

# TR | TRD | TRM

## Productivity Line

Productive. Dynamic.

 **SORALUCE**

As part of our premium solutions, the **Productivity Line bed type milling** machines of Soraluce allows productivity to be taken to the next level, providing optimum rigidity and mechanical stability, high dynamics and the maximum stock removal capacity on the market.



# Productive Dynamic Heavy-Duty

TOP BENEFITS	PRODUCTIVITY	PRECISION	RELIABILITY	FLEXIBILITY
Design	■	■	■	■
Full cast iron structure	■	■	■	
Multiple configurations	■			■
Linear guiding & Damping Pads	■	■	■	
DAS+	■	■	■	

TR: Bed type milling machine  
 TRD: Bed type milling machine with rotary table  
 TRM: Multitasking bed type milling machine



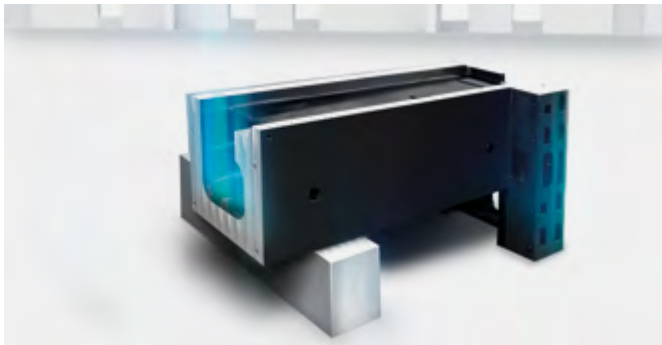


# Nine reasons to choose Productivity Line

01.

# A winning combination

The most rigid and dynamic solution on the market



## Full cast iron

Long term stability.

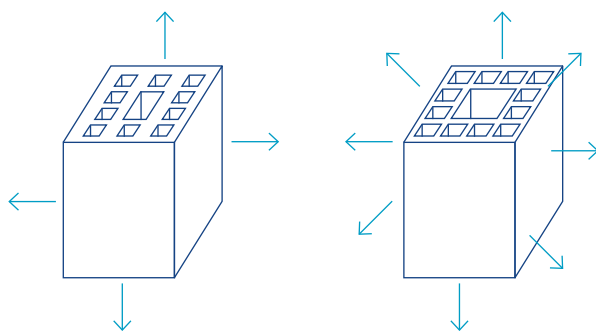
### Thermostability

- Expansion under control: quantity, speed, direction.
- Vibrations absorption, damping capacity.
- No need of electronic compensations.
- Best performance against temperature variations.
- Main structure: column, saddle, ram.

## Linear guiding

Lifelong durability.

- Soraluce is a pioneer in the use of linear guiding systems in large machines and heavyduty applications.
- Design proven since 1991.
- Lifelong durability > 10 years maintenance free at maximum performance.



Cast iron

Fabricated steel

TOP BENEFITS	Linear guiding	Prismatic guiding	Hydrostatic guiding
Precision	↑↑↑	→	↑↑
Dynamics	↑↑↑	↓	↑↑
Maintenance free	↑↑↑	↓	↓
Loading capacity	↑↑↑	↑↑	↑↑
Thermal stability	↑↑↑	→	→
Sustainability	↑↑↑	↑	↓↓↓
Foundation cost saving	↑↑↑	↑↑↑	↓↓



## Damping pads

Great stability.

- Own development of special damping pads combined with linear guides.
- Eliminates any vibration during machining processes.

## DAS+

No chatter.

### Active damping system

- 100% cutting capacity through the complete workpiece volume.
- Reduced cycle time up to 45%.
- Increased productivity up to 300%.
- Improved surface quality.
- Extended tool life.
- Machine protected: long term precision as reduces machine's key components wear (ballscrew, guideway, gearbox, head), in both roughing and finishing operations.

### How does DAS+ work?

DAS+ is a smart system which oversees the machining process and selects the best technological alternative to eliminate chatter:

- Active damping in the ram.
- Spindle speed tuning by automatic selection of optimum speed.
- Harmonic oscillation of spindle speed.

02.

# Next level technologies

## Best stock removal



- Best stock removal with extended ram.
- Great cutting capacity through the complete workpiece volume.

Results TR Z: 1300 mm

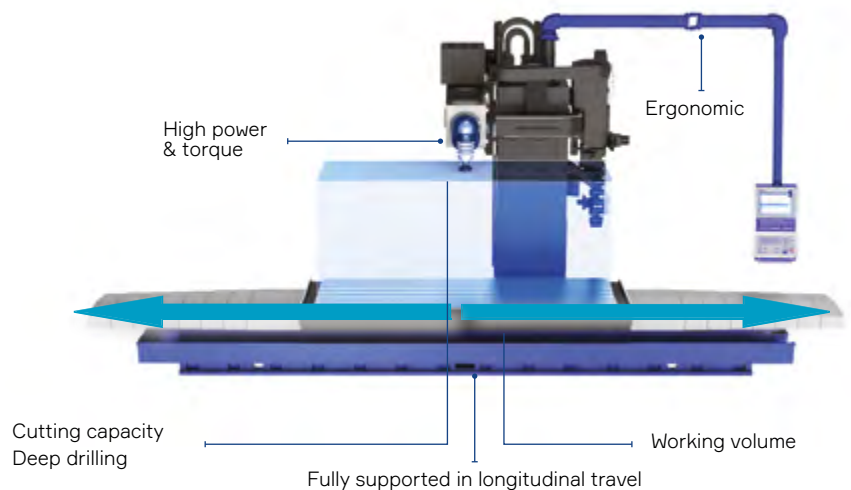
Stable working conditions, material DIN CK45.  
DAS+ OFF.

Ø 125 mm face milling  
tool

Ap= 5 mm  
Ae= 100 mm  
F= 2020 mm/min  
Q= 1010 cm<sup>3</sup>/min  
Power consumption: 100% (37 kW)

## Much more than a machining center

	Sorbusce milling machine	Machining center
Working volume	↑	↓
High power	↑	↓
High torque	↑	↓
Cutting capacity	↑	↓
Deep drilling	↑	↓
Ergonomic	↑	↓
Compact	↑	↓



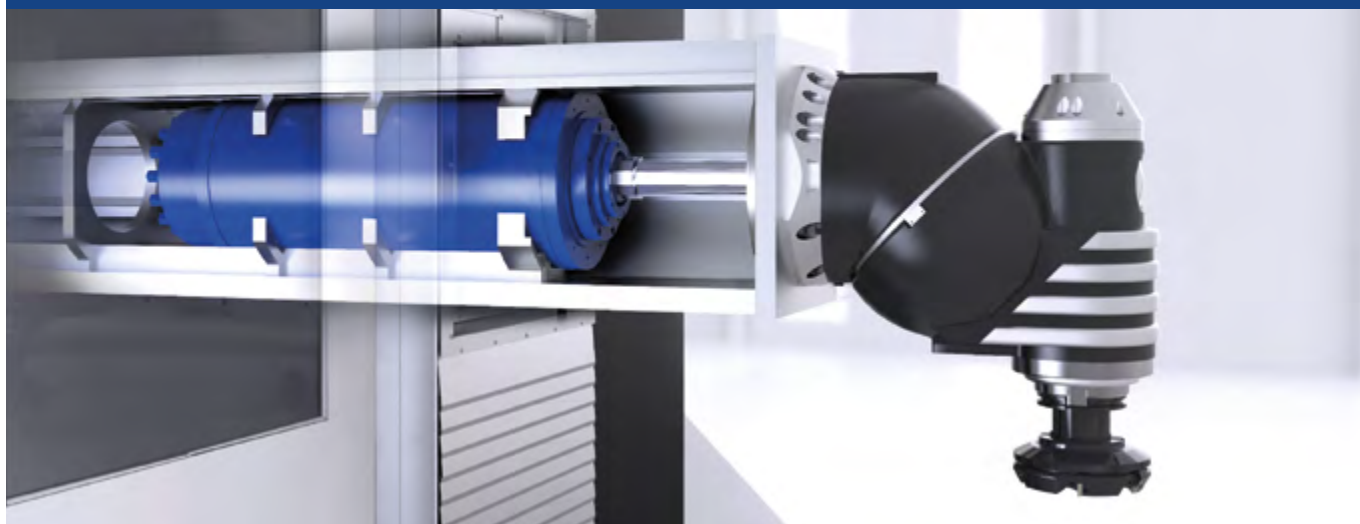
## Inline spindle motor

- High efficiency.
- Minimum noise level.
- High performance thanks to optimized power-torque curve.
- Full power at low rpm.
- Short distance between main motor and head transmission.

### Compact-design transmission shaft.

Placed at the front of the ram close to the head.

Up to  
43 kW



### Best reliability

No belts, no reducers, neither long transmission bars.

### Great precision

Best thermal stability provided by cooled inline motor.

### Enhanced rigidity

Frontal assembly, all sides of the ram are solid.

### Ease of maintenance

Quick exchange of the main spindle motor.

03.

# Accuracy in the DNA

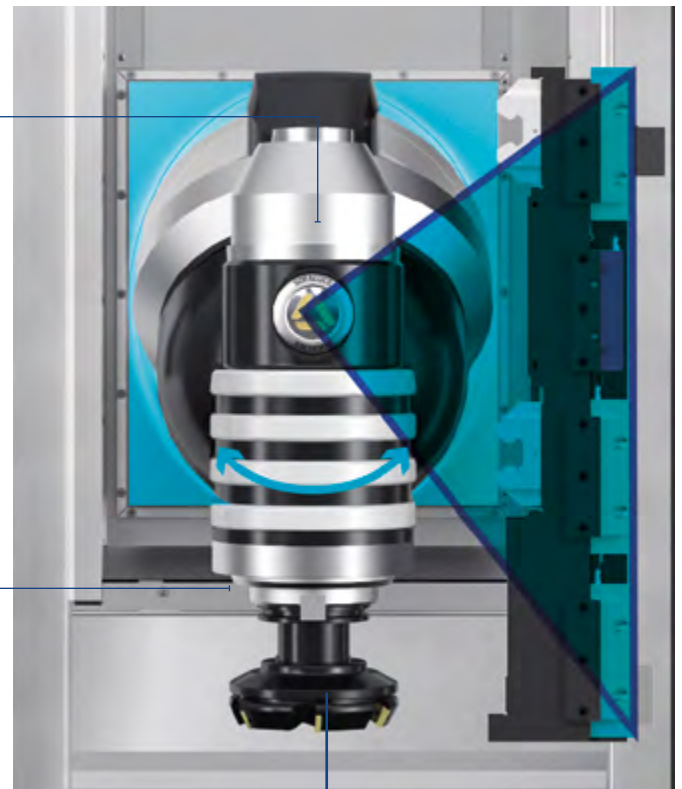
## Increased effective stiffness

Design is conceived to obtain the best precision and rigidity. We keep maximum quality control of manufacturing and assembly until its final verification, using Smart 3D thermal compensation of the machine.

- 01 Stiffness forces triangle
- Compact saddle for best rigidity.
  - The cutting forces are transferred directly from the cross axis roller bearings to the column, minimizing the deformation of the saddle.
  - Special Soraluze saddle design with minimum distance between the ram and the column, providing excellent stability, precision and maximum cutting capacity.
  - Ram saddle fully guided.

- 02 Torsion and deformation under control
- Provided by the best guiding system in the market.
  - Straightness ensured through a perfect parallelism between guides supporting surfaces.
  - Lateral ram torsion constrained by special ribbed design cast iron ram, all sides being solid.
  - Full control over ram drop and flexion.

- 03 Minimum distance
- Short distance from the column to the tool, thanks to the arrangement of the ballscrew and counterweight system.
  - Minimum machine overhang.



Torsion movement

- 04 No compensation
- Ram drop under control without electronic compensation.

04.

# Best working environment

## Compact & shielded



### Standard peripheral guarding:

- Easy front & rear access to work area.
- 2 sliding frontal doors.
- Extra back door.
- Sides opening for long workpiece loading / unloading tasks.
- Extra thickness for long-term resistance.
- Glass windows for long-term clear vision.



### Roofed guarding (as option):

- Total protection for coolant and chips.
- Fumes extraction systems (as option).
- Automatic door opening (as option).
- CCTV camera (as option).
- Extra LED lighting (as option).



### Workpiece access from the rear

05.

# Smart Technology



Automatic re-setting of head kinematics to increase accuracy. It compensates the head articulation positioning deviation for one particular position of the head.

+ ACCURACY



Eliminates any chatter that may arise during the machining process.

Machine protected: long term precision as reduces machine's key components wear.

+ PRODUCTIVITY  
Patent no. EP 3017911





# Energy save Package

**+30% save**  
on energy consumption

You decide how and when the different components of the machine are switched on / off!

- Spindle
- Axes
- Machine power
- Control
- Lightning
- Air supply
- Hydraulic parts
- Warm-up program
- Calendar planning



Cloud based software suite that enables seamless production information flow and maximizes machine performance.

**+ PRODUCTIVITY**



Smart and automatic setting of defined cutting parameters according to actual machine power consumption.

**30% time saved**  
in roughing process!

**+ PRODUCTIVITY**



Eliminates chatter originated on either fixtures or workpieces.

**+ PRODUCTIVITY**  
**+ QUALITY**

Patent no. EP 3226089 B1

06.

# Soraluce heads

More than  
**300**  
head models

Precision &  
High performance

Precise machining results due to high positioning accuracy.

Maintenance friendly: wear parts can be easily replaced on site.

High dynamics.

Robust design.

Air-oil lubricated gears; extended operating hours.

High power and torque allowing maximum cutting capacity.

Customization: more than 300 head models at your disposal.

Water-cooled for best thermal stability.



# The most advanced head manufacturing center



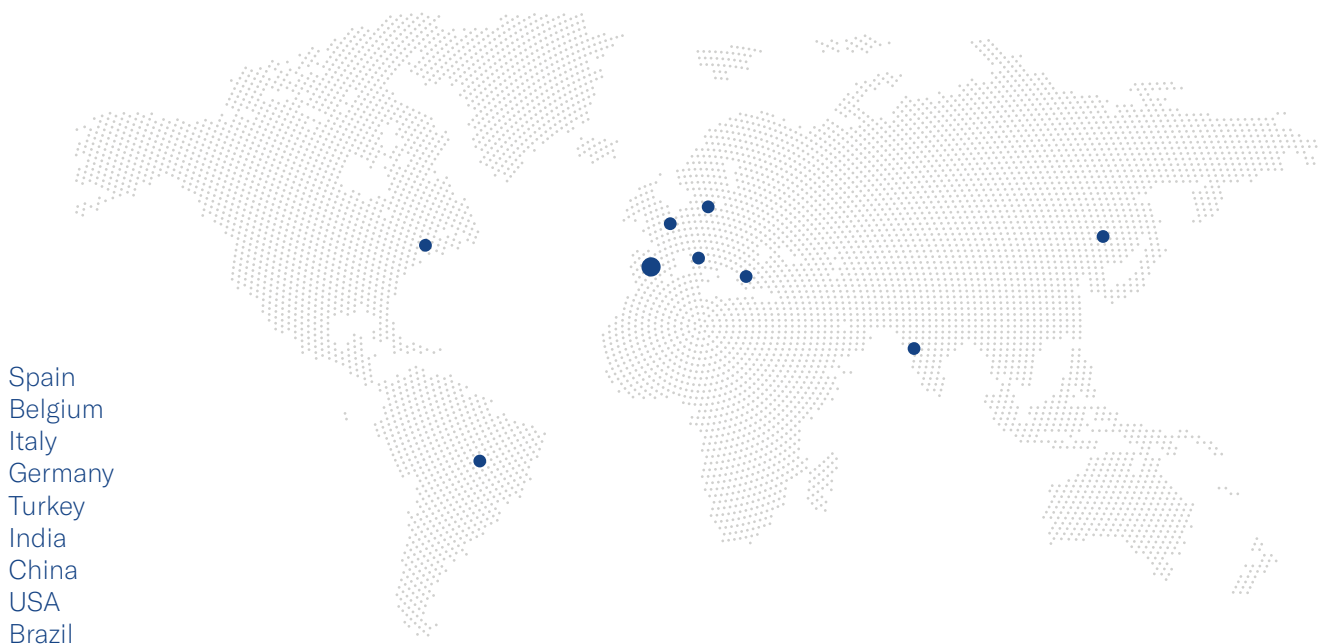
## In-house made



## Head service hubs

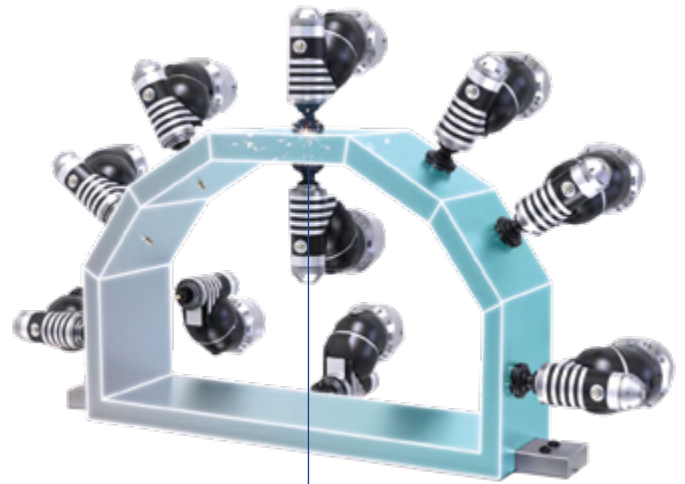
- Your trusted service partner.
- Know-how directly from the manufacturer.
- Maintenance & repair.
- Spare head service available.

150  
Spare heads available



# High Performance Heads

- Up to 43 kW (S1-100%).
- High speed up to 7000 min<sup>-1</sup>.
- Automatic mechanical heads.
- Optimum accessibility thanks to reduced size.
- Robust performance.
- Highest reliability.
- Fast positioning.
- Maximum thermal stability.
- Quick change for maintenance purposes.



The power of indexing

# High-Frequency Spindles

- Up to 74 kW.
- Up to 300 Nm.
- Vertical high-speed head.
- C-axis torque motor, continuous positioning (as option).
- Robust performance.
- Highest reliability.
- Maximum thermal stability.



## Thousands of possibilities

### Universal head

37 kW (S1)  
 2.5° x 2.5° / 0.001° x 0.001°  
 6000 / 7000 min<sup>-1</sup>

### Multitasking head

37 kW (S1)  
 2.5° X 2.5° / 0.001° X 0.001°  
 5000 / 6000 / 7000 min<sup>-1</sup>

### Orthogonal head

37 kW (S1)  
 1° x 1°  
 6000 / 7000 min<sup>-1</sup>

### 5-axis continuous head

Up to 37 kW (S1) mechanical / up to 74 kW (S1) electrospindle  
 0.001° x 0.001°  
 Up to 7000 min<sup>-1</sup> mechanical / Up to 30000 min<sup>-1</sup> electrospindle



## Orthogonal Head

Compact design, conceived for machines with inline motor.

- Inverse machining capacity: up to -45°.
- No additional set-ups.
- Improved cycle time.
- Better finishing quality.
- Minimum manipulation.
- Full advantage of machine travel.
- Same distance from spindle to table during lateral and front milling.

07.

# Soraluce Software Factory

## Smart HMI, Intelligent interface.

- Ergonomic and intuitive workspace.
- Soraluce's APPS available.
- Parallel work during NC program running.
- Minimized downtimes.
- Real time machine status.
- Energy consumption monitoring.
- Simplification of repetitive tasks.



01

Modular and robust;  
configurable according  
to customer's  
requirements.

02

Own methodology;  
complete integration,  
approved in Soraluce.

03

Development of specific  
custom cycles.

04

Capability for automated  
system, flexibles  
lines, centralized tool  
magazines.



Softkeys &  
Customized  
masks



Manufacturing  
cycles



Dynamic collision  
monitoring



Advanced tool  
management

08.

# Digital services



Advanced Digital Services, based on the Soraluce Data System comprehensive monitoring platform:

## Reportya

Regular customized reports.

## FactoryConnect

Machine park monitoring and integrations with corporate management systems (ERP, MES, etc.).

## Autocheck

Self-Assessment using Fingerprint benchmark parameters.

## JobManager

Traceability of manufacturing orders, programs, tools and process incidences.

## Emaintenance

Digital management of maintenance tasks.

## OEEMonitor

Availability & Performance & Quality parameters calculation.

09.

# Ergonomic & Safe

## Tool changing system

Tool loading  
non-stop machining

- Simple and ergonomics.
- Allows tool loading/unloading with machine in operation.
- Full safety for the operator.
- No downtimes:
  - Tool storage is protected from chips and coolant.
  - Inductive detectors protected.
- Advanced tool management options available on request.

Totally reliable

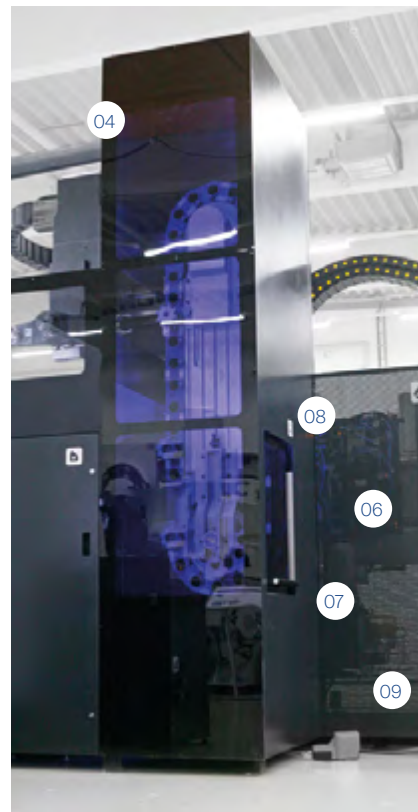
- NC controlled.
- No impacts with head.
- Tool control.

Non-stop machining

Robotized tool  
changer available



# Ergonomics & Easy maintenance



01

Accessible and spacious work area.

02

Working area perfectly lightened.

03

Flexible control panel arm: CNC control at the front or rear-side of the machine.

04

Protection of the critical areas of the equipment.

05

Wide glass surfaces.

06

Visible gauges and levels.

07

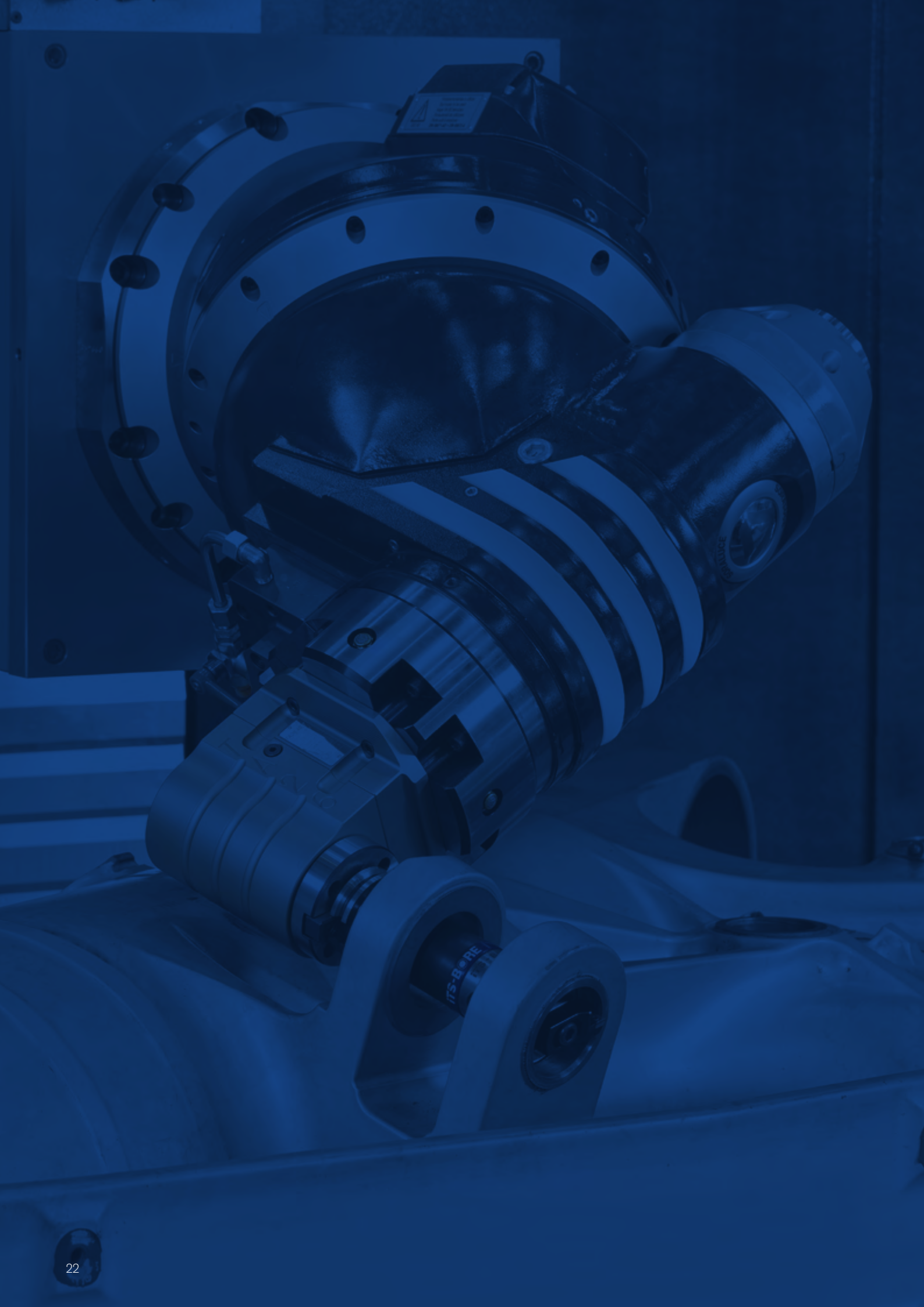
Accessible intervention areas to ease maintenance tasks.

08

Sliding doors and windows to prevent dismantling of panels.

09

Machine grease lubrication; consumption is kept to the minimum necessary.



Meet  
the machines

# Productivity Line

Best stock removal rate!



**SORALUCE**

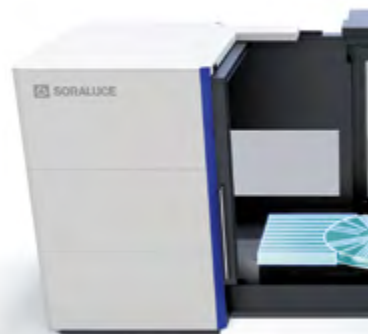


# Choose the configuration of your machine

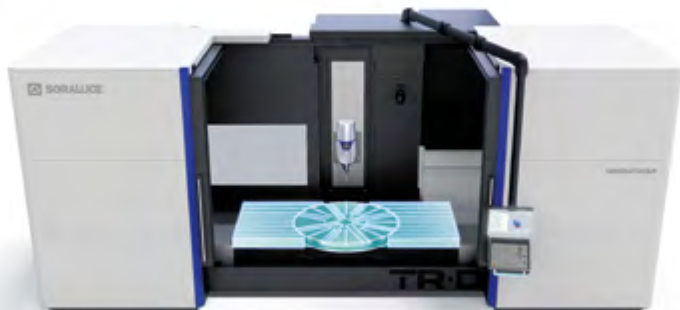
A versatile range



TR  
Standard table



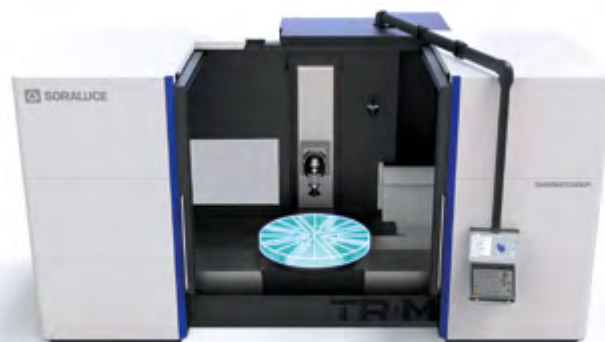
TRD | TRM  
Integrated rotary milling | turning table



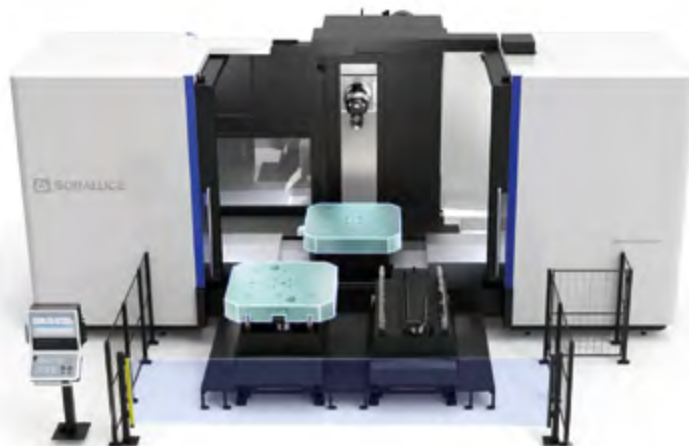
TRD  
5-axis TRD with electrospindle



TR  
Pendulum machining



TRD | TRM  
Rotary milling | turning table



TR  
Palletized and flexible manufacturing systems



# TR

## Bed type milling machine

SORALUCE TR is much more than a machining center providing higher working volume, power, torque and cutting capacity.

Designed to offer optimum rigidity and mechanical stability, with the best ergonomic, accessibility and safety to operators.

Choose the configuration of your table TRD | TRM

Swing (max.) Ø 2300 mm



Rotary table for  
milling (squared)



Rotary milling |  
turning table (round)



Integrated rotary milling | turning table  
(located in the center of the table)



Integrated rotary milling | turning  
table (located in the right lateral  
side of the table)



# TRD

## Integrated B-axis rotary table

### 4 or 5 axes continuous machining

- Universal automatic indexing head, 4 axes (standard).
- Vertical high-speed head, 4 axes.
- Vertical high speed continuous positioning head (torque motor, C-axis), 5 axes.
- Universal automatic indexing head with electrospindle attachment, 4 + 2 axes.

- Five-sided machining.
- Ease of use with specific rotary table cycles.
- High accuracy thanks to the table center measuring and correction.
- Permanent table rotation compensation.





# TRM

Multitasking  
All in one: milling,  
turning, grinding  
and gear cutting  
in a single  
machine.



- Improved machining accuracy and overall part quality.
- Significant reduction in production lead time.
- Cost benefits: fewer fixtures, tools and labor requirements.
- Single machine investment for multiple processes.
- Optimized use of floor space.
- Machining of several morphologies, sizes and complexities.
- Improved precision due to minimum workpiece set-ups.
- Fewer operators involved in the machining process.

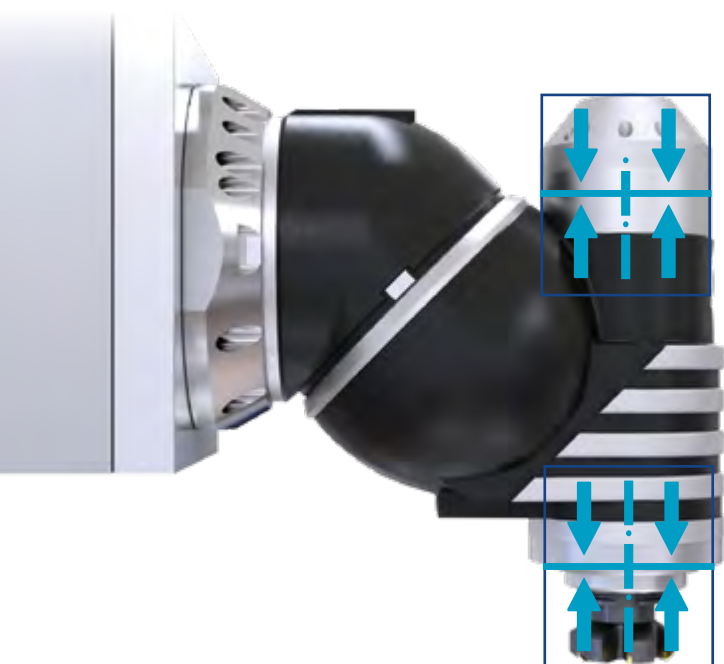
## Milling & Turning tables

- Table area Ø 1600 mm.
- Table capacity: 8000 kg by milling / 2000 kg by turning.
- Turning spindle speed: 6 ÷ 400 min<sup>-1</sup>.
- Turning spindle power: 90 kW.

# High Torque Multitasking Head

Head and spindle orientation at any angle.

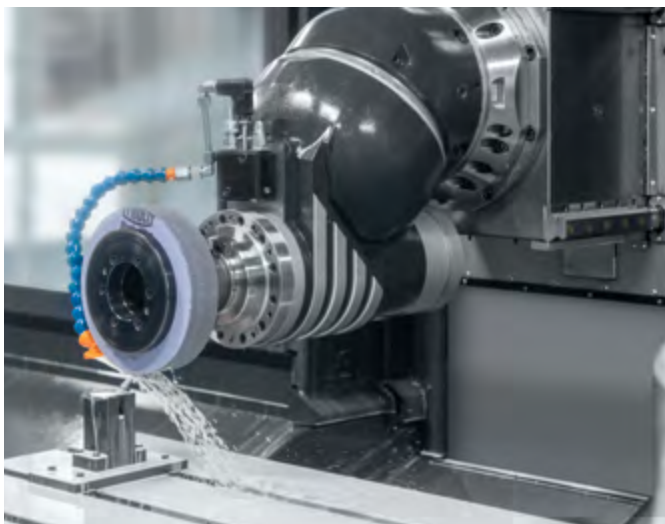
- Standard tools, no adapter needed.
- Automatic tool changing system.
- Standard range, availability of spare parts.
- Ease of use thanks to specific positioning cycle.
- 37 kW
- Up to 900 Nm
- 5000 / 6000 / 7000 min<sup>-1</sup>
- 2.5° x 2.5° / 0.001° x 0.001°



Mechanical transmission head with spindle clamping system: includes a clutch to clamp the spindle at any angle during turning operation.

The clamping system prevents bearing damage thanks to an internal retractable support ring.

## Grinding capability



- Table mounted dressing unit.
- Wheel holder with integrated nozzle.
- Balancing unit.
- Full splash guarding.
- Fume extraction.
- Specific cooling system.
- Double protection for guideways and telescopics.
- Grinding cycles and functionalities by Soraluca Software Factory.

# Features TR

## Technical characteristics

Common features TR   TRD   TRM				
Vertical traverse "Z" axis	mm	1600		
Cross traverse "Y" axis	mm	1300 / 1500		
Spindle power	kW	43		
Spindle speed range	min <sup>-1</sup>	6000 / 7000		
Rapid traverse	mm/min	35000		
Tool magazine	No. Tools	40 / 60 / 80		
		TR25	TR35	TR45
Longitudinal traverse "X" axis	mm	2500	3500	4500
Table area	mm	2860 x 1200	3860 x 1200	4860 x 1200
Table capacity	kg	7500	10500	13500
		TRD30	TRD35	
Longitudinal traverse "X" axis	mm	3000	3500	
Table area	mm	1600 x 1600	3500 x 1200 (Ø 1600)	
Swing (max)	mm	2300		
Table capacity	kg	12000	10000	
		TRM30	TRM35	
Longitudinal traverse "X" axis	mm	3000	3500	
Table area	mm	Ø 1600	3500 x 1200 (Ø 1600)	
Swing (max)	mm	2300		
Table capacity	kg	8000 by milling   2000 by turning		
Turning spindle speed	min <sup>-1</sup>	400		
Turning spindle power	kW	90		

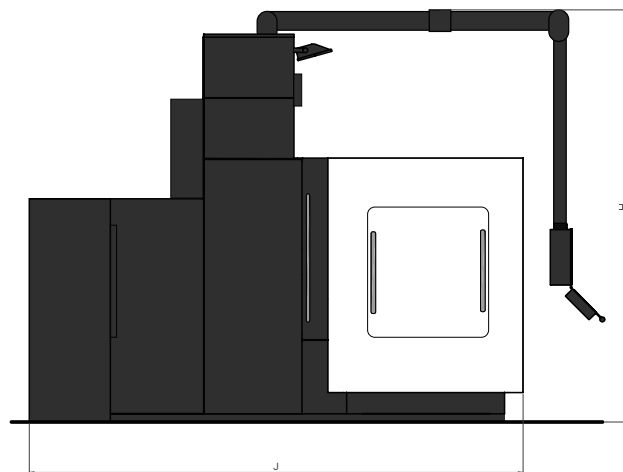
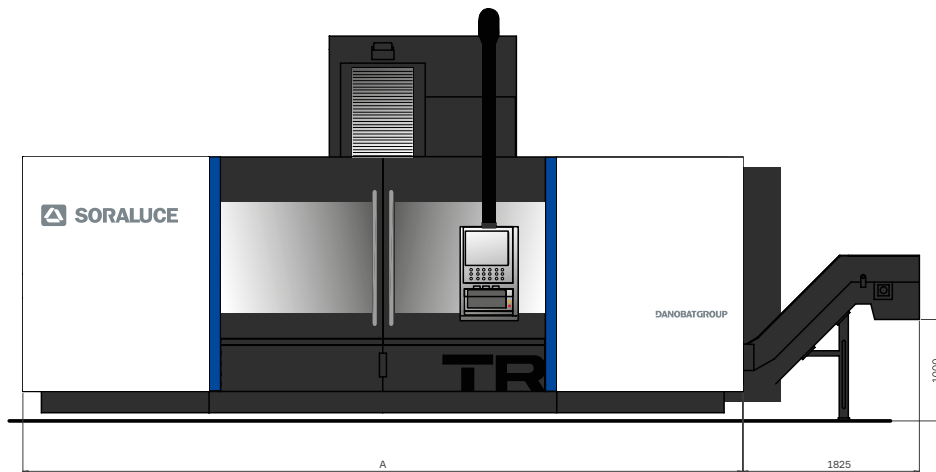
## Technology at your disposal

■ Basic machine ■ Optional

	TR	TRD	TRM
Full cast iron	■	■	■
Linear guiding & damping pads	■	■	■
DAS <sup>+</sup>	■	■	■
Inline spindle motor	■	■	■
Heads with air oil lubrication	■	■	■
Electrospindle	■	■	■
Multitasking	-	-	■
Complete splash guarding	■	■	■
Soraluce Smart HMI	■	■	■

# Set & Go

Less expensive foundation.  
Easy transport & installation.



TR Layout	X	Z	Y	A	H	J
TR25	2500	1600	1300 / 1500	7100	4100	4870 / 5480
TR35	3500			9100		
TR45	4500			11100		
TRD30	3000	1600	1300 / 1500	7500	4060	5630 / 5970
TRD35	3500			9100		
TRM30	3000			7100	4060	
TRM35	3500			9100		

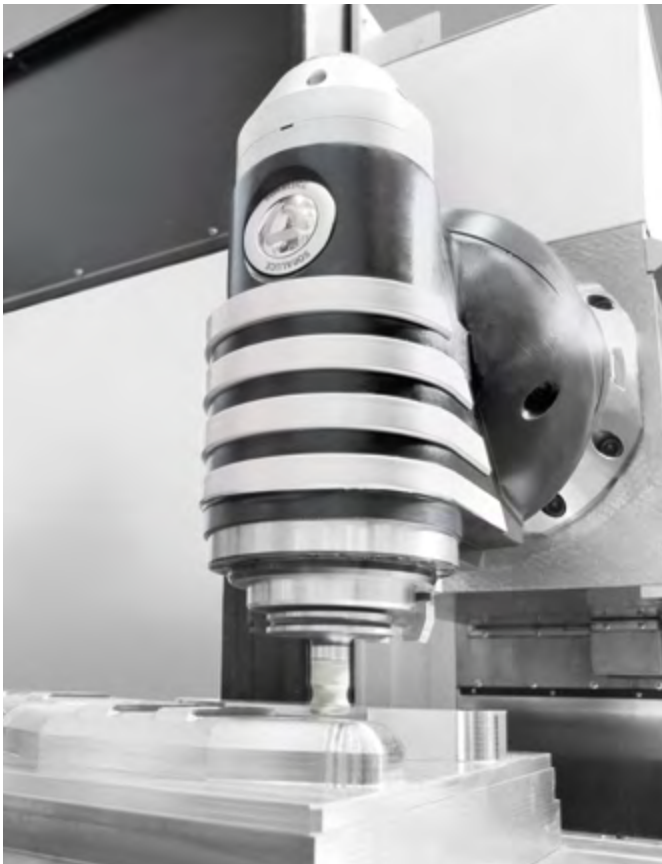
Dimensions in mm.

# Applications

TR  
Boring



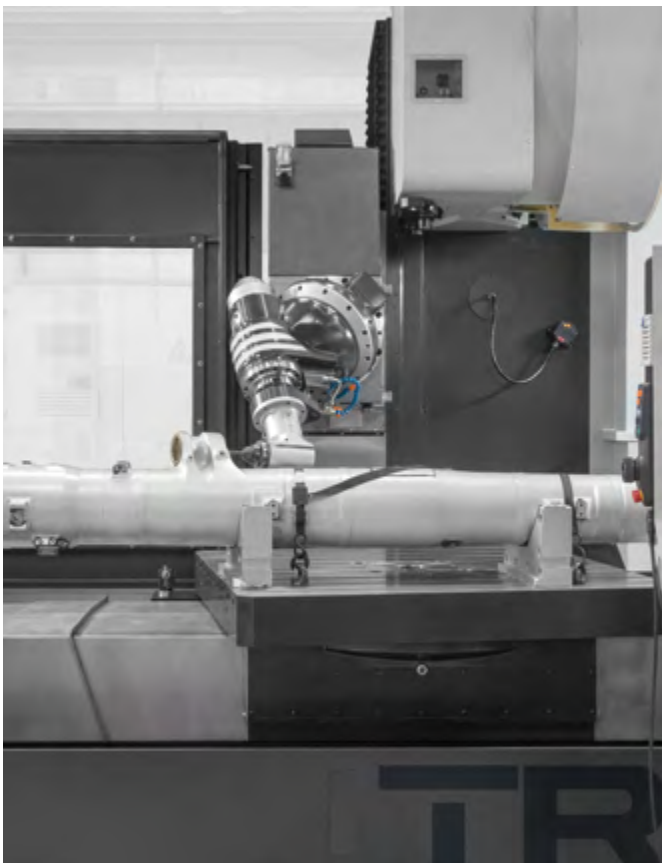
TRD  
Mould & Die / Mould



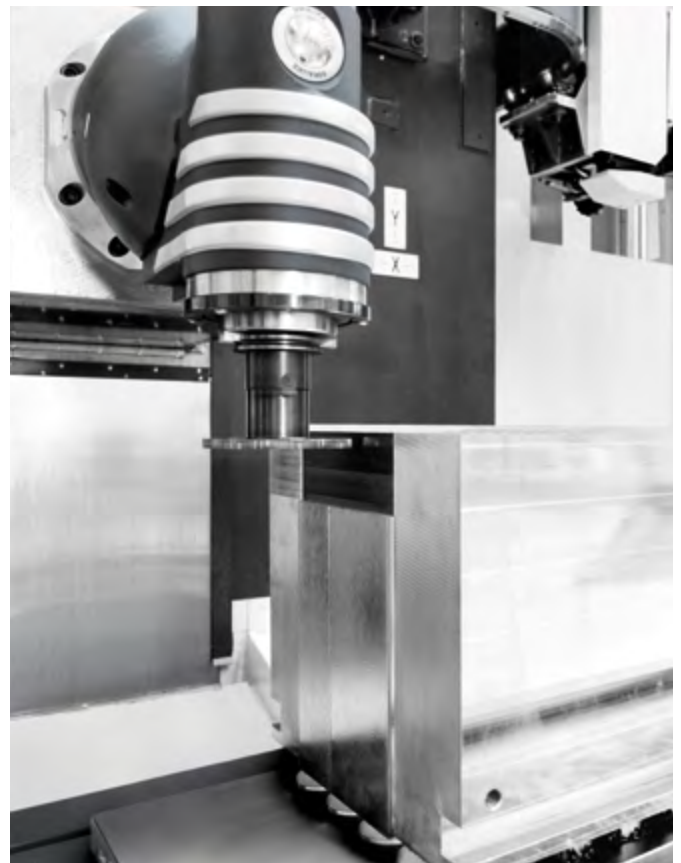
TR  
Mould & Die / Mould



TRM  
Mechanical Workshops



TRD  
Aerospace / Landing gear



TR  
General Engineering



There is only one first

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**DANOBATGROUP**

