

PRELIMINARY

FOBA[®]
Laser Marking + Engraving

FOBA G3

2-in-1 Laser Workstation 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 workpieces.

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.

- *(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 workstation:* Precise marking and engraving of small workpieces accomplished with patented camera system for the automatic recognition of parts and alignment of all processing steps
- *Compact, convenient, easy to handle:* Fits through standard doors, robust and premium design, ergonomic workstation for standing or seated work, intuitive operation
- *Modular + application-specific configuration:* X/Y cross table and 2 station rotary table, up to five axes, vision systems IMP and Point & Shoot™, fully manual up to all-automatic configuration, etc.



FOBA G3: X/Y cross table version



Implant: **bone screw**,
high-alloyed stainless steel



Implant: **hip stem**,
chromium-vanadium steel

INNER VALUES

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 m², 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 workstation for standing and seated work** accommodates the individual user's needs: The input table (with monitor, 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

EXEMPLARY

Model Applications



Implant: **hip stem**, titanium



Instrument: **surgical needle**, high-alloyed stainless steel



Implant: **hip ball**, chromium-vanadium steel

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VISION ALIGNMENT FOR PRECISION & REPEATABILITY

Vision(ary) Systems: 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**.

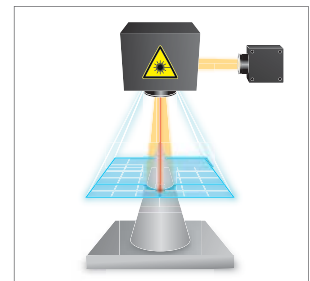
The **patented camera system IMP** automatically detects workpieces and their positioning, and adjusts the marking/engraving accordingly. That is why IMP is ideal for automated batch production.

- *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 alignment of parts:* elimination of continual documentation of finite program changes resulting from system instability or inaccuracy, minimization of daily engineering input into the process

With **Point & Shoot™** marking contents are positioned manually directly on a screen image of the product. This system is perfect for the processing of high-quality workpieces and individual parts.

Both imaging systems allow for upfront verification of what the mark will look like and where it will be. In addition, IMP and Point & Shoot™ assist in reducing expensive fixtures and eliminating 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.



Implant: **bone plate**, high-alloyed implant steel



Instrument: **scalpel**, high-alloyed stainless steel



Instrument: **retractor**, high-alloyed stainless steel

FOBA G3

Workstation for Laser Marking and Laser Engraving

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TECHNICAL DATA

	FOBA G3 with X/Y Cross Table	FOBA G3 with Rotary Table
Marking Lasers/ Engraving Lasers	<i>Fiber Laser Markers:</i> DP20F, DP30F, DP50F (20 to 50W), 1,064 nm <i>Grayscale Laser Markers:</i> DP10GS (Nd:YVO, 10W), DP30FGS (Yb, 30W), 1,064 nm <i>Operating Modes:</i> continuous (cw), pulsed (QS) 10 to 100kHz*, mixed (parametrizable) <i>Marking Fields:</i> depending on the utilized lens, from 114x114 mm to 290x290 mm	
Machine	Laser protection class 1 (acc. to DIN EN 60825-1:05/2008) Air-cooled <i>User Interfaces:</i> FOBA MarkUS™ (German, English, Spanish, Italian, French, Chinese, Japanese)	
Dimensions (WxDxH) Footprint Weight	800x1,770x1,925 mm 1.4m ² Approx. 700 kg	800x1,777x1,925 mm 1,4m ² Ca. 700 kg
	Sliding door Axes travel paths (X, Y, Z) each 300 mm	630 mm rotary table, 200 mm bulkhead partition Powered by electricity Travel path Z axis 300 mm
Max. Load Max. Workpiece Size (WxDxH)	50 kg 450x450x200 mm	8 kg per station 240x240x240 mm or 360x200x190 mm
Supply	Depending on the design of the workspace and the utilized laser system	
Electrical Req. Power Consumpt.	1/N/PE, AC 110V (optional) or 230V (standard), 50/60 Hz 2.0 to 3.4 kVA	
Temperature Humidity	15 to 35°C (max. 40°C*) 10 to 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	<i>Engravings (3D):</i> FOBA EMC (Full version incl. axis control and 3D software FOBA 3D)	

* Depending on laser



Top left: G3 with X/Y cross table and sliding door
Bottom left: G3 with rotary table (dimensions in mm)



Right: FOBA G3 with rotary table

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