



FOBA M2000-R

Automated rotary table workstation for all round more throughput

The M-Series is FOBA's new generation of advanced laser marking workstations for the precise and economic processing of small, large and geometrically complex work pieces as well as small and large batches of parts. The M-Series is available in two sizes (M2000 and M3000) and with three model options each (B: with work table, R: with turntable, P: with axes X/Y/Z).

The laser marking workstation M2000-R is equipped with a programmable Z axis and a two-station rotary table. The automated rotary table workstation is perfect for marking all kinds of serial parts such as day/night design parts, metal components, tools or medical technology products.

Your product benefits

- **Precision and process reliability:** highly rigid workstation (polymer concrete), intelligent imaging technology
- **Flexibility:** integration into customer processes, various laser systems available, accessories and options for optimal customization
- **Economy:** small footprint (1.13 sqm), optimal accessibility, air-cooled laser systems
- **Ergonomics:** height-adjustable workstation for standing/seated work, individual adaptation to user's needs
- **Productivity:** higher throughput with 2-station rotary table



Day/night design parts (lower part by courtesy of Preh GmbH)





For precision and process reliability: Highly rigid workstation, intelligent imaging

The highly rigid construction of the M2000 workstation together with the patented vision alignment and verification system IMP (Intelligent Mark Positioning) ensure ultimate precision and process reliability. As a result, all marks and processings are executed precisely and with repeat accuracy.

Highly rigid polymer concrete workstation

The workstation's polymer concrete slab is float-mounted on the machine frame. As a result all M-Series workstations are insensitive to variations in temperature and vibrations and ensure ultimate **process reliability and stability**.

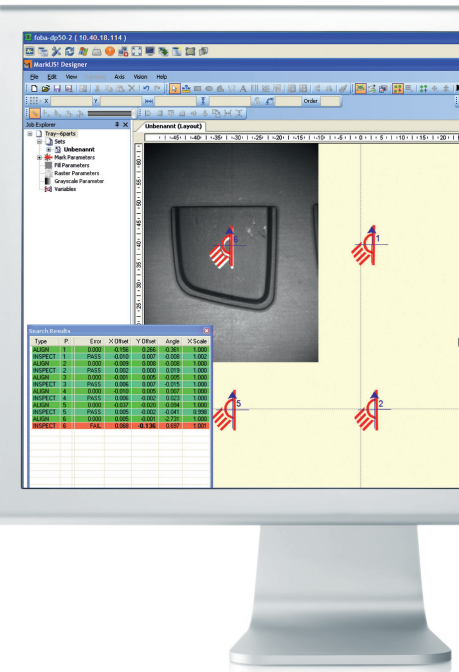
Automatic mark alignment and verification

The camera system IMP automatically detects work pieces and their positioning, and adjusts the marking/engraving accordingly. IMP also detects changes in the part geometry or position and defective or faulty components. Either the processing is re-aligned automatically or – in the case of parts with negative test results – completely skipped. The operator is informed with an error message instead. Thus, IMP ensures **less scrap and mismarked products**.

With its verification feature, IMP provides the capability to achieve **pre-mark or post-mark verifications**. The pre-mark verification feature prevents over marking already marked parts. The post-mark verification validates that the mark placement is accurate (position and orientation). This feature also helps check for poor contrast marks that can be caused by an early degradation of the laser performance or a change in material characteristics.

Verification report: Due to bumps on the surface of the raw material, part #6 failed the inspection, the Y position exceeded the 0.1mm tolerance.

*Vision system FOBA IMP:
Detects parts/positions, and
aligns the processing automatically and precisely as required.
Thus, IMP ensures consistent
highest marking/engraving
quality and accuracy without
compromise.*



More flexibility for individual processes

The M-Series adapts to the customer's laser process and not vice versa. The workstation provides the flexibility that is needed to design, extend, ensure and implement these laser processes.

- **Interfaces in the working chamber** of the workstation for the integration of auxiliary equipment or instruments (cameras, measurement devices, sensors, etc.) are available as an option
- **Flexible machine control** for the integration of additional process steps (quality assurance/control, etc.)

More productivity for higher throughput

By utilizing a M2000-R laser workstation customers reduce downtimes while at the same time increasing their manufacturing throughput.

- **2-station turntable** for loading parts to the machine while simultaneously marking
- **Highly stable workstation** for more process reliability

More efficiency in the smallest space

The minimal footprint (1.13 sqm) and optimal workstation accessibility ensure more efficiency in the smallest space. The compact marking machine is designed for maximum utilization of space and optimal service and maintenance accessibility.

- Access for loading: from the front
- Access for service and maintenance: from the front and through all lateral doors (on both sides, in front and at the back)



More ergonomics for maximum ease of use

Designed for both standing and seated work, and highly adaptable to individual needs, the M-Series provides maximum ease of use and meets all requirements for ergonomic working:

- **Electrical height adjustment** for seated or standing work, each intermediate position is adjustable, height adjustment range: 750 – 1,050 mm.
- **Control panel** (with monitor, keyboard and computer mouse): workstation can be configured with panel on the left or right side of the machine.
- **Major control elements and status displays** are directly integrated in the front of the workstation to ensure optimal accessibility.
- **Complete machine room is accessible:** Loading from the front, workstation access (for service, maintenance) from the front and from all lateral doors.



*Height adjustment:
demonstrated at the
M2000-B workstation*

FOBA M2000-R

Technical Data

FOBA®
Laser at your service

Model	Laser marking workstation with 2-station turntable and programmable Z axis
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Available Laser Systems (Extract)

Fiber laser markers	Y.0100-fc, Y.0200-fc, Y.0300-fc, Y.0301-f, Y.0500-fc Y.0100, Y.0200, Y.0300, Y.0301, Y.0500
UV marking laser	V.0020-uv

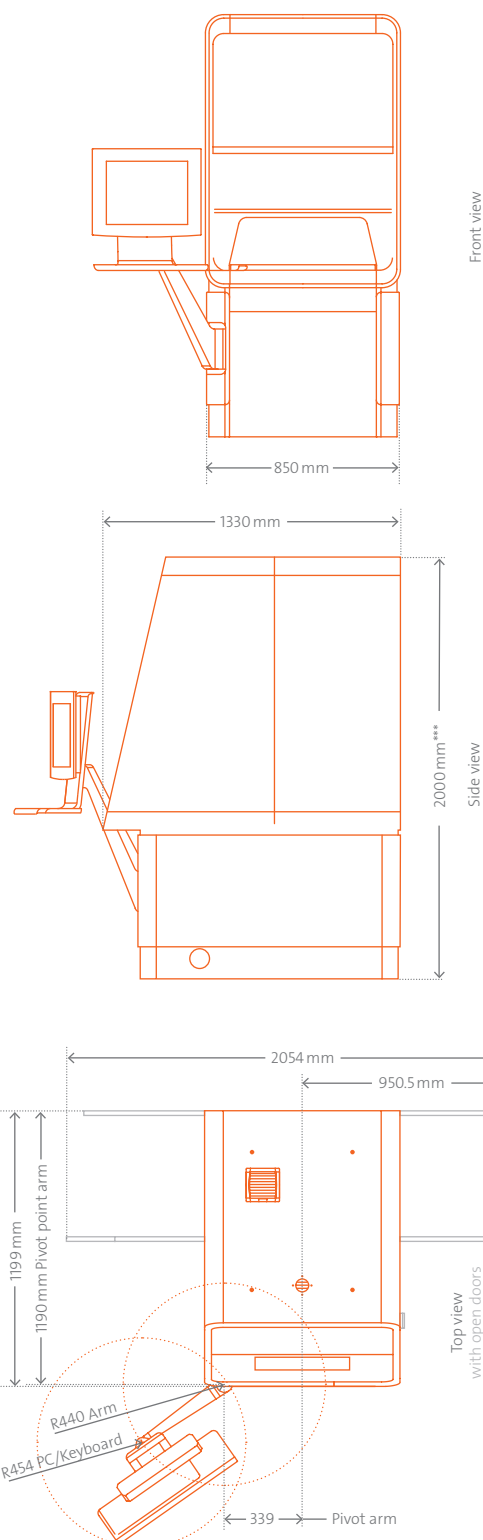
Machine

Features	Motorized rotary table (ø 630mm, 2 stations), turning bulkhead wall
User interfaces	Laser marking software FOBA MarkUS™
Axes	Programmable Z axis → Travel 500 mm → Travel speed 15 mm/s
Dimensions	850x1,330x(1,800–2,100)* mm (WxDxH)
Footprint	1.13 m²
Working chamber	0.136 m³
Weight	Approx. 700 kg**
Safety class	→ Laser class 1 (according to DIN EN 60825-1) → Supply room IP4x
Max. load	2x8 kg
Max. work piece size	H=200 mm, WxD according to ½ of ø=630 mm

Supply	→ Depends on workspace and utilized laser system
Electrical requirements	1/N/PE, AC 110/230 V, 50/60 Hz
Power consumption	Depends on utilized laser system, < 2kW
Temperature	15–35 °C (dependig on laser system also up to 40 °C)
Humidity	10–90 %, non-condensing

Options and Accessories	→ Exhaust systems → Vision systems → Other axes on request → Rotation axis → Rotation/swiveling unit → Interfaces for the integration of client processes
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Available Workstations	Two housing sizes for processing smaller (M2000) and larger (M3000) parts Three workstation models → with work table (M2000-B, M3000-B) → with 2-station turntable (M2000-R, M3000-R) → with three axes (X/Y/Z) (M2000-P, M3000-P)
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* Height adjustment range **Without laser and external components *** Height adjustable from 1800–2,100 mm

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