Laser Marking +
Engraving Solutions

FOBA®
Laser at your service

FOBA G3

2-in-1 laser machine for high-precision laser markings and engravings

Versatile and precise without compromise. Customer-specific configuration. Compact, convenient, and easy to handle. All that is FOBA G3: The small but mighty laser material processing machine for high-precision deep engravings and brilliant laser markings on small work pieces.

FOBA G3 excels wherever absolute marking and reproduction accuracy are demanded: from the marking of small plastic and metal parts to the engraving of filigree 2D/3D textures and patterns on 3D surfaces. This predestines FOBA G3 for varied laser marking and engraving applications in the medical technology industry and fine engraving sector as well as for numerous applications in the metal, tool and mold production.

Implant: bone screw, high-alloyed stainless steel
Implant: hip stem, Chromium-Vanadium steel

Your product benefits

- **(Inside ring) marking, engraving (2D, 3D), surface finishing:** Medical instruments and equipment, implants; premium watches and high-quality jewelry, etc.
- **Absolutely accurate 2-in-1 laser machine:** Precise marking and engraving of small work pieces accomplished with patented camera system for the automatic recognition of components and alignment of all processing steps
- **Compact, convenient, easy to handle:** Fits through standard doors, robust and premium design, ergonomic machine for standing or seated work, intuitive operation
- **Modular and application-specific configuration:** X/Y cross table and rotary table with 2 stations, up to five axes, vision systems IMP and Point & Shoot™, fully manual up to all automatic configuration, etc.

The Hardware
Modular, flexible, ergonomic

FOBA G3 is a laser processing machine for laser marking (including inner ring markings), 2D/3D deep laser engraving, surface patterning and finishing. The G3 is available as rotary table machine or as X/Y cross table station. It can be equipped with a laser system that is suited for the customer-specific application. Up to five axes can be set up and driven either manually or fully automatically (X, Y, Z, swivel axis, rotary unit).

With a footprint of 1.4 m^2, FOBA G3 fits through standard doors. As a result of the compact design, the workstation can easily be integrated into any lab environment.

The stable machine frame and alignable and repeatable axes ensure repeatable machine operation, accurate markings and exact documentation over a significant period of time.

The ergonomic machine for standing and seated work accommodates the individual user's needs: The input table (with monitor and keyboard) is vertically adjustable, the monitor can also be swivelled.

The Software
Intuitive, powerful, safe

FOBA EMC and FOBA MarkUS™, intuitive user interfaces for engraving and marking, create user-friendly and flexible programming environments with program traceability and axes control. FOBA EMC is the central control software for all engravings (3D); FOBA MarkUS™ is the software for all laser marking applications (2D).

In the full version, FOBA EMC comes with the 3D software FOBA 3D. As an option, the vision system IMP can be added. FOBA MarkUS™ is available with the camera systems IMP and Point & Shoot™ for automated or manual vision alignment.

- **Software security features:** several freely configurable, password protected user access levels
- **MarkUS™ archive feature:** all-in-one job file format (mark data, layout positions, parameters, etc.) for easy archival and retrieval of jobs to any location

For precision and repetition accuracy:
Vision alignment with IMP and Point & Shoot™

The vision systems IMP (Intelligent Mark Positioning) and Point & Shoot™ ensure ultimate precision and repeatability as well as micron-precise processings and a fully computer-controlled process.

The patented camera system IMP automatically detects work pieces and their positioning, and adjusts the marking/engraving accordingly. That is why IMP is ideal for automated batch production.

- **Reduction of scrap and mismarked parts through vision alignment:** Elimination of the wrong mark on the wrong part by visually verifying the proper part geometry prior to marking; should this part validation fail, the part is not marked; an error message is written, communicating the failure to the user.
- **Automatic component alignment:** IMP adjusts automatically to changes in the component and the component position. Users in special markets such as medical technology or the pharmaceutical industry are bound to strict adherence to defined processes. Possible changes to accepted marking templates must therefore be documented in detail. In that the IMP vision alignment system detects changed component positions and defective or flawed parts automatically and aligns the marking relative to these, it is no longer or only very seldom necessary to adapt marking jobs and thus existing processes.

With Point & Shoot™ marking contents are placed manually directly on a screen image of the product to be marked. This system is perfect for the processing of high-quality work pieces and individual parts.

Both imaging systems allow an upfront verification of what the mark will look like and where it will be. IMP and Point & Shoot™ thus help to reduce high-cost fixtures and help to avoid expensive production stops and time-consuming trial-and-error processes.

- **More profitability and productivity:** Work time savings due to faster production, reduction of expenses for product holders and fixtures
- **Consistent highest marking/engraving quality and accuracy** without compromise

Vision system FOBA IMP: Detects the position of to-be-processed areas and parts, and aligns engraving, marking or finishing automatically and precisely as required.

Exemplary
Model Applications

Implants

Hip stem, Titanium

Bone plate, high-alloyed implant steel

Hip ball, Chromium-Vanadium steel

Instruments

Surgical needle, high-alloyed stainless steel

Scalpel, high-alloyed stainless steel

Retractor, high-alloyed stainless steel

FOBA G3
Technical Data

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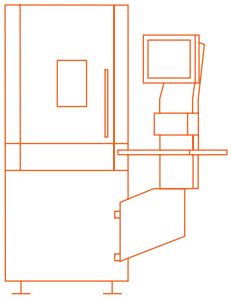
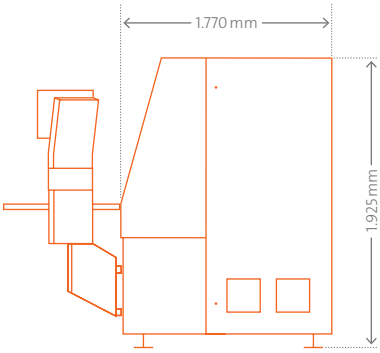
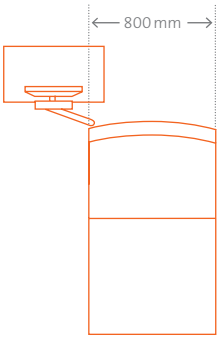
Model	FOBA G3 with X/Y cross table	FOBA G3 with rotary table
Marking / Engraving Lasers		
Fiber laser markers	DP20F, DP30F, DP50F (Yb, 20–50 W), 1,064 nm	
Grayscale lasers	DP10GS (Nd:YVO_4, 10 W), DP30FGS (Yb, 30 W), 1,064 nm	
Operating modes	Continuous (cw), pulsed (QS) 10–100 kHz*, mixed (parametrizable)	
Marking fields	Depending on the utilized lens, from 114 x 114 mm – 290 x 290 mm	
Machine	→ Laser class 1 (acc. to DIN EN 60825-1:2008-05) → Air-cooled	
User interfaces	FOBA MarkUS™ (German, English, Spanish, Italian, French, Chinese, Japanese)	
Dimensions (W x D x H)	800 x 1,770 x 1,925 mm	800 x 1,777 x 1,925 mm
Footprint	1.4 m^2	1.4 m^2
Weight	Approx. 700 kg	Approx. 700 kg
Features	Sliding door Axes travel paths (X, Y, Z) each 300 mm	630 mm rotary table, 200 mm bulkhead partition Travel path Z axis 300 mm Powered by electricity
Max. load	50 kg	8 kg per station
Max. work piece size (W x D x H)	450 x 450 x 200 mm	240 x 240 x 240 mm or 360 x 200 x 190 mm
Supply	→ Depending on workspace design and utilized laser system	
Electrical req.	1/N/PE, AC 110 V (optional) or 230 V (standard), 50/60 Hz	
Power consumption	2.0–3.4 kVA	
Temperature	15–35 °C (max. 40°C*)	
Humidity	10–90 %, non-condensing	
Options and Accessories	→ Expandable up to 5 axes (with swivel axis and rotary unit) → Status display on machine (light) → Focus shifter → Touch probe → Exhaust system	
Vision systems	**IMP**: Automatic optical part recognition and alignment of marking/engraving; particularly suitable for automated batch production **Point & Shoot™**: Visual direct mark alignment on a screen image of the part; particularly suitable for quality workpieces and single piece production	
Application software	**Engravings (3D)**: FOBA EMC (full version incl. axis control and 3D software FOBA 3D)	


Front view G3 with X/Y cross table



Side view X/Y cross table version



Top view

* Depending on laser

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