

**MILLING SOLUTIONS FOR
THE AEROSPACE INDUSTRY.**

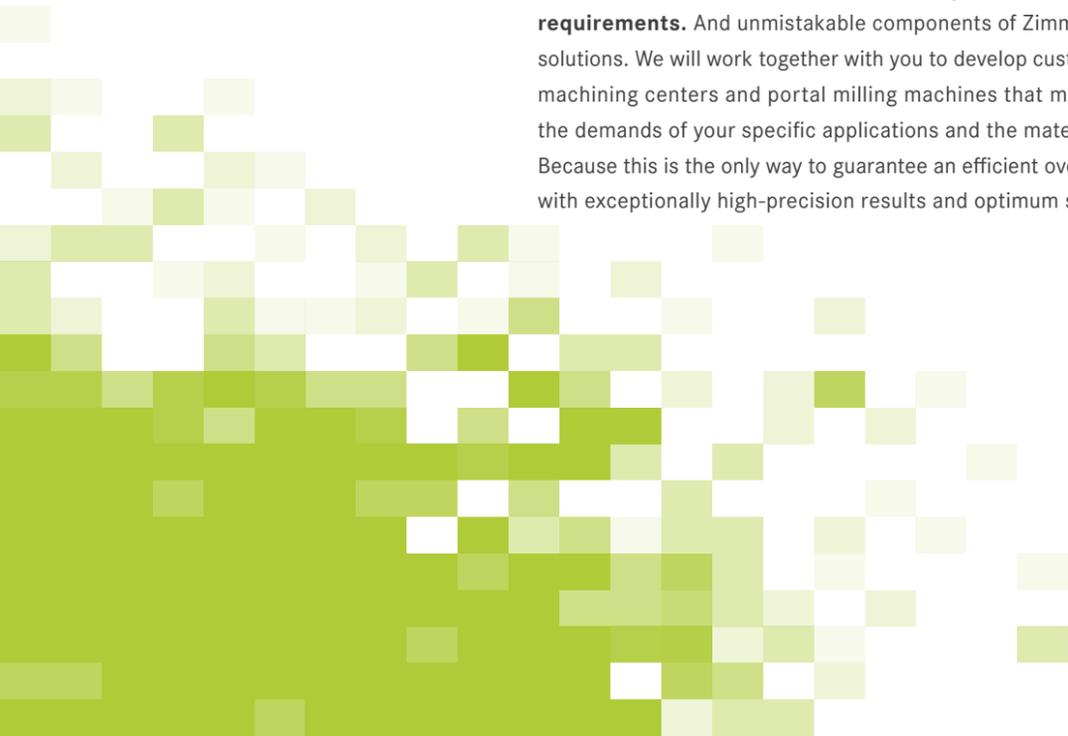
**BORN WITH THE ZIMMERMANN DNA. A MACHINE
IN THE IMAGE OF THE PEOPLE WHO MADE IT.**

Milling machines built with pioneering technology. And whose most important component is dedication. People who work tirelessly to achieve outstanding precision. That is the essence of the Zimmermann DNA. Because as a leader offering top-quality, high-performance horizontal machining centers and portal milling machines “Made in Germany”, the most vital elements are confidence and reliability. And this applies to the people just as much as it does to the machines. It is the ambition that burns in every member of our workforce and in every single component of our machines. And it inspires the promise that we make to our customers: A Zimmermann will never let you down.

**“PIONEERING TECHNOLOGY, DYNAMIC,
RELIABLE. A ZIMMERMANN WILL NEVER
LET YOU DOWN.”**

**TYPICAL ZIMMERMANN: PRECISE DOWN TO THE
LAST DETAIL.**

High-performance solutions, fast reaction times and maximized material removal rates – these are all specific aerospace industry requirements. And unmistakable components of Zimmermann’s milling solutions. We will work together with you to develop custom-built horizontal machining centers and portal milling machines that more than surpass the demands of your specific applications and the materials you machine. Because this is the only way to guarantee an efficient overall milling process with exceptionally high-precision results and optimum surface quality.





Whenever you want to go further and still reduce your consumption, you need a custom-built solution. For example in the form of Zimmermann's upward-traveling portal milling machines or horizontal machining centers.



**HIGH-PERFORMANCE PARTNER FOR THE AEROSPACE INDUSTRY:
ZIMMERMANN FOR GKN AEROSPACE.**

“When we stopped machining aluminum and switched over to carbon fiber, we looked around for the right milling machine. We found this in the form of the FZ35. It is the perfect combination of all the key factors: optimum portal size, suitable spindle thickness and stable, effective operation. Ultimately, the machine even won over our American colleagues

in the Group who decided to invest in a further Zimmermann solution. *So far, we have been more than satisfied because apart from the machine itself, the service offered by Zimmermann also plays a decisive role.* And it is provided expertly and efficiently to meet the customer’s needs.”

Erich Metzger,
Supervisor Maintenance,
GKN Aerospace



**CLEVER FULLY-FEATURED SYSTEMS:
ZIMMERMANN FOR AIRBUS.**

“Nowadays, portal milling machines in general have reached a very high level. *What provides genuine value-added is fully-featured systems equipped with application-specific clamping technology that permits the rapid changeover of large components.* Zimmermann’s milling solutions provide this value-added. Convenience of operation, versatility in use, economic efficiency and agility on the part of suppliers are everything. Zimmermann supplies individually customized solutions based on an economically priced standard approach.”

Dr. Achim von Arciszewski,
Vice President Assembly
VTP A380/A400M, Airbus



OUR STRENGTH: YOUR MATERIAL.**Carbon fiber**

Zimmermann's gantry machines and horizontal machining centers handle carbon fiber materials with outstanding precision. In particular when the task involves the squaring, drilling or milling of composite materials, skin machining or the manufacture of structural components. Alongside the precision that is required when machining carbon fiber, another vital factor is minimizing the deposition of hazardous dusts around the machine. To meet this specific need, Zimmermann has developed concepts that extract the hazardous dusts that are produced during machining. In this way, the extraction hoods located directly at the milling head ensure an optimized, safe milling process.

Aluminum

With machining levels of up to 96%, the series production of structural parts from aluminum demands extremely high machining performance. Zimmermann's milling solutions are perfectly designed to meet this task. Achieving the necessary rigidity, in combination with optimized machining performance, is the key focus during the development of comprehensive system concepts. From the efficient disposal of the chips resulting from machining through to the reduction of thermal influences inside the machine – Zimmermann's fully-featured solutions take account of every factor in the milling process and thus maximize the overall performance of the milling machines. Short throughput times, minimized idle times and maximum machine availability are the key to economically efficient milling solutions.

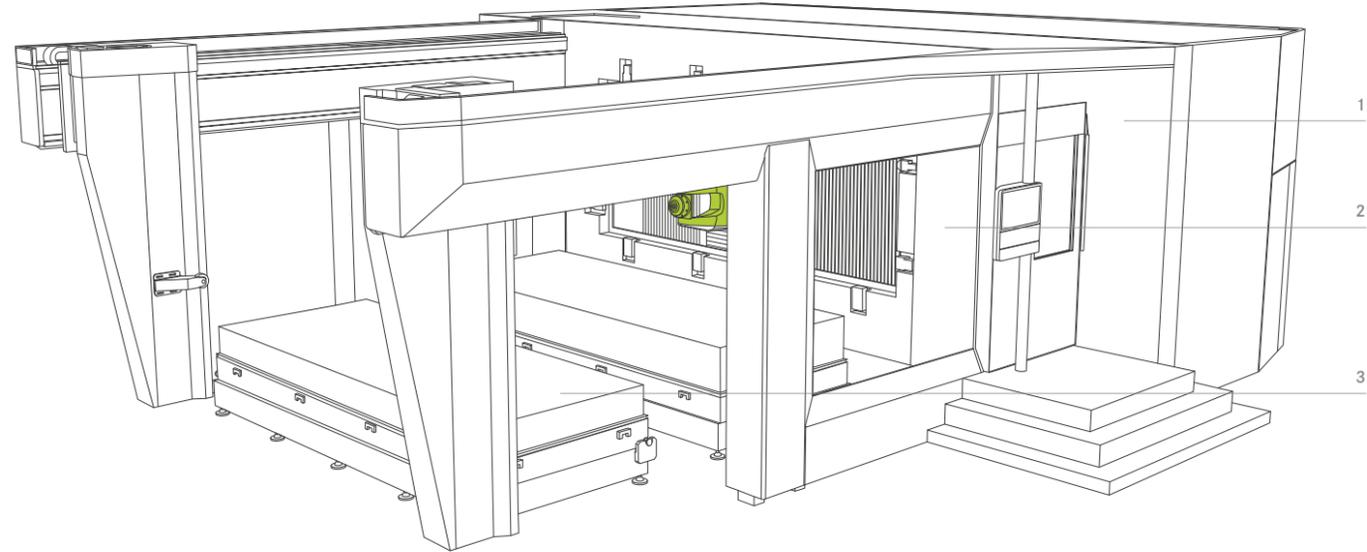
Titanium

When machining tough materials such as titanium, what counts is to ensure a rigid, stable machine structure. As a result, Zimmermann's milling solutions are able, for example, to machine drop-forged workpieces to a high level of precision at low speeds or to turn and mill engine components. The increased material removal rates result in consistently more efficient machining of large airplane components. The high-performance spindles and optimized rigidity permit enhanced, high-speed machining performance. Economic efficiency lies at the heart of all Zimmermann solutions, whether in the case of the portal milling machines or the horizontal machining centers.



HORIZONTAL MACHINING CENTERS

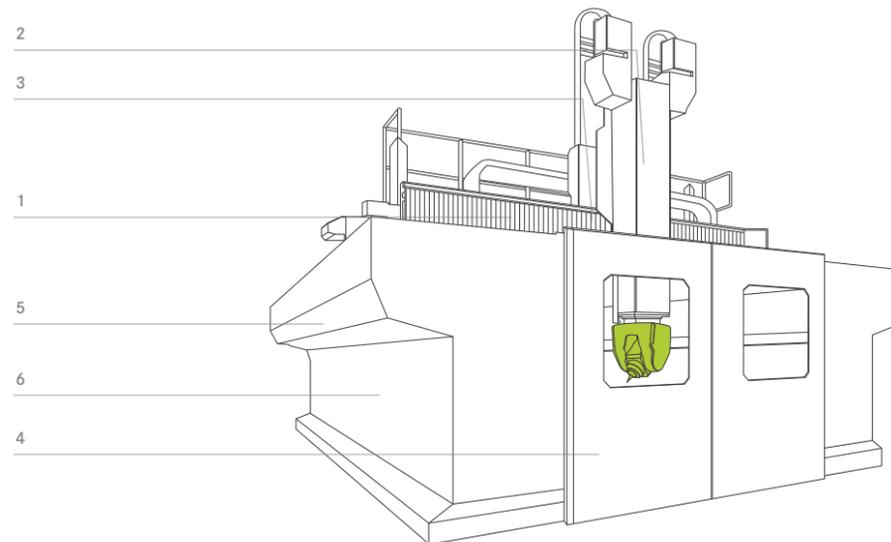
Thanks to their maximized material removal rates, the **horizontal machining centers** are suitable first and foremost for the machining of pockets in a huge range of workpieces and large structural components. In addition to their innovative traveling column concept, the pallet handling capability, which is supplied as standard, is another great advantage of these solutions.



- 1 Increased rigidity through the innovative, water-cooled traveling column concept
- 2 Stepped drive guide for perfectly constant geometry along the Z axis.
- 3 Pallet handling as standard with area for setting up pallets during machine operation

UPWARD-TRAVELING PORTAL MILLING MACHINES

The **upward-traveling portal milling machines** make it possible to create machine concepts with differently-sized operating ranges. The gantry construction with fixed side walls ensures constant weight distribution and consequently guarantees precise results.



1 The reinforced, structurally rigid portal that travels upward ensures even more dynamic machining of the workpieces

2 The high bending strength of the robust vertical slide permits considerable freedom of action in the Z working range

3 Zero-play portal drives are mounted on either side outside of the protected area and have dual guides and an extended base for optimum stability

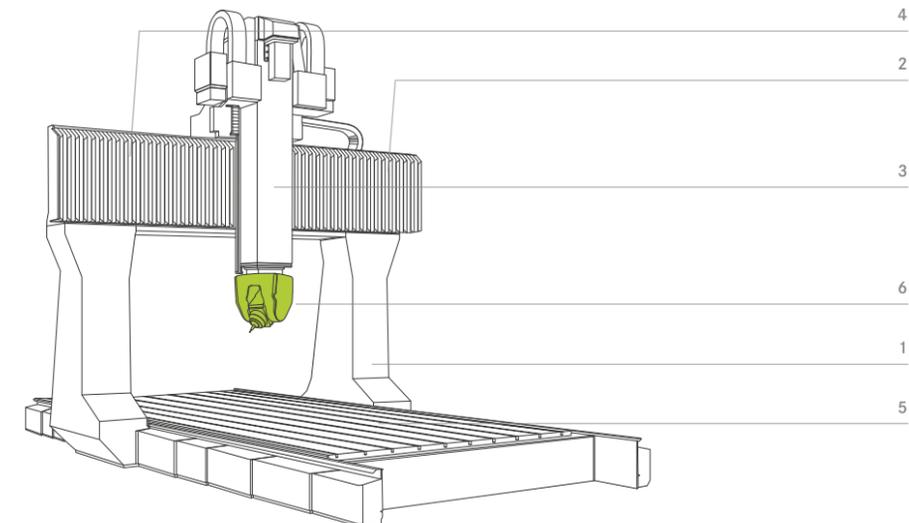
4 Cast iron clamping table with T-slots, anchored to the machine base

5 Full protective housing thanks to closed side walls, rear wall and front-mounted sliding door with generously sized windows

6 Compound-filled, trapezoidal side columns with large seating area

DOWNWARD-TRAVELING PORTAL MILLING MACHINES

Sophisticated, practical technology with a classical design: the **downward-traveling portal milling machines** permit access from all sides and are therefore ideal whenever space is limited.



1 Weight-optimized portal that travels downwards for excellent dynamics and precision

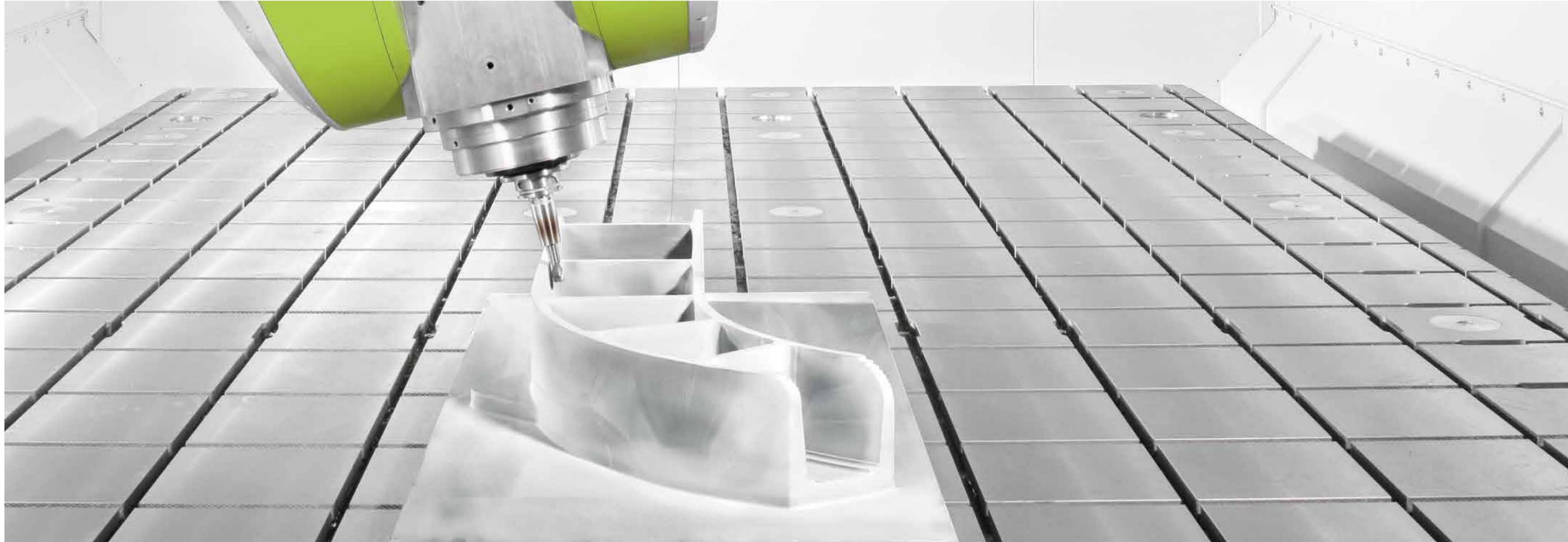
2 Reinforced portal ensures even greater stability and precision, thus making your milling operations even faster

3 Enlarged Z-axis section with larger cross-slide plate

4 Dustproof bellows in the Y- and Z-axis, telescopic steel covers in the X-axis

5 Free-standing machine bed

6 Optional: Wet machining



AN INTEGRAL PART OF ANY ZIMMERMANN MACHINE: MODULARITY.

A modular system concept underpins every Zimmermann portal milling machine. Travel path, drive technology, milling head, make and type of the controller as well as other accessories can be specified and combined individually depending on the area of application and the intended use.

Drives

Our milling solutions make use of the optimum drive for the machine concept in question. The extremely dynamic and particularly low-maintenance rack-and-pinion drive provides excellent performance at a reasonable cost. All imaginable axis lengths are possible and cover an extremely wide range of applications. The classic among the drive designs is the ball screw drive. It is characterized by its high precision, low cost and outstanding economic efficiency. The linear motor is the ideal solution for applications involving largely stationary masses.

Safety

To protect them against contamination, the guide components as well as the drive and measurement systems on the Y- and Z-axis are covered by dust-proof bellows. The X-axis is equipped with lamella covers. The side walls form the machine housing. Sliding doors or folding doors with generously sized windows are mounted at the front. An optional cover for the working area prevents the escape of removed material as well as of coolants and lubricants. At the back, the machines are sealed off by either a fully enclosed tool changer or a second door.

Measuring systems

The three linear axes in Zimmermann milling machines have direct Heidenhain linear encoders with glass scales. These measuring systems have a compressed-air barrier to protect them against contamination. The A and C rotation axes are equipped with high-resolution angular measurement systems depending on machine type.

Control systems

Zimmermann's milling solutions are available with different makes and types of controllers. Modern controllers offer many different functions for optimizing the milling trajectory. Measuring probes, tool measurement and measuring software are available as options. They make it possible to configure the Zimmermann milling solutions perfectly for the intended application.

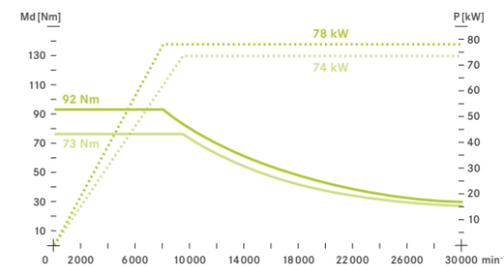
Clamping technology

Zimmermann's milling solutions benefit from the most suitable clamping technology depending on the batch size, machining variance or retooling cycles. Flexible clamping solutions and specific mechanisms for individual components are both equally possible.

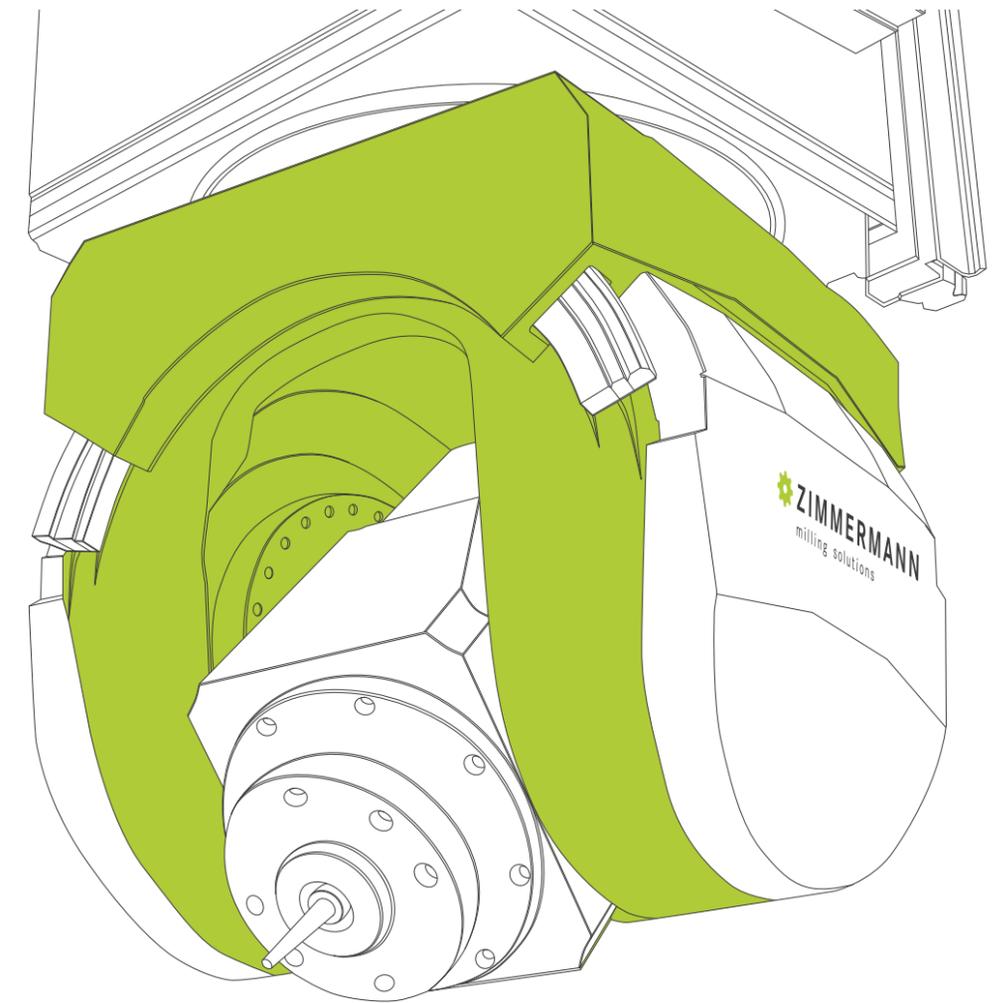
Automation

The automation capabilities of all Zimmermann milling solutions help increase productivity and boost economic efficiency. From the unstaffed operation of multiple machines, through turnkey solutions and on to minimized setup times thanks to innovative handling solutions and intelligent clamping technologies – the automation capabilities of Zimmermann's milling solutions help create a consistently more efficient milling process.

“IT IS ONLY IF YOU BUILD THE HEART OF THE MACHINE YOURSELF THAT YOU CAN KNOW HOW IT BEATS.”



Spindle torque/power diagram M3ABC.



HEADS WITH CHARACTER – AND A HIGH-PERFORMANCE DRIVE.

The Zimmermann milling heads lie at the very heart of our machines. And they have a unique character if you look at everything they can achieve. When you put together your custom-designed system concept from our range of products, you need to decide on the right Zimmermann milling head in the light of the materials you machine, the desired material removal rate and the demanded surface quality.

The patented 2- and 3-axis fork-type heads are designed as cast iron monoblock components. This design boasts outstanding thermal stability combined with optimized oscillation and vibration damping. The large swiveling angle, the axis speeds and the acceleration of all Zimmermann milling heads ensure their outstanding dynamic behavior. The high-performance 2- and 3-axis milling heads

range from powerful and versatile through to lean and compact. But that's not all: Whenever our customers purchase from Zimmermann, we give them advice and support that is just as precise as the milling performance of our machines.

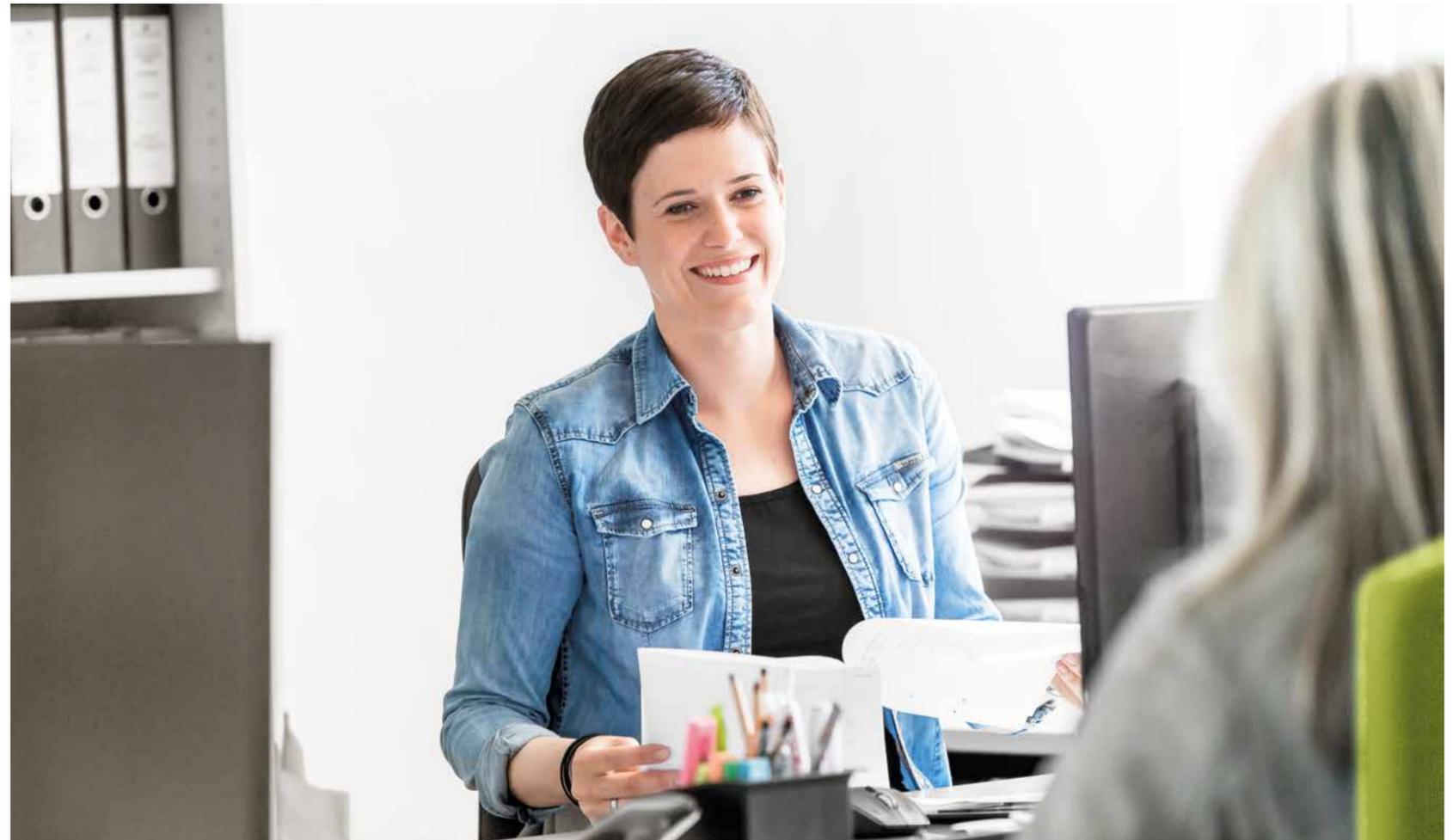
Every Zimmermann milling solution is specially conceived to meet the requirements of your specific milling application by ensuring that all the different components interact perfectly.

For this to be possible, they must be optimally harmonized. We offer an extensive modular accessories system to meet the demands of your machine type, intended application and material. Because only when you have the right complementary solutions can your production process run smoothly and seamlessly.

**OUR MACHINES ARE AT WORK WORLDWIDE.
SO IS OUR SERVICE.**

With every Zimmermann solution, our customers acquire not only high-performance machines with a vast working area, outstanding dynamics, maximized material removal rates and unrivalled surface quality but, even more importantly, peace of mind and security. Their confidence is based on our impressive service capabilities. And not just when they buy their Zimmermann solution but for many years afterwards. Anywhere in the world.

**“THE MOST IMPORTANT CRITERION IN
OUR CUSTOMERS’ PURCHASING DECISIONS:
TRUST.”**



**Quick, easy access:
our Service Hotline.**

Our Service Team is waiting for you, wherever you are in the world. Even outside of normal working hours. Our Service Hotline staff will solve any production-related problems quickly and efficiently: Whether through modern remote diagnostic technology, online troubleshooting or the targeted guidance of your in-house Service Team’s repair activities via webcam – the most important first step is always to identify the problem quickly and accurately in order to minimize milling downtimes.

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SERVICE-HOTLINE WORLDWIDE

**Optimized machine uptimes:
our on-site service.**

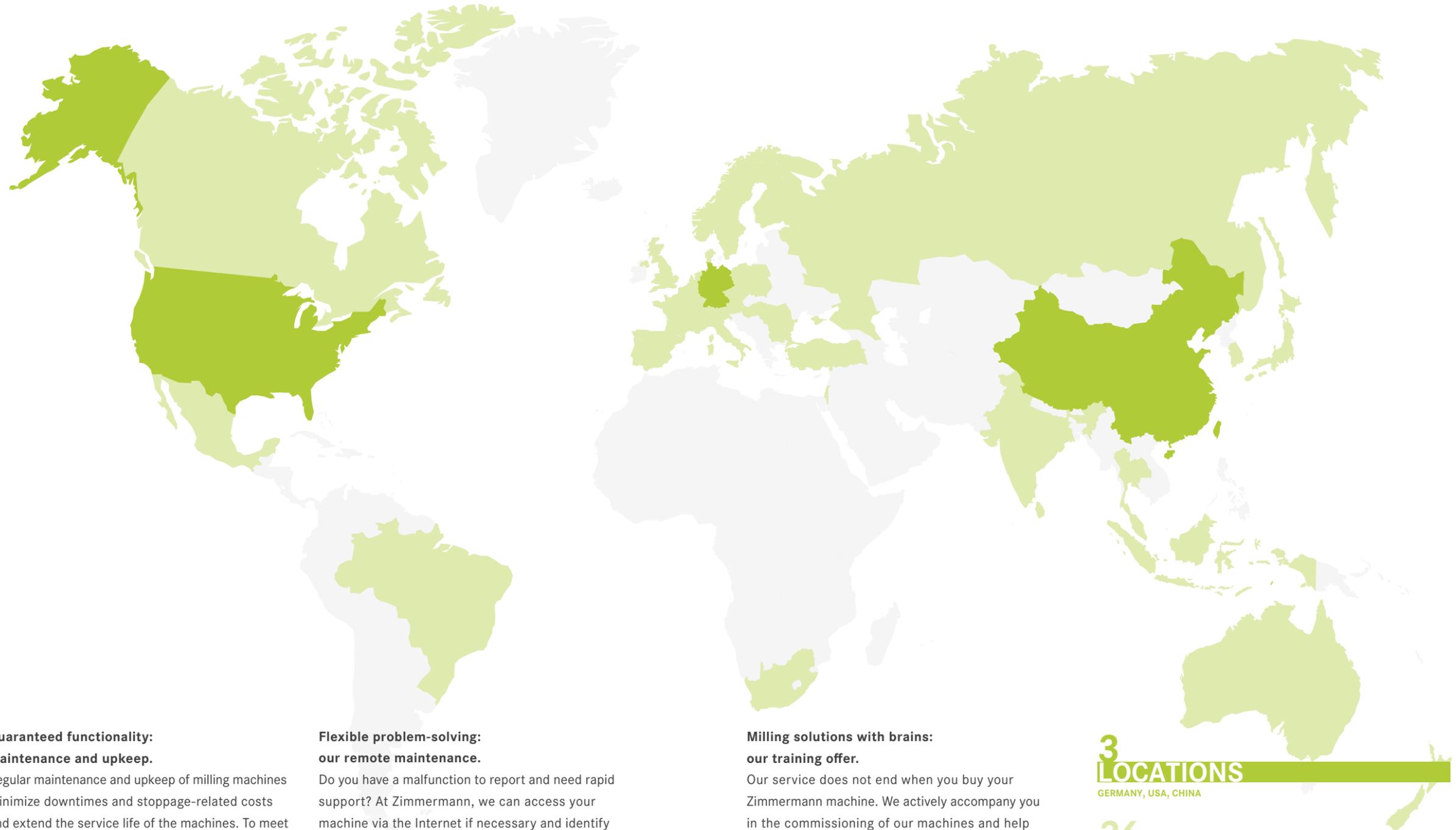
The Zimmermann Service Team is ready and waiting to provide on-site assistance and will make sure that your machines are up and running and giving you all the economic efficiency you demand. And you benefit from a comprehensive service offering: From regular inspections of your machine, through the overhauling and repair of your system and on to modernization measures – we provide support for every aspect of your milling application.

**Short reaction times:
our spare parts service.**

It is not just our machines that work tirelessly on your behalf. Our support service is also there for you. If ever a Zimmermann machine has to be shut down due to a damaged part, then one thing is more important than anything else: fast delivery of the spare part. And that’s where we come into our own. 95% of all spare parts are immediately available and we guarantee shortest delivery times anywhere in the world. But that’s not all: Our worldwide service network ensures that the spare part is installed professionally on-site so that your machine is immediately ready to resume production.

**Tested worldwide:
the CE mark.**

All Zimmermann milling solutions comply with the European machinery regulations. The CE mark is confirmation that the product conforms to the corresponding EU regulations. The EU regulations define the binding legal requirements in the European Union. All our product series have not only the corresponding CE mark but also an EU Declaration of Conformity. This guarantees that every milling machine with this label complies with the underlying health and safety requirements set out in the applicable EU regulations. For more information on the CE mark for all Zimmermann milling solutions, simply contact our Service Hotline.



**Guaranteed functionality:
Maintenance and upkeep.**

Regular maintenance and upkeep of milling machines minimize downtimes and stoppage-related costs and extend the service life of the machines. To meet the needs of these complex systems, it is necessary to pay close attention to all the machine functions. From the machine's current condition, through the wear level of critical components and on to the documentation of all the factors. We will advise you concerning preventive measures because this is the only way of guaranteeing the unrestricted functionality of the milling solution in the long term. Maintenance and upkeep activities should be performed at regular intervals. The exact maintenance interval depends on the utilization level, the technology and the nature of the machining operations performed.

**Flexible problem-solving:
our remote maintenance.**

Do you have a malfunction to report and need rapid support? At Zimmermann, we can access your machine via the Internet if necessary and identify and correct any problems quickly and efficiently. Our remote maintenance team is able to call up all the diagnostic and service menus. Zimmermann's remote maintenance of CNC-controlled machine tools provides you with direct support – wherever your company is located.

**Milling solutions with brains:
our training offer.**

Our service does not end when you buy your Zimmermann machine. We actively accompany you in the commissioning of our machines and help you to get to know and love them. Because it is not until users know how they can achieve outstanding precision with a solution from Zimmermann that they can produce the best possible results. At one of our multi-day training courses, you will find out everything you need to know about using, operating and maintaining our milling solutions. Working in cooperation with you, our service staff perform milling tests and machine workpieces. Because however good things may sound in theory, we prefer to prove them in practice. As you know, a Zimmermann will never let you down.

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LOCATIONS
GERMANY, USA, CHINA

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SALES REPRESENTATIVES
AUSTRALIA, AUSTRIA, BELGIUM, BRAZIL, BULGARIA, CHINA, CZECH REPUBLIC, DENMARK, FINLAND, FRANCE, GERMANY, GREAT BRITAIN, HUNGARY, INDIA, INDONESIA, ISRAEL, ITALY, JAPAN, MALAYSIA, MEXICO, NETHERLANDS, NEW ZEALAND, NORWAY, RUSSIA, ROMANIA, SINGAPORE, SLOVAKIA, SOUTH AFRICA, SOUTH KOREA, SPAIN, SWEDEN, SWITZERLAND, TAIWAN, THAILAND, TURKEY, USA

PORTAL MILLING MACHINES

COMPACT MILLING MACHINES

HORIZONTAL MILLING MACHINES



MACHINE TYPES	FZ25	FZ30/FZ35	FZ37	FZ42	FZ42 ³	FZ100	FZ33C	FZ40C	FZH400
Characteristic	On the Lighter Side.	Proven Technology.	The All-Rounder.	On the Heavy Side.		Unique and Productive.	Compact and Flexible.	Compact and Powerful.	Horizontal.
Working Ranges ¹									
X-Axis	7000 mm	3000 mm – 6000 mm	3000 mm – 40000 mm	3000 mm – 40000 mm		3000 mm – 40000 mm	2500 mm	2400 mm	4100 mm*
Y-Axis	3500 mm	2360 mm – 3360 mm	2500 mm – 6000 mm	2500 mm – 6000 mm		2500 mm – 6000 mm	3000 mm – 4000 mm	2900 mm	1600 mm*
Z-Axis	2000 mm	1000 mm – 1500 mm	1000 mm – 3000 mm	1000 mm – 2000 mm		1000 mm – 3000 mm	1250 mm – 1500 mm	1250 mm	650 mm*
Milling Heads									
VH12 	Milling Spindle HSK-A63 Spindle Power: 24/39 kW Torque: 39/49 Nm 20000 rpm	Milling Spindle HSK-A63 Spindle Power: 24/39 kW Torque: 39/49 Nm 20000 rpm	Milling Spindle HSK-A63 Spindle Power: 24/39 kW Torque: 39/49 Nm 20000 rpm						
VH20 		Milling Spindle HSK-A63 Spindle Power: 40/53 kW Torque: 48/63 Nm 25000 rpm	Milling Spindle HSK-A63 Spindle Power: 45/57 kW Torque: 67/85 Nm 25000 rpm				Milling Spindle HSK-A63 Spindle Power: 45/57 kW Torque: 67/85 Nm 25000 rpm		
VH30 		Milling Spindle HSK-A63¹ Spindle Power: 60/79 kW Torque: 95/126 Nm 22000 rpm	Milling Spindle HSK-A63 Spindle Power: 60/79 kW Torque: 95/126 Nm 22000 rpm Milling Spindle HSK-A100 Spindle Power: 70/86 kW Torque: 167/229 Nm 15000 rpm Milling Spindle HSK-A63 Spindle Power: 74/78 kW Torque: 73/92 Nm 30000 rpm				Milling Spindle HSK-A63 Spindle Power: 60/79 kW Torque: 95/126 Nm 22000 rpm Milling Spindle HSK-A100 Spindle Power: 70/86 kW Torque: 167/229 Nm 15000 rpm Milling Spindle HSK-A63 Spindle Power: 74/78 kW Torque: 73/92 Nm 30000 rpm		Milling Spindle HSK-A63 Spindle Power: 74/78 kW Torque: 73/92 Nm 30000 rpm Milling Spindle HSK-A63 Spindle Power: 125/156 kW Torque: 66/83 Nm 30000 rpm
VH60 				Milling Spindle HSK-A100 Spindle Power: 63/82 kW Torque: 300/391 Nm 15000 rpm Milling Spindle HSK-A100 Spindle Power: 93/102 kW Torque: 444/575 Nm 8000 rpm	Milling Spindle HSK-A100 Spindle Power: 44/44 kW Torque: 200/230 Nm 10000 rpm Milling Spindle HSK-A100 Spindle Power: 45/60 kW Torque: 344/454 Nm 5000 rpm Milling Spindle HSK-A63 Spindle Power: 50/58 kW Torque: 95/117 Nm 24000 rpm		Milling Spindle HSK-A100 Spindle Power: 63/82 kW Torque: 300/391 Nm 15000 rpm Milling Spindle HSK-A100 Spindle Power: 93/102 kW Torque: 444/575 Nm 8000 rpm		
M3ABC 						Milling Spindle HSK-A63 Spindle Power: 60/79 kW Torque: 95/126 Nm 22000 rpm Milling Spindle HSK-A63 Spindle Power: 74/78 kW Torque: 73/92 Nm 30000 rpm			Milling Spindle HSK-A63 Spindle Power: 74/78 kW Torque: 73/92 Nm 30000 rpm Milling Spindle HSK-A63 Spindle Power: 100/125 kW Torque: 48/60 Nm 30000 rpm

¹Other dimensions on request. We reserve the right to make technical changes without prior notice. ²Only FZ35. ³MuST® Spindle Changing System.

*Machine Type also available with other working ranges and pallet dimensions.



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