



**JUARISTI**

## **TX SERIES**

### **PLANER TYPE BORING AND MILLING CENTERS**

Great rigidity and high reliability in multifunction centers

MILLING. BORING. **THE EXPERTS.**

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**TX SERIES**  
Unbeatable mechanical and  
thermal performance



# TX SERIES

## Planer Type Boring and Milling Centers

High rigidity and precision thanks to its thermo-symmetrical structure. A truly multifunctional center that stands out for its reliability, unbeatable performance and high productivity.

The TX series is one of the most recognisable symbols in the JUARISTI universe. We have a long track record of designing this type of solutions, which over the years have established themselves as one of the most sought after by our customers.

This involves a machine that can successfully carry out boring and milling operations. It is characterised by its symmetrical design with a centred head on the column, which provides a high degree of precision and dynamics.

### Main features:

- Thermo-symmetric design with central head.
- Oversized cast iron structural components.
- Hydrostatic rotary table with double pinion system to eliminate backlash.
- High-precision and rigid linear guides.
- Multiple customisation and automation options.



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**1.** Thermo-symmetric structure with central head. **2.** Multiple automation options. Detail of the ATC robot. **3.** Four-guide vertical head movement: 2 in front and 2 in the rear. **4.** Robust structure and high-precision components. **5.** Double pinion play-free hydrostatic guide for table rotation.

### /// High precision and productivity



- High-performance head guidance and efficient force distribution with vertical four-sided guideways.
- Powerful, high-torque machining.
- Maximum dynamics thanks to a structural design optimised through the Finite Element Method (F.E.M.) and the use of direct drives (feeds up to 30 m/min).
- High precision oil-air lubricated bearings.
- Compatible with state-of-the-art milling tools.
- Quick return on investment.

### /// Rigidity, robustness and long service life



- Reduced thermal deformation thanks to the thermo-symmetric column and central head design.
- Increased tool life by up to 20 % due to reduced vibration.
- Guaranteed strength due to the oversized cast iron structure.

### /// Capable of machining all kinds of parts



- Ample work space.
- Hydrostatic rotary table with 8 to 60 t capacity depending on the configuration.

### /// Multifunction and automation



- Compatible with a wide range of automated systems (head and tool changer, pallet changer, measuring probes, etc.).
- Various machining configurations: with boring bar, fixed horizontal spindle, automated universal head, 5-axis continuous rotating head.
- Customisable with a wide range of accessories: facing plate, heads, vertical dividing plate, automated head loader, etc.

### /// Very flexible customisation



- Vertical stroke up to 2,500 mm (TX1), 3,000 mm (TX3) and 4,000 mm (TX7).
- Extensive flexibility for personalisation with full enclosure, automatic doors, roof and fume extraction system.

### /// Ergonomic platform and easy maintenance



- Ergonomic operator platform: vertical and crosswise motion (optional).
- Central maintenance cabinet including all hydraulic, lubrication and pneumatic units.
- Comprehensive automated lubrication system.



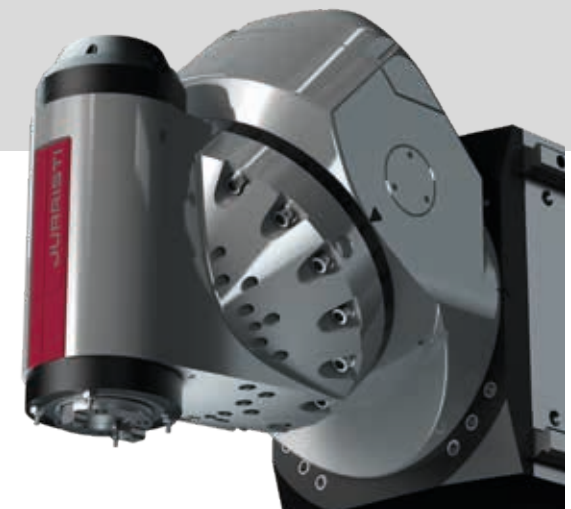
## TX-S Model

FLEXIBLE CONFIGURATIONS TO SUIT ALL NEEDS

### /// Boring bar

- Next-generation design with oil-air lubrication system for high precision bearings and cooled oil to minimise thermal deformation.
- Multifunctional capacity: compatible with a wide range of heads for machining operations such as Boring, Milling, Facing, etc.



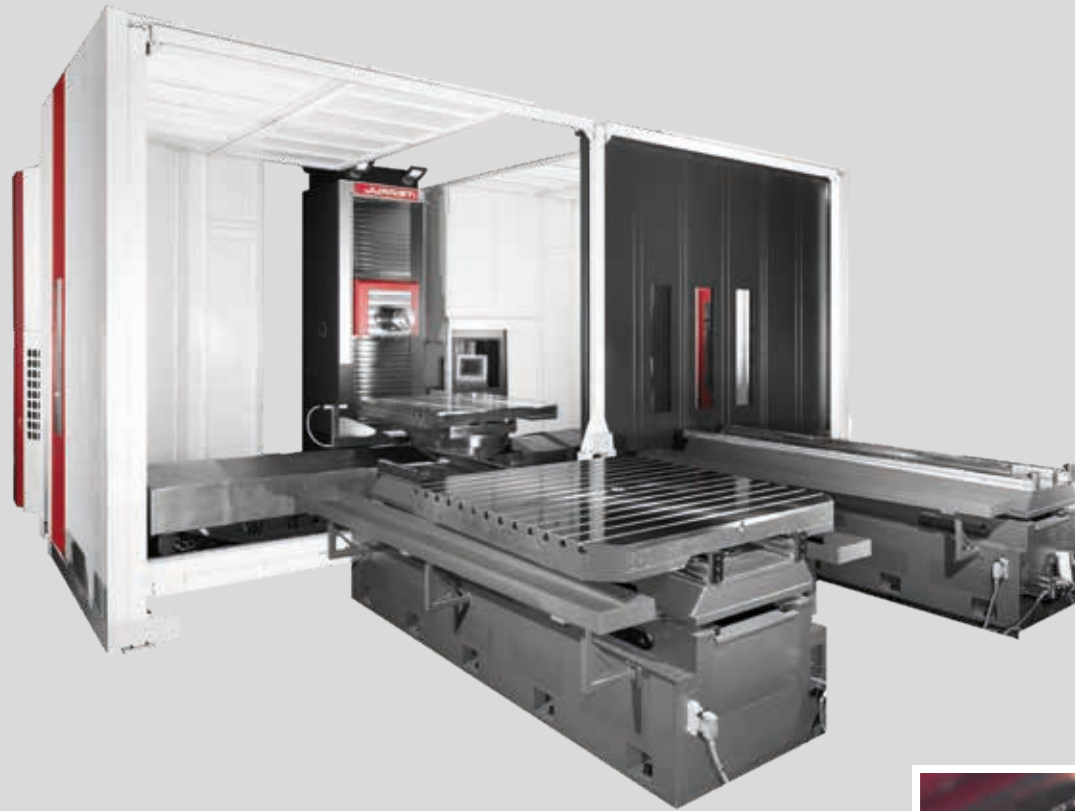


## **TX-D** Model

### **/// Universal Automatic Head**

- Automatic heads with  $1^{\circ} \times 1^{\circ} / 0.001^{\circ} \times 0.001^{\circ}$  indexing and continuous rotation.
- Suitable to work at any angle in the space and machine parts on 5 sides in a single clamping.
- The heads are interchangeable and can be loaded on the machine either manually or automatically.

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## **TX-H** Model

### **/// Machining center with fixed horizontal head**

- Direct horizontal spindle with high rigidity and rotation speed (without W axial travel).
- Robust design and great length allows good accessibility to all types of parts.







## **TX-K** Model

### **/// 5-axis twist-type continuous rotation head**

- Highly rigid 5-axis head for machining complex surfaces on any material with high chip removal capacity.
- Available with electro-spindle for high-speed machining.
- Continuous A axis rotation up to  $\pm 105^\circ$ .



## **TX RAM** Model

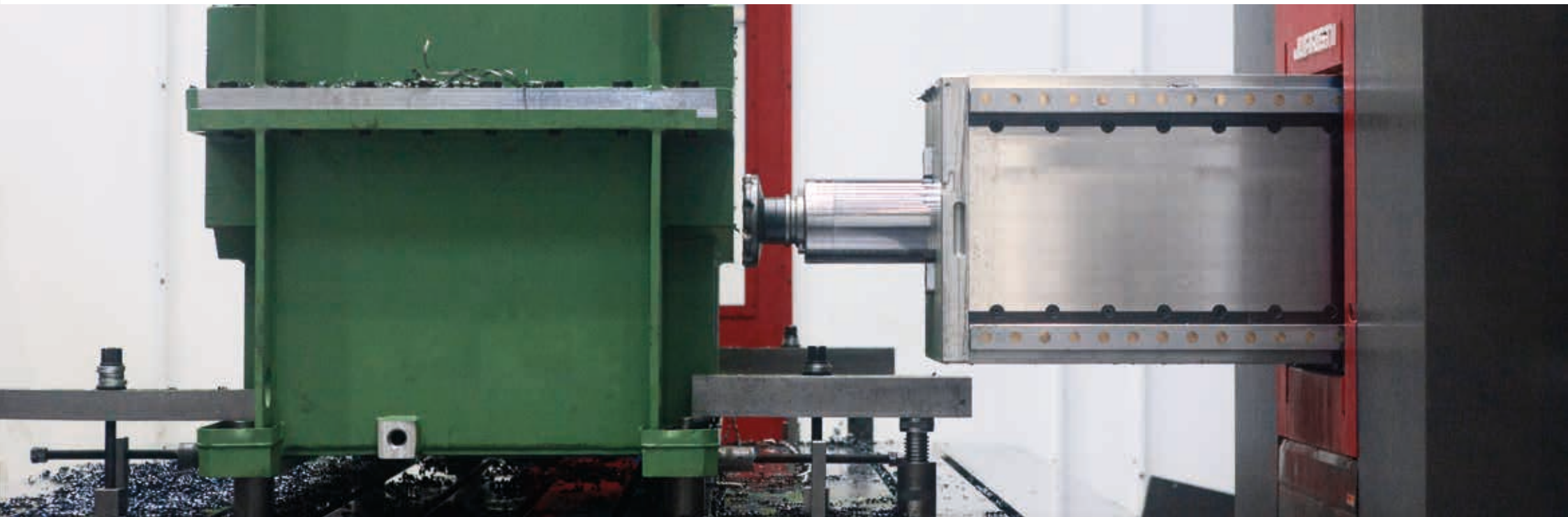
### **/// RAM output configuration + Boring bar (V + W)**

- Box-in-box concept: head centred on the thermo-symmetric column and RAM centred on the headstock with four-sided guidance.
- RAM extension up to 1,000 mm without drop thanks to balancing systems.
- High performance and vibration-free even under extreme conditions.
- Guaranteed control over the RAM flexion thanks to the RPT technology (RAM Precision Technology).
- Precision machining and long service life.
- Large part machining capability: work area that allows turning of parts up to 5,000 mm long and weighing 60 t.

### /// Outstanding customisation capacity

The TX RAM series offers great customisation features, including multiple heads and a variety of automation systems, such as automatic pallet, head and tool changers, among others.

<b>TX RAM</b>		
<b>Rotary table</b>	mm	1,600x1,600 ≥ 3,000x4,000
	t	20-40-60
X	mm	2,000-...6,000
Y	mm	2,000-...4,000
Z	mm	1,500-...3,000
V (RAM)	mm	800-1,000
∅/W	mm	130-150-180/800-1,000
P	kW	46/64
Feeds	m/min	30



# TX SERIES

DIMENSIONS ADAPTED TO ALL MACHINING SHOPS

## TX1

### /// Vertical stroke up to 2,500 mm

- Vertical stroke up to 2,500 mm.
- Boring bar:  $\varnothing=110-130/W=600$  mm.
- Spindle speed:  $3,000 \text{ min}^{-1}$ .
- Spindle power: 40 kW.
- Double motor, double pinion anti-backlash table rotation [Master-Slave].
- Table dimensions up to  $1,600 \times 2,000$  mm/8 t.



## TX3

### /// Vertical stroke up to 3,000 mm

- Four-guide vertical stroke up to 3,000 mm.
- Boring bar:  $\varnothing=130-150/W=800$  mm.
- Spindle speed:  $3,500 \text{ min}^{-1}$ .
- Spindle power: 40-46 kW.
- Preloaded double pinion with backlash elimination system.
- Table dimensions up to  $2,500 \times 3,000$  mm/40 t.

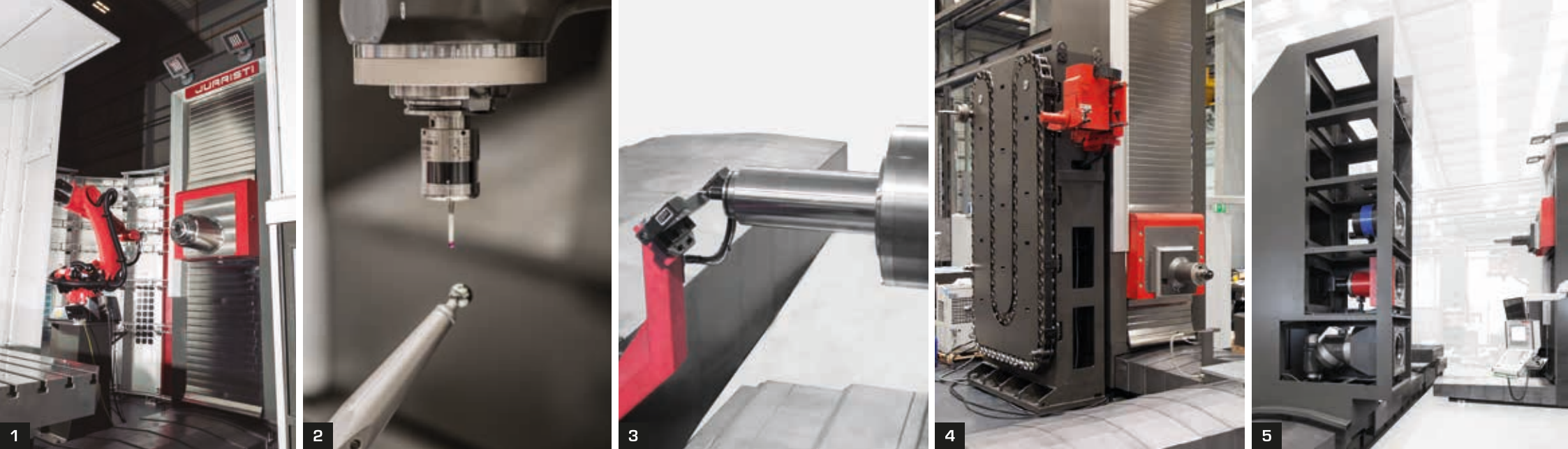


## TX7

### /// Vertical stroke up to 4,000 mm

- Four-guide vertical stroke up to 4,000 mm.
- Boring bar:  $\varnothing=150-180/W=1,000$  mm.
- Spindle speed:  $3,000 \text{ min}^{-1}$ .
- Spindle power: 46-70 kW.
- Preloaded double pinion with backlash elimination system.
- Table dimensions up to  $2,500 \times 3,000$  mm/40 t,  $3,000 \times 3,500$  mm/60 t.
- Highly dynamic.
- 2 ball screws with two motors on Y-axis.





1. ATC type robot. 2. Workpiece touch probe. 3. Laser tool measurement probe. 4. Column-independent ATC. 5. Head magazines. 6. Automatic head changer.



## Automated Solutions

QUICK AND RELIABLE

### /// Systems designed to increase our machines' autonomy and productivity

JUARISTI designs and manufactures automated systems to increase its solutions' productivity and allow for unassisted work.

#### Automated solutions

- Automatic tool changer.
- Automatic head and accessory changer.
- Automatic pallet changer.
- Automatic head calibration system.
- Calibration system and tool life control.
- Probes for part measurement.



## Ensemble designed for **total Multifunctionality**

The TX series comprises an assembly capable of dealing with very different machining types by including a wide range of heads and accessories.

The automated head loading system allows you to change from boring to milling in 1 to 2 minutes.

The TX is ideal for multiple sectors by combining the strong roughing capability of the boring bar with the high speed and precise finishing of the five-axis heads.

The integrated automation systems make this series an ideal choice for 360° machining companies by making the most of the equipment and floor space.



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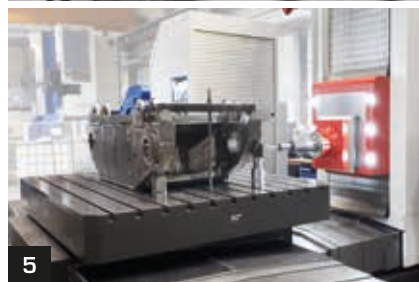
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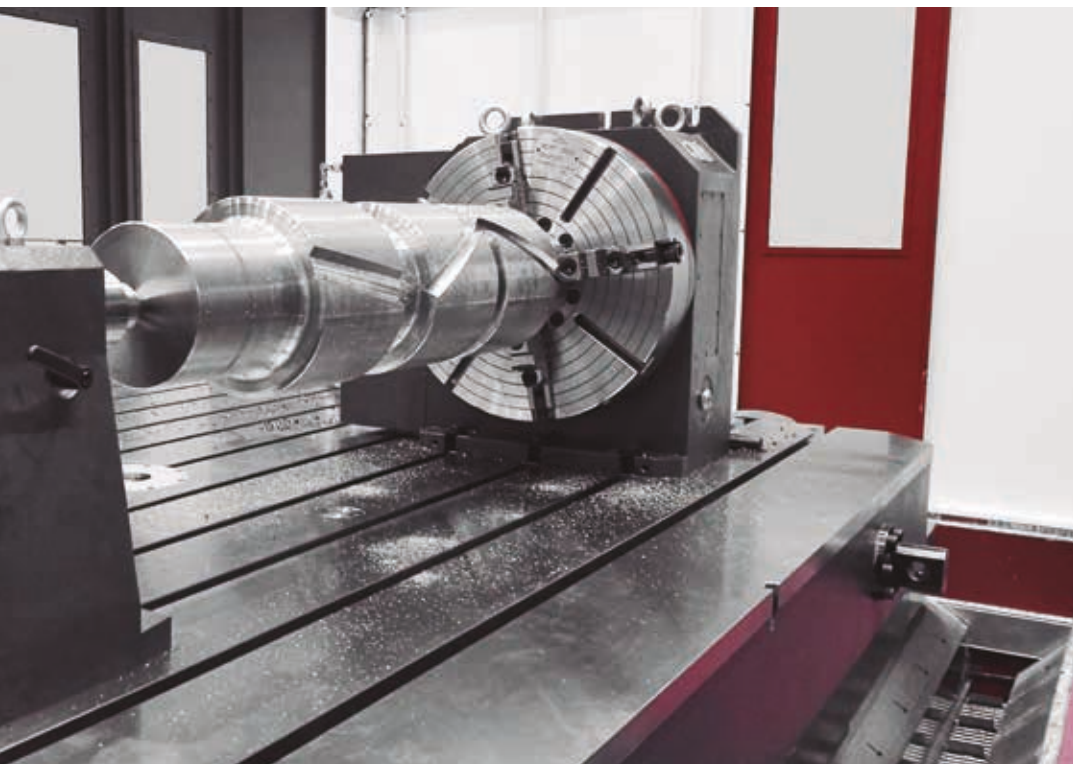
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- 1. Hydraulic pumps, compressors and valves.
- 2. Power generation.
- 3. Mining machinery.
- 4. Automotive and aeronautics.
- 5. Construction machinery
- 6. Railway bogie.
- 7. Pharmaceutical sector.
- 8. Power transmission gearbox: gear-shaft machining.





## Ultimate **versatility** for all sectors

The TX series is JUARISTI's most popular solution due to its versatility.

High customer satisfaction among the most demanding sectors thanks to its excellent performance.

### Industries who choose this series:

- General machining
- Power Generation: Hydraulic, Wind, Nuclear
- Railway
- Automotive
- Aeronautics and Aerospace
- Oil and Gas
- Naval
- Defence
- Construction and mining machinery
- Power Transmission: Gearboxes
- Iron and steel industry



FOR APPLICATIONS IN THE MOST DEMANDING SECTORS

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# TECHNICAL SPECIFICATIONS

			TX1	TX3	TX7	
<b>MACHINE STROKES</b>			X - Cross table	2,000 - 3,000 - 4,000	2,000 - 3,000 - 4,000 - 5,000	3,000 - 4,000 - 5,000 - 6,000
			Y - Vertical head	1,500 - 2,000 - 2,500	2,000 - 2,500 - 3,000	2,000 - 2,500 - 3,000 - 3,500 - 4,000
			Z - Longitudinal column		1,500 - 2,000 - 2,500 - 3,000	
			W - Axial boring bar	600	800	1,000
<b>HEAD</b>	<b>TYPE S</b> <b>Boring bar</b> ISO 50 (HSK100)	Ø boring bar mm	130 (110)	130 (150)	150 (180)	
		Spindle rotation speed	3,000	3,500 (4,000)	3,000 (2,500)	
		Spindle power - S1/S6	40/59	40/59 - 46/65	46/65 - 70/119	
		Spindle torque - S1/S6	1,650/2,500	1,650/2,500 - 2,050/2,900	2,620/3,930 - 4,120/6,180	
		Fixed spindle Ø x L	280x550			
		Spindle rotation speed	6,000 (12,000 with electric-spindle)			
	<b>TYPE H</b> <b>Fixed spindle</b> ISO 50 (HSK100)	Spindle power - S1/S6	40/59 (48 with electric-spindle)			
		Spindle torque - S1/S6	1,400/2,125			
		Degree of indexing	1°x 1°/ 0.001° x 0.001°			
	<b>TYPE D</b> <b>Uni. Head (3+2)</b> ISO 50 (HSK100)	Spindle rotation speed	5,000/6,000			
		Spindle power - S1/S6	40/59			
		Spindle torque - S1/S6	1,300/1,960			
		A-axis	± 105° with continuous rotation or positioning every 0.001°			
	<b>TYPE K</b> <b>5 axes continuous rotation</b> ISO 50 (HSK100 - HSK63)	Mech./Elec. Speed.	6,000/10,000/18,000			
		Mech./Elec. Power	30/48			
		Mech./Elec. Torque	1,030/300/90			
				Optional		

			TX1	TX3	TX7	
<b>FEEDS</b>	X-Y-Z	m/min	30	30	30 - 25	
	W	m/min	20	20	20	
	B	min <sup>-1</sup>	8	5	3	
<b>ROTARY TABLE</b> Hydrostatic B-axis	Table size	mm	1,000x1,200/1,250x1,600/ 1,600x1,600/1,600x2,000	1,600x1,600/1,600x2,000/ 2,000x2,000/2,000x2,500	2,000x2,000 2,000x2,500 2,500x3,000	2,500x3,000 3,000x3,000 3,000x3,500
	Maximum load	kg	8,000	20,000	40,000	60,000
<b>AUTOMATIC PALLET CHANGER</b>	No. of pallets		2 - 4 or more with FMS System			
	Pallet size	mm	1,120x1,120/1,450x1,600	1,600x1,600/2,000x2,000	2,000x2,500/2,500x3,000	
	Max. load	kg	6,000	16,000	30,000	
<b>AUTOMATIC HEAD CHANGER</b>	No. of heads		1 - 2 - 3 - 4			
<b>AUTOMATIC TOOL CHANGER</b>	No. of tools		30 - 40 - 60 - 80 - 100 - 120 - 160 Chain type 150 - 400 Rack/ Type Robot			
	Max. tool dimension	Diameter	mm	125 (250)		
		Length	mm	600 - 1,000 (with Robot)		
		Weight	kg	35 - 50		
<b>COOLANT THROUGH SPINDLE</b>	Adjustable pressure	bar	20 - 30 - 40 - 60 - 80			
<b>CE ENCLOSURE</b>	Full enclosure around the machine with manual/automatic doors <b>Option:</b> Roof with dust extraction/filtration system   <b>Option:</b> Stand-alone platform with 2 movements					
<b>CNC</b>	<b>SIEMENS 840 D - SL/HEIDENHAIN TNC 640/FANUC Oi-MF, 31iB/FAGOR 8065</b>					

# TECHNOLOGY

## My JUARISTI

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



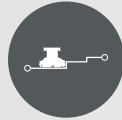
### SUPERVISOR

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 machining 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 machining 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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