VPC / VPC-U / VPC 2800-U

Pure technology!
Pure technology!

The AXA gantry machining centres VPC 2800-U, VPC-U and VPC in compact form, when compared with travelling column machines, achieve much higher cross travels (Y-axis) without any limitations on exactness and stiffness.

The AXA gantry machining centres of VPC series – Compact, yet still perfect performers

Compact and clearly set up on the outside, the high-performance gantry machining centres from AXA make use of each single centimetre. Thus, the machine makes entire use of the machining space available within its limited space. The versions VPC (Vertical Portal Centre), VPC-U and VPC 2800-U (Universal Vertical Portal Centre, each with tilting head) achieve high cross travels with total precision and stiffness.

The clever construction means that the machine needs less room for a large machining area. All the components such as the control cabinet and tool changer are preferably integrated into the machine stand. The tool magazine is housed well protected in the back machining area. A tool double gripping system provides for short tool changing times while the stationary layout allows for loading the magazine chain at the same time.

The optimal design is also reflected in the machine cutting performance: The ingenious combination of sliding and roller guideways improves absorption. At the same time, the gantry drive provides for utmost dynamics and accuracy.

Place your trust in the specialist with plenty of tradition: AXA

Ready for use in many industries and many applications:

- Plant and equipment manufactories
- Precision tool making including fixtures, mould and press tools
- Automotive industry
- Aerospace industry
- Subcontract machining
- Jobbing shop for large and small manufacturing series
- Rail track and rolling stock equipment
- Medical industry
- Automation technology
- Packaging machines
- Hydraulic components
- Valve manufacture
- Profile machining
- Plastics and aluminium machining
Easily accessible work area due to low load height and spacious door opening

VPC – Vertical machining in its entirety

The VPC with its vertical spindle is particularly designed for machining large plate-shaped workpieces. The implementation of angular heads also simply enables lateral machining. The clever layout provides for excellent workspace use.

Main design:
- Extremely rigid, static and dynamically well-balanced ground frame construction
- Spacious and easily accessible machine tables
- Direct measuring systems for the X/Y/Z-axes
- Cover according to current machinery directives
- Ideal for crane loading by the open covering over the work area
- Machine transport in one single piece

Guideways and drives:
- Clever combination of sliding and roller guideways for high dynamics, stiffness and absorption
- Guiding built upon manually scraped or ground surface
- Optimal guiding by extremely large guidance ratio
- Real gantry drive in the Y-axis with corresponding individual drive, guideway and direct measuring system for both portal sides
- Drives and guideways are protected
- Ball screws in all linear axes

Tool changing system:
- Simple and very robust stationary placed tool changer
- Magazine protected in rear part of machine
- Stationary tool changer layout allows for long tool chains without any negative effect on machine dynamics and precision
- Fixed location coded tool management for better operator monitoring
- Simultaneous tool pre-selection by double gripping system
- Support of various tool holding systems such as SK, BT, HSK, CAPTO
- Magazine placement possible during machining

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- Magazine placement possible during machining

Ingenuity and great ideas

Its strength is its flexible structure:
Your ideas and all your requirements can be achieved thanks to the VPC. The AXA experts develop and design solutions – also by integrating other technologies.
- Through spindle coolant with filter system
- Chip conveyors in slat-band belt, scraper belt or magnetic belt versions
- Controllers either from Heidenhain or Siemens
- Rotary tables horizontally or vertically integrated, in 1 or 2 axes, combined with tailstocks, counterbearings or a further rotary table in gantry mode for clamping bridges
- Automatic doors
- Clamping systems – hydraulic, pneumatic, magnetic or manual
- Touch probes and tool touch probe systems
- Active power monitoring, collision monitoring and complete process monitoring
- Tool identification systems
- Laser breakage control with tool measurement

Remote maintenance

We can develop and manufacture special solutions for you upon request – from the standard solution up to made-to-measure customer manufacture.

Flexibility in every detail:
Your ideas become our mission!

Workspaces with up to 2940 mm in X and 1600 mm in Y offer much room for large tools and their clamping devices

CE conform entire covering with optional complete covering and device to extract oil mist fumes

Excellent accessibility and optional possibility of crane loading by sparsely opening doors during simultaneously above opening covering
**VPC – Vertical machining in its entirety**

The VPC with its vertical spindle is particularly designed for machining large-plate shaped workpieces. The implementation of angular heads also enables a more efficient machining. The lower layout provides for excellent workspace use.

**Main design:**
- Extremely rigid, static and dynamically well-balanced ground frame construction
- State-of-the-art guideways for high dynamics, stiffness and accuracy
- Ball screws in all linear axes and direct measuring system for both portal sides
- Optional guideways and drives are protected in rear part of machine frame

**Main design:**
- Optimal guiding by extremely large guidance ratios
- Guideways and drives: Clever combination of sliding and roller guideways for high dynamics, stiffness and absorption
- Guiding built upon manually scraped or ground surfaces

**Tool changing system:**
- Simple and very robust stationary tool plate changer
- Ball screws in all linear axes

**Tool changer:**
- Number of tool pockets standard
- Optional expandable up to
- Max. tool diameter
- Max. tool length
- Tool change time approx.

**Accuracy:**
- Positioning accuracy
- Repeatability accuracy

**Technical data VPC**

<table>
<thead>
<tr>
<th>VPC 40</th>
<th>VPC 45</th>
<th>VPC 50</th>
<th>VPC 55</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working area</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>X-traverse range (mm)</td>
<td>2800 (2940)</td>
<td>2300 (2400)</td>
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<tr>
<td>Y-traverse range (mm)</td>
<td>1400 (1500)</td>
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<td>Z-traverse range (mm)</td>
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<td>800 (900)</td>
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<td>Machine table</td>
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<tr>
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<td>1950 (2050, 2250)</td>
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<td>DIN 69871 A / DIN 69872 A</td>
<td>BT 40, HSK A63, C6</td>
<td>BT 40, HSK A63, C6</td>
<td>BT 40, HSK A63, C6</td>
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<td>Tool holder fixture</td>
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<td>SK 40</td>
<td>SK 45</td>
<td>SK 50</td>
<td>SK 55</td>
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<td>Tool changer options</td>
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<td>Standard drive no.</td>
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<td>Optional drive no.</td>
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<td>120, 150, 180</td>
<td>120, 150, 180, 220</td>
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<tr>
<td>Optional expandable up to</td>
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<td>Max. tool diameter (mm)</td>
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<td>Max. tool length (mm)</td>
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<tr>
<td>Tool change time approx. (s)</td>
<td>6</td>
<td>6</td>
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</tr>
</tbody>
</table>

**Technical specifications refer to the standard version. Extensions and modifications upon request and depending on overall configuration and application.**
VPC-U – performance in any angle

The portal machining centre VPC-U displays its entire strength in 5-side machining of workpieces with its tilting spindle and the rotary table integrated into machine bed. The spindle swivels around the Y-axis while the NC-rotary table turns the workpiece into the right position in line with the specifications.

The complete machine table consists of a combination of fixed tables and rotary table that is set higher than the fixed tables for the horizontal machining. The table level can optionally be levelled out by elevated fixed tables or attached tables.

Main design:
- Extremely rigid, static and dynamically well-balanced ground frame construction
- Spacious work area and easily accessible machine tables
- Direct measuring systems for the main X/Y/Z-axes
- Cover according to current machinery directives

Guideways and drives:
- Open above the work area, ideal for crane loading
- Machine transport in one single piece
- Optimal accessibility for all maintenance and service requirements
- Clever combination of sliding and roller guideways for high dynamics, stiffness and absorption
- Guiding built upon manually scraped or grinded surface
- Optimal guiding by extremely large guidance ratio
- Real gantry drive in the Y-axis with corresponding individual drive, guideway and direct measuring system for both portal sides
- Drives and guideways are protected
- Ball screws in all linear axes

Tool changing system:
- Version and equipment according to VPC series

Tilting spindle:
- 1-axis tilting spindle swivelling around the Y-axis (B-axis)
- Hirth-coupled construction, stepless positioning or interpolating
- Tilting range 0° to -90°

Rotary table:
- Continuous turning NC-rotary table around the Z-axis
- Integrated in machine bed
- Hydraulic clamping

CE conform entire covering with optional complete covering and device to extract oil mist fumes

Excellent accessibility and optional possibility of crane loading by spacious opening doors during simultaneously above opening covering

Ingenuity and great ideas

Its strength is its flexible structure: Your ideas and all your requirements can be achieved thanks to the VPC-U.

The AXA experts develop and design solutions – also by integrating other technologies.

- Through spindle coolant with filter system
- Chip conveyer in slat-band belt, scraper belt or magnetic belt versions
- Controllers either from Heidenhain or Siemens
- Construction possible with additional rotary tables with horizontal rotation axis on fixed machine table
- Automatic doors
- Clamping systems – hydraulic, pneumatic, magnetic or manual
- Touch probes and tool touch probe systems
- Active power monitoring, collision monitoring and complete process monitoring
- Tool identification systems

Through spindle coolant with filter system

- Laser breakage control with tool measurement
- Remote maintenance

We can develop and manufacture special solutions for you upon request – from the standard solution up to made-to-measure customer manufacture.

Flexibility in every detail: Your ideas become our mission!
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Main design
- Extremely rigid, static and dynamically well balanced ground frame construction
- Spacious work area and easy accessible machine parts
- Direct measuring systems for the main X/Y/Z axes
- Clamping according to current machinery directives

Open above the work area, ideal for crane loading
- Machine transport is one single piece
- Optimal accessibility for all maintenance and service requirements

Guideways and drives:
- Clear combination of tilting and roller guideways for high dynamics, efficiency and absorption
- Guiding bush is operated manually or grinded surface
- Optimally guiding by extremely large guidance ratio
- Main spindle drive in the X-axis with corresponding individual drive, guideways and direct measuring system for both portal axes
- Chrome and guideways are protected
- Ball screws in all linear axes

Tool changing system
- Version and equipment according to VPC series

Tilting spindle:
- 5-axis tilting spindle swivelling around the X-axis (B-axis)
- Hexagonal construction, stepless positioning or interpolating
- Tilting range ±90°

Rotary table:
- Continuous turning NC-rotary table
- Integrated in machine bed
- Hydraulic clamping

Working area
- X-traverse range vertical: 2300 (2640)
- X-traverse range horizontal: 2300 (2640)
- Y-traverse range vertical: 1200 (1400)
- Y-traverse range horizontal: 1200 (1400)
- Z-traverse range vertical: 850 (1000)
- Z-traverse range horizontal: 850 (1000)

Machine table
- Table width (exact on Faktor): 1160 (1350, 1500)
- Table length square: 1160
- Table indexing: 1160
- Number of法兰: 7
- Max. table load per table: 1600 (2000)
- Min. distance table – spindle nose vert.: 220
- Min. distance table – spindle nose hor.: (mm)

CNC-rotary table
- Framing surface: 1100 x 1100
- Max. transport weight: 1500 (1800)
- Max. tangential moment: 10000 (18000)
- Accuracy measuring system: ±0.0005
- Min. distance table – spindle nose vert.: ±0.006
- Min. distance table – spindle nose hor.: ±0.006

Feed drive
- Max. rapid traverse in X/Y/Z: 15000
- Max. power (40% DC): 6000
- Max. torque (40% DC): 2000
- Optional up to Speed range ¹ Main spindle drives 100 113110 111 131
- Repeating accuracy: ± 0.0005
- Positioning accuracy: ± 0.001
- Accuracy measuring system: ± 0.0005
- Max. tool length: 1100 (1350, 1500)
- Max. tool diameter: 140
- Number of tool pockets standard: 20
- Number of tool pockets optional: 30
- Tool changer
- Number of tool change standard: 21
- Optional expandable up to: 30
- Max. tool mass: 160
- Max. tool mass in pounds: 130
- Speed range: 10000
- Max. tool length approx.: 400
- Tool change time approx.: 6

Accuracy
- Positioning accuracy *: ± 0.015 (± 0.006)
- Reaching accuracy: ± 0.015 (± 0.006)

¹ Main spindle drives
- VPC 40-U
- VPC 45-U
- VPC 50-U
- VPC 55-U

Technical data VPC-U
VPC 2800-U – More than increased performance

Enough is just not enough. The VPC 2800-U unites the advantages of the compact built VPC range with the working area proportions of the spacious portal machining centres PFZ/UPFZ from AXA. Its travel of 2940 x 1100 mm makes this multi-talent stand out above the competition for large gantry machines. The compact construction integrates all the essential components in very confined space.

5-sides and 5-axes machining of large cubic workpieces is a simple task for the VPC 2800-U. The combination of a stepless interpolating 1-axis tilting head with a rotary table integrated into the frame makes this task simplicity itself.

Main design:
- Extremely rigid, static and dynamically well-balanced ground frame construction
- Spacious work area and easily accessible machine tables
- Direct measuring systems for the main X/Y/Z-axes
- Cover according to current machinery directives
- Open above the work area, ideal for crane loading
- Machine transport in one single piece
- Optimal accessibility for all maintenance and service requirements

Guideways and drives:
- Large-scale dimensioned roller guideways for high dynamics and stiffness
- Optimal guiding by extremely large guidance ratio
- Real gantry drive in the X-axis with corresponding individual drive, guideway and direct measuring system for both portal columns
- Drives and guideways are protected
- Ball screws in all linear axes

Tool changing system:
- Version and equipment according to VPC series

Tilting spindle:
- 1-axis tilting spindle swivelling around the Y-axis (B-axis)
- Stepless, interpolating construction
- Tilting range 0° to -90°
- Hydraulic clamping for heavy machining

Rotary table:
- Continuous turning NC-rotary table around the Z-axis
- Integrated in machine bed
- Hydraulic clamping

Excellent machine accessibility with crane loading possibility by the optional complete covering with automatic doors and automatically opening bellows in the roof section.
Ingenuity and great ideas

Its strength is its flexible structure:
Your ideas and all your requirements can be achieved thanks to the VPC 2800-U. The AXA experts develop and design solutions – also by integrating other technologies.
- Through spindle coolant with filter system
- Chip conveyor in flat-belt, scraper belt or magnetic belt versions
- Controls either from Heidenhain or Siemens
- Automatic doors
- Clamping systems – hydraulic, pneumatic, magnetic or manual
- Touch probe and tool touch probe systems
- Active power monitoring, collision monitoring and complete process monitoring
- Tool identification systems
- Low-breakage control with tool measurement
- Remote maintenance

We can develop and manufacture special solutions for you upon request – from the standard solution up to made-to-measure customer requirements.
Flexibility in every detail: Your ideas become our mission!

Technical data VPC 2800-U

<table>
<thead>
<tr>
<th>VPC 2800-U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working area</td>
</tr>
<tr>
<td>X traverse range vertical</td>
</tr>
<tr>
<td>Y traverse range horizontal</td>
</tr>
<tr>
<td>Z traverse range</td>
</tr>
<tr>
<td>CNC-rotary table</td>
</tr>
<tr>
<td>Clamping surface</td>
</tr>
<tr>
<td>Max. transport weight</td>
</tr>
<tr>
<td>Max. tangential moment</td>
</tr>
<tr>
<td>Max. tilting moment</td>
</tr>
<tr>
<td>Accuracy measuring system</td>
</tr>
<tr>
<td>Min. distance table – spindle nozzle vert.</td>
</tr>
<tr>
<td>Min. distance table – spindle nozzle hor.</td>
</tr>
<tr>
<td>Feed drive</td>
</tr>
<tr>
<td>Max. rapid traverse in X/Y/Z</td>
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<tr>
<td>Max. feed force</td>
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<td>Main spindle drive</td>
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<td>Standard drive no.</td>
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<td>Tool holding fixture</td>
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<td>DIN 69871 A / DIN 69872 A</td>
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<td>BT 50, HSK A63</td>
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<tr>
<td>Tiltting spindle head</td>
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<tr>
<td>Swivelling range B-axis</td>
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<td>Indexing</td>
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<td>Tool changer</td>
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<td>Optional expandable up to</td>
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<td>Max. tool diameter</td>
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<tr>
<td>By free adjacent pockets</td>
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<tr>
<td>Max. tool length</td>
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<tr>
<td>Optional</td>
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<tr>
<td>400 (300)</td>
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<td>Accuracy</td>
</tr>
<tr>
<td>Positioning accuracy*</td>
</tr>
<tr>
<td>Repeating accuracy</td>
</tr>
<tr>
<td>0.015 (± 0.008)</td>
</tr>
<tr>
<td>0.015 (± 0.008)</td>
</tr>
</tbody>
</table>

Main spindle drives

| Speed range |
| Max. power (100% DC) |
| Max. power (150% DC) |
| Optional |
| 6000 |
| 6000 |
| 6000 |
| 60 |

Optional features

* For 1500 mm per axis X/Y/Z with vertical spindle

The specifications refer to the standard version. Extensions and modifications upon request and depending on overall configuration and application.
Milling, drilling and turning

VPC 2800-U/D with additional turning equipment

Upgrading with a fast turning rotary table expands the possibilities of the machining centre VPC 2800-U/D: Simple turning work is possible alongside milling and drilling.

The machine has been adapted in every detail to turning according to the stiff requirements: A further firmly fixed, hydraulic turning tool holder with automatic pull-in next to the working spindle serves to assimilate the corresponding required turning tools. The separate clamping unit in CAPTO C6 version for turning tools caters for utmost stability, clear turning tools orientation and avoids further stress on the main spindle bearing during turning operation.

The enhancement of the turning functionality brings about one of the outstanding features of this machine – namely changing between two tool holder systems. Alongside the standard SK 50 magazine for drilling and milling tools, a further separate tool magazine is fitted for turning tools with CAPTO C6 tool holder. This is in a protected area underneath the gantry support. A double gripping system for each magazine here enables short tool changing times. The stationary set magazine chains provide for the possibility of loading the magazine during machining.

The right turn for your production!
VPC with additional turning equipment

Additional possibilities for the machining centre VPC-U: As a fast turning rotary table is integrated, simple turning can be done alongside milling and drilling.

Pick up of the turning tool takes place in a fixed CAPTO C6 turning tool holder at the side on vertical Z-slide. An installed pick-up magazine on the right-hand side functions as changer for the tools. The CE conform machine covering has also been adapted to the increased requirements.

Turn on top turning class!

Perfect adaptation: VPC-U with increased swivelling range for ring workpieces

Machining large ring-formed workpieces is also a simple job for the VPC-U. These requirements can be quickly met by adjusting the work-space and rotary table.

The tilting spindle offers the advantage of vertical and horizontal machining as well as with an inclined set spindle. Implementing an angular head furthermore enables the immergence into small diameters for inner machining.

The right turn for every angle!

For smaller ring diameters – additional angular heads for inside machining can be added.
So many convincing features in just one machine
VPC 45-DASK with double axis tilting head

Equipped with a 2-axis tilting head, the VPC especially fulfills the requirements for highly dynamic simultaneous 5-axis machining. Referring to finishing machining as for mould making workpieces: this concept stands out in particular in its finishing in its utmost workpiece form and contour precision and thus sets new standards for the surface finish itself. Furthermore, the tilting axes contain a hydraulic clamp. Thus, the head can be used universally for various applications.

The tilting axes are stepless interpolating and can thus be tilted during the machining process. The whole head tilts here around the Z-axis while the spindle is tilted in the fork around the X-axis. A gantry elevation compensates possible construction height loss caused by the fork head design between the vertical and horizontal spindle setting. Guideways and drives have been designed for the largest increased accelerations and travel speeds for this version.

The right result – no matter what position!

Small and large workpieces firmly under control

A fixed and secure hold is the key to gaining a faultless result. The requirements are so multifaceted like the individual form of the workpieces. Besides the fixing, further factors are essential for choosing the right clamping technology: efficiency, user-friendliness and machine reliability.

AXA advises you on the choice of the right clamping technology – no matter whether mechanical, hydraulic, magnetic or vacuum related. Place your trust in our experience.

Clamping technology in its variety:
- Chucks or clamping devices
- Machine vices
- Centering vices
- Box jaws
- Multiple clamping systems

Machine series VPC: Let’s clamp together!

AXA with double-axis tilting head for highly dynamic 5-axis machining

Rotary table built on machine table with counterbearing and combined to a clamping bridge

2-axis tilting head of the VPC 45-DASK: the entire head tilts around the Z-axis (C-axis) with a tilting range of ± 360° while the spindle can be tilted in the fork around the X-axis (A-axis) in the tilting range of ± 110°

Zero point clamping system set in table for exact and quick loading of clamping equipment and tool pallets

The generously dimensioned machine table of the VPC series offers much room for setting up clamping equipment.
The VPC can be upgraded for fully automatic operation with a robot system that consists of two pallet positions or a pallet pool.

**Automation at every single work step**

Advanced automation technology plays a major role in sinking production costs and protects employees from heavy and dangerous tasks. The complex movement sequences around workpiece loading and unloading and the right clamping technology choice are ideal candidates for automation as well as machining workpieces and process control. This is the only way for your production to benefit from the decisive machine added value. Minimal set-up times and flexible production shifts in unmanned operation create maximal flexibility. Thus, modern industry robots today are a major part of automation solutions. Their enormous range, their sheer unbelievable mobility and their capacity to move large loads of over 1000 kg makes them multi-faceted and universally deployable and so, they often replace more complex and rigid pallet systems. Automatically a flexible solution!

VPC with two pallet positions ahead for machine loading

- Pick up of workpiece pallet by a special gripping system
- Robots can move heavy workpieces over a long range
- Workpiece pallet implementation in machining by centre zero point clamping system

Workpiece machining on clamped pallet with the VPC
## Product overview

### VCC DBZ

**Vertical moving column machining centres in compact design in short bed version, with pendulum machining or with swivel rotary table**

<table>
<thead>
<tr>
<th>X-travel:</th>
<th>720 - 1200 mm</th>
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<tbody>
<tr>
<td>Y-travel:</td>
<td>2 x 750 / 2 x 900 mm</td>
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<tr>
<td>Z-travel:</td>
<td>500 - 600 mm</td>
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<tr>
<td>Tool holder:</td>
<td>SK40 / HSK-A63</td>
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<tr>
<td>Spindle power:</td>
<td>20 - 40 kW</td>
</tr>
</tbody>
</table>

### VCC

### DBZ

### VSC VHC

**Moving column machining centres with vertical spindle or swivel head for 5-side-, long bed and pendulum machining**

<table>
<thead>
<tr>
<th>X-travel:</th>
<th>1200 - 12000 mm</th>
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</thead>
<tbody>
<tr>
<td>Y-travel:</td>
<td>500 - 1000 mm</td>
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<tr>
<td>Z-travel:</td>
<td>600 - 1000 mm</td>
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<tr>
<td>Tool holder:</td>
<td>SK40/50 / HSK-A63/A100</td>
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<tr>
<td>Spindle power:</td>
<td>20 - 57 kW</td>
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</tbody>
</table>

### VSC

### VHC

### VPC VPC-U

**Gantry machining centres in compact design with vertical spindle or swivel head for 5-side-machining**

<table>
<thead>
<tr>
<th>X-travel:</th>
<th>2360 - 3000 mm</th>
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</thead>
<tbody>
<tr>
<td>Y-travel:</td>
<td>1200 - 1600 mm</td>
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<td>Z-travel:</td>
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<tr>
<td>Tool holder:</td>
<td>SK40/50 / HSK-A63/A100</td>
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<tr>
<td>Spindle power:</td>
<td>20 - 57 kW</td>
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</table>

### VPC

### VPC-U

### PFZ UPFZ

**Large gantry machining centres with vertical spindle or swivel head for 5-side-machining**

<table>
<thead>
<tr>
<th>X-travel:</th>
<th>2000 - 12000 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y-travel:</td>
<td>1500 - 4000 mm</td>
</tr>
<tr>
<td>Z-travel:</td>
<td>650 - 1200 mm</td>
</tr>
<tr>
<td>Tool holder:</td>
<td>SK40/50 / HSK-A63/A100</td>
</tr>
<tr>
<td>Spindle power:</td>
<td>20 - 57 kW</td>
</tr>
</tbody>
</table>

### PFZ

### UPFZ