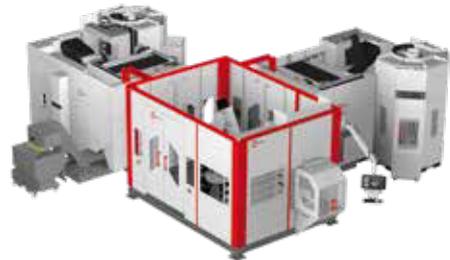
Handling system HS flex



IH systems



Basic system plus 2 machines . 90°



Basic system plus 2 machines . 180°



Basic system plus 3 machines



05 Precision



PRECISION IN EVERY DIMENSION: Hermle has a thorough understanding of the requirements for manufacturing high-precision machining centres for processing smaller and larger workpieces of up to 3.0 t in weight. For this reason, "The Original" only uses German machines for production and materials from European suppliers.

Furthermore, the entire machining production department is fully air conditioned and kept clean by a central chip disposal system.

Hermle machining centres have also been thoroughly tested by intensive endurance tests and in manufacture-oriented machining processes in our own machining manufacturing department. Our meticulous manufacturing processes allow Hermle to set new precision standards which undercut those demanded by the DIN/ISO 10791 standard in every way.

At Hermle, we distinguish between positioning precision (accuracy with which a certain position within the working area can be pinpointed on one axis) and geometric precision.

The latter is significant for the precision of the entire machine – it encompasses the following factors:

- Positioning of linear and rotary axes
- Straightness and angular deviation of the linear axes
- Rectangularity and parallel alignment of all axes to one other
- Concentricity and axial run-out of the swivelling rotary table
- Concentricity of the working spindle

The precision of Hermle machining centres originates during mechanical production and is not produced by subsequent electronic compensation. This further improves the precision of the individual axes (precision package 1 and 2).



LEVELS OF PRECISION

Hermle standard:

X-Y-Z: Positional uncertainty $P \leq 8 \mu$
 A: Positional uncertainty $P \leq 10'' / 8''$
 C: Positional uncertainty $P \leq 8''$

Hermle improved precision:

X-Y-Z: Positional uncertainty $P \leq 5 \mu$
 A: Positional uncertainty $P \leq 6''$
 C: Positional uncertainty $P \leq 6''$

IMPROVED PRECISION PACKAGES

Precision package 1* (linear axes X, Y, and Z)

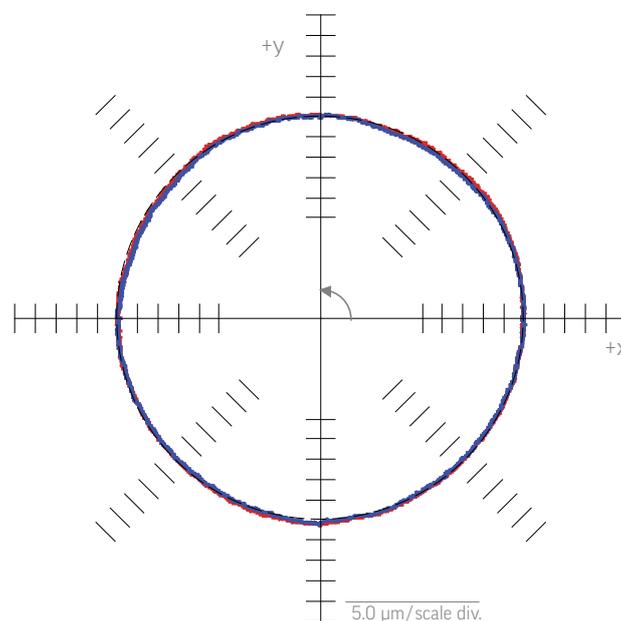
- Straightness optimisation
- Geometry adjustment and optimisation
- Straightness measurement
- Positional uncertainty X, Y, Z: $P \leq 5 \mu$
- Laser measurement according to VDI/DGQ 3441 or ISO 230-2

Precision package 2* (rotary axes A and C)

- Table geometry
- Axial run-out bearings
- C-axis bearing
- Adjustment of complete table
- Position of A and C axes relative to basic geometry
- Positional uncertainty A $6''$
- Positional uncertainty C $6''$
- Laser measurement according to VDI/DGQ 3441 or ISO 230-2

*To achieve improved precision (Precision package 1/2), components must be selected with care. Tolerances must also be taken into account whilst the machine is still being constructed. Hermle also recommends the HSK A 63 tool holding fixture, electric heat compensation, an ICS recooling unit and two-sided A-axis drive.

Test and operating conditions are as follows: air conditioned room (+20 °C, +/- 2 °C) and temperature fluctuation of only 0.5 °C in one hour or max. 2 °C within 24 hours.



 Run 1

 Run 2

06

Energy efficiency

Both manufacturer and customer benefit from efficient production processes. Therefore, Hermle has focused on integrated resource sustainability and energy efficiency for many years. We can rightly claim pioneer status in the Blue Competence initiative founded by the VDW (German Machine Tool Builders Association).

From development to low-energy manufacturing (with a high level of in-house production) to the operation of CNC machining centres - Hermle has stood for a principle of sustainable environmental protection combined with economic considerations for many years. Energy recovery is just one of the advantages enjoyed by our customers.

BLUECOMPETENCE

Machine Tools



EFFICIENT MANUFACTURING

We use energy efficient manufacturing methods not because it is the current trend or because it is required of us, but on principle. And we always have.

Low energy component manufacture

- Mineral casting technology
- Lightweight construction

Virtual machine optimisation / machine development

Reduced of transport energy consumption

- High levels of in-house production
- Just one production plant
- Locally sourced components and materials
- No material tourism

High-quality, high-efficiency components

- Ball screws
- Guideways
- Antifriction bearing etc.

EFFICIENT OPERATION

Our machining centres are energy efficient both during their manufacture and during operation.

Energy recovery has been standard at Hermle for over 20 years

High quality servo axes

Ideal drive design for the respective application

Demand-based cooling technology both for dimensioning and in application

*De-energize system:
Up to 80% less energy consumption in stand-by mode*

Very long machine service life

07 Services

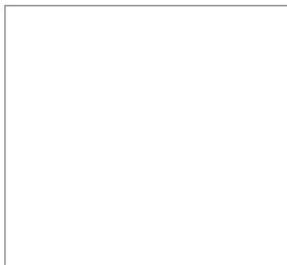
The perfection we insist on for the development and production of our machines is also mirrored by our service department. Our service team provides more than just spare parts and rapid response support within hours. At Hermle, we see ourselves as a comprehensive service provider which provides customers with numerous benefits.

Alongside standard services, these include:

- Our superior, cost-effective, practical and flexible training programmes carried out by sales representatives directly at the customers' premises.
- Our continual pursuit of optimisation and perfection. Our motto – those who stop improving today will not make the grade tomorrow.
- Intensive expert consultation on milling in general, programming and handling of our products.
- Our application technicians who are experts in machining processes and who are quick to assist and advise our customers.







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Subject to technical modifications . 12/17/C12/1000/EN/ST



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