



**JUARISTI**

## **MX SERIES**

**FLOOR TYPE MILLING-BORING MACHINES WITH CENTRAL HEAD**

High performance in large dimensions

MILLING. BORING. **THE EXPERTS.**





# MX SERIES

## Milling-Boring Machines with mobile column and central head

The MX series is a premium solution characterised by precision, rigidity and high dynamics, the fruit of more than 20 years of experience in designing this series.

The "box-in-box" concept, first introduced by JUA-RISTI on this type of machine, with a symmetrical column and completely enclosed central head, provides the machine with optimum rigidity, precision and dynamics.

This series comprises two machine configurations: the MX universal milling machine, and the MX RAM boring-milling machine optimised for boring work that achieves great results on extremely demanding parts.

- **Maximum precision thanks to the box-in-box design.**
- **Thermo-symmetric structure.**
- **High dynamics (up to 30 m/min).**
- **Vertical travel of the head and RAM with 4 guides.**
- **Multiple multitasking options.**

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### MX SERIES

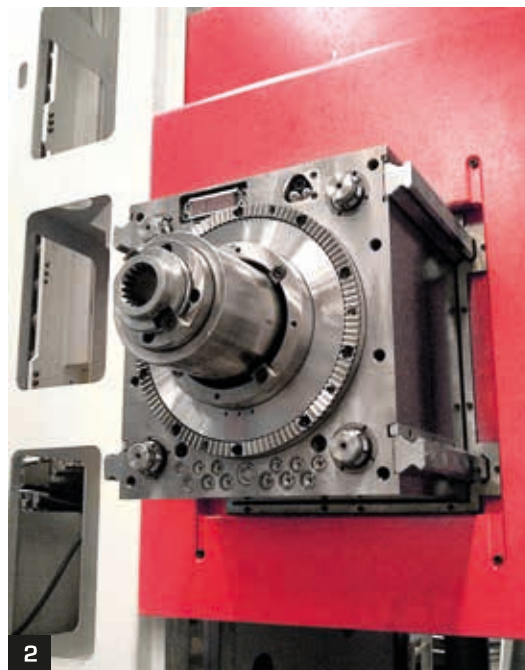
Multiple configuration options

MILLING. BORING. **THE EXPERTS.**





1



2

1. Box-in-box design with symmetrical column and vertical stroke on four guides. 2. RAM with four double-sided guides. 3. Maximum precision LM linear guide on the X-Y-Z axes.



3

**/// Highly stable and robust assembly**

- Reduced thermal deformation thanks to the thermo-symmetric column's and central head's design.
- Double real-time geometrical compensation of the head+RAM center of gravity and RAM flexion.

**/// High power and efficiency**

- High-performance head guiding and efficient force distribution with vertical four-sided guiding.
- High power (40 and 96 kW) and high spindle torque (1,300 to 8,650 Nm).
- High performance due to cooled gearbox transmission.

**/// Automation and multifunction**

- Compatible with a wide range of automated systems (head and tool changer, measuring probes, etc.).
- ATC Automatic Tool Changer (30-120 positions for chain type and up to 400 positions for robot type).
- Head/accessory magazines with automatic change up to 10 positions.
- AHC-Automatic Head Calibration.

**/// Ample working space and easy to use**

- Large ergonomic mobile platform with functionalities to help the operator.
- Operator cabin with three independent movements X-Y-Z for safe access at height to tools and parts.

**/// Outstanding results in large volumes**

- Machining up to 7 m high, 5 m wide parts.
- Long RAM travels, 2,000 mm on the milling machine and 1,900+1,000 mm on the Boring machine.
- High dynamics and feed rates of up to 30 m/min.

**/// Modular system with multiple configurations**

Flexible configuration machine compatible with a wide range of heads and tables:

- Universal (45°) ACD and Orthogonal AOD Heads.
- AV Vertical Heads.
- Facing heads.
- Continuous rotary head for 5 axes.
- Rotary tables with an 8 to 180 tonne capacity with up to 5,000x6,000 mm surface area.
- Can be supplied with turning and/or tilting table.



## **MX** Model

### **/// Milling Machine**

- Configuration for highly multifunctional milling operations.
- Equipped with universal, orthogonal, 5-axis, vertical heads and special accessories.
- Long RAM travels from 1,500 mm to 2,000 mm.
- High rotation speeds: 6,000 min<sup>-1</sup> [mechanical head] and 18,000 min<sup>-1</sup> [electro-spindle].

## MX RAM Model

### /// Boring machine

- Next-generation design with oil-air lubrication system for high precision bearings and cooled oil to minimise thermal deformation.
- JUARISTI's exclusive boring bar, made of hardened and nitrided steel, is known for its excellent inertia, vibration damping and robustness.
- It offers top reliability as it is manufactured in a single piece and is easily interchangeable.
- Boring bar diameter from 130 mm to 205 mm.





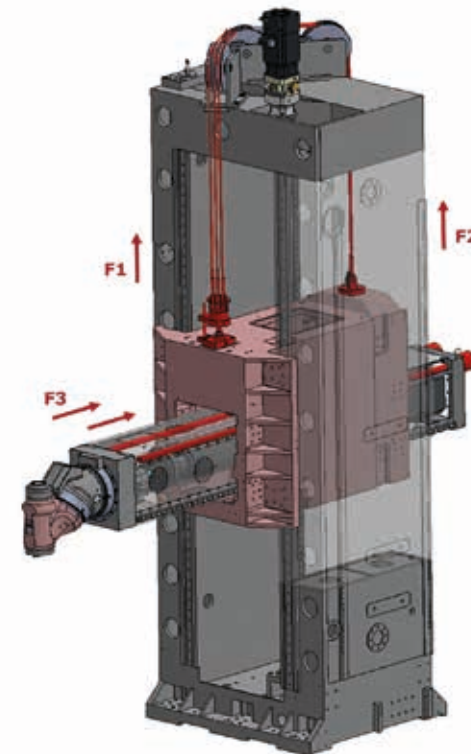
**Maximum stability due to optimised design and the compensation systems.**



### **/// RAM output geometric compensation system (RPT).**

All MX series models are equipped with RPT (RAM Precision Technology), something achieved after years of experience and development of RAM boring and milling machines, all based on real-time hydromechanical compensation of both the center of gravity of the RAM/headstock and the RAM flexion.

- Guaranteed geometric accuracy throughout the entire RAM and boring bar travel.
- High-precision machining of large-volume parts.
- It allows deep boring and drilling operations with maximum precision.





### /// Box-in-box thermo-symmetric design: rigidity and accuracy

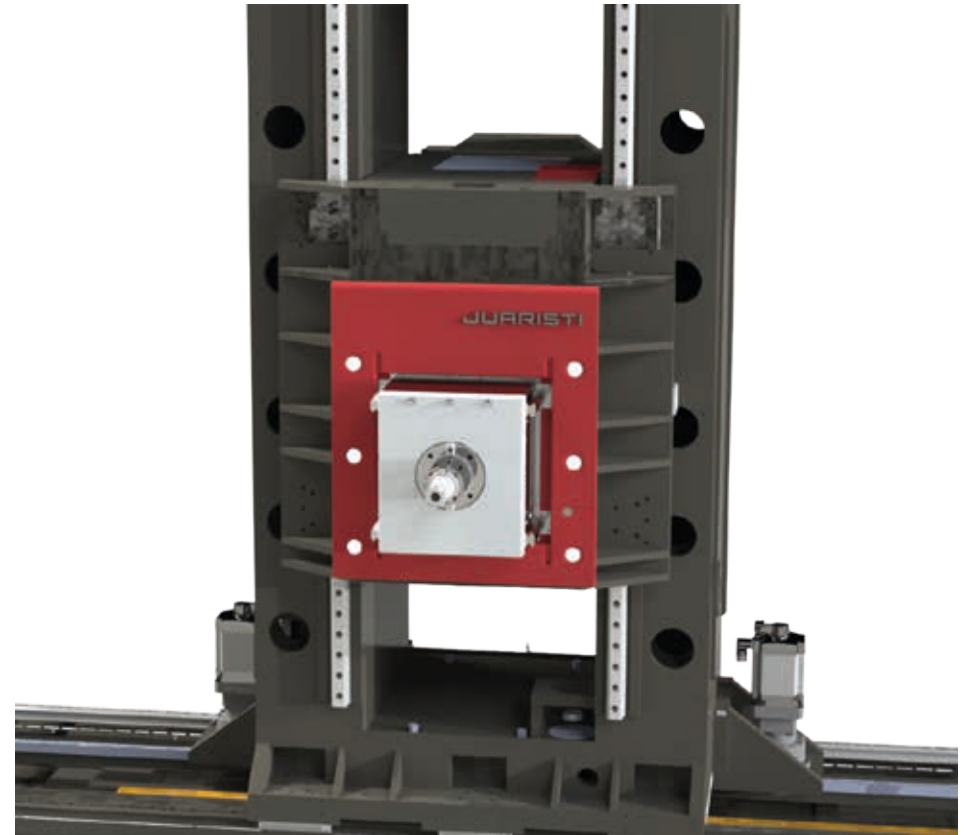
The thermo-symmetric structure of the MX series prevents angular deformation of the column.

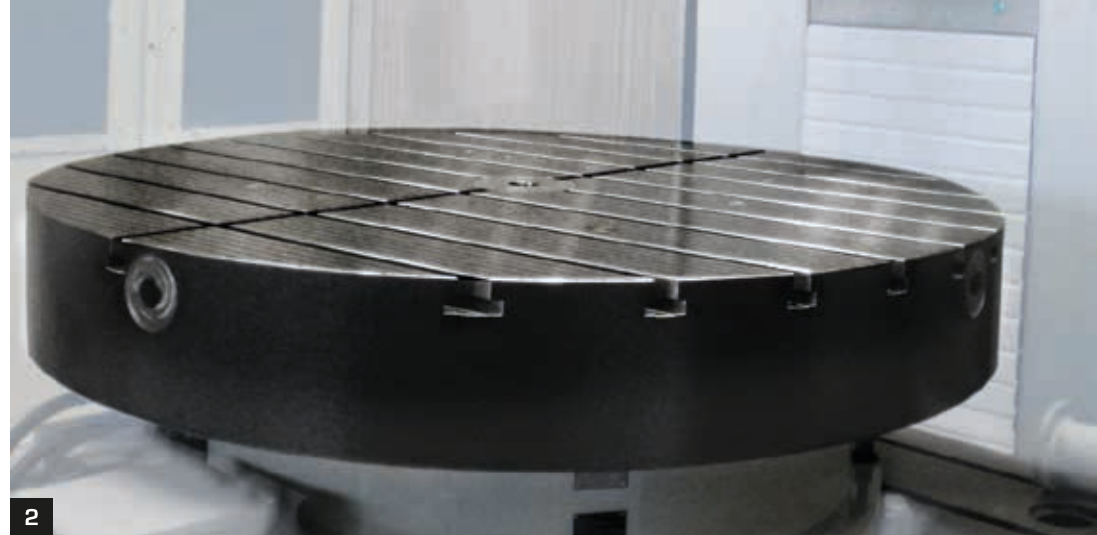
- High machining capacity in both directions and improved finishing quality.
- Direct force transmission to the head.
- Cutting capacity increased by up to 25 %.
- Longer tool life due to vibration absorption.

### /// 4-sided guided reinforced vertical column and RAM

The MX series has reinforced 4-way vertical guides (two front and two rear). The RAM is housed in a completely closed console and has 4 double-sided guides to ensure its stability.

- Improves the machine's productivity.
- Eliminates torsional deformation.
- Improves vibration absorption.
- Increases machining accuracy.





## Multifunction Rotary tables

### /// Hydrostatic table rotation: guaranteed accuracy over the entire service life

Conscious of the huge relevance tables have in ensuring quality and facilitating ergonomic machining, at JUARISTI we design and manufacture a wide range of tables to deal with different operations. It is possible to work with a fourth axis in continuous rotation or a locked/positioned axis [360,000 positions] with a high clamping torque.

### /// MG roto-traversing tables

- Cross movement: hydrostatic or linear guiding.
- Load capacity: 8 to 180 tons.
- Table dimensions from 1,000x1,200 mm to 5,000x6,000 mm.
- Cross travel from 1,000 to 6,000 mm.

### /// MT milling-turning tables

- Table diameter from 1,450 to 3,000 mm.
- Drive power from 46 to 2x51 kW.
- Rotation speed of 100 to 400 min<sup>-1</sup>.
- Load capacity of 5 to 50 tons.

### /// MGT tilting tables

- Capacity of 40 to 100 tons.
- Tilting angle of 10°.
- Dimensions up to 4,000x4,000 mm.



#### Universal head ACD (45°)

- Automatic indexing  $1^\circ \times 1^\circ / 0.001^\circ \times 0.001^\circ$ .
- Power 40/60 kW.
- Torque 1,400/2,850 Nm.
- Rotation speed: 6,000/8,000 min<sup>-1</sup>.



#### TWIST type head

- Continuous Mechanical/Electro-spindle, 1 or 2 axes.
- Power 30/48/60 kW.
- Torque 230/450/1,000 Nm.
- Rotation speed: 6,000/12,000/24,000 min<sup>-1</sup>.



#### Orthogonal head AOD (90°)

- Automatic indexing  $1^\circ \times 1^\circ$ .
- Power 40/60 kW.
- Torque 1,500/2,200 Nm.
- Rotation speed: 5,000 min<sup>-1</sup>.



#### Vertical head AV

- Automatic indexing  $2.5^\circ / 1^\circ$ .
- Power 40/60 kW.
- Torque 1,400/2,850 Nm.
- Rotation speed: 3,000 min<sup>-1</sup>.



#### Facing head

- Machining diameter up to 2,000 mm.
- Rotation speed: 500 min<sup>-1</sup>.
- External turning and facing of tapered surfaces, threads, grooves and radii.



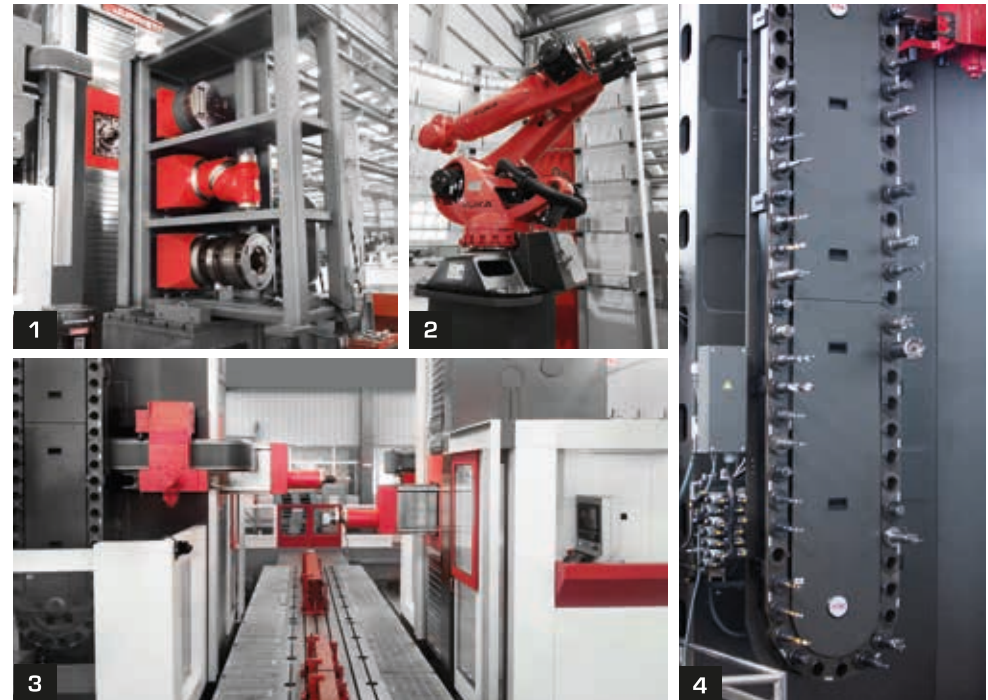
#### Horizontal direct output

- Direct horizontal output with high rigidity and rotation speed.
- A long, robust design allows good accessibility to all types of parts.

## Multifunction, Automation and maximum productivity

The MX series features a high degree of flexible customisation. It can be configured with multiple accessories to form a fully automated, end-to-end solution.

The incorporation of different automatic heads, rotary tables, tool changers and automatic head magazines entirely manufactured by JUARISTI, make it a perfect manufacturing system.



1. AAC Head changer. 2. Robot type ATC tool changer. 3. Duplex configuration. 4. Chain type tool magazine.



## APPLICATIONS **SECTORS**

### Optimum rigidity, precision and stability

Due to its optimum rigidity, precision and dynamics, its flexibility and multiple configurations, the MX series is mainly demanded by subcontracting companies and customers with a wide range of parts to be machined.

In addition, it can be configured in a mirrored layout to significantly increase machining productivity.

It is widely used in various types of industries:

- **General machining**
- **Mining and construction machinery**
- **Chemical and paper industry**
- **Power generation: hydro, wind, oil and gas**
- **Railway**
- **Aeronautics**



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FOR APPLICATIONS IN THE MOST DEMANDING SECTORS



1. Wind turbine frame for the energy sector. 2. Oil and Gas. 3. Crane components for mineral loading. 4. Mining and construction. 5. Power generation turbines. 6. Petrochemical industry. 7. Equipment goods. 8. Subcontracting.

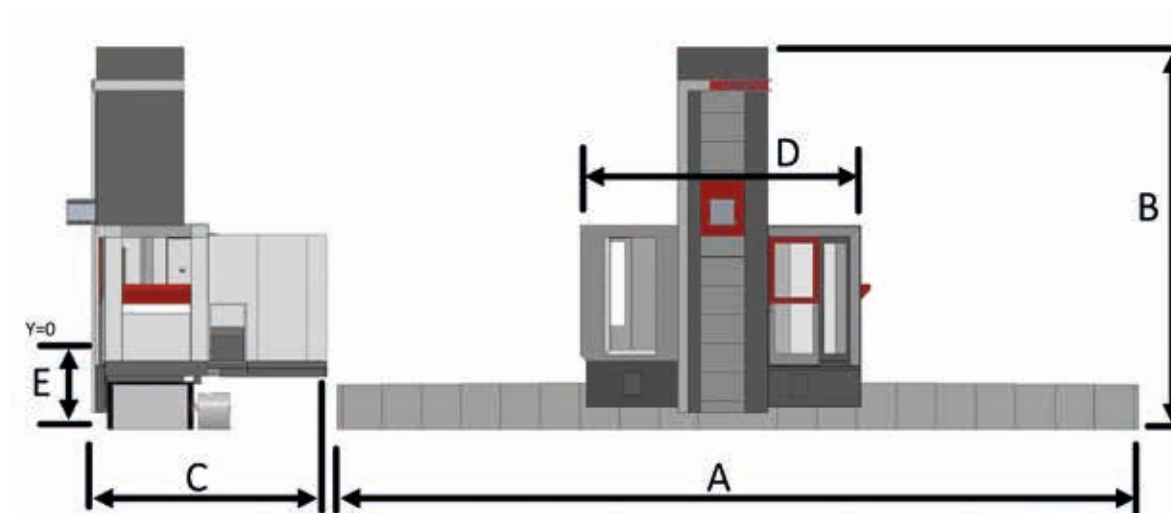
TECHNICAL SPECIFICATIONS

STROKES		MX5	MX7	MX9	MX5 RAM	MX7 RAM
X - longitudinal column stroke	mm	4,000 + Nx1,000	4,000 + Nx1,000	4,000 + Nx1,000	4,000 + Nx1,000	4,000 + Nx1,000
Y - vertical head stroke	mm	2,000 + Nx500...4,000	3,000 + Nx500... 6,000	3,000 + Nx500... 8,000	2,000 + Nx500... 4,000	3,000 + Nx500... 6,000
Z - cross RAM stroke	mm	1,500	1,650 - 1,800	2,000	1,200	1,500
W - axial boring bar stroke	mm	-	-	-	800	800 - 1,000
Z + W	mm	1,500	1,650 - 1,800	2,000	2,000	2,300 - 2,500
HEAD - SPINDLE						
Ø boring bar	mm	-	-	-	130 - 160	160 - 180
Tool taper	-	ISO 50	ISO 50	ISO 50	ISO 50	ISO 50
RAM section	mm	460x520	460x520	520x580	460x520	460x520
Spindle rotation speed	min <sup>-1</sup>	6,000	6,000	6,000	3,500 - 3,000	3,000 - 2,500
Spindle power (S1 - 100 %)	kW	40 - 46	46	46 - 60	51	51 - 64
Spindle torque (S1 - 100 %)	Nm	1,300 - 1,610	1,610	1,610 - 2,900	2,250 - 3,225	3,225 - 4,050
FEEDS						
X-Y-Z	m/min	35 - 30 - 30	30 - 25 - 25	30 - 20 - 20	35 - 30 - 30	30 - 25 - 25



MX9 RAM
4,000 + N x 1,000
3,000 + N x 500... 8,000
1,500 - 1,900
1,000
2,500 - 2,900
160 - 180 - 205
ISO 50 - ISO 60
520 x 580
3,000 - 2,500
71 - 96
4,050 - 8,650
30 - 20 - 20

	A	B	C	D	E
MX5 - MX5 RAM	X+5,100	Y+3,440	4,100	5,100	1,200
MX7 - MX7 RAM	X+5,500	Y+3,700	4,300	5,300	1,600
MX9 - MX9 RAM	X+6,300	Y+4,125	5,000	6,300	1,805



# TECHNOLOGY

## My JUARISTI

A cutting-edge software that provides users with tools to improve profitability, increase productivity, reduce downtimes and simplify machine operations.



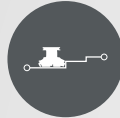
### SUPERVISOR

Unifies and streamlines management of all production equipment, allowing direct communication with the end-user's ERP.



### OSASUN

Software for machine monitoring, self-diagnostics and predictive maintenance.



### ADAPTIVE CONTROL

Adapts cutting conditions by increasing feed and power in favourable conditions and reducing it in adverse conditions.



### BALANCE CONTROL

Software for monitoring and correcting unbalanced masses in turning processes.



### GPS

Fully automated search for table center for increased accuracy in multi-sided machining.

## LEADING TECHNOLOGIES

Our solutions include the most cutting-edge technologies to ensure maximum precision and reliability. They ensure reduced vibrations and enable automatic head calibration or quick machine verification, among many other advantages.



### HDS

#### HYDROSTATIC DAMPING SYSTEM

Reduced vibration and increased cutting capacity thanks to hydrostatic damping.



### AHC

#### AUTOMATIC HEAD CALIBRATION

Fast, automatic head geometry correction to ensure precision.



### RPT

#### RAM PRECISION TECHNOLOGY

Guaranteed geometric precision throughout the entire RAM and bar axis stroke.

# Made by JUARISTI

## A Promise of Quality

JUARISTI follows an end-to-end production philosophy. 'Made by JUARISTI' ensures that all structural components, tables, heads and automation systems are manufactured and assembled in-house.

JUARISTI's extensive experience in machine tool design and in-depth knowledge of the industry allows us to offer our customers the solution that best meets their needs, with the guarantee of maximum precision and reliability. Moreover, we offer a comprehensive, personalised service throughout your dealings with JUARISTI, from the initial consultation and personalised support phase, to design, manufacture, approval, commissioning and after-sales service.

### ACCURACY CUBE

Today's inspiration is tomorrow's innovation

**Accuracy Cube promises precision and reliability for our customers.**

In this area, we collect and analyse information to improve our patented Accuracy Best+ process, JUARISTI's intelligent production method to ensure precise machining and settings before and after machine assembly.

This state-of-the-art air conditioned and temperature-controlled manufacturing center mean parts are machined and measured with optimum precision and quality guarantees, surpassing customer requirements.

### ACCURACY BEST+

#### Precision Parts Center

Precision machining area



High-precision grinding and superfinishing of cylindrical components. Precision machining of key machine elements: heads, gearboxes, etc.

#### 3D Verification Lab

Room for Dimensional Verification



A space devoted to dimensional verification with a state-of-the-art ultra-precise coordinate measuring machine.

#### The White Room

Head assembly area



Final assembly of heads in a controlled atmosphere white room free of contaminants.





Closer, faster, more efficient

## COMISSIONING

### Installation

Final installation at the customer's plant by the machine's team of assembly technicians.

### Excellence since day 1

Standardised commissioning protocol to ensure optimum operation and performance.

### Training

Training on the operation and maintenance of our machines taught by our team of assembly and commissioning technicians.

## KEEP IT RUNNING

### Spare parts

Guaranteed spare parts availability with warehouses in Spain, Germany and dealer locations. Wide range of available accessories.

### Immediate assistance

Hotline managed by specialist technicians. Comprehensive assistance system.

### Preventive maintenance

Continuous machine monitoring and analysis for preventive maintenance.

## CONTINUOUS IMPROVEMENT

### Upgrades

Updating of all our machines.

### Optimisation

A wide range of available technological and automated options.

### Consultancy

Technical consulting in all project phases, from before the purchase to our technical service.

## ALWAYS ON YOUR SIDE

### On site support

Our support team has the technical training that ensures optimum performance of our machines.

### One step ahead

Comprehensive assistance system with remote servicing, preventive and predictive maintenance.

# JUARISTI **SERIES**

## The Next Level



### **TL - TX SERIES**

PLANER TYPE HORIZONTAL BORING-MILLING MACHINES

- High precision, high power and capacity thanks to its thermo-symmetric design.
- Capable of boring and 5-sided machines in a single clamping.
- Option to incorporate various heads, accessory magazines and pallets.



### **ML SERIES**

MOBILE COLUMN MILLING MACHINES

- Optimised design for a quick return on investment.
- Development-based Value Analysis with high dynamics and great versatility.



### **TH SERIES**

MULTIFUNCTION MILLING, BORING AND TURNING CENTERS

- Highly automated high performance multifunction centers.
- Milling, boring or turning operations.
- High dynamics and precision thanks to its thermo-symmetrical structure.



### **MX - MX RAM SERIES**

CENTRAL HEAD MILLING-BORING MACHINES

- High-performance in big formats.
- Powerful chip removal and excellent finishes.
- Powerful and efficient thanks to the closed column console design and four-sided guided RAM.



### **BL SERIES**

BED TYPE MILLING MACHINES

- Dynamic, powerful small format milling machines.
- Equipped with state-of-the-art heads.
- High efficiency, long service life and integrated enclosure.



### **MP RAM SERIES**

HYDROSTATIC MOBILE COLUMN BORING MACHINES

- High-power and precision in machines large parts.
- Unbeatable results and a guaranteed highest precision thanks to hydrostatic technology.
- Designed to meet the requirements of the most complex, critical parts with the highest machine durability.

# MILLING. BORING. **THE EXPERTS.**

At JUARISTI, we are experts in delivering solutions for all types of machining operations. Our catalogue spans a wide range of configurations for milling machines, boring machines and machining centers.

We pride ourselves on the quality and robustness of our products, on our close customer cooperation from the consultation during the buying process to our technical service, and on our development of innovations that set us apart to compete globally.

Our technical service network is present in more than 40 countries. The rapid response, spare parts availability and our highly professional technical staff mean we can offer a personalised, professional service that ensures our solutions are reliable.

For more than 75 years, we have led the way in innovation in our sector and provided solutions to customers in the most demanding industries.

## **JUARISTI Boring & Milling Machines**

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