FL 
FLOOR TYPE 
MILLING-BORING 
CENTRE
The SORALUCE FL milling and boring centre is a multi-purpose milling and boring machine offering exceptional versatility, and enabling customers to increase their productivity. It is the ideal machine for sectors such as industrial vehicles, moulds and dies, capital goods and medium sized workpiece subcontractors.
Strong Technology, enhanced Precision

BACKGROUND CONCEPTS

Long lasting high precision
Rigid and stable design for the highest precision: all main machine elements made from cast iron; GG30.

High dynamics
High dynamics with speeds up to 35 m/min and acceleration of 2 m/s² in longitudinal, vertical and cross axes, resulting from a combination of linear guiding and double rack and pinion driving systems. Working feed force of 16000 N on all axes.

High performance
High precision and efficiency provided by a high torque direct drive spindle motor, which also guarantees low heat, reduced noise and no maintenance.

CONSTRUCTION CHARACTERISTICS

Guiding system
INA linear guiding system with recirculating cylindrical rollers on each axes (X-Y-Z) guarantees immense stability and high precision.
A system that guarantees high dynamics, minimum maintenance and low heating levels.

Driving system
The longitudinal axis is driven by two servomotors, two gearboxes and a double rack and pinion. The vertical and cross axes are driven by preloaded ball screws with double recirculating nuts. Its heavy duty design and high dynamics provides the optimum in power and cutting speed capability.
SORALUCE Milling-Boring Heads are well known for being first class thanks to their reliability.

The broad range of SORALUCE heads (Universal, Orthogonal, Horizontal, Modular Quill, Angular, etc.) are distinguished by their precision and high performance, enabling accurate complex milling, boring, drilling, reaming and tapping operations.

Complete design, manufacturing, assembly and verification processes are conducted in-house, under the same roof, by an experienced team of highly skilled designers and assembly engineers.

To ensure high quality heads, the workshop is equipped with state-of-the-art, temperature and humidity controlled, high precision manufacturing machinery and assembly equipment.

With strict in-process quality controls and exhaustive run-off on specific test benches, SORALUCE certifies the highest quality for the most critical elements on this kind of machines.

MILLING AND BORING HEAD RANGE FL

**Universal head**
- 32 kW
- 2.5° x 2.5° / 1° x 2.5° / 0.001° x 0.001°
- 4000 / 5000 / 6000 rpm

**Compact orthogonal head**
- 32 kW
- 2.5° x 2.5° / 1°
- 4000 / 5000 rpm

**Fixed horizontal head**
- 32 kW
- 3000 / 4000 / 5000 rpm
Thanks to the specific SORALUCE developments, head articulation positioning deviations have been reduced to a minimum. These allow for the compensation of head kinematic values and orthogonal position offsets (M10 functions), for any position in the work area.

Some of the advantages of the system we have developed:
- Calibration for any type of head.
- Calibration for any position in the work area.
- Calibration for any angle, not just orthogonal.
- Offset error compensation due to thermal expansion.
- Measure distance between different head spindle noses (head changing system machines).
- Easy-to-use interface, 100% integrated with HEIDENHAIN iTNC530 HSCI and SIEMENS 840D SL.

A FL machine equipped with the head calibration system is the best choice for high precision and reliability.

COMPACT ORTHOGONAL HEAD

The FL milling centre can be equipped with the Soraluce orthogonal head, 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.

This head enables the end user to take advantage of full machine travel: eliminating the need for additional workpiece support fixtures, due to close to table head spindle accessibility for both frontal and lateral milling.

Inverse machining:
An extra feature on orthogonal heads is machining in negative positions. The machine enables the orthogonal head to be positioned for inverse machining, up to -45°. This eliminates the necessity for additional set-ups, resulting in improved overall cycle times and finish quality with less component manipulation.

Such advantages, and very easy indexing head programming, make this a very popular option amongst our customers.
FL FLOOR TYPE MILLING-BORING CENTRE

RESPONDING TO CUSTOMER NEEDS

FLEXIBILITY AT YOUR DISPOSAL

High versatile due to its wide range of machine configurations. The machine’s travelling column means it can be equipped with different work stations, enabling simultaneous machining and workpiece loading.

The FL milling-boring centre can incorporate a wide variety of optional features and accessories such as different milling-boring heads, automatic tool changing systems, floor plates, angle plates, auxiliary tables, rotary and rotary-travelling tables and many other special options, making it the most flexible machining centre on the market.

PROVEN STABILITY, LOW FOUNDATION COSTS

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

This ensures high machine stability and saves on foundation construction costs as the machine can be installed at floor level, improving machine operation and maintenance ergonomics.
FL FLOOR TYPE MILLING-BORING CENTRE

FL-CENTER machine concept.
**TECHNICAL SPECIFICATIONS FL**

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>FL-3000</th>
<th>FL-4000</th>
<th>FL-5000</th>
<th>FL-6000</th>
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<tr>
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<td>Vertical traverse “Y” axis</td>
<td>mm</td>
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<td>1400 / 1800 / 2200</td>
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<td>Cross traverse “Z” axis</td>
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<td>Heads</td>
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<td>Universal / Orthogonal / Fixed boring head</td>
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<tr>
<td>Spindle power</td>
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<td>Spindle nose taper</td>
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<td></td>
<td></td>
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<td>ISO-50 / HSK-100</td>
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<tr>
<td>Spindle speed range</td>
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<td></td>
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<td>4000 / 5000 / 6000</td>
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<td>Rapid traverse</td>
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<td></td>
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<td>CNC system</td>
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<td>Coolant system</td>
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<td>External coolant system over a ring / Internal coolant system up to 30 bar</td>
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<td>Tool magazine</td>
<td>No. tools</td>
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<td>Machine weight</td>
<td>kg</td>
<td>31000</td>
<td>32100</td>
<td>33200</td>
<td>34300</td>
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</table>

**LAYOUT FL**

Dimensions in mm.
SPECIFIC MACHINING AND TECHNOLOGY SOLUTIONS

Flexible and high dynamics machining solution for large production requirements.

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

Gas turbine case machining process, including drilling and milling operations with big size cutting disk.
Different work stations for machining principal industrial vehicle components such as frames, stabilizers, booms, etc.

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

For complex angle machining, the machine can be equipped with a universal stepless positioning head, in order to reach any angular position in the work area.
By the customer’s side from the start:
- Local sales service team at your disposal.
- Production process analysis by local product engineers.
- Feasibility analysis.
- Technical & financial studies.

Custom solutions:
- Custom machining solutions.
- Machining process improvement studies.
- Tooling.
- Fixturing.
- Software.
- Customer part machining acceptance trials.

Project management:
- Machine set-up & commissioning.
- Personnel training.
- Production assistance.

Together throughout a machine’s life:
- Technical assistance by local service engineers.
- Telephone support.
- Hotline.
- Service contracts.
- Preventive maintenance.
- Spare part management.

MORE INFORMATION ABOUT SORALUCE FL FLOOR TYPE MILLING-BORING CENTRE AT www.danobatgroup.com
If your mobile phone has the QR code reader tool you will be able to go directly to our site at www.danobatgroup.com

SORALUCE
Osintu auzoa
P.O. Box 90
E-20570 BERGARA (Gipuzkoa) Spain
Tel.: +34 943 76 90 76
Fax: +34 943 76 51 28
soraluce@soraluce.com
www.danobatgroup.com

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