FX
FLOOR TYPE
MILLING-BORING
CENTRE
MULTI-PURPOSE MILLING AND BORING MACHINE

ACCURACY AND RELIABILITY

High precision in big components

Its modular design makes it remarkably versatile, as it can be equipped with a wide range of optional accessories, and efficiently and precisely customised for any specific customer need.

It is the ideal machine for sectors such as the energy sector (wind power, gas, nuclear), shipbuilding, rail and capital goods.
Strong Technology, enhanced Precision

BACKGROUND CONCEPTS

Long lasting high precision
Rigid and stable design for the highest precision, all main machine elements made of cast iron; GG30 (GGG70 for ram when cross travel “Z” = 1900 mm).

High performance
Its linear guiding and damping system combined with a high dynamic driving system yields high performance machining results.

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.

CONSTRUCTION CHARACTERISTICS

Combined guiding and damping system
The INA linear guiding system with recirculating cylindrical rollers on each axes (X-Y-Z) and our own specially developed hydrostatic damping elements guarantees immense stability and high precision.

The guiding system incorporates hydrostatic damping pads between the recirculating cylindrical rollers, which eliminates any vibration during machining processes.

This system guarantees high dynamics, minimum maintenance, low heat levels and reduced grease consumption.

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 taping 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 FX**

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

**Orthogonal head**
- 46 kW
- 1° x 1° / 1° x 0.001°
- 4000 / 6000 rpm

**Automatic angular rotary head with manual tool change**

**Fixed horizontal boring head**
- 46 / 60 / 70 kW
- 3000 / 4000 / 5000 rpm

**NC facing and boring head**

**Modular quill spindle**
- 46 / 70 / 100 kW
- Ø 130 / 150 / 180 mm
- 2500 / 3000 rpm
MODULAR QUILL SPINDLE

SORALUCE has redefined the concept of milling and boring thanks to its new patented quill changing system that helps combine, in a unique machine, the benefits of traditional boring machines and the advantages of modern milling machines.

The system automatically changes quill spindles and heads, thus enabling the use of different quill spindles with different diameters and lengths (Ø 130 ÷ 180 mm / W: 700 ÷ 1000 mm) and any component machining heads, such as orthogonal heads, fixed horizontal heads, etc. with a milling power of up to 60 kW.

Compared to traditional quill solutions, the SORALUCE exclusive modular quill spindle enables the same distance between quill spindle and milling head to be maintained, enabling 5 side machining using the same set-up without need for additional workpiece positioning a long way from the machine.

In addition, maintenance work can be carried out with other milling heads in use.

Advantages are avoiding down time, improved productivity and maximisation of customer benefits.

AUTOMATIC HEAD CHANGING SYSTEM

SORALUCE has developed an automatic head changing system with adapter flanges.

The system consists of a specially prepared machine ram and a specific head adapter flange.

Accurate ram and the head fitting is achieved by hirth couplings, with each milling head clamped by several hydraulic clamping cylinders. Fluid and electricity supplies are provided via quick release couplings.

A fully enclosed pick-up station is provided to protect heads from pollution from the machining processes and workshop environment during head is stocking.
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 FX milling-boring centre can incorporate a wide variety of optional features and accessories such as different milling-boring heads, modular quill spindles, automatic head changing systems, 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.

RAM BALANCE

The Dynamic CNC Ram Balance System, patented by SORALUCE, takes care of ram geometrical accuracy, straightness and parallelism when crossing vertical and cross axes, and is specially indicated for machines equipped with head changing systems.

- **CNC controlled**: The system is driven by a numerically controlled servomotor. Drive action is measured using a direct-measuring scale that checks actual system response. The system is 100% controlled at any time and in any position and with any head.

- **Dynamic**: Configurable compensation values. Tables can be positioned anywhere in the work area. Works for any position. Different tables created for different heads. Real time customised compensation.

- **Balance system**: The system works in both positive and negative directions. This means that optimum compensation can be achieved for a wide variety of head weights.
Option detail: Operator’s platform
# TECHNICAL SPECIFICATIONS FX

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>FX-6000</th>
<th>FX-8000</th>
<th>FX-10000</th>
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## LAYOUT FX

![Layout Diagram](image.png)

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Dimensions in mm.
Large electro welded structures machined on angle plates, enabling easy chip evacuation for better heat evacuation avoiding workpiece deformation.

Pendulum machining of wind power nacelles using two workstations equipped with rotary-travelling tables. Improved production rate guaranteed.

Complete machining of energy components in a single setup, by combining the broad range of available top quality machining heads with a rotary-travelling table.
Full hub machining and verification, including simulation, milling, boring, drilling, tapping and measuring operations.

High performance orthogonal head enables access to complex machining areas.

Diesel motor block machining in three setups. Complete machining of base face, lateral faces, crankshaft support, crankshaft bores, cylinder faces and cylinder bores using Soraluce’s specially designed heads (roughing and finishing).
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 FX FLOOR TYPE MILLING-BORING CENTRE AT www.danobatgroup.com

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