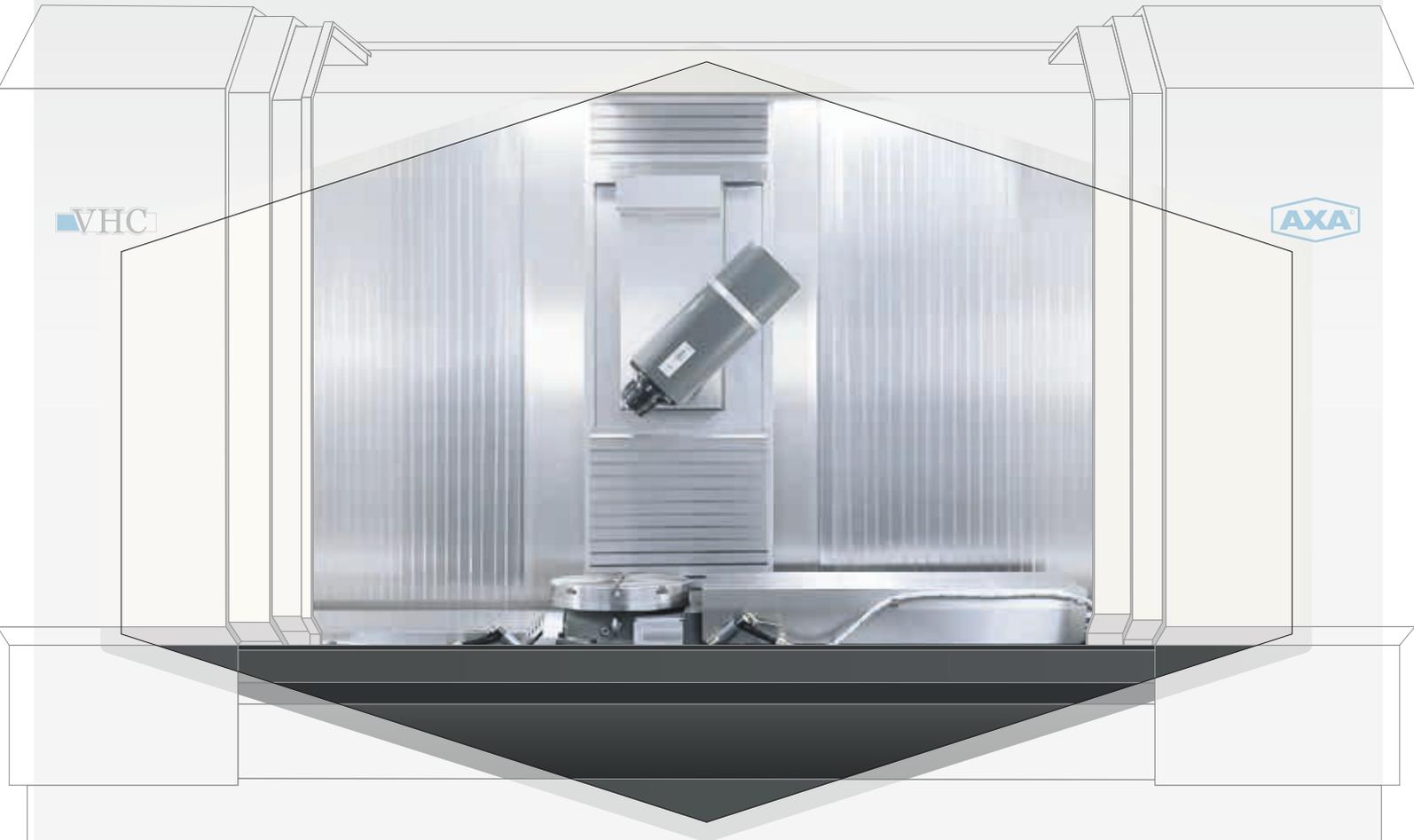


VSC / VHC



Producing success.
With AXA uniqueness.



Entwicklungs- und
Maschinenbau GmbH



Right at the heart of your production process: the machining centres of the VSC and VHC series stand out through precision quality and flexible design

Uniqueness

made by AXA

The VSC and VHC travelling column machines

On hand at all times. Showing no weakness despite being non-stop in action. Always mastering new challenges – machine tools are at the centre of the production process in the metal processing industry. They must correspond to the highest requirements concerning availability and precision.

The travelling column machines VSC and VHC are clear in their structure, yet flexible in their assembly. The working area is constructed to be extremely rigid. The fixed machine tables and stationary positioned tool magazine pool ensure that only the travelling column is in motion. Strong drive motors cater for the

very dynamic performance of our machine tools. The combination of fixed machine tables with linear motion axes on the tool side opens up a whole world of possibilities: small and compact machine variants for the manufacturing of small parts are just as possible as sophisticated machines for large and complex work pieces. The machines are also capable of operating in pendulum processing machining mode, which minimises set-up times so as to be quickly ready for operation.

AXA tradition lies in the development, construction and assembly of machine tools.



Conception and construction from a single source: overview of the VSC main assembly



Maximum efficiency: the workspace is partitioned into two sections and thus reduces set-up times to a minimum

VSC – Power and intuition for every workpiece

Main design:

- Cross slides, travelling columns and spindle head stock are made from high-quality cast iron
- Extremely rigid, static and dynamically well balanced ground frame construction
- Direct measuring systems for X/Y/Z axes
- Casing according to current machinery directives, totally closed working area with no interfering contours – also in pendulum operation mode
- Total access to working area when doors are fully open
- Excellent accessibility for maintenance and service tasks
- Machine transport in one piece

Guideways and drives:

- Hardened precision steel slideways mounted on manually scraped or grinded surfaces
- Optimal guiding by extremely large guidance ratio and Turcite coatings
- High rigidity, outstanding long-term precision performance and excellent vibration absorbing capabilities of the guideways
- Excellent resetting and adjustability of the guideways
- Drives and guideways are protected set outside of working area
- Ball screws in all linear axes with patented support units for ball screws in the X-axis for large travel lengths

Tool changing system:

- Fixed location coded tool management enables better monitoring
- Tool pre-selection by double gripper arm during machining
- Support of various tool holding systems such as SK, BT, HSK, CAPTO
- Tool magazine is protected outside of working area
- Placement of the XTS magazine during machining possible
- Tool change takes place behind working area cladding: no disturbing contours in the working area during tool change by the gripper or parts
- Transport unit from XTS magazine has its own drive and moves at up to 120 m/min to the spindle position for the tool change
- Any number of tool pockets are provided by several compact XTS towers
- Tool pockets within a tower can also be expanded at any point in time in the future

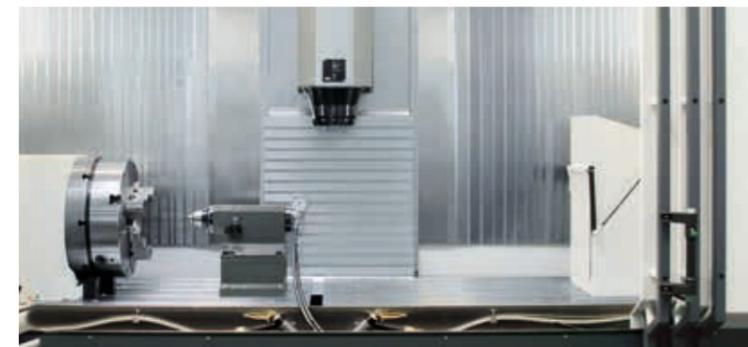
Flexible thanks to numerous options

- Through spindle coolant with filter system
- Chip conveyor 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 rotar 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.



Rotary table in the left and right workspace or rotary tables in gantry mode for clamping bridges in long bed machining mode



Rotary table combined with a tailstock as well an additional pick-up station for special tools, angular heads or multiple spindle heads

Technical data VSC

Technical data		VSC 1 - XTS	VSC 2 - XTS	VSC 2 - XTS50		VSC 3 - XTS	VSC 3 - XTS50	VSC 50 - XTS
Working area								
X-traverse range	[mm]	1760 - 9000	1760 - 9000	1760 - 9000	[mm]	1760 - 9000	1760 - 9000	2000 - 9000
Optional pendulum travel	[mm]	(X-Weg - 400) / 2	(X-Weg - 500) / 2	(X-Weg - 500) / 2	[mm]	(X-Weg - 500) / 2	(X-Weg - 500) / 2	(X-Weg - 700) / 2
Y-traverse range	[mm]	550	600	600	[mm]	700 (900, 1000) ²	700 (900, 1000) ²	1000
Z-traverse range	[mm]	600	850	850	[mm]	850 (950) ²	850 (950)	1000
Distance table - spindle nozzle	[mm]	180 - 780	180 - 1030	180 - 1030	[mm]	180 - 1030 (1130) ²	180 - 1030	180 - 1180
Machine table								
Clamping surface, grinded, approx.	[mm]	(X-Weg + 400)xY-Weg	(X-Weg + 400)xY-Weg	(X-Weg + 400)xY-Weg	[mm]	(X-Weg + 400)xY-Weg	(X-Weg + 400)xY-Weg	(X-Weg + 400)xY-Weg
T-slots, reference slot H7	[mm]	14 H9	14 H9	18 H9	[mm]	14 H9	18 H9	18 H9
T-slots indexing	[mm]	160	160	160	[mm]	160	160	160
Number of T-slots		3	4	4		5 (6) ²	5 (6) ²	6
Max. table load	[kg/m ²]	800	1000	1000	[kg/m ²]	1200	1200	1500
Feed drive								
Max. rapid traverse	[m/min]	30/30/25 (40/40/30) ²	40/40/30	40/40/30	[m/min]	40/40/30	40/40/30	30/30/25
Max. feed force	[N]	9000	9000	9000	[N]	9000	9000	20000
Main spindle drive								
Standard drive no. ¹		110	110	131		110	131	161
Optional drive no. ¹		100/111	100, 111, 113	133		100, 111, 113	133	163, 182
Tool holding fixture								
DIN ISO 7388-1 AD / DIN ISO 7388-3 AD		SK 40	SK 40	SK 50		SK 40	SK 50	SK 50
Optional		BT 40, HSK A63, C6	BT 40, HSK A63, C6	BT 50, HSK A100, C8		BT 40, HSK A63, C6	BT 50, HSK A100, C8	BT 50, HSK A100, C8
Tool changer								
Number of tool pockets standard		22	22	26		22	26	30
Optional expandable up to		216 ³	216 ³	156 ³		288 ³	180 ³	180 ³
Max. tool diameter	[mm]	85	85	110	[mm]	85	110	110
By free adjacent pockets	[mm]	135	135	180	[mm]	135	180	180
Max. tool length	[mm]	400	400	400	[mm]	400	400	400
Tool change time approx.	[s]	4	5	7	[s]	5	7	8
Accuracy								
Positioning accuracy ⁴	[mm]	± 0,015 (± 0,0075) ²	± 0,015 (± 0,0075) ²	± 0,015 (± 0,0075) ²	[mm]	± 0,015 (± 0,0075) ²	± 0,015 (± 0,0075) ²	± 0,015
Repeating accuracy	[mm]	± 0,005	± 0,005	± 0,005	[mm]	± 0,005	± 0,005	± 0,005

¹ Main spindle drives

		100	110	111	113		131	133	161	163	182
Speed range	[rpm]	6000	6000	6000	6000	[rpm]	4000	4000	4000	4000	4000
Optional up to	[rpm]	15000	12000	12000	10000	[rpm]	9000	9000	7500	7500	-
Max. torque (40% DC)	[Nm]	95	143	191	255	[Nm]	286	355	540	540	820
Max. power (40% DC)	[kW]	20	30	40	40	[kW]	45	56	28	56	81

² Optional features

³ e.g. 3 fully equipped towers

⁴ Per 1000 mm per axis X/Y/Z



VHC travelling column machine with tilting spindle head: machining a workpiece from all sides in only one setting



Rotary tables in gantry mode for clamping bridges as well as further, removable pick-up station left for pendulum operation or right for long bed operation

VHC – Additional options due to tilting spindle head

Main design:

- Cross slides, travelling columns and spindle head stock are made from high-quality cast iron
- Extremely rigid, static and dynamically well balanced ground frame construction
- Direct measuring systems for X/Y/Z axes
- Casing according to current machinery directives, totally closed working area with no interfering contours – also in pendulum operation mode
- Total access to working area when doors are fully open
- Excellent accessibility for maintenance and service tasks
- Machine transport in one piece

Guideways and drives:

- Hardened precision steel slideways mounted on manually scraped or grinded surfaces
- Optimal guiding by extremely large guidance ratio and Turcite coatings
- High rigidity, outstanding long-term

- precision performance and excellent vibration absorbing capabilities of the guideways
- Excellent resetting and adjustability of the guideways
- Drives and guideways are protected set outside of working area
- Ball screws in all linear axes with patented support units for ball screws in the X-axis for large travel lengths

Tool changing system:

- Fixed location coded tool management enables better monitoring for the operator
- Tool pre-selection by double gripper arm during machining
- Support of various tool holding systems such as SK, BT, HSK, CAPTO
- Tool magazine is protected outside of working area
- Placement of the XTS magazine during machining possible
- Tool change takes place behind working area cladding: no disturbing contours in the working

- area during tool change by the gripper VHC – Precise results from every viewpoint or parts
- Transport unit from XTS magazine has its own drive and moves at up to 120 m/min to the spindle position for the tool change
- Any number of tool pockets are provided by several compact XTS towers
- Tool pockets within a tower can also be expanded at any point in time in the future

Tilting spindle head:

- Vertical and horizontal machining
- In combination with a rotary table, 5 face machining or 5 axes simultaneous machining can be achieved
- Tilting spindle head 0,001° indexing increments or fully interpolating
- Tilting range up to $\pm 100^\circ$

Flexible thanks numerous options

- Through spindle coolant with filter system
- Chip conveyor 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.



The tilting spindle head in operation: enables the machine to work in a range of $\pm 100^\circ$



Thanks to the tilting spindle with a tilting range of $\pm 110^\circ$ and the rotary table's raised position work pieces can also be machined from a rear position

Technical data VHC

Technical data		VHC 2 - XTS	VHC 2 - XTS50	VHC 3 - XTS		VHC 3 - XTS50	VHC 50 - XTS
Working area							
X-traverse range vertical	[mm]	1760 - 9000	1760 - 9000	1760 - 9000	[mm]	1760 - 9000	2000 - 9000
Optional pendulum travel vertical	[mm]	(X-axis - 400) / 2	(X-axis - 500) / 2	(X-axis - 500) / 2	[mm]	(X-axis - 500) / 2	(X-axis - 600) / 2
Y-traverse range horizontal / vertical	[mm]	600	600	700 (900,1000) ²	[mm]	700 (900, 1000) ²	1000
Z-traverse range horizontal / vertical	[mm]	850 / 820	850 / 790	850 (950) ²	[mm]	850 / 790 (950)	1000 / 970
Distance table - spindle nozzle vert.	[mm]	0 - 820	0 - 790	40 - 890 (990) ²	[mm]	0 - 790	0 - 970
Distance table - spindle nozzle hor.	[mm]	180 - 1030	250 - 1100	250 - 1100 (1200) ²	[mm]	250 - 1100	280 - 1280
Machine table							
Clamping surface, grinded, approx.	[mm]	(X-axis + 400)x Y-axis	(X-axis + 400)x Y-axis	(X-axis + 400)x Y-axis	[mm]	(X-axis + 400)x Y-axis	(X-axis + 400)x Y-axis
T-slots, reference slot H7	[mm]	14 H9	18 H9	14 H9	[mm]	18 H9	18 H9
T-slots indexing	[mm]	160	160	160	[mm]	160	160
Number of T-slots		4	4	5 (6) ²		5 (6) ²	6
Max. table load	[kg/m ²]	1000	1000	1200	[kg/m ²]	1200	1500
Feed drive							
Max. rapid traverse	[m/min]	40/40/30	40/40/30	40/40/30	[m/min]	40/40/30	30/30/25
Max. feed force	[N]	9000	9000	9000	[N]	9000	20000
Main spindle drive							
Standard drive no. ¹		110	131	110		131	161
Optional drive no. ¹		100, 111, 113	133	100, 111, 113		133	163, 182
Tool holding fixture							
DIN ISO 7388-1 AD / DIN ISO 7388-3 AD		SK 40	SK 50	SK 40		SK 50	SK 50
Optional		BT 40, HSK A63, C6	BT 50, HSK A100, C8	BT 40, HSK A63, C6		BT 50, HSK A100, C8	BT 50, HSK A100, C8
Tilting spindle head							
Swivelling range B-axis		± 90° (± 100°) ²	± 90° (± 100°) ²	± 90° (± 100°) ²		± 90° (± 100°) ²	± 90° (± 100°) ²
Indexing		0,001° (fully interpolating) ²	0,001° (fully interpolating) ²	0,001° (fully interpolating) ²		0,001° (fully interpolating) ²	0,001° (fully interpolating) ²
Tool changer							
Number of tool pockets standard		22	26	22		26	30
Optional expandable up to		216 ³	156 ³	288 ³		180 ³	180 ³
Max. tool diameter	[mm]	85	110	85	[mm]	110	110
By free adjacent pockets	[mm]	135	180	135	[mm]	180	180
Max. tool length	[mm]	400	400	400	[mm]	400	400
Tool change time approx.	[s]	5	7	6	[s]	7	8
Accuracy							
Positioning accuracy ⁴	[mm]	± 0,015 (± 0,0075) ²	± 0,015 (± 0,0075) ²	± 0,015 (± 0,0075) ²	[mm]	± 0,015 (± 0,0075) ²	± 0,015
Repeating accuracy	[mm]	± 0,005	± 0,005	± 0,005	[mm]	± 0,005	± 0,005

¹ Main spindle drives

		100	110	111	113		131	133	161	163	182
Speed range	[rpm]	6000	6000	6000	6000	[1/min]	4000	4000	4000	4000	4000
Optional up to	[rpm]	15000	12000	12000	10000	[1/min]	9000	9000	7500	7500	-
Max. torque (40% DC)	[Nm]	95	143	191	255	[Nm]	286	355	540	540	820
Max. power (40% DC)	[kW]	20	30	40	40	[kW]	45	56	28	56	81

² Optional features

³ e.g. 3 fully equipped towers

⁴ Per 1000 mm per axis X/Y/Z with vertical spindle

Top notch in all movements during milling, drilling and turning

Increasingly complex turning and milling jobs are demanded upon the metal processing industry.

The machines of the VSC and VHC series have been designed to fulfil these requirements. To ensure this success, the machines are equipped with rotary tables that are directly driven by quick-turning, high performance torque motors as well as vertical or horizontal turning spindles to create very high speeds.

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 for turning tools thus ensures for utmost stability, a clear orientation of the turning tools and avoids further stress on the main spindle bearing during turning operation.

Tool changing between two tool holding systems thanks to the adjustable XTS changer and gripping arm is one of the outstanding benefits of the machine. For example,

one magazine chain can be set with CAPTO C6 uptake for turning tools and at the same time a second magazine can be carried out with SK 50 for drilling and milling tools.

Thanks due to the expandable tool shop, you can set the configuration of the magazine chains yourself and therefore determine the number of required tools for turning and drilling/milling.



Top notch in all movements during milling, drilling and turning



Milling, drilling and turning in one setting with vertical and horizontal spindle position



All intermediary angles can be set on the turning tool position beside the vertical and horizontal spindle position



Turning spindle with 1500 rpm in combination with a tailstock that can be manually adjusted over the fixed machine table in longitudinal direction for varying lengths of the turning workpieces



A further firmly fixed turning tool holder with automatic pull-in next to the working spindle serves to assimilate the corresponding required CAPTO turning tools

Keeping a firm grip on small and large workpieces alike

A firm and secure hold is the key to a faultless result. The requirements are just as different as the forms of the workpieces. Alongside fixing, other factors play an essential role when choosing the right clamping technology:

- cost effectiveness
- operator convenience
- machine reliability

The AXA experts give the right advice on the choice of the right clamping technology: Regardless whether mechanical, hydraulic, magnetic or vacuum technology – place your trust in our experience. Systems that already exist can also be integrated – just as much as individual solutions can be developed. Together with numerous partners, we find the correct clamping technology.

Clamping technology in its diversity:

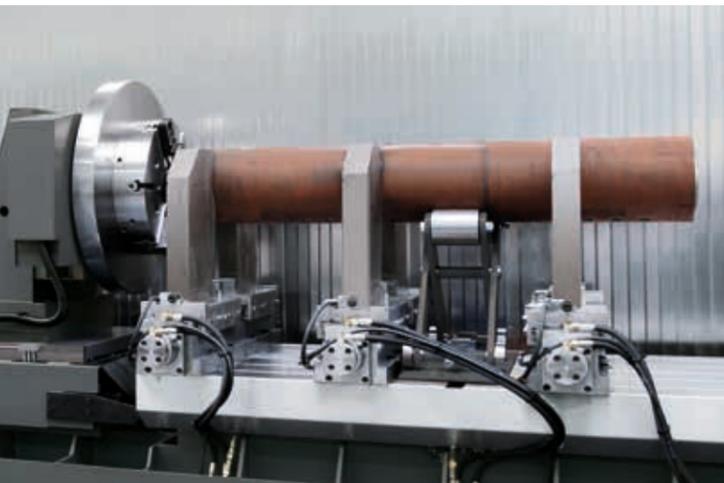
- Chucks or clamping devices
- Machine vices
- Centering vices
- Box jaws
- Multiple clamping systems
- Clamping towers
- Simple table clamping systems
- Clamps of moulded parts with special clamping system



Keeping a firm grip on small and large workpieces alike



The heavy SK 50 pendulum machining centre is fitted with a high-performance tilting spindle head - Different clamping devices allow different workpieces to be machined in parallel



The workpiece can be rotated to position when clamped



Manual or NC-driven pre-centering and presetting of the clamping elements for the next workpiece diameter

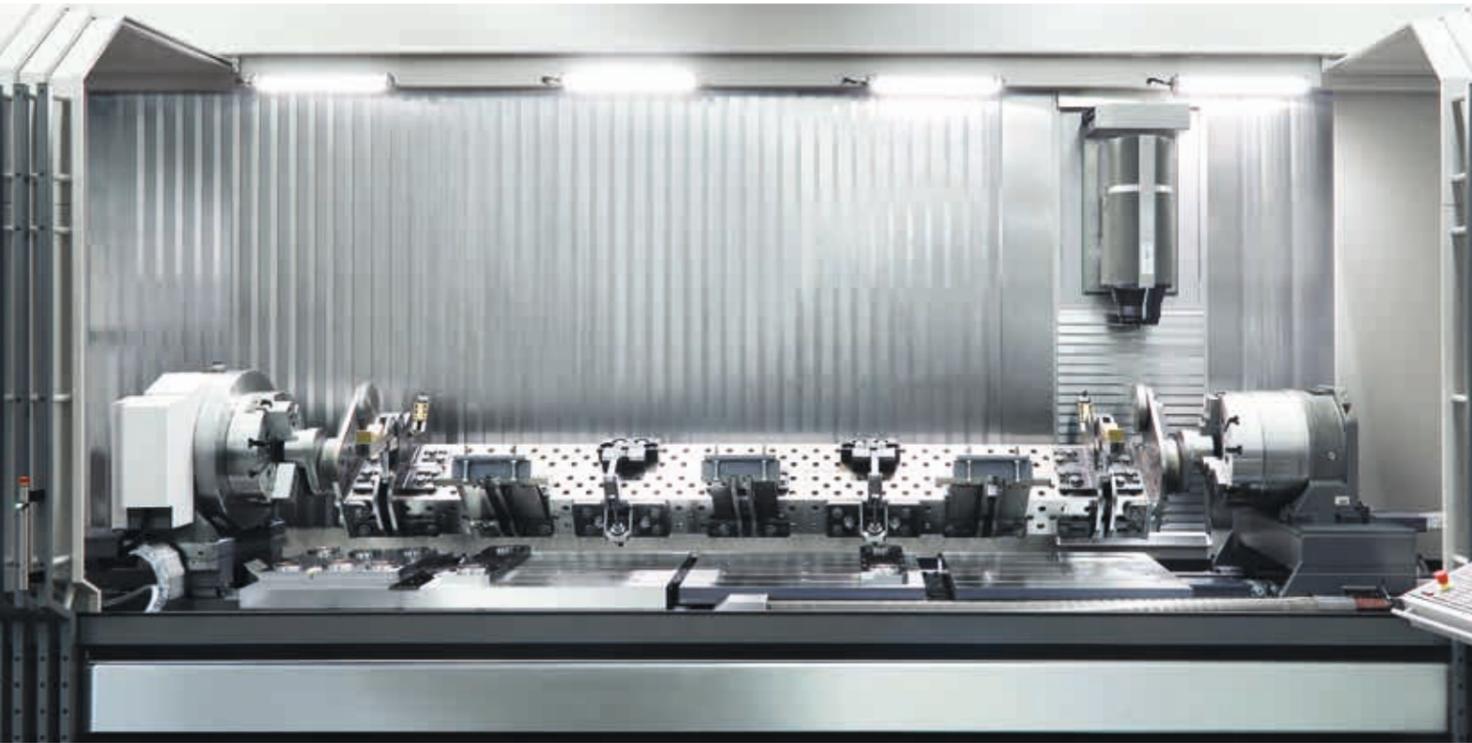


In the right hand working space long strips can be manufactured in clamps that can be positioned flexibly



Two NC rotary tables working in gantry mode ensure torsionally stiff suspension of the long clamping bridge in the left-hand pendulum working space

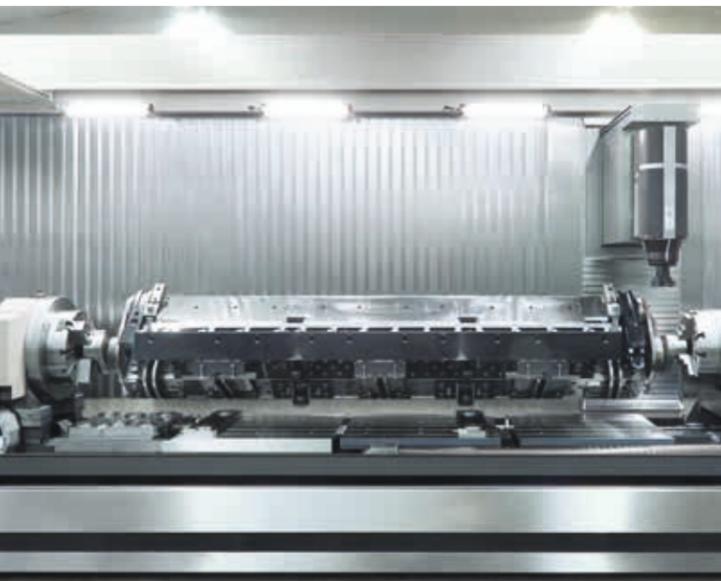
Keeping a firm grip on small and large workpieces alike



An outstanding multi-purpose working area! Rotary tables movable along the X-axis and zero-point clamping systems on the fixed machine tables allow for fast and flexible changeovers to meet different work piece requirements



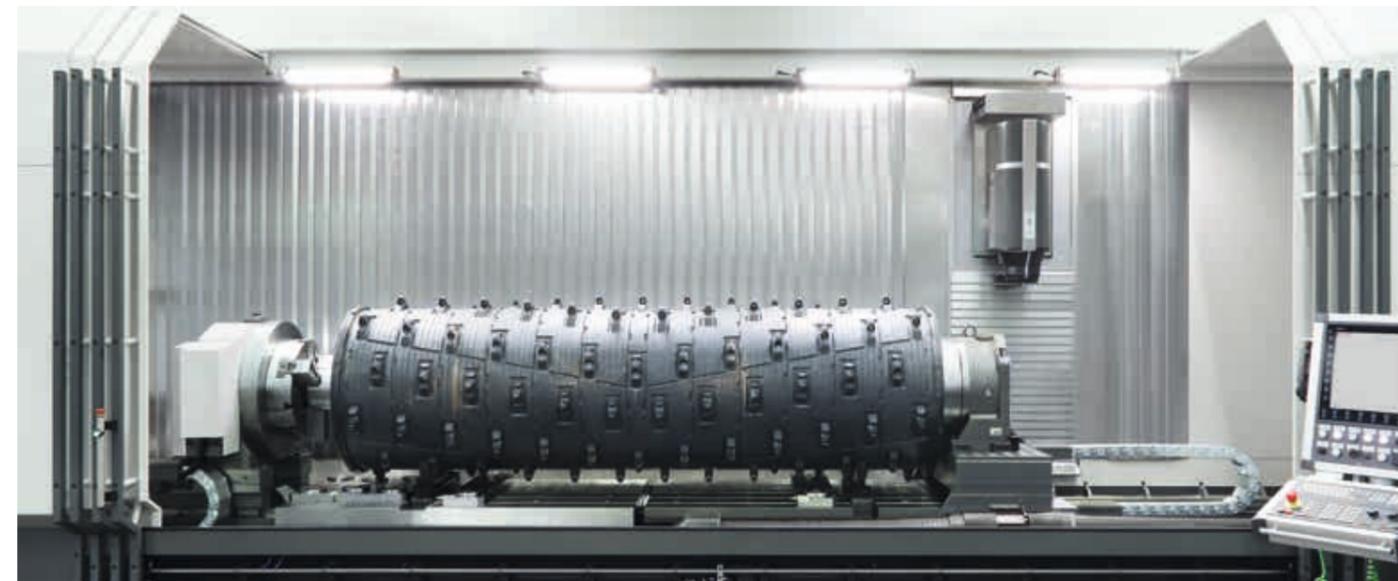
Version 2: The rotary tables are driven to the outer park positions and the work pieces can be positioned flexibly in the working area via a range of different clamping elements that are held by the zero-point clamping systems



Version 1: The rotary tables are driven into the working area to take up a hydraulic clamping device for the work pieces



The work pieces can now be taken hold of directly via the hydraulic clamping device - Sliding doors that open above the working area allow for optimal loading from above



Version 3: The rotary tables are driven into the working area and the work pieces are taken hold of directly by the rotary tables - Since one of the rotary tables can be driven across the fixed machine table, the work piece length is flexibly adjustable

Automisation at every work cycle



Assured quality at optimal task repetition – the VSC and VHS machining tool series fulfil such aspirations. Highly developed automisation technology plays an essential role in achieving this. Furthermore, it reduces production costs and protects staff from heavy and dangerous activities.

Automating the complex movements around loading and unloading workpieces as well as finding the right choice of clamping technology belong just as much to an ideal automisation solution as workpiece machining and process control. AXA masters these requirements as well – individually created around

customer requests. Here is where the decisive machine value added originates for production. Regardless whether this centres around a large production series or applications for the production of small series.

Automisation at every work cycle



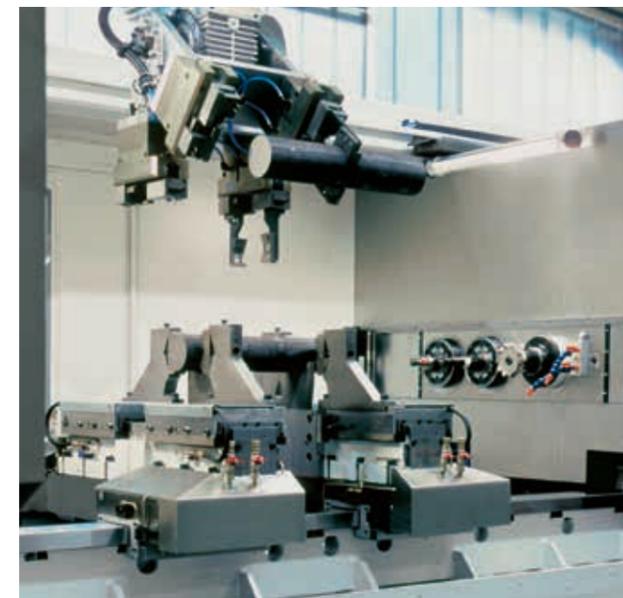
Installed industrial robot in front of the travelling column machine for direct machine loading and unloading with workpieces



Quick and simple automisation by compact complete solution with workpiece storage, handling system and zero-point clamping



Machine buffer store reduces set-up times due to long transport distances of the robot system - During machining, the robot changes the workpieces from the buffer into the workpiece storage unit



Double gripper swaps the finished item with the raw material in one work cycle - As loading takes place from above by the portal robot, machine accessibility remains intact



Complex hydraulic clamping unit, modularly designed by AXA, for quick conversion and secure chip flow

Product overview



TMP

Gantry machining centre for 5-side-machining in mould making for large-scale workpieces

X-travel: 2300 - 2940 mm (vertical)
 2000 - 2640 mm (horizontal)
 Y-travel: 1400 - 1600 mm
 Z-travel: 900 mm
 Spindle power: 27 - 56 kW



VPC 2800 U

VPC

VPC U

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

X-travel: 2360 - 3900 mm
 Y-travel: 1200 - 2940 mm
 Z-travel: 500 - 1100 mm
 Spindle power: 20 - 63 kW



VSC



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

X-travel: 1200 - 12000 mm
 Y-travel: 500 - 1000 mm
 Z-travel: 600 - 1000 mm
 Spindle power: 20 - 81 kW

VHC

DBZ

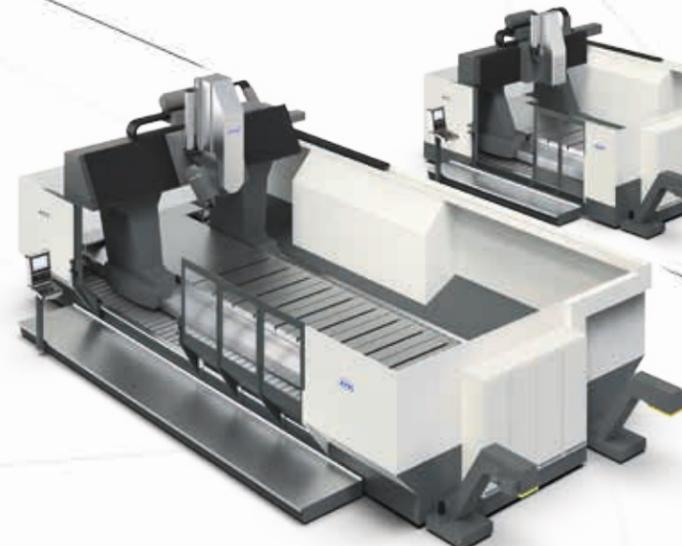


VCC

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

X-travel: 750 - 1200 mm - 2 x 750 / 2 x 900 mm
 Y-travel: 500 - 600 mm
 Z-travel: 700 mm
 Spindle power: 20 - 40 kW

UPFZ



PFZ

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

X-travel: 2000 - 12000 mm
 Y-travel: 1500 - 4000 mm
 Z-travel: 650 - 1200 mm
 Spindle power: 20 - 57 kW

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Technical changes, price changes, errors or misprints reserved. Equipment, specifications and features of the machinery can vary according to the product version and chosen additional options. Images may contain surcharged optional extras. Machinery specifications are exclusively as per the order confirmation.

Brochure effective: A1 – 08/2018