Milling at its best: Hermle machines are often at the forefront when it comes to optimized results. The proverbial Hermle precision in combination with process consulting and project management has made us an important machine manufacturer in nearly all key sectors: From large complex components to the very smallest components in the high-tech sector. Versatile applications, uncompromising results Hermle – the original.
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. Machining centres are made for daily operation, whether as linked linear segments in production or as stand-alone workshop machinery.

01
Industry sectors

Automotive industry

Precision mechanics

Medical engineering

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

<table>
<thead>
<tr>
<th>TECHNICAL DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traverse X-Y-Z: 800 - 800 - 550 mm</td>
</tr>
<tr>
<td>Speed: 15000 / 18000 / 25000 / 42000 rpm</td>
</tr>
<tr>
<td>Rapid linear traverse X-Y-Z (dynamic): 45 (60) - 45 (60) - 40 (60) m/min</td>
</tr>
<tr>
<td>Linear acceleration X-Y-Z (dynamic): 6 (10) m/s²</td>
</tr>
<tr>
<td>Control unit: TNC 640 / S 840 D sl</td>
</tr>
<tr>
<td>Rigid clamping table: 1050 x 805 mm</td>
</tr>
<tr>
<td>Max. table load: 2000 kg</td>
</tr>
<tr>
<td>Swivelling rotary tables:</td>
</tr>
<tr>
<td>Machining table with worm: 0 440 mm</td>
</tr>
<tr>
<td>Swivelling range: +/- 130°</td>
</tr>
<tr>
<td>A axis speed: 25 rpm</td>
</tr>
<tr>
<td>C axis speed: 30 rpm</td>
</tr>
<tr>
<td>Max. table load: 450 kg</td>
</tr>
<tr>
<td>Machining tables with torque: 0 440 mm</td>
</tr>
<tr>
<td>Swivelling range: +/- 130°</td>
</tr>
<tr>
<td>A axis speed: 55 rpm</td>
</tr>
<tr>
<td>C axis speed: 65 rpm</td>
</tr>
<tr>
<td>Max. table load: 450 kg</td>
</tr>
</tbody>
</table>
The machine . MT

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

**TECHNICAL DATA**

**Traverse X-Y-Z:** 800 - 800 - 550 mm

**Speed:** 15000 / 18000 rpm

**Rapid linear traverse X-Y-Z (dynamic):** 45 (60) - 45 (60) - 40 (60) m/min

**Linear acceleration X-Y-Z (dynamic):** 6 (10) m/s²

**Control unit:** TNC 640 / S 840 D sl

**Swivelling rotary table:**
- Machining table with torque: 0 750 mm
- Swivelling range: +/- 130°
- A axis speed: 25 rpm
- C axis speed: 800 rpm
- Max. turning table load: 700 kg
- Max. milling table load: 1400 kg

- Fully integrated rotary technology
- Integrated balancing system
- Reinforced cabin top
- Production booth
- Milling operations: 5-side machining/up to 5 axes simultaneous machinings
- Turning operations: Horizontal/vertical turning, up to 5 axes simultaneous machinings
A new dimension of dynamics
3 axes in one tool for workpiece-independent dynamics

Force characteristics:
- 4 guideways with one guide shoe for ideal force balance
- Tandem drive (A axis)
- Torsion avoidance and high level of accuracy
- Mineral casting design with excellent vibration dampening properties

Pickup tool magazine integrated into the base body to save space

Stainless steel lining of entire working area

Optimised chip ejection in working area during dry machining

Swivelling range of Swivelling rotary table +/- 130°

Large working area relative to the installation area

Accessibility, excellent ergonomics

Linear axes above the working area

Modified gantry design with optimum main axis support

Torque (C axis) to a high dynamic

Tandem drive (A axis)

Optimised chip ejection in working area during dry machining

Large working area relative to the installation area

Accessibility, excellent ergonomics

Pickup tool magazine integrated into the base body to save space

Stainless steel lining of entire working area

Optimised chip ejection in working area during dry machining

Swivelling range of Swivelling rotary table +/- 130°

Large working area relative to the installation area

Accessibility, excellent ergonomics

Linear axes above the working area

Modified gantry design with optimum main axis support

Torque (C axis) to a high dynamic

Tandem drive (A axis)
02.3
The workpiece

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

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

THE WORKPIECE DIMENSION

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

<table>
<thead>
<tr>
<th>3-axis</th>
<th>5-axis/MT</th>
</tr>
</thead>
<tbody>
<tr>
<td>800 x 800 x 550 mm</td>
<td>0 800 x 560 mm</td>
</tr>
<tr>
<td>max. 2000 kg</td>
<td>max. 1400 kg</td>
</tr>
<tr>
<td>MT: max. 700 / 1400 kg</td>
<td>Collision circle Ø 990 mm</td>
</tr>
<tr>
<td>max. vertical table clearance 700 mm</td>
<td></td>
</tr>
</tbody>
</table>
3-axis machining

5-axis machining
Ergonomics

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

HIGHLIGHTS

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

Screen pivotable by up to 30 °C

Practical, slide-in storage

Control panel +/-100 mm height adjustable
Door opening 940 mm
Vertical table clearance 700 mm
Loading height 950 mm
Control panel pivotable
Hermle’s swivelling rotary table has revolutionised the concept of 5-axis machining. The C 42 also relies on 5-axis operation and takes full advantage of its advantages. These include worm gears on the entry-level table and torque drive on the highly dynamic version. All machining tables are manufactured exclusively and entirely at our plant in Gosheim.

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

**TECHNICAL DATA**

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

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

**Torque table**
- High dynamics on the A and C axes
- No wear
- Direct, absolute measuring system
Made in Germany – made in Gosheim: The C 42 table variants stand for the highest quality and optimum material usage from the cast housing to the installed gearbox and torque motors. At our main plant in Gosheim, these machining tables are laying the foundations for the precision, accuracy and quality of the machined surfaces.

Hermle’s swivelling rotary tables are equipped with cutting-edge drive technology for high dynamic during 5-axis machining as the slowest axis determines the speed of 5-axis simultaneous milling. With high-performance drive technology in the rotary axes (A axis / C axis), loads of up to 1400 kg can be positioned quickly and above all with great precision.

**DRIVE TECHNOLOGY**

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

**One-sided drive**

- Mechanical drive on right of table housing

**Tandem drive**

- Mechanical tandem drive to left and right of table housing
Swivelling rotary table

Drive type of C axis: Worm

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

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

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

Secondary clamping plates 930 x 490

Zero-point clamping systems/pallet clamping systems
The “Torque” swivelling rotary table provides the ideal conditions for highly dynamic 5-axis and simultaneous 5-axis machining.
Rigid clamping table

Clamping surface: 1050 x 805 mm

Equipped with the rigid clamping table, the machine can deal with clamping weights of up to 2000 kg - ideal for 3-axis machining of large, bulky and heavy workpieces.

T grooves: parallel 12/14 H7

Swivelling rotary table . MT

Drive type of C axis: Torque

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

Zero-point clamping systems / pallet clamping systems
The C 42 can be equipped with two-piece or compact spindles. All tool spindles can be replaced quickly and easily in case of failure. With the different speed ranges and tool holding fixtures the tool spindles are suitable for a wide variety of machining tasks. Like the machining tables, all tool spindles are manufactured exclusively and entirely at our plant in Gosheim.

**TECHNICAL DATA**

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

**Collision protection with collision inquiry**

Each tool spindle has several collision sleeves which compensate collision energy in the Z direction.
**Tool spindle 15000 rpm**

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

* No compression sleeves

---

**Tool spindle 15000 rpm**

Maximum spindle speed: 15000 rpm
Main power 20% c.d.f.: 42 kW
Torque 20% c.d.f.: 148 Nm
Tool holding fixture: SK 40
Tool spindle: two-piece
Collision protection: collision sleeves
**Tool spindle 18000 rpm**

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

* No compression sleeves

**Tool spindle 25000 rpm**

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

**Tool spindle 42000 rpm**

- Maximum spindle speed: 42000 rpm
- Main power 20% c.d.f.: 35 kW
- Torque 20% c.d.f.: 17.5 Nm
- Tool holding fixture: HSK E 40
- Tool spindle: compact
The C 42's tool magazine holds up to 42 tools in the standard version and is integrated into the machine bed to save space. It can be filled from the side by swivelling the control panel to the loading point.

<table>
<thead>
<tr>
<th>TECHNICAL DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pick-up magazine</strong></td>
</tr>
<tr>
<td><strong>Integration into the machine bed</strong></td>
</tr>
<tr>
<td><strong>Excellent accessibility</strong></td>
</tr>
<tr>
<td><strong>Control panel pivotable to the loading point</strong></td>
</tr>
<tr>
<td><strong>Covers for tool holding fixture</strong></td>
</tr>
<tr>
<td><strong>Tool changer (pick-up)</strong></td>
</tr>
</tbody>
</table>

- **Interface:**
  - Interface: SK 40 / HSK A 63
  - Interface MT: HSK A 63 / HSK T 63

- **Magazine pockets:**
  - 42

- **Max. tool weight:**
  - 8 kg
  - 2.5 kg

- **Max. tool diameter:**
  - Ø 80 with corresponding adjacent pocket allocation Ø 125 mm

- **Max. tool length:**
  - 300 mm
  - 300 mm

- **Max. magazine load:**
  - 168 kg
  - 105 kg

- **Chip-to-chip time:**
  - approx. 4.5 s
  - approx. 4.5 s
Additional tool magazine ZM 50 / ZM 88 k

- Magazine pockets: 50 / 88
- Max. tool weight: SK 40 / HSK A 63: 8 kg, HSK T 63: 2.5 kg, HSK E 40: 0.8 kg
- Max. tool diameter: Ø 80, with corresponding adjacent pocket allocation Ø 125 mm
- Max. tool length: 300 mm

Additional tool magazine single

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

Additional tool magazine double

- Magazine pockets: 462
- Max. tool weight: 8 kg
- Max. tool diameter: Ø 80, with corresponding adjacent pocket allocation Ø 125 mm
- Max. tool length: 300 mm
02.8
Control unit

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

Heidenhain

Milling and turning using one control unit

Heidenhain TNC 640

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

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 Heidenhain brochures.

For further advantages and detailed technical data, please see the Siemens brochures.
### Hermle control tools

<table>
<thead>
<tr>
<th>Tool Management Control</th>
<th>Automation Control System</th>
<th>Wear Diagnosis System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple, Hermle tool management for Heidenhain controls.</td>
<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>

### Hermle setups

<table>
<thead>
<tr>
<th>Standard</th>
<th>Heavy duty machining</th>
<th>High production</th>
</tr>
</thead>
</table>
| Standard setting.  
Switches back to the standard setting after a different setup has been used. | 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). | Quicker machining with programs which have many cycle calls or subprograms. |
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.
02.9
The details

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

HIGHLIGHTS

- Comprehensive fluid technology
- Optimised chip management
- Diverse cooling lubricant units
- Scraper belt conveyor
- Slat conveyor
- We provide the correct method of chip removal from the working area for all kinds of chips
03
Technical data : C 42
## 03.1 Technical data . C 42

### Working area

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traverse X axis</td>
<td>800 mm</td>
</tr>
<tr>
<td>Traverse Y axis</td>
<td>800 mm</td>
</tr>
<tr>
<td>Traverse Z axis</td>
<td>550 mm</td>
</tr>
<tr>
<td>Rapid linear traverse (dynamic) XY-Z</td>
<td>45 - 45 - 40 m/min</td>
</tr>
<tr>
<td></td>
<td>(60 - 60 - 60 m/min)</td>
</tr>
<tr>
<td>Linear acceleration (dynamic) XY-Z</td>
<td>6 (10) m/s²</td>
</tr>
<tr>
<td>Linear feed force XY-Z</td>
<td>8500 N</td>
</tr>
<tr>
<td>Max. vertical table clearance</td>
<td>700 mm</td>
</tr>
<tr>
<td>Max. workpiece diameter Ø</td>
<td>800 mm</td>
</tr>
<tr>
<td>Max. workpiece height</td>
<td>560 mm</td>
</tr>
<tr>
<td>Collision circle (A axis) in 0° position</td>
<td>0 990 mm</td>
</tr>
</tbody>
</table>

### Main spindle drive

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Speed</th>
<th>Main power / Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>15000 rpm</td>
<td>HSK A 63</td>
</tr>
<tr>
<td>Main power / Torque</td>
<td>31 kW / 194 Nm</td>
<td></td>
</tr>
<tr>
<td>Speed (MT variants)</td>
<td>15000 rpm</td>
<td>HSK T 63</td>
</tr>
<tr>
<td>Main power / Torque</td>
<td>31 kW / 194 Nm</td>
<td></td>
</tr>
<tr>
<td>Speed</td>
<td>15000 rpm</td>
<td>SK 40</td>
</tr>
<tr>
<td>Main power / Torque</td>
<td>42 kW / 148 Nm</td>
<td></td>
</tr>
<tr>
<td>Speed</td>
<td>18000 rpm</td>
<td>HSK A 63</td>
</tr>
<tr>
<td>Main power / Torque</td>
<td>42 kW / 148 Nm</td>
<td></td>
</tr>
<tr>
<td>Speed</td>
<td>25000 rpm</td>
<td>HSK A 63</td>
</tr>
<tr>
<td>Main power / Torque</td>
<td>31 kW / 98 Nm</td>
<td></td>
</tr>
<tr>
<td>Speed</td>
<td>42000 rpm</td>
<td>HSK E 40</td>
</tr>
<tr>
<td>Main power / Torque</td>
<td>35 kW / 17,5 Nm</td>
<td></td>
</tr>
<tr>
<td>Speed (MT variants)</td>
<td>18000 rpm</td>
<td>HSK A 63 / HSK T 63</td>
</tr>
<tr>
<td>Main power / Torque</td>
<td>42 kW / 148 Nm</td>
<td></td>
</tr>
</tbody>
</table>

### Control unit

- Heidenhain TNC 640
- Siemens Sinumerik 840 D sl
- Interface SK 40 / HSK A/T 63 / HSK E 40

### Tool changer (pick-up)

- Magazine pockets: 42 items
- Chip-to-chip time: approx. 4.5 s
- Max. tool length: 300 mm
- Max. tool diameter with corresponding adjacent pocket allocation: Ø 80 mm, Ø 125 mm
- Max. magazine load: 168 kg

### Extension of tool storage capacity

- Additional tool magazine ZM 50: Additional 50 pockets
- Additional tool magazine ZM 88k: Additional 88 pockets
- Additional tool magazine single ZM 192: Additional 192 pockets
- Additional tool magazine double ZM 462: Additional 462 pockets
- Interface SK 40 / HSK A 63 / HSK T 63 / HSK E 40
- Max. tool diameter in the additional tool magazine with corresponding adjacent pocket allocation: Ø 80 mm, Ø 125 mm
- Max. tool weight: 8 kg, 2.5 kg
### Table variants *

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

*All machining tables available on demand

- Included in standard delivery
- Available upon request
<table>
<thead>
<tr>
<th><strong>Positional uncertainty</strong></th>
<th>P 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>
<tr>
<td><strong>Chip drawer</strong></td>
<td>Removable chip drawer</td>
<td></td>
</tr>
<tr>
<td><strong>Chip conveyor</strong></td>
<td>Scraper belt or hinge conveyor ejection height</td>
<td>at least 940 mm</td>
</tr>
<tr>
<td></td>
<td>ejection height</td>
<td>450 l</td>
</tr>
<tr>
<td></td>
<td>chip cart</td>
<td></td>
</tr>
<tr>
<td><strong>External cooling lubricant supply</strong></td>
<td>With chip drawer and cooling lubricant tank</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cooling lubricant tank capacity</td>
<td>390 l</td>
</tr>
<tr>
<td><strong>Internal cooling lubricant supply with paper band filter</strong></td>
<td>Capacity of standard tank</td>
<td>100 l</td>
</tr>
<tr>
<td></td>
<td>Capacity of cooling lubricant tank</td>
<td>570 l</td>
</tr>
<tr>
<td></td>
<td>max. 40 bar / 27 l/min</td>
<td>max. 80 bar / 30 l/min</td>
</tr>
<tr>
<td></td>
<td>Mains connection (ICS)</td>
<td>- 400 V / 50 Hz</td>
</tr>
<tr>
<td></td>
<td>Power consumption (ICS)</td>
<td>- 16.5 kVA</td>
</tr>
<tr>
<td></td>
<td>Power consumption (ICS with recooling unit)</td>
<td>- 22.5 kVA</td>
</tr>
<tr>
<td><strong>Hydraulics</strong></td>
<td>Operating pressure</td>
<td>120 bar</td>
</tr>
<tr>
<td><strong>Central lubrication</strong></td>
<td>Minimum grease lubrication quantity</td>
<td></td>
</tr>
<tr>
<td><strong>Connected loads (machine)</strong></td>
<td>Mains connection</td>
<td>400 V / 50 Hz</td>
</tr>
<tr>
<td></td>
<td>Power consumption C 42</td>
<td>53 kVA</td>
</tr>
<tr>
<td></td>
<td>Power consumption C 42 MT</td>
<td>57 kVA</td>
</tr>
<tr>
<td></td>
<td>Compressed air</td>
<td>6 bar</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>(standard version without optional extras, attachments, workpieces and cooling lubricant)</td>
<td>Approx. 13.5 t</td>
</tr>
<tr>
<td></td>
<td>Included in standard delivery</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Available upon request</td>
<td></td>
</tr>
</tbody>
</table>
The C 42 is prepared for anything: Numerous optional extras make machining even more efficient and powerful in real applications and enable you to optimise your work with the machining centre still further.

C 42 standard machine dimensions
- External blow air
- Automatic cabin door
- Automatic cabin top
- Collection of operating data
- Bed flushing
- Hand-held control module
- Heat compensation
- Emulsion mist extraction system
- Precision packages
- Graphite machining packages
- Internal blow air
- Internal cooling lubricant supply
- Comfort control panel
- Touch probe
- Touch probe preparation
- Pallet clamping system
- Pallet storage
- Pallet changer
- Production cabin
- ICS recouling unit
- Visibility improvement unit
- Signal lamp
- Chip conveyor
- Chip drawer
- Coolant nozzle
- Chip cart
- Sealing air for scales
- Laminated safety glass panes
- Tool breakage monitoring / measurement
- Additional magazine

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

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

C 42 dimensions . Additional tool magazine single

1 Machining center
2 Emulsion mist extraction
3 Chip conveyor
4 Chip cart
5 Internal cooling lubricant supply
6 ICS recoling unit
9 Additional tool magazine single
C 42 dimensions. Additional tool magazine double

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

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

C 42 U MT dimensions

1 Machining center
2 Emulsion mist extraction
3 Chip conveyor
4 Chip cart
5 Internal cooling lubricant supply
6 ICS recooling unit
11 Reinforced cabin top
04.1 Automation . C 42

Everybody is talking about automation, but it’s much more than just a trend. We ourselves have changed from being a machine manufacturer to a process provider because we believe that the decisive criterion for automated efficiency is integration of the entire environment. In keeping with this philosophy, we are continuing what began with economical pallet changing and intelligent handling systems with highly advanced robot solutions. Therefore, we have long been capable of converting machines into flexible manufacturing cells.
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 PW 850 - Compact pallet changer
- Repeating accuracy: < 0.01 mm
- Broad hinged double doors with optimum access to the setup station
- Side access door with direct access to working area
- Control panel swivels across machine working area
- Can be equipped with double or triple storage

- Pallet dimensions / workpiece sizes
  - 400 x 400 / Ø 500 mm
  - 500 x 500 / Ø 630 mm
  - 630 x 630 / Ø 800 mm
  - MT: Ø 750 mm

- Pallet spaces
  - Without storage: 3
  - With double storage: 5
  - With triple storage: 6

- Transport weight
  - With double storage: max. 850 kg incl. pallet
  - With triple storage: max. 600 kg incl. pallet
The new HS flex handling system is an automation solution providing cost-effective entry into machining centre automation. The HS flex handling system is an automation solution providing cost-effective entry into machining centre automation. The front-sided adaptation ensures a space-saving layout with direct connection to the machining centre. The large intermediate space provides direct access to the working area for manual operator activities. In automatic mode, a double door blocks operator access; and in setup mode, access to the handling system. The customisable pallet storage modul offers numerous combination options for a large range of parts. A second pallet storage modul can be additionally integrated in the handling system, thus enhancing the storage of parts significantly.

The Hermle Automation-Control-System (HACS), which is operated via an integrated touch panel, provides an ideal platform for intuitive operation and control of the handling system.
Function and movement concept of the handling system. Compact design and space-saving arrangement with optimum access for the machine operator.

**Your Advantages**

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

---

**Technical Data: HS flex:**

<table>
<thead>
<tr>
<th>Pallet Storage</th>
<th>Rack Storage Module 1</th>
<th>Rack Storage Module 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rack Storage Locations</td>
<td>From 6 to 25 rack storage locations for each rack storage module. The rack storage modules can be configured in many different variants and mixed operation is also possible (different workpiece and pallet dimensions). The maximum workpiece dimensions to be processed and table loads of the respective machine model are relevant.</td>
<td></td>
</tr>
<tr>
<td>Pallet Dimensions</td>
<td>Max. 500 x 400 mm</td>
<td></td>
</tr>
<tr>
<td>Workpiece Height</td>
<td>Max. 625* The workpiece height per rack level depends on the selected rack storage module variants.</td>
<td></td>
</tr>
<tr>
<td>Transport Weight incl. Pallet</td>
<td>Max. 450 kg**</td>
<td></td>
</tr>
<tr>
<td>Pallet Weight</td>
<td>Min. 20 kg</td>
<td></td>
</tr>
<tr>
<td>Pallet Change Time</td>
<td>Max. 50 s</td>
<td></td>
</tr>
</tbody>
</table>

* Please pay attention to the maximum permitted workpiece height.
** Please pay attention to the maximum permitted table load.
04.2 All components. From a single source.

Hermle - milling at its best. We stand for
- Machining centres and automation solutions from a single source.
- High system expertise during planning, installation and maintenance.
- 3-, 4- and 5-axis machining centres for which we ourselves manufacture and install all components including table units, main spindles and entire sheet metal enclosures.
- Automation solutions from pallet changing systems and pallet storage, tool magazines and flexible manufacturing systems to custom turnkey solutions.
Pallet changer PW 850

Handling system HS flex

IH systems

Basic system plus 2 machines. 90°

Basic system plus 2 machines. 180°

Basic system plus 3 machines
PRECISION IN EVERY DIMENSION: Hermle has a thorough understanding of the requirements for manufacturing high-precision machining centres for processing smaller and larger workpieces of up to 3.0 t in weight. For this reason, "The Original" only uses German machines for production and materials from European suppliers. Furthermore, the entire machining production department is fully air conditioned and kept clean by a central chip disposal system.

Hermle machining centres have also been thoroughly tested by intensive endurance tests and in manufacture-oriented machining processes in our own machining manufacturing department. Our meticulous manufacturing processes allow Hermle to set new precision standards which undercut those demanded by the DIN/ISO 10791 standard in every way. At Hermle, we distinguish between positioning precision (accuracy with which a certain position within the working area can be pinpointed on one axis) and geometric precision. The latter is significant for the precision of the entire machine – it encompasses the following factors:

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

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

Hermle standard:  
X-Y-Z: Positional uncertainty P ≤ 8 µ
A: Positional uncertainty P ≤ 10'' / 8''
C: Positional uncertainty P ≤ 8''

Hermle improved precision:  
X-Y-Z: Positional uncertainty P ≤ 5 µ
A: Positional uncertainty P ≤ 6''
C: Positional uncertainty P ≤ 6''

IMPROVED PRECISION PACKAGES

Precision package 1*  
(linear axes X, Y, and Z)
- Straightness optimisation
- Geometry adjustment and optimisation
- Straightness measurement
- Positional uncertainty X, Y, Z: P ≤ 5 µ
- Laser measurement according to VDI/DGQ 3441 or ISO 230-2

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

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

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

EFFICIENT MANUFACTURING

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

Low energy component manufacture
- Mineral casting technology
- Lightweight construction

Virtual machine optimisation / machine development

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

High-quality, high-efficiency components
- Ball screws
- Guideways
- Antifriction bearing etc.

EFFICIENT OPERATION
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 stated 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.