Productivity in 5 axes

THE HF SERIES
HELLER solutions: Knowing how it’s done.

A range of work pieces

Steering knuckle
Tow-bar
Fittings
Brake calliper
Transmission housing

Manifold
Bearing bracket
Steering housing
Steering tube
Auxiliary motor house

Camshaft carrier
Pump body
Wheel carrier
Swing shaft
Spindle cover

Turbo housing
Converter housing
Cylinder head
Cylinder crankcase
and many more
Our quality pledge to you: Made by HELLER

HF series: Productivity in 5 axes

Machine concept: Robust and highly dynamic

Spindle units: Top quality made by HELLER

Tool management: Fast, ergonomic, productive

Workpiece management: From universal to productive

Peripheral equipment: Fast and efficient disposal for enhanced precision

Operation: Well thought out based on experience

Control: Optimally equipped for any task

Service and maintenance concept: Optimised for day-to-day practice

HELLER product range: full spectrum of productivity
H series
Flexibly configurable 4-axis machining centres

F series
Universal 5-axis machining centres with fifth axis in the tool

C series
5-axis mill/turning centres for complete machining

Our quality promise

MADE BY HELLER
The reason for HELLER quality and precision is simple:
HELLER machines produce HELLER machines.

We develop and produce ourselves all core components that ensure the availability, precision and quality of a HELLER machine. Made by HELLER is a quality seal on which you can rely. This pledge is central to our new generation of universal 5-axis machining centres - the new HF series. The HF series is a logical expansion to our product range that benefits you:

This machining concept is opening up new perspectives for the manufacturing tasks of today and tomorrow. Product with optimum output - now and in the future. With the HELLER HF series.
Dynamic and productive machining in five axes - the new HF series from HELLER. Based on the typical HELLER "genes" – highest quality, perfect productivity and total reliability in everyday use throughout the machine’s entire life cycle – ideally equipped for meeting the tough requirements of modern production processes.

Highly productive and flexible, easy to operate and maintain, for direct loading or with pallet changer: the HF series is made for high output with minimal handling requirements. Made to work.
IN 5 AXES

- Fifth axis provided by the workpiece for dynamic 5-sided machining and simultaneous 5-axis machining
- Horizontal spindle for fast tool change and short idle times
- Pallet changer concept for productive high-volume machining
  
  Table concept for the direct loading and machining of a wide range of parts and materials for medium and small batch sizes
  
  Direct access to the work area, short distance to the spindle
  
  Comfortable low operating height at the workpiece setting station, short distance to the pallet, integrated flush/air guns
  
- Double pivoting main operating unit, 24” touch screen, HELLER operation interface
5-axis machining places the highest demands on the flexibility and stability of a machining centre. The HF series is the perfect combination of stiffness and dynamics. This is based on the inherently rigid bed construction. The high productivity and precision of the HF series is down to its unique machine configuration: the fifth axis is provided by the workpiece, the directly driven AB axis is also supported by a counter bearing. High-precision and fast machining cycles are therefore guaranteed.

**Dynamic:** constantly high speed of the AB-axis thanks to the minimal mass moment of inertia, direct drives in the two rotary axes A and B

**Stiffness:** combination of YRT bearing (pre-tensioned axial-radial bearing with high load-bearing capacity and rigidity) and counter bearing

**Machine bed:** grey cast iron with three installation and two location points
High positioning accuracy due to direct, absolute measuring systems in all machining axes, automatic clamping in all gravity-loaded axes.

Axes: three linear axes in X, Y, Z, two rotary axes in A and B, fifth axis (A) in the workpiece.

Horizontal spindle with lean spindle neck for perfect reach into the workpiece.

Operator platforms: stiff, weight-optimised steel construction with high traversing dynamic.

NC tool changer: equipped as standard with two fast NC axes for short downtimes and consistent precision.


**Improved dynamic: Speed package vs. Power package**

Faster acceleration: up to 9 m/s²

Improved rapid traverse: up to 80 m/min

Shorter chip-to-chip times: tool change operation up to 10% faster.
Spindle units

TOP QUALITY
MADE BY HELLER

The perfect spindle for every application:

4 variants
All spindles rated for a 10 min duty cycle at 56 40 %
Speeds of up to 18,000 rpm, torques of up to 354 Nm
Maintenance-free motor spindle
Excellent lubrication with oil/air mixture
Thermally stable thanks to active cooling and growth compensation
Easy and quick exchange of the motor spindle towards the rear (well-established HELLER principle from MC 20)
Existing tools from the H and C series can still be used
HELLER milling head support (MSK)

Standard spindle unit: SC63 SpeedCutting
Equipped with HSK-A63 interface
Especially suitable for machining of light metals

Optional machining units:

PC63 PowerCutting
Increased torque
Equipped with HSK-A63 interface
Compared to SC63: Double torque (201Nm)
Perfectly suited to machining cast iron and steel

SC100 SpeedCutting
For even more stability in the tool
Equipped with HSK-A100 interface
Compared to SC63: 57 % larger diameter front bearing (Ø 110 mm)
Especially suitable for machining with long tools

PC100 PowerCutting
High torque with large tools
Equipped with HSK-A100 interface
Compared to PC63: 76 % higher torque (354Nm)
Especially suitable for machining cast iron and steel
## Technical data

<table>
<thead>
<tr>
<th></th>
<th>SC 63</th>
<th>PC 63</th>
<th>SC 100</th>
<th>PC 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed range (rpm)</td>
<td>5 – 18,000</td>
<td>5 – 12,000</td>
<td>5 – 12,000</td>
<td>5 – 10,000</td>
</tr>
<tr>
<td>Drive torque (Nm)</td>
<td>100</td>
<td>201</td>
<td>201</td>
<td>354</td>
</tr>
<tr>
<td>Drive power (kW)</td>
<td>47</td>
<td>46</td>
<td>46</td>
<td>48</td>
</tr>
<tr>
<td>Spindle taper</td>
<td>HSK-A63</td>
<td>HSK-A63</td>
<td>HSK-A100</td>
<td>HSK-A100</td>
</tr>
<tr>
<td>HELLER additional milling head support (MSK)</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

- **Option**: □
Tool management

Fast, ergonomic, productive
**Chain-type magazine**

- Optimum traversing dynamic: chain-type magazine according to the HFC principle
- Tried and proven mounting of the tool holder in a double chain
- Minimum provisioning times: intelligently adapted tool magazine form permits short traverse attachment, such as on H and F/C series
- Compact dimensions with high packing density for your tools
- Tools from the H and F series can still be used

**Tool changer**

- High precision and repeatability: high-speed tool changer with two fast NC axes for safe stroke and swivel movement, proven design from the H and F/C series
- Short chip-to-chip times and follow-on tool provisioning during machining
- Tools always precisely positioned for the tool change due to the traverse attachment

**Options**

- Tool break monitoring during machining for effective process reliability
- Tool loading parallel to machining on selected magazines
- Tool shank cleaning
- Tool coding
- Wireless technology measuring probe
- Tool measurement

---

**Technical data**

<table>
<thead>
<tr>
<th>Chain-type magazines</th>
<th>C 54</th>
<th>C 80</th>
<th>C 160</th>
<th>C 50</th>
<th>C 100</th>
<th>C 150</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spindle taper</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>HSK-A63</td>
<td>HSK-A100</td>
<td></td>
</tr>
<tr>
<td><strong>Magazine places</strong></td>
<td>54</td>
<td>80</td>
<td>160</td>
<td>50</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td><strong>Tool Ø1)</strong> (mm)</td>
<td>160/72</td>
<td></td>
<td>280/112</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bridge mounted tool (mm)</strong></td>
<td>Ø 260 x 160</td>
<td>Ø 400 x 280</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mass (kg)</strong></td>
<td>12</td>
<td></td>
<td></td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Moment of weight2)</strong> (Nm)</td>
<td>10</td>
<td></td>
<td></td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tool length HF 3500 (mm)</strong></td>
<td>500</td>
<td></td>
<td></td>
<td>500</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tool length HF 5500 (mm)</strong></td>
<td>550</td>
<td></td>
<td></td>
<td>550</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Chip-to-chip time HF 3500 (s)</strong></td>
<td>2.7 (2.4)</td>
<td></td>
<td></td>
<td>3.3 (3.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Chip-to-chip time HF 5500 (s)</strong></td>
<td>2.9 (2.6)</td>
<td></td>
<td></td>
<td>3.5 (3.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Availability</strong></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

1) Adjacent places free/all spaces occupied
2) relative to the tool gripper groove

- Standard
- ( ) Optional values
- □ Option

---

**Baureihe HF**
Workpiece management

From universal
to productive
Pallet changer concept for series production

Ideal for series production with and without workpiece automation

- Robust lift-and-swivel principle from H and F/C series, complemented by HF pallet interface

Load up to 550kg (HF 3500) and/or 750kg (HF 5500) per pallet

Existing purely mechanical clamping fixtures from the H and F series can still be used

Air nozzles for removal of chips

Integrated pallet location check safeguards interfaces against mechanical damage

Cleaning of functional surfaces at rotary table and setting station with additional flushing nozzles

Workpiece setting station for manually rotating pallet in 90° indexing

Options

- Automatic rotating NC setting station with automatic setting station door
- Hydraulic workpiece clamping

Table concept for direct loading

Perfect access to the work area thanks to new machine concept

Convenient workpiece handling at the front of the machine due to low loading edge

Operator panel can be swivelled from work area door to front door

Options

- Reinforced A axis drive for permanent 5-axis simultaneous machining
- Rotary axes A and B are equipped for high-precision or heavy-duty machining operations with a hydraulically-supported fail-safe safety clamping function

Table with large clamping surface

Ideal for production tasks with small batch sizes and frequently changing machining tasks

Can be combined with workpiece automation function for even higher productivity

Load up to 550 kg (HF 3500) or 750 kg (HF 5500) load capacity

Options

- Clamping plate
- Hydraulic workpiece clamping

A swivel axis and B rotary table

- Directly driven and cooled A and B axis for excellent dynamics and optimised precision

Outstanding rigidity through combined axial-radial mountings with integrated, absolute and direct measuring systems in A and B

Maximum permissible pull-out torque through compact dimensions

Options

- Reinforced A axis drive for permanent 5-axis simultaneous machining
- Rotary axes A and B are equipped for high-precision or heavy-duty machining operations with a hydraulically-supported fail-safe safety clamping function
Peripheral equipment

Fast and efficient disposal for enhanced precision

Chip conveyor and coolant unit
- With scraper conveyor or hinge band conveyor, depending on machining process requirements
- Coolant units with paper band filter or vacuum rotation filter technology
- High pressure coolant supply, optionally with 50bar or 70bar
- Internal coolant supply through the spindle with up to 7 pressure stages programmable in the NC program
- High coolant unit tank volumes and high volumetric flows

Option
- Coolant cooler for even higher process reliability through thermal stability
**Work area**

- Free chip fall below the horizontal spindle, ideal for short- and long-chipping materials
- Central, wide chip conveyor for fast chip removal, supported by steep side walls
- Interior work area panelling made from non-corroding steel provides long-term resistance against dirt and coolant
- Low cleaning effort thanks to self-cleaning effect of the stainless steel lamella covers
- Easy to clean with flushing gun thanks to good access to the work area

**Option**

Coolant extraction from the work area
Well thought out based on experience

**Machine Operation**
- Linear guided, smooth operating doors at the workpiece and tool setting station and the work area
- Robust, practical touch controls, optimally arranged for the operator
- One air gun, two flushing guns
- Double-swivelling main operating unit with 24” touch screen, HELLER operation interface, console design with selectable operating height

**Tool setting**
- Tool setting at the magazine when spindle is running

**Work area**
- Direct and fast access to the work area
- Short, ergonomic distance to the spindle
- Angled work area doors open the work area roof
- Large vision panel for optimised view into the work area
- LED illumination of the work area

**Options**
- Pane blow-off device at the main operating door
- Convenient Operating Panel at the tool setting station

**Workpiece loading**
- Comfortable, low operating height at the workpiece setting station, short distance to the pallet, operation via touch panel, integrated flush/air guns
- Lockable setting station for safe workpiece loading
- Well-conceived interface to automation systems
- Automatic setting and de-setting for high process reliability and short downtimes
Control

Well-equipped for any task

Siemens SINUMERIK 840D sl with HELLER operation interface
- Sinumerik Operate expanded by HELLER functions: fast and easy operation with extensive additional functions and information
- Real-time communication via Profinet
- IO-Link for direct diagnostics and parameterisation of sensors
- NC-memory with 10MB
- HELLER touchscreen user interface
- Clearly arranged display of all functions
- Graphical cycle support
- Remote diagnostics via ePS

Option
- HT8 and HT2 handheld operating units
Service and maintenance concept

Optimised for daily usage
All functionally relevant systems and components are arranged for fast and easy access: separate HELP modules for machine and pallet changer

Proven components from MC 20: motor spindle can be replaced easily and quickly from the machine rear

Easy and direct access to the control cabinet

The concentration of supply units and maintenance points at just a few locations ensures quick and easy inspection

Quick response times of the HELLER spare parts service help to keep production downtimes short in case of emergencies
HELLER product range

PRODUCTIVITY OVER THE FULL SPECTRUM

The H series: 4-axis horizontal machining

**H 2000**
X/Y/Z: 630 x 630 x 630 mm
Pallet: 400 x 500 mm
Pallet loading: to 800 kg

**H 4000**
X/Y/Z: 800 x 800 x 800 mm
Pallet: 500 x 630 mm
Pallet loading: to 1,400 kg

**H 4500**
X/Y/Z: 800 x 800 x 800 mm
Pallet: 500 x 630 mm
Pallet loading: to 1,400 kg

**H 5000**
X/Y/Z: 800 x 800 x 800 mm
Pallet: 630 x 630 mm
Pallet loading: to 1,400 kg

**H 6000**
X/Y/Z: 1,000 x 1,000 x 1,000 mm
Pallet: 630 x 630 mm
Pallet loading: to 1,400 kg

**H 8000**
X/Y/Z: 1,250 x 1,200 x 1,100 mm
Pallet: 800 x 800 mm
Pallet loading: to 2,000 kg

**H 10000**
X/Y/Z: 1,600 x 1,400 x 1,300 mm
Pallet: 1,000 x 1,000 mm
Pallet loading: to 4,000 kg

**H 14000**
X/Y/Z: 2,400 x 1,600 x 1,600 mm
Pallet: 1,000 x 1,000 mm
Pallet loading: to 4,000 kg

**H 16000**
X/Y/Z: 2,400 x 1,600 x 1,600 mm
Pallet: 1,250 x 1,600 mm
Pallet loading: to 8,000 kg

The HF series: Productivity in 5 axes

**HF 3500**
X/Y/Z: 710 x 750 x 710 mm
Pallet: 400 x 500 mm
Pallet loading: to 550 kg

**HF 5500**
X/Y/Z: 900 x 950 x 900 mm
Pallet: 500 x 630 mm
Pallet loading: to 750 kg
The F/C series: 5-axis complete machining

FP 4000
X/Y/Z: 800 x 800 x 1,045 mm
Pallet: 500 x 630 mm
Pallet loading: to 1,400 kg

CP 4000
X/Y/Z: 800 x 800 x 1,045 mm
Pallet: 500 x 630 mm
Pallet loading: to 1,400 kg

FP/FT 6000
X/Y/Z: 1,000 x 1,000 x 1,300 mm
Pallet/Table: 630 x 630 mm / Ø 1,000 mm
Pallet/Table loading: to 1,400 kg

CP/CT 6000
X/Y/Z: 1,000 x 1,000 x 1,300 mm
Pallet/Table: 630 x 630 mm / Ø 1,000 mm
Pallet/Table loading: to 1,400 kg

FP 10000
X/Y/Z: 1,600 x 1,400 x 1,600 mm
Pallet: 1,000 x 1,000 mm
Pallet loading: to 4,000 kg

CP 10000
X/Y/Z: 1,600 x 1,400 x 1,600 mm
Pallet: 1,000 x 1,000 mm
Pallet loading: to 4,000 kg

FP/FT 8000
X/Y/Z: 1,250 x 1,200 x 1,400 mm
Pallet/Table: 800 x 800 mm / Ø 1,100 mm
Pallet/Table loading: to 2,000 kg

CP/CT 8000
X/Y/Z: 1,250 x 1,200 x 1,400 mm
Pallet/Table: 800 x 800 mm / Ø 1,100 mm
Pallet/Table loading: to 2,000 kg

FP 14000
X/Y/Z: 2,400 x 1,600 x 1,600 mm
Pallet: 1,000 x 1,000 mm
Pallet loading: to 4,000 kg

FP 16000
X/Y/Z: 2,400 x 1,600 x 1,600 mm
Pallet: 1,250 x 1,600 mm
Pallet loading: to 8,000 kg

The MC series: Highly-productive series production

MC 20
X/Y/Z: 800 x 750 x 800 mm
Table: Ø 520 mm
Table loading: 500 / 800 kg

The RFK / DRZ / RFN series: Crankshaft and camshaft manufacturing

RFK
External and internal milling of crankshafts

DRZ
Crankshaft chasing

RFN
External milling for camshafts

Process modules and special solutions: productivity across the full range

CBC
Coating cylinder bores of automobile engines

MPC 400
Head Changer System for multi-spindle machining processes

TRS 4000
Stand-alone machine for transfer lines, rated for high volumes

VCM (Wenzler)
Vertical chamber machine with 5 axes for the machining of structural components
HELLER SOLUTION EXPERTISE: EFFICIENCY FOR YOUR PRODUCTION. WORLDWIDE.

www.heller.biz