G220

Turn-mill center for a flexible and powerful machining
Turning-Milling or Milling-Turning
the G220 gets your workpieces and unit costs in shape

The generous work area of the G220 forms the basis for equal implementation of milling and turning in one machine design. The configuration of the machine is designed to provide a maximum of flexibility independent of the primary use of the machine.

The dynamic and powerful motorized milling spindle allows the production of demanding workpieces – even using five-axis machining. Moreover, the lower tool turret with a Y-axis and a powerful tool drive ensures the possibility of three-dimensional machining on the main and counter spindle.
The machine design
- Spindle clearance 65 mm, optional:
  - Spindle clearance 90 mm, chuck ø=250 mm
- Powerful motorized spindles
- Lower tool turret with Y-axis (100 mm) and 18 stations (VDI25) or 12 stations (VDI30)
- Tool drive for lower turret 7,200 rpm, up to 6 kW and 18 Nm
- Fast tool change
- Generous work area designed for turning/milling or milling/turning
- Simultaneous machining with two tool carriers possible
- High dynamics (up to 55 m/min rapid traverse)

The motorized milling spindles
Powerful and dynamic motorized milling spindles

HSK-T40
- max. 18,000 rpm
- 11 kW and 30 Nm
- 70 or 140 magazine stations

HSK-T63
- max. 12,000 rpm
- 17 kW and 90 Nm
- 50 or 100 magazine stations
A fast tool change of approx. 6 s chip-to-chip time
The G220 with its dynamic motorized milling spindle is ideal for machining of complex workpieces – up to five-axis machining.

With a high degree of rigidity, thermal and dynamic stability and vibration damping – also thanks to the Y/B-axis running in hydrostatic bearings – workpieces can be completely machined from six sides with high productivity and precision.

**Main and counter spindles**
- D 65 mm
- 5,000 rpm
- 32 kW, 170 Nm (40%)
- optional: Spindle clearance
- D 90 mm
- 3,500 rpm

**Motorized milling spindles**
- 18,000 rpm, 11 kW (100%), 30 Nm (25%) (HSK-T40)
- 12,000 rpm, 17 kW (100%), 90 Nm (25%) (HSK-T63)
- X-axis 355 mm
  - Rapid traverse rate 30 m/min
- Y-axis +/- 80 mm
  - Rapid traverse rate 15 m/min
- Z-axis 1040 mm
  - Rapid traverse rate 55 m/min
- B-axis -50°/+230°

**Lower turret**
- 7,200 rpm
- 6 kW, 18 Nm (25%)
- X-axis 185 mm
  - Rapid traverse rate 30 m/min
- Y-axis +/- 50 mm
  - Rapid traverse rate 15 m/min
- Z-axis 1000 mm
  - Rapid traverse rate 55 m/min

**Tailstock**
- Max. pressure force
  - 8,000 N
- Tool holding fixture
  - DIN 2079, SK 30
- Max. distance from spindle zero
  - 1265 mm

**Steady rest**
- Clamping range 12-152 mm
Motorized milling spindle HSK-T40
A shuttle supplies the motorized milling spindle with the required tools from the tool magazine. With a choice of 70 or 140 tool stations (HSK-T40), 50 or 100 tool stations (HSK-T63), the G220 has a large stock of tools, contributing to reduced setup costs.

A chip-to-chip time of approx. 6 s ensures short downtimes and high productivity.
Motorized milling spindle HSK-T40
The cooling concept: efficient use of energy

Intelligent use of proven cooling principles:

- **Targeted heat dissipation**
  All high-loss heat sources of the G220 are cooled directly with different cooling media via multiple fluid circuits. In addition to the cooling circuits for the main spindle, counter spindle, and motorized milling spindle, torque drive of the B-axis, the hydraulic system and control cabinet also have a separate cooling circuit. The lost heat energy is absorbed directly in the fluid and removed from a central location of the machine.

- **Economic use of waste heat**
  The INDEX “cold water interface” allows the heat loss energy stored in the cooling medium to be removed from a central location and conveyed for another use, if required, e.g., production hall heating, service water heating, or process heating for other production steps. The recovery of machine waste heat enables a sustainable reduction of energy costs in the company.

- **Climate-neutral dissipation of heat**
  The cold water interface provides the ability to dissipate heat in a climate-neutral manner, if the machine waste heat stored in the cooling medium cannot be used otherwise. The necessary cooling unit can be used with the help of the water interface first on the outside of the production hall and secondly also centrally for several machines. This offers a considerable energy savings potential for production hall heating dissipation/climate control or increased efficiency as a result of centralized heat disposal.
Focus on production and control – Industry 4.0 included.
The iXpanel operating concept provides access to networked production. With iXpanel, your staff always has all relevant information for efficient production right at the machine. iXpanel is already included in the standard and can be individually extended. You can use iXpanel as you want it for your business organization – that’s Industry 4.0 tailored to your needs.

Future-proof.
iXpanel integrates the latest control generation SIEMENS S840D sl. Use iXpanel intuitively through an 18.5” touch monitor.

Productive.
Maximum performance through comprehensive technology cycles and programming screens, e.g., for optimum turning, milling and drilling, especially when using several tools simultaneously.

Intelligent.
The machine always starts with the control home screen. Other functions can always be displayed on a second screen, and the operator enjoys direct, activity-related assistance already in the standard version, such as workpiece drawing, setup lists, programming tools, documentation, etc., right at the machine.

Virtual & open.
With the optional VPC box (industrial PC), iXpanel opens up the world of Virtual Machine with the 3 operating modes - CrashStop - RealTime mode - Independent simulation (VM on board) directly at the control. Thanks to the VPC box, the machine can be integrated into your IT structure without restrictions.
Virtual Machine
3D simulation
VPC Box
Custom applications
VirtualPro Programming Studio
Custom applications
See text area

Dimensions

HSK-T40

HSK-T63

* Dimensions are valid for turret VDI25 (18 stations)
Installation Chart
Dimensions

Dimensions:
- 2550
- 4325
- 1984
- 2340 (2350)
- 523
- 6309
## Technical data

### Working range

<table>
<thead>
<tr>
<th></th>
<th>Turning length mm</th>
<th>1000</th>
<th>1000</th>
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### Main spindle

<table>
<thead>
<tr>
<th></th>
<th>Spindle clearance mm</th>
<th>65</th>
<th>90</th>
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<tbody>
<tr>
<td>Spindle nose ISO 702/1</td>
<td>2140</td>
<td>A8</td>
<td></td>
</tr>
<tr>
<td>Max. speed rpm</td>
<td>5,000</td>
<td>3,500</td>
<td></td>
</tr>
<tr>
<td>Drive power (100%/40%) kW</td>
<td>31.5 / 32</td>
<td>40 / 40</td>
<td></td>
</tr>
<tr>
<td>Torque (100%/40%) Nm</td>
<td>125 / 170</td>
<td>190 / 310</td>
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</tr>
<tr>
<td>Chuck diameter mm</td>
<td>210</td>
<td>250</td>
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<tr>
<td>C-axis resolution Deg.</td>
<td>0.001</td>
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### Counter spindle

<table>
<thead>
<tr>
<th></th>
<th>Spindle clearance mm</th>
<th>65</th>
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<tbody>
<tr>
<td>Spindle nose ISO 702/1</td>
<td>2140</td>
<td>A8</td>
<td></td>
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<tr>
<td>Max. speed rpm</td>
<td>5,000</td>
<td>3,500</td>
<td></td>
</tr>
<tr>
<td>Drive power (100%/40%) kW</td>
<td>31.5 / 32</td>
<td>29 / 40</td>
<td></td>
</tr>
<tr>
<td>Torque (100%/40%) Nm</td>
<td>125 / 170</td>
<td>142 / 207</td>
<td></td>
</tr>
<tr>
<td>Chuck diameter mm</td>
<td>210</td>
<td>250</td>
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</tr>
<tr>
<td>C-axis resolution Deg.</td>
<td>0.001</td>
<td>0.001</td>
<td></td>
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### Slide travel Z, rapid traverse rate, feed force mm / m/min / N 1040 / 55 / 6.400

### Tailstock

<table>
<thead>
<tr>
<th></th>
<th>Quill DIN 2079</th>
<th>SK30</th>
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<tbody>
<tr>
<td>Slide travel Z mm</td>
<td>1080</td>
<td></td>
</tr>
<tr>
<td>Max pressure force N</td>
<td>8,000</td>
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### Upper tool carrier

<table>
<thead>
<tr>
<th>Tooling system</th>
<th>HSK-T40</th>
<th>HSK-T63</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. speed rpm</td>
<td>18,000</td>
<td>12,000</td>
</tr>
<tr>
<td>Drive power (100%) kW</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>Torque (100%/25%) Nm</td>
<td>19 / 30</td>
<td>62 / 90</td>
</tr>
<tr>
<td>Slide travel X, rapid traverse rate, feed force mm / m/min / N</td>
<td>355 / 30 / 9.050</td>
<td></td>
</tr>
<tr>
<td>Slide travel Y, rapid traverse rate, feed force mm / m/min / N</td>
<td>+/- 80 / 15 / 7.850</td>
<td></td>
</tr>
<tr>
<td>Slide travel Z, rapid traverse rate, feed force mm / m/min / N</td>
<td>1040 / 95 / 6.400</td>
<td></td>
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<tr>
<td>Swivel range B Deg.</td>
<td>-50/+230</td>
<td></td>
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<tr>
<td>Fixed tool locations on MMS</td>
<td>4 x HSK-T40</td>
<td>-</td>
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### Lower tool carrier

<table>
<thead>
<tr>
<th>Tooling system DIN ISO 10889</th>
<th>25 x 48</th>
<th>30 x 55</th>
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</thead>
<tbody>
<tr>
<td>Number of stations</td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td>Max. speed rpm</td>
<td>7,200</td>
<td></td>
</tr>
<tr>
<td>Max. drive power, torque (25%) kW / Nm</td>
<td>6 / 18</td>
<td></td>
</tr>
<tr>
<td>Slide travel X, rapid traverse rate, feed force mm / m/min / N</td>
<td>185 / 30 / 7.000</td>
<td></td>
</tr>
<tr>
<td>Slide travel Y, rapid traverse rate, feed force mm / m/min / N</td>
<td>+/- 50 / 15 / 7.850</td>
<td></td>
</tr>
<tr>
<td>Slide travel Z, rapid traverse rate, feed force mm / m/min / N</td>
<td>1000 / 95 / 6.400</td>
<td></td>
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</tbody>
</table>

### Steady rest with sep. slide

| Clamping range mm | 12 - 152 |
| Slide travel Z mm | 1000 |

### Gantry-type receiving unit with conveyor belt

| Workpiece weight / workpiece length max. kg / mm | 7.5 / 400 |

### Tool magazine

<table>
<thead>
<tr>
<th>Tooling system DIN69893</th>
<th>HSK-T40</th>
<th>HSK-T63</th>
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<tbody>
<tr>
<td>Tool magazine stations</td>
<td>70 (opt. 140)</td>
<td>50 (opt. 100)</td>
</tr>
<tr>
<td>Max. tool weight kg</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Chip-to-chip time s</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

### Machine dimensions

| Length x width x height mm | 4325 x 2340 x 2550 |
| Weight kg | 14,000 |
| Connected power kW | 68 |

### Control

INDEX C200 sl (based on Siemens S840D sl)

* incl. tool magazine
Motorized milling spindle HSK-T40