HIGH DYNAMIC AND VERSATILITY

FLOOR TYPE MILLING-BORING CENTRES • FLP
The new generation of SORALUCE FLP 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 FLP 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 FLP 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 large machines and heavy duty applications.

› The system combines our own specially developed damping pads with INA guiding systems on each axis

› The system guarantees immense stability eliminating any vibration during machining processes

› Using heavy duty 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

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 time, by means of ram built-in actuators, an oscillation force that opposes the vibration.

› Increases the cutting capacity 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

Awarded with Quality Innovation of the Year 2015 and Best of Industry 2015
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
The new SORALUCE FLP 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.
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

- **Power:** 37 kW / 43 kW
- **Angular Accuracy:** 2.5° x 2.5° / 0.001° x 0.001°
- **Speed:** 4000/5000/6000/7000 min⁻¹

### FIXED HORIZONTAL BORING HEAD

- **Power:** 43 kW / 49 kW
- **Speed:** 4000 / 5000 min⁻¹

### COMPACT ORTHOGONAL HEAD

The SORALUCE FLP 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 › FLP
### TECHNICAL SPECIFICATIONS FLP

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>FLP-3000</th>
<th>FLP-4000</th>
<th>FLP-5000</th>
<th>FLP-6000</th>
<th>FLP-7000</th>
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<td>Spindle speed range min⁻¹</td>
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<td>Rapid traverse mm/min</td>
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<td>19000</td>
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<td>21000</td>
<td>22000</td>
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* Other specifications under request  | ** Other CNC systems under request

### LAYOUT FLP

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 840D 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
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
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
Leading the Most Demanding Industries

With excellent versatility and precise and efficient customization, SORALUCE FLP 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.
The incorporation of rotary tables and other working areas, make the SORALUCE FLP a highly flexible machining centre on the market.

Complete industrial vehicle workpiece machined in a single setup.

Flexible and high dynamics machining solution for large production requirements.

Rough vertical tool machining for improved chip evacuation, enabling extended unmanned cutting processes.

Different work stations for machining principal industrial vehicle components such as frames, stabilizers and booms.

Gas turbine case machining process, including drilling and milling operations with big size cutting disk.

Power generation sector high precision requirements can be met with adapted equipment, including special heads, self-developed machining cycles, specific coolant equipment, etc.