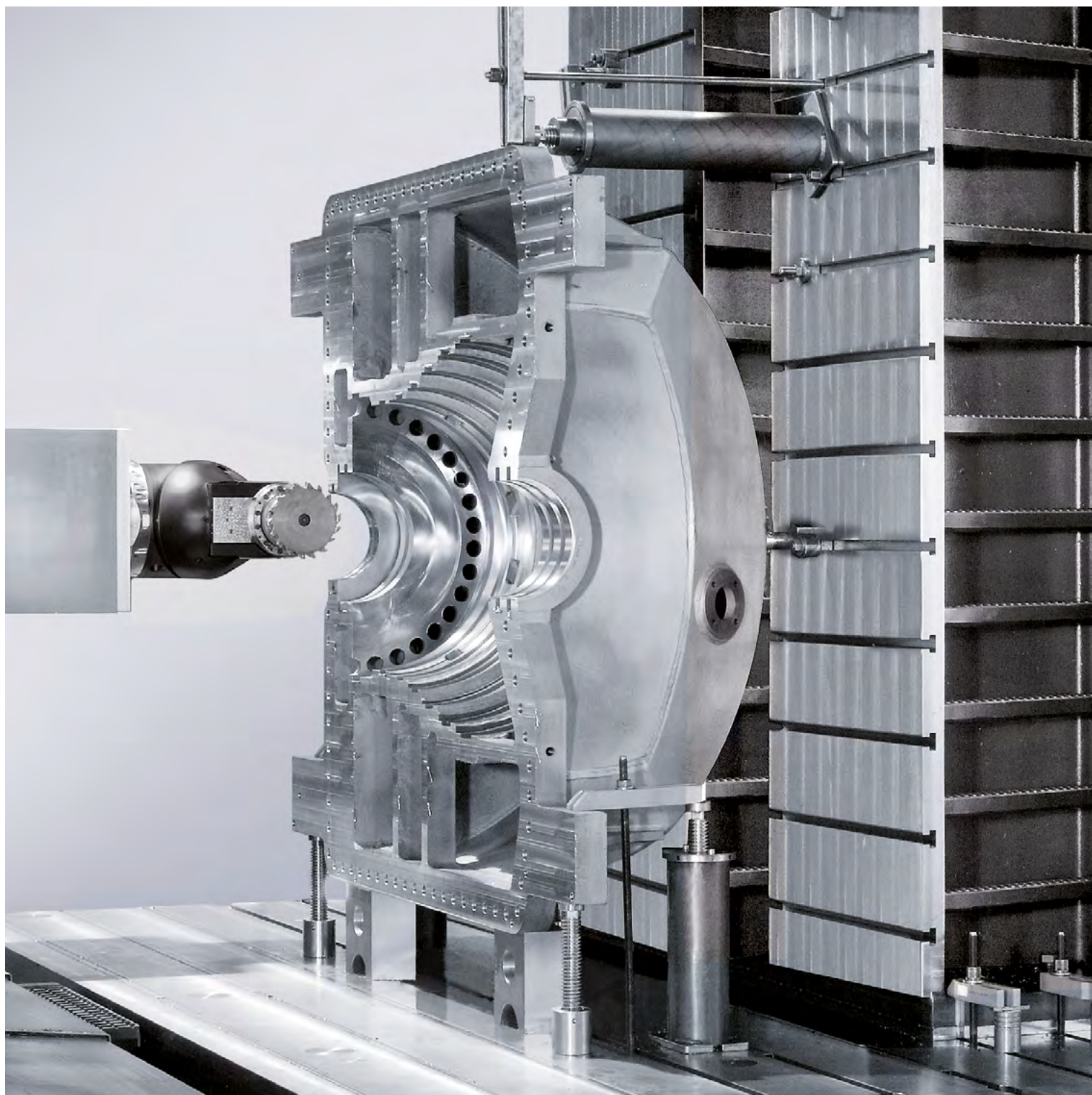


HIGH DYNAMIC AND VERSATILITY

**FLOOR TYPE MILLING-BORING
CENTRES › FL**





ERGONOMIC AND USER FRIENDLY

The new generation of SORALUCE FL is the expression of SORALUCE's values: reliability, precision and competitiveness. Within these concepts, customers find huge improvements in maintenance, ergonomics, high dynamics and safety in the work environment.

The SORALUCE FL floor type milling boring centres are multi-purpose milling boring machines, offering high versatility and productivity. The machine modular design offers remarkable versatility, enabling the machine to be adapted to customer's needs.

The SORALUCE FL is the ideal machine for several applications in different sectors such as industrial vehicles, moulds and dies, capital goods and medium sized precision engineering components, ensuring highest precisions and efficiency results.



BACKGROUND CONCEPTS

DESIGN

The design of the machine structure and dimensions have been optimised by an analysis based on “Finite Element Method” (FEM) simulation technique, optimising:

- › Stiffness
- › Antivibration
- › Stress absorption
- › Complete mechanical stability

HIGH PERFORMANCE

High torque direct drive spindle motor inside the ram, with a built-in cooling system, providing:

- › Great precision
- › High efficiency
- › Low heat
- › Reduced noise
- › No maintenance
- › No losses in the transmission
- › Stable working conditions

LONG LASTING PRECISION

Full cast iron, enabling:

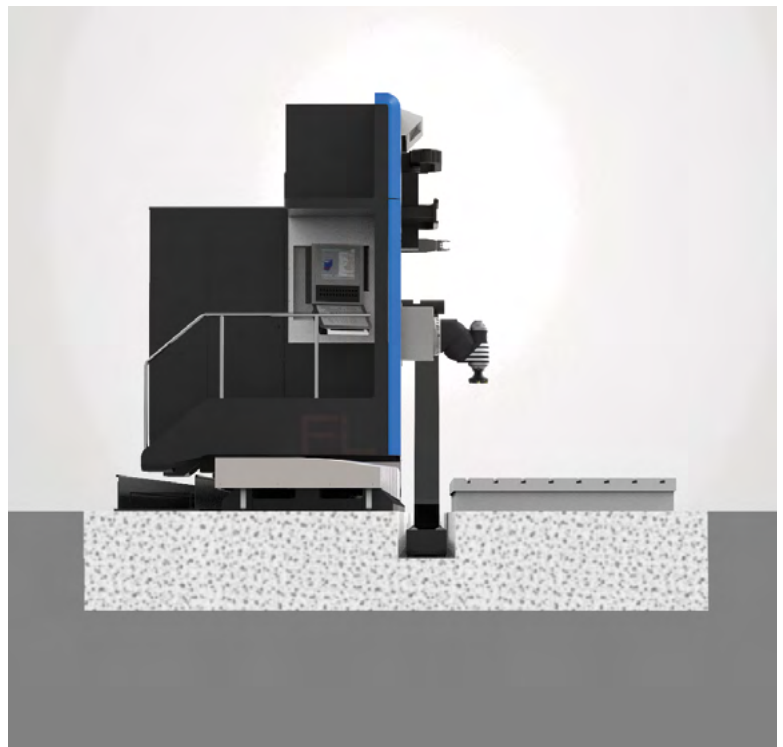
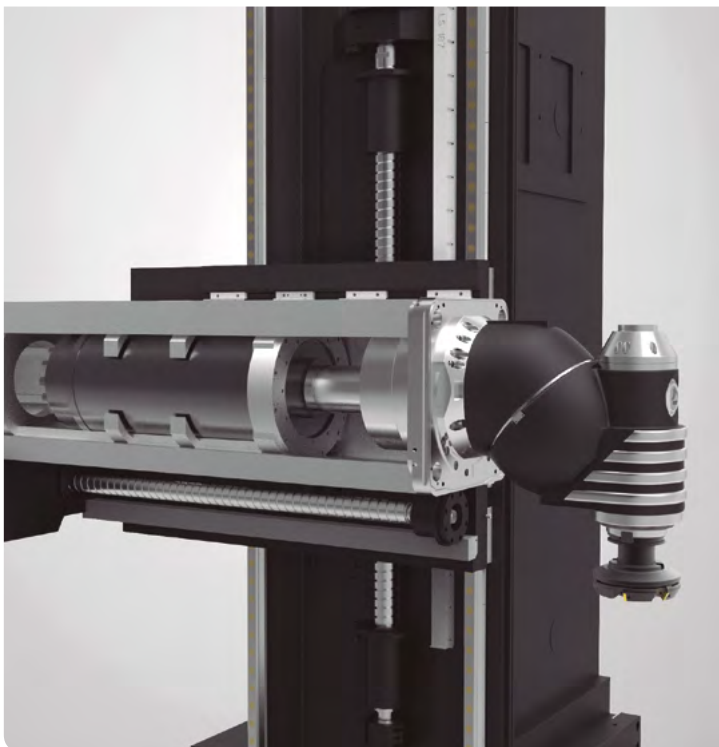
- › Accuracy: long lasting precision
- › Stiffness: proven physic stability
- › Productivity: high cutting capacity

Thanks to the unique mechanical features of the cast iron and the optimised design, the precision and robustness of the machine are ensured for all the machine's life.

PROVEN STABILITY

Thanks to its flat longitudinal axis design and low profile column connection, the machine's centre of gravity is kept very low:

- › Ensures high machine stability
- › Saves on foundation construction costs
- › Improves machine operation
- › Enhanced maintenance ergonomics



COMBINED GUIDING AND DAMPING SYSTEM

SORALUCE is a pioneer in the use of linear guiding systems in high machining capacity equipment and heavy duty applications.

- › The system combines our own specially developed hydrostatic damping elements with INA guiding systems on each axis
- › The system guarantees immense stability eliminating any vibration during machining processes
- › Using linear guiding systems since 1992
- › More than 1500 references in the market working with this system
- › It guarantees high precision and dynamics, low friction, low heat levels, minimum maintenance and reduced grease consumption



HIGH ACCURACY

Optimised machine structure and guiding system that guarantee the precision along the machine's life.



INCREASED PRODUCTIVITY

High dynamics on the axes and machine's stability provide the right features to ensure stable machining on demanding applications while enables the high performance tools to give their best.



ENERGETIC EFFICIENCY

- › Low maintenance costs
- › Low heat levels
- › Reduced grease consumption



THE NEXT LEVEL OF INNOVATION

**PATENT
PENDING**

DAS SYSTEM (DYNAMICS ACTIVE STABILISER)

Beyond machine tool limits

The DAS system is a device capable of actively increasing the dynamic rigidity of the machine, which reduces the risk of chatter and increases the cutting capacity by up to 300% improving dramatically the production time during the roughing process.

The DAS system measures the vibrations during the machining process and generates, in real and time, by means of ram built-in actuators, an oscillation force that opposes the vibration.

- › Allows the use of maximum power throughout the whole working area
- › Up to 300% improvement of productivity
- › Better surface quality of the machined part
- › Extends lifetime of the tools
- › Avoids premature aging of machine components



DYNAMIC HEAD CALIBRATION

Even more accuracy in the working area

Thanks to specific SORALUCE developments, head articulation positioning deviations have been reduced to a minimum. This system allows the compensation of head's kinematic values on the whole working area.

- › Automatic calibration for any type of head
- › Transparent for the user: Automatic calibration of the head without the need to use specific programming functions
- › Calibration of the head for any working area
- › Offset error compensation due to thermal expansion
- › Easy-to-use interface, 100% integrated with HEIDENHAIN and SIEMENS



TOTAL MACHINE

THE COMPLETE WORKING AREA ANALYSED FOR AN OPTIMAL RESULT

The new SORALUCE FL Generation is based on a complete revision of the machine from the user's point of view focusing on improving operation efficiency and developing a Total Machine Concept.

The Total Machine Concept takes into account the machine but also the complete working area. All the interactions of the operator with the different machine elements are analysed for an optimal implementation.

Not only the machine, but the work area and its surroundings are analysed as a whole in order to guarantee an optimal final result. All of the interactions are studied to optimise from the clamping and loading of the workpiece to its removal once machined and its subsequent cleaning. The environment and its processes must be linked to the machine's own work, making all parts of the entire process as simple, safe and ergonomic as possible.

With this new design concept, SORALUCE has added to its equipment large number of innovations not only with the aim of facilitating work and making them a safer environment, but also to simplify maintenance and to minimise stoppage times, thus increasing the productivity and profitability of the machine.



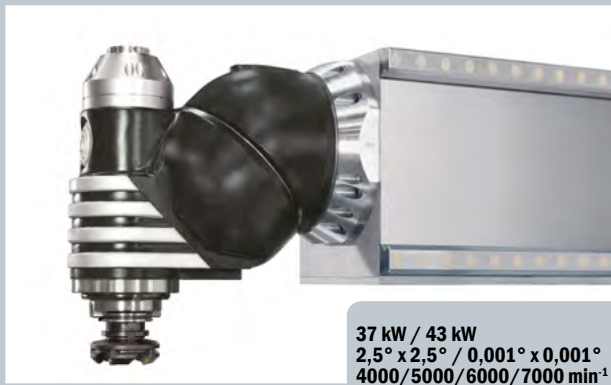
MILLING AND TURNING HEADS

IN-HOUSE MANUFACTURED
HIGH RELIABILITY
BROAD RANGE

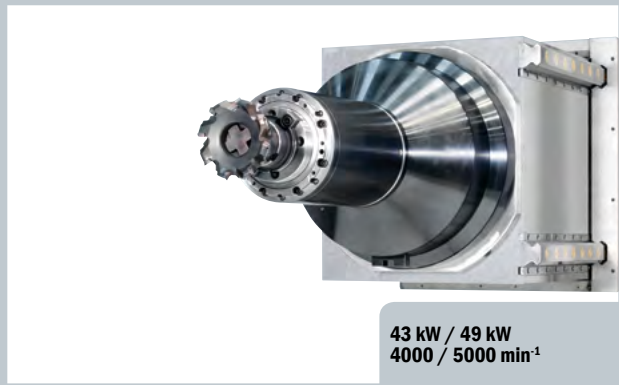
In order to cater to the diverse needs of each customer, SORALUCE's contrasted head technology is fundamental and provides the necessary customisation for an optimal

configuration, with the possibility of including a large variety of standard heads and special solutions.

UNIVERSAL HEAD



FIXED HORIZONTAL BORING HEAD

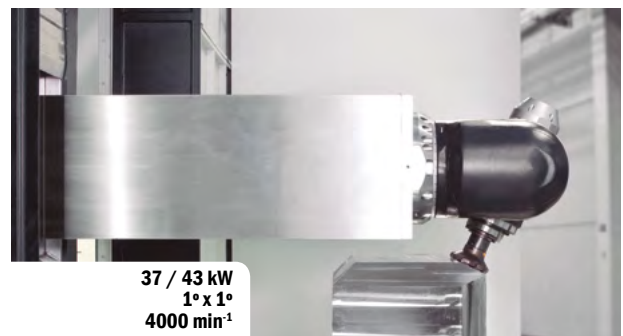


COMPACT ORTHOGONAL HEAD

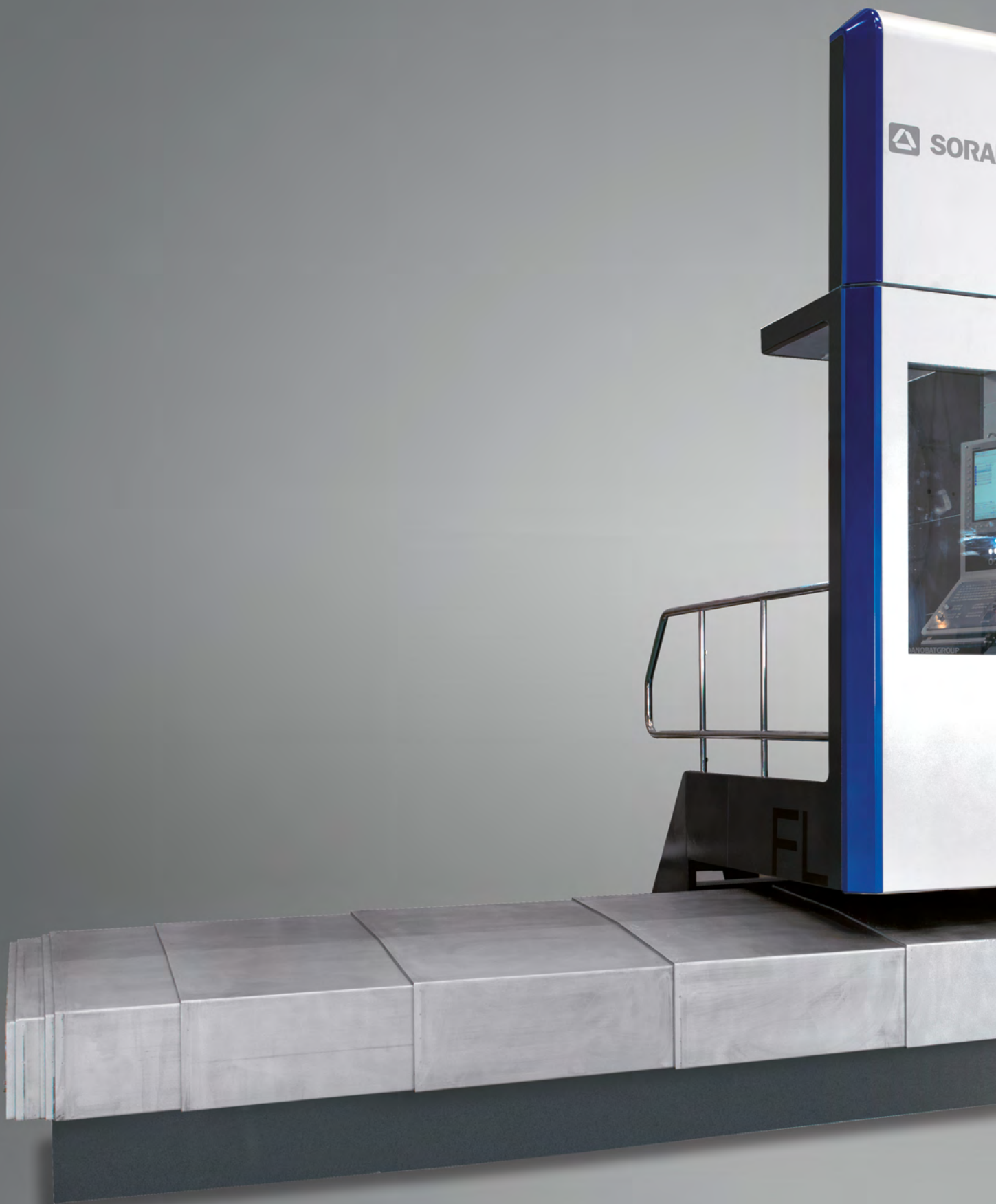
The SORALUCE FL milling machine can be equipped with the SORALUCE orthogonal head indexing at 1° x 1°, with its compact design specially conceived for machines with an in-line motor. It allows the simultaneous positioning of both head articulations, reducing non-production time.

Inverse machining capability:

- › Up to -45°
 - › No additional setups
 - › Improved cycle time
 - › Better finishing quality
 - › Minimum manipulation
-
- › Full advantage of machine travel
 - › No need for additional work piece support fixtures
 - › Close to table head spindle accessibility for both front and lateral milling



HIGH DYNAMIC
AND VERSATILITY › **FL**



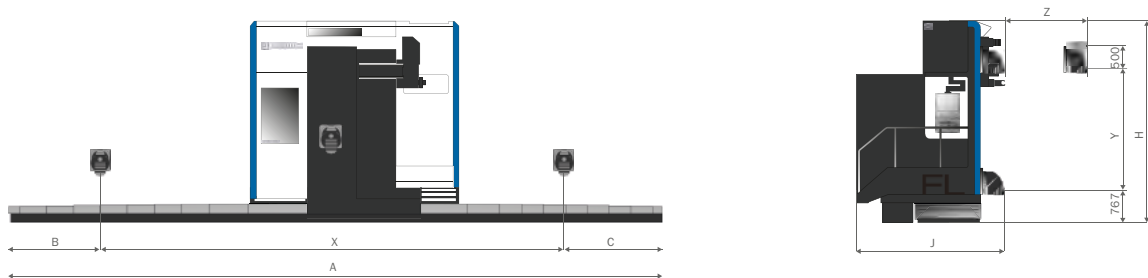


TECHNICAL SPECIFICATIONS FL

CHARACTERISTICS		FL-3000	FL-4000	FL-5000	FL-6000	FL-7000	FL-8000	FL-10000
Longitudinal traverse "X" axis*	mm	3000	4000	5000	6000	7000	8000	10000
Vertical traverse "Y" axis	mm	1800 / 2200						
Cross traverse "Z" axis	mm	1300						
Heads		Universal / Orthogonal / Fixed boring head						
Spindle motor	kW	43						
Spindle nose taper		ISO-50 / HSK-100						
Spindle speed range	min ⁻¹	4000 / 5000 / 6000 / 7000						
Rapid traverse	mm/min	35000						
CNC system**		Heidenhain TNC 640 / Siemens 840 D SL						
Coolant system		External coolant system over a ring / Internal coolant system up to 70 bar						
Tool magazine	No. tools	40 / 60						
Machine weight	kg	17000	18000	19000	20000	21000	22000	23000

* Other specifications under request | ** Other CNC systems under request

LAYOUT FL



	X	Y	Z	A	B	C	H	J
FL-3000	3000	1800 / 2200	1300	8790	2227	3563	3880 / 4280	3182
FL-4000	4000	1800 / 2200	1300	9790	2227	3563	3880 / 4280	3182
FL-5000	5000	1800 / 2200	1300	10790	2227	3563	3880 / 4280	3182
FL-6000	6000	1800 / 2200	1300	11790	2227	3563	3880 / 4280	3182
FL-7000	7000	1800 / 2200	1300	12790	2227	3563	3880 / 4280	3182
FL-8000	8000	1800 / 2200	1300	13790	2227	3563	3880 / 4280	3182
FL-10000	10000	1800 / 2200	1300	15790	2227	3563	3880 / 4280	3182

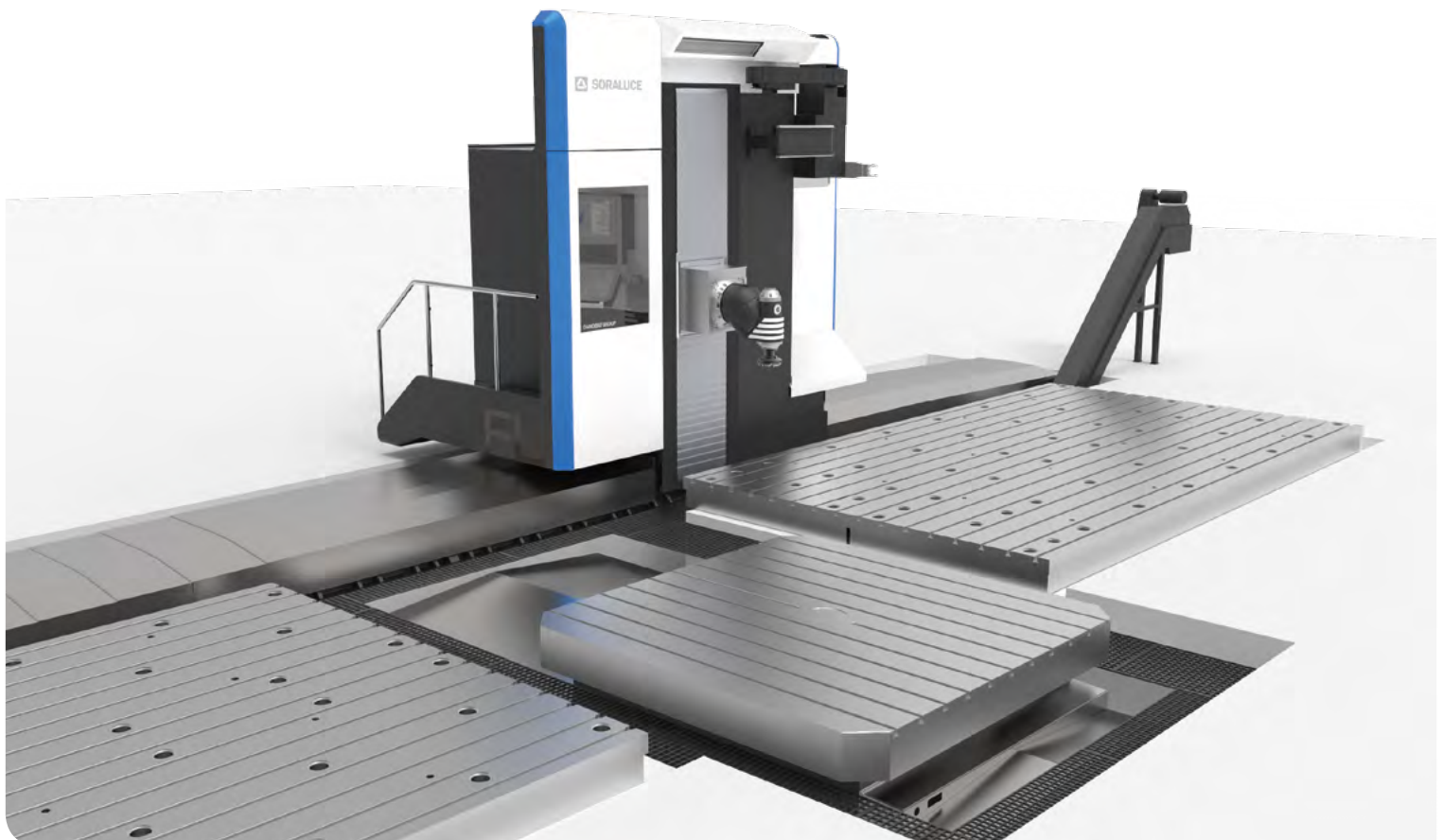
Dimensions in mm.

VERSATILITY HIGHLY CONFIGURABLE

WORKSTATIONS

As it is a floor type machine, the work area can be configured according to the specific needs of each customer, with one or several workstations, which makes it possible to carry out simultaneous machining and part preparation operations.

It can integrate floor plates, angle plates, auxiliary tables, rotary or rotary-travelling milling tables and turning tables.



TOOL MAGAZINE

- › Tool magazine for 40 / 60 tools
- › The storage area is protected from chips and coolant
- › Simple and ergonomic tool loading/unloading system
- › Advanced tool management options available on request



CNC UNITS

Heidenhain TNC 640

The TNC 640 NC system by Heidenhain boasts the qualities demanded by highly technological machines now including multitasking capabilities.

- › Wide variety of milling and turning cycles
- › Time and cost saving
- › HEIDENHAIN conversational or DIN/ISO programming with the simple Klartext dialogue

Siemens 840 D SL

The SINUMERIK 840D SL is a premium class CNC, with a superior system flexibility. It is the CNC of choice when opening up completely new technology fields.

- › Modular and scalable
- › Benchmark in open architecture
- › Communicative at all levels



HUMAN MACHINE

COMFORT, SAFE AND ERGONOMIC

SORALUCE has created a new range of machines that will revolutionise the market thanks to the creation of a more human and ergonomic environment, while also significantly increasing the safety and ergonomics parameters.

OPERATOR'S PLATFORM

- › Enclosed operator's platform
- › Complete workbench with a panel to hang drawings and documents
- › CNC panel with smooth movements
- › Generous interior lighting by led spotlights integrated in the ceiling
- › Sliding door allowing the operator's approach to the head to check the tool or the component
- › Enhanced visibility, ample glass surface
- › Support for special tools in the external platform
- › Floor with special anti-slip paint that minimizes the wear and tear

Access to
working area



Non-slip floor with
special anti-wear
and anti-slip paint

Open operator
platform with good
lightning



TOOL MAGAZINE

- › Full visibility of tool magazine
- › Storage area's closure protecting sensitive items inside it from chips and coolant
- › Sliding shutter to ease tool loading / unloading

MAINTENANCE

- › The intervention areas are now more accessible
- › Sliding shutters and doors to avoid the disassembly of panels
- › Improved protection of the critical areas of the equipment
- › Gauges and levels visible from the outside the machine without removing panels
- › Ample areas to ease the maintenance tasks
- › Specific signals to indicate maintenance and service points

Full visibility
of tool
magazine

Sliding shutters to
ease tool loading /
unloading



Spacious area
for maintenance

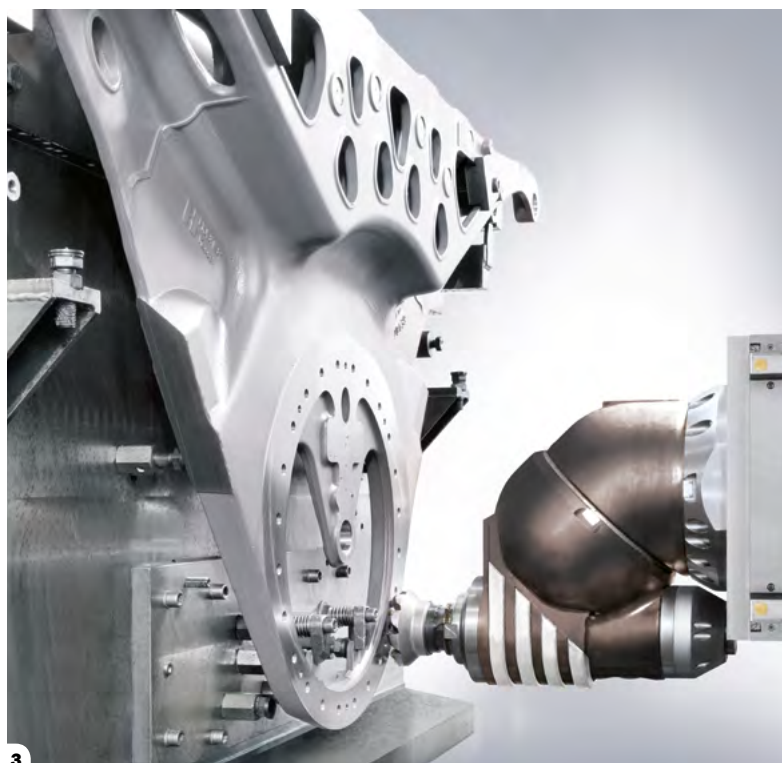
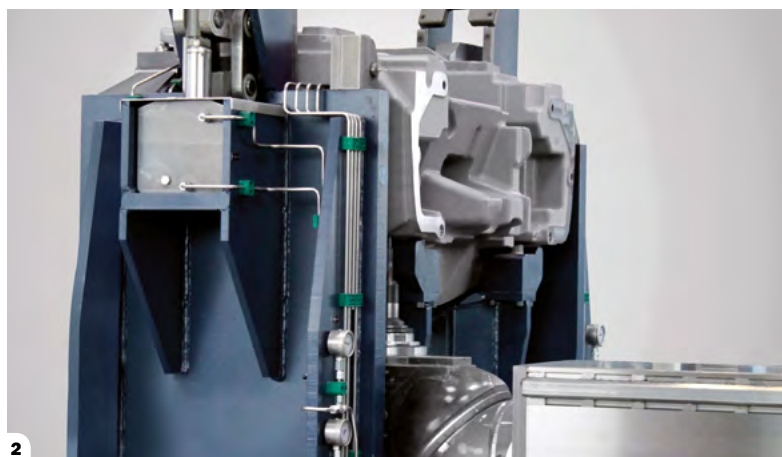


Machine status
lightning



LEADING THE MOST DEMANDING INDUSTRIES

With excellent versatility and precise and efficient customization, SORALUCE FL milling-boring machines meet the specific needs of any customer of medium-large sized components thanks to the wide variety of heads, options and levels of automation available.



- [1] The incorporation of rotary tables and other working areas, make the SORALUCE FL a highly flexible machining centre on the market
- [2] Complete industrial vehicle workpiece machined in a single setup
- [3] Flexible and high dynamics machining solution for large production requirements
- [4] Rough vertical tool machining for improved chip evacuation, enabling extended unmanned cutting processes
- [5] Different work stations for machining principal industrial vehicle components such as frames, stabilizers and booms
- [6] For complex angle operations, the machine can be equipped with a universal stepless positioning head, in order to reach any angular position of the work area
- [7] Power generation sector high precision requirements can be met with adapted equipment, including special heads, self-developed machining cycles, specific coolant equipment, etc.

