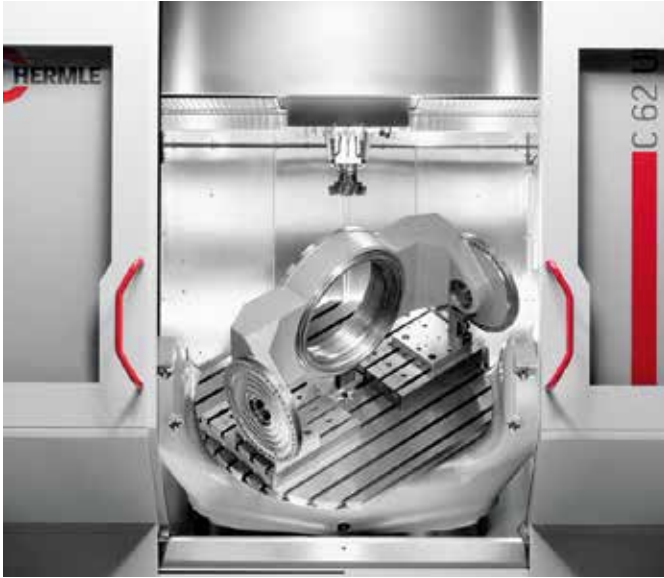


# C 62

[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”.



# Contents.

01 Industry sectors	4
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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.

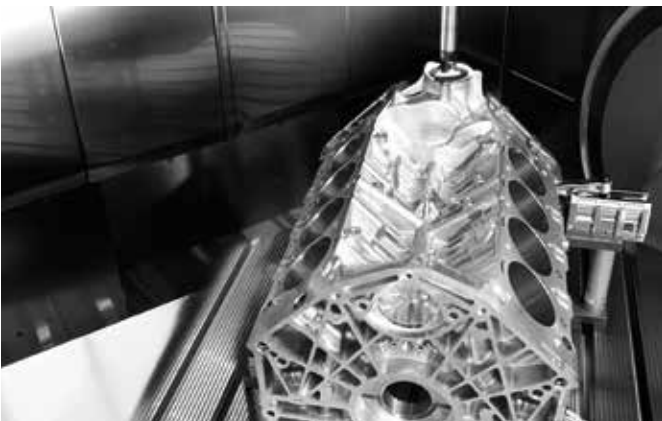
*Aerospace industry*



*Machine construction*



*Motor sports and racing*



*Tool and mould construction*



*Subcontractor industry*



# 02

## The machine

The C 62: 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>1200 – 1300 – 900 mm</i>
<i>Speed:</i>	<i>9000 / 10000 / 12000 / 15000 / 18000 rpm</i>
<i>Rapid linear traverses X-Y-Z:</i>	<i>50 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 900 mm</i>
<i>Swivelling range:</i>	<i>+/- 130°</i>
<i>A-axis speed:</i>	<i>15 rpm</i>
<i>C-axis speed:</i>	<i>30 rpm</i>
<i>Max. table load:</i>	<i>2500 kg</i>
<i>Table with torque:</i>	
<i>Table with torque:</i>	<i>Ø 1350 x 1100 mm</i>
<i>Swivelling range:</i>	<i>+ / - 130°</i>
<i>A-axis speed:</i>	<i>15 rpm</i>
<i>C-axis speed:</i>	<i>30 rpm</i>
<i>Max. table load:</i>	<i>2500 kg</i>





MLE

C 62 U

# 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 62 U MT machining centre can also process workpieces up to 2500 kg in weight.



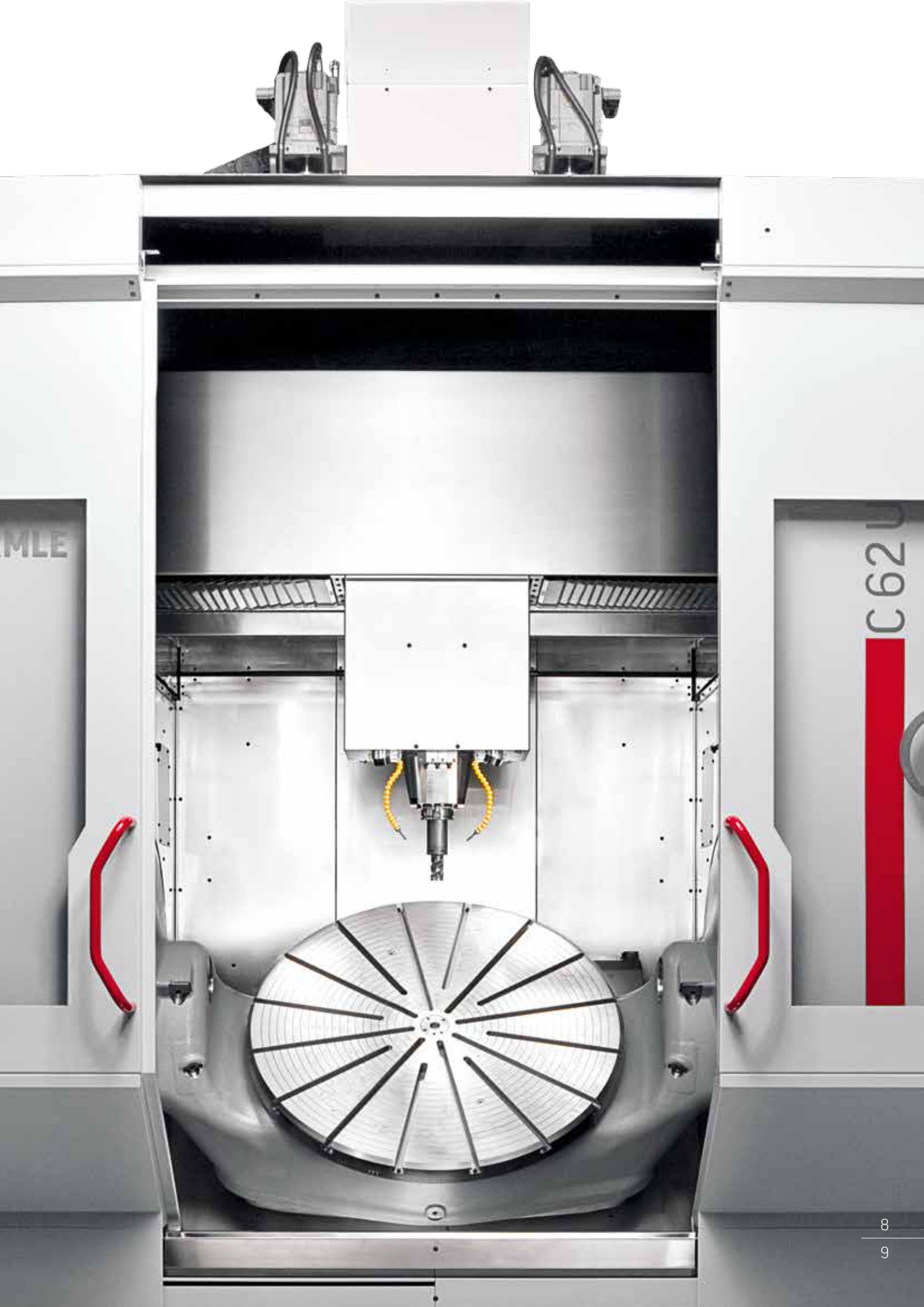
### TECHNICAL DATA

<i>Traverse X-Y-Z:</i>	<i>1200 - 1300 - 900 mm</i>
<i>Speed:</i>	<i>9000 / 12000 / 18000 rpm</i>
<i>Rapid linear traverses X-Y-Z:</i>	<i>50 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 1200 mm</i>
<i>Swivelling range:</i>	<i>+/- 130°</i>
<i>A-axis speed:</i>	<i>15 rpm</i>
<i>C-axis speed:</i>	<i>400 rpm</i>
<i>Max. turning table load:</i>	<i>1500 kg</i>
<i>Max. milling table load:</i>	<i>2500 kg</i>

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







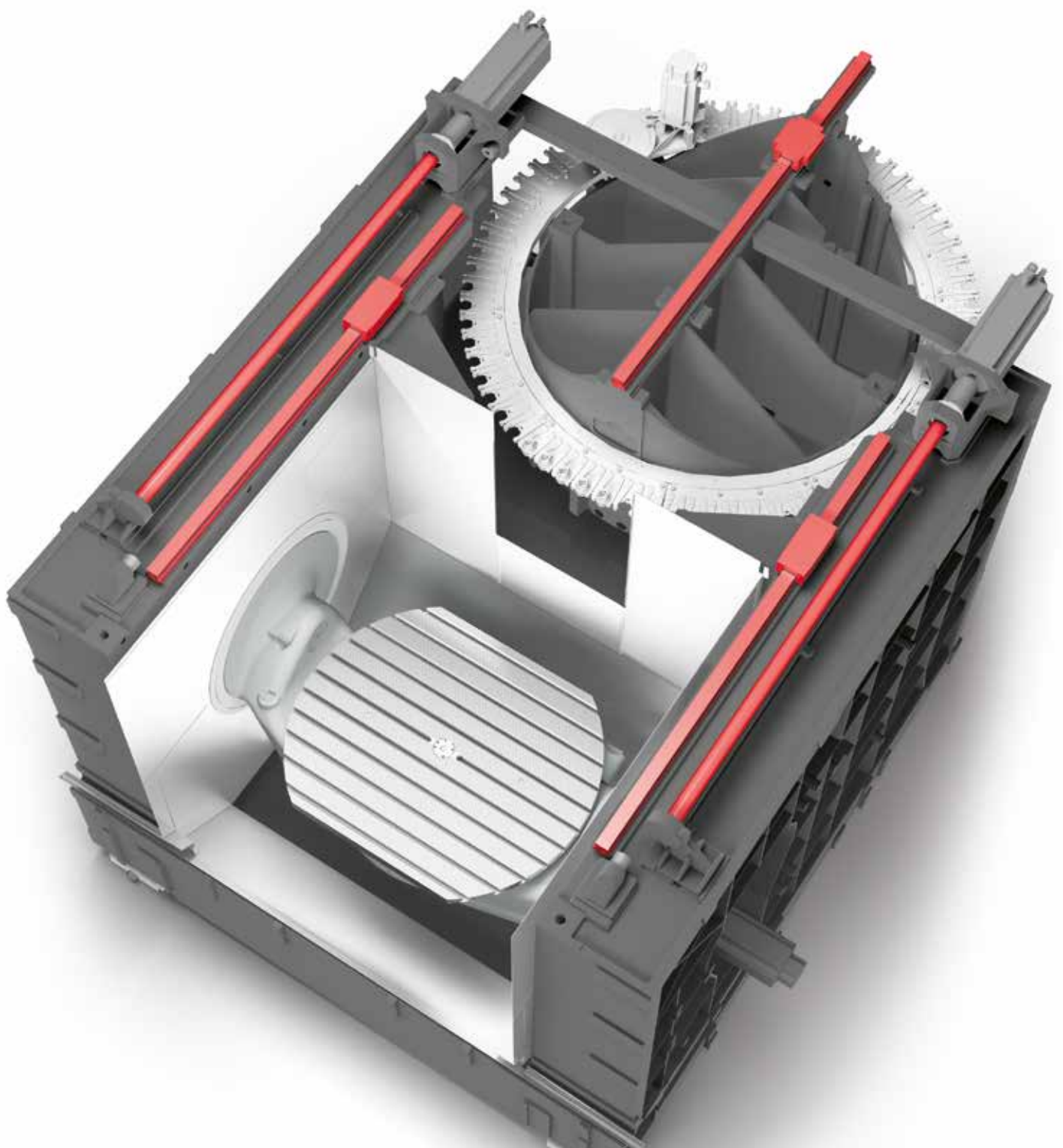
MLE

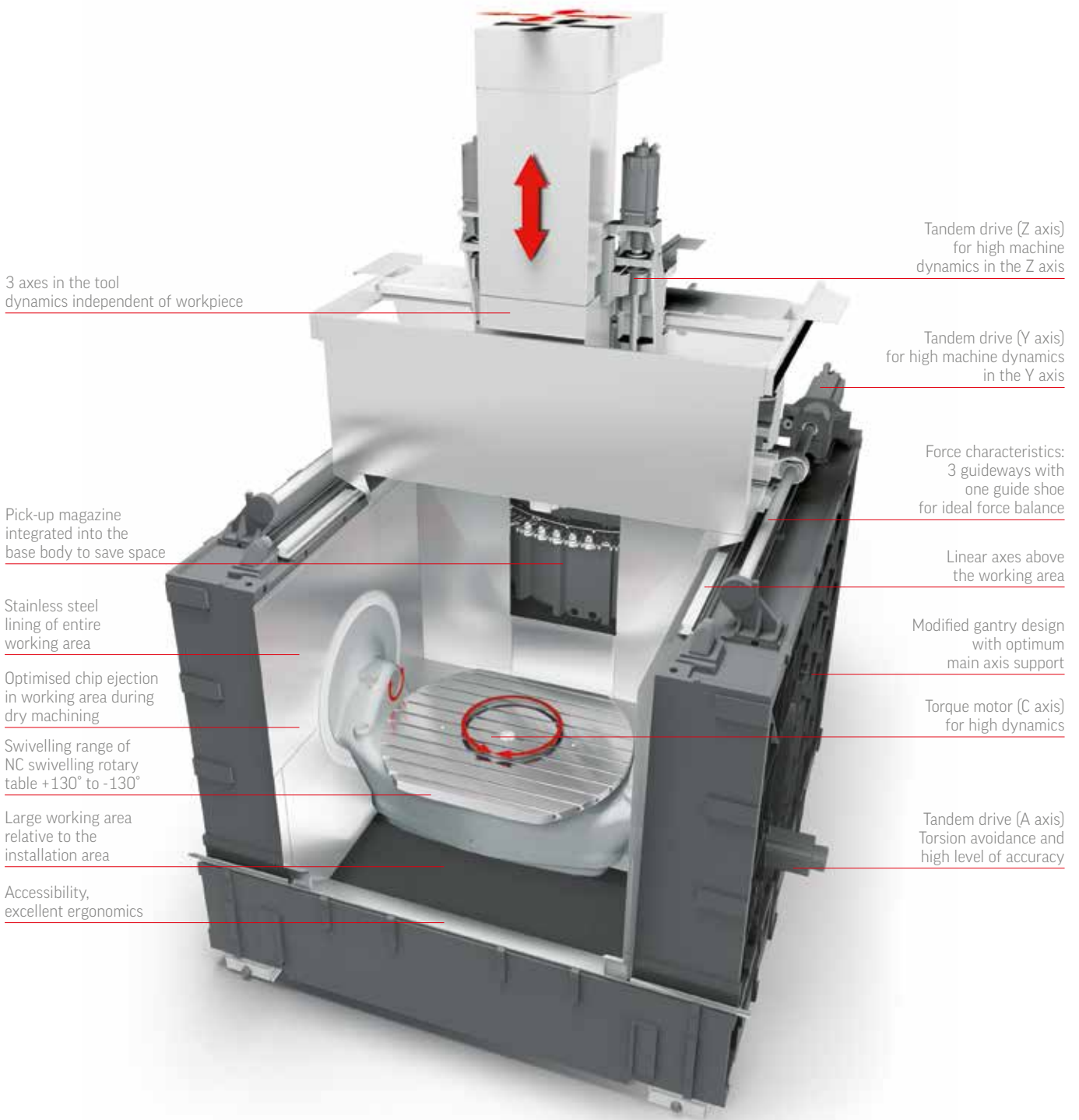
C62U



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 NC swivelling rotary table +130° to -130°

Large working area relative to the installation area

Accessibility, excellent ergonomics

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

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 62 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 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*

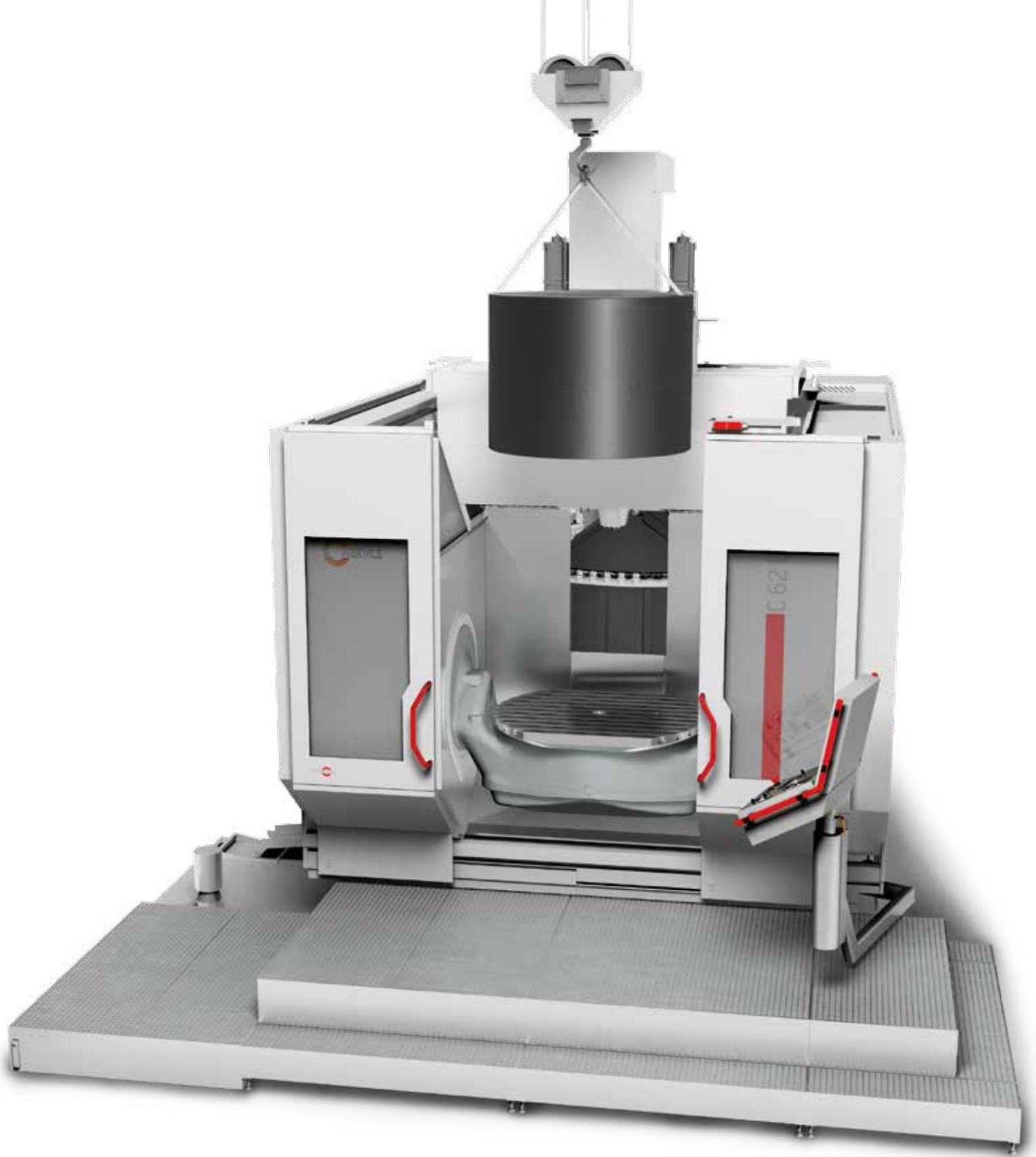
*Ø 1200 x 900 mm*

*max. 2500 kg*

*MT: max. 1500 / 2500 kg*

*Collision circle: Ø 1400 mm*





*5-axis machining*

# 02.4 Ergonomics

Built for daily use: the Hermle C 62 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 - 35°
  - 19" screen
- Automatic and reinforced cabin top
- Laminated safety glass panes
- Optimum loading height
- Crane loading
- Minimum interval between table and operator
- Large door opening
- Additional control panel in area of tool loading station
- Lockable fluid box
- Production cabin and bed flushing

Screen pivotable  
by up to 35°

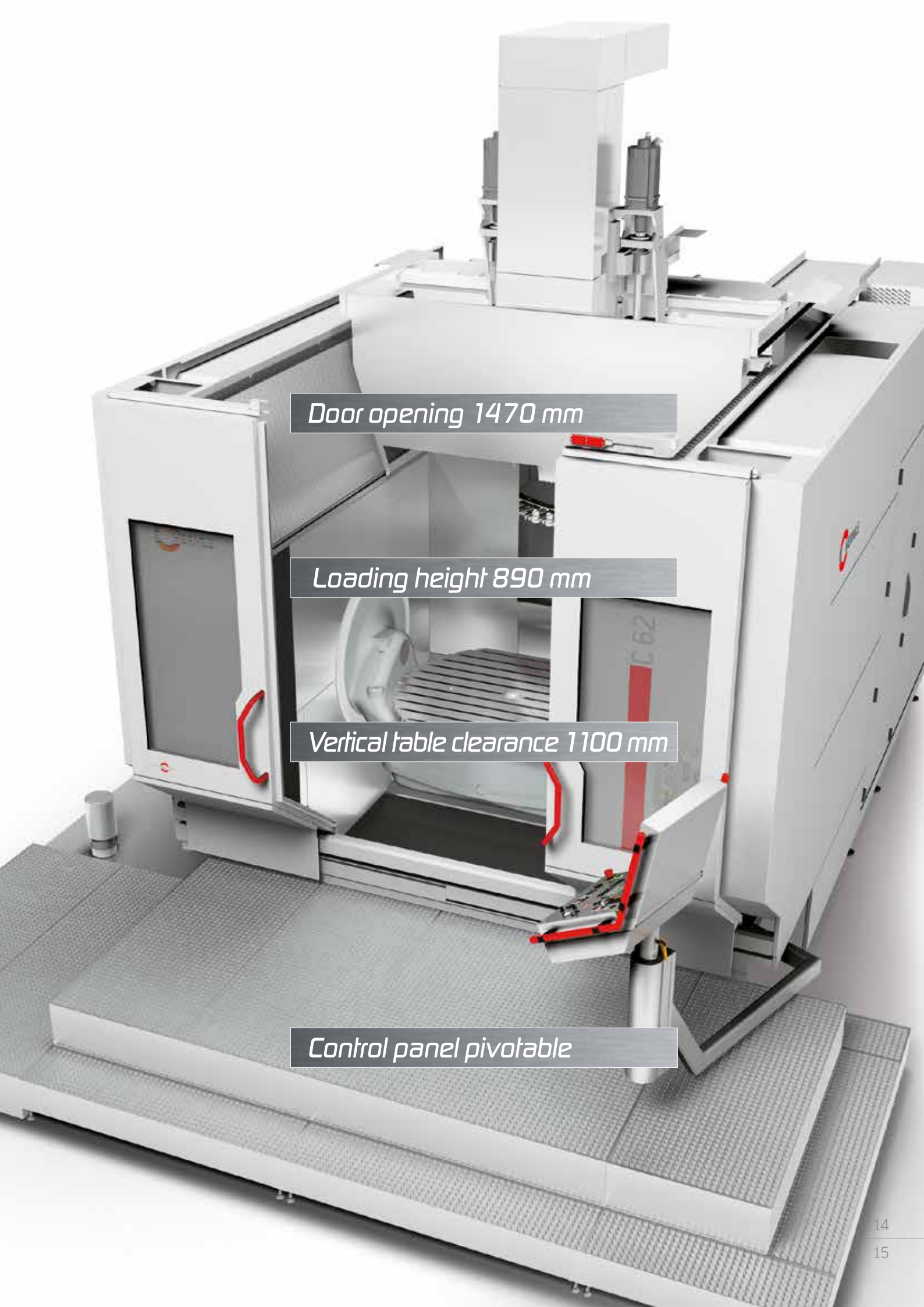


Practical,  
slide-in storage



Control panel  
+/-100 mm  
height adjustable





*Door opening 1470 mm*

*Loading height 890 mm*

*Vertical table clearance 1100 mm*

*Control panel pivotable*

# 02.5

## Table variants

Hermle's NC swivelling rotary table has revolutionised the concept of 5-axis machining. Also with the C 62, five axis operation is a key attribute, this capability is enhanced through the use of a torque drive. All 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.

Made in Germany - made in Gosheim: the C 62 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 tables are laying the foundations for the precision, accuracy and quality of the machined surfaces.





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 2500 kg rapidly and, most importantly, with exceptional precision.

## TECHNICAL DATA

*High degree of freedom in working area*

- *Very high table load (up to 2500 kg with the highest accuracy)*
- *No accumulation of chip on the 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*
- *No wear*
- *Direct, absolute measuring system*

## 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 900
T grooves:	parallel 7 / 18 H7
Swivelling range:	+/- 130°
C-axis drive type:	Torque
Speed - rotary axis C:	30 rpm
Speed - swivelling axis A (tandem drive):	15 rpm
Max. table load:	2500 kg



Clamping surface:	Ø 1350 x 1100
T grooves:	parallel 11 / 22 H7
Swivelling range:	+/- 130°
C-axis drive type:	Torque
Speed - rotary axis C:	30 rpm
Speed - swivelling axis A (tandem drive):	15 rpm
Max. table load:	2500 kg

# Swivelling rotary table . MT

C-axis drive type: torque



Zero-point clamping systems / pallet clamping systems

Clamping surface:	Ø 1200
T grooves:	star 16 / 22 H7
Swivelling range:	+/- 130°
C-axis drive type:	Torque
Speed - rotary axis C:	400 rpm
Speed - swivelling axis A (tandem drive):	15 rpm
Max. turning table load:	1500 kg
Max. milling table load:	2500 kg

# 02.6 Spindles

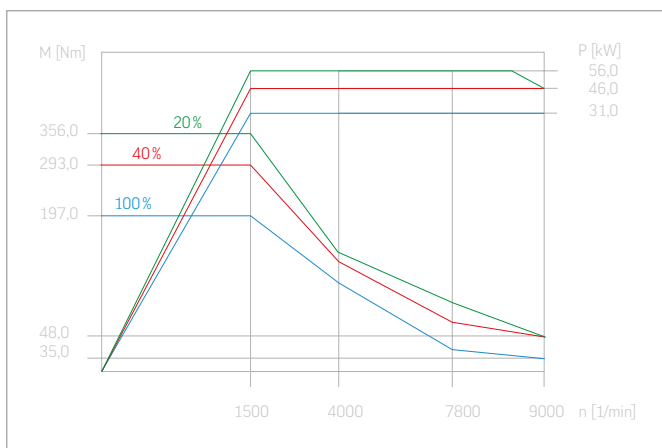


The C 62 features compact spindles. All the spindles can be replaced easily and quickly during servicing. With the different speed ranges and tool holding fixtures the spindles are suitable for a wide range of machining tasks. Like the tables, all spindles are manufactured exclusively and entirely at our plant in Gosheim.

## TECHNICAL DATA

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

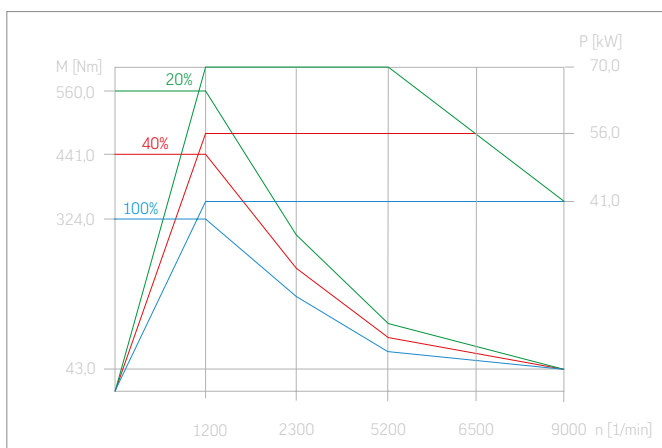
### Spindle 9000 rpm



### C 62 U

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
Spindle:	compact

### Spindle 9000 rpm



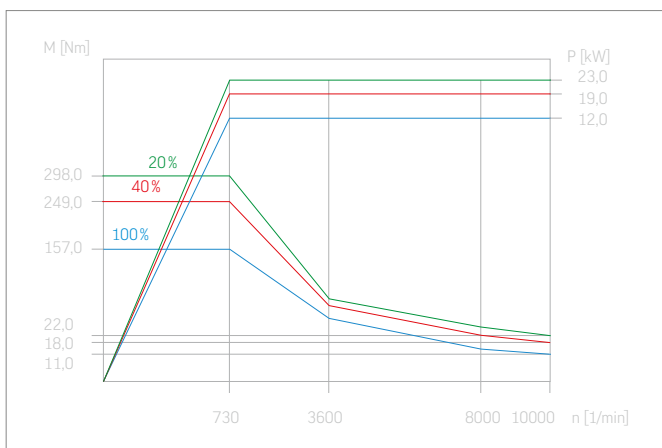
### C 62 U and C 62 U MT

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
Spindle:	compact





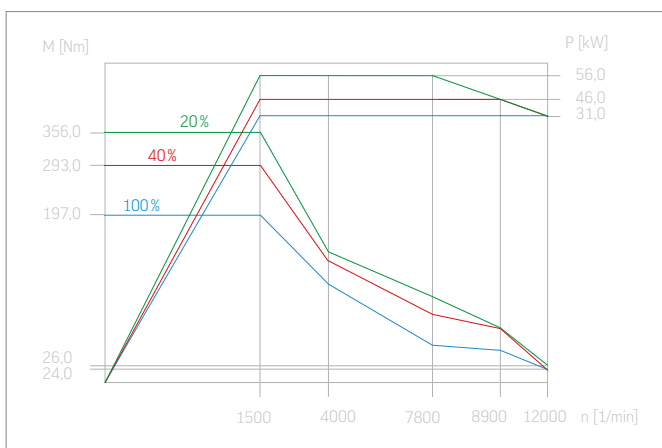
## Spindle 10000 rpm



## C 62 U

**Maximum spindle speed:** 10000 rpm  
**Main Power 20% c.d.f.:** 13 kW  
**Torque 20% c.d.f.:** 298 Nm  
**Tool holding fixture:** HSK A 63  
**Spindle:** compact

## Spindle 12000 rpm

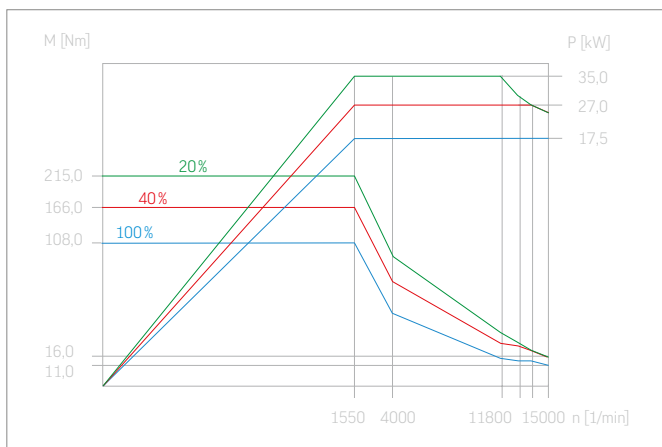


## C 62 U and C 62 U MT

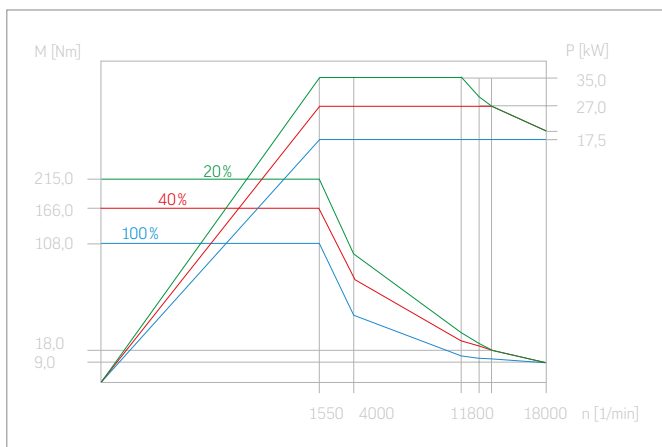
**Maximum spindle speed:** 12000 rpm  
**Main Power 20% c.d.f.:** 56 kW  
**Torque 20% c.d.f.:** 356 Nm  
**Tool holding fixture:** HSK A 100 / HSK T 100  
**Spindle:** compact



## Spindle 15000 rpm



## Spindle 18000 rpm



## C 62 U

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  
Spindle: compact

## C 62 U and C 62 U 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 A 63 / HSK T 63  
Spindle: compact





# 02.7

## The magazine

The C 62's tool magazine holds up to 70 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 integrated tool lift transports the tools quickly and easily to the elevated ring magazine.



### 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*

*Ground-level tool loading point with integrated tool lift to standard magazine*

*Tool changer (pick-up)*

<i>Interface:</i>	<i>SK 40 / HSK A 63</i>	<i>HSK A 50 / HSK A 100</i>
<i>Interface MT:</i>	<i>HSK T 63</i>	<i>HSK T 100</i>
<i>Magazine pockets:</i>	<i>70</i>	<i>50</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>with corresponding adjacent pocket allocation</i>	
<i>Max. tool length:</i>	<i>500 mm</i>	<i>500 mm</i>
<i>Max. magazine load:</i>	<i>560 kg</i>	<i>550 kg</i>
<i>Chip-to-chip time:</i>	<i>approx. 9.5 s</i>	<i>approx. 9.5 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 62. The additional magazine is available as a single or double version.

### *Additional magazine single*



### *Additional magazine double*



## **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*



# 02.8

## Control unit

The C 62 can be used with two control types. Both controls offer various 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)
- 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
- 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
- Including shell transformation, 5-axis transformation and process-oriented measuring
- 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
- Operate user interface



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.









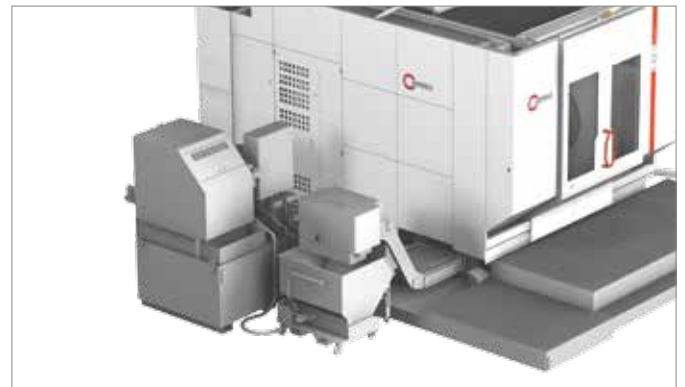
# 02.9

## The details

The C 62 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.



Chip conveyor



Chip conveyor with internal cooling lubricant supply ICS 80

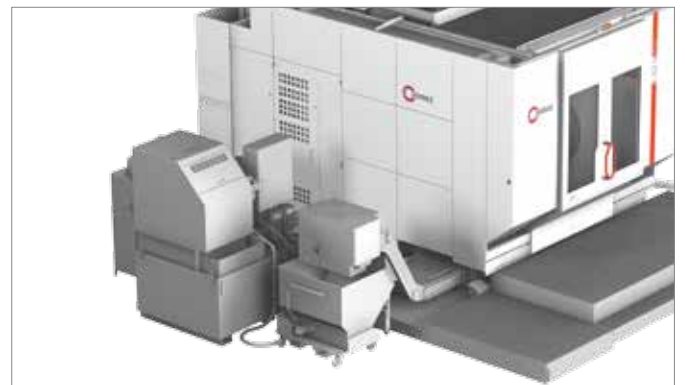
### HIGHLIGHTS

*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*



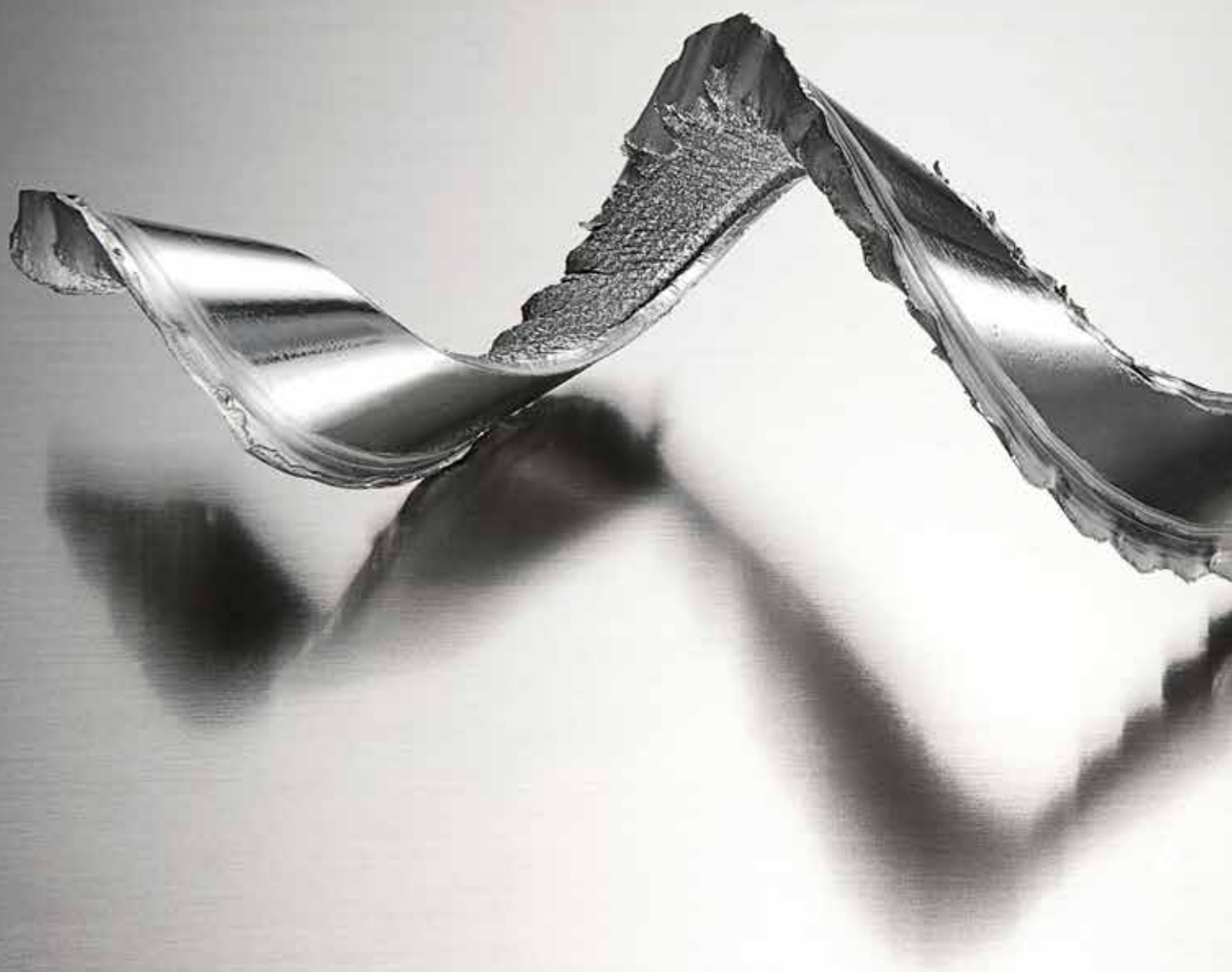
Chip conveyor with internal cooling lubricant supply ICS 80 and recooling unit



Chip conveyor with internal cooling lubricant supply ICS 80, recooling unit and emulsion mist extraction

03

Technical data . C 62



# 03.1

## Technical data . C 62

<b>Working area</b>	Traverse	X axis	1200 mm
	Traverse	Y axis	1300 mm
	Traverse	Z axis	900 mm
	Rapid linear traverses	X-Y-Z	50 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		1100 mm
	Max. workpiece diameter		Ø 1200 mm
	Max. workpiece height		900 mm
	Collision circle (A axis) in 0° position		Ø 1400 mm
<b>Main spindle drive</b>	Speed	9000 rpm	SK 50 ○
	Main power/Torque	20% c.d.f.	56 kW / 356 Nm
	Speed (C 62 / C 62 MT)	9000 rpm	HSK A 100 ○
	Main power/Torque	20% c.d.f.	41 kW / 476 Nm
	Speed	10000 rpm	HSK A 63 ○
	Main power/Torque	20% c.d.f.	23 kW / 298 Nm
	Speed (C 62 / C 62 MT)	12000 rpm	HSK A 100 / HSK T 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 (C 62 / C 62 MT)	18000 rpm	HSK A 63 / HSK T 63 ○
	Main power/Torque	20% c.d.f.	35 kW / 215 Nm
<b>Control unit</b>	Heidenhain		TNC 640 ●
	Siemens		Sinumerik 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		70	50
Chip-to-chip time		approx. 9.5 s	approx. 9.5 s	
Max. tool length		500 mm	500 mm	
Max. tool diameter		Ø 160 mm	Ø 250 mm	
Max. magazine load		560 kg	550 kg	

<b>Extension of tool storage capacity*</b>	Interface / Interface MT	additional magazine		max. 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 900	Ø 1350	Ø 1200 (MT variant)
	Clamping surface	Ø 900 mm	Ø 1350 mm	Ø 1200 mm
Clamping surface flattened on 2 sides	-	1100 mm	-	
Swivelling range	+/- 130°	+/- 130°	+/- 130°	
C-axis drive mode	torque	torque	torque	
Speed - swivelling axis A	15 rpm	15 rpm	15 rpm	
Speed - rotary axis C	30 rpm	30 rpm	400 rpm	
Max. milling table load	2500 kg	2500 kg	2500 kg	
Max. turning table load	-	-	1500 kg	
T grooves parallel	7 units / 18 H7	11 units / 22 H7	-	
T grooves star			16 units / 22 H7	

\*All tables available on demand

- Included in standard delivery
- Available upon request



<b>Positional uncertainty</b>	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 ●
<b>Chip conveyor</b>	Scraper belt conveyor ● Hinged belt conveyor ○ Chip conveyor ejection height at least 940 mm Chip cart 450 l ○	
<b>Coolant equipment</b>	Amount of coolant 600 l ● Pump capacity 5 bar / 140 l/min	
<b>Internal cooling lubricant supply with paper band filter</b>	Amount of coolant 1700 l Pressure (manually adjustable up to) max. 80 bar / 47 l/min Mains connection (ICS) 400 V / 50 Hz Power consumption (ICS) 24.8 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. 30.5 t
<b>Connected loads</b>	Mains connection 400 V / 50 Hz Power consumption C 62 U to 114 kVA Power consumption C 62 U MT to 114 kVA Compressed air 6 bar	

● Included in standard delivery

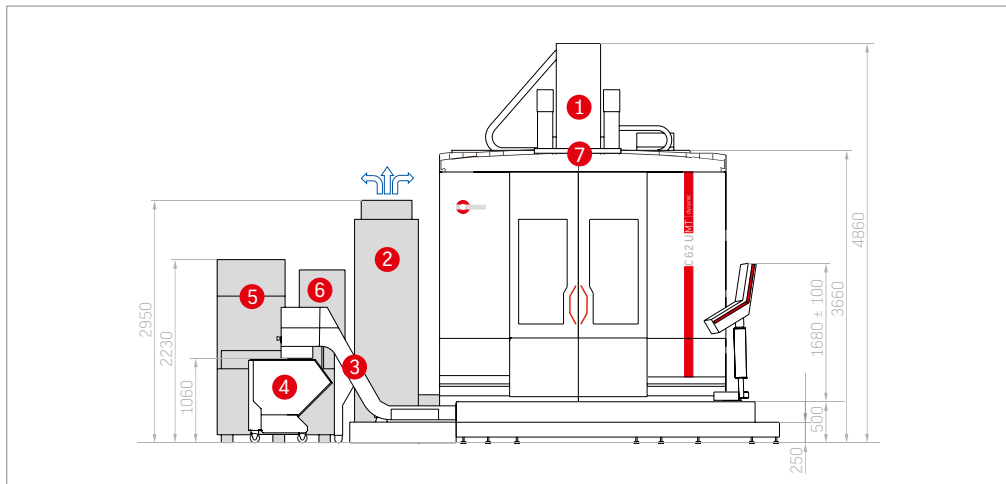
○ Available upon request



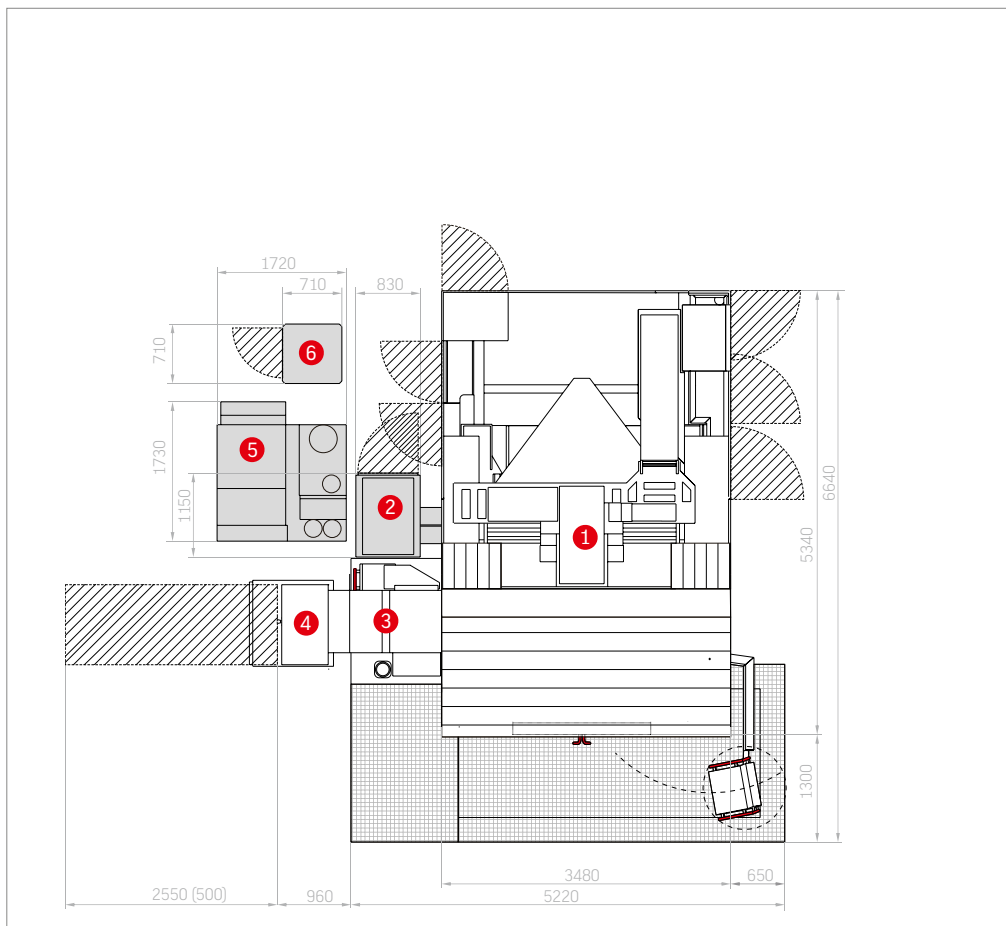
# 03.2 Options

The C 62 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 62 U MT dimensions



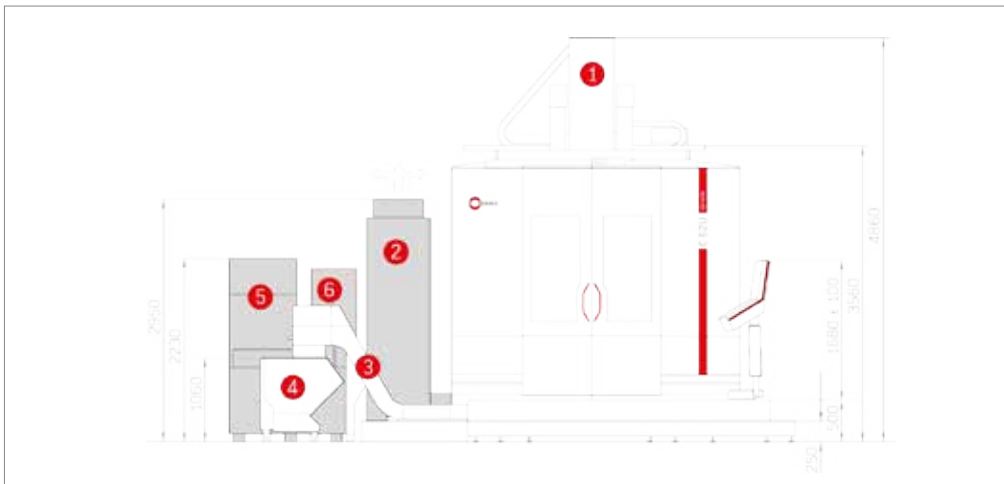
- 1 Machining centre
- 2 Emulsion mist extraction
- 3 Chip conveyor
- 4 Chip cart
- 5 Internal cooling lubricant supply
- 6 Recooling unit
- 7 Reinforced cabin roof  
C 62 U MT



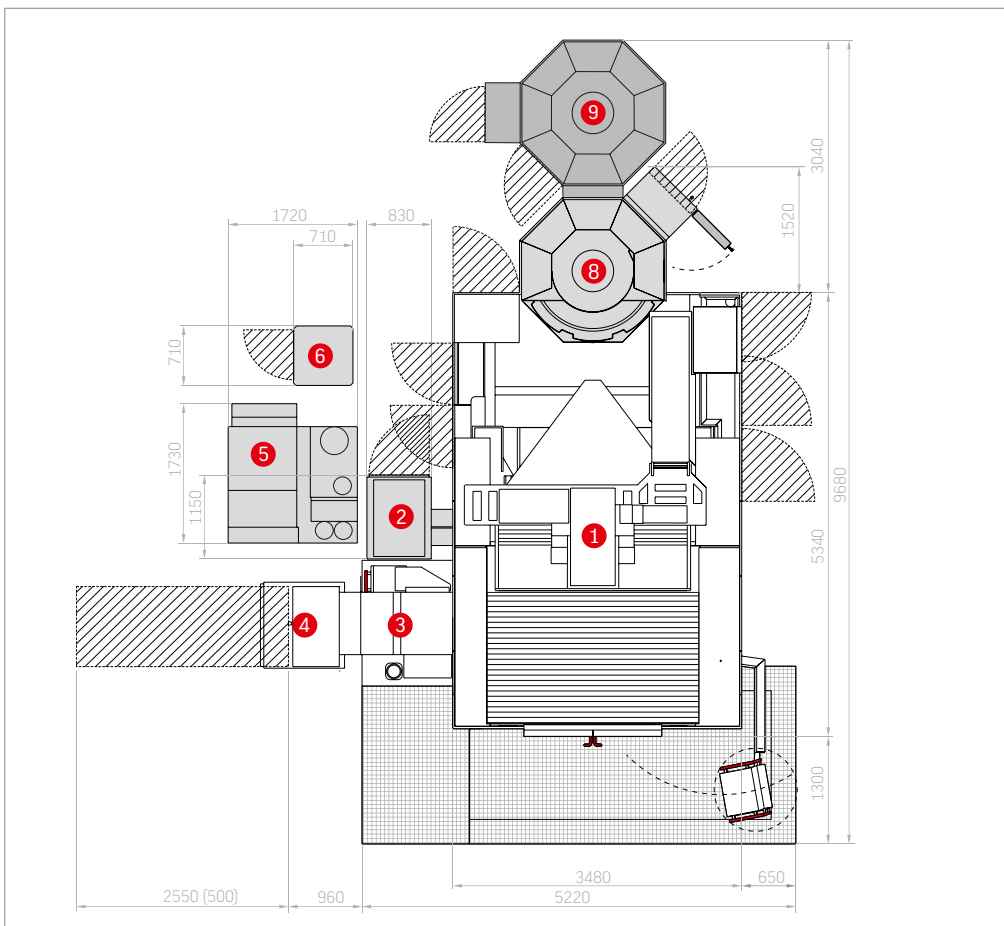
## Options

- Automatic cabin door
- Minimum quantity lubrication external
- BDE signal
- Control panel height adjustable
- 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 62 U dimensions . Additional magazine single / double



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





04

# Automation

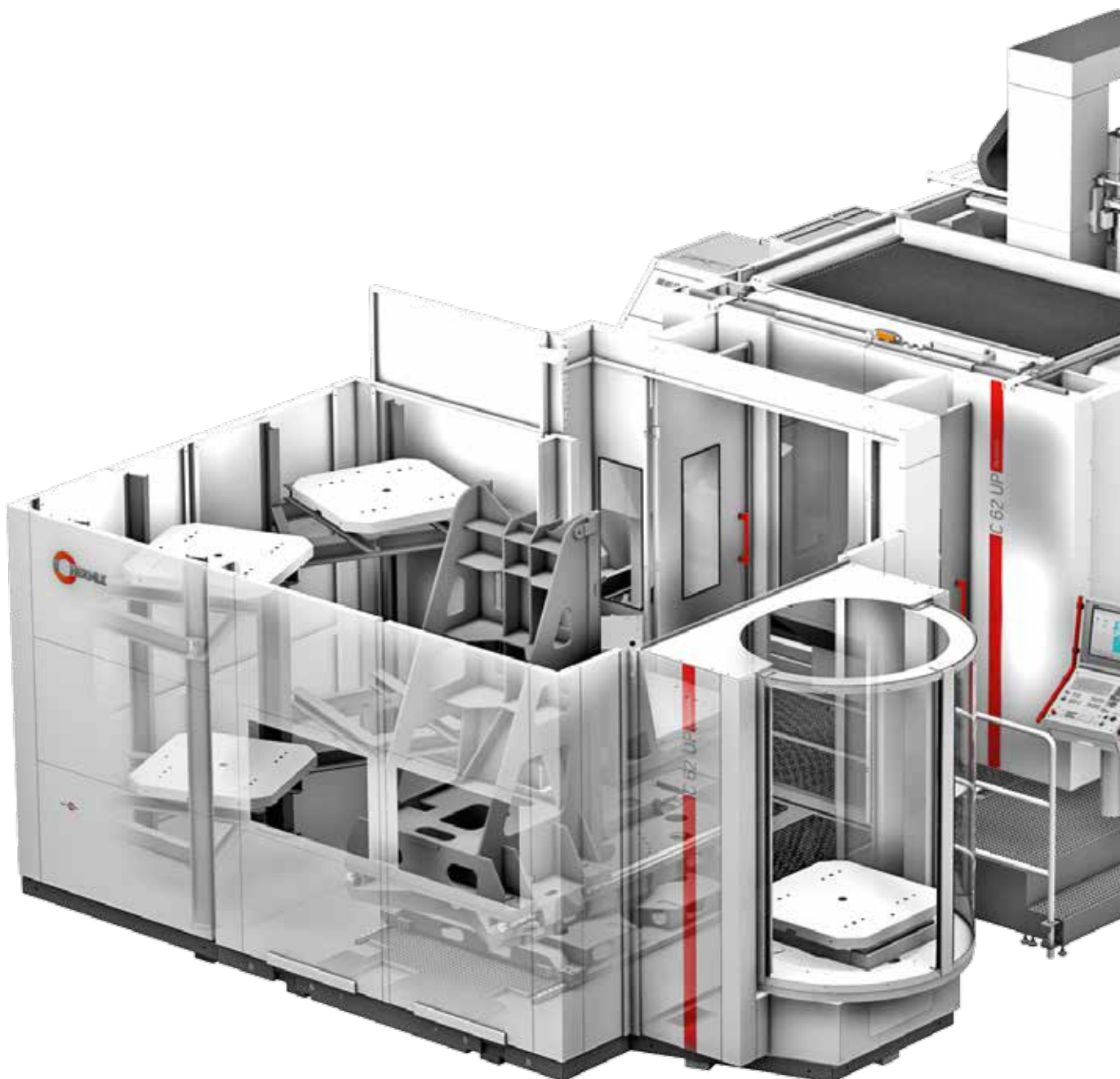


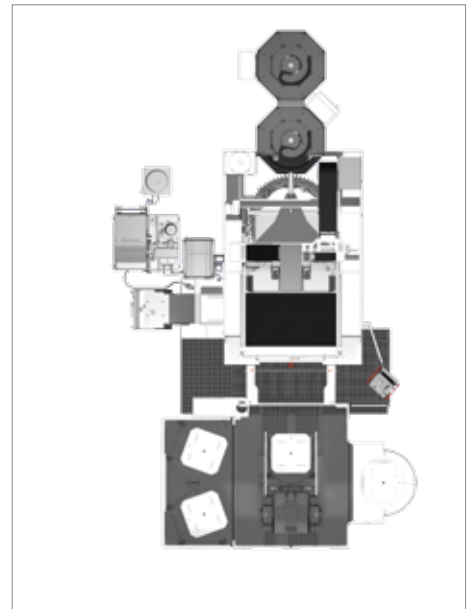




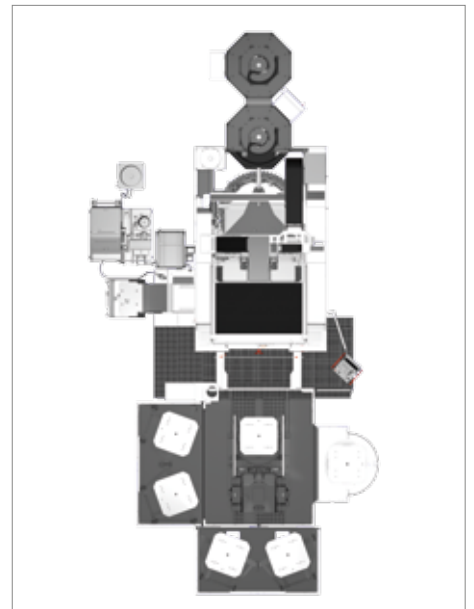
# 04.1 Automation . C 62

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.

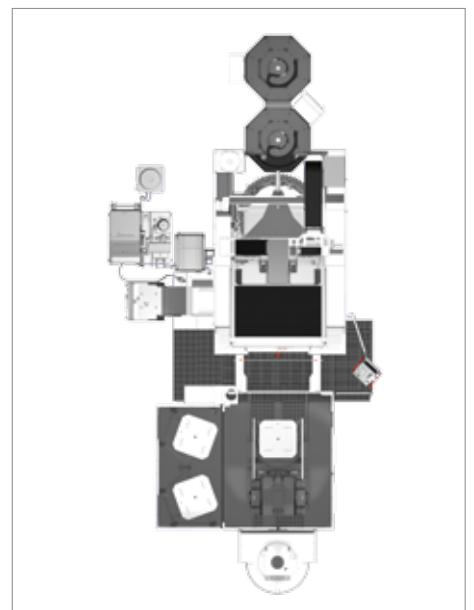




Pallet changer PW 3000 with one 2/4-pallet storage module and setup station module, right



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  $P \leq 8''$   
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 ( $+20^{\circ}\text{C}$ ,  $\pm 2^{\circ}\text{C}$ ) and temperature fluctuation of only  $0.5^{\circ}\text{C}$  in one hour or max.  $2^{\circ}\text{C}$  within 24 hours.

## IMPROVED PRECISION PACKAGES

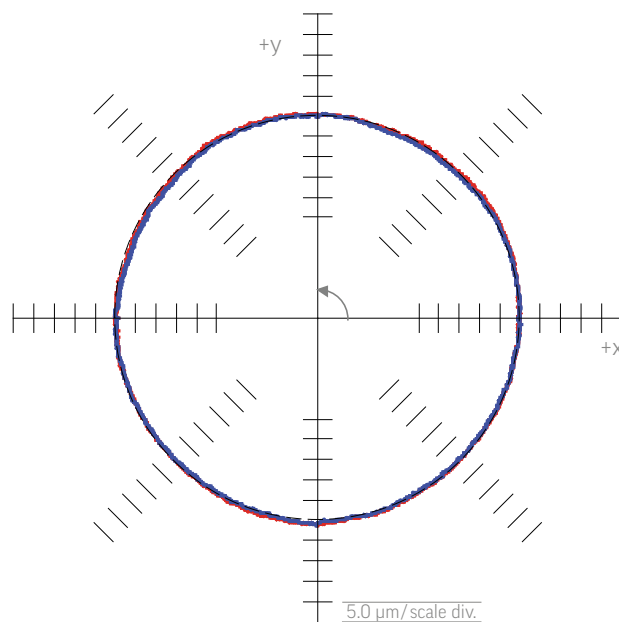
### Precision package 1 (linear axes X, Y, and Z)

- Straightness optimisation
- Geometry adjustment and optimisation
- Straightness measurement
- X, Y, Z positioning accuracy Pos. tolerance  $\leq 5 \mu$
- 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
- Indexing precision A  $6''$
- Indexing precision C  $6''$
- Laser measurement according to VDI/DGQ 3441 or ISO 230-2

\*not available for pallet changer and MT variant



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.

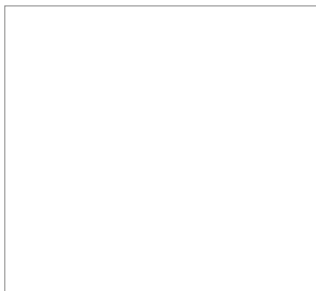
Alongside standard services, these include:

- Our superior, cost-effective, practical and flexible training programs carried out by sales representatives directly at the customers' premises.
- Our continual pursuit of optimization 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.





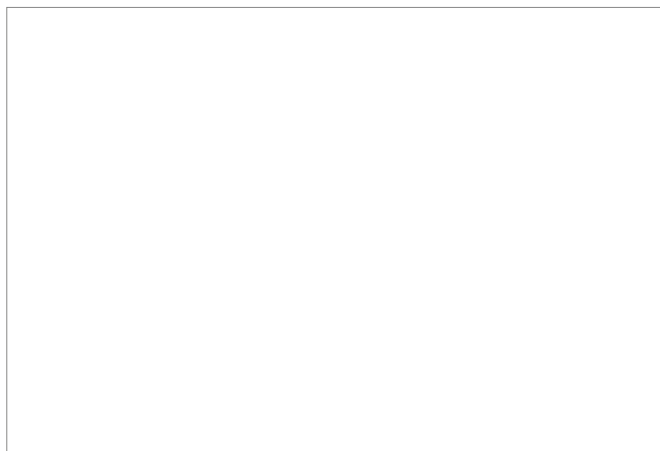




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