

# C 52

[www.hermle.de](http://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 conjunction with process consultation and project management has made us an important machine manufacturer in nearly all key sectors:

from large complex components to the smallest components in the high-tech area. Versatile applications, uncompromising results – Hermle “The Original”.





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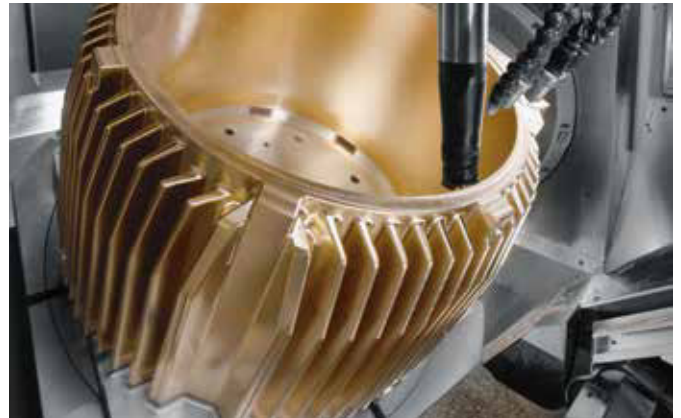
# 01 Industry sectors

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

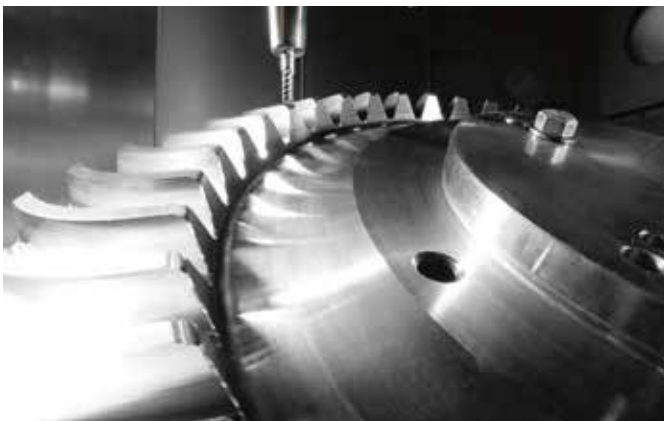
*Aerospace industry*



*Machine construction*



*Energy Technology*



*Tool and mould construction*



*Subcontractor industry*



# 02

## The machine

The C 52: 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

<i>Traverse X-Y-Z:</i>	<i>1000 - 1100 - 750 mm</i>
<i>Speed:</i>	<i>9000 / 12000 / 15000 / 18000 rpm</i>
<i>Rapid linear traverses X-Y-Z:</i>	<i>60 - 60 - 55 m/min</i>
<i>Linear acceleration X-Y-Z:</i>	<i>6 m/s<sup>2</sup></i>
<i>Control unit:</i>	<i>TNC 640 / S 840 D sl</i>
<i>Swivelling rotary tables:</i>	
<i>Table with torque:</i>	<i>Ø 700 mm</i>
<i>Swivelling range:</i>	<i>+ 100° / - 130°</i>
<i>A-axis speed:</i>	<i>20 1/min</i>
<i>C-axis speed:</i>	<i>30 1/min</i>
<i>Max. table load:</i>	<i>2000 kg</i>
<i>Table with torque:</i>	<i>Ø 1150 x 900 mm</i>
<i>Swivelling range:</i>	<i>+ 100° / - 130°</i>
<i>A-axis speed:</i>	<i>20 1/min</i>
<i>C-axis speed:</i>	<i>30 1/min</i>
<i>Max. table load:</i>	<i>2000 kg</i>





ERMLE

C 52 U  
dynamic

# 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 table swivelled. The C 52 U MT machining centre can also process workpieces up to 2000 kg in weight.

### TECHNICAL DATA

<i>Traverse X-Y-Z:</i>	<i>1000 - 1100 - 750 mm</i>
<i>Speed:</i>	<i>9000 / 12000 / 18000 1/min</i>
<i>Rapid linear traverses X-Y-Z:</i>	<i>60 - 60 - 55 m/min</i>
<i>Linear acceleration X-Y-Z:</i>	<i>6 m/s<sup>2</sup></i>
<i>Control unit:</i>	<i>TNC 640 / S 840 D sl</i>
<i>Swivelling rotary table:</i>	
<i>Table with torque:</i>	<i>Ø 1000 mm</i>
<i>Swivelling range:</i>	<i>+ 100° / - 130°</i>
<i>A-axis speed:</i>	<i>20 1/min</i>
<i>C-axis speed:</i>	<i>500 1/min</i>
<i>Max. turning table load:</i>	<i>1000 kg</i>
<i>Max. milling table load:</i>	<i>2000 kg</i>

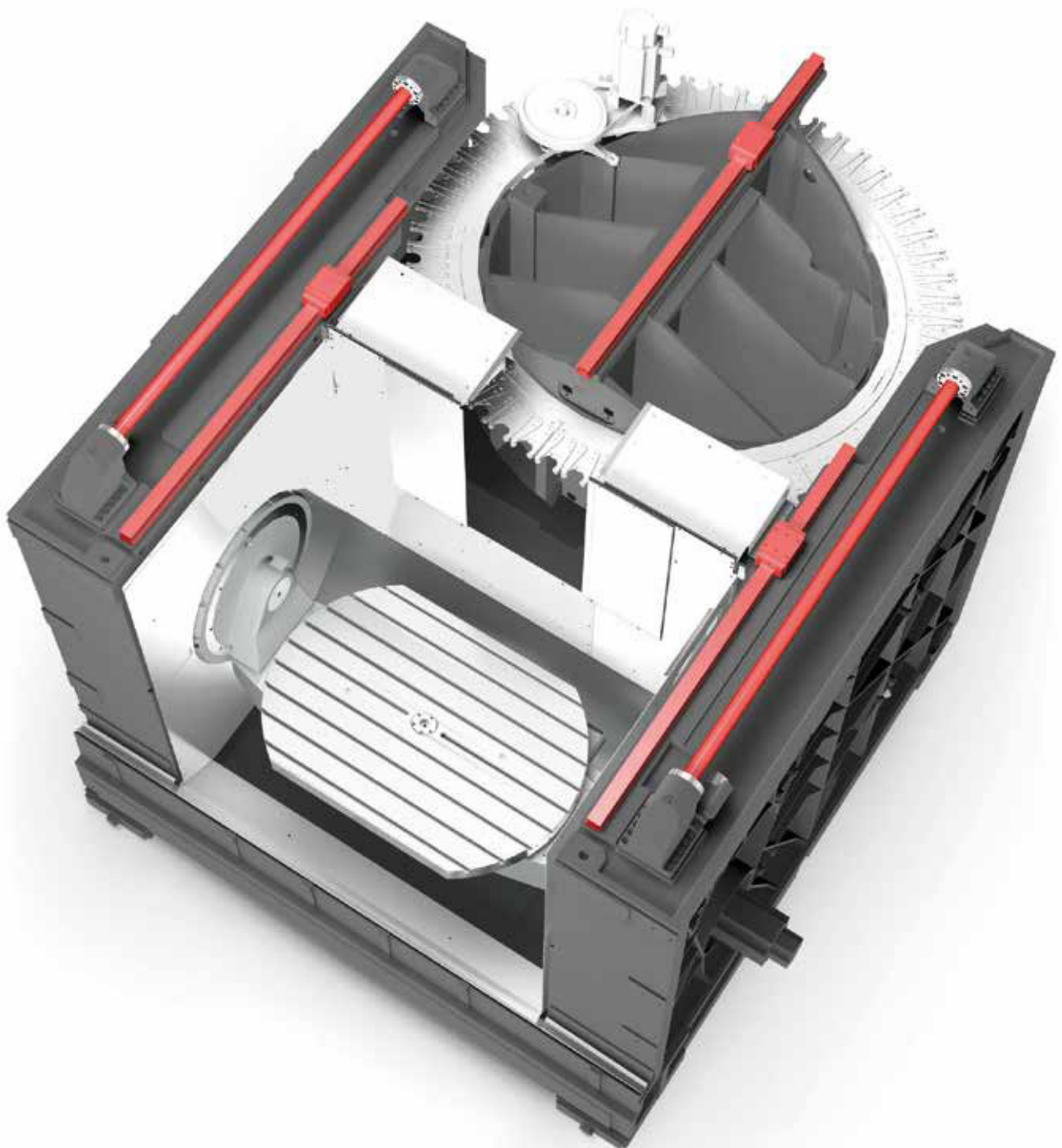
- Fully integrated rotary technology
- Integrated balancing system
- Reinforced top
- Production booth
- Milling operations: 5-side machining/  
up to 5 axes simultaneous machinings
- Turning operations: Horizontal/vertical turning,  
up to 5 axes simultaneous machinings

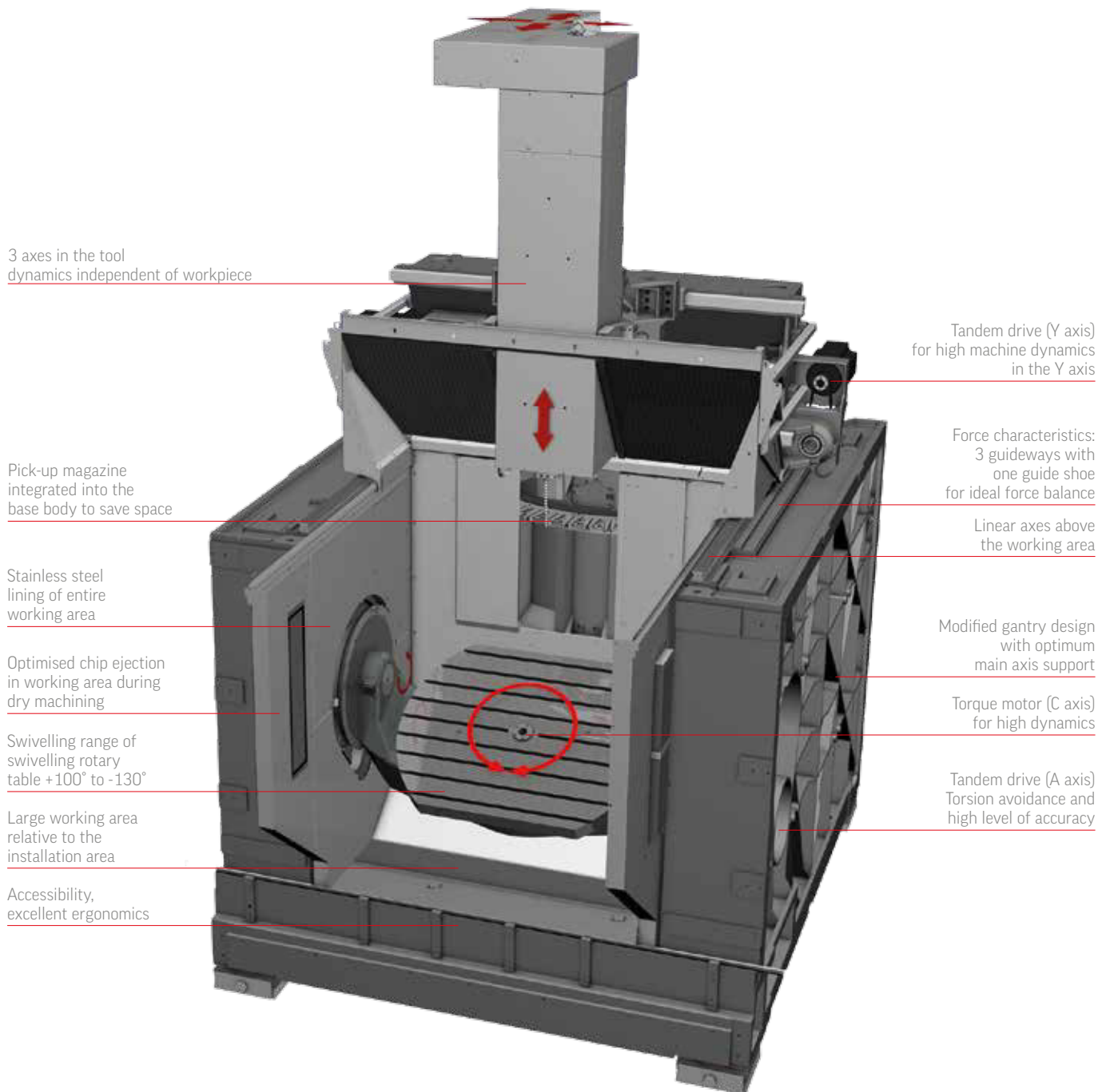




02.2

A new dimension of dynamics





3 axes in the tool  
dynamics independent of workpiece

Pick-up 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 +100° to -130°

Large working area  
relative to the  
installation area

Accessibility,  
excellent ergonomics

Tandem drive (Y axis)  
for high machine dynamics  
in the Y axis

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

Linear axes above  
the working area

Modified gantry design  
with optimum  
main axis support

Torque motor (C axis)  
for high dynamics

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

# 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 52 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*

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



*5-axis / MT*

*Ø 1000 x 810 mm*

*max. 2000 kg*

*MT: max. 1000 / 2000 kg*

*Collision circle: Ø 1290 mm*

*Vertical table clearance: max. 950 mm*



*5-axis machining*

# 02.4 Ergonomics

Built for daily use: the Hermle C 52 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 0 - 30°
  - 19" screen
- Optimum loading height
- Laminated safety glass panes
- Automatic and reinforced cabin top
- Crane loading
- Minimum interval between table and operator
- Large door opening
- Additional control panel in area of tool loading station
- Lockable fluid box

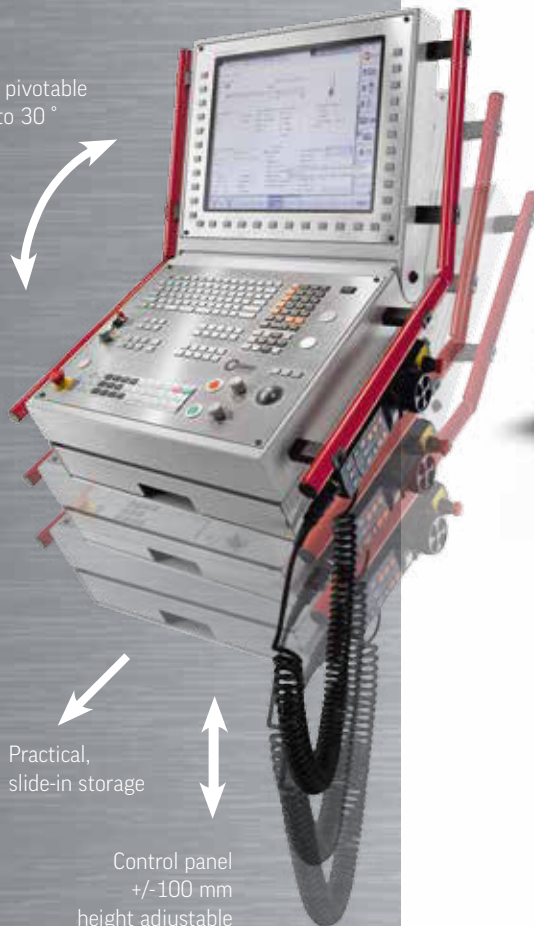
Screen pivotable  
by up to 30°



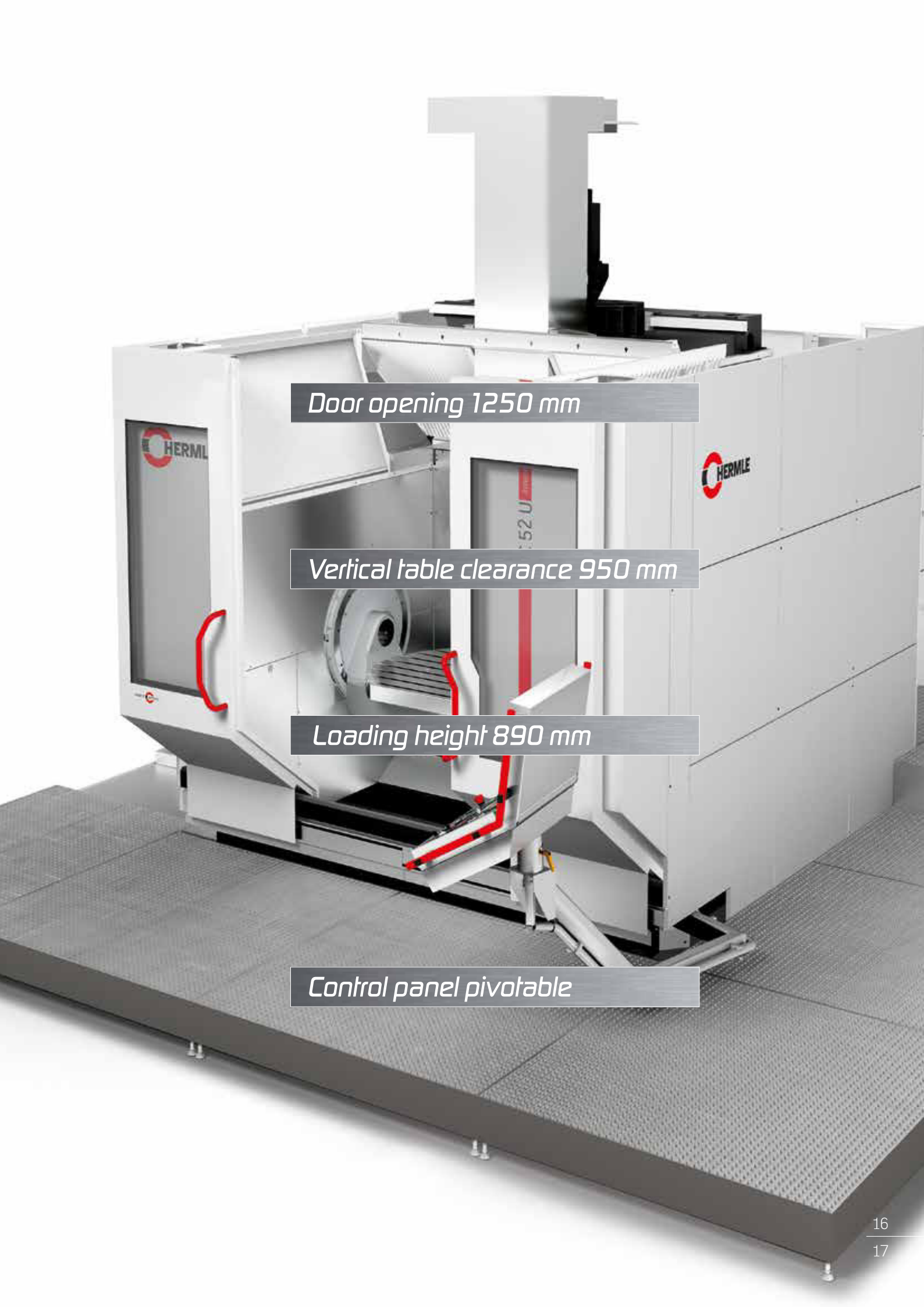
Practical,  
slide-in storage



Control panel  
+/-100 mm  
height adjustable







*Door opening 1250 mm*

*Vertical table clearance 950 mm*

*Loading height 890 mm*

*Control panel pivotable*

# 02.5 Table variants

Hermle's swivelling rotary table has revolutionised the concept of 5-axis machining. Also with the C 52, five axis operation is a key attribute, this capability is enhanced through the use of a torque drive. All machining tables are manufactured exclusively and entirely at our plant in Gosheim.

Uncompromised perfection: this tandem drive design accesses the gearwheel on the table housing directly and so completely eliminates shaft torsion. This is the only way to achieve the highest precision.





# 02.5

## Table variants

Made in Germany – made in Gosheim: the C 52 table variants stand for the highest quality and optimum material usage from the cast housing to the installed 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.



### TECHNICAL DATA

*High degree of freedom in working area*

- *Very high table load (up to 2000 kg with the highest accuracy)*
- *No accumulation of chip on the swivelling rotary 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 the A axis flanges results in very large collision circle*
- *High swivelling range for undercuts*

#### Torque table

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

Hermle tables are equipped with cutting edge drive technology for high dynamic performance during 5 axis machining, as it is the slowest axis that determines the speed when milling in 5 axes. High-torque motors and the adapted gear can position loads of up to 2000 kg rapidly and, most importantly, with exceptional precision.

## *DRIVE TECHNOLOGY*

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

### *Tandem drive*

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



# Swivelling rotary table

C-axis drive type: torque



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



Zero-point clamping systems / pallet clamping systems

Clamping surface:	Ø 700
T grooves:	parallel 9 / 14 H7
Swivelling range:	+ 100° / - 130°
C-axis drive type:	Torque
Speed - rotary axis C:	30 rpm
Speed - swivelling axis A (tandem drive):	20 rpm
Max. table load:	2000 kg



Clamping surface:	Ø 1150 x 900
T grooves:	parallel 9 / 18 H7
Swivelling range:	+ 100° / - 130°
C-axis drive type:	Torque
Speed - rotary axis C:	30 rpm
Speed - swivelling axis A (tandem drive):	20 rpm
Max. table load:	2000 kg

# Swivelling rotary table . MT

C-axis drive type: torque



Zero-point clamping systems / pallet clamping systems

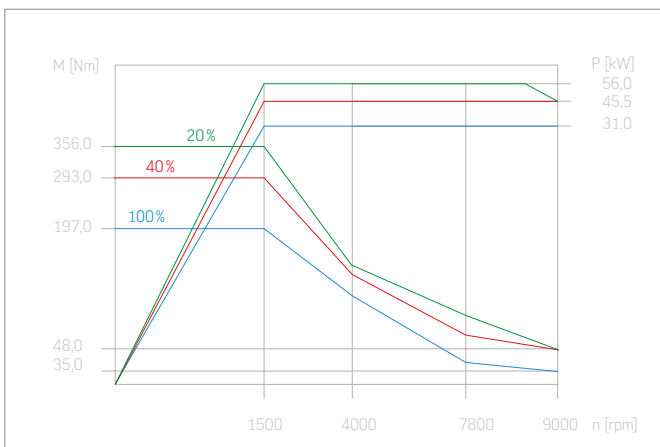
Clamping surface:	Ø 1000
T grooves:	star 16 / 18 H7
Swivelling range:	+ 100° / - 130°
C-axis drive type:	Torque
Speed - rotary axis C:	500 rpm
Speed - swivelling axis A (tandem drive):	20 rpm
Max. turning table load:	1000 kg
Max. milling table load:	2000 kg

# 02.6 Tool spindles



The C 52 is equipped with compact spindles. All 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.

## Tool Spindle 9000 rpm

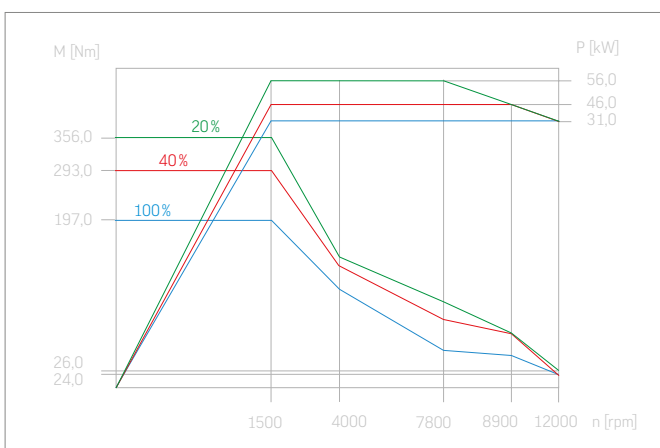


## TECHNICAL DATATOOL

- High-tech tool spindles for demanding milling processes
- Slim-end tool spindle for machining deep cavities
- Few projecting edges (prevention of collision)

Maximum spindle speed:	9000 rpm
Main Power 20% c.d.f.:	56 kW
Torque 20% c.d.f.:	356 Nm
Tool holding fixture:	SK 50
Tool Spindle:	compact

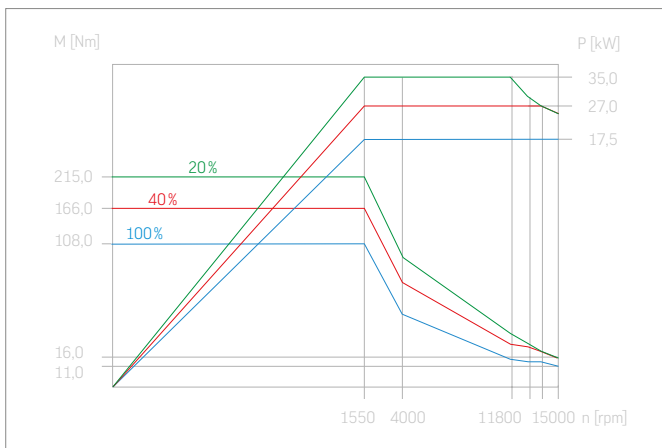
## Tool Spindle 12000 rpm



Maximum spindle speed:	12000 rpm
Main Power 20% c.d.f.:	56 kW
Torque 20% c.d.f.:	356 Nm
Tool holding fixture:	HSK A 100
Tool Spindle:	compact

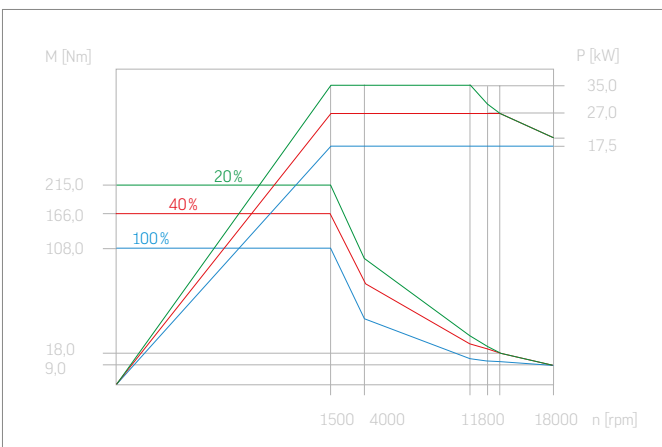


## Tool Spindle 15000 rpm



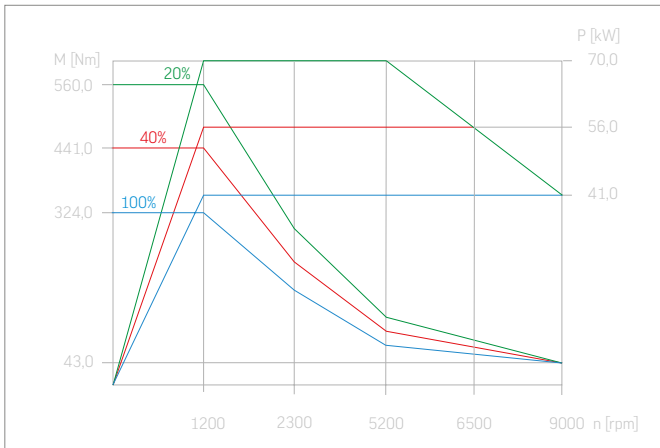
**Maximum spindle speed:** 15000 rpm  
**Main Power 20% c.d.f.:** 35 kW  
**Torque 20% c.d.f.:** 215 Nm  
**Tool holding fixture:** SK 40  
**Tool Spindle:** compact

## Tool Spindle 18000 rpm



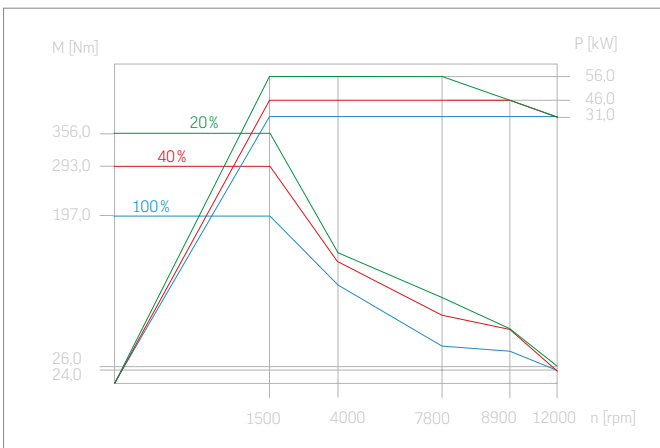
**Maximum spindle speed:** 18000 rpm  
**Main Power 20% c.d.f.:** 35 kW  
**Torque 20% c.d.f.:** 215 Nm  
**Tool holding fixture:** HSK A 63  
**Tool Spindle:** compact

## Tool Spindle 9000 rpm



Maximum spindle speed: 9000 rpm  
 Main Power 20% c.d.f.: 70 kW  
 Torque 20% c.d.f.: 560 Nm  
 Tool holding fixture: HSK T 100  
 Tool Spindle: compact

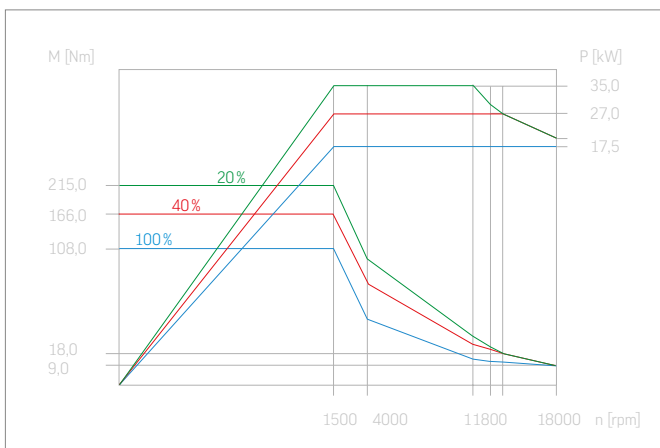
## Tool Spindle 12000 rpm . MT



Maximum spindle speed: 12000 rpm  
 Main Power 20% c.d.f.: 56 kW  
 Torque 20% c.d.f.: 356 Nm  
 Tool holding fixture: HSK T 100  
 Tool Spindle: compact



## Tool Spindle 18000 rpm . MT



Maximum spindle speed: 18000 rpm  
 Main Power 20% c.d.f.: 35 kW  
 Torque 20% c.d.f.: 215 Nm  
 Tool holding fixture: HSK T 63  
 Tool Spindle: compact





# 02.7

## The tool magazine

The C 52's tool magazine holds up to 60 tools in the standard version and is integrated into the machine bed to save space. On the rear of the machine is the ground-level tool loading point with operator control panel. The adapted platform enhances ergonomics with easy accessibility.

### TECHNICAL DATA

*Pick-up magazine*

*Integration into the machine bed*

*Excellent accessibility*

*Additional control panel next to tool loading point*

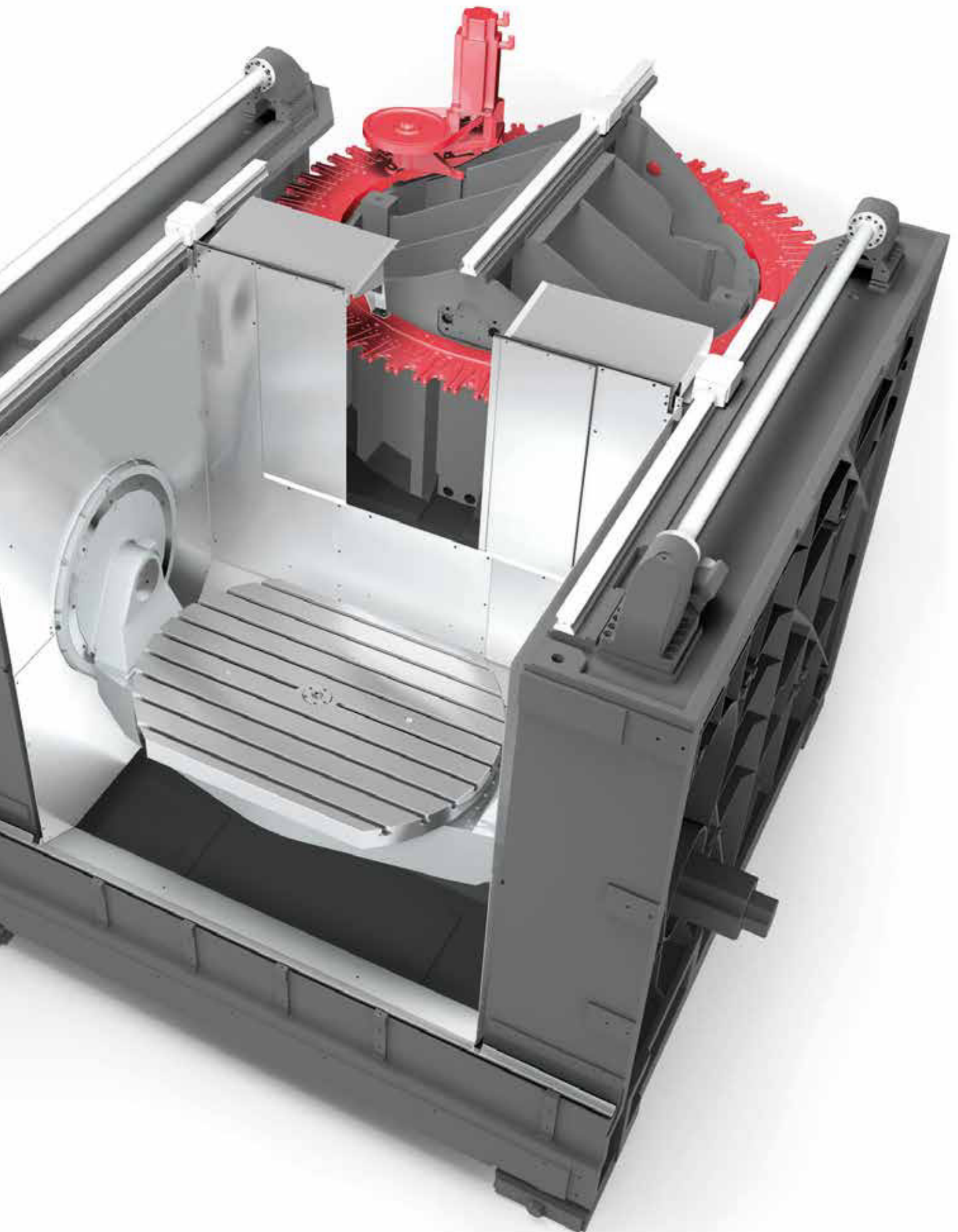
*Covers for tool holding fixture*

*Ergonomically optimum platform for the machine operator*

*Tool changer (pick-up)*

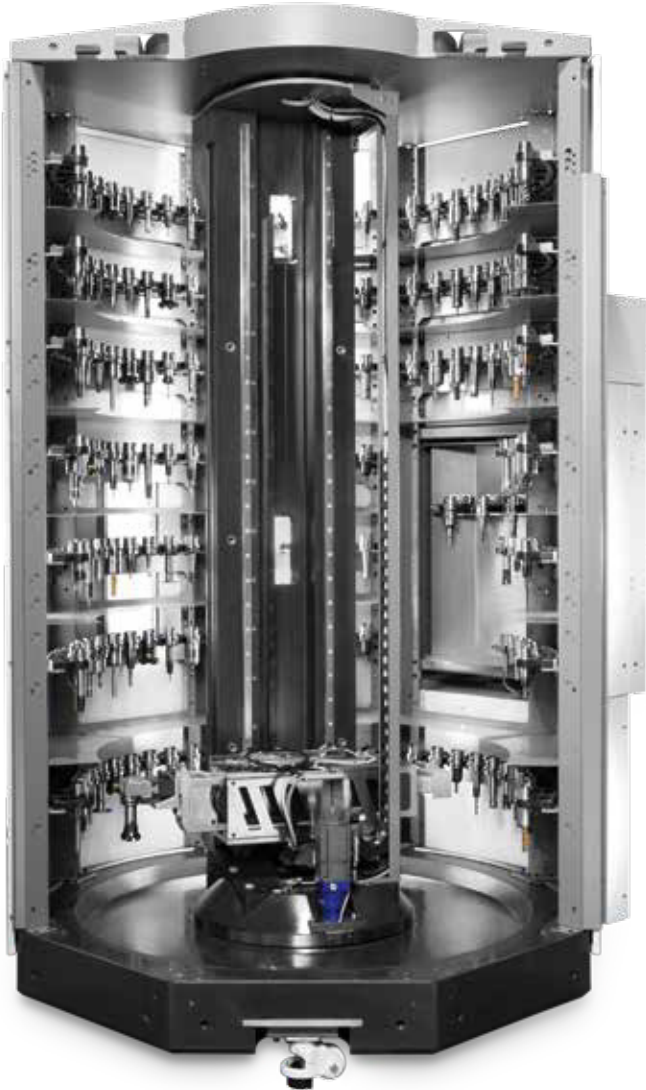
<i>Interface:</i>	<i>SK 40 / HSK A 63</i>	<i>SK 50 / HSK A 100</i>
<i>Interface MT:</i>	<i>HSK T 63</i>	<i>HSK T 100</i>
<i>Magazine pockets:</i>	<i>60</i>	<i>42</i>
<i>Max. tool weight:</i>	<i>15 kg</i>	<i>30 kg</i>
<i>Max. tool diameter:</i>	<i>Ø 160 mm</i>	<i>Ø 250 mm</i>
<i>Max. tool length:</i>	<i>500 mm</i>	<i>500 mm</i>
<i>Max. magazine load:</i>	<i>480 kg</i>	<i>462 kg</i>
<i>Chip-to-chip time:</i>	<i>approx. 7.0 s</i>	<i>approx. 7.0 s</i>





## *Additional magazine*

The Hermle additional magazine, for space-optimised expansion of the tool storage capacity. Adjustable feet with integrated transport rollers facilitate attachment to the Hermle machining centre C 52. The additional magazine is available as a single or double version.



### *HIGHLIGHTS*

*Only 3 m<sup>2</sup> footprint*

*Up to 325 tool pockets  
(depending on the interface)*

*Loading and unloading position  
with 2 x 2 or 2 x 3 tool pockets  
(depending on the interface)*

*With an additional control panel*

*Adjustable feet with integrated  
transport rollers*

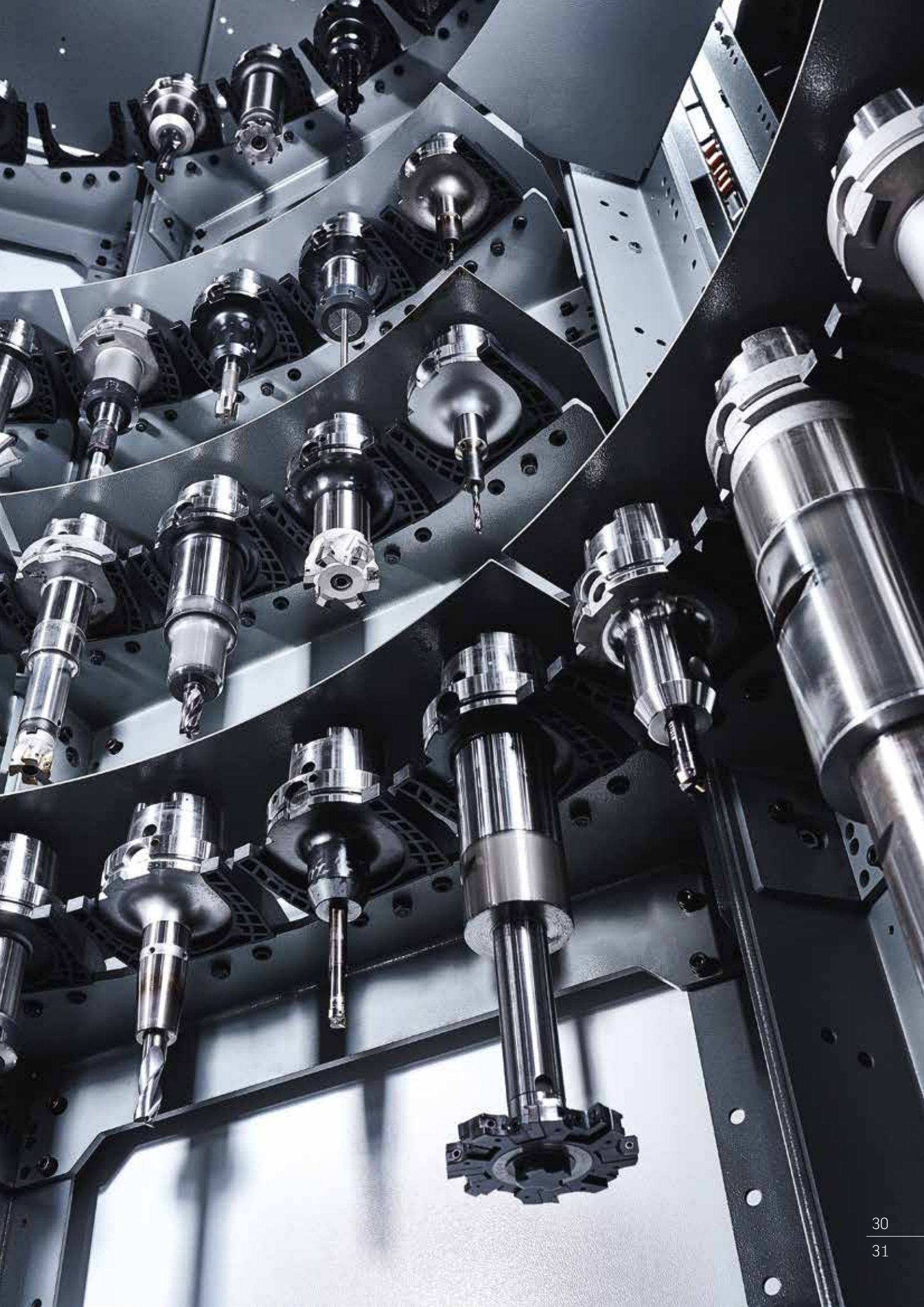
*Two magazines that can  
be combined*

### *Additional magazine single*



### *Additional magazine double*





# 02.8

## Control unit

The C 52 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
- 19" TFT colour flat screen
- 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

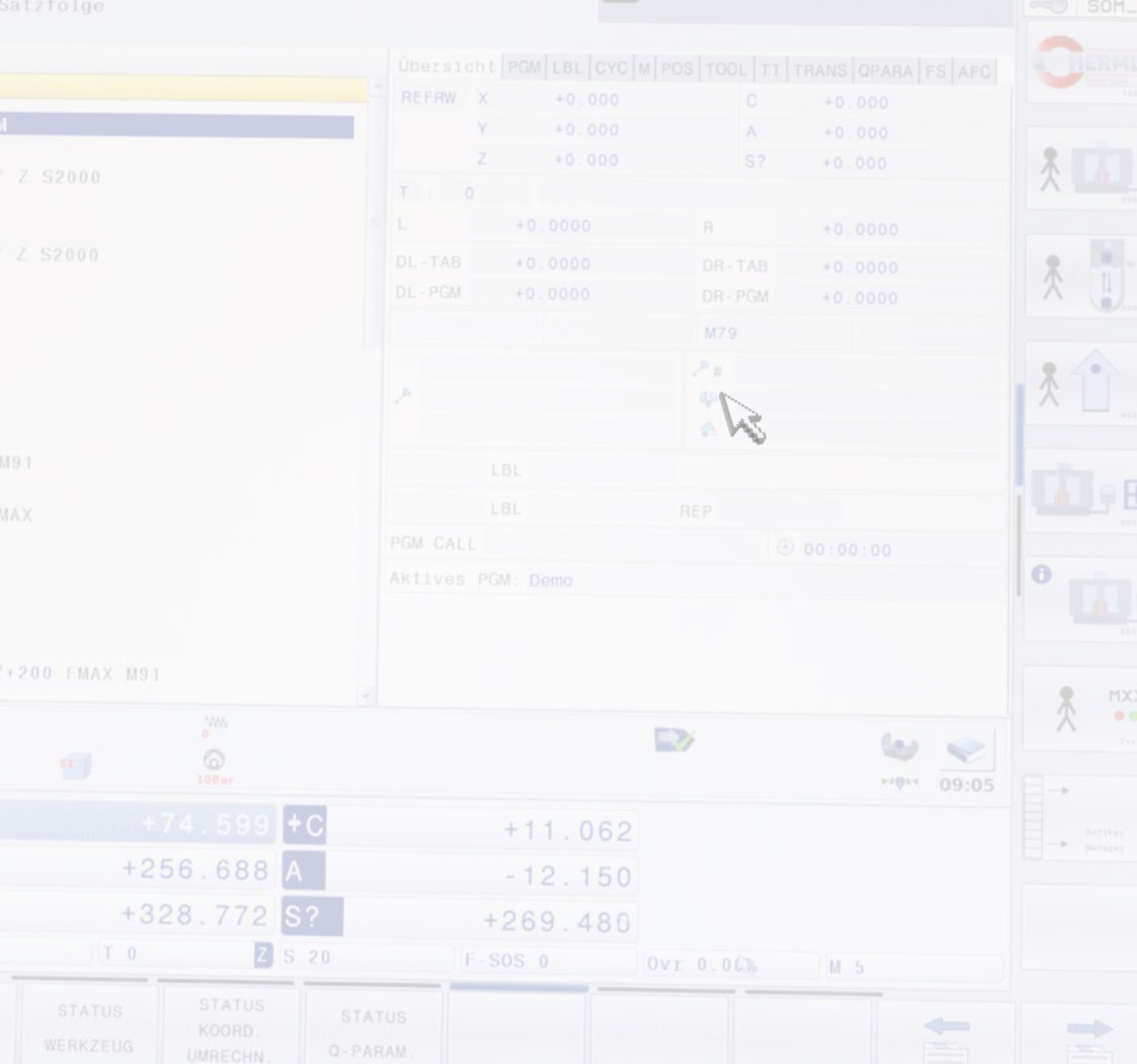
- For roughing in conjunction with high milling power.
- Greater machining performance possible thanks to reduced machine vibration (depending on the tool and the selected technology data).

#### High-Production

##### Production

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





### 3D Contour Tolerance max.

3D contour tolerance max.

- For 3D roughing with low machining performance.
- Very high machining speed, mainly for free-form surfaces.



### 3D Contour Tolerance min.

3D contour tolerance min.

- For very high demands of machining accuracy, mainly for free-form surfaces.
- Can also be used with conventional programs.



### 3D Path Smoothing

3D path smoothing

- For very high demands on the surface quality, mainly for free-form surfaces.



# 02.9

## The details

The C 52 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*

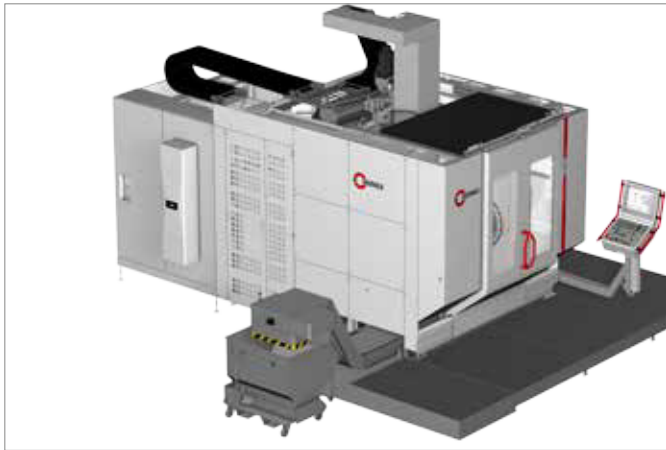
*Optimised chip management*

*Diverse cooling lubricant units*

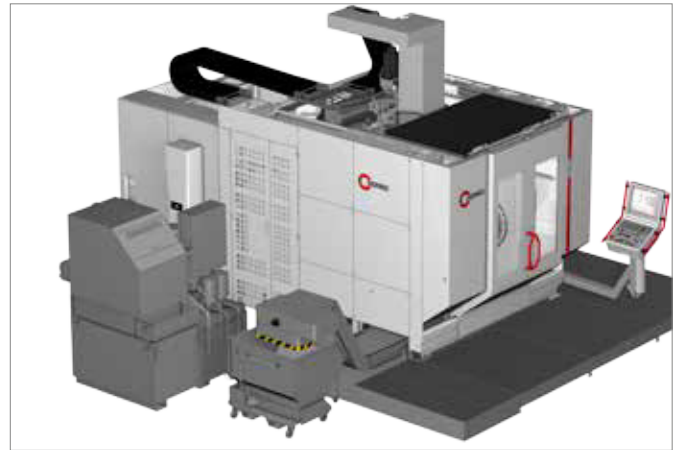
*We provide the correct method of chip removal from the working area for all kinds of chip*



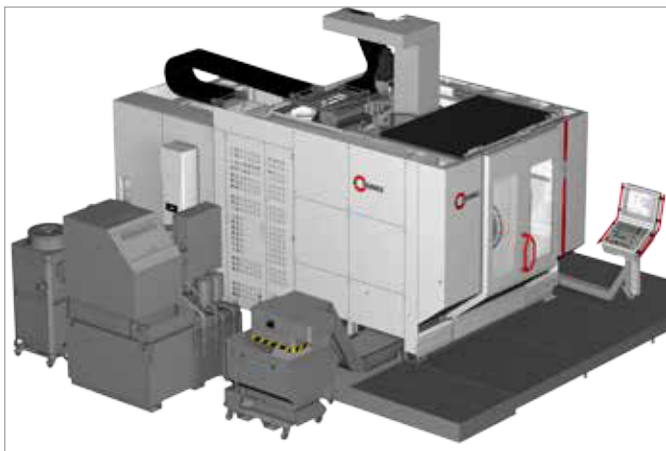
Space-saving chip conveyor arrangement



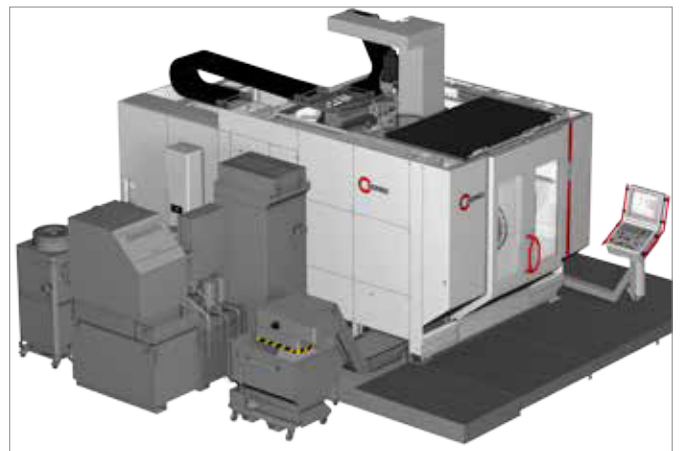
Chip conveyor



Chip conveyor with internal cooling lubricant supply



Chip conveyor with internal cooling lubricant supply and recooling unit

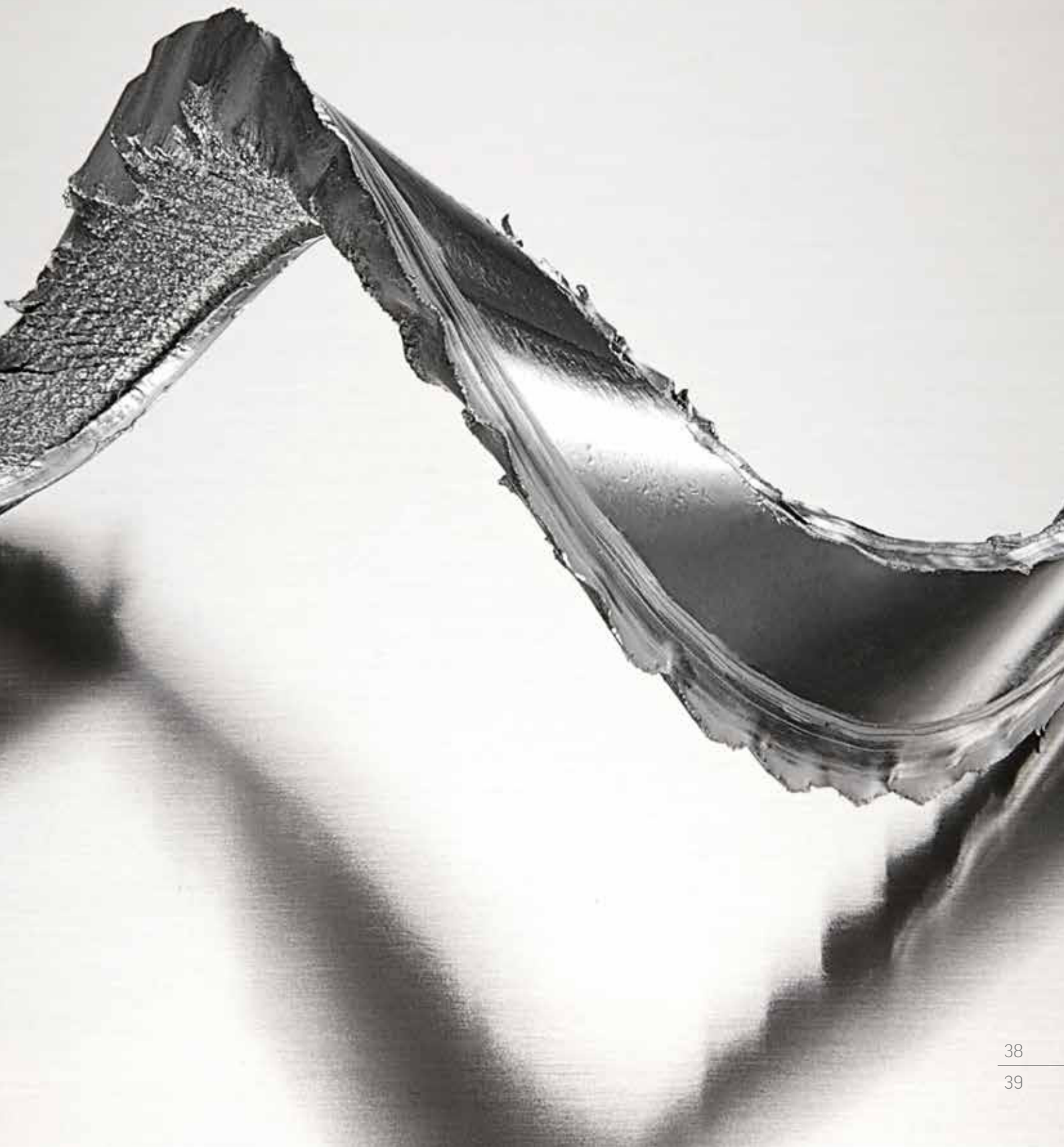


Chip conveyor with internal cooling lubricant supply, recooling unit and emulsion mist extraction

03

Technical data . C 52





# 03.1

## Technical data . C 52

<b>Working area</b>	Traverse	X axis	1000 mm
	Traverse	Y axis	1100 mm
	Traverse	Z axis	750 mm
	Rapid linear traverses	X-Y-Z	60-60-55 m/min
	Linear acceleration	X-Y-Z	6 m/s <sup>2</sup>
	Linear feed force	X-Y-Z	16000 N
	Max. vertical table clearance		950 mm
	Max. workpiece diameter		Ø 1000 mm
	Max. workpiece height		810 mm
	Collision circle (A-axis) 0° position		Ø 1290 mm
<b>Main spindle drive</b>	Speed	9000 rpm	SK 50 ○
	Main power/Torque	20% c.d.f.	56 kW / 356 Nm
	Speed	12000 rpm	HSK A 100 ○
	Main power/Torque	20% c.d.f.	56 kW / 356 Nm
	Speed	15000 rpm	SK 40 ○
	Main power/Torque	20% c.d.f.	35 kW / 215 Nm
	Speed	18000 rpm	HSK A 63 ●
	Main power/Torque	20% c.d.f.	35 kW / 215 Nm
	Speed	9000 rpm	HSK T 100 ○
	Main power/Torque	20% c.d.f.	70 kW / 560 Nm
	Speed	12000 rpm	HSK T 100 ○
	Main power/Torque	20% c.d.f.	56 kW / 356 Nm
Speed (MT variants)	18000 rpm	HSK T 63 ●	
Main power/Torque	20% c.d.f.	35 kW / 215 Nm	
<b>Control unit</b>	Heidenhain		TNC 640 ●
	Siemens		S 840 D sl ○



<b>Tool changer (pick-up)</b>	Interface	SK 40 / HSK A 63 / HSK T 63	SK 50 / HSK A 100 / HSK T 100	○
	Magazine pockets		60	
Chip-to-chip time*		approx. 7.0 s		approx. 7.0 s
*(chip-to-chip times for 3-axis units in milling mode calculated in keeping with German standard VDI 2852, page 1)				
Max. tool length		500 mm		500 mm
Max. tool diameter		Ø 160 mm		Ø 250 mm
Max. magazine load		480 kg		462 kg
Max. tool weight		15 kg		30 kg

<b>Extension of tool storage capacity*</b>	Interface / Interface MT	additional magazine		magazine load	
		single	double	single	double
SK 40	ZM 90 / ZM 115	ZM 220 / ZM 270		90 / 115	220 / 270
SK 50	ZM 72 / ZM 92	ZM 176 / ZM 216		72 / 92	176 / 216
HSK A 63 / HSK T 63	ZM 110 / ZM 135	ZM 265 / ZM 325		110 / 135	265 / 325
HSK A 100 / HSK T 100	ZM 88 / ZM 108	ZM 212 / ZM 260		88 / 108	212 / 260

\*The tool length depends on the use of the magazine and is at max. 500 mm. More details on request.

<b>Table variants*</b>	Swivelling rotary table	Ø 700	Ø 1150	Ø 1000 (MT variant)
	Clamping surface		Ø 700 mm	Ø 1150 mm
Clamping surface flattened on 2 sides		-	900 mm	-
Swivelling range		+100° / -130°	+100° / -130°	+100° / -130°
C-axis drive mode		torque	torque	torque
Speed - swivelling axis A (tandem)		20 rpm	20 rpm	20 rpm
Speed - rotary axis C		30 rpm	30 rpm	500 rpm
Max. milling table load		2000 kg	2000 kg	2000 kg
Max. turning table load		-	-	1000 kg
T grooves parallel		9 units / 14 H7	9 units / 18 H7	-
T grooves star-shaped		-	-	16 units / 18 H7

\*All tables available on demand

- Included in standard delivery
- Available upon request

<b>Positional tolerance</b>	Tp 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 ●
<b>Chip conveyor</b>	Scraper belt conveyor ● Hinged belt conveyor Chip conveyor ejection height at least 940 mm Chip cart 450 l ○	
<b>Cooling lubricant unit</b>	Amount of cooling lubricant 500 l ● Pump capacity 5 bar / 80 l/min	
<b>Internal cooling lubricant supply with paper band filter</b>	Amount of cooling lubricant 1700 l Pressure (manually adjustable up to) max. 80 bar / 47 l/min Mains connection (ICS) 400 V / 50 Hz Power consumption (ICS) 18.5 kVA	
<b>Hydraulics</b>	Operating pressure 120 bar ●	
<b>Central lubrication</b>	Minimum grease lubrication quantity ●	
<b>Weight</b>	(standard version without optional extras, attachments, workpieces and cooling lubricant)	Approx. 21.0 t
<b>Connected loads</b>	Mains connection 400 V / 50/60 Hz Power consumption C 52 U to 94 kVA Power consumption C 52 U MT to 94 kVA Compressed air 6 bar	

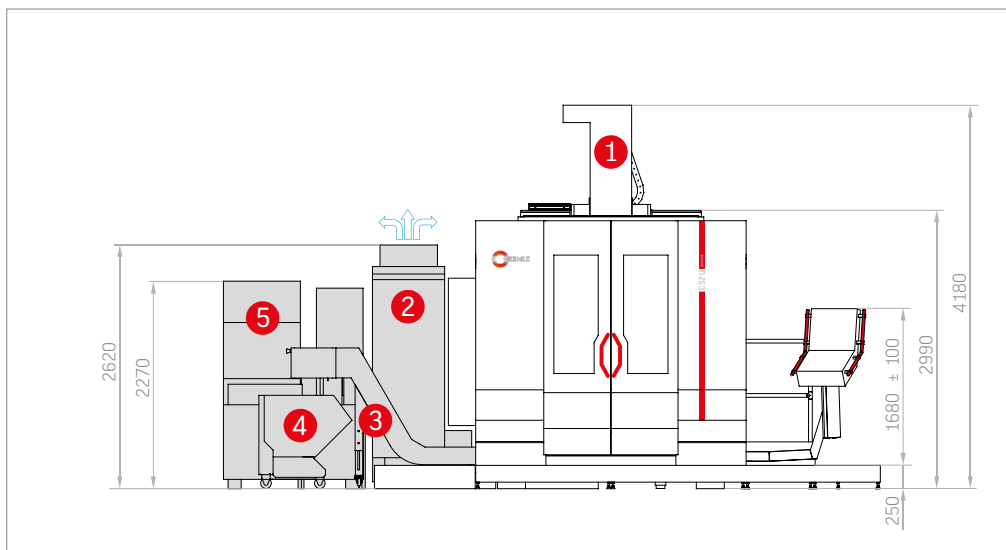
- Included in standard delivery
- Available upon request



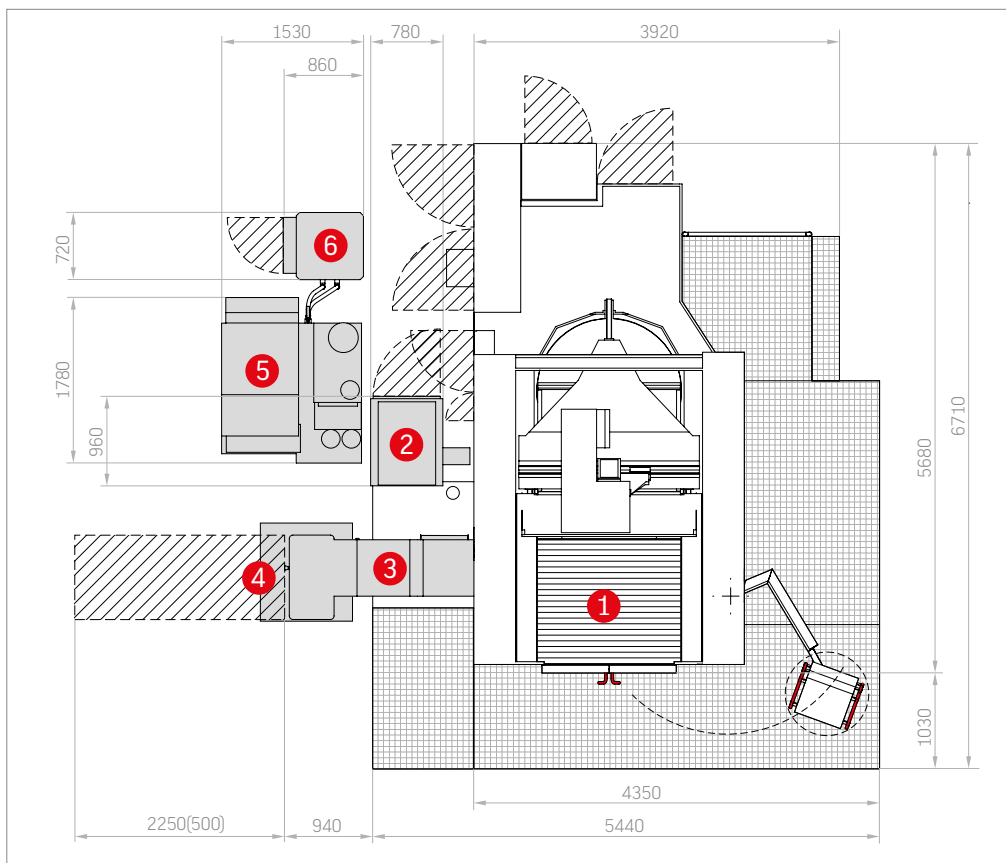
# 03.2 Options

The C 52 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 52 U dimensions



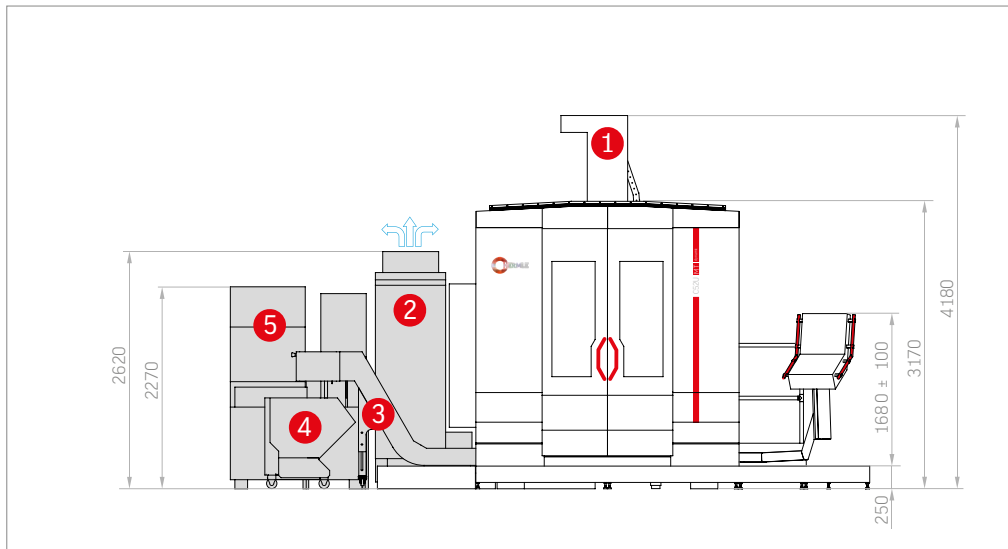
- 1 Machining centre
- 2 Emulsion mist extraction
- 3 Chip conveyor
- 4 Chip cart
- 5 Internal cooling lubricant supply
- 6 Recooling unit



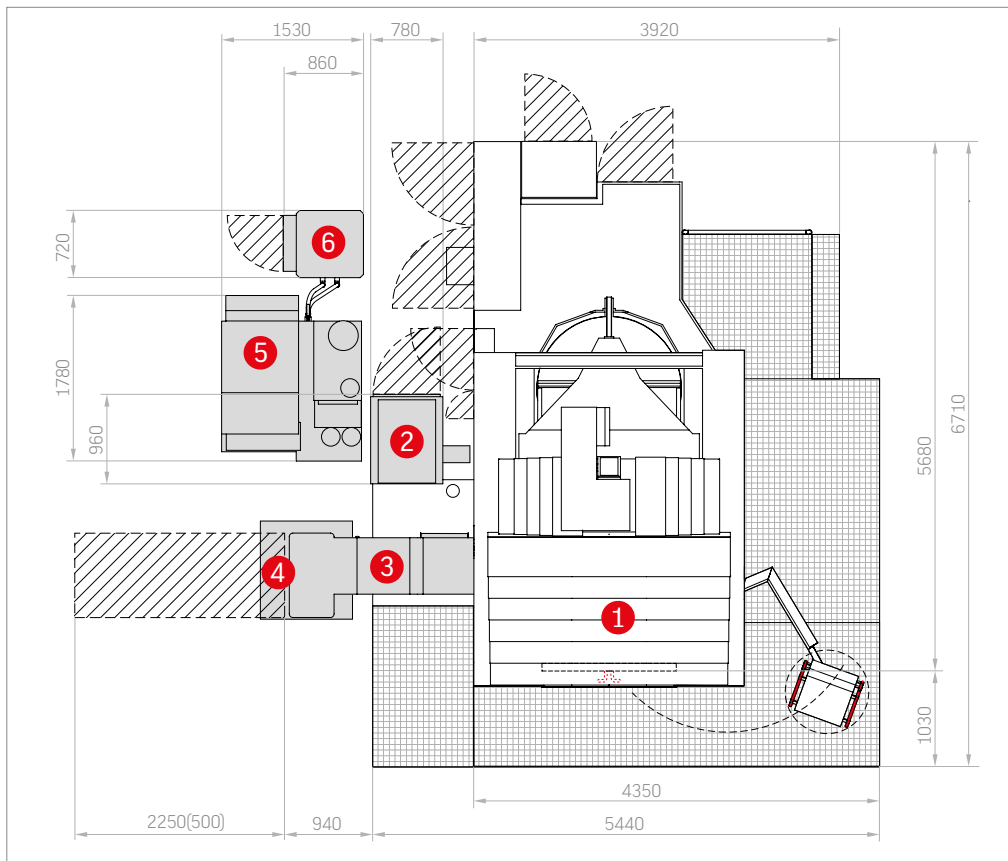
# Options

- Automatic cabin door
- Minimum quantity lubrication external
- BDE signal
- Control panel height adjustable with 19" swivel screen
- Bed flushing
- Blow air through spindle centre
- Rotary feedthrough
- Elec. hand-held control module
- Elec. heat compensation
- Emulsion mist extraction
- Internal cooling lubricant supply
- Touch probe incl. preparation
- Pallet storage
- Pallet changer
- Rotating transparent window
- Recooling unit
- Chip conveyor
- Coolant nozzle
- Chip cart
- Air purge for linear scales
- Status lamp
- Preparation button
- Tool breakage monitoring/measurement
- Additional magazine

## C 52 U MT dimensions



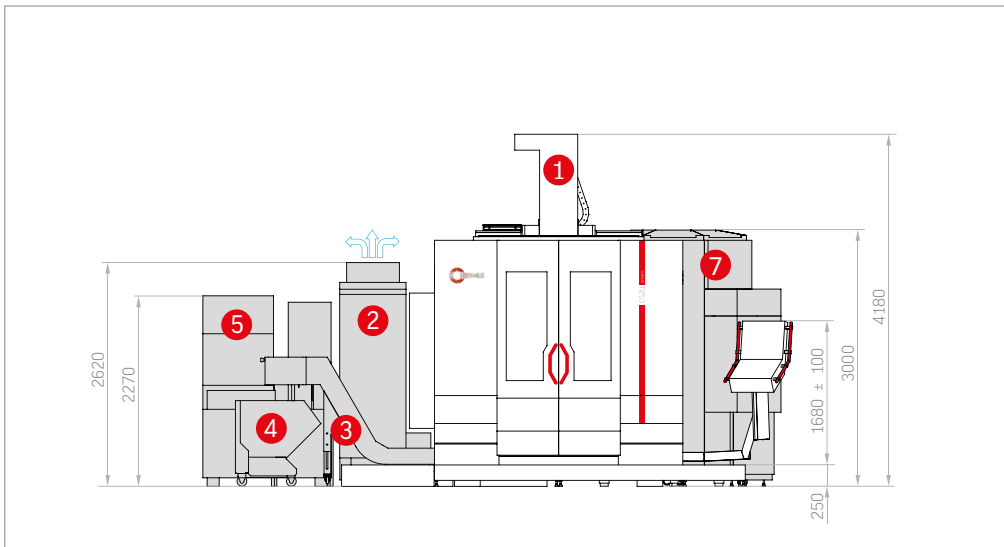
- 1 Machining centre
- 2 Emulsion mist extraction
- 3 Chip conveyor
- 4 Chip cart
- 5 Internal cooling lubricant supply
- 6 Recooling unit



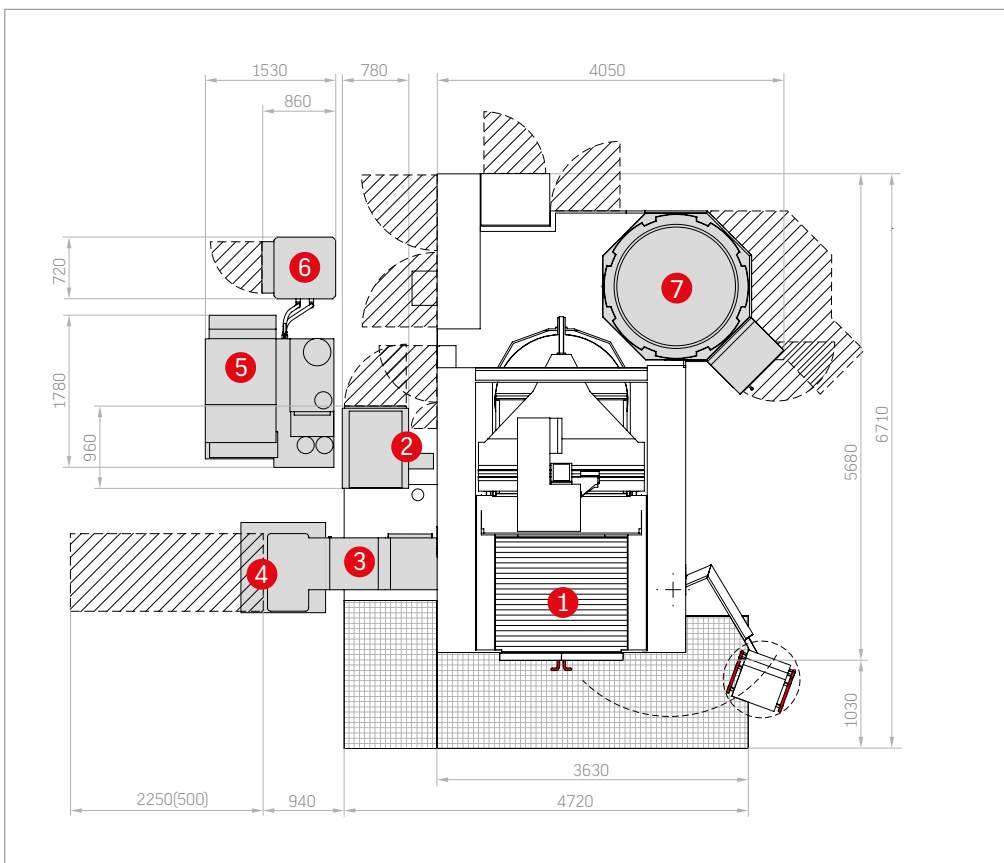
## Options

- Automatic cabin door
- Minimum quantity lubrication external
- BDE signal
- Control panel height adjustable with 19" swivel screen
- Bed flushing
- Blow air through spindle centre
- Rotary feedthrough
- Elec. hand-held control module
- Elec. heat compensation
- Emulsion mist extraction
- Internal cooling lubricant supply
- Touch probe incl. preparation
- Pallet storage
- Pallet changer
- Rotating transparent window
- Recooling unit
- Chip conveyor
- Coolant nozzle
- Chip cart
- Air purge for linear scales
- Status lamp
- Preparation button
- Tool breakage monitoring/measurement
- Additional magazine

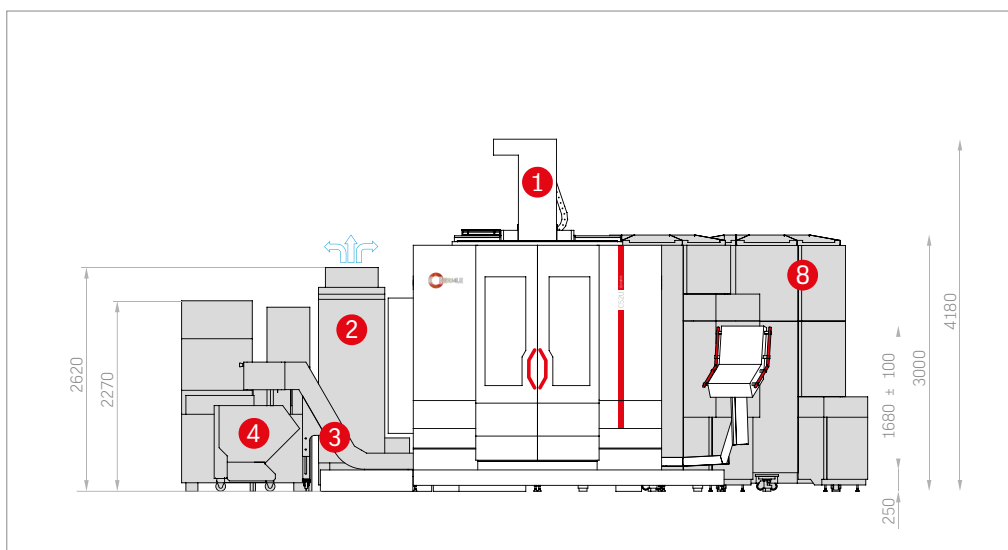
## C 52 U dimensions . Additional magazine single



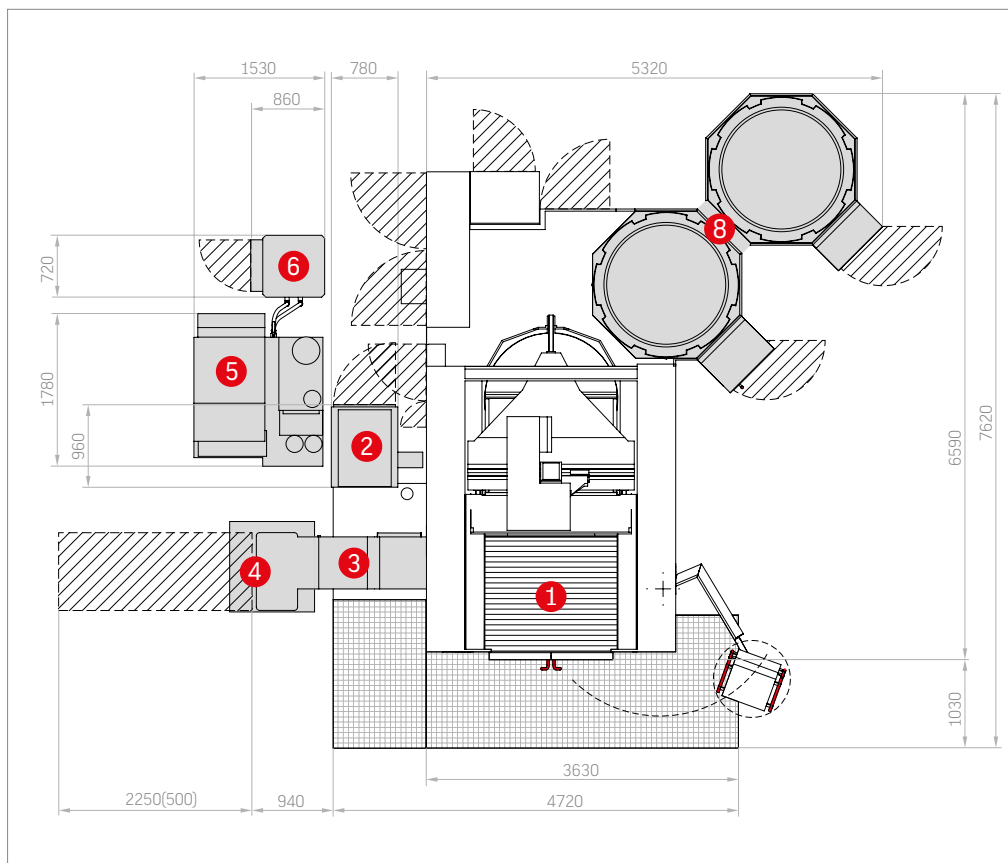
- 1 Machining centre
- 2 Emulsion mist extraction
- 3 Chip conveyor
- 4 Chip cart
- 5 Internal cooling lubricant supply
- 6 Recooling unit
- 7 Additional magazine single



### C 52 U dimensions . Additional magazine double



- 1 Machining centre
- 2 Emulsion mist extraction
- 3 Chip conveyer
- 4 Chip cart
- 5 Internal cooling lubricant supply
- 6 Recooling unit
- 8 Additional magazine double



# 04 Automation

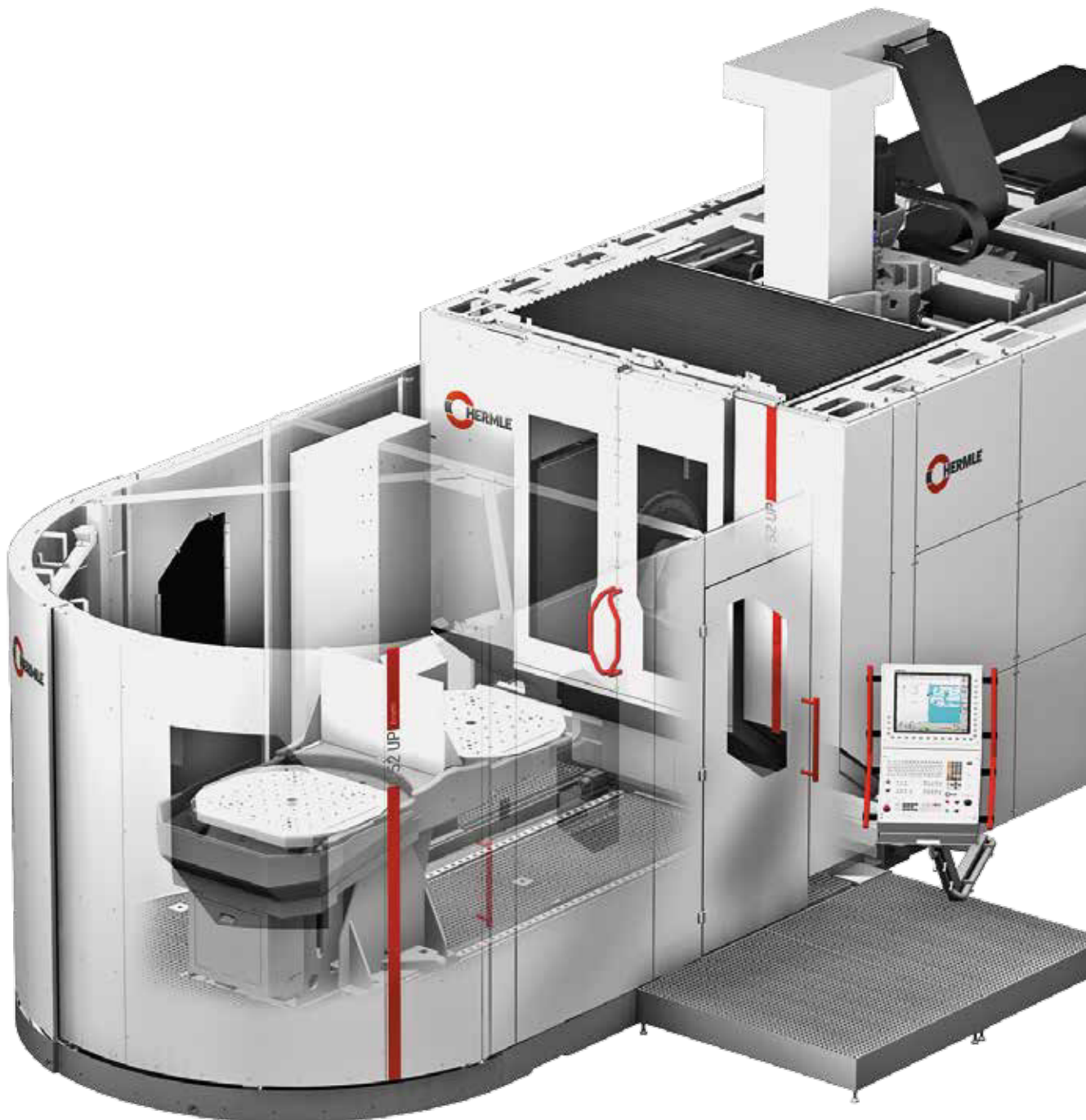






# 04.1 Automation . C 52

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.



## TECHNICAL DATA

*Pallet dimensions:* 800 x 800 / Ø 1000 mm  
1000 x 800 / Ø 1166 mm

*Number of pallets without storage:* 2 pallets

*Transport weight per side including pallet:* max. 2000 kg

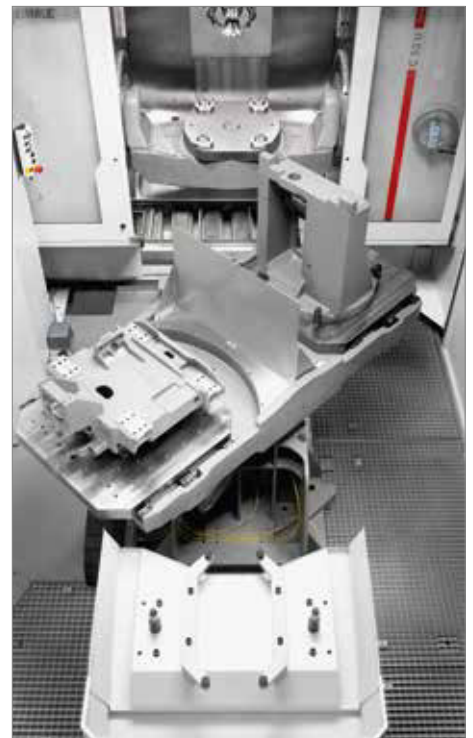
*Repeating accuracy:* < 0,01 mm



Setup station is optimally accessible, including for crane loading.

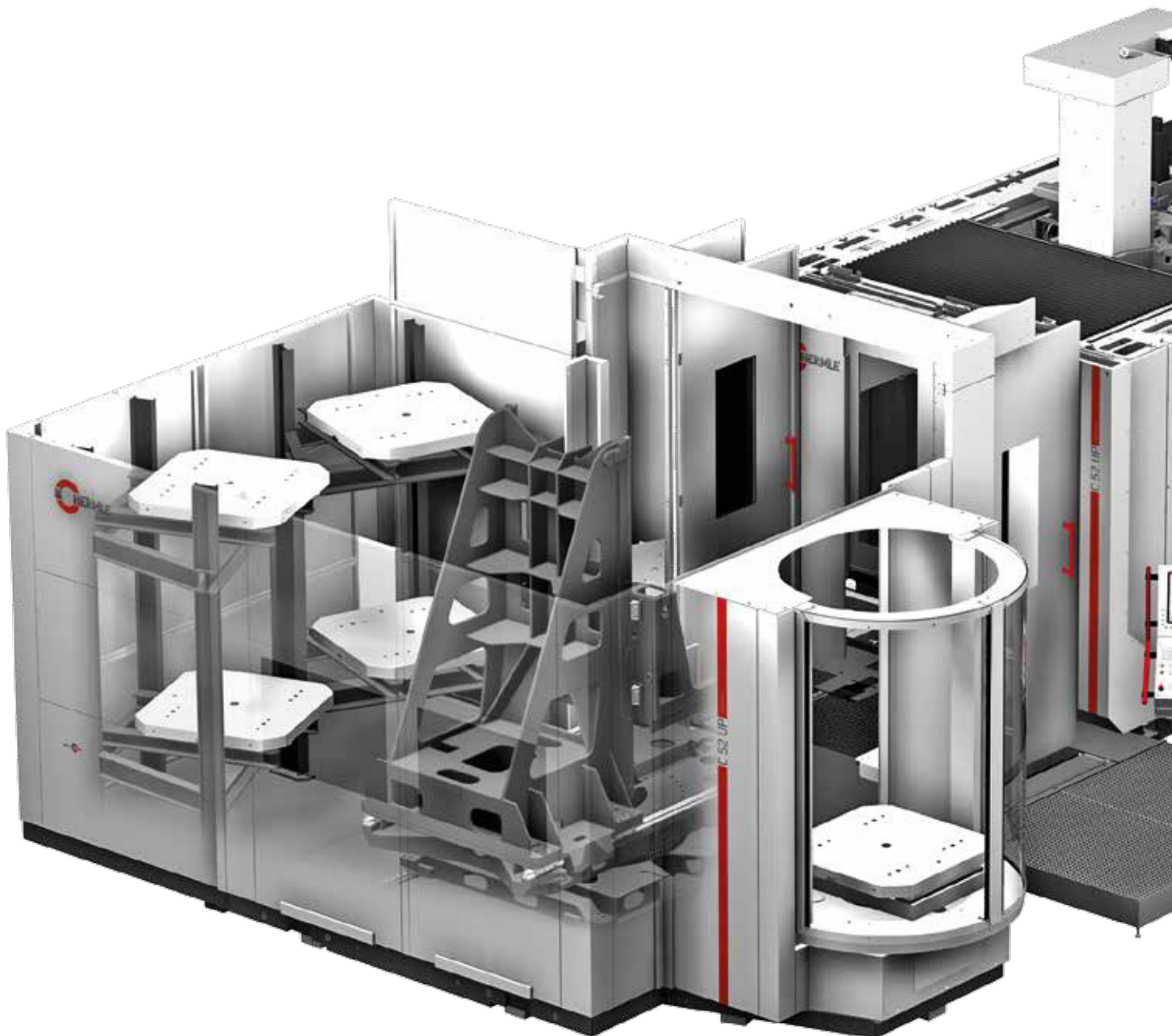


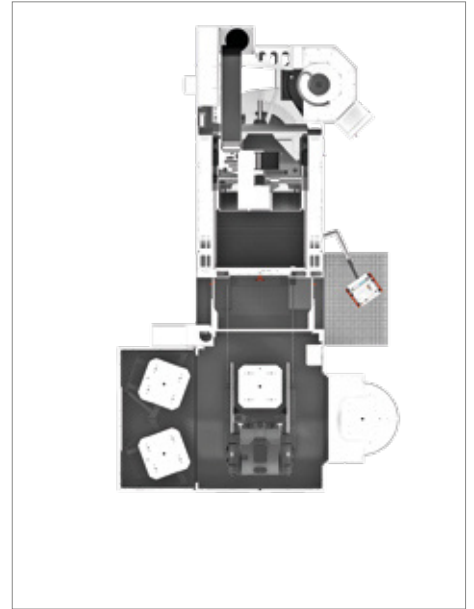
Side access to the working area of the C 52 U for manual operations or in setup mode.



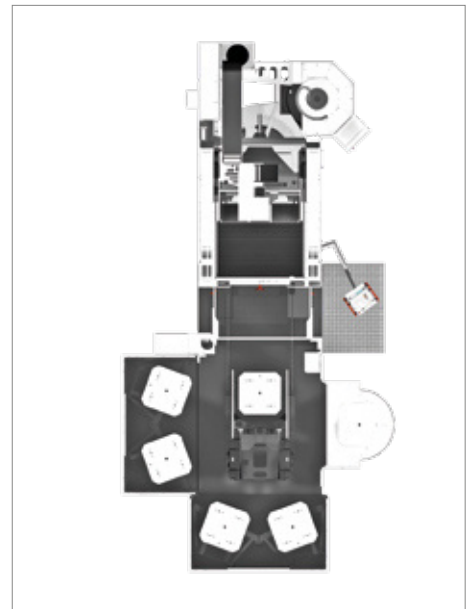
The PW 2000 can move up to 2000 kg including pallet from the setup station to the working area of the C 52 U.

# 04.1 Automation . C 52

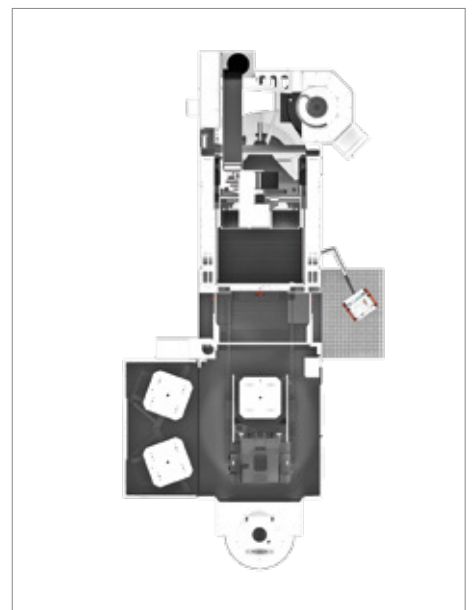




Pallet changer PW 3000 with one 2/4-pallet storage module and setup station module, right



Pallet changer PW 3000 with two 2/4-pallet storage modules and setup station module, right



Pallet changer PW 3000 with one 2/4-pallet storage module and setup station module, front

The pallet changer PW 3000 is modular in design. The storage and setup station modules can be configured to adapt to specific positions and quantities.

# 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 2.5 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 swarf 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 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).



## PRECISION LEVELS

### 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  $P \leq 6''$

\*To achieve improved precision, 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, electr. heat compensation, an ICS recooling unit and two-sided A axis drive. Test and operating conditions are as follows: air conditioned room ( $+20 \text{ }^\circ\text{C}$ ,  $\pm 2 \text{ }^\circ\text{C}$ ) and temperature fluctuation of only  $0.5 \text{ }^\circ\text{C}$  in one hour or max.  $2 \text{ }^\circ\text{C}$  within 24 hours.

## IMPROVED PRECISION PACKAGES (ON DEMAND)

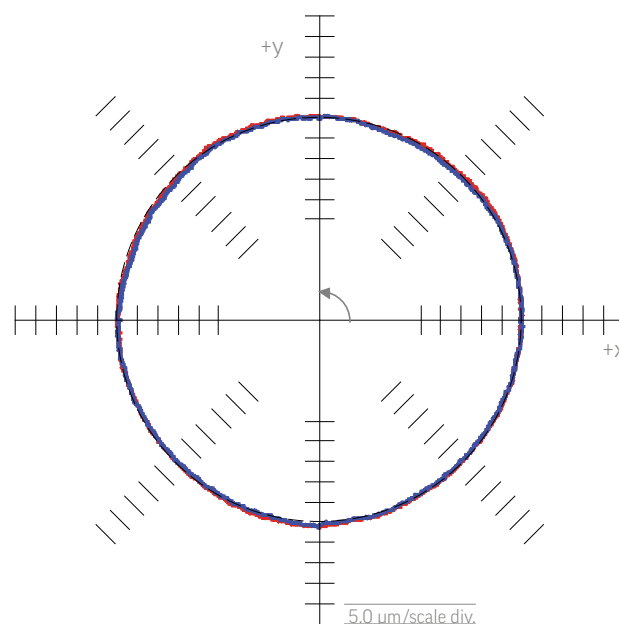
### Precision package 1 (linear axes X, Y, and Z)

- Straightness optimisation
- Geometry adjustment and optimisation
- Straightness measurement
- X, Y, Z positioning accuracy: Positional uncertainty  $\leq 5 \mu$
- 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 position
- 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

\*Not available for MT variants.



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*

*Reduction in the energy required for transport  
through:*

- 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*

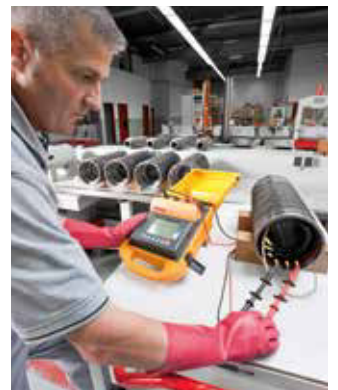
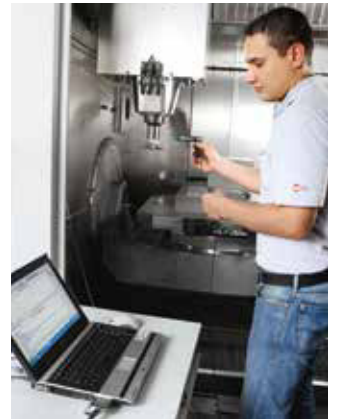
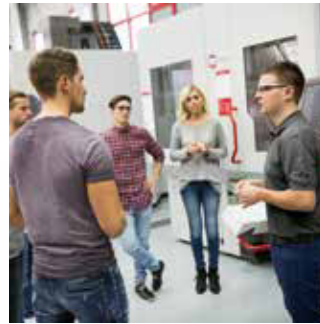
# 07 Services

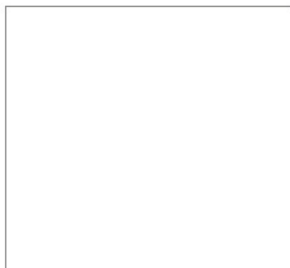
The perfection we insist on for the development and production of our machines is also mirrored by our service department. Our service team provides more than just spare parts and rapid response support within hours. At Hermle, we see ourselves as a comprehensive service provider which provides customers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