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

02 The machine

03 Technical data

04 Automation

05 Precision

06 Energy efficiency

07 Services
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.
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**

**Traverse X-Y-Z:** 1000 - 1100 - 750 mm  
**Speed:** 9000 / 12000 / 15000 / 18000 rpm  
**Rapid linear traverses X-Y-Z:** 60 - 60 - 55 m/min  
**Linear acceleration X-Y-Z:** 6 m/s²  
**Control unit:** TNC 640 / S 840 D sl  

**Swivelling rotary tables:**  
Table with torque: Ø 700 mm  
Swivelling range: + 100° / - 130°  
A-axis speed: 20 1/min  
C-axis speed: 30 1/min  
Max. table load: 2000 kg  
Table with torque: Ø 1150 x 900 mm  
Swivelling range: + 100° / - 130°  
A-axis speed: 20 1/min  
C-axis speed: 30 1/min  
Max. table load: 2000 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 table swivelled. The C 52 U MT machining centre can also process workpieces up to 2000 kg in weight.

TECHNICAL DATA

Traverse X-Y-Z: 1000 - 1100 - 750 mm
Speed: 9000 / 12000 / 18000 1/min
Rapid linear traverses X-Y-Z: 60 - 60 - 55 m/min
Linear acceleration X-Y-Z: 6 m/s²
Control unit: TNC 640 / S 840 D sl
Swivelling rotary table:
Table with torque: 0 1000 mm
Swivelling range: + 100° / - 130°
A-axis speed: 20 1/min
C-axis speed: 500 1/min
Max. turning table load: 1000 kg
Max. milling table load: 2000 kg

- 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

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

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

Torque motor (C axis)
for high dynamics

Modified gantry design
with optimum
main axis support

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

Pick-up magazine
integrated into the
base body to save space

Linear axes above
the working area

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
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

<table>
<thead>
<tr>
<th>5-axis / MT</th>
<th>0 1000 x 810 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>max. 2000 kg</td>
<td></td>
</tr>
<tr>
<td>MT: max. 1000 / 2000 kg</td>
<td></td>
</tr>
<tr>
<td>Collision circle: 0 1290 mm</td>
<td></td>
</tr>
<tr>
<td>Vertical table clearance: max. 950 mm</td>
<td></td>
</tr>
</tbody>
</table>
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
Door opening 1250 mm
Vertical table clearance 950 mm
Loading height 890 mm
Control panel pivotable
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.
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.

<table>
<thead>
<tr>
<th>Feature</th>
<th>1st Configuration</th>
<th>2nd Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clamping surface:</td>
<td>Ø 700</td>
<td>Ø 1150 x 900</td>
</tr>
<tr>
<td>T grooves:</td>
<td>parallel 9 / 14 H7</td>
<td>parallel 9 / 18 H7</td>
</tr>
<tr>
<td>Swivelling range:</td>
<td>+ 100° / - 130°</td>
<td>+ 100° / - 130°</td>
</tr>
<tr>
<td>C-axis drive type:</td>
<td>Torque</td>
<td>Torque</td>
</tr>
<tr>
<td>Speed - rotary axis C:</td>
<td>30 rpm</td>
<td>30 rpm</td>
</tr>
<tr>
<td>Speed - swivelling axis A (tandem drive):</td>
<td>20 rpm</td>
<td>20 rpm</td>
</tr>
<tr>
<td>Max. table load:</td>
<td>2000 kg</td>
<td>2000 kg</td>
</tr>
</tbody>
</table>
Clamping surface: \( \varnothing 1000 \)

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.

TECHNICAL DATATool

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

**Tool Spindle 9000 rpm**

- 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
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)

<table>
<thead>
<tr>
<th>Interface</th>
<th>SK 40 / HSK A 63</th>
<th>SK 50 / HSK A 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface MT</td>
<td>HSK T 63</td>
<td>HSK T 100</td>
</tr>
<tr>
<td>Magazine pockets</td>
<td>60</td>
<td>42</td>
</tr>
<tr>
<td>Max. tool weight</td>
<td>15 kg</td>
<td>30 kg</td>
</tr>
<tr>
<td>Max. tool diameter</td>
<td>Ø 160 mm</td>
<td>Ø 250 mm</td>
</tr>
<tr>
<td>Max. tool length</td>
<td>500 mm</td>
<td>500 mm</td>
</tr>
<tr>
<td>Max. magazine load</td>
<td>480 kg</td>
<td>462 kg</td>
</tr>
<tr>
<td>Chip-to-chip time</td>
<td>approx. 7.0 s</td>
<td>approx. 7.0 s</td>
</tr>
</tbody>
</table>
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 m² 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 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.
## Hermle control tools

<table>
<thead>
<tr>
<th>Tool Management Control</th>
<th>Operate-Tool-System</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Automation Control System</th>
<th>Wear Diagnosis System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple, Hermle order management software.</td>
<td>Machine status is continually monitored by the Hermle wear diagnosis system. It facilitates rapid machine diagnostics and status-oriented detection of maintenance tasks.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Information-Monitoring-Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>The „Information-Monitoring-Software“ is used to display the live status of machines and send events via e-mail.</td>
</tr>
</tbody>
</table>

## Hermle setups

<table>
<thead>
<tr>
<th>Standard</th>
<th>Heavy Duty Machining</th>
<th>High-Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>Heavy duty machining</td>
<td>Production</td>
</tr>
<tr>
<td>- Standard setting.</td>
<td>- For roughing in conjunction with high milling power.</td>
<td>- Quicker machining with programs which have many cycle calls or sub-programs.</td>
</tr>
<tr>
<td>- Switches back to the standard setting after a different setup has been used.</td>
<td>- Greater machining performance possible thanks to reduced machine vibration (depending on the tool and the selected technology data).</td>
<td></td>
</tr>
</tbody>
</table>
### 3D Contour Tolerance max.

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

### 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

- For very high demands on the surface quality, mainly for free-form surfaces.
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
Technical data. C 52
## Technical data . C 52

### Working area

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traverse X axis</td>
<td>1000 mm</td>
</tr>
<tr>
<td>Traverse Y axis</td>
<td>1100 mm</td>
</tr>
<tr>
<td>Traverse Z axis</td>
<td>750 mm</td>
</tr>
<tr>
<td>Rapid linear traverses X-Y-Z</td>
<td>60-60-55 m/min</td>
</tr>
<tr>
<td>Linear acceleration X-Y-Z</td>
<td>6 m/s²</td>
</tr>
<tr>
<td>Linear feed force X-Y-Z</td>
<td>16000 N</td>
</tr>
<tr>
<td>Max. vertical table clearance</td>
<td>950 mm</td>
</tr>
<tr>
<td>Max. workpiece diameter</td>
<td>Ø 1000 mm</td>
</tr>
<tr>
<td>Max. workpiece height</td>
<td>810 mm</td>
</tr>
<tr>
<td>Collision circle (A-axis) Ø' position</td>
<td>Ø 1290 mm</td>
</tr>
</tbody>
</table>

### Main spindle drive

<table>
<thead>
<tr>
<th>Speed (rpm)</th>
<th>Main power (kW)</th>
<th>Torque (Nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9000</td>
<td>56</td>
<td>356</td>
</tr>
<tr>
<td>12000</td>
<td>56</td>
<td>356</td>
</tr>
<tr>
<td>15000</td>
<td>35</td>
<td>215</td>
</tr>
<tr>
<td>18000</td>
<td>35</td>
<td>215</td>
</tr>
<tr>
<td>9000</td>
<td>70</td>
<td>560</td>
</tr>
<tr>
<td>12000</td>
<td>56</td>
<td>356</td>
</tr>
<tr>
<td>18000</td>
<td>35</td>
<td>215</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Main spindle drive variants</th>
<th>Speed (rpm)</th>
<th>Main power (kW)</th>
<th>Torque (Nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSK A 100</td>
<td>12000</td>
<td>56</td>
<td>356</td>
</tr>
<tr>
<td>HSK A 40</td>
<td>15000</td>
<td>35</td>
<td>215</td>
</tr>
<tr>
<td>HSK A 63</td>
<td>18000</td>
<td>35</td>
<td>215</td>
</tr>
<tr>
<td>HSK T 100</td>
<td>9000</td>
<td>70</td>
<td>560</td>
</tr>
<tr>
<td>HSK T 100</td>
<td>12000</td>
<td>56</td>
<td>356</td>
</tr>
<tr>
<td>HSK T 63</td>
<td>18000</td>
<td>35</td>
<td>215</td>
</tr>
</tbody>
</table>

### Control unit

- Heidenhain: TNC 640
- Siemens: S 840 D sl
### Tool changer (pick-up)

<table>
<thead>
<tr>
<th>Interface / Interface MT</th>
<th>SK 40 / HSK A 63 / HSK T 63</th>
<th>SK 50 / HSK A 100 / HSK T 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magazine pockets</td>
<td>60</td>
<td>42</td>
</tr>
<tr>
<td>Chip-to-chip time*</td>
<td>approx. 7.0 s</td>
<td>approx. 7.0 s</td>
</tr>
<tr>
<td><em>(chip-to-chip times for 3-axis units in milling mode calculated in keeping with German standard VDI 2852, page 1)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. tool length</td>
<td>500 mm</td>
<td>500 mm</td>
</tr>
<tr>
<td>Max. tool diameter</td>
<td>Ø 160 mm</td>
<td>Ø 250 mm</td>
</tr>
<tr>
<td>Max. magazine load</td>
<td>480 kg</td>
<td>462 kg</td>
</tr>
<tr>
<td>Max. tool weight</td>
<td>15 kg</td>
<td>30 kg</td>
</tr>
</tbody>
</table>

### Extension of tool storage capacity*

<table>
<thead>
<tr>
<th>Interface / Interface MT</th>
<th>SK 40 ZM 90 / ZM 115</th>
<th>SK 50 ZM 72 / ZM 92</th>
<th>HSK A 63 / HSK T 63 ZM 110 / ZM 135</th>
<th>HSK A 100 / HSK T 100 ZM 88 / ZM 108</th>
</tr>
</thead>
<tbody>
<tr>
<td>additional magazine</td>
<td>ZM 220 / ZM 270</td>
<td>ZM 176 / ZM 216</td>
<td>ZM 265 / ZM 325</td>
<td>ZM 212 / ZM 260</td>
</tr>
<tr>
<td>magazine load</td>
<td>90 / 115</td>
<td>72 / 92</td>
<td>110 / 135</td>
<td>88 / 108</td>
</tr>
<tr>
<td>(MT variant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

### Table variants*

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

*All tables available on demand

- Included in standard delivery
- Available upon request
<table>
<thead>
<tr>
<th>Positional tolerance</th>
<th>Tp in X-Y-Z axes according to VDI/DGQ 3441</th>
<th>0.008 mm ●</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(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.)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chip conveyor</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scraper belt conveyor</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Hinged belt conveyor</td>
<td>●</td>
</tr>
<tr>
<td>Chip conveyor ejection height</td>
<td>at least 940 mm</td>
<td>●</td>
</tr>
<tr>
<td>Chip cart</td>
<td>450 l</td>
<td>○</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cooling lubricant unit</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of cooling lubricant</td>
<td>500 l</td>
<td>●</td>
</tr>
<tr>
<td>Pump capacity</td>
<td>5 bar / 80 l/min</td>
<td>●</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Internal cooling lubricant supply with paper band filter</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of cooling lubricant</td>
<td>1700 l</td>
<td>●</td>
</tr>
<tr>
<td>Pressure (manually adjustable up to)</td>
<td>max. 80 bar / 47 l/min</td>
<td>●</td>
</tr>
<tr>
<td>Mains connection (ICS)</td>
<td>400 V / 50 Hz</td>
<td>●</td>
</tr>
<tr>
<td>Power consumption (ICS)</td>
<td>18.5 kVA</td>
<td>●</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hydraulics</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure</td>
<td>120 bar</td>
<td>●</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Central lubrication</th>
<th>Minimum grease lubrication quantity</th>
<th>●</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Weight</th>
<th>(standard version without optional extras, attachments, workpieces and cooling lubricant)</th>
<th>Approx. 21.0 t</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Connected loads</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mains connection</td>
<td>400 V / 50/60 Hz</td>
<td>●</td>
</tr>
<tr>
<td>Power consumption C 52 U</td>
<td>to 94 kVA</td>
<td>●</td>
</tr>
<tr>
<td>Power consumption C 52 U MT</td>
<td>to 94 kVA</td>
<td>●</td>
</tr>
<tr>
<td>Compressed air</td>
<td>6 bar</td>
<td>●</td>
</tr>
</tbody>
</table>

● 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
- BOE 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

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

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.

**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
04.1 Automation . C 52
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.
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, elect. heat compensation, an ICS recolcool unit and two-sided A axis drive.

Test and operating conditions are as follows: air conditioned room ($\pm 20^\circ C$, $\pm /- 2^\circ C$) and temperature fluctuation of only $0.5^\circ C$ in one hour or max. $2^\circ C$ 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.
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.
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
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.
The machining examples used in this leaflet are published with the explicit and kind permission of our customers.
The information in this brochure only contains general descriptions and/or performance features that, in a
concrete application, may not always apply in the form described or represented here or may have changed due
to further development of the products. The performance features desired shall only be binding if they have been
expressly agreed upon in writing at the time of the contract. The machines illustrated may include some options,
accessories and control unit alternatives.

Maschinenfabrik
Berthold Hermle AG
Industriestraße 8-12
D-78559 Gosheim

Phone +49 (0)7426 95-0
Fax +49 (0)7426 95-1309

info@hermle.de
www.hermle.de