

VCC / DBZ



**Producing success.**

*With AXA's uniqueness.*



Entwicklungs- und  
Maschinenbau GmbH



Precise and productive, yet compact in form: the travelling column machines of the VCC and DBZ series

# Uniqueness

*made by AXA*

## True greatness comes from within – The compact travelling column machines VCC and DBZ

Learnt from the large machines, implemented into the smaller ones. Although of a smaller scale, the two machining centres VCC and DBZ are completely flexible in their functionality. Their advantages are put to work in particular when machining small and medium-sized workpieces – in individual machining mode for small batches or in pendulum mode for series production. The machines'

small footprint certainly makes the VCC and DBZ series from AXA very interesting for smaller and medium-sized companies.

The VCC and DBZ unite a clear structure with flexible design. A very rigidly constructed workspace is enhanced through fixed machine tables and a stationary positioned tool magazine pool. That gives the

machines immense stability and rigidity and at the same time an extremely dynamic travelling column due to the powerful drive sets in the main axes. From workshop production up to fully automatic series production. The field of applications of these machines is so dynamic just as its design and layout. Reliable quality for demanding tasks.



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

## 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 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.



Can optionally be equipped with a zero-point clamping system and a rotary table - no limitations to movement paths thanks to its position outside of the working area

## VCC – Great impact, yet small in size

### 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
- Casing according to current machinery directives, totally closed working area with no interfering contours
- 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
- Alternatively with roller guides
- Drives and guideways are protected set outside of working area
- Ball screws in all linear axes

### Tool changing system:

- Fixed location coded tool management enables better monitoring for the operator
- Support of various tool holding systems such as SK, BT, HSK
- Tool magazine is protected outside of working area
- Placement of the 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



Compact and uncluttered workspace with direct spindle access to the tool magazine



Custom working area for passing long work pieces beneath the tool changer



Basic structure of the VCC 50 with vertical spindle



Basic structure of the VCC 50 with tilting spindle

## VCC 50 - A powerful extension of the VCC series

### Distinctive appearance:

Powerful spindles and a particularly stable machine bed with a reinforced travelling column as standard - the result is a compact, torsion-resistant base construction, which convinces with its high rigidity and provides extraordinary cutting performance.

Based on the basic model's compact design, the VCC 50 3-axis machining centre is the ideal machining centre for the manufacture of small parts in the heavy-duty cutting field.

### The perfect addition:

Thanks to the option to extend the three main axes with a swivel head and/or a vertically or horizontally integrated rotary table, the VCC 50 can also be upgraded for 5-axis simultaneous machining. The working area position makes it particularly suitable for use with swivel bridges.

Here the swivel head is used in a reinforced version.

### Machining example:

The material hardness and toughness of Hardox 400 represent particular challenges for machine tools, the VCC 50 masters them easily.

Exemplary cutting values for the

VCC 50 when processing Hardox 400:

#### Material properties

370 - 430 HBW Brinell  
40 - 45 HRC Rockwell

#### Face milling

D = 80 mm	vc = 80 m/min
fz = 0,12 mm	ae = 50 mm
ap = 5 mm	

#### Contour milling

D = 50 mm	vc = 80 m/min
fz = 0,15 mm	ae = 10-15 mm
ap = 45 mm	

#### HPC contour milling

D = 20 mm	vc = 180 m/min
fz = 0,16 mm	ae = 1 mm
ap = 45 mm	

#### Slot milling

D = 20 mm	vc = 120 m/min
fz = 0,075 mm	ae = 20 mm
ap = 20 mm	





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

## 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 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.



Compact and uncluttered workspace with direct spindle access to the tool magazine

## DBZ – Performance on both sides

### Main design:

- Double place machining centre
- 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
- Casing according to current machinery directives, totally closed working area with no interfering contours
- 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
- Alternatively with roller guides
- Drives and guideways are protected set outside of working area
- Ball screws in all linear axes

### Tool changing system:

- Fixed location coded tool management enables better monitoring for the operator
- Support of various tool holding systems such as SK, BT, HSK
- Tool magazine is protected outside of working area
- Placement of the 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



The plate changer is easily accessible from the front



The tool changer is located behind the control panel

## Technical data VCC

Technical data		VCC	VCC 2	VCC 50
<b>Working area</b>				
X-traverse range	[mm]	750 1200	1200	1350
Y-traverse range	[mm]	550	600	750
Z-traverse range	[mm]	600	700	850
Distance table - spindle nozzle	[mm]	180 - 780	180 - 880	180 - 1030
<b>Machine table</b>				
Clamping surface, grinded, approx.	[mm]	1000 x 500 1350 x 500	1350 x 600	2050 x 850
T-slots, reference slot H7	[mm]	14 H9	14 H9	18 H9
T-slots indexing	[mm]	160	160	160
Number of T-slots		3	4	5
Max. table load	[kg/m <sup>2</sup> ]	800	800	1200
<b>Feed drive</b>				
Max. rapid traverse	[m/min]	25/25/20	25/25/20	40/40/30
Max. feed force	[N]	9000	9000	9000
<b>Main spindle drive</b>				
Standard drive no. <sup>1</sup>		110	110	131
Optional drive no. <sup>1</sup>		100 / 111	100 / 111	133 / 163
<b>Tool holding fixture</b>				
DIN 69871 A / DIN 69872 A		SK 40	SK 40	SK 50
Optional		HSK A63	HSK A63	HSK A100
<b>Tilting spindle head (optional)</b>				
Swivelling range				± 90° or ± 100°
Indexing				0,001° (hydr. clamped or fully interpolating)
<b>Tool changer</b>				
No. of tool pockets standard		22	22	22
Optional expandable up to		30	30	
Max. tool diameter	[mm]	85	85	110
By free adjacent pockets	[mm]	135	135	180
Max. tool length	[mm]	400	400	400
<b>Accuracy</b>				
Positioning accuracy <sup>2</sup>	[mm]	± 0,02	± 0,02	± 0,015
Optional	[mm]	± 0,015 / ± 0,0075	± 0,015 / ± 0,0075	± 0,0075
Repeating accuracy	[mm]	± 0,005	± 0,005	± 0,005

## Technical data DBZ

Technical data		DBZ	DBZ 2
<b>Working area</b>			
X-traverse range	[mm]	2 x 750	2 x 900
Y-traverse range	[mm]	550	600
Z-traverse range	[mm]	600	700
Distance table - spindle nozzle	[mm]	180 - 780	180 - 880
<b>Machine table</b>			
Clamping surface,	[mm]	2 x (1000 x 500)	2 x (1000 x 600)
T-slots, reference slot H7	[mm]	14 H9	14 H9
T-slots indexing	[mm]	160	160
Number of T-slots		3	4
Max. table load	[kg/m <sup>2</sup> ]	800	800
<b>Feed drive</b>			
Max. rapid traverse	[m/min]	25/25/20	25/25/20
Max. feed force	[N]	9000	9000
<b>Main spindle drive</b>			
Standard drive no. <sup>1</sup>		110	110
Optional drive no. <sup>1</sup>		100 / 111	100 / 111
<b>Tool holding fixture</b>			
DIN 69871 A / DIN 69872 A		SK 40	SK 40
Optional		BT 40, HSK A63	BT 40, HSK A63
<b>Tool changer</b>			
No. of tool pockets standard		22	22
Optional expandable up to		30	30
Max. tool diameter	[mm]	85	85
By free adjacent pockets	[mm]	135	135
Max. tool length	[mm]	400	400
<b>Accuracy</b>			
Positioning accuracy <sup>2</sup>	[mm]	± 0,015	± 0,015
Optional	[mm]	± 0,0075	± 0,0075
Repeating accuracy	[mm]	± 0,005	± 0,005

### <sup>1</sup> Main spindle drives

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

<sup>2</sup> Per 1000 mm per axis X/Y/Z

## Tension in every detail

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 and 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



Main body made of aluminium with integrated intake for handling systems, mounting pins for zero-point clamping and clamping devices for the workpiece



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

## Automisation at every work cycle

Assured quality at optimal task repetition – the VCC and DBZ 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.



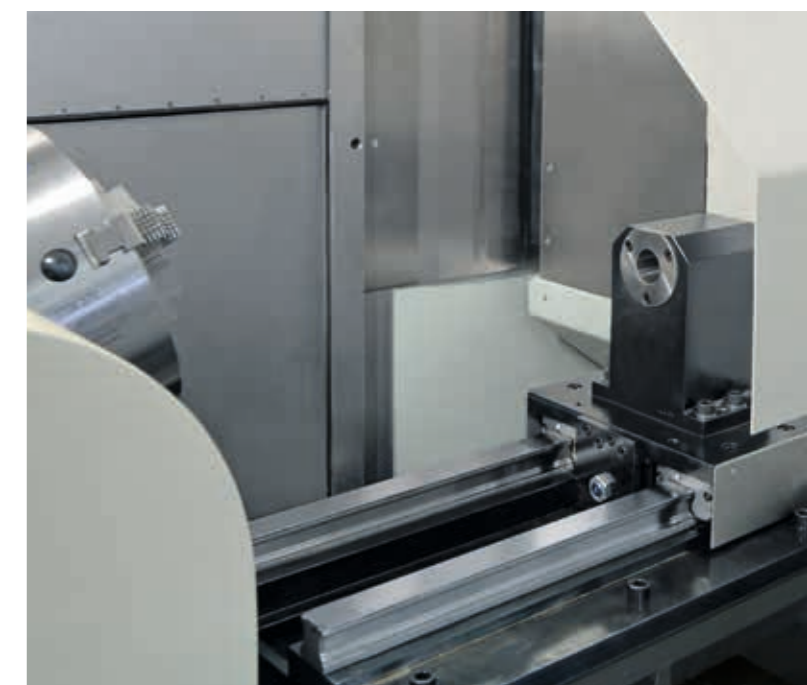
Rotary table with counter bearing and swivel bridge for mechanical multiple clamping system



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

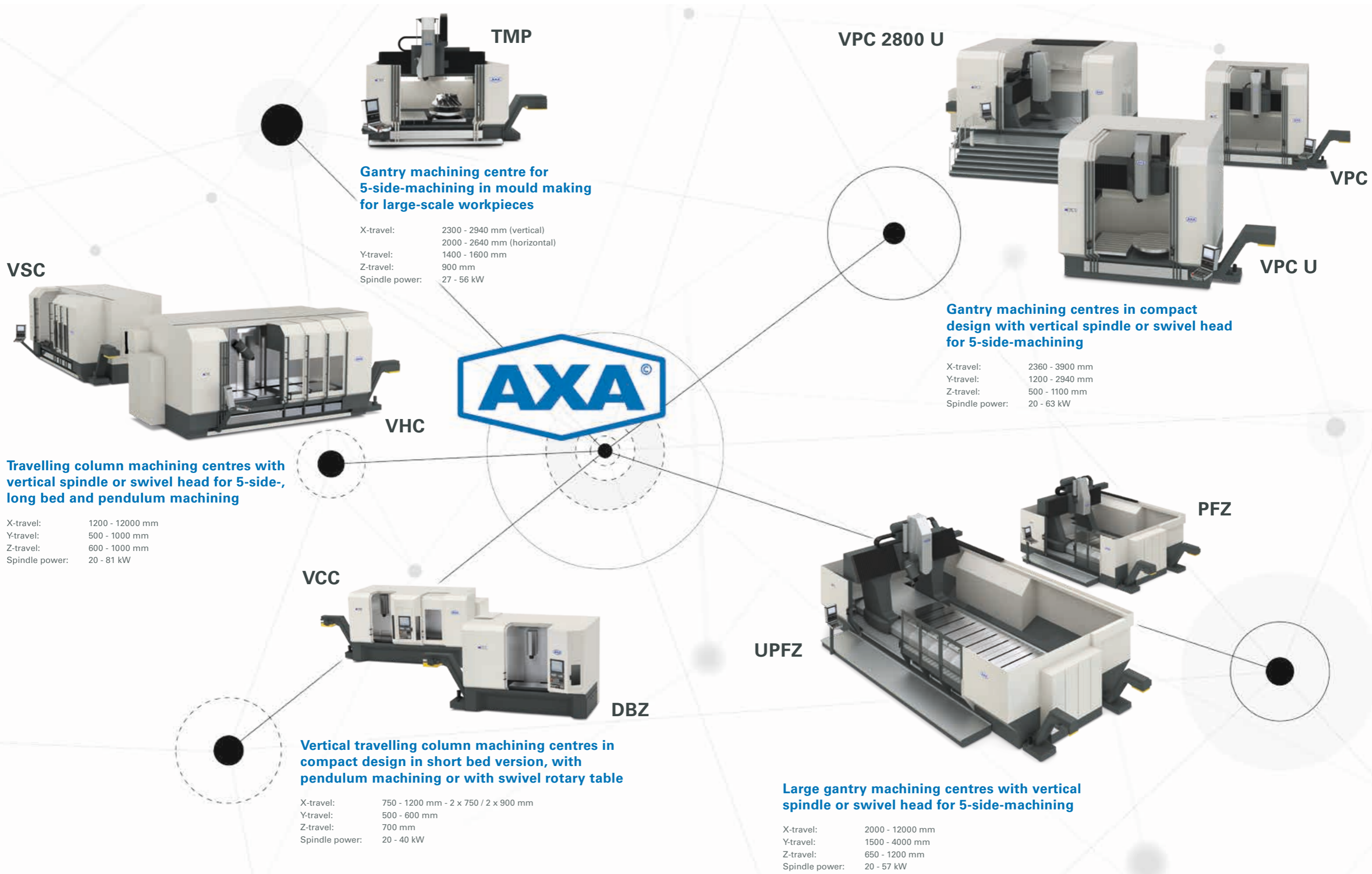


2 axes NC-tilting rotary table from AXA with continuous 360° round axis and tilting axis from 0° to 90°



Tailstock can be manually adjusted for varying lengths of workpieces

# Product overview





## AXA Headquarters

Post Office Box 12 60  
48621 Schöppingen  
Münsterstraße 57  
48624 Schöppingen  
Germany  
Tel. +49 2555 87 - 0  
Fax +49 2555 1496  
www.axa-maschinenbau.de  
mail@axa-maschinenbau.de

## AXA Subsidiary South

Rudolf-Wanzl-Straße 9  
89340 Leipheim  
Germany  
Tel. +49 8221 20782 - 0  
Fax +49 8221 20782 - 20  
nl.sued@axa-maschinenbau.de

## AXA Subsidiary East

Auerswalder Höhe 3  
09244 Lichtenau / Chemnitz  
Germany  
Tel. +49 37208 6995 - 0  
Fax +49 37208 6995 - 21  
nl.ost@axa-maschinenbau.de

## AXA CNC-stroje, s.r.o.

Na Cintlovce 1580/5  
26801 Hořovice  
Czech Republic  
Tel. +420 311 516420  
Fax +420 311 516410  
info@axacnc.cz

