THEO

Say hello to Theo. Say no to slow.

MA1 Series

Handheld Laser Welder

Effortless Operation, Seamless Welding, Superior Results!

Compared to traditional welding methods, Theo's MA1 handheld laser welders offer a lightweight, compact, and versatile solution. These units are easy to operate across a wide range of materials, including stainless steel, carbon steel, aluminum, and galvanized steel. They deliver up to ten times faster welding speeds, higher weld strength, and reduced porosity. The MA1 series' 20μ spot size reduces heat-affected zones, weld deformation and burn-through. Theo's laser welding process results in clean, consistent weld beads that require little to no post-processing.

Overall, our MA1 series enhances efficiency and productivity, reduces waste, and lowers costs, ultimately boosting your profitability.

Product Model		MA1-Ultra	MA1-65	MA1-45	MA1-35
Weld Thickness[1] (inch / mm)	Stainless steel	0.335" / 8.5mm	1/4" / 6.5mm	0.18" / 4.5mm	0.14" / 3.5mm
	Carbon steel/ Iron	0.335" / 8.5mm	1/4" / 6.5mm	0.18" / 4.5mm	0.14" / 3.5mm
	Aluminium	0.256" / 6.5mm	0,22" / 5.5mm	0.16" / 4mm	1/8" / 3mm
	Galvanized sheet	0.335" / 8.5mm	1/4" / 6.5mm	0.18" / 4.5mm	0.14" / 3.5mm
Wobble (inch / mm)		0-0.16" / 0-4mm	0-0.16" / 0-4mm	0-0.16" / 0-4mm	0-0.16" / 0-4mm
Operating Temperature (°F)		0~104	0~104	0~104	0~104
Operating Temperature (°C)		0~40	0~40	0~40	0~40
Weight (pounds)		86 lbs	86 lbs	84 lbs	62 lbs
Weight (kg)		39kg	39kg	38kg	28kg
Dimensions (in*in*in)		26.3*10.9*21.3	26.3*10.9*21.3	26.3*10.9*21.3	22.7*10.4*16.7
Dimensions (mm*mm*mm)		667*276*542	667*276*542	667*276*542	576*265*425
Volume (cubic feet)		< 3.5	< 3.5	< 3.5	2.1
Volume (m^3)		< 0.1	< 0.1	< 0.1	0.06

[1] Data points represent extreme penetration depth based on lab test results; the penetration depth performance will vary according to setup and application.
Disclaimer: All weld penetration depth values and performance specifications stated in this brochure for the MA1 Ultra are based on preliminary testing. Final values may vary upon completion of further testing and validation.

With 5 different copper nozzles

- Compact
- Light
- Portable

Get Hands-On with the Next Generation of Welding Technology

Hard-to-find skill set, technically complex welding processes, uncomfortable work conditions, low efficiency, unsuitability for special metals and thin sheets, high welding wire consumption, and pre-cleaning and joint preparation required for full penetration. For TIG, vertical welding is notably challenging due to limited direction and operating angles.

Large heat-affected zone: Traditional welding often distorts and discolors the workpiece due to heat, affecting weld quality by introducing porosity, reducing joint strength, and altering grain structure—necessitating further post-processing. Welding materials like copper and aluminum also introduce thickness limitations.

Handheld Laser Welding

Compared to traditional welding methods, Theo's new MA1 handheld laser welding products significantly boost welding speed (up to ten times faster for steels). They are easy to operate, comply with industry safety standards, save energy, and are eco-friendly.

Theo's MA1 series features a high-precision laser control system, stable beam quality, and a laser power range of 800 to 1500 watts.

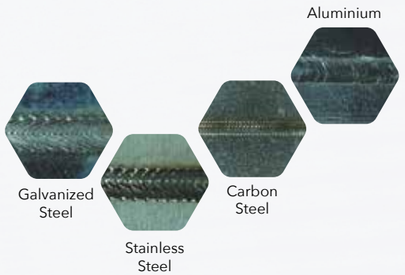
Even novices can be trained to consistently achieve weld depths from 1.5mm to 6.5mm (roughly .25") with little to no welding wire consumption, ensuring high-quality, strong welds!

Item	Traditional Welding	THEO Handheld Laser Welding
Welding Speed	Average	**Up to 10 times faster than TIG.**
Welding Quality	Highly dependent on user experience. Welding seams can be rough or irregular, requiring rework and polishing.	**Consistent high-quality results.** Beautiful and neat welding seams, deep molten pool, and high strength. No cleaning necessary.
Training & Learning Curve	Difficult to learn.	**Easy – Train in hours.** Proficiency in 1-2 weeks.
Heat-affected Zone	Large	**Small**
Material Distortion & Deformation	High	**Very Low**
Welding Seam Damage	Potential for porosity, lack of consistency.	**Uniform melt pool and great consistency.**
Energy Consumption	High	**Low – up to 80% reduction in electricity costs.**
Consumables	High welding wire consumption.	**Precise wire consumption supported by wire feeding system.**

Six Robust Safety Measures for Unmatched Protection

The MA1 Series Handheld Welder is a Class IV laser product. To guarantee safe operation, appropriate PPE (Personal Protective Equipment) is essential. At a minimum, laser-safe eyewear should always be worn. Theo includes a pair of goggles with every laser for added safety.

Wire Feeder Unit Included – Integrated Wobble Welding



The laser control system ensures consistent wobble frequency control, allowing for weld widths of up to **4.0mm (approximately 0.16")**. This innovation results in high-quality, symmetrical weld seams that are smooth to the touch and require no further processing.

The MA1 series includes a wire feeder module for situations where deeper weld penetration is necessary, such as filling gaps or achieving smooth, flush weld profiles. The module supports welding wire diameters of 1.0mm (approximately 1/25"), 1.2mm (approximately 3/64"), and 1.6mm (approximately 1/16"). It is compatible with a variety of materials including carbon steel, stainless steel, aluminum, non-ferrous metals, and other alloys.

Theo Handheld Laser Welder Features

Stable Performance and Reliable Quality

Theo's new MA1 series handheld laser welder is engineered with **Maxphotonics' world-class laser technology,** ensuring precise laser control and stable beam quality. Each unit undergoes rigorous testing before leaving the factory, including a 500-hour high- and low-temperature (-10°C–45°C or -14°F–113°F) cycling power test and a 12-hour continuous welding test with 99% power stability. With a laser power source lifespan of approximately 100,000 hours, all our products meet SGS industry standards to guarantee stable and durable beam output.

Compact Handheld Welding Torch

Equipped with a revolutionary laser optic design, our welding torch is impressively lightweight at just **680g (1.5 pounds)**. Its optical design and QCS output head are seamlessly integrated, providing high transmission efficiency and heat output. Ergonomically crafted for user comfort, the torch is easy to operate. We've also included a built-in wobble function with a multi-point interlock system, allowing operators to work safely all day while consistently delivering high-quality welds.

Welding torch with wire feeder

Handheld welding torch

Compact and Mobile

Theo's new generation of handheld laser welders is engineered for portability, making it ideal for mobile welding projects.

With options ranging from **28kg to 39kg (62-86 pounds)**, you can choose the product that best suits your welding needs and performance criteria. The compact design, occupying less than 0.1m³ (3.5 cubic feet), enhances its portability, allowing for easy transport and setup.

Simple Operating System, Intuitive Processing Mode

Theo's new MA1 generation of handheld laser welding products features a 7" LED touchscreen and an intuitive, multi-language operating system. With simple operation modes, it's easy to get to work.

Beginners can consistently deposit good welds with just **1-2 hours of training**, significantly reducing both training and production costs.

The device comes pre-loaded with **32 sets of process parameters** while also allowing for precise user customization. This feature enables operators to swiftly select welding parameters based on various materials and thicknesses.

Easy Integration and Operation

1

200-240Vac power supply

2

Gas: Argon/Nitrogen

3

Ground clamp safety loop

The product's rear panel is clearly labeled for effortless setup, making it especially convenient for beginners. Integration is further simplified with our user guide videos. All you need is a standard 220Vac power plug, a connection to industrial shielding gas like argon or nitrogen, and the interlock connection attached to your workpiece to start welding. The 7-inch LED touchscreen features an intuitive, multi-language operating system. Here, you can easily select from preset welding parameters or input your own precise user-defined settings.

Lightweight, Portable, and Engineered for High Performance

Traditional welding methods take time to master, and weld quality can vary tremendously according to the welder's specialized training and years of experience.
The new generation of Theo's MA1 handheld laser welding products introduces high welding efficiency, simple and convenient operation, and easy-to-learn technology. Nearly anyone can be trained to quickly achieve consistently high-quality welding results in a range of different materials and thicknesses.

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