



HURON



EDITORIAL

Since 1854, Huron Graffenstaden has been inventing, designing and building milling and turning machines for the automotive, aerospace, energy, medical and general engineering industries.

During its 160 year existence Huron has witnessed many historic events and experienced all the economic ups and downs of growth and recessions. The company has remained at the forefront of CNC machine tool design and build by evolving, adapting and learning from the experiences gained during these years.

Committed to the values of reliability, quality and precision, and motivated by a desire to innovate we have managed to overcome economic and technical challenges but still maintained an understanding our customers' needs and expectations.

The contrast of our historic industrial pedigree and modern engineering principles form the DNA of the Huron brand.

160 years of excellence, 160 years of ingenuity, 160 years of professionalism.

Above all, Huron Graffenstaden is a company that relies on its human assets and mastery of technologies. Establishing close and lasting partnerships with our customers and partners the best stories have yet to be written.

Bernard ECHEVARD,
General Manager

B Echevard

HURON GRAFFENSTADEN FROM PAST TO PRESENT

1927

Birth of the HURON Brand and our Indian head logo.

INNOVATION SERVING TRADITION

Established in Alsace, a land of tradition and excellence, Huron Graffenstaden continues to write its story and bring audacity, innovation and cutting-edge technology to the industry.

Through its creations and inventions, Huron Graffenstaden has for more than a century been regarded as one of the world's frontrunners in the machining of metals and composites.

A true pioneer, the company has brought extraordinary benefits to industry in terms of performance and productivity gains.

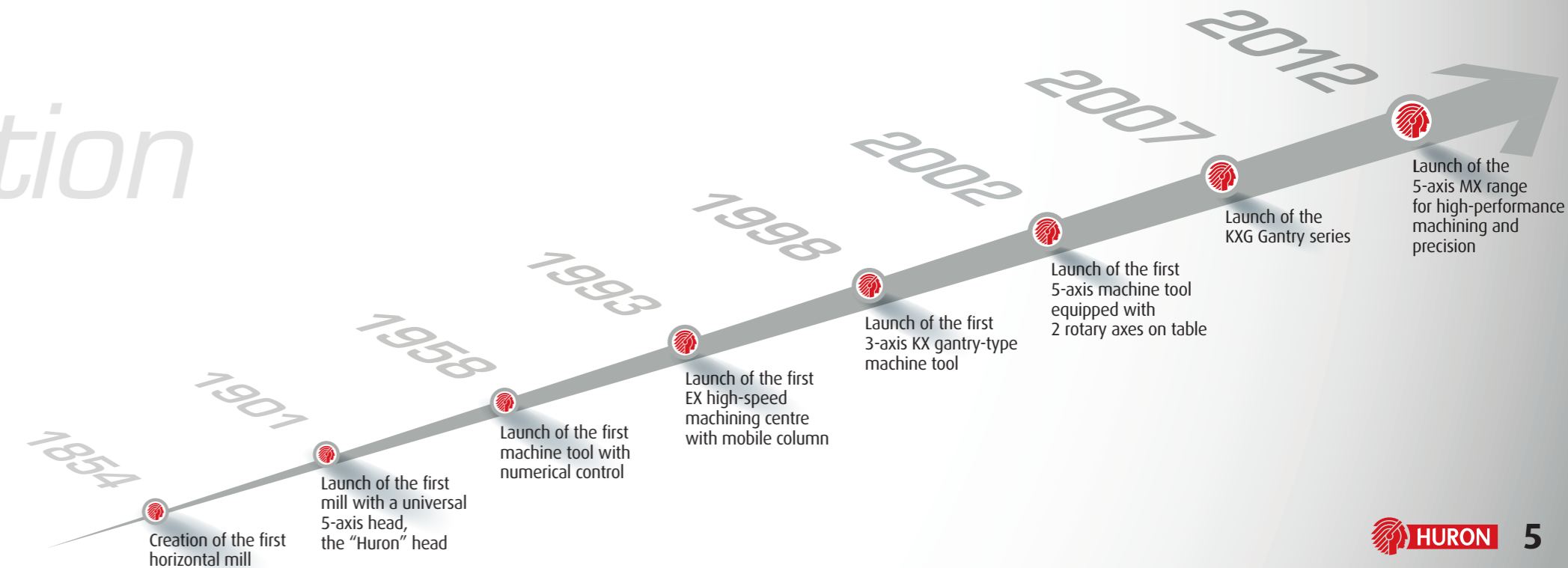
AUDACITY SERVING EXCELLENCE

After have extensively covered the traditional European markets (France, Germany, UK and Italy), we have adapted to achieve today's worldwide presence.

We continue to cultivate our ability to change with each country's industrial development to and support our deployment on an international scale.

We gain strength from our international supply and learn from other cultures, benefitting from the know-how and demands of our customers, we have always developed a rock-solid pragmatic approach based on listening and understanding, wherever we may be, and we continue to do so today.

Creating machines
since 1854
160 years





HUMANITY AT THE HEART OF OUR VALUES...

... OUR CUSTOMERS THE FOCUS OF OUR ATTENTION

At Huron Graffenstaden, we take pride in the quality of our machines, in our work, and in what we are capable of achieving together, by working closely with our customers and partners. Day-in, day-out, we strive to give our best and go the extra mile to meet their demands. Each constraint is a challenge, each step forward is a victory.

Creativity

Passion

Creativity

Passion

Listening

Listening

“ The world is changing as our customers' needs. Our machines move with the times but our values have remained the same, for 160 years... **”**

Dominique LUTZ,
International Business Director

WORKING WORLDWIDE EVERY DAY

THE WORLD IS OUR MARKET... PROXIMITY IS OUR STRENGTH

Our international locations are backed up by our sales teams and after-sales service we work with partners based near you who can give you advice and support and can respond quickly and efficiently.

“ Languages, distances and time zones are not barriers. At Huron Graffenstaden, working internationally is a day-to-day occurrence. ”

Dominique LUTZ, International Business Director



CULTURAL PROXIMITY

Our local agents and partners know the issues and characteristics of your market better than anyone. They maintain their excellent skills and their knowledge of our products better than anyone too.

Our aim: to provide the best experts to listen to and discuss your requirements, without barriers.

PHYSICAL PROXIMITY

Wherever you are in the world, Huron Graffenstaden is never far away. With our organisation by geographical zones, we are able to visit your site quickly and efficiently.

Our aim: to react effectively to optimise the profitability of your production line.

TECHNICAL PROXIMITY

At Huron Graffenstaden, we share our values and our technical expertise with you by establishing deep, trusting relations and solid collaboration that stand the test of time.

Our aim: to build true partnerships that go beyond usual supplier/customer relations.



“Huron Graffenstaden’s greatest wealth is our customers. Each one is a new source of knowledge and inspiration. They are what takes the company forward.”

Michel SAILLEY, Deputy General Manager

LISTENING TO THE CUSTOMER

THE CHALLENGE OF ADAPTABILITY

Huron Graffenstaden works together with you to define, design, manufacture and commission your solution: a unique solution that is the result of sustained, quality dialogue combined with reliable machines and individually tailored after sales service.

While our degree of involvement depends on your needs, we remain fully committed irrespective of the service required.

Looking for a standard machine?

We deliver your machine and guarantee Huron quality.

Need a machine with a custom configuration?

Consult our catalogue and select the variants and equipment you need for your machine to match your production process requirements.

Does your application call for a highly specific machine?

We can take care of the complete engineering based on your specifications.



CREATIVITY AND DEVELOPMENT

HURON, TO GO EVEN FURTHER

From the very beginning of the milling centre design phase, the focus is firmly on machining the customer's workpieces.

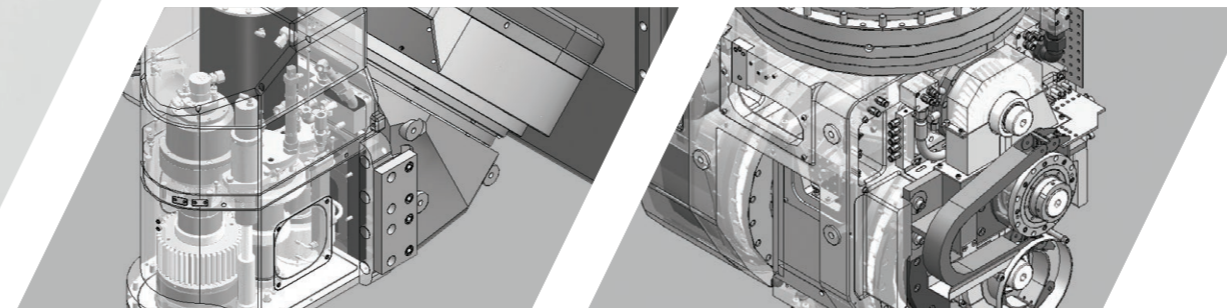
Precision, robustness and adaptability lie at the heart of the creative process. Taking on board specific features requested by the customer forms an integral part of the development project.

“ Purchasing one of our machines is a long-term investment. They are designed to be adaptable to changing needs, to changes in environmental and technical standards and to changes in technology. ”

Michel KIMENAU, Technical Director

“ Our customers' requirements are the driving force behind our ingenuity and creativity. ”

Michel SAILLEY,
Deputy General Manager





“It’s a bit like Formula 1: our specialists tune the machine to the driver and the way they drive. Our customers want to win so we listen to their needs and do what it takes to maximise mechanical performance. **”**

Pascal JUNG, Customer Applications Manager

PERFORMANCE AT THE HEART OF YOUR APPLICATIONS

HURON, ACCOMPANYING YOUR ACHIEVEMENTS

Our Applications specialists are entrusted with boosting the performance levels of Huron milling centres. Their aims: to confirm the feasibility of your workpieces, integrate the machine into an existing production process, support and train your employees and transmit our know-how to enable you to get the most out of your investment.

In complex industrial configurations, the Applications Department is increasingly called upon to propose a full turnkey service. Machining programs, workholding fixtures, tooling, training, etc. – services with the clear objective of helping you meet your own customer’s production quality and lead-time requirements.





Proximity *Listening*
Know how
Know how
Engagement

A SENSE OF AFTERSALES SERVICE

HURON, BY YOUR SIDE

Sand in the gears of your production line can seriously impact your productivity.

Our Aftersales' servicing processes are built on the principles of reactivity, reliability, proximity and trust. By fostering close, regular relations with you upstream, we can even anticipate and avoid particular malfunctions.

By listening to you and advising you, we build our Aftersales Service together with you, day after day.

Commitment

Proximity

Listening

Listening

Know how

“ Human relations are essential. Each of our customers is a partner. We see it every day: problems can be solved much quicker through dialogue, mutual assistance, enthusiasm and trust. **”**

Vincent CORNIER, Aftersales Manager

LOOKING TO THE FUTURE... TO STAY ONE STEP AHEAD

A NEW 20,000 SQ.M SITE

Customers working in cutting-edge sectors, increasingly complex technologies and increasingly imposing machines.

To maintain its efficiency and performance benchmarks, Huron Graffenstaden is laying the foundations for a new era! A new production plant and more spacious premises will offer new development prospects, opening up exciting new technological challenges.

OUR PLANET, OUR HOME

The environment is a sensitive subject in industry. We make a point of monitoring changes in environmental legislation to integrate them into our day-to-day activity and all our innovation practices, and even go a step further wherever possible. The energy cost of a machine is becoming a key criterion in the purchasing decision-making process, which is why eco-design is more of a priority than ever before.

HURON, A HUMAN CHALLENGE ABOVE ALL

Behind each machine, from its design at Huron to commissioning at the customer's plant, there are many people. Passion, expertise and transmission of know-how drive our corporate culture.

We are committed to continuing our work while remaining loyal to the values which have taken us to this very high level of excellence.

“

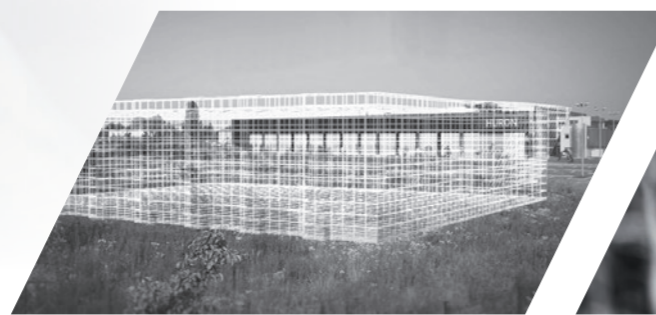
In a sometimes turbulent industrial climate, Huron has not veered from its course!

Our strengths lie in reliable, precise, robust machine tools equipped with the latest technologies and expertise acknowledged around the world.

From the outset, Huron Graffenstaden's history has always been characterised by excellence and innovation and the Huron brand has been synonymous with quality and strength.

Today the story goes on, with you, and the future is very bright... ”

Bernard ECHEVARD, General Manager





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MX Series

Milling and Turning centre

Performance
Technology
Power
Accuracy



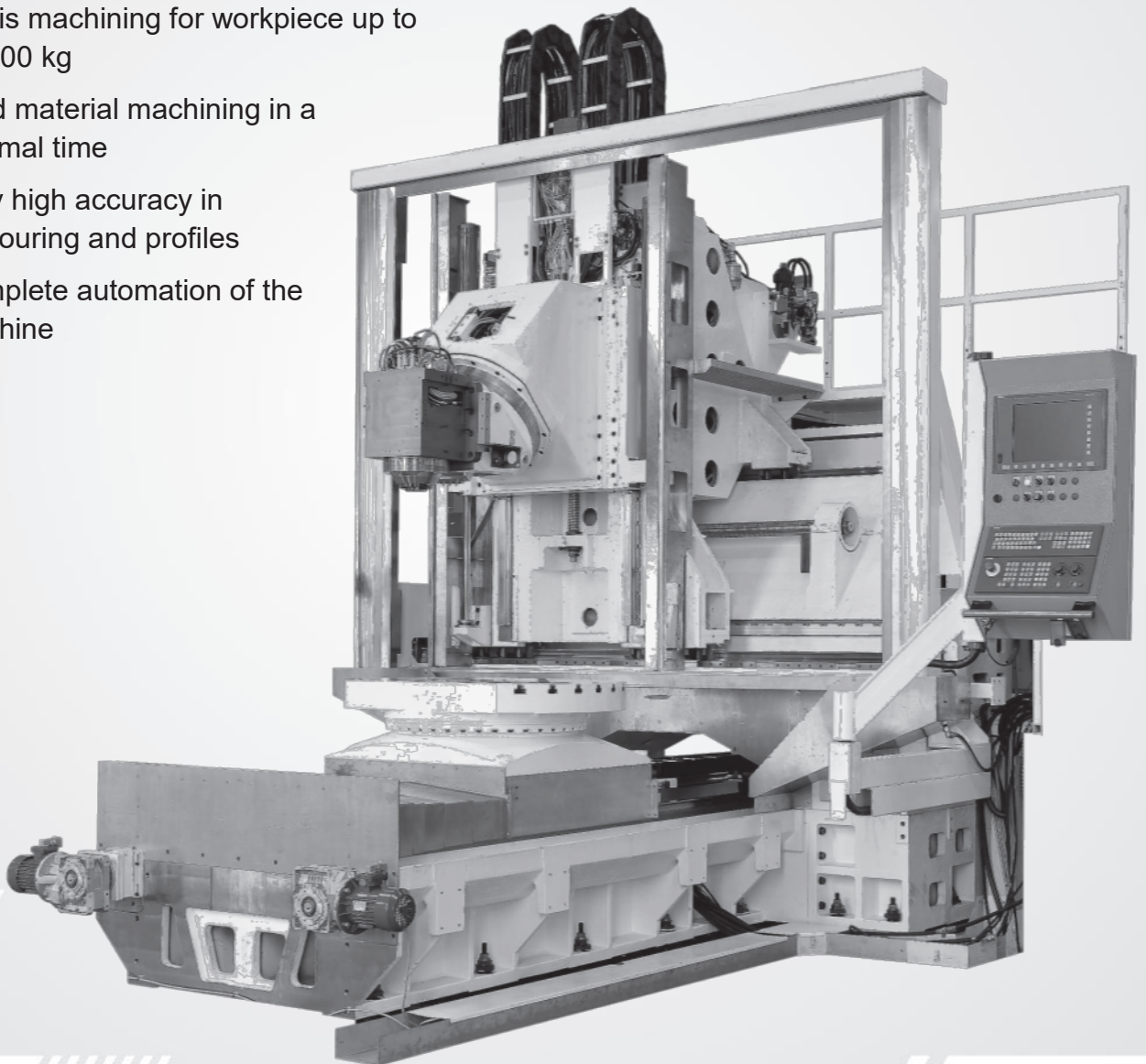


MX Series

Powerful, Rapid, Accurate Milling (M) and Mill/Turn (MT) centre

The MX multifunction machining centre is a high flexibility machine enabling machining operations in 5 axes and on 5 sides, in one setup part clamping, from roughing to finishing, as well as turning operations.

- 5 axis machining for workpiece up to 12.000 kg
- Hard material machining in a minimal time
- Very high accuracy in contouring and profiles
- Complete automation of the machine





Structure : Rigidity and Accuracy

- Structure with mobile column
- Cast iron with a high mechanical performance which maximises structure rigidity and allows optimum harmonic stability and maximum damping during demanding cutting conditions
- Machine secured on foundation with weight equally distributed over fixing points enabling extreme rigidity and a very high geometrical stability
- Modular design allows maximum flexibility in machine configuration to adapt to the technical requirements of customer
- Electrical cabinet fixed on the rear of the portal and protected IP54

Linear axes

- Ballscrew with integrated system of compensation for expansion
- Recirculating linear roller guide shoes ensuring minimum friction and efficient axis drive
- Automatic grease lubrication of linear roller guides minimising the pollution of coolant
- Absolute linear measurement by optical encoders in conformity with norm VDI/DGQ 3441

Head and Spindle

- Head equipped with integrated torque motor
- Head on a 45° plane allowing tilting from -45° up to +180°
- Spindle orientation : from vertical to horizontal, through all intermediate positions
- Powerful spindle with high torque allowing high metal removal rate
- Monitoring of the machining's vibrations to secure all the elements of the machine, the tool as well as the workpiece

Rotating table

- MX 8 / MX 10 / MX 12 : Table equipped with torque motor
- High rate of rotational and acceleration
- No backlash
- No wear
- Rigidity : high clamping torque enabling high power during roughing
- 2 versions : Milling and Mill/Turn
- MX 16 / MX 20 : Table's driven with wheel and double pignons

Numerical control

- Ergonomic design
- Very high capacity of memory and calculation
- Interactive programming
- Graphic simulation before machining for optimal safety

Environment - Ergonomics

- Chips evacuation channels with washing system and spiral conveyors
- Tool magazine outside of working area
- Complete safeguard ensuring a safety of the machine, the operator and the environment
- Very large accessibility to the table and the workpiece
- Tilting operator panel



MX Series

Standard head and spindle



Standard universal head (A axis)

	MX 8/10/12 M/MT MX 12L M	MX 11 M	MX 16/20 M
Rotating speed	100 rpm	30 rpm	100 rpm
Torque : working / clamping	2.120 / 2.500 Nm	7.000 / -- Nm	1.750 / 7.000 Nm
Measuring on axes	Direct encoder	Direct encoder	Direct encoder
Resolution	0,001°	0,001°	0,001°
Débattement axe A			
Axe broche / plan chariot	+180° / -45°		
Axe broche / plan table	-30° (gauche) 0° (vertical) -90° (horizontal droite)		



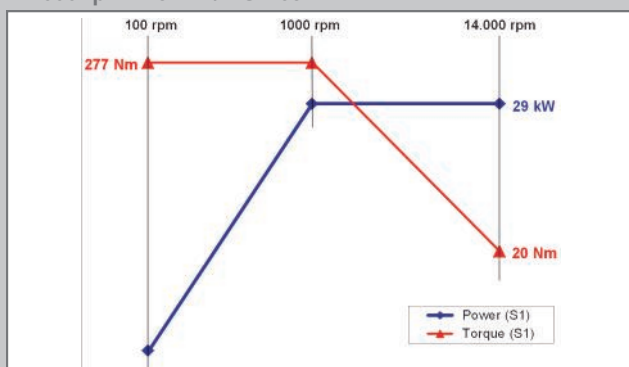
Standard spindle

	MX 8/10/12 M MX 12L M	MX 8/10/12 MT MX 11 M MX 16/20 M
Taper	HSK 63A	HSK 100A
Rotating speed	100 - 14.000 rpm	100 - 10.000 rpm
Power (S6/S1)	29 kW (S1)	43 / 33 kW
Torque (S6/S1)	277 (S1)	415 / 343 Nm
Characteristic speed	1.000 rpm	1.000 rpm

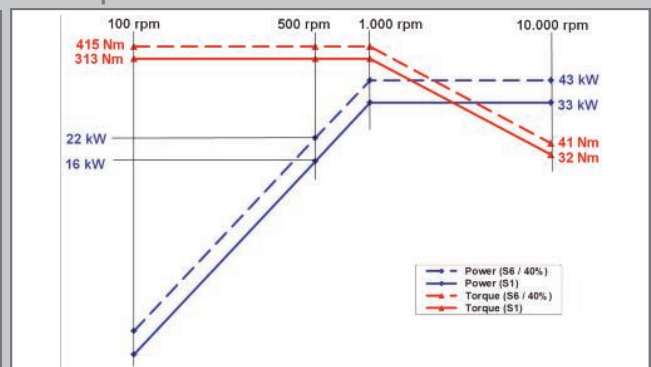
Equipments

- Air wall for spindle protection
- Control captor for angular positioning of the spindle
- Electrospindle cooling system
- Mechanical clamping with spring rings
- Tool release with hydraulic control
- Life greasing of bearings
- Taper cleaning by compressed air
- Vibration monitoring

14.000 rpm - 29 kW / HSK 63-A



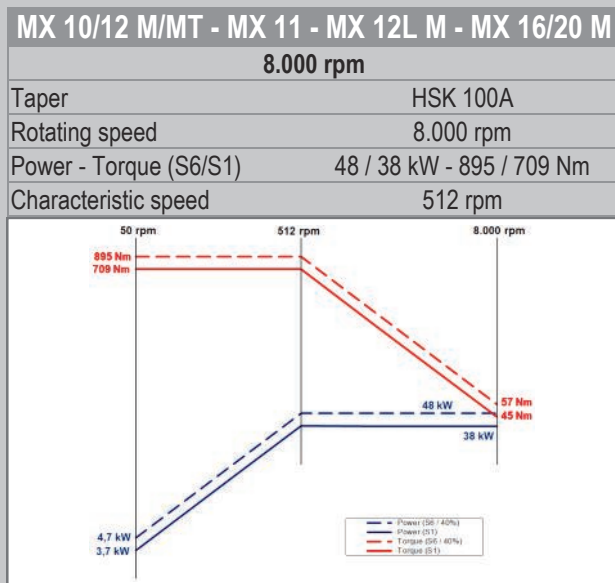
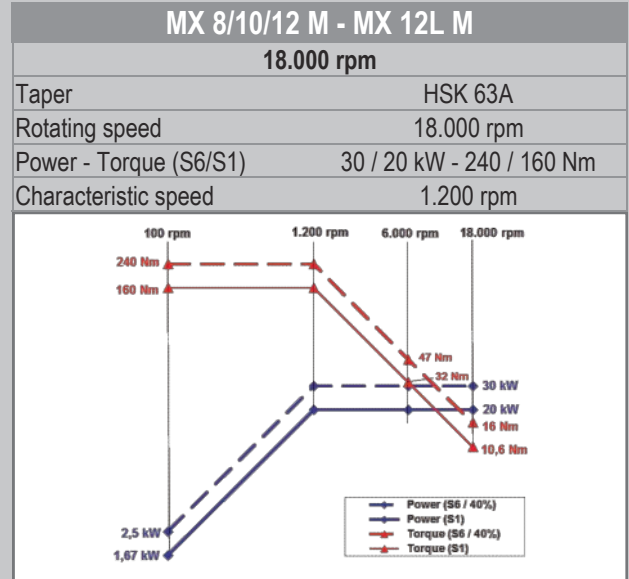
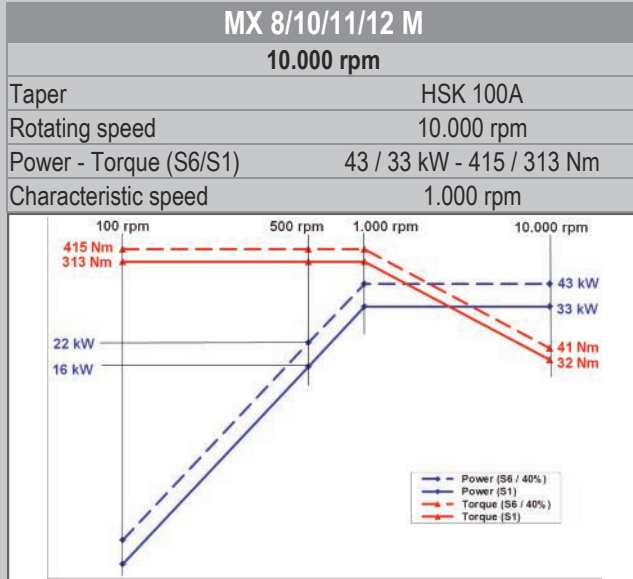
10.000 rpm - 33 kW / HSK 100-A





Alternatives for spindles (universal head of fork head)

When fork head, clearance of B axis is limited from -105° up to $+10^\circ$





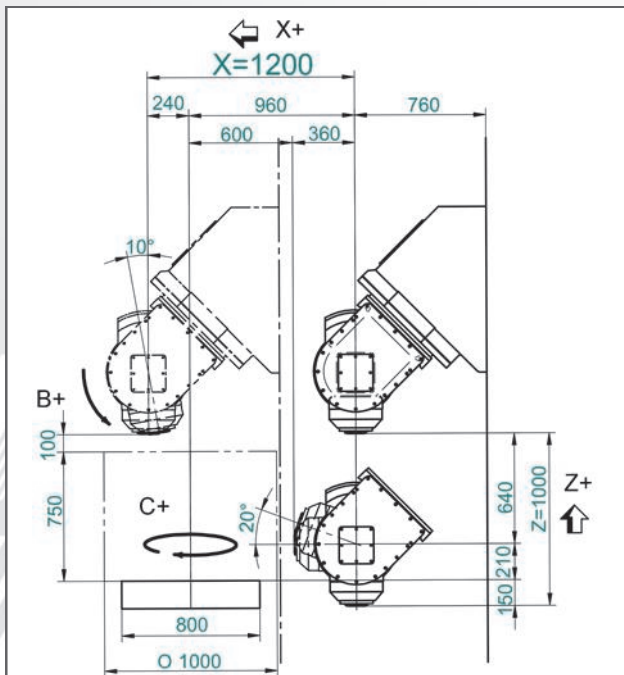
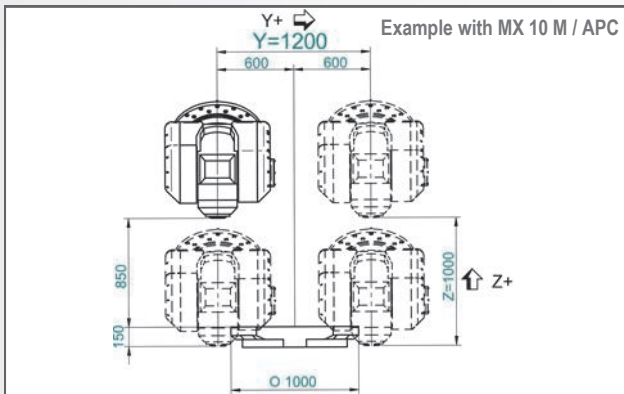
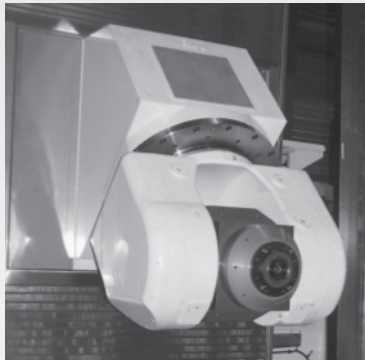
MX Series

Fork head / Alternative

MX 10/12 M

B axis clearance	-110° / +10°
Resolution	0,001°
Rotating speed	30 rpm
Torque : working / clamping	1.150 / 7.000 Nm

- B axis, parallel to the Y axis allows the evolution of the spindle around the horizontal axis
- The axis has a torque motor directly connected to the rotating parts ensuring a movement without backlash and a very accurate positioning

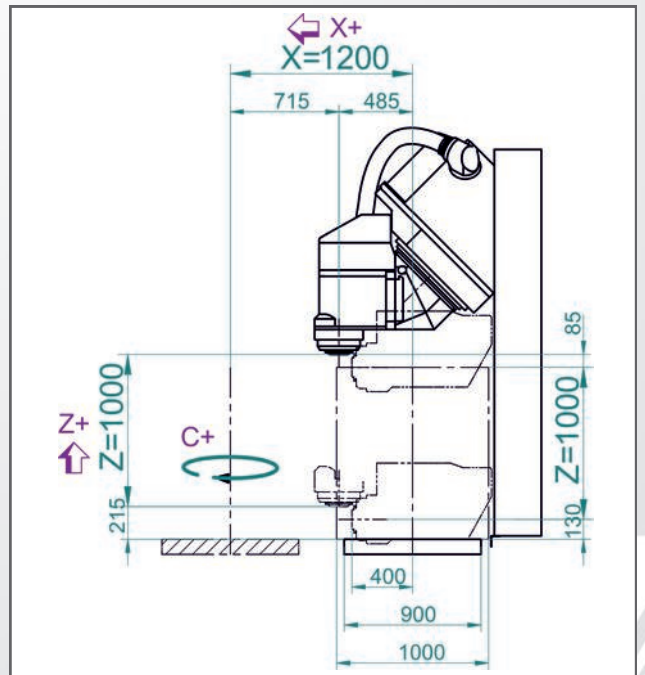
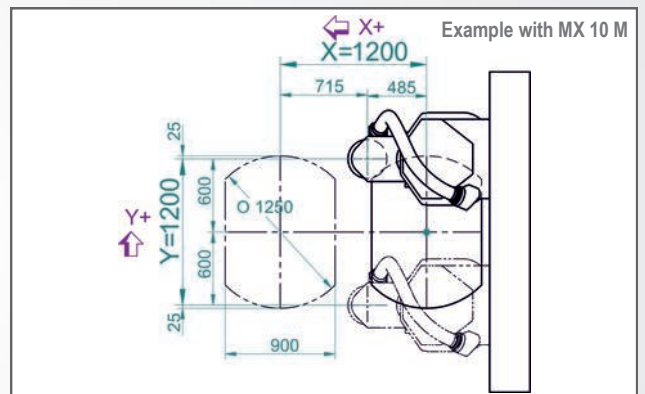


Universal head for Mechanical head / Alternative

MX 10/12 M/MT - MX 12L M

A axis clearance	-45° / +180°
Resolution	0,001°
Rotating speed	30 rpm
Torque : working / clamping	1.750 / 7.000 Nm

- Universal milling head with 1 rotating axis, on a 45° plane
- Very well suited for the hard material machining
- Allow an important roughing with a high chips removal rate, thanks to the high clamping torque
- Torque motor drive ensuring a movement without backlash and a very accurate positioning

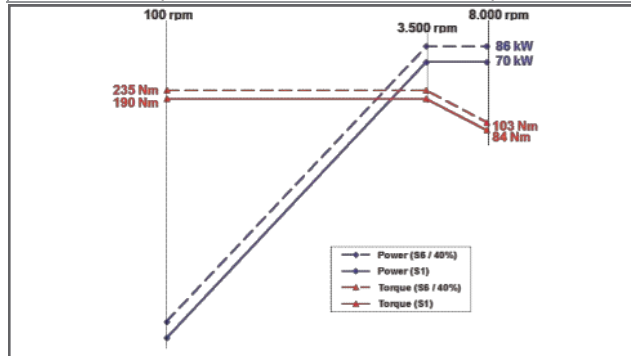


X travel limited to 1.075 mm with a workpiece Ø 1.250 mm



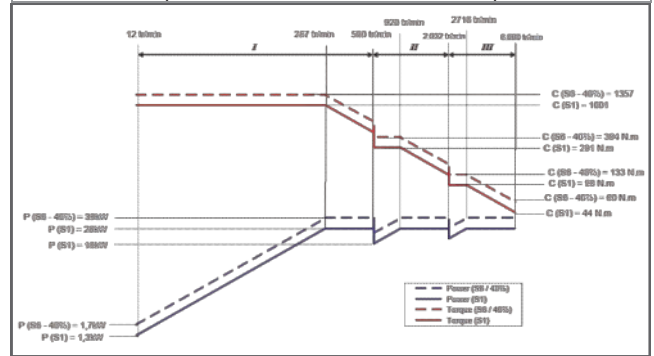
Spindle 8.000 rpm with fork head

Taper	HSK 100A
Rotating speed	8.000 rpm
Power - Torque (S6/S1)	70 / 86 kW - 235 / 190 Nm
Characteristic speed	3.500 rpm



Mechanical spindle 6.000 rpm with universal head

Taper	HSK 100A
Rotating speed	6.000 rpm
Power - Torque (S6/S1)	38 / 28 kW - 1.350 / 1.001 Nm
Characteristic speed	267 rpm



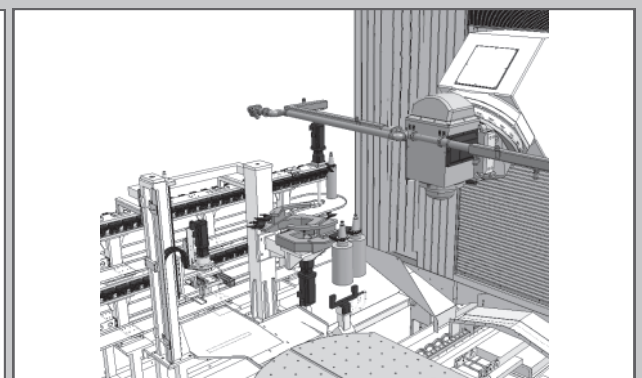
Tools changers

	MX 8/10/11/12 M	MX 8/10/12 MT
- Tool magazine is an horizontal chain type		
- Automatic load/unload of the tool is made in vertical position		
Pockets quantity / Taper	60 / HSK 63A	60 / HSK 100A
Max. length	400 mm	MX 8 : 500 mm MX 10 / MX 12 : 650 mm
Max. Ø contiguous / non contiguous	95 / 120 mm	125 / 250 mm
Max. weight : tool / in magazine	8 / 240 kg	25 / 300 kg
Tool changing time : tool / tool - chip / chip	6 - 12 sec	6 - 12 sec



Alternatives : Tools changers

	MX 8/10/11/12 M MX 12L M	MX 8/10/11/12 M/MT MX 12L M
- Magazine with 2 superposed tool chains		
- Automatic load/unload is made in vertical position		
Pockets quantity / Taper	120 / HSK 63A	120 / HSK 100A
Max. length	400 mm	MX 8 : 500 mm MX 10 / MX 12 : 650 mm
Max. Ø contiguous / non contiguous	95 / 120 mm	125 / 250 mm
Max. weight : tool / in magazine	8 / 480 kg	25 / 480 kg
Tool changing time : tool / tool - chip / chip	6 - 12 sec	6 - 12 sec





MX Series

The table

M version

MT version

		Standard	Palletized (alternative)	Standard	Palletized (alternative)
MX 8	Table dimension	mm Ø 1.000 x 800	Ø 800 x 630	Ø 800	Ø 800
	Max. machining volume (ØxH)	mm Ø 1.000 x 1.035 (*)	Ø 800 x 900 (*)	Ø 800 x 1.035 (*)	Ø 800 x 900 mm(*)
	Admissible load	kg 2.000	1.200	2.000	1.200 kg
	Rotating speed	rpm 50	50	500	500
	Torque : working / clamping	Nm 1.210 / 10.000	1.210 / 10.000	1.580 / 10.000	1.580 / 10.000
	Clamping system	mm 7 slots 22H7	7 slots 22H7	8 radial slots	8 radial slots
	T slots	H12 - 100 mm	H12 - 100 mm	22H7 / H12 - 45°	22H7 / H12 - 45°
	Central boring	Ø 63H7	Ø 63H7	Ø 63H7	Ø 63H7
MX 10	Table dimension	mm Ø 1.250 x 900	Ø 1.000 x 800	Ø 1.000	Ø 1.000
	Max. machining volume (ØxH)	mm Ø 1.250 x 1.130 (*)	Ø 1.200 x 1.000 (*)	Ø 1.250 x 1.130 (*)	Ø 1.200 x 1.000 (*)
	Admissible load	kg 2.500	1.500	2.000	1.500
	Rotating speed	rpm 65	65	500	500
	Torque : working / clamping	Nm 2.700 / 10.000	2.700 / 10.000	3.270 / 10.000	3.270 / 10.000
	Clamping system	mm 7 slots 22H7	7 slots 22H7	8 radial slots	8 radial slots
	T slots	H12 - 100 mm	H12 - 100 mm	22H7 / H12 - 45°	22H7 / H12 - 45°
	Central boring	Ø 63H7	Ø 63H7	Ø 63H7	Ø 63H7
MX 11	Table dimension	mm Ø 1.250 x 1.100	Ø 1.000 x 800		
	Max. machining volume (ØxH)	mm Ø 1.250 x 1.120 (*)	Ø 1.250 x 1.000 (*)		
	Admissible load	kg 2.500	2.000		
	Rotating speed	rpm 30	30		
	Torque : working / clamping	Nm 10.000	10.000		
	Clamping system	mm 7 slots 22H7	7 slots 22H7		
	T slots	H12 - 100 mm	H12 - 100 mm		
Central boring	Ø 63H7	Ø 63H7			
MX 12	Table dimension	mm Ø 1.600 x 1.250	Ø 1.400	Ø 1.400	Ø 1.400
	Max. machining volume (ØxH)	mm Ø 1.600 x 1.130 (*)	Ø 1.600 x 1.000 (*)	1.600 x 1.130 (*)	1.600 x 1.000 (*)
	Admissible load	kg 4.000	2.500	4.000	2.500
	Rotating speed	rpm 50	50	250	250
	Torque : working / clamping	Nm 4.590 / 12.000	4.590 / 12.000	5.670 / 12.000	5.670 / 12.000
	Clamping system	mm 10 slots 22H7	10 slots 22H7	8 radial slots	8 radial slots
	T slots	H12 - 125 mm	H12 - 125 mm	22H7 / H12 - 45°	22H7 / H12 - 45°
	Central boring	Ø 100H7	100H7	Ø 100H7	100H7

(*) with restriction on X travel

L version

MX 12L M

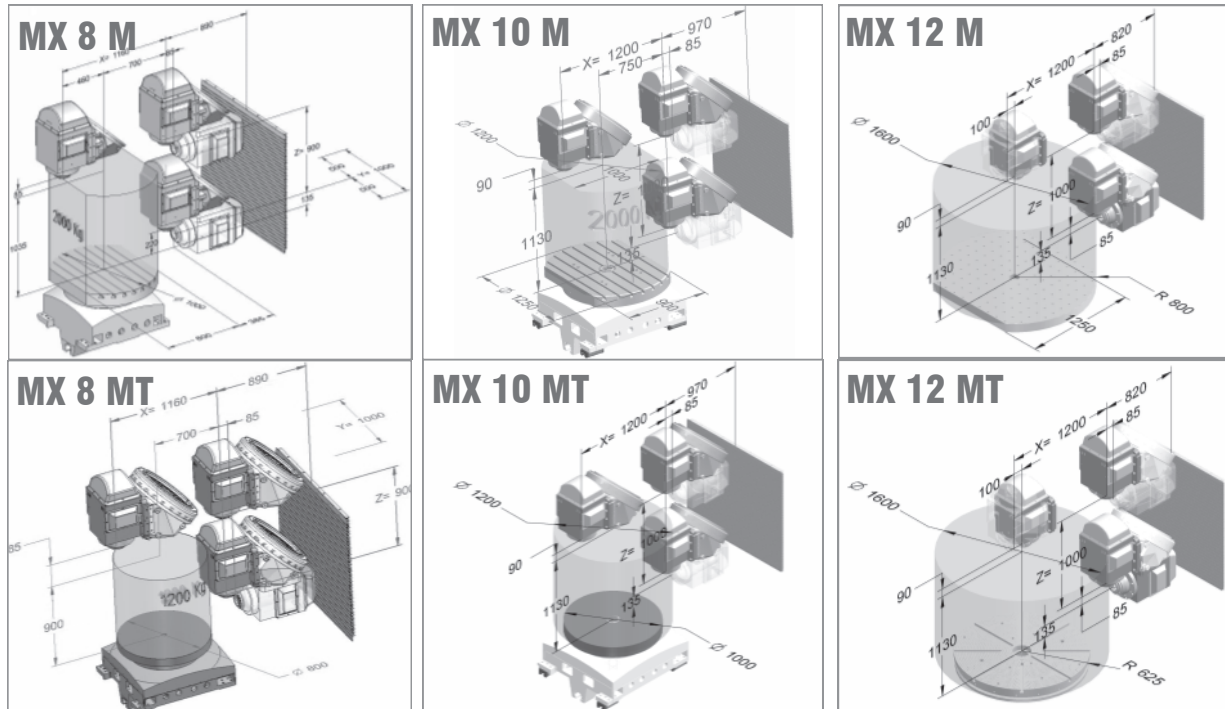


MX 12

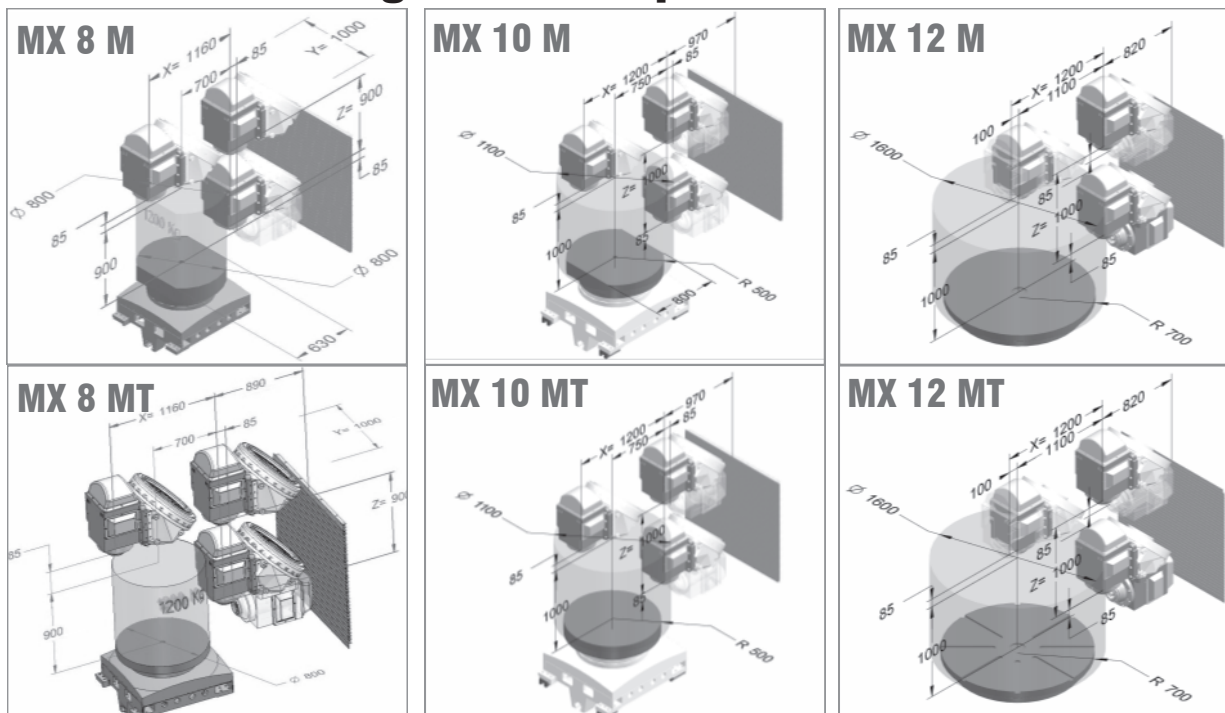
Travels	X 2.000 mm Y 1.600 mm Z 1.000 mm
Table dimension	Ø 1.600 x 1.250 mm
Max. machining volume (ØxH)	1.600 x 1.130 mm (*)
Admissible load	4.000 kg
Rotating speed	50 rpm
Torque : working / clamping	4.590 / 12.000 Nm
Clamping system	10 slots
T slots	22H7 / H12 - 125 mm
Central boring	Ø 100H7
Overall measurements	6.990 x 9.100 x 4.800 mm
Weight of the machine	45.000 kg



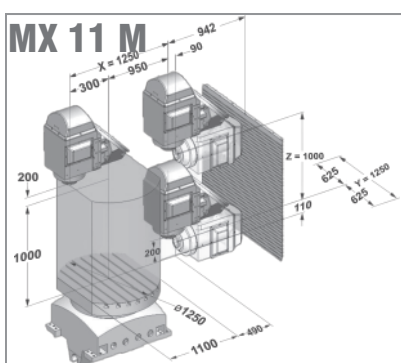
Interference diagrams with standard table



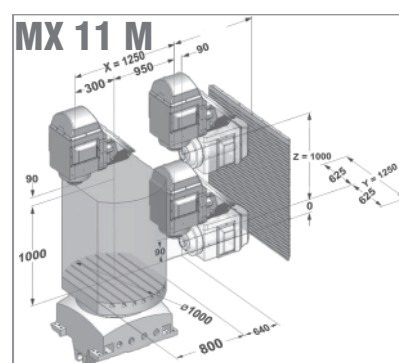
Interference diagrams with palletized table



MX 11
Standard table



MX 11
Palettised table



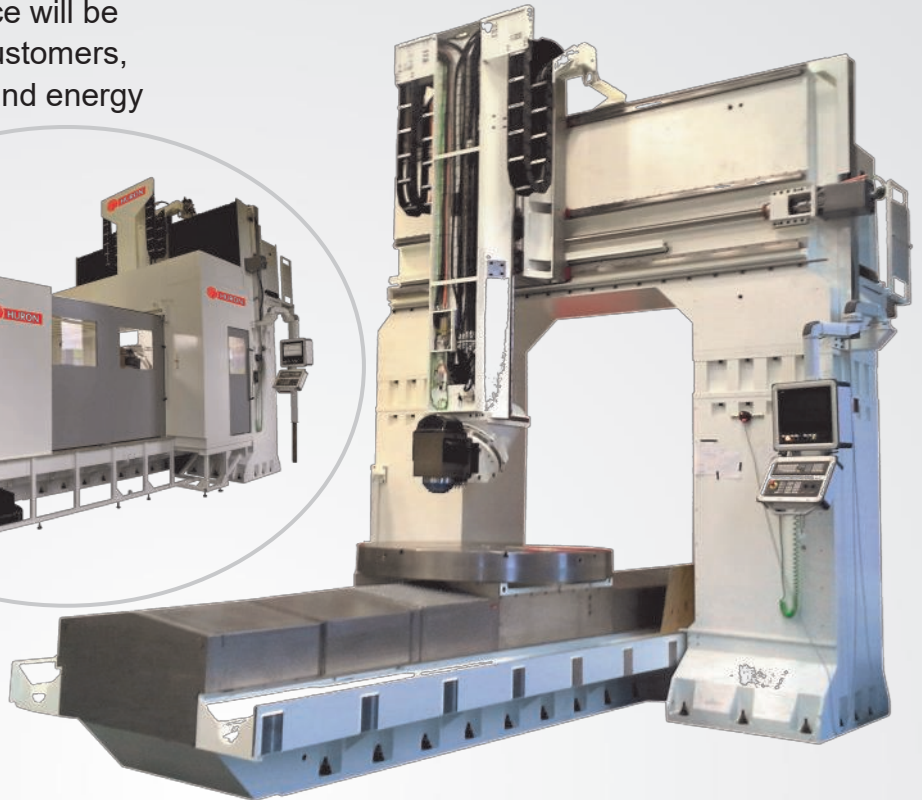


MX Series

Extension of the range - MX 16, MX 20 M

In order to allow our customers to machine extremely large parts, the MX range has been extended to include extra-large models, with MX 16 and MX 20.

The larger workpiece clearance will be appreciated by some of our customers, particularly in the aeronautic and energy industries.



Heads and spindles

Offer identical to other machines in the range

Tool changers

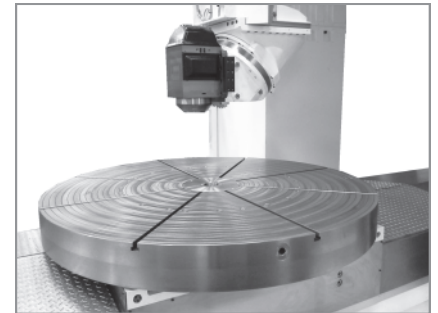
Automatic loading/unloading of tools is made in vertical position

	Standard	Alternative
Qty of housings	60	120
Type	Chain	Chain
Taper	HSK 100-A	HSK 100-A
Tool dimension		
Max. Ø tool	120 mm	125 mm
Max. length	400 mm	650 mm
Max. weight of tool	10 kg	25 kg
Max. weight in magazine	300 kg	480 kg
Tool changing time		
tool/tool - chip/chip	6 - 20 sec	6 - 12 sec

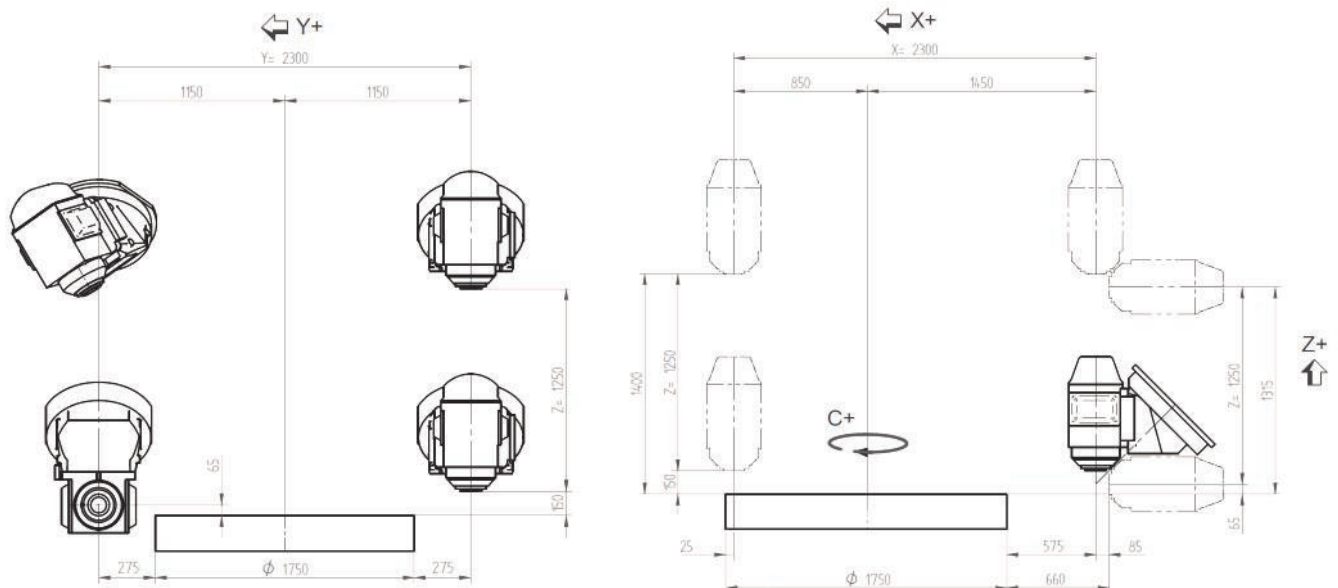


The table - M version

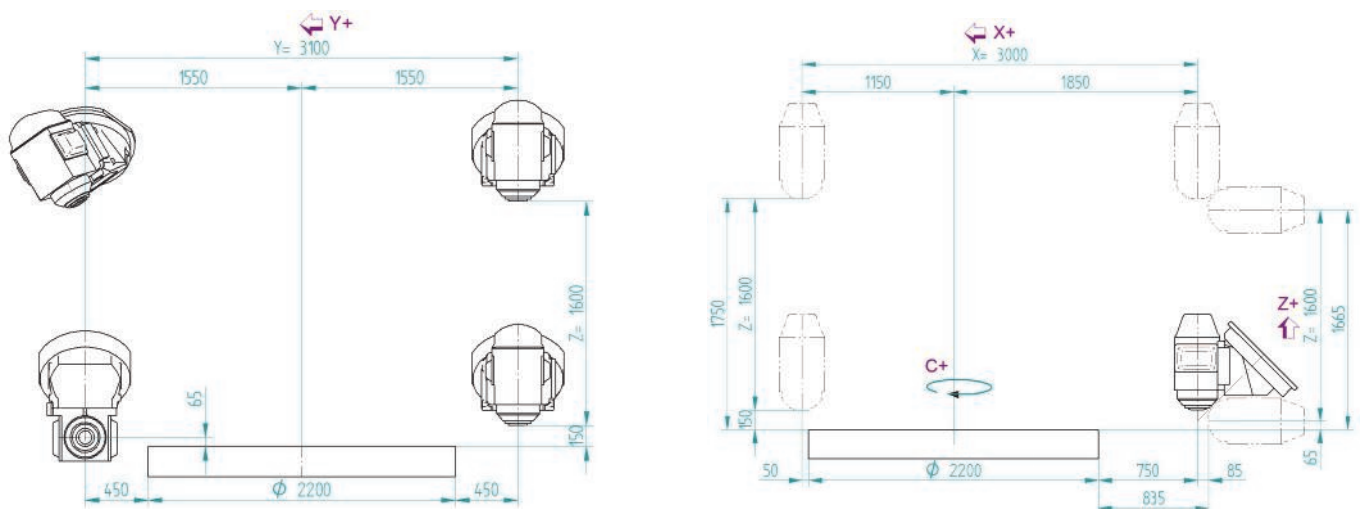
		MX 16 M	MX 20 M
Table dimension	mm	Ø 1.750	Ø 2.200
Max. machining volume (ØxH)	mm	Ø 2.000 x 1.300	Ø 2.500 x 1.650
Admissible load	kg	10.000	12.000
Distance between column	mm	2.000	2.500
Rotating speed (S6)	rpm	9	7
Torque : Working (S6) / Clamping	Nm	12.000 / 35.000	18.000 / 38.000
Clamping type	mm	8 T slots 22H12 - 100 mm	8 T slots 22H12 - 100 mm
Central boring		Ø 100H7	Ø 100H7



MX 16 M - Head/table positioning



MX 20 M - Head/table positioning





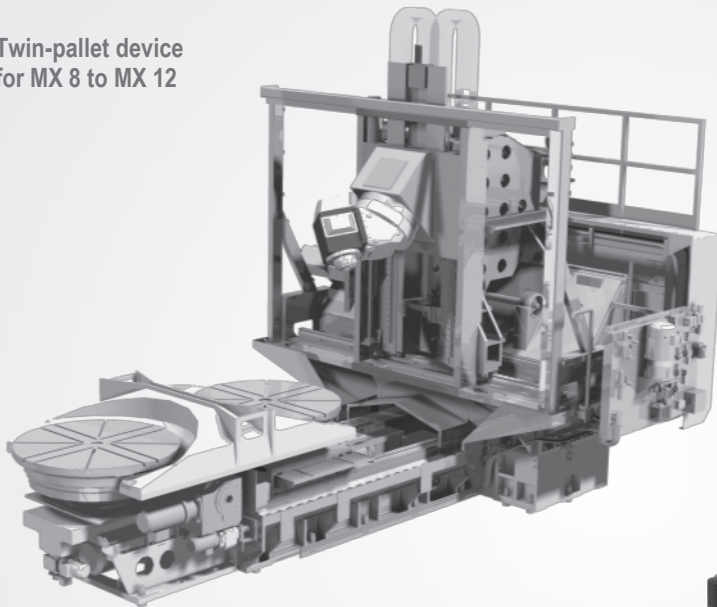
MX Series

Automation

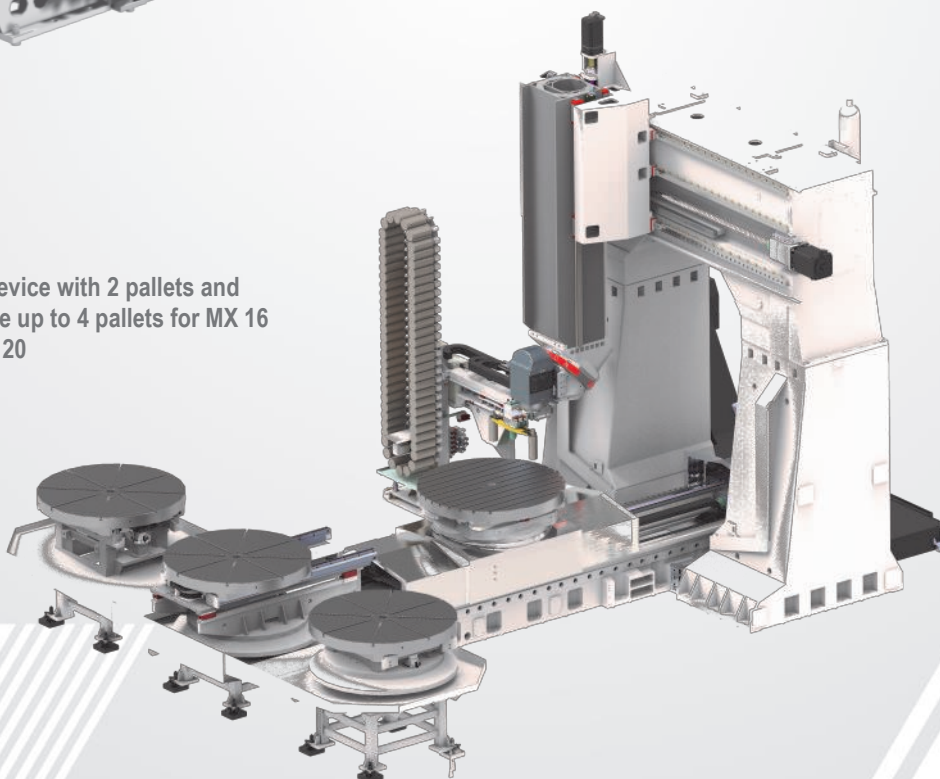
For higher productivity, increase production speeds and optimise machining cycles, we offer a variety of palletizing configurations. The processes are independent, safe and reliable.

- Palletizer attached to the front of the machine
- Optimal operator access to the machine
- Constant visibility over the working area
- Safeguard for easy, ergonomic pallet loading/unloading from above and from the front of the machine

Twin-pallet device
for MX 8 to MX 12



Pallet device with 2 pallets and
available up to 4 pallets for MX 16
and MX 20





Cycles CN HURON

PRECILIFE or how to manage tool life automatically ? (*)

This cycle provides automatic tool checking during machining or at tool change. If critical wear or a broken tool is detected, the system automatically triggers the replacement of the tool at the most appropriate time. It therefore safeguards the integrity of the workpiece and the cutting tools and optimizes tool use. The profitability of the machine is increased by reducing downtime and tooling costs.

MAIN FEATURES

- Automated tool measurement, inspection and replacement done in the machining process
- No change to the NC program
- Implemented by HURON
- Configurable wear and breakage detection tolerance for each tool
- Automatic replacement of tools

(*) Only with 3 axes machines, spindle in vertical position

PRECIPOWER or how to optimise roughing operations ?

It takes care of optimizing the roughing operation by automatically modulating and adapting the feedrate, in real time, to the value that result in peak material removal.

MAIN FEATURES

- Full use of available spindle power
- Automatic feedrate modulation
- Maximize material removal rate
- Spindle and rotating axes overload protection during roughing

PRECIFIVE or how to get an accurate and automatic calibration of the machine kinematic ?

Automate the calibration of the kinematics by carrying out the measurement of the position and the orientation of the rotation axes.

The calibration can be executed directly in an NC program to ensure optimum accuracy during critical machining operations.

MAIN FEATURES

- Quick, accurate, repeatable measuring system
- Optimized machining accuracy
- Compensation of the thermal expansion of the machine
- Reduces rejected parts
- Rapid evaluation following a machine collision
- Control report

PRECIPROTECT or how to save time while protecting the machine and the workpieces ?

This cycle allows real-time monitoring of toolpaths and machine movements in order to anticipate any form of collision. The machine and the part are thus preserved.

MAIN FEATURES

- Conserve machine accuracy
- Save time : no simulation required, control is done in real-time
- Save money : No more repair or machine stop due to a collision
- Increase profitability : preserve integrity of the machine and workpiece ; no more delivery delays to customers
- Reliability : detection of an imminent collision triggers an immediate and automatic stop of the movements of the machine
- Peace of mind : let the machine work unsupervised



MX Series

Technical characteristics

Linear axes X / Y / Z		MX 8 M	MX 8 MT	MX 10 M	MX 10 MT	MX 11 M	MX 12 M	MX 12 MT
Travels	mm	1.160x1.000x900		1.200x1.200x1.000		1.250x1.250x1.000		1.200x1.600x1.000
Rapid feedrates	m/min	42		42		40		42
Acceleration per axis	m/s ²	4		4		4		4
Rotating A axis - Universal head		MX 8		MX 10		MX 11		MX 12
Rotating speed	rpm	100		100		30		100
Torque : Work / Clamping	Nm	2.120 / 2.500		2.120 / 2.500		7.000 / --		2.120 / 2.500
Rotating C axis - Table		MX 8 M	MX 8 MT	MX 10 M	MX 10 MT	MX 11 M	MX 12 M	MX 12 MT
Rotating speed	rpm	50	500	65	500	30	50	250
Table dimension	mm	1.000x800	Ø 800	1.250x900	Ø 1.000	1.250x1.100	1.600x1.250	Ø 1.400
Admissible load	kg	2.000	2.000	2.500	2.500	2.500	4.000	4.000
Accuracies (VDI DGQ 3441)								
Uncertainty : P				Axes linéaires : 7 µ - Axes rotatifs : 10 sec				
Repeatability : Ps medium				Axes linéaires : 4 µ - Axes rotatifs : 5 sec				
Tools magazines		MX 8/10/11/12 M				MX 8/10/12 MT		
Qty of housings		60				60		
Taper		HSK 63A				HSK 100A		
Tool dimension :								
Length	mm	400				MX 8 : 500 - MX 10/12 : 650		
Ø	mm	95 / 120				125 / 250		
Weight	kg	8 / 240				25 / 300		
Coolant		MX 8 M/MT				MX 10/11/12 M/MT		
Flow - Pressure	l/min - bar	25 - 5				60 - 5		
Tank	litres	750				1.500		
Overall measurements (Doors opened + conveyor)		MX standard without pallet device				MX standard with pallet device		
		MX 8 M/MT	MX 10 M/MT	MX 12 M/MT	MX 8 M/MT	MX 10 M/MT	MX 11	MX 12 M/MT
Width	mm	6.250	6.360	6.460	6.250	7.220	5.900	6.140
Depth	mm	6.150	7.970	8.360	7.450	10.300	8.500	10.950
Height	mm	3.930	4.200	4.800	3.930	4.385	3.600	4.880
Weight of the machine	kg	22.000	35.000	37.000	25.000	40.000	28.000	43.000

Spindles

Standard spindle		MX 8/10/11/12 M			MX 8/10/12 MT MX 16/20	
Rotating speed	rpm	14.000			10.000	
Taper		HSK 63A			HSK 100A	
Power	kW - Nm	29			43	
Torque		277			415	
Characteristic speed	rpm	1.000			1.000	
Alternatives		MX 10/12 M/MT MX 11/16/20 M		MX 10/12 M MX 11/16/20 M		MX 8/10/12 M MX 12L M
Rotating speed	rpm	8.000		10.000		18.000
Taper		HSK 100A		HSK 100A		HSK 100A
Power (S6/S1)	kW - Nm	48		43		30
Torque (S6/S1)		895		415		240
Characteristic speed	rpm	512		1.000		1.200



Technical characteristics

Linear axes X / Y / Z		MX 16 M	MX 20 M
Travels	mm	2.300 x 2.300 x 1.250	3.000 x 3.100 x 1.600
Rapid feedrates	m/min	40	20
Acceleration per axis	m/s ²	X / Y / Z = 3	X = 1,8 - Y / Z = 2
Rotating A axis - Universal head		MX 16 M	MX 20 M
Rotating speed	rpm	100	100
Torque : Work / Clamping	Nm	1.750 / 7.000	1.750 / 7.000
Rotating C axis - Table		MX 16 M	MX 20 M
Rotating speed	rpm	9	7
Table dimension	mm	Ø 1.750	Ø 2.200
Admissible load	kg	10.000	12.000
Accuracies (VDI DGQ 3441)			
Uncertainty : P		Linear axes : 7 µ - Rotating axes : 10 sec	
Repeatability : Ps medium		Linear axes : 4 µ - Rotating axes : 5 sec	
Tools magazines		MX 16/20 M	
Qty of housings		60	
Taper		HSK 100A	
Tool dimension :			
Length - Ø - Weight	mm - mm - kg	400 - 120 - 10	
Coolant		MX 16 M	MX 20 M
Flow - Pressure	l/min - bar	30 - 5	30 - 5
Tank	litres	1.000	1.000
Overall measurements (Doors opened + conveyor)		MX 16 M	MX 20 M
Width	mm	8.420	8.900
Depth	mm	10.000	9.480
Height	mm	6.650	6.620
Weight of the machine	kg	90.000	90.000

Alternatives

Travels		MX 12 L M						
Travels	mm	2.000 x 1.600 x 1.000						
Rotating axis - Head		Forked head			Head for mechanical spindle			
Swivelling angle		-110° / +10°			-0° / 180°			
Rotating C axis - Palletized table		MX 8 M	MX 8 MT	MX 10 M	MX 10 MT	MX 11 M	MX 12 M	MX 12 MT
Rotating speed	rpm	50	500	65	500	30	50	250
Dimension	mm	800 x 630	Ø 800	1.000 x 800	Ø 1.000	1.000 x 800	Ø 1.400	Ø 1.400
Admissible load	kg	1.200	1.200	1.500	1.500	2.000	2.500	2.500
Tools magazines		MX 8/10/11/12 M - MX 12L M			MX 8/10/12 M /MT- MX 11 M - MX 12L M			
Qty of housings		120			120			
Taper		HSK 63A			HSK 100A			
Tool dimension :								
Length	mm	400			MX 8 : 500 - MX 10/12 : 650			
Ø	mm	95 / 120			125 / 250			
Weight	kg	8 / 480			25 / 480			

Optional equipments

Various spindles - Various tools magazines - Pallet device - High pressure coolant 70 bar - Microspraying coolant - Air blast - Workpiece probe - Tool probe - Oil extraction device - Oil skimmer - Sight glass - Air conditioning of electrical cabinet - Pressurization of measuring scales



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KXG Series

**5 axes machining centres
Mobile traverse, high performance**

Performance
Technology
Power
Accuracy





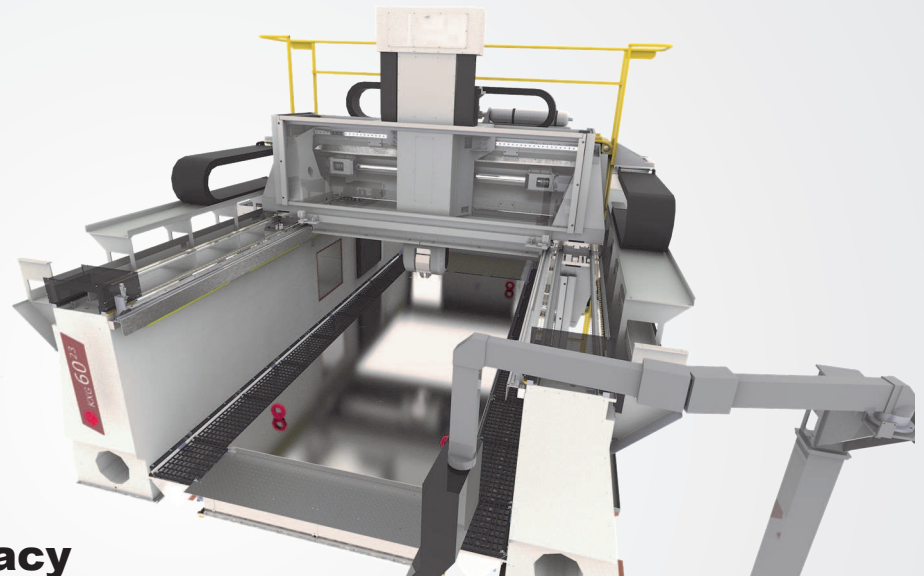
KXG Series

Powerful, Rapid, Accurate 5 axes Gantry machining centre High performance

The 5-axis Gantry milling centre is a very large machine that allows machining operations on 5-axis and 5-sided to be carried out in one setup part clamping, from roughing to finishing.

It is particularly suitable for large complex parts intended for machining molds, dies, stamping tools, models and precision parts in the automotive, aeronautical and industrial mechanics industries.

- 5-axis machining for workpieces up to 52.000 kg
- Very high accuracy in contouring and profiles
- Complete automation of the machine



Structure : Rigidity and Accuracy

- Gantry structure with mobile traverse
- Fixed components and concrete walls specifically adapted to the dynamic and vibratory requirements of the machine, reinforcing rigidity and ensuring an excellent damping coefficient of the vibrations generated during machining
- Moving elements, slide, carriage and crossbar made of mechanically welded steel with specially designed walls to guarantee high dynamics, reducing moving masses, maintaining high rigidity
- Structure integrating glazed surfaces allowing easy control of machining
- Machine secured to the ground by several fixing points, distributing the load equally in order to guarantee extreme rigidity and high geometric stability
- Very high modularity offering a wide range of configurations and allowing easy adaptation to the customer's technical requirements
- Air-conditioned electrical cabinet, protected to IP54

Linear axes

- Axis X can be driven by a rack and pinion system (KXG-P) or by linear motors (KXG-L). In both cases, the synchronization of the systems on the top of each wall ensures precise and dynamic control
- Y and Z axes controlled by asynchronous motors coupled at the end of high precision ball screws
- Guide rails with slider low friction recirculating roller bearings
- Automatic lubrication of ball screws and guide rails
- Absolute measurement by linear scales and in accordance with VDI/DGQ 3441



Head / Rotating axes

- Direct drive by torque motors for perfect synchronization with linear movements
- Direct mounting angular encoders offering high positioning accuracy on both axes
- Continuous high speed, high accelerations, no backlash and no wear
- Rigidity: high locking torque thanks to hydraulic brakes, allowing the spindle power to be fully exploited during roughing operations

Spindle

- Powerful and high-torque spindle for high chip removal
- Vibration monitoring during machining allowing a secured work for the machine elements, for the tool as well as for the part

Numerical controller

- Data processing performance
- Extremely ergonomic design
- Large memory
- Interactive programming
- Graphical simulation before machining for optimal safety

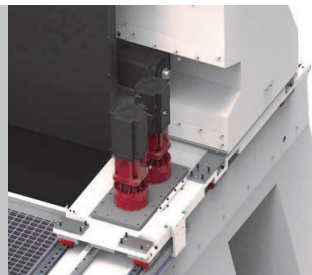
Environment - Ergonomics

- Chips evacuation channel by means of a screw conveyor on both side of the table
- Tools magazine outside the working area
- Complete machine safeguard for protection of the machine, the operator and his environment
- High accessibility to the table and the workpiece from the top thanks to a retractable bellows
- Operator control panel on arm
- Energy efficiency for the production of large parts

Maintenance

- Very good accessibility to the main regular maintenance points
- Clustering of fluid, pneumatic and electrical components in a common cabinet

KXG-P X-axis drive with rack and pinion gear

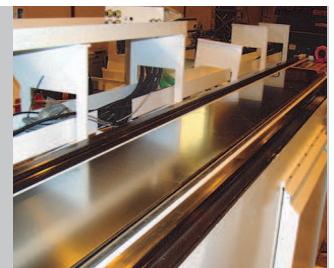


Rack and pinion drive system consisting of 2 planetary servo gearboxes connected in parallel, with electrical preload, located on the mobile crossbar. The rack is fixed on both walls.

The rack and pinion systems have a high level of geometric accuracy ensuring high accuracy. In addition, an electric servo-based preload using 1 servo motor to control each gearbox allows an antagonistic torque to be applied to the 2 output gears, eliminating backlash.

The accelerations and displacements speeds obtained are identical to those of a linear motor drive.

KXG-L X-axis drive with linear motor



Drive system by linear motor composed of a three-phase primary (fixed on the machine crossbar), and several modules constituting the secondary with permanent magnets, fixed on the 2 walls.

The primary is equipped with a water cooling system that ensures the dissipation of the heat generated and therefore the accuracy of the positioning.

Eliminating the conversion of rotary motion to linear motion reduces moving parts, increasing accuracy, acceleration and speed, while eliminating play.

Reduced periodic maintenance due to the absence of mechanical components, which also reduces noise emissions during displacements, and increases the average life of the drive.



KXG Series

Standard head and spindle

- Fork head with 2 orthogonal moving axes
- B axis : evolves in the Z and Y-Z plane and swings around a horizontal axis
- C axis : moves in the X-Y plane and rotates around the vertical axis Z
- Angular encoder in the axis for high positioning and repeatability accuracy
- Torque motors for backlash-free and wear-free movements
- High clamping torque for heavy roughing
- Possibility to reach negative angles
- Allow the machining with 5 continuous axes

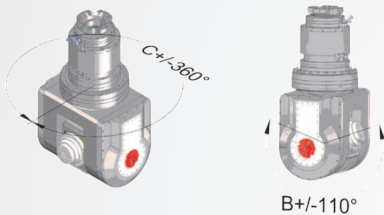


Vibration monitoring

Vibration monitoring during machining allowing a secured work for the machine elements, for the tool as well as for the part. The system consists of a vibration sensor and an electronic signal processing box.

Standard head

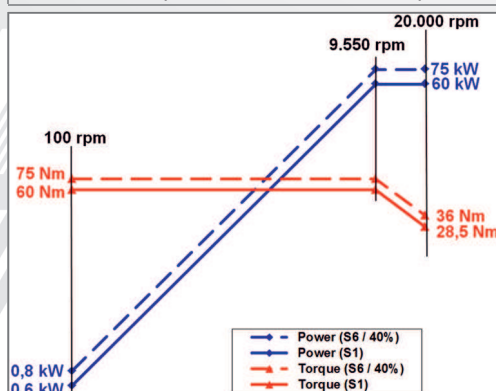
Axes displacement	B : +/- 110° C : +/- 360°
Rotating speed (B, C)	100 rpm
Clamping torque (B, C)	4.000 Nm
Working torque :	
- B axis	994 Nm
- C axis	878 Nm



Standard spindle

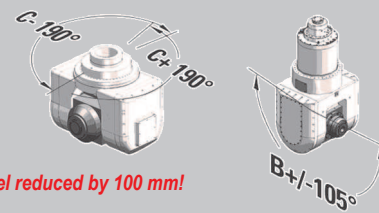
- Coolant by nozzles
- Air-barrier for spindle sealing
- Angular position control sensor
- Cooling circuit
- Mechanical tool clamping
- Release of tool by hydraulic control
- Lubrication of air/oil bearings
- Taper cleaning by compressed air

Taper	HSK 63-A
Rotating speed	20.000 rpm
Power (S6/S1)	75 / 60 kW
Torque (S6/S1)	75 / 60 Nm
Characteristic speed	9.550 rpm



Alternative for head

Axes displacement	B : +/- 105° C : +/- 190°
Rotating speed (B, C)	30 rpm
Clamping torque (B, C)	7.000 Nm
Working torque :	
- B axis	1.150 / 750 Nm
- C axis	1.100 / 500 Nm

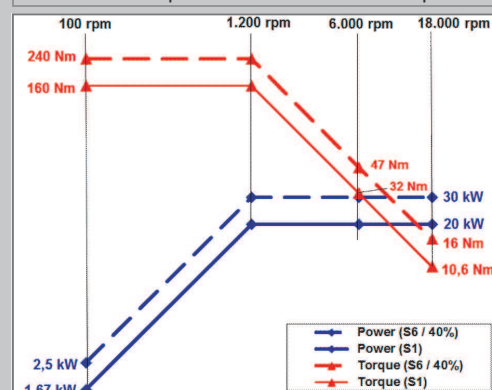


Y travel reduced by 100 mm!

With spindle

- Coolant by nozzles
- Angular position control sensor
- Cooling circuit
- Mechanical tool clamping
- Release of tool by hydraulic control
- Lubrication of air/oil bearings
- Taper cleaning by compressed air

Taper	HSK 63-A
Rotating speed	18.000 rpm
Power (S6/S1)	30 / 20 kW
Torque (S6/S1)	240 / 160 Nm
Characteristic speed	1.200 rpm

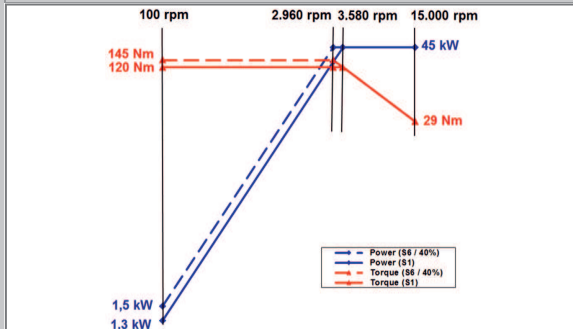




Spindle alternatives with standard head

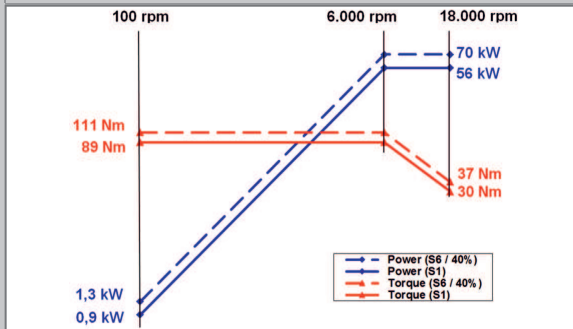
Electrospindle 15.000 rpm

Taper	HSK 100-A
Rotating speed	15.000 rpm
Power (S6/S1)	45 / 45 kW
Torque (S6/S1)	145 / 120 Nm
Characteristic speed	3.580 rpm



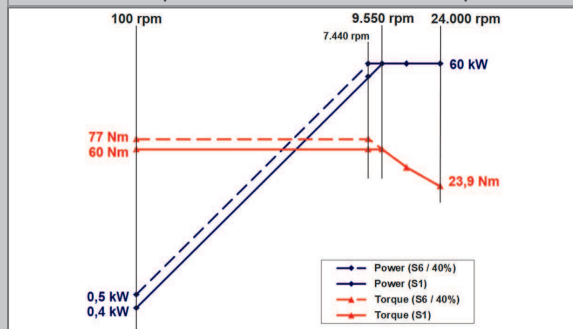
Electrospindle 18.000 rpm

Taper	HSK 63-A
Rotating speed	18.000 rpm
Power (S6/S1)	70 / 56 kW
Torque (S6/S1)	111 / 89 Nm
Characteristic speed	6.000 rpm



Electrospindle 24.000 rpm

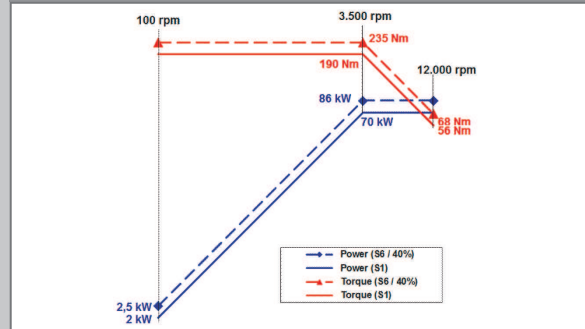
Taper	HSK 63-A
Rotating speed	24.000 rpm
Power (S6/S1)	60 / 60 kW
Torque (S6/S1)	77 / 60 Nm
Characteristic speed	9.550 rpm



Spindle alternatives with alternative head

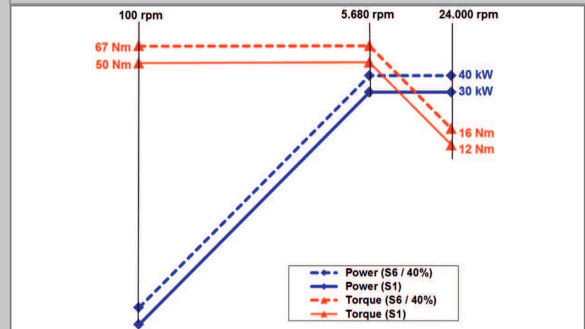
Electrospindle 12.000 rpm

Taper	HSK 100-A
Rotating speed	12.000 rpm
Power (S6/S1)	86 / 70 kW
Torque (S6/S1)	235 / 190 Nm
Characteristic speed	3.500 rpm



Electrospindle 24.000 rpm

Taper	HSK 63-A
Rotating speed	24.000 rpm
Power (S6/S1)	40 / 30 kW
Torque (S6/S1)	67 / 50 Nm
Characteristic speed	5.680 rpm





KXG Series

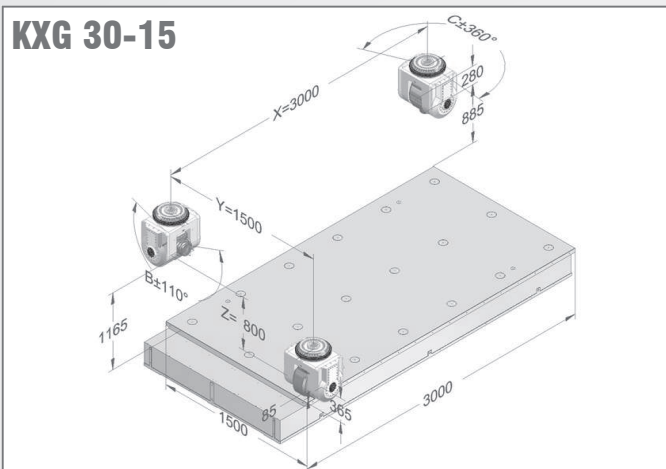
The table

Table allowing large parts machining.

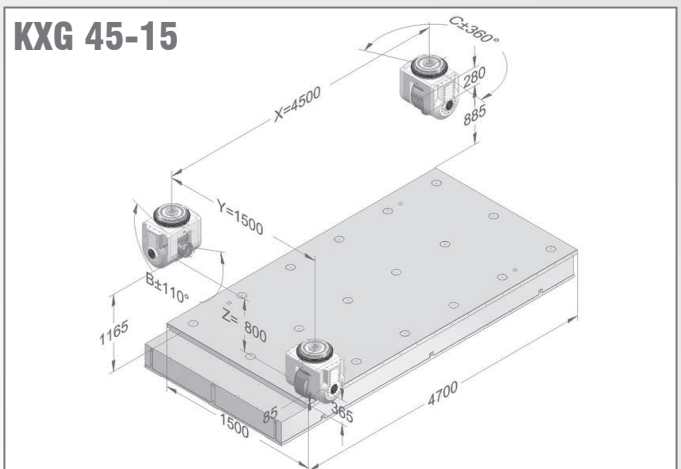
		KXG 30-15	KXG 45-15	KXG 45-25	KXG 60-25	KXG 90-25
Table dimension	mm	3.000 x 1.500	4.700 x 1.390	4.700 x 2.480	6.200 x 2.480	9.000 x 2.480
Admissible load	kg	13.000	18.000	21.000	25.000	52.000
Distance between portal	mm	2.600	2.600	3.500	3.500	3.500

Interferences diagrams

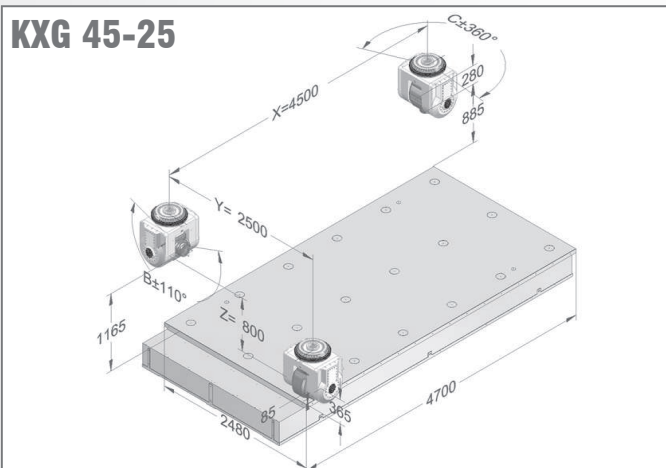
KXG 30-15



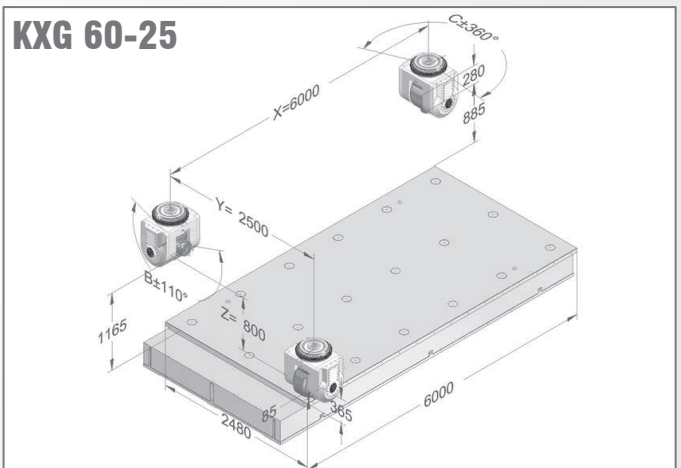
KXG 45-15



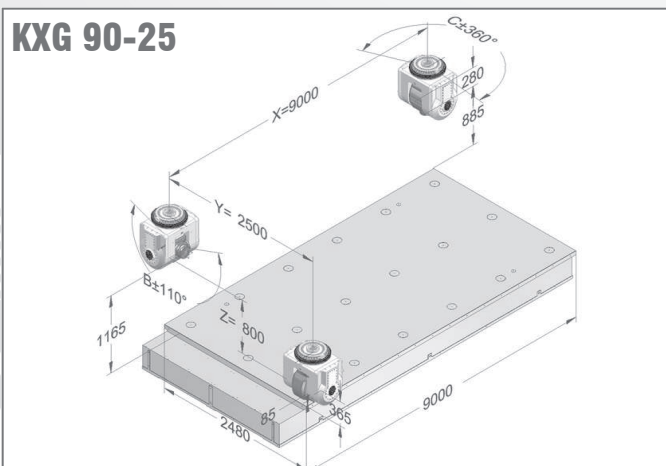
KXG 45-25



KXG 60-25



KXG 90-25





Standard tool changer

Chain with 2 wheels

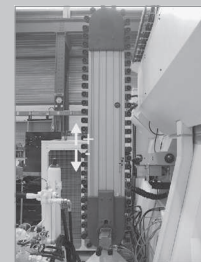
The automatic loading/unloading of tools is done vertically.

Number of housings	40
Taper	HSK 63-A
Tool size	
Ø - length - weight	90 mm - 300 mm - 8 kg
Max. weight in the magazine	160 kg
Tool changing time :	
tool to tool - chip to chip	5 - 15 sec



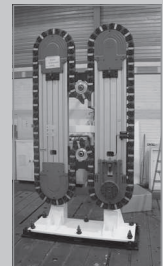
Alternatives with HSK 63-A taper

Number of housings	60	100
Tool size		
Ø - length - weight	90 mm - 300 mm - 5 kg	90 mm - 300 mm - 5 kg
Max. weight in the magazine	150 kg	250 kg
Tool changing time :		
tool to tool - chip to chip	5 - 15 sec	5 - 20 sec



Alternatives with HSK 100-A taper

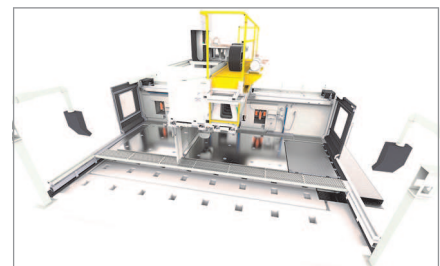
Number of housings	40	60
Tool size		
Ø - length - weight	120 mm - 300 mm - 10 kg	120 mm - 300 mm - 10 kg
Max. weight in the magazine	200 kg	300 kg
Tool changing time :		
tool to tool - chip to chip	6 - 16 sec	6 - 20 sec



TWIN version - Pendulum machining (optional)

Adaptability and flexibility of the workspace to easily meet the customer's production requirements

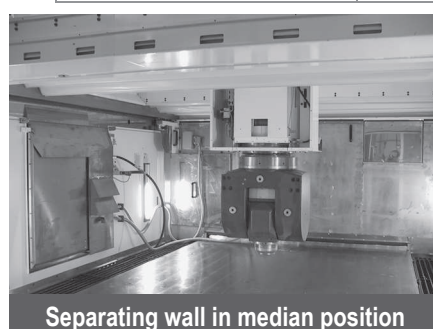
- 2 independent working and machining areas obtained by a separating wall fixed on 2 guide carriages allowing pendulum work
- 3 different positions: Front, Median, Rear
- « Parking » position of the separating wall to allow the use of all the travel X
- Passing the machining head from one area to another through the « guillotine door »
- Access to each area through sliding doors at the front and rear of the machine
- Each area is equipped with a tool changer, an operator panel and any other equipment necessary for machining the part.



	KXG 60-23 TWIN		KXG 90-23 TWIN	
Table dimension	6.200 x 2.480 mm		9.000 x 2.480 mm	
Position of the separating wall	Area A	Area B	Area A	Area B
- front	1.000 mm	4.050 mm	2.500 mm	5.550 mm
- median	1.500 mm	3.550 mm	3.000 mm	5050 mm
- rear	2.000 mm	3.050 mm	3.500 mm	4.550 mm
Admissible load on table	30.000 kg		52.000 kg	



Separating wall in rear position



Separating wall in median position



Guillotine door

Technical characteristics

Linear axes X / Y / Z		KXG 30-15	KXG 45-15	KXG 45-25	KXG 60-25	KXG 90-25
Travel X	mm	3.000	4.500	4.500	6.000	9.000
Travel Y	mm	1.500	1.500	2.500	2.500	2.500
Travel Z	mm	800 / 1.250	800 / 1.250	800 / 1.250	800 / 1.250	800 / 1.250
Rapid feedrates	m/min	X / Y = 60 - Z = 45				
Head / Rotating axes B, C						
B axis tilting	°	+/- 110°				
C axis rotation	°	+/- 360°				
Rotating speed	rpm	100				
Torque : clamping / working	Nm	B,C = 4.000 / B = 994 Nm / C = 878 Nm				
Table		KXG 30-15	KXG 45-15	KXG 45-25	KXG 60-25	KXG 90-25
Table size	mm	3.000 x 1.500	4.700 x 1.390	4.700 x 2.480	6.200 x 2.480	9.000 x 2.480
Admissible load	kg	13.000	18.000	21.000	25.000	52.000
Spindle						
Rotating speed / Taper	rpm	20.000 / HSK 63-A				
Power - Torque	kW - Nm	75 - 60				
Characteristic speed	rpm	9.550				
Accuracies (VDI DGQ 3441)		KXG 30-15	KXG 45-15	KXG 45-25	KXG 60-25	KXG 90-25
Linear axes (X/Y/Z)		X = 0,025	X = 0,025	X = 0,025	X = 0,035	X = 0,050
- Positioning (P)	mm	Y/Z = 0,010	Y/Z = 0,010	Y/Z = 0,010	Y/Z = 0,010	Y/Z = 0,010
- Repetability (Ps medium)	mm	X/Y/Z = 0,005	X/Y/Z = 0,005	X/Y/Z = 0,005	X = 0,006 Y/Z = 0,005	X = 0,006 Y/Z = 0,005
Rotating axes (B, C)						
- Positioning (P)	sec	10	10	10	10	10
- Repetability (Ps medium)	sec	5	5	5	5	5
Tools changer						
Number of housings		40				
Ø - Length - Weight		90 mm - 300 mm - 8 / 160 kg				
Tool changing time : tool to tool - chip to chip	sec	5 / 15				
Overall measurements (Doors opened + conveyor)		KXG 30-15	KXG 45-15	KXG 45-25	KXG 60-25	KXG 90-25
Width	mm	8.110	8.110	8.500	9.300	10.210
Depth	mm	9.060	11.000	12.000	11.700	14.500
Height	mm	5.735	5.800	5.800	5.800	5.800
Weight of the machine	kg	55.000	60.000	80.000	90.000	130.000

Optional equipments

Extension of Z travel to 1.250 mm - Various spindles and heads - Various tools changers - Pendulum machining - T-slots on table - Washing rail - Microspraying - Air blowing - Part probe - Tool probe - Oil mist extraction - Oil separator - Pressurization of measuring scales



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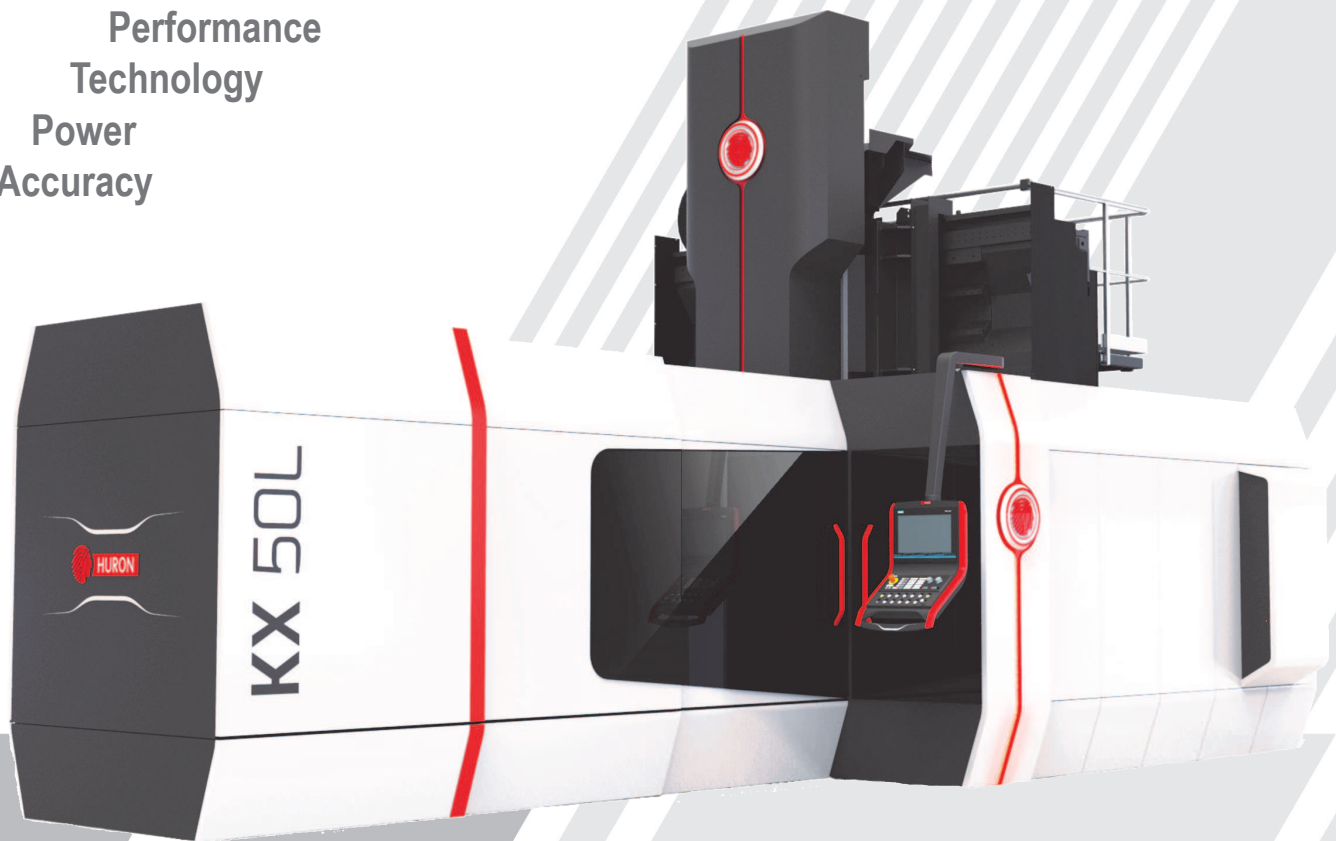
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KX *Large Series*

**Vertical milling centres
5 axes, high speed, fixed portal**

Performance
Technology
Power
Accuracy





KX Large Series

KX Large, a range of very high performance milling machines for 5-sided and 5-axes machining of complex parts.

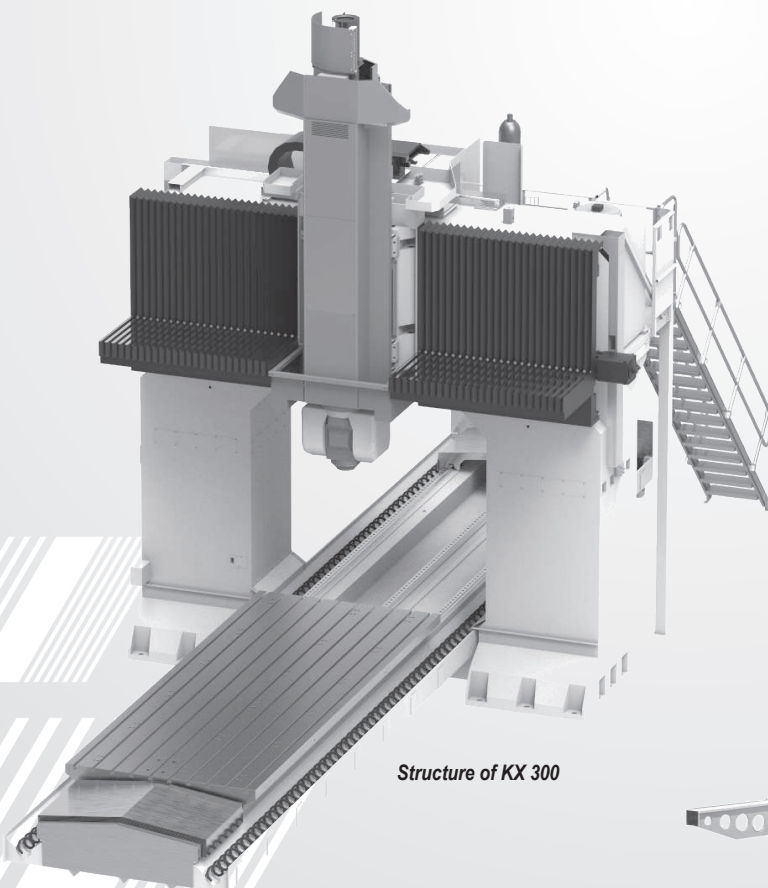
The choice of fixed portal architecture makes it possible to offer a machine with maximum rigidity for extremely accurate machining in various and hard materials.

The working area accept workpieces with weight up to 20 tons and machining volumes up to 4.080 x 2.180 x 1.550 mm on the 5 faces.

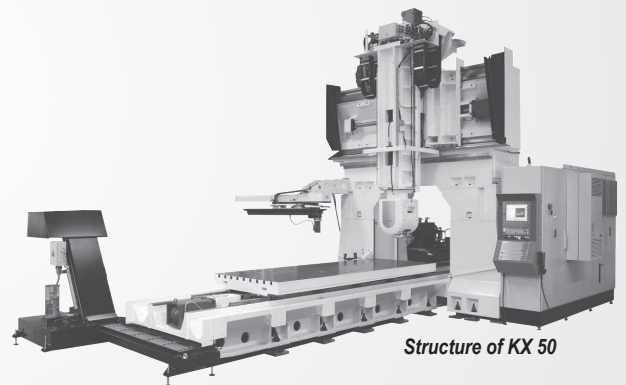
The modular design and the many alternatives and equipments offered make it easy to meet all customer requirements.

This excellence range offers models suitable for the tooling production sectors (molds, dies, models), machining of large parts for general and precision mechanics, or production of complex parts for the Aeronautics or Energy.

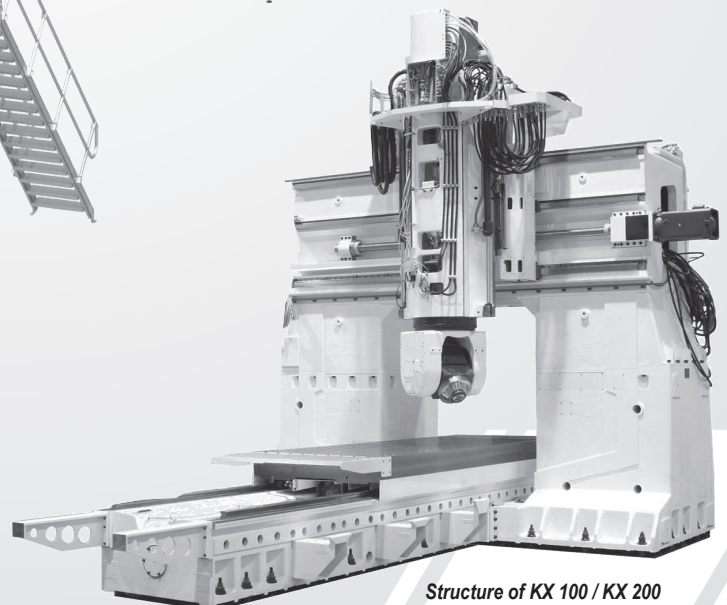
- High performances in roughing as well as in finishing
- High accuracy performance in positioning and in 5 axes contouring
- Wide distance between columns for the maximal exploitation of the part volume
- High performance spindle in roughing as well as in surfacing



Structure of KX 300



Structure of KX 50



Structure of KX 100 / KX 200



Rigid and robustness structure

- Fixed portal
- Mobile parts :
 - KX 50 : slide, saddle, bed/table and portal in melting
 - KX 100/200 : slide and saddle in welded steel ; bed/table in melting
 - KX 300 : slide and saddle in welded steel, bed/table and portal in concrete
- The architecture, structure and materials used are optimized to absorb cutting forces and those induced by the accelerations of moving bodies. This results in high stability and excellent dynamic behavior during machining, which results in optimized cutting and high fidelity in the execution of contours and shapes on all types of materials. The tool life is thus extended.
- Structure with fixed portal reducing torsional stresses, large dimensioning of static parts and the base of the machine. Dynamic parts optimized to limit moving masses.
- The temperature sensors (bed, bearings, spindle) allow to control and to correct the thermal deformations.
- Multiple foundation points to ensure high rigidity and vibration dumping for high geometric accuracy
- Protected electrical cabinet IP54

Environment - Ergonomics

- Chips evacuation channel with washing device and spiral conveyors
- Chips evacuation by coolant liquid
- Tool magazine outside of working area
- Full safeguard ensuring safety of the machine, the operator and its environment
- Wide accessibility to the table and the workpiece
- Articulated operator control panel for perfect visibility during machining
- The automatic tool changer is placed outside the working area and is protected from the machining area. The tools can be loaded simultaneously at the machining.
- Complete safeguard with great accessibility from the top and the side allowing an easy positioning of the part. Door with wide opening for hoist loading.

Linear axes

- X axis : moving table on fixed bed
- Y axis : moving saddle on fixed transverse
- Z axis : vertical slide equipped with an adjustable milling head with 2 orthogonal rotational axes and an electro-spindle. This design allows the cutting tool to work on high machining parameters, even with hard materials, and at high speed
- Z-axis balancing cylinders
- Linear guide rails with roller recirculating roller bearings allowing feedrates up to 40 m/min.
- Servo motors: the linear axes are driven by AC motors coupled directly to the end of the precision ball screw.
- Absolute measurement scales on all axes

Rotating axes

- The B & C axes are equipped with a direct mounting angular encoder and offer high positioning accuracy
- Direct drive by torque motors for perfect synchronization with linear movements
- This motorization offers the advantages of continuous high speed, high acceleration, high rigidity, absence of backlash and wear
- High clamping torque in roughing.
- Allows high-speed machining in 4 and 5 simultaneous axes

Numerical controller

- Driving up to 5 continuous axes
- Great ergonomics, color screen and full alphanumeric keyboard
- Connections and communication interfaces integrated and easily accessible
- High memory and calculation capacities
- Interactive programming
- Graphic simulation before machining for optimal safety

Maintenance

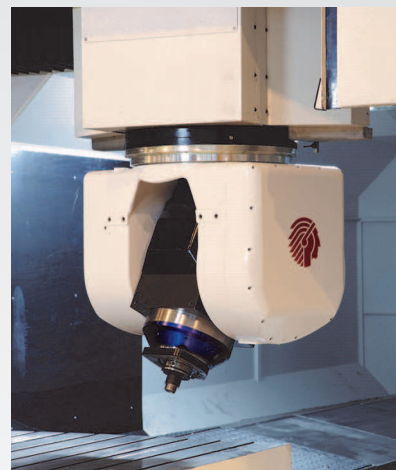
- Very good accessibility to all maintenance points
- Grouping of fluid, pneumatic, electrical components in a common cabinet



KX Large Series

Fork head and electrospindle

- Accurate positioning and repeatability for complex workpieces
- Angular encoders in the axis for accurate positioning and repeatability
- Torque motors for dynamic movements without backlash and wear
- High clamping torque for high roughing
- Possibility of reaching negative angles
- Axial/radial tool stiffness guaranteed
- Machining of deep pockets thanks to the use of long tools
- Spindle and machining secured thanks to vibration monitoring



	KX 50 M/L	KX 100 / 200 / 300
Swivelling of axes	B : +/- 110° C : +/- 360°	B : +/- 105° C : +/- 190°
Rotating speed (B, C)	100 rpm	30 rpm
Clamping torque (B, C)	4.000 Nm	7.000 Nm
Working torque		
– B axis	994 Nm	1.150 / 750 Nm
– C axis	878 Nm	1.100 / 500 Nm

Spindles KX 50 M/L

	Standard		Variantes	
	HSK 63-A	HSK 63-A	HSK 63-A	HSK 100-A
Taper	HSK 63-A	HSK 63-A	HSK 63-A	HSK 100-A
Rotating speed	20.000 rpm	18.000 rpm	24.000 rpm	15.000 rpm
Power (S6/S1)	75 / 60 kW	70 / 56 kW	60 / 60 kW	45 / 45 kW
Torque (S6/S1)	75 / 60 Nm	111 / 89 Nm	77 / 60 Nm	145 / 120 Nm
Characteristic speed	9.550 rpm	6.000 rpm	9.550 rpm	3.580 rpm

Spindles KX 100 / 200 / 300

	Standard		Variantes		
	HSK 63-A	HSK 63-A	HSK 100-A	HSK 100-A	HSK 100-A
			Mechanical spindle without Hirth-block		
Taper	HSK 63-A	HSK 63-A	HSK 100-A	HSK 100-A	HSK 100-A
Rotating speed	18.000 rpm	24.000 rpm	12.000 rpm	4.000 rpm	10.000 rpm
Power (S6/S1)	30 / 20 kW	40 / 30 kW	86 / 70 kW	21 / 14,5 kW	43 / 33 kW
Torque (S6/S1)	240 / 160 Nm	67 / 50 Nm	235 / 190 Nm	810 / 550 Nm	415 / 313 Nm
Characteristic speed	1.200 rpm	5.680 rpm	3.500 rpm	250 rpm	1.000 rpm

Mechanical fork head (Option)



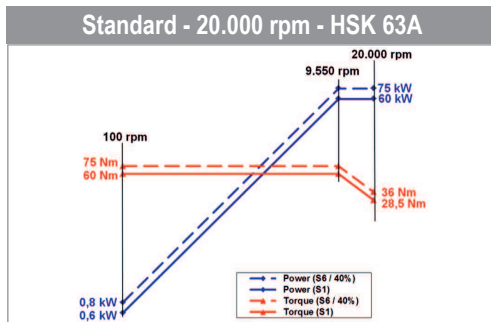
Suitable for hard material milling. It is associated with a high torque spindle and allows a heavy roughing with a high chip removal rate. The rotary axes are driven by a wheel and worm gear; that of the spindle by gears.



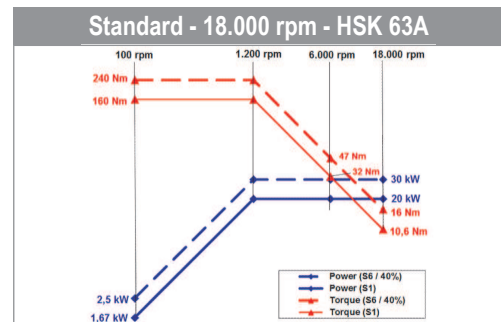
	KX 100 / 200 / 300
Swivelling of axes	B = +/- 95° ; C = +/- 200°
Rotating speed (B & C axes)	4,17 rpm
Clamping torque (axes B & C)	10.000 Nm
Working torque	B = 4.524 Nm C = 2.292 Nm



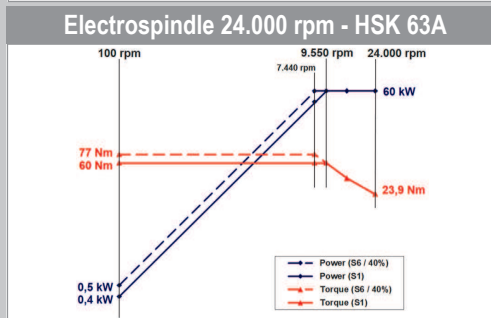
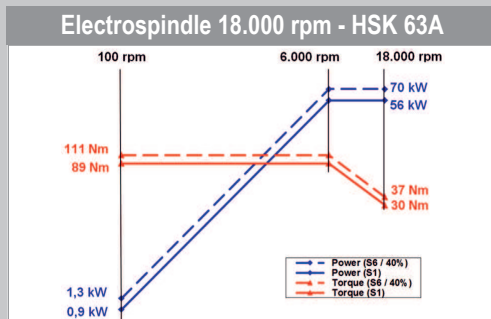
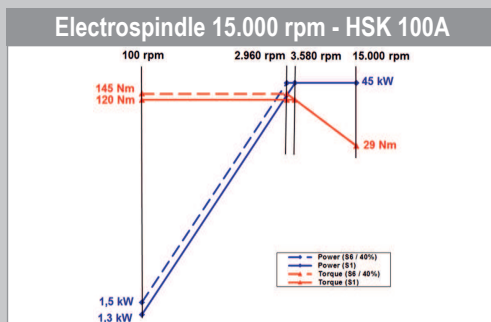
KX 50 M/L



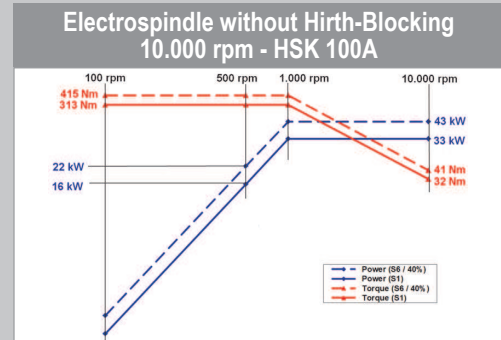
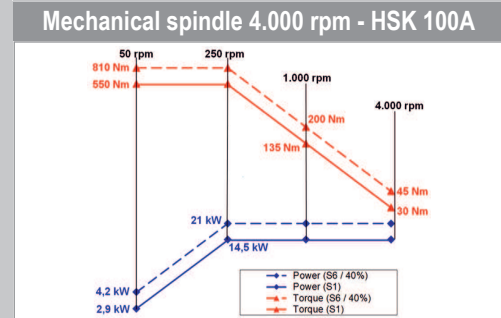
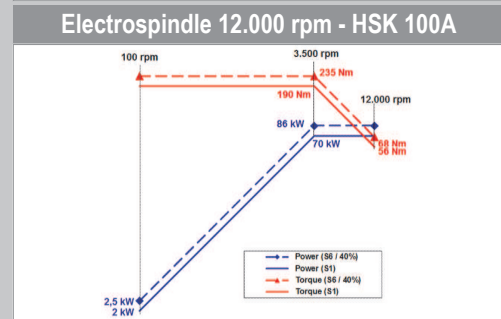
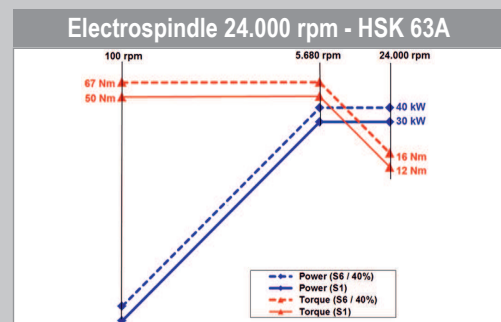
KX 100 / 200 / 300



Alternatives



Alternatives

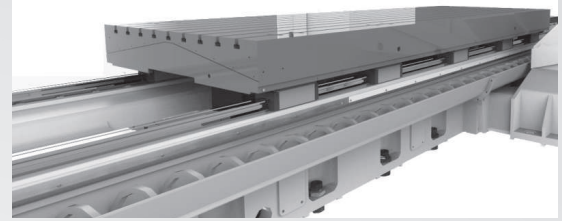
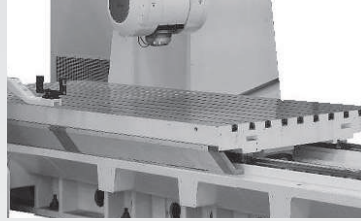




KX Large Series

The table

Mobile table with large working area allowing the machining of large parts and the use of a wider range of tool lengths for the same clamping.



		KX 50 M	KX 50 L	KX 100	KX 200	KX 300
Table dimension	mm	2.200 x 1.250	3.300 x 1.250	2.500 x 1.250 <i>alternative</i> 2.500 x 1.500	3.500 x 1.250 <i>alternative</i> 3.500 x 1.500	5.200 x 2.000
Machining volume (**)						
– length x width	mm	1.240 x 940	2.240 x 940	1.380 x 1.380	2.380 x 1.380	4.080 x 2.180
– height	mm	855	855	800	800	1.550
Admissible load	kg	4.000	6.000 (2.500*)	12.000 (6.000*)	12.000 (9.000*)	20.000 (13.000*)
Rapid feedrate X / Y / Z	m/min	40 / 40 / 40	40 / 40 / 40	40 / 40 / 40	25 / 40 / 40	20 / 20 / 20
Qty of slots		9	9	9	9	15
Reference slot		18H7	18H7	22H8	22H8	22H8
Other slots		18H12	18H12	22H12	22H12	22H12
Distance between slots	mm	125	125	125	125	125

(*) with maximal acceleration

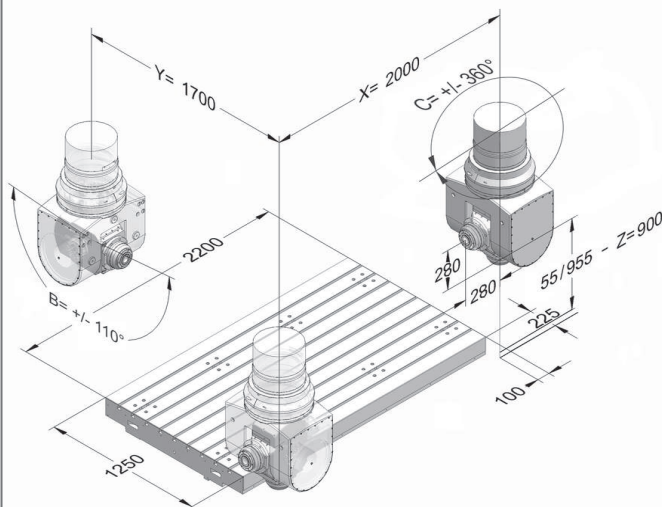
(**) 5-sided machining with a 100 mm tool length

KX 300

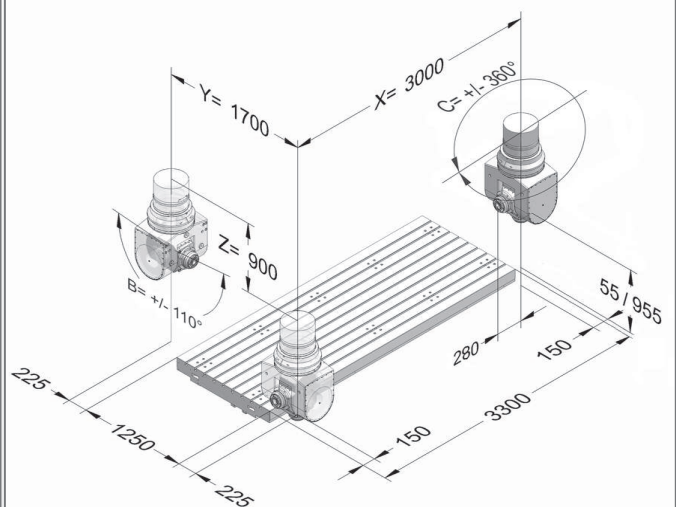
Rack-and-pinion table drive perfectly suited for long strokes and heavy loads. Increases rigidity.

Interferences diagrams KX 50

KX 50 M - Standard table



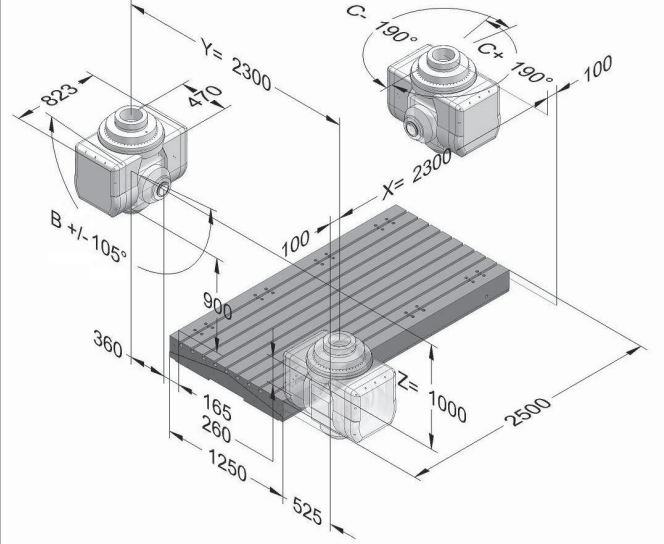
KX 50 L - Standard table



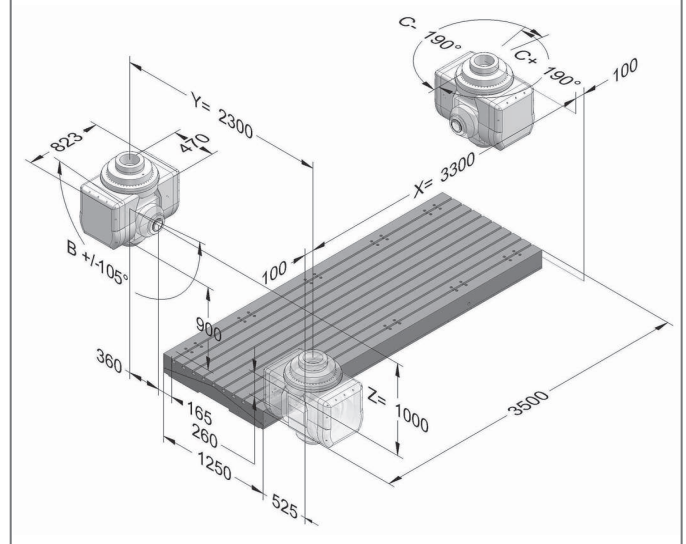


Interferences diagrams KX 100 / 200 / 300

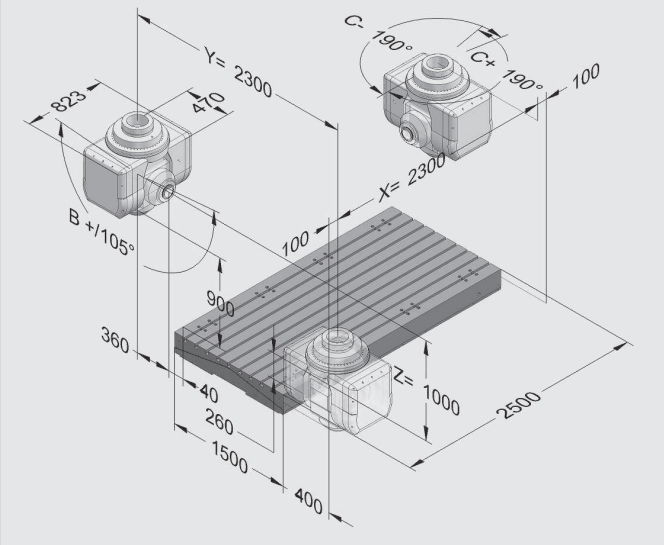
KX 100 - Standard table



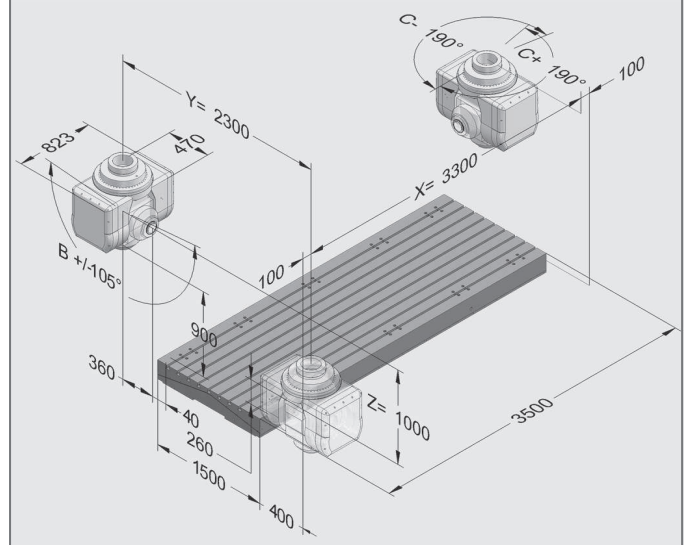
KX 200 - Standard table



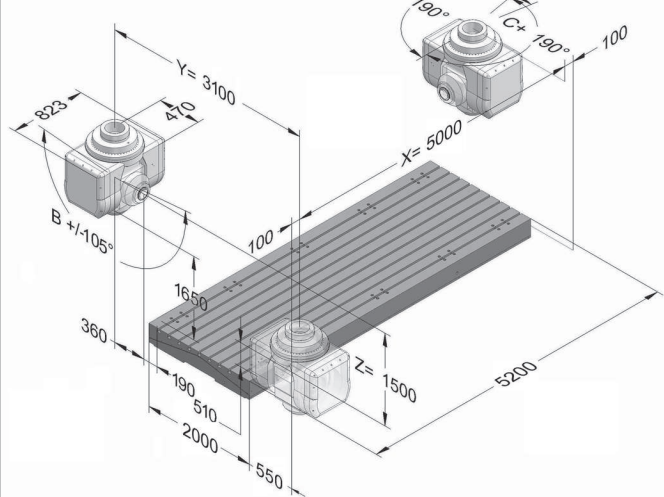
KX 100 - Table alternative 2.500 x 1.500



KX 200 - Table alternative 3.500 x 1.500



KX 300 - Standard table



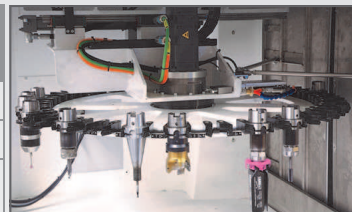


KX Large Series

Tools changers

The load/unload of tools is made in vertical position

	KX 50 M/L	KX 100 / 200 / 300
Qty of housings	30	40
Taper	HSK 63-A	HSK 63-A
Tool dimension Ø - length - weight	90 mm - 300 mm - 8 kg	100 / 190 mm - 300 mm - 8 kg
Max. load in magazine	120 kg	160 kg
Tool changing time : tool/tool - chip/chip	9 - 18 sec	6 - 20 sec

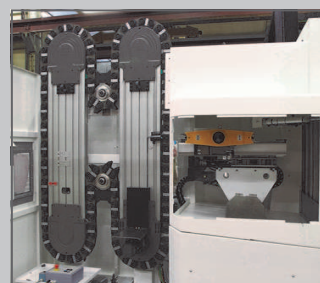


Picture of KX 50 tools changer

Alternatives KX 50 M/L

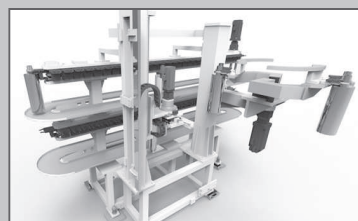
For the machining of deep pockets, the rigidity of the machine allows the use of long tools.(with HSK 100-A taper)

Combined with vibration monitoring, it is possible to obtain finished parts of very high quality.



Qty of housings	60		120	
	HSK 63-A		HSK 100-A	
Taper	HSK 63-A		HSK 100-A	
Tool dimension :				
Ø	90 / 120 mm	90 / 120 mm	125 / 250 mm	125 / 250 mm
Length	500 mm	60 tools = 500 mm + 60 tools = 300 mm	500 mm	60 tools = 500 mm + 60 tools = 300 mm
Weight	15 kg	15 kg	25 kg	25 kg
Tool changing time : tool/tool - chip/chip	6 - 15 sec	6 - 15 sec	6 - 15 sec	6 - 15 sec

Alternatives KX 100 / 200 / 300



Qty of housings	60		100	
	HSK 63-A		HSK 100-A	
Taper	HSK 63-A		HSK 100-A	
Tool dimension :				
Ø	90 mm	90 mm	120 mm	120 mm
Length	300 mm	300 mm	300 mm	400 mm
Weight	8 kg	8 kg	10 kg	25 kg
Max. load in magazine	240 kg	400 kg	120 kg	kg
Tool changing time : tool/tool - chip/chip	6 - 20 sec	6 - 20 sec	6 - 16 sec	6 - 20 sec
				5 - 20 sec



HURON numerical controller cycles

PRECILIFE or how to manage tool life automatically ? ^(*)

This cycle provides automatic tool checking during machining or at tool change. If critical wear or a broken tool is detected, the system automatically triggers the replacement of the tool at the most appropriate time. It therefore safeguards the integrity of the workpiece and the cutting tools and optimizes tool use. The profitability of the machine is increased by reducing downtime and tooling costs.

MAIN FEATURES

- Automated tool measurement, inspection and replacement done in the machining process
- No change to the NC program
- Implemented by HURON
- Configurable wear and breakage detection tolerance for each tool
- Automatic replacement of tools

(*) Only with 3 axes machines, spindle in vertical position

PRECIPOWER or how to optimise roughing operations ?

It takes care of optimizing the roughing operation by automatically modulating and adapting the feedrate, in real time, to the value that result in peak material removal.

MAIN FEATURES

- Full use of available spindle power
- Automatic feedrate modulation
- Maximize material removal rate
- Spindle and rotating axes overload protection during roughing

PRECIFIVE or how to get an accurate and automatic calibration of the machine kinematic ?

Automate the calibration of the kinematics by carrying out the measurement of the position and the orientation of the rotation axes. The calibration can be executed directly in an NC program to ensure optimum accuracy during critical machining operations.

MAIN FEATURES

- Quick, accurate, repeatable measuring system
- Optimized machining accuracy
- Compensation of the thermal expansion of the machine
- Reduces rejected parts
- Rapid evaluation following a machine collision
- Control report

PRECIPROTECT or how to save time while protecting the machine and the workpieces ?

This cycle allows real-time monitoring of toolpaths and machine movements in order to anticipate any form of collision. The machine and the part are thus preserved.

MAIN FEATURES

- Conserve machine accuracy
- Save time : no simulation required, control is done in real-time
- Save money : No more repair or machine stop due to a collision
- Increase profitability : preserve integrity of the machine and workpiece ; no more delivery delays to customers
- Reliability : detection of an imminent collision triggers an immediate and automatic stop of the movements of the machine
- Peace of mind : let the machine work unsupervised



KX Large Series

Performance

Looking for a simple and effective solution? HURON offers you a complete standard solution to allow you to realize your parts at a competitive price.

- Moving table
- Fork head equipped with electrospindle
- Tools changer
- Chips conveyor and washing device for chips recover channels
- Washing gun
- Low coolant by nozzles
- Operator panel
- Portable electronic handwheel
- Complete safeguard
- Oils for first feeling (excluding emulsion)
- Cylinders for leveling
- 1 set of technical documents
- 12 months warranty

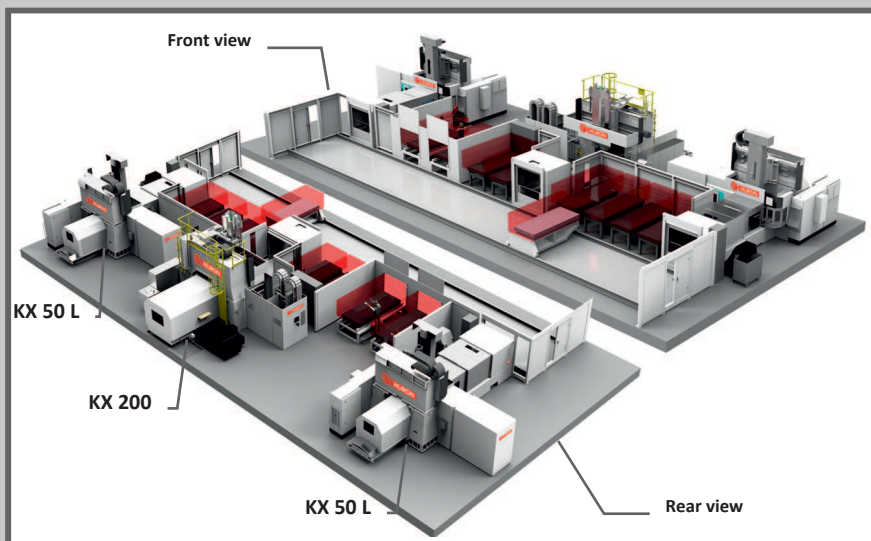


Automation

For higher productivity or greater accuracy in machining, HURON offers the possibility to add optional systems to the machine, such as coolant, micro-spraying, probes, etc..., no to mention HURON NC cycles and our support services.

In order to increase production speeds and optimise machining cycles, we offer a variety of palletizing configurations.

For one, two, three or more machines, your line will become a flexible production unit, allowing you to save valuable time. The processes are independent, safe and reliable.



Example of automated cell with 2 KX50L, 1 KX200, and 8 pallets common to the 3 machines



Technical characteristics

Linear axes X / Y / Z		KX 50 M	KX 50 L	KX 100	KX 200	KX 300
X travel	mm	2.000	3.000	2.300	3.300	5.000
Y travel	mm	1.700	1.700	2.300	2.300	3.100
Z travel	mm	900	900	1.000	1.000	1.500
Rapid feedrates	m/min	40	40	40	X : 25 Y / Z : 40	20
Acceleration per axis	m/s ²	4	4	4	4	X : 1,5 Y/Z : 2
Rotating axes B, C - Head		KX 50 M / L		KX 100 / 200 / 300		
Swivelling of B axis	°	+/- 110°		+/- 105°		
Rotation of C axis	°	+/- 360°		+/- 190°		
Rotating speed	rpm	100		30		
Clamping torque	Nm	4.000		7.000		
Working torque	Nm	B : 994 C : 878		B : 1.150 C : 1.100		
Table		KX 50 M	KX 50 L	KX 100	KX 200	KX 300
Dimension	mm	2.200 x 1.250	3.300 x 1.250	2.500 x 1.250	3.500 x 1.250	5.200 x 2.000
Max. admissible load	kg	4.000	6.000	12.000	12.000	20.000
Qty of slots		9	9	9	9	15
Reference slot	mm	18H7	18H7	22H8	22H8	22H8
Other slots	mm	18H12	18H12	22H12	22H12	22H12
Distance between slots	mm	125	125	125	125	125
Spindle		KX 50 M / L		KX 100 / 200 / 300		
Spindle speed	rpm	20.000		18.000		
Taper		HSK 63-A		HSK 63-A		
Power - Torque	kW - Nm	75 - 75		30 - 240		
Characteristic speed	rpm	9.550		1.200		
Accuracies (VDI DGQ 3441)						
Linear axes (X/Y/Z)						
- Positioning (P)	mm	0,007	0,007	0,007	0,007	X : 0,020 Y / Z : 0,007
- Repeatability (Ps medium)	mm	0,004	0,004	0,004	0,004	X : 0,005 Y / Z : 0,004
Rotating axes (B, C)						
- Positioning (P)	sec	10	10	10	10	10
- Repeatability (Ps medium)	sec	5	5	5	5	5
Tools changer						
Qty of housings		30	30	40	40	40
Tool length	mm	300	300	300	300	300
Tool Ø	mm	90	90	100	100	100
Tool weight / Load in magazine	kg	8 / 120	8 / 120	8 / 160	8 / 160	8 / 160
Tool changing time : tool/tool - chip/chip	sec	9 / 18	9 / 18	6 / 20	6 / 20	6 / 20
Coolant		KX 50 M	KX 50 L	KX 100	KX 200	KX 300
Flow - Pressure	l/min - bar	30 - 6	30 - 6	30 - 5	30 - 5	30 - 5
Tank	litres	600	600	1.000	1.000	1.000
Over-all measurements (Doors opened + conveyor)		KX 50 M	KX 50 L	KX 100	KX 200	KX 300
Width	mm	6.630	5.820	7.900	8.000	8.890
Depth	mm	8.700	10.450	7.870	10.690	15.000
Height	mm	5.140	5.140	5.410	5.410	6.370
Weight of the machine	kg	31.000	36.000	35.000	41.000	95.000



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