



L1-WELD

HANDHELD LASER WELDING



**LASER WELDING - AS EASY
AS DRAWING A LINE**

www.vpglaserone.ru



L1-WELD

The best handheld laser welding solution on the market.

We guarantee quality, reliability, simplicity and speed at every stage of equipment purchase and operation.

L1-WELD Pro

The flagship of the L1-WELD range features a 2x smaller heat spot diameter, enabling:

- metal welding with penetration up to 10 mm
- high-quality joints in highly reflective and difficult-to-weld metals
- minimal heat-affected zone

The pre/post-weld cleaning function improves quality and saves time.



Welding capabilities by material

L1-WELD Pro Unique capabilities for welding and cleaning

L1-WELD Plus High-quality welding and enhanced capabilities cleaning capabilities

Preset capabilities for welding stainless, low-carbon and galvanized steel	up to 10 mm	up to 8 mm
Preset capabilities for welding Al-Mg and Al-Mn alloys	up to 8 mm	up to 7 mm
Preset capabilities for welding AMg6 aluminum	up to 8 mm	up to 3 mm
Preset capabilities for welding titanium and nickel alloys	up to 8 mm	up to 4 mm
Preset capabilities for welding copper	up to 4 mm	up to 2 mm
Cleaning width	up to 15 mm	up to 15 mm
Filler-wire welding capability	Yes	Yes

The L1-WELD range of handheld laser welding systems is professional industrial equipment designed for welding and cleaning a wide range of metals and thicknesses. Each L1-WELD model is designed for specific user segments and their applications.



L1-WELD Plus

Additional cleaning before and after welding.
Changeover takes no more than 30 seconds.



HANDHELD LASER-WELDING BENEFITS:

- high process speed with no need for post-processing
- localized heat input ensures minimal distortion and maximum strength
- easy training, equipment servicing and operation



PRE- AND POST-WELD CLEANING:

- changeover between welding and cleaning in under 30 seconds
- high-productivity, high-quality cleaning with minimal heat input



COMPETITIVE ADVANTAGES OF L1-WELD:

- superior weld quality at high productivity
- extensive preset library eliminates mode search and tuning
- training and commissioning included with delivery
- continuous improvement of equipment and support
- ideal balance of compactness and functionality

L1-WELD

KEY DIFFERENCES FROM CONVENTIONAL HANDHELD WELDING METHODS

Technical characteristics	L1-WELD Pro	L1-WELD Plus	Conventional welding methods
Speed	Up to 4x faster than TIG welding	Up to 4x faster than TIG welding	Average
Weld quality	Improved weld quality through pre-cleaning cleaning function	Improved weld quality through pre-cleaning cleaning function	Operator-dependent
Warping and distortion	Almost absent	Minor	High
Heat-affected zone	Lowest possible	Small	Large
Learning	Strong results within the first hours	Strong results in a short time	Several stages
Material selection flexibility	Extended range including highly reflective metals; no changeover required	Wide range of materials; no changeover required	Limited range of materials; changeover required
The Pre/post-weld welding	Yes	Yes	No
Ease of selecting welding mode	Very easy: simpler setup and extensive library of preset modes	Easy, extensive library of preset modes	Difficult
Beam scanning	Yes, width up to 5 mm	Yes, width up to 5 mm	No (movement is manual)

L1-WELD Pro

L1-WELD Pro – HANDHELD WELDING MADE EASY:

- 27 preset modes
- Consistent weld quality
- Compatible with industrial robots
- 2-year warranty
- Power consumption below 6.5 kW
- Consistently high weld-joint quality
- Minimal heat-affected zone

EVERYTHING IS SET UP FOR YOU:

- Parameters selected for you
- Training and setup in just 5 minutes
- Intuitive control interface

DYNAMIC BEAM AMPLITUDE AND FREQUENCY OSCILLATION - THE FUTURE OF HANDHELD LASER WELDING AVAILABLE TODAY:

PERFECT, DEFECT-FREE WELD - GREATER JOINT STRENGTH

Weld analysis shows that adjustable beam scanning delivers even more stable weld formation and completely eliminates undercuts and pores, enhancing the benefits of conventional constant-parameter modes.

GREATER PENETRATION AT THE SAME LASER POWER

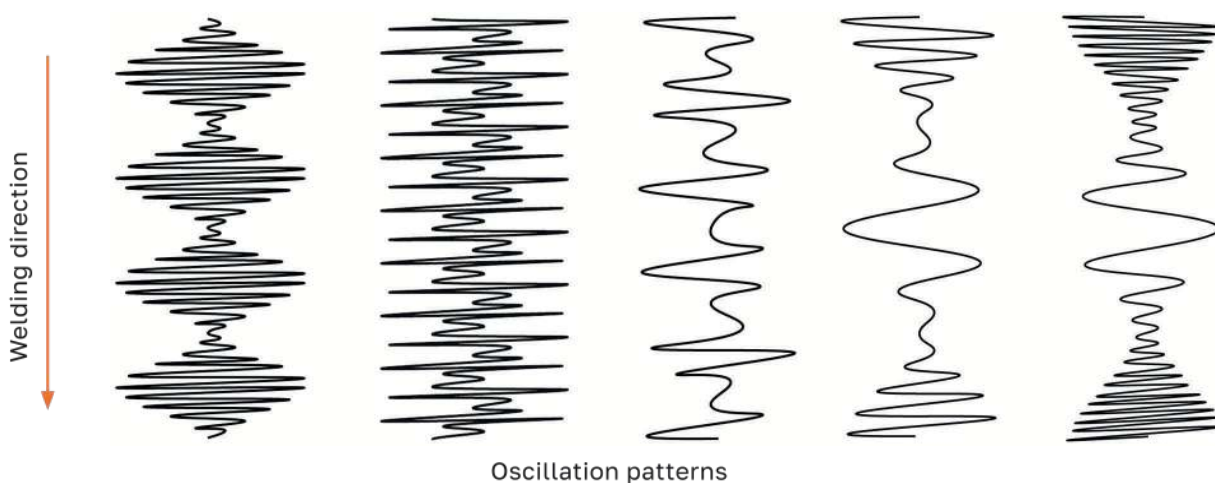
Dynamic oscillation increases penetration without narrowing the weld by up to 40% without wire and up to 140% with wire.

FAR MORE EFFICIENT WIRE MELTING

Oscillation distributes laser energy evenly for better wire melting.

HIGHER SPEED - HIGHER PRODUCTIVITY

Dynamic oscillation increases wire-feed speed without sacrificing weld quality.



L1-WELD

INTUITIVE CONTROLS + EASY COMMISSIONING

LASER-BEAM OSCILLATION FREQUENCY

0-300 Hz: Increase frequency for a uniform weld at high welding-gun travel speed

LASER-BEAM OSCILLATION WIDTH

0-5 mm: Greater oscillation width produces a wider weld (with reduced penetration across its width)

Emergency stop button
and system key switch

Trigger 1
Gas supply on

Trigger 2
Laser emission on



NOZZLE SELECTION BY JOINT TYPE

BUTT WELD	CORNER WELD	T-JOINT WELD	LAP WELD	EDGE WELD

LASER POWER 200-2000 W:

Power determines gun travel speed and penetration depth

SELECTING A WELDING PROGRAM

1. Use the mode buttons (right/left arrow) to select the program number
2. To switch preset subgroups, hold the mode button (right/left arrow) for 2 seconds (mode table is supplied with your **L1-WELD**)

SAVING A WELDING PROGRAM

1. Hold both mode buttons for 3 seconds
2. When the screen stops flashing, the program is saved

RESETTING THE PROGRAM TO FACTORY SETTINGS

Press and hold both mode buttons for 10 seconds

Ethernet connection
for controlling system
parameters via web interface

220 V power connector

Control inputs/outputs
and safety interlocks

Quick-connect fitting
for the gas line

1

220 V, single-phase,
max. 32 A

2

Standard gas
cylinder with regulator

3

Contact terminal
for safety circuit

Accessory kit



2 nozzle sets: welding (4 types) and cleaning (3 types)



Cutting kit
(cutting nozzle, tube and fitting)



Wire-feed bracket
with tip set



0.8 mm 1 mm 1.2 mm 1.6 mm



Convenient gun holder
(mounts on table or unit)



Operator protection:
professional eyewear



Gas connection kit
(regulator, 5 m hose, fitting, clamp)



5 replacement lenses
for uninterrupted work

also included:

- Connection kit (32 A socket on cable)
- Connectors (12-pin and 4-pin remote control)
- Documentation set (manual + maintenance schedule)
- PC cable

Wire feeder

An optional wire feeder is available.

It includes all hardware and software required to add wire welding to L1-WELD.

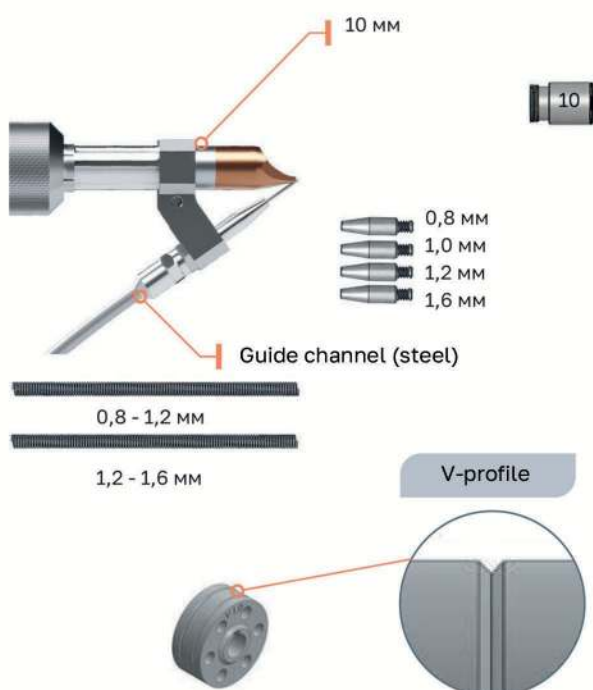
Designed for handheld laser welding with wire for low-carbon steel, stainless steel, aluminum, non-ferrous metals and other alloys.

Wire-feed settings are adjusted on the feeder; L1-WELD sends a synchronization signal. The wire nozzle guides the wire precisely into the weld zone. L1-WELD modes provide standard settings for typical materials and wire types.

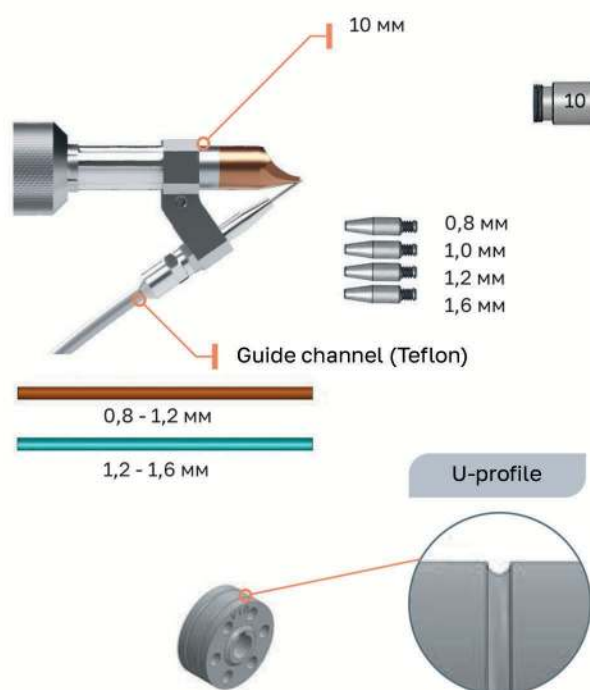


FILLER-WIRE WELDING CONFIGURATIONS AND PARAMETERS

HARD WIRE



SOFT WIRE



L1-WELD

— is a powerful handheld system that can also be integrated into robotic cells



THIS ALLOWS YOU TO:

-  Scale productivity without replacing equipment.
-  Ensure uncompromising quality and repeatability of every weld.
-  Perform complex, repetitive tasks without fatigue or errors.
-  External MODBUS TCP control - unique capabilities for integration into an automated system.

The system can include a benchtop positioner that rotates round parts about a horizontal or vertical axis in the robot work area. An automatic welding-wire feeder is also available with single- or dual-wire feed.

Unique function:

Laser cladding

L1-WELD Plus – not only welds, but also repairs and restores parts using the laser-cladding function



HOW DOES IT WORK?

The laser beam melts the filler wire and a thin surface layer of the base material, creating a strong bond without significantly heating the whole part.

BENEFITS FOR YOUR BUSINESS:



Restoration of high-value parts:
repair worn shafts, gears, dies, molds, etc.



Defect repair:
repair cavities, pores and cracks in castings and finished parts.



Applying protective coatings:
extend service life under abrasive wear or corrosion.

TECHNICAL CAPABILITIES

Material	Max. thickness
Stainless, low-carbon and galvanized steel	up to 6 mm
Al-Mg and Al-Mn alloys	up to 6 mm
Copper	up to 2 mm
Cleaning width	up to 15 mm
Filler-wire welding capability	yes



GLOBAL LEADER IN THE LASER INDUSTRY

VPG LaserONE is a Russian company founded by the outstanding Soviet scientist Valentin Pavlovich Gapontsev, founder of the international science and technology corporation.

VPG LaserONE develops and serially produces high-efficiency fiber lasers and amplifiers, optical components, assemblies, modules, instruments, subsystems and systems for:

- Industrial laser cutting, welding, cladding, alloying, heat treatment, marking and cleaning systems.
- Scientific research.
- Fiber-optic, atmospheric and satellite optical communications, cable television.
- Surgery and biomedicine.
- Optical ranging and remote monitoring of industrial facilities and the atmosphere.
- Measurement and control systems, sensors.

In order to introduce innovative laser technologies into production, VPG LaserONE has for many years worked closely with leading domestic machine-building, metallurgical, railway and motor transport enterprises and supplies its customers with more than 600 types of ultra-high-technology laser equipment. Many devices and systems have no equivalents on the world high-tech market. All key components of fiber laser technology are manufactured in-house, which delivers:

- Fast product development.
- Efficient production methods.
- The industry's best product delivery times.
- More advanced and higher-quality solutions.
- The highest wall-plug efficiency, which reduces overall energy consumption and costs.



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1992

Foundation date



1,500+

employees



500+

R&D
specialists



>60 000 m²

facilities



100+

patents



90%

component
localization