GRAVOTECH

OPERATING AND MAINTENANCE MANUAL

Laser Workstation

LW2 Touch

MARKING LASER

GRAVOTECH

TYPE 3 TECHNIFOR GRAVOGRAPH

M_LW2 Touch_EN_B - Last updated: 03/2020 - Translation of the French original document

Table of contents

A. Foreword

1. Appreciation

Thank you for choosing LW2 Touch - Gravotech.

Gravotech is pleased to count you among the users of its engraving and traceability solutions.

For help, contact Gravotech.

For more information on products, visit www.gravotech.com website.

2. Information

	**To ensure security and productivity, read this manual before starting-up the equipment. It provides details about the installation and use of the equipment.** **Keep this manual in case you need to refer to it.**

	**For the attention of users having an individual cardiac assist device fitted:** **Our equipment is designed and manufactured with the greatest care in order to guarantee their compliance with the EMC Directive currently in force. This means that the levels of electromagnetic emissions produced by this equipment when in operation are limited and do not exceed the thresholds defined by the Directive.** **However, multiple factors make it impossible to guarantee the total absence of risk for users having a cardiac assist device fitted. Consequently, it is recommended that standing for a prolonged period within less than 1 m (3.281 ft) of an operating machine should be avoided.**

B. Legal notices

Last updated: 10/2015

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The Product's specifications are altered by (i) any Product's modification or alteration, (ii) any adaptation and installation of accessories that are not recommended by Gravotech, (iii) the integration of a control system and (iv) the connection to an external device. Such specifications' alterations may lead to the non-compliance of the Product with applicable rules and standards. Shall the Product be non-compliant, the person in charge of the Product's installation shall be responsible of the final workstation's compliance. In no event, Gravotech shall be liable for any damages arising from such non-recommended or unauthorized Product's alterations. It is precised that the warranty shall not apply in such case.

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C. Regulation observance

Last updated: 01/2020

EC declaration of conformity or declaration of incorporation supplied with the machinery

Type of machine	Directives - Standards
Dot peen marking: Machine XF500p, XF500m, Impact p, Impact eZ p, Impact m, Impact eZ m P5000PN, P5000EM Scribing marking: Machine B-Engraver, M10, M10 Jewel, M20 Pix, M20 Energy RingCube, TagCube Sharpening by grinding: Machine CG30 Bevelling: Machine B4, B6 Engraving by milling: Machine IM3, IF3 M20, M20 Jewel, M20 ABC, M20 Pen, M20 Beauty Cube, M20 V3 M40, M40G, M40 ABC IS200, IS400, IS400 Volume IS6000, IS7000, IS8000 - XP - XP Milling Hot foil stamping: Machine M20 Artfoil Dot peen marking: Transportable machinery - Partly completed machinery XF530p, XF530m, XE320Cp, XM500 Dot peen marking: Partly completed machinery XF510Cp-Sp-Dp, XF510Cm-Sm-Dm, XE310Cp-Sp Scribing marking: Partly completed machinery XF510Cr-Sr-Dr, SV510 CCU, Rack, TouchPad UC500, UC500 SV, UC300, UC Laser, XCOM Racks IS Laser fume extractor ES10, ES20, ES30, ES40, ES50 LE120HP, LE140HP, LE150HP, LE190HP, LNI900 Accessory: Partly completed machinery Rotary APF, Laser APF, Dotpeen APF PFD500 TAG3500 Cylinder attachment DMC15, DMC25, DMC25PN, DP3500, DP4500, DP4500PN RD1, RD2, RDM, RD Jewel eZ300	- Low voltage: 2014/35/EU - EMC: 2014/30/EU - RoHS 2: 2011/65/EU
Dot peen marking: Portable machine XM700	- Low voltage: 2014/35/EU - EMC: 2014/30/EU - RoHS 2: 2011/65/EU - Cells and batteries: 2006/66/EC
CO2, Yag and fiber laser marking: Machine (gantry) LS100 Energy, LS100 Ex Energy, LS900 Energy LS100, LS100 Ex, LS900, LS900 XP, LS1000XP LS100 Ex Fibre, LS900 Fibre LS900 Edge CO2, Yag and fiber laser marking: Machine (galvo) LW1, LW2, LW2 Touch, LW3, WeLase (Cxx, Fxx, Gxx, Hxx), WeLase 360 (Cxx, Fxx, Gxx, Hxx) Laser Solution Hybrid-Series (standard version, Version Energy), Laser Solution Green-Series (standard version, Version Energy), Laser Solution CO2-Series (standard version, Version Energy), Fiber Energy CO2, Yag and fiber laser marking: Partly completed machinery (galvo) – Class 4 Laser Solution Fiber-Series (standard version, Version Energy)	- Low voltage: 2014/35/EU - EMC: 2014/30/EU - RoHS 2: 2011/65/EU - Safety of laser products - Part 1: Equipment classification and requirements: EN 60825-1:2008 - Safety of laser products - Part 4: Laser guards: EN 60825-4+A1+A2:2006

D. Required safety labels

Last updated: 01/2020

Machines concerned	Required safety labels

LS100
LS100 Ex
LS100 Energy
LS900
LS900 XP
LS1000 XP

LS100 Ex Fibre
LS900 Fibre

LS900 Edge

WeLase

Shared labels

Warning: Laser beam

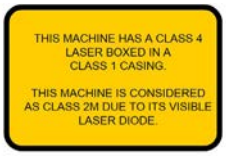
General warning

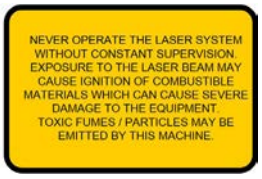
Warning: Flammable materials

Warning: Electricity

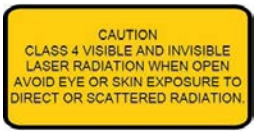
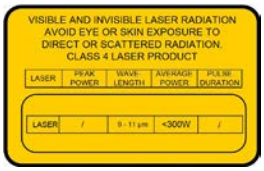
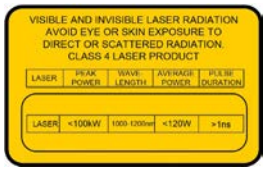
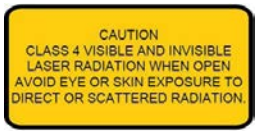
Warning: Crushing of hands

Refer to instructions manual/booklet.





"Passthrough" function

LS100 LS100 Ex LS100 Energy LS900 LS900 XP LS1000 XP	LS100 Ex Fibre LS900 Fibre	LS900 Edge
  	  	  

Required safety labels

<table>
<tr><th>Machines concerned</th><th>Required safety labels</th></tr>
<tr><td>Laser Solution Hybrid-Green-CO2 Series (standard version, version Energy)

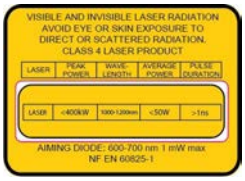
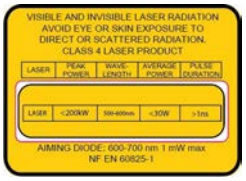
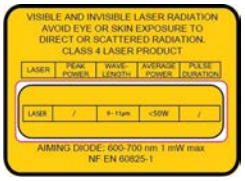
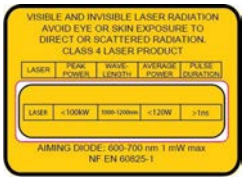
Laser Solution Fiber-Series (standard version, version Energy) Fiber Energy</td><td>
Shared labels

Warning: Laser beam

General warning

Warning: Electricity

Refer to instructions manual/booklet.


<table>
<tr><td>Laser Solution Hybrid Series (standard version, version Energy)</td><td>Laser Solution Green Series (standard version, version Energy)</td><td>Laser Solution CO2 Series (standard version, version Energy)</td><td>Laser Solution Fiber-Series (standard version, version Energy) Fiber Energy</td></tr>
<tr><td>  </td><td>  </td><td>  </td><td> 
  </td></tr>
</table>
</td></tr>
<tr><td>LW1 - LW2 - LW2 Touch - LW3</td><td>

Warning: Laser beam

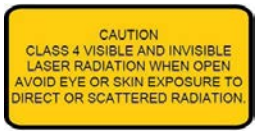
General warning

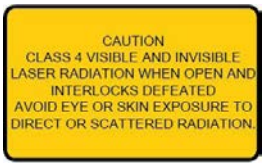
Warning: Flammable materials

Warning: Electricity

Warning: Crushing of hands

Refer to instructions manual/booklet.


</td></tr>
</table>

E. Introduction

1. Presentation

The LW2 Touch is a station allowing the attachment of a marking head. It is equipped with a motorized Z-axis mounted to a table.

Marking is carried out by the marking head, which integrates two motors (X- Y) to displace the laser beam on the part to mark.

2. Instructions for use and warranty limitations

The LW2 Touch machine is covered by a general 24-month warranty under normal conditions of use and maintenance. The warranty incorporates a limit of 750 000 usage cycles (Door opening/closing). The warranty expires when either of these conditions (period or number of cycles) is reached.

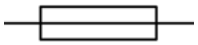
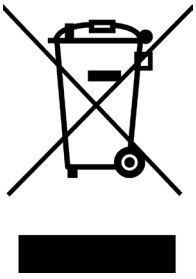
3. Identification of the marking equipment

The marking equipment is identified by:

- 1 identification plate on the rear face

Have the model and serial number of the equipment available when contacting Gravotech.

■ Description of symbols used (ID plate)

	*Alternating current*		*Fuse*
	*The equipment must be disposed of at an appropriate collection point for processing, sorting, and recycling of Waste Electronic and Electrical Equipment (WEEE).* *By following these instructions, you are helping the environment, contributing to the preservation of our natural resources, and protecting human health.*		*Logo meets "EC" standard*

Introduction

4. Work station safety

- Turn off the machine before beginning any cleaning, maintenance or repair procedure.
- Never unplug a cable while the Control Unit is turned on.
- Use the appropriate protection when equipment is used in a polluted environment. Use of these protections are the user's or the integrator's responsibility.
- In the event of power problems, install a UPS (power conditioner).
- The marking head and the Control Unit must be clean and protected from dust. Exterior optics must be verified and cleaned if necessary.

Warning: Hazardous moving parts

■ Control Unit / marking head

For more information, consult the manual of the machine in question (Fiber - Hybrid - Green - CO2 Energy Series).

■ Door motorization

Manipulate the door with caution before switching on:

1. **Remove the cover (See: Step 1: Opening the casing).**
2. **Remove 2 screws in order to release the counterweights (See: Step 2).**

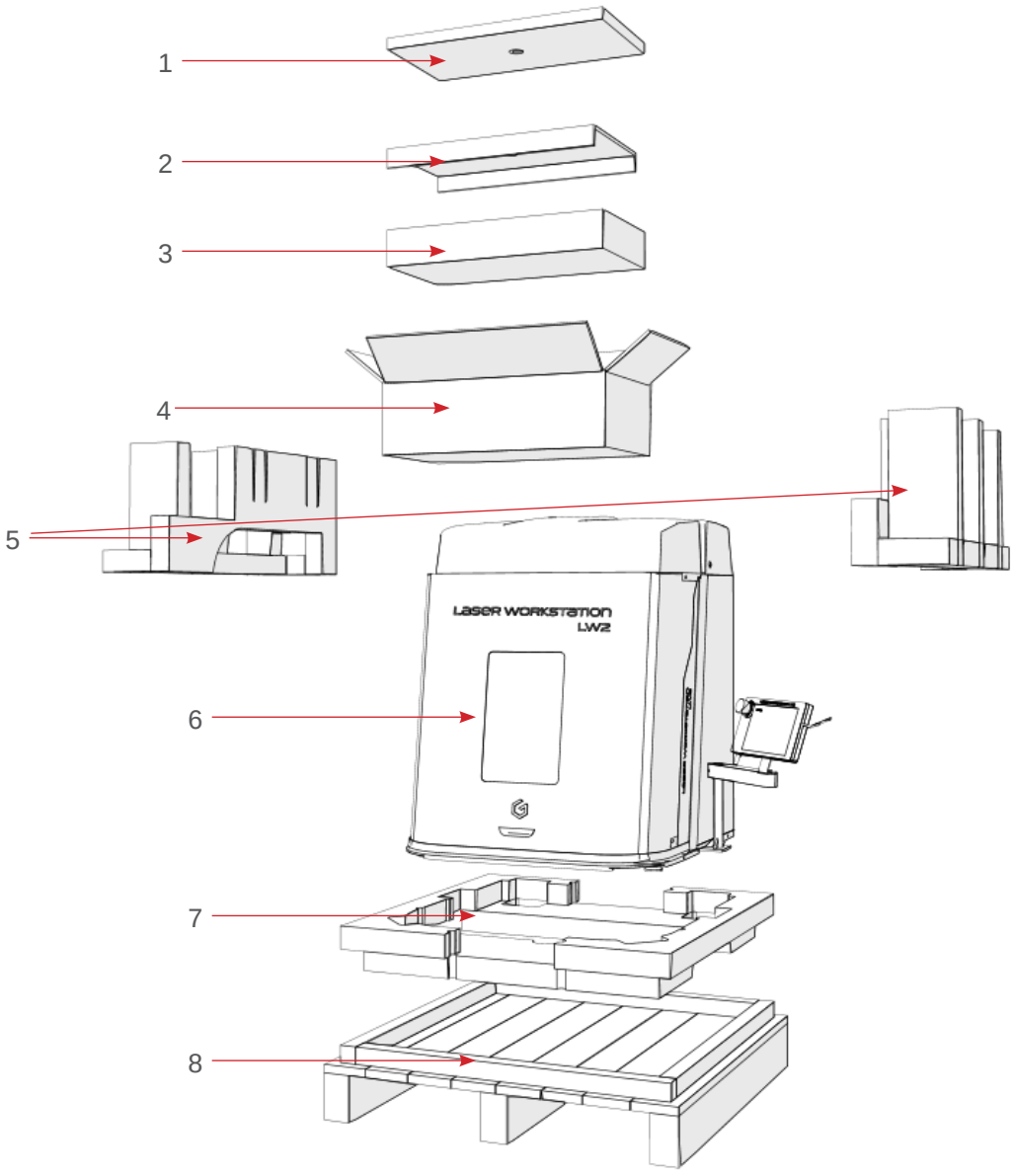
■ Handling the machine

- In the event of an extended period of non-use, unplug the power cable and protect the machine.
- Never pour or spill liquid on the machine (drinks, cleaning products, etc.) except where recommended by Gravotech.

Gravotech will not be held responsible for injuries resulting from disregard for the above operating instructions or other general safety rules applicable to the use of this equipment or resulting from misuse. Furthermore, disregard for the instructions will void the warranty.

F. Unpacking

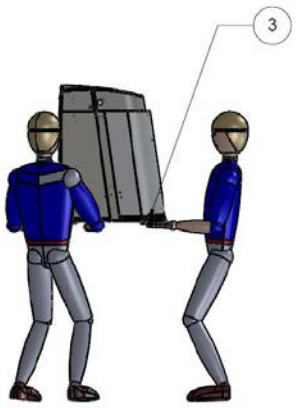
1. Packaging

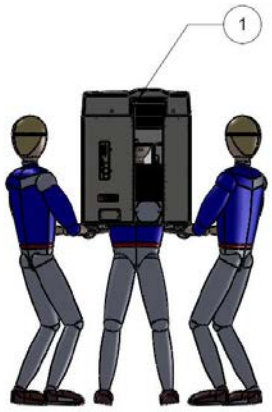


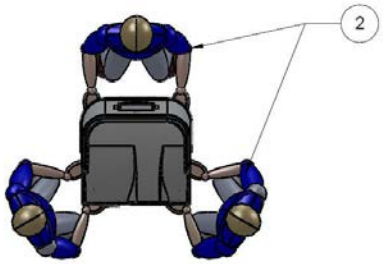
1. *Protective foam*
2. *Wedge*
3. *Contents of the box: screen + mounting bracket + cables*
4. *Box*
5. *Protective foam*
6. *LW2 Touch (maximum: 60 kg (132.277 lb))*
7. *Wedge*
8. *Pallet*

Unpacking

	Unpack the machine with 3 operators.







1. *LW2 Touch (weight: 60 kg (132.277 lb))*
2. *Unpack the machine with 3 operators.*
3. *Handles (x 6)*

G. Laser safety

1. Recommendations and safety regarding laser devices

■ Personnel safety

THIS MACHINE HAS A CLASS 4 LASER BOXED IN A CLASS 1 CASING. THIS MACHINE IS CONSIDERED AS CLASS 2M DUE TO ITS VISIBLE LASER DIODE (RED).

- The machine is considered as Class 1 when the door is closed. In this case, the security enclosure of the LW2 Touch is locked and sealed against potential Laser radiation emissions under normal working and safety conditions. The modification of locking systems, or the removal of these systems or labels designed for safety, will result in exposure to hazards from the Laser beam. Any modification is prohibited. The LW2 Touch is closed, locked and labelled to ensure that it works in complete safety. The labels and security devices must not be removed or concealed by the operator.
- The machine is considered as Class 2M when the door is opened (emission power equal to or less than 1 mW). In this case, the security shutter in the Laser module closes to avoid any risk of Laser emission. The marking can only be carried out if the door is closed.

If the machine is being integrated, the installer is responsible for ensuring the final equipment conforms to current legislation. Observe EN 60825-1 standard concerning the controls and signage (access panels, doors, emergency stops...). Example: application of safety pictograms, installation of suitable guards, use of the electrical safety channel provided on the equipment (non-exhaustive list).

Only trained personnel aware of the risks posed by the machine are authorized to use it. Only Gravotech personnel, or persons authorized by Gravotech may service the elements that constitute the marking machine. Any intervention by unauthorized third party would exclude Gravotech's liability.

Laser radiation is invisible, but exposure, direct or scattered, is hazardous to skin and eyes.

Do not use this marking equipment in an explosive environment. No inflammable material should be located within the machine enclosure near the reflected beam (operator's shirt, curtains, wall covering in non-synthetic material: fire hazard). For safety reasons, never operate the machine without constant surveillance.

This equipment is not suitable for use in locations to which children have access.

This laser can produce dangerous diffuse reflections. It may lead to skin and eye injuries as well as a fire risk. Its use requires extreme caution. Fire prevention and protection equipment is the user's responsibility. Do not look at the Laser beam continuously when marking, even through the protective glass. The light intensity may strain the eye.

Laser safety

2. Labels

■ Warranty labels

These labels guarantee the laser was not opened or dismantled.

Opening without prior written consent voids warranty.

DO NOT OPEN LASER COVER WARRANTY VOID IF SEAL IS BROKEN *

** DO NOT OPEN THE LASER COVER*
WARRANTY VOID IF SEAL IS BROKEN

■ Glass protection index

940 nm -< 1150 nm DIR LB6 (OD6+): LW2 Touch + Fiber - Hybrid Energy Series

532 nm D LB5 + IR LB6: LW2 Touch + Green Energy Series

9000 nm -< 11000 nm D LB4: LW2 Touch + CO2 Energy Series

3. Work station safety

Specific hygiene and safety instructions

Personnel laser radiation protection

Concerned industrial use installation:

Use:

Installation:

Restricted area

The room in which this sign is posted is defined as a restricted laser area:

- in normal production phase (1)
- maintenance and setting phase (1)
- .....(1)

Regulation in the restricted area

Access to the restricted laser area is regulated. Only competent personnel having attended proper training can remain during the operation: this implies medical aptitude and laser safety training.

Any person authorized access to the restricted area is to observe the rules provided by the employer.

(1) To be filled in or crossed out.

Laser safety

General Instructions

- **Avoid any exposure to laser radiation.**
- **Do not put hands or an object in the laser beam's trajectory.**
- **Never stare into the primary laser beam.**
- **Avoid direct eye exposure to diode laser beam.**
- **Do not direct the beam towards other persons, openings or windows.**
- **Do not remove protection hoods or short-circuit the securities.**
- **Electrical interventions on the system can only be carried out by competent LT/HT personnel.**
- **In the event of an incident or even doubts concerning the functioning of the installation, inform the person in charge of laser safety.**

Wearing safety glasses

Under normal conditions of use, the machine operates at Class 1 - 2M: protective goggles are not necessary.

Laser radiation safety glasses are mandatory whenever in an area where laser radiation emission exceeds class 3B AEL.

As a user, it is mandatory to declare the use of class 4 laser station to current authorities and to follow their safety recommendations.

Name and address of the doctor in charge of medical exams for personnel occupying the laser restricted area:

..... Tel:.....

Name and address of person in charge of the observance of laser security regulation in the restricted area:

..... Tel:.....

Laser safety

4. Potential hazards related to materials worked with

■ Fumes and toxic particles

	**Laser marking certain materials emits dangerous fumes and particles that may be toxic and/or damage the equipment.** **In this case, adapt an extraction system (with filtration if necessary) to the marking station.**

The processing of parts using this type of Laser causes thermal and photo-electric (molecular) deterioration of the material. Even micro-quantities of the by-product (soot or fumes), created during Laser marking, may accumulate over a long period. Some of these by-products may prove to be hazardous to humans.

Health side-effects to the operators may include poisoning, allergies or cancer. Here are some examples of the most sensitive materials:

- plastics and rubber
- painted materials
- anodized and galvanized metals
- ceramics
- materials containing lead or mercury

For a more detailed list of the risks related to the material worked with, consult Annex A of the ISO 11553- 1:2005 standard.

In this case, adapt an extraction system (with filtration if necessary) to the marking station. This system vacuums chips from the marking area.

It must be linked to:

- either a centralised vacuum system with an external evacuation.
- either an independent system dedicated to the marking station, which removes fumes and particles using activated carbon filters.

The user must observe national legislation in force concerning chemical agent exposure limits.

For more information, contact us.

Laser safety

Examples of secondary radiation risks

The use of a class 4 laser device can generate:

- A risk of fire or explosion due to materials or inflammable substances
- UV radiation
- X rays
- High intensity visible light when marking on certain materials

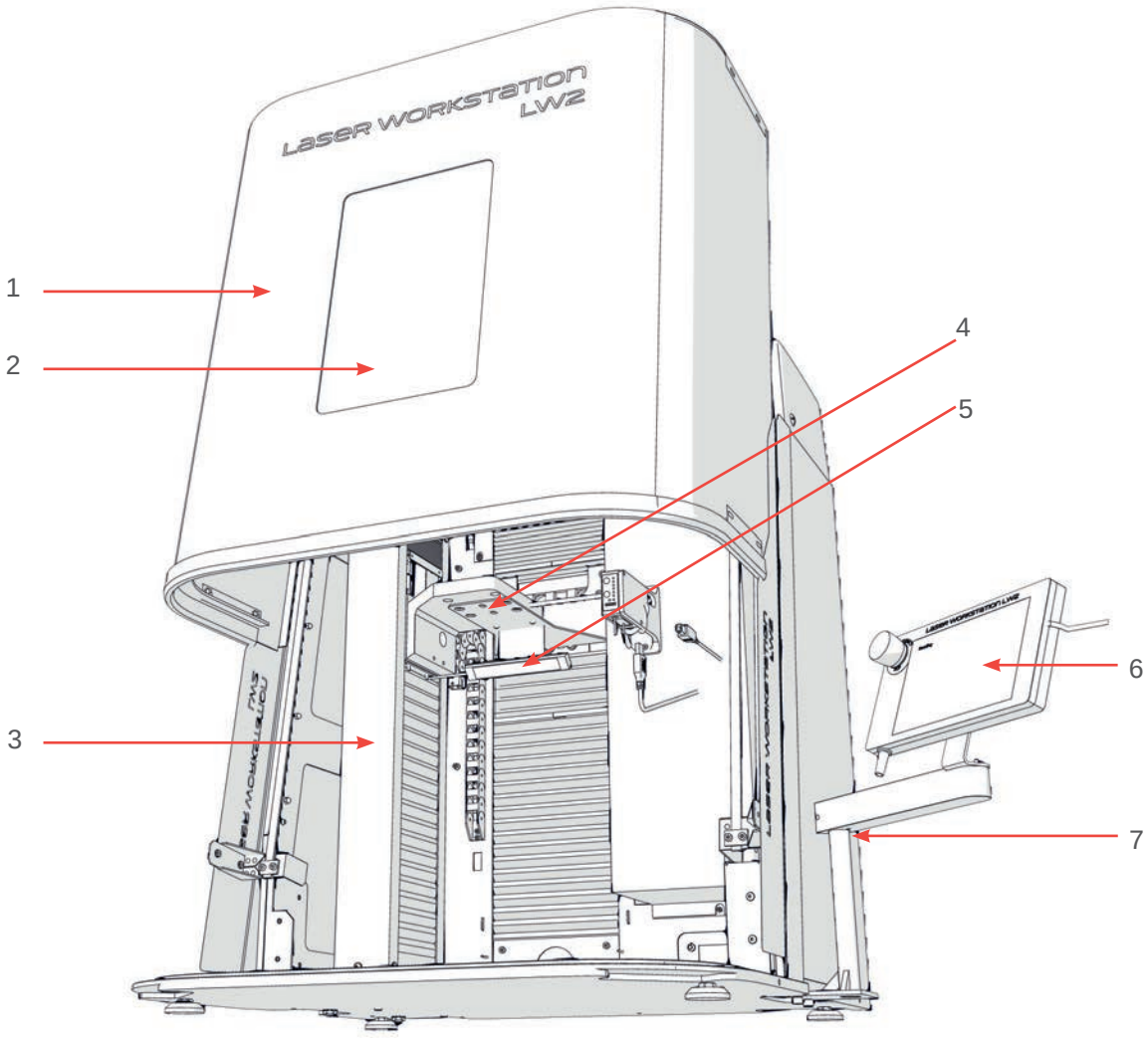
Reflected beam

Special integration is required when marking some materials to prevent the beam reflecting.

- Copper, copper-based materials (bronze, brass)
- Gold
- Silver
- Polished materials

H. Description of the machine

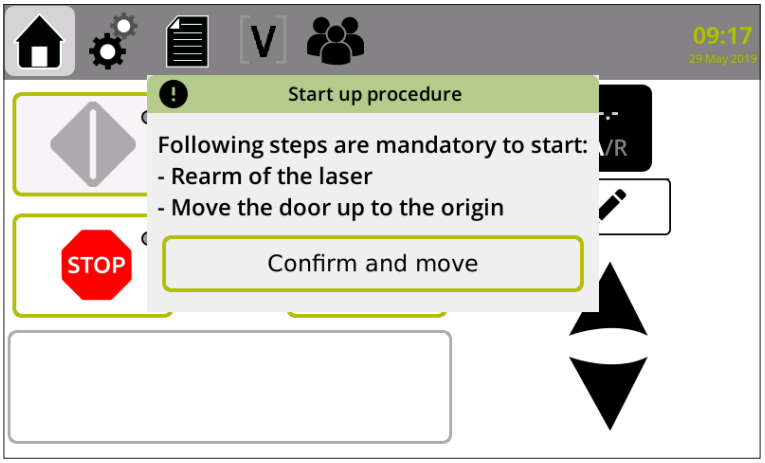
■ Global view of the marking area



1. *Door*
2. *Laser protection glass*
3. *Motorized Z-axis*
4. *Mount: marking head*
5. *Marking area lighting*
6. *Color touch screen*
7. *Support feet*

I. Color touch screen

Piloting via an internal program



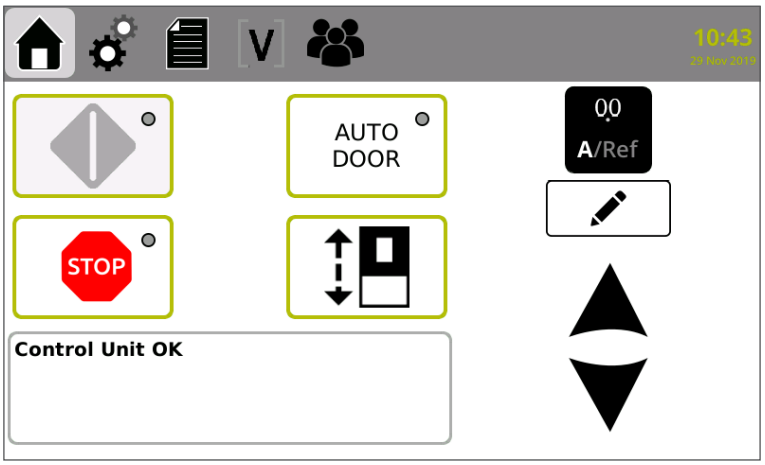
The window appears when the tablet is started up.

To confirm, press the key: Confirm and move.

The laser is reset. The door moves to its origin.

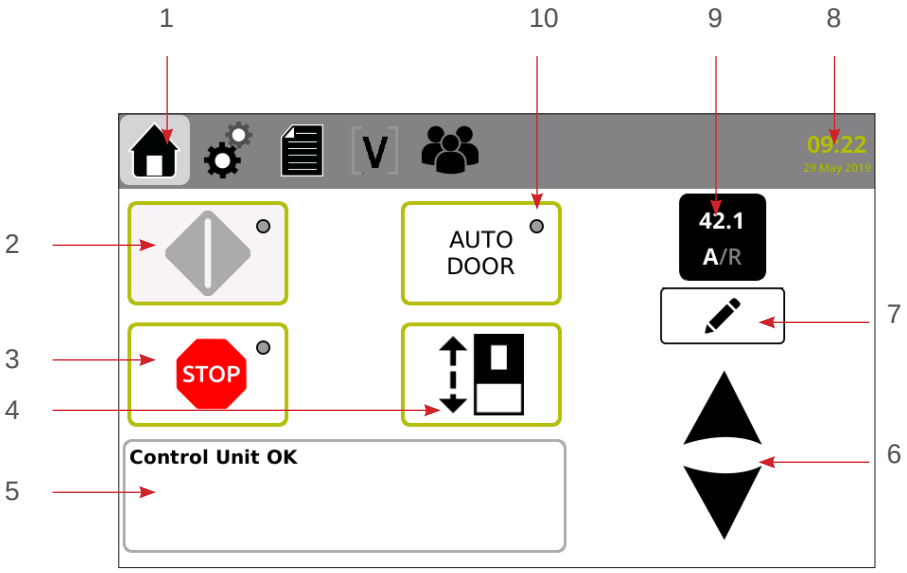
Axis origin set: Press. 

(press and hold - 3 s).



Color touch screen

1. Main screen



1. *Main menu*
2. *Start marking*
3. *Stop marking*
4. *Door opening/closing*
5. *CCU information*
6. *Z-axis raising / Z-axis lowering*
7. *Edit: head positioning: Z*
8. *Date/Time*
9. *Absolute distance / Reference value*
10. *Door opening/closing: Automatic mode*

■ Main menu

Icon used to return to the main menu, followed by the name of the menu. This icon appears several times in the program.

■ Start marking

Used to start marking.

The indicator light signals that the marking file is ready for marking.

Green light: Marking in progress

■ Stop marking

Used to stop the marking cycle at any time.

Color touch screen

■ Door opening/closing

When not in automatic mode, pressing once on the button causes the door to change status.

Do not hold the button down.

In automatic mode, the button is disabled.

■ Z axis

The motorized Z axis is controlled via the touch screen.

 : Absolute distance / Reference value	Display of the position of the Z axis in relation to absolute 0. Absolute 0 corresponds to the highest point on the axis. The reference value allows the user to define a new origin. It corresponds to the focal distance. Axis origin set: press and hold - 3 s
	Edit: head positioning: Z
 : Z-axis raising / Z-axis lowering	Used to raise or lower the marking head in order to adjust focus. Pressing the button once causes a movement of 0.2 mm (0.008 in).

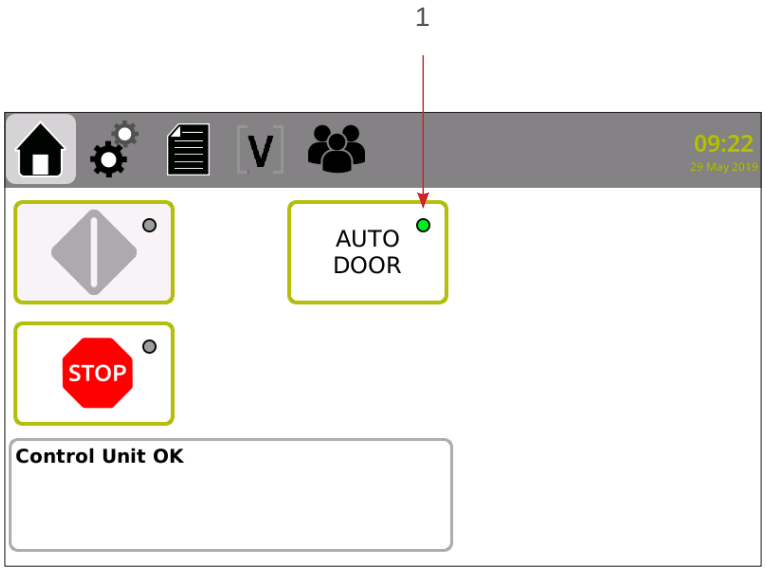
Color touch screen

■ Door opening/closing: Automatic mode

Click on: 

.

The screen below appears:



1. *Indicator lights on*

Automatic mode must be activated when the door is open.

Marking time must exceed 1 second.

The indicator light signals whether automatic mode is activated.

When marking is started, the door closes, marking is executed and the door opens at the end of the cycle.

Automatic mode is compatible with marking management modes (independent, infinite, N times, etc.)

It is essential to start marking with the touch screen.

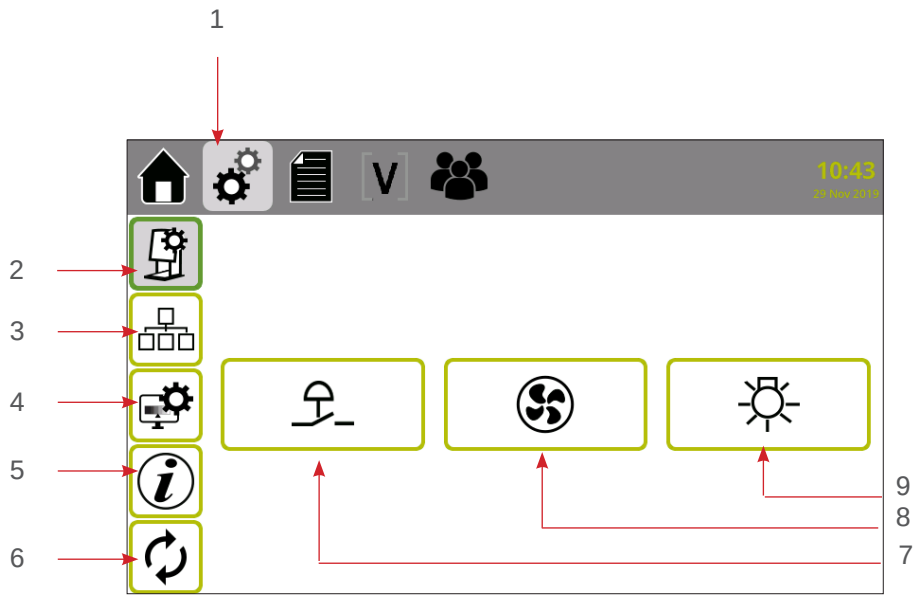
It is no longer possible to use the raise and lower buttons.

It is no longer possible to modify the position of the Z axis.

Color touch screen

2. Marking parameters

■ Configuration: Command



1. *Marking parameters*
2. *Command*
3. *Network configuration*
4. *Adjustment*
5. *System information*
6. *Update / Backup/restore data*
7. *"Safety circuit reset" button*
8. *Activation/deactivation of the extractor*
9. *Marking area lighting (On/Off)*

- **Safety circuit reset**

Switching on the laser source following start-up or an emergency stoppage of the machine.

- **Fume extraction - filtration**

Used to activate/deactivate the fume extraction and filtration system.

This function is only available with model ES10-ES30.

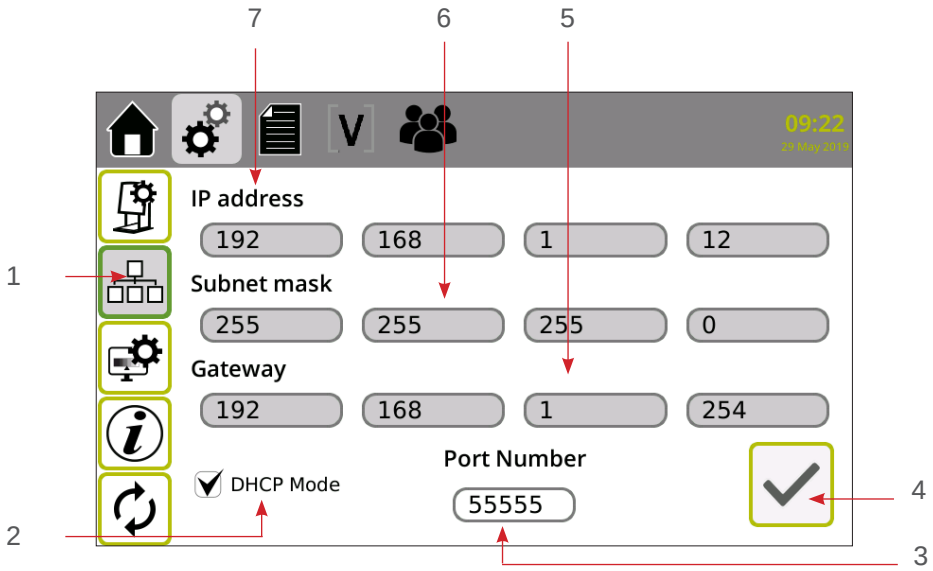
- **Marking area lighting**

Switches the marking field lighting on or off.

Color touch screen

■ Network configuration

Allows the machine's network connection to be set up. The screen below appears:

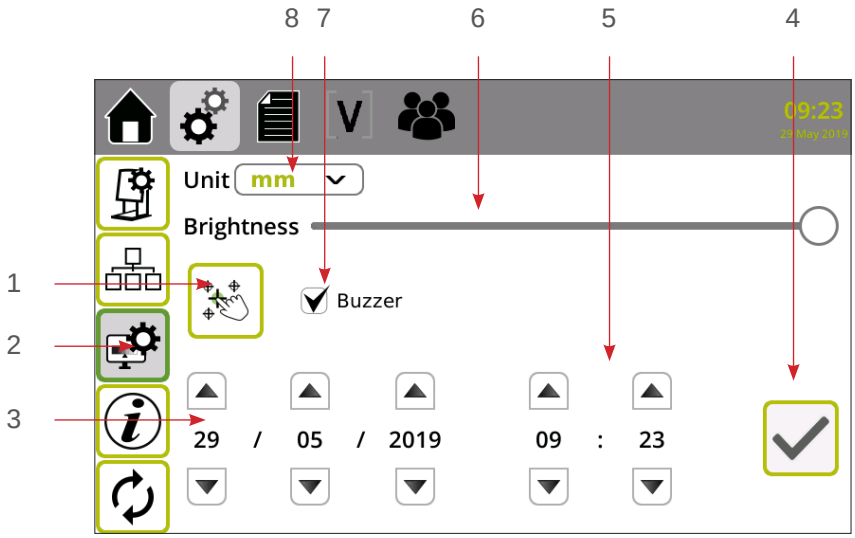


1. *Network configuration*
2. *DHCP mode*
3. *Port number*
4. *"Check" key*
5. *Gateway*
6. *Subnet mask*
7. *IP address*

When DHCP mode is selected, an IP address and a subnet mask are automatically assigned.

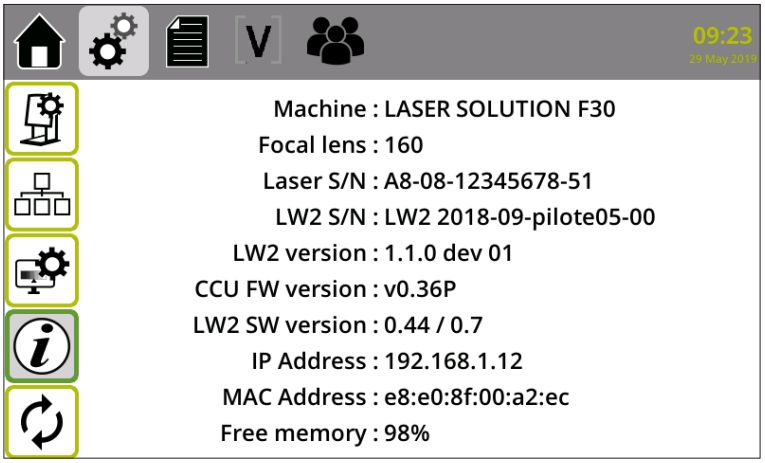
Color touch screen

Adjustment



1. *Activate screen calibration*
2. *Adjustment*
3. *Date*
4. *"Check" key*
5. *Time*
6. *Brightness*
7. *Activation of the buzzer*
8. *Units (mm or inches)*

System information

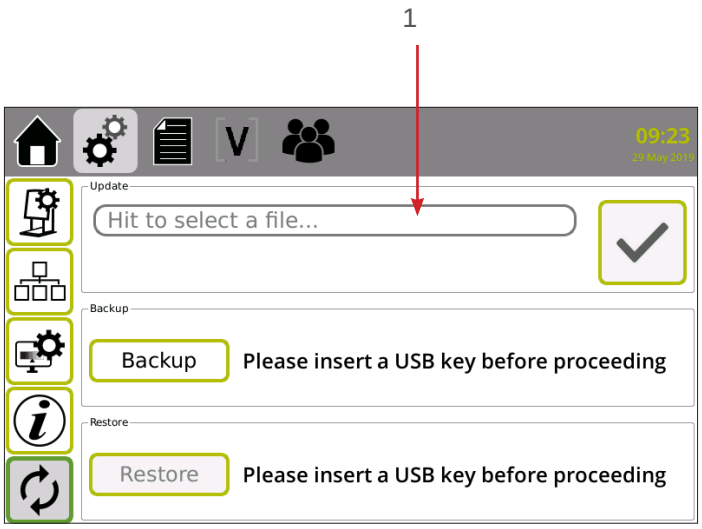


This menu contains technical information that can be communicated to the distributor or the technical support in case of problem.

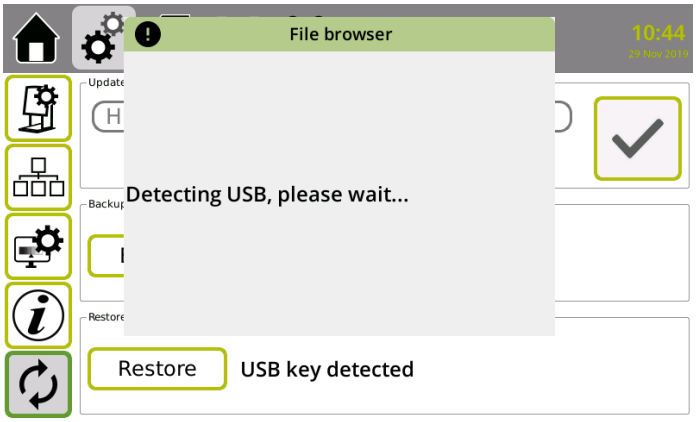
Color touch screen

■ Update

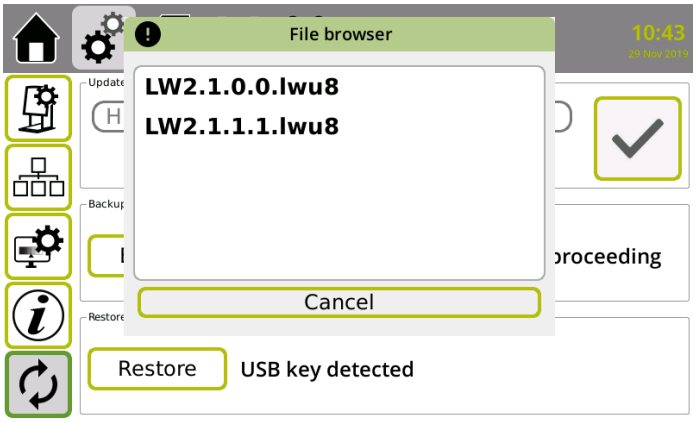
Insert the USB key into the LW2 Touch. File imports and updates are performed via USB key.



1. *Selecting the update file*



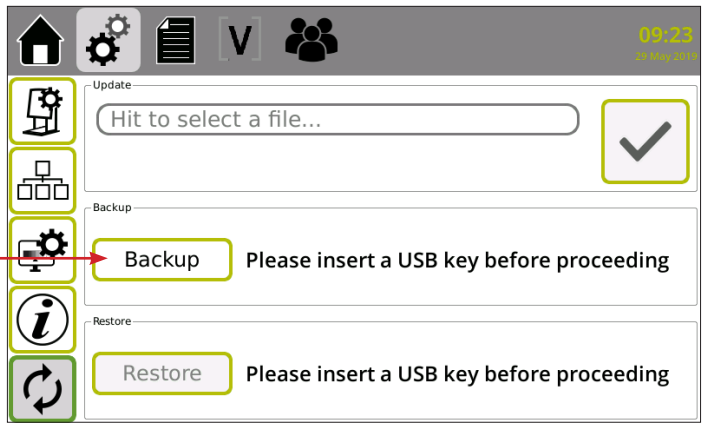
Select the file.



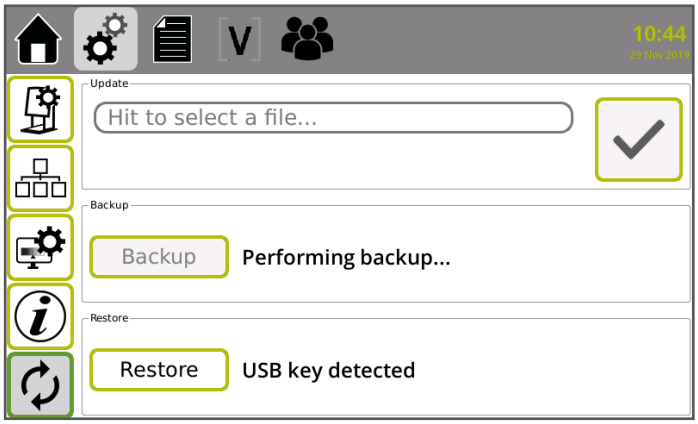
To confirm, press the key: 

- **Backup: Memory backup**

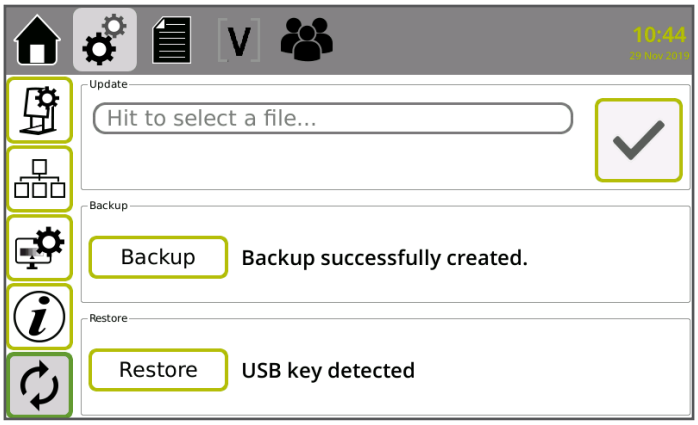
Used to backup all the data to a single file.

1 

1. *Press the key: Backup*



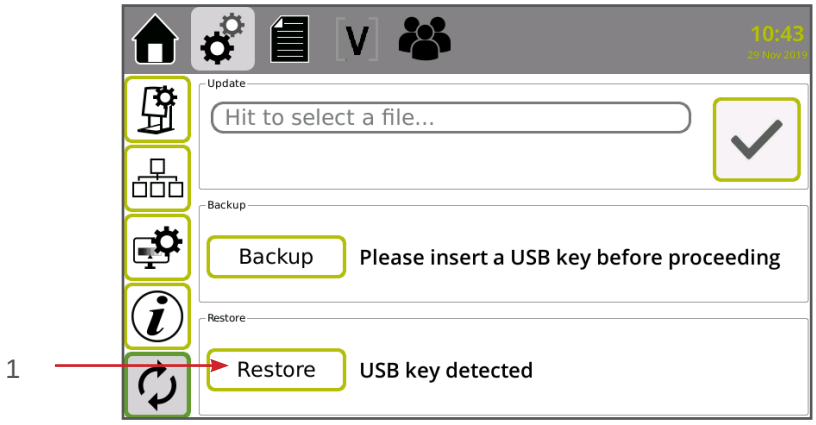
Color touch screen



The file created in this way may be saved to a USB key but may not be opened.

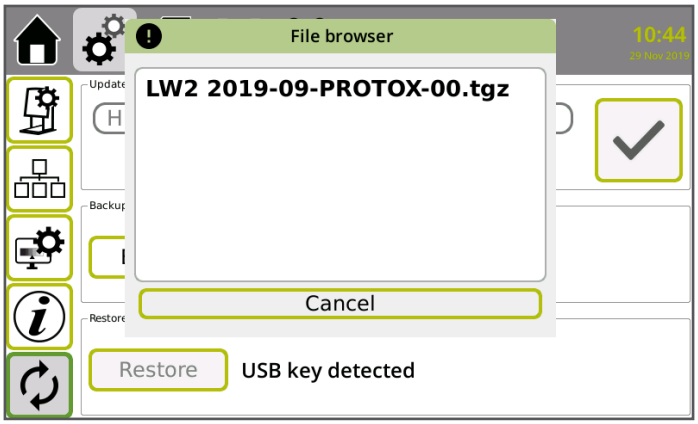
- **Restore: Data recovery**

Used to restore all the data previously backed up.



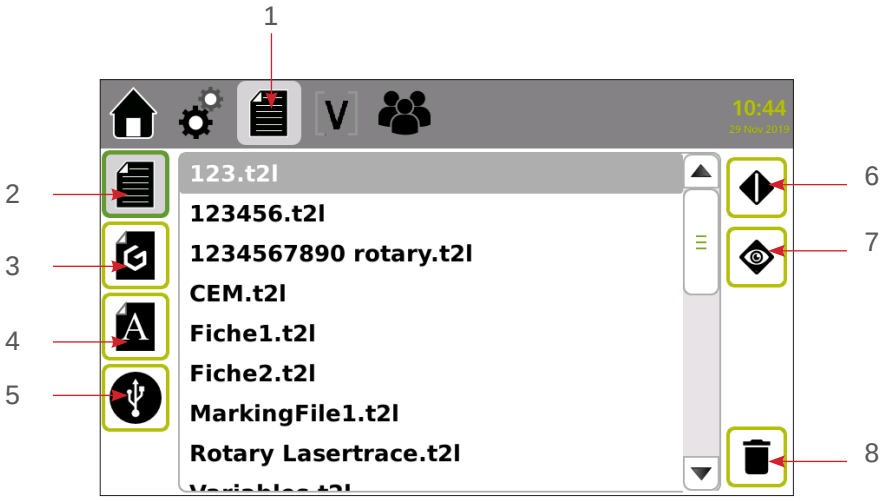
1. *Press the key: Restore*

Select the file.



3. "File" menu

■ Marking file



1. *"File" menu*
2. *Marking file*
3. *Logos*
4. *Fonts*
5. *USB connection*
6. *Loading the marking files*
7. *File simulation*
8. *Delete*

■ Logos

List of available logos (in the marking file(s)):

Color touch screen

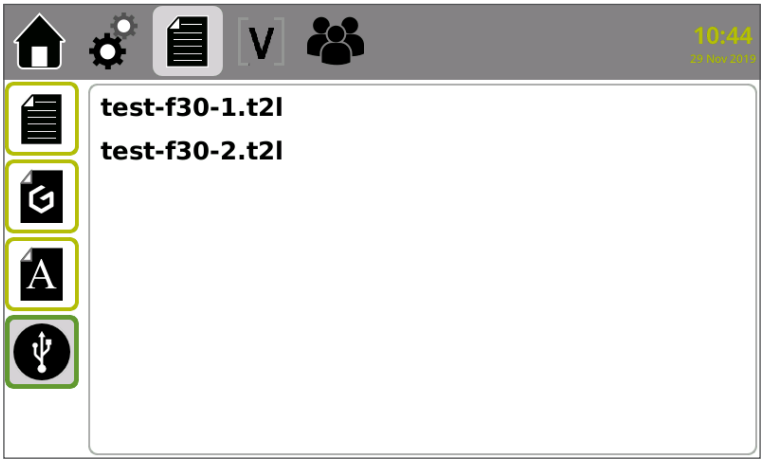
Fonts

List of available fonts (in the marking file(s)):

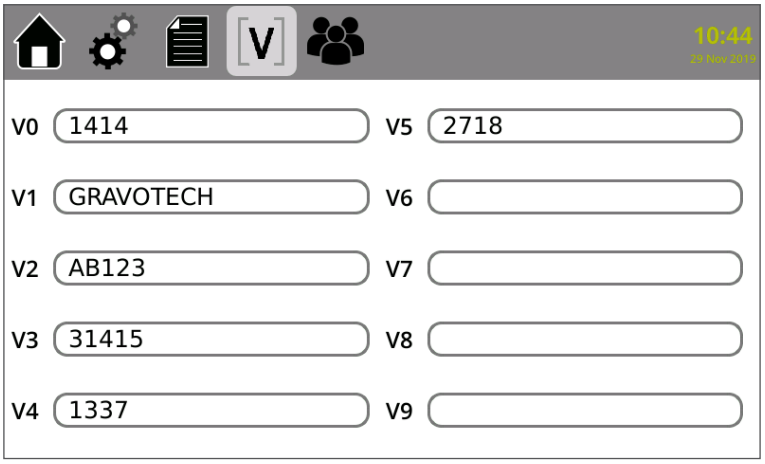
USB connection

Connect the USB key to the machine. File imports and updates are performed via USB key.

List of marking files:



4. "Variables" menu



Allows the user to modify the content of the variables in the marking files.

The PC can be disconnected.

5. Menu: Security mode

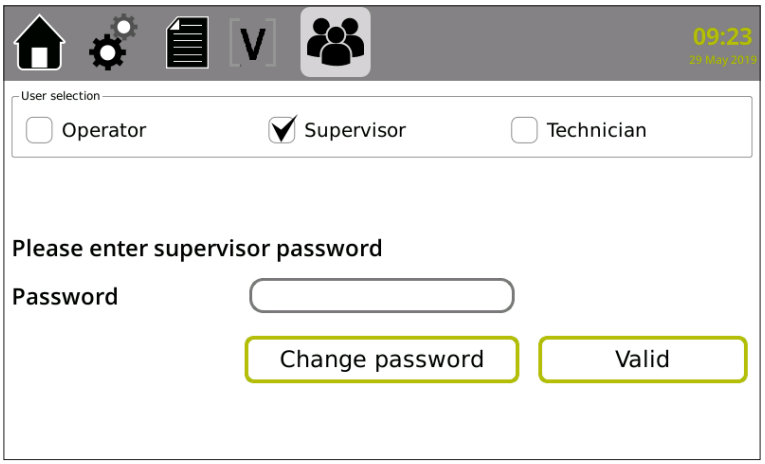
- "Supervisor" mode

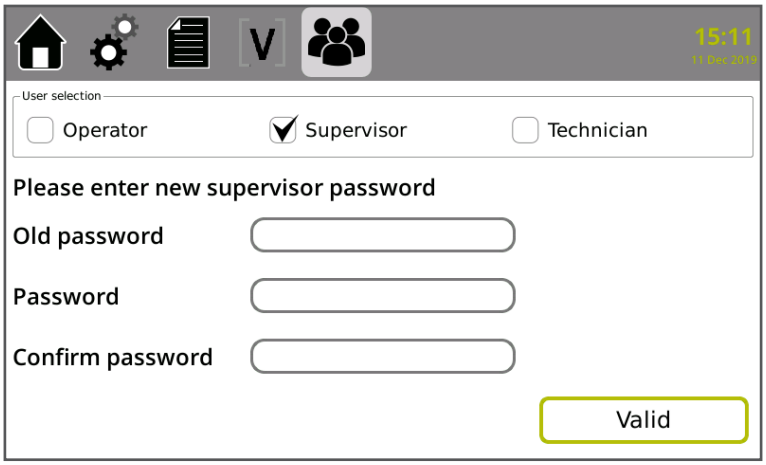
This mode is selected by default.

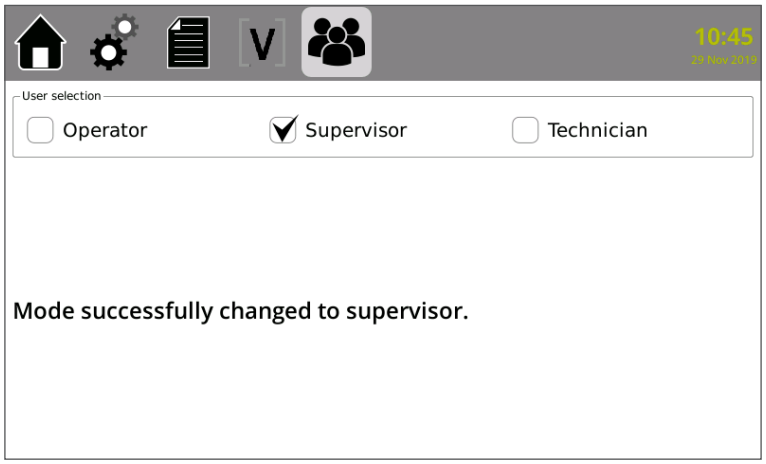
Used to limit access to certain functions in the program. Switching from one operating mode to another is password protected. This password can only be changed under the "Supervisor" operating mode.

Color touch screen

Setting the password: click on: Change password.



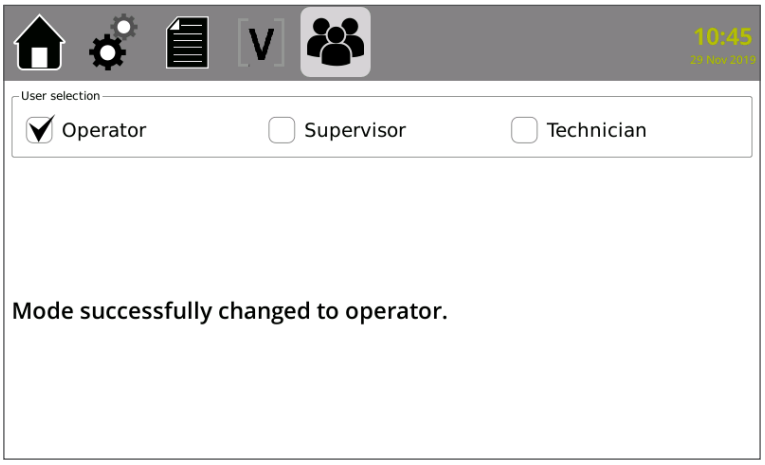




Color touch screen

■ "Operator" mode

Select either "Supervisor" or "Operator" mode for the operating mode of the program.

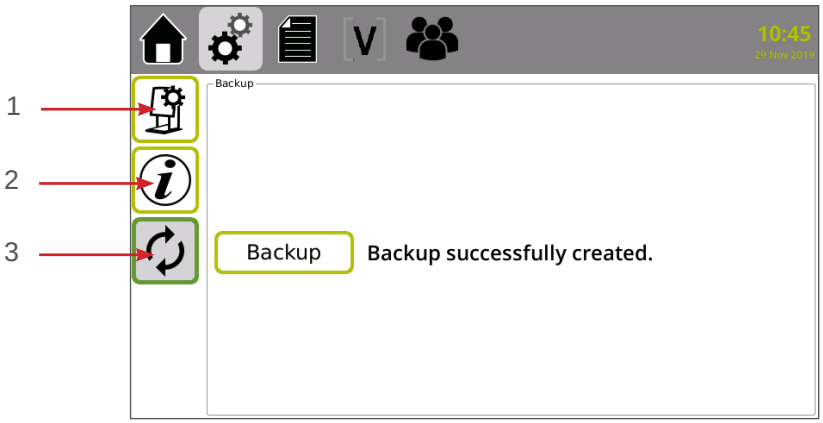


Functions accessible in "Operator" mode:

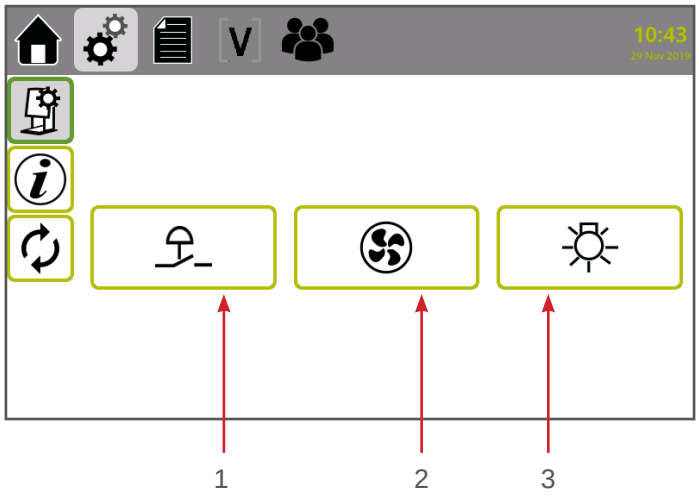
- Main menu:
  - Start marking
  - Stop marking
  - Door opening/closing
  - Door opening/closing (Automatic mode)
  - CCU information
  - Absolute distance / Reference value
  - Z-axis raising / Z-axis lowering
  - Edit: Head positioning: Z
  - Date/Time

Color touch screen

- Marking parameters



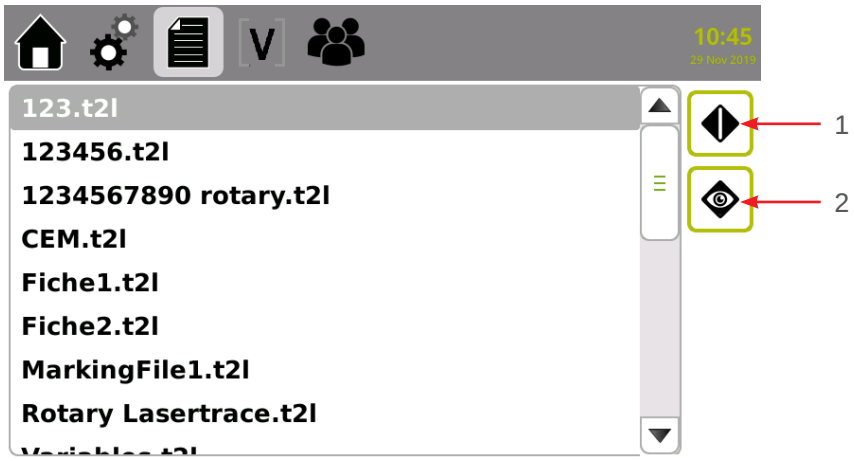
1. *Command*
2. *System information*
3. *Saving parameters*



1. *"Safety circuit reset" button*
2. *Activation/deactivation of the extractor*
3. *Marking area lighting (On/Off)*

Color touch screen

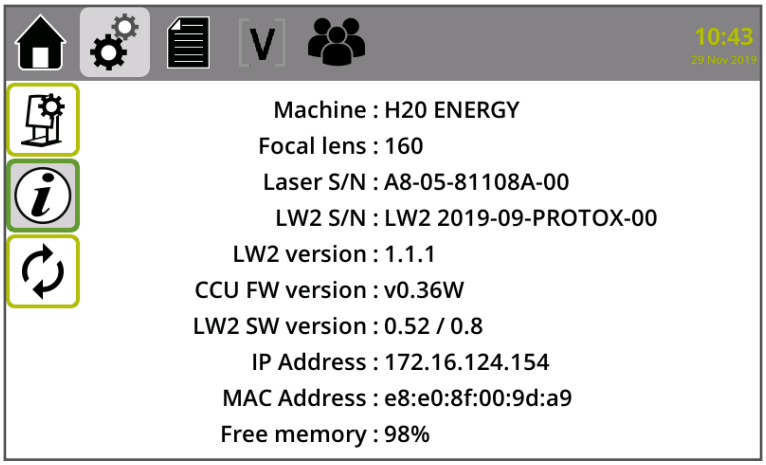
- "File" menu



1. *Loading the marking files*
2. *File simulation*

The operator cannot delete the files.

System information:

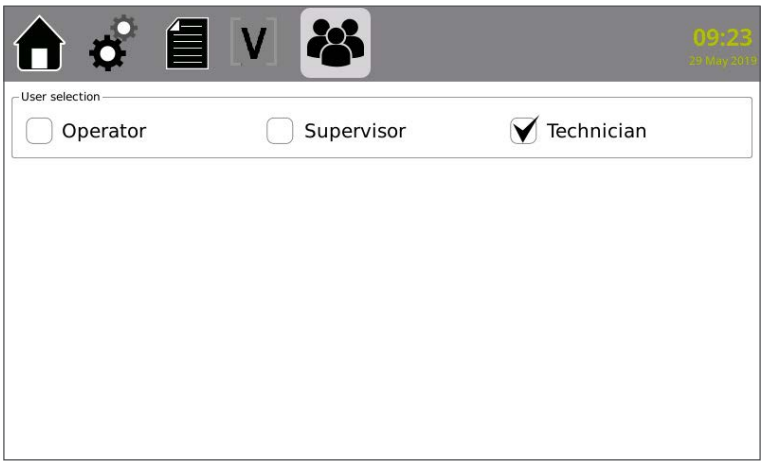


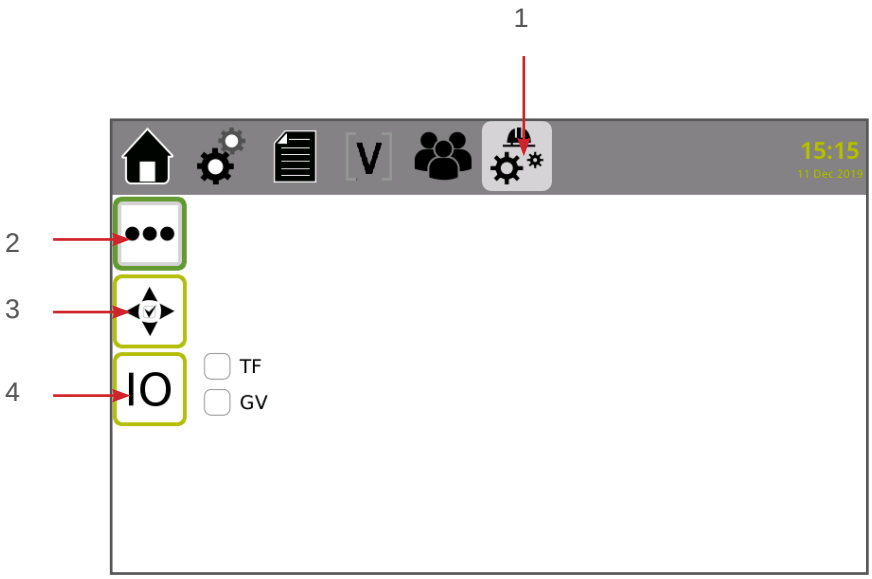
- "Variables" menu
  - Set variable

■ Technician mode

This option is password protected.

Configuration - Firmware: only an approved technician is authorised to carry out this operation.





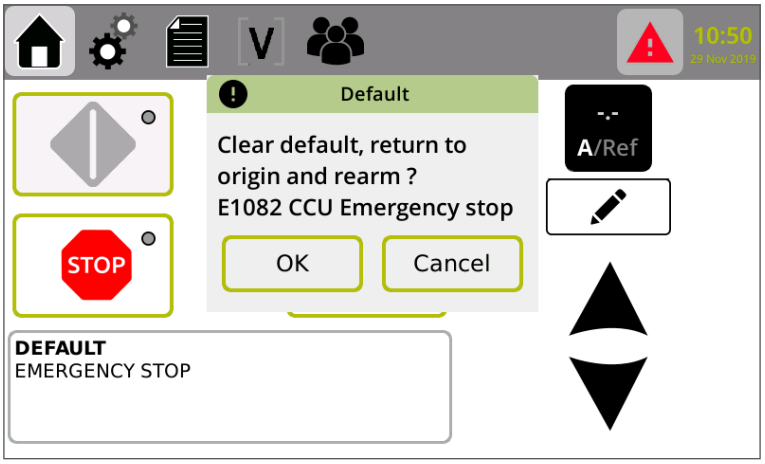
1. *Technician mode*
2. *Program management*
3. *Menu: Diagnosis*
4. *Menu: Inputs / Outputs*

6. Emergency stop

Pull on the emergency stop button in order to deactivate it.

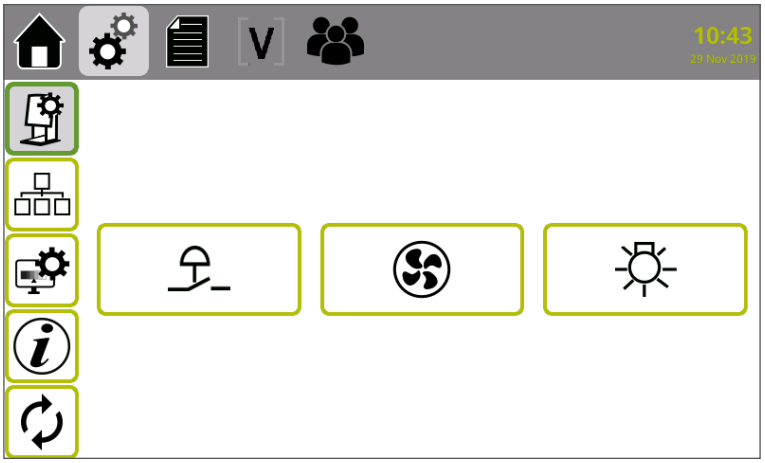
Follow the instructions on the screen.

Click on "OK".



- Safety circuit reset:

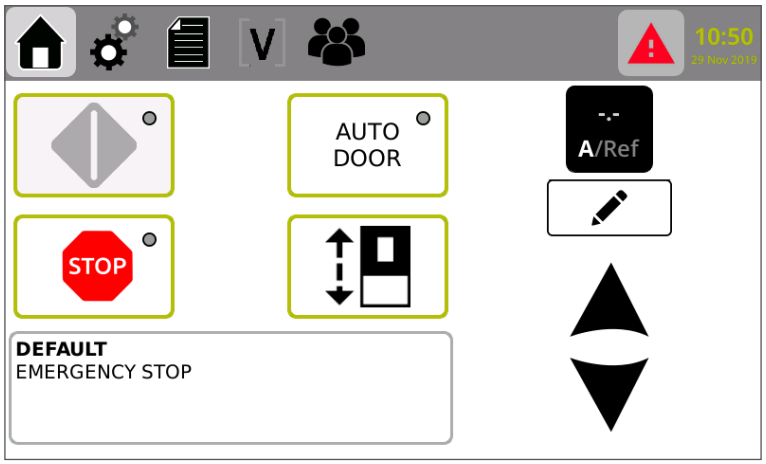
Click on the icon:  .



Click on the icon:  .

Color touch screen

- Fault acknowledgement: click on the icon:  .

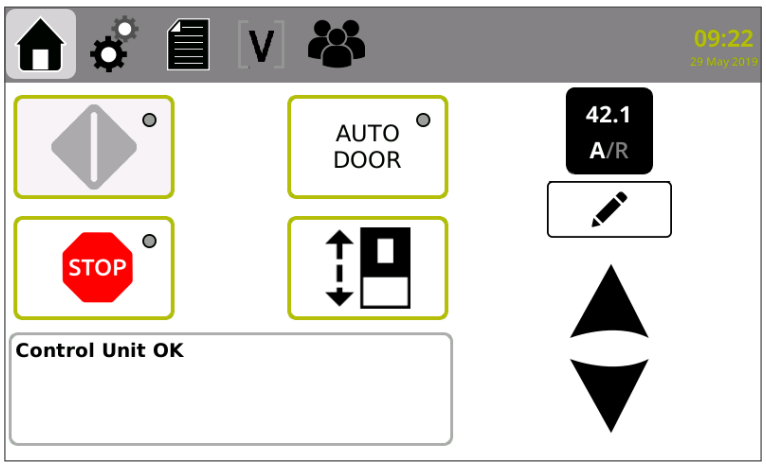


- Return to origin: click on the icon: 

(press and hold: 3 s).

The head goes back to the origin.

To go back to the main menu or to the last screen, press the corresponding icon: 



The machine is ready for operation.

J. Installation

1. Electrical installation

	Turn off the machine before beginning any cleaning, maintenance or repair procedure. Always switch the machine off before connecting or disconnecting a cable or optional accessory. **Never unplug a cable while the machine is turned on (except for the mains lead in the event of an emergency). The power outlet must be located alongside the equipment and must be easily accessible.** **Do not remove the power supply cover: risk of electric shock.** **The connection to the single phase power supply is made with a standard, 3 pin plug with grounding. Grounding must be done according to the regulations in effect to ensure the safety of the personnel.**

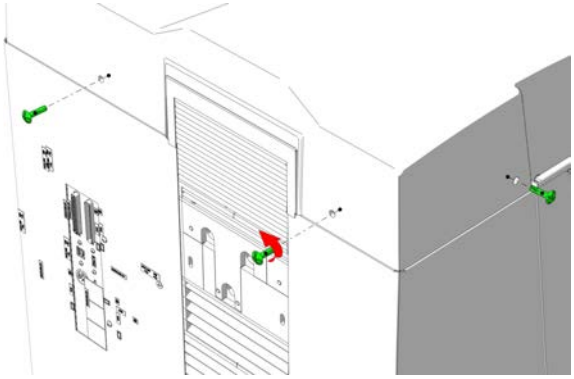
2. Physical installation

	The different elements of the equipment must be connected with the power off. The power supply should be connected last.

To install the equipment in complete safety, follow the stages below.

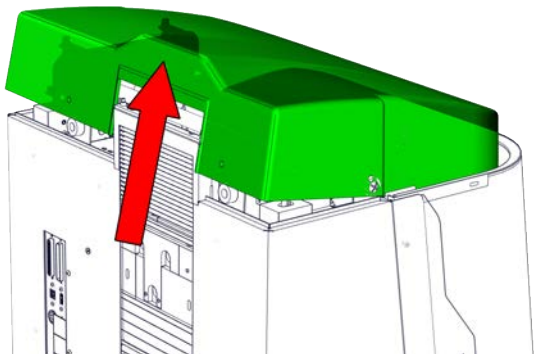
■ Step 1: Opening the casing

1. **Unscrew the 4 screws at the top of the housing.**

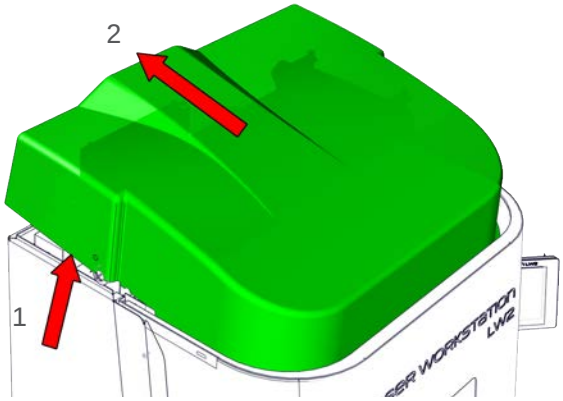


Installation

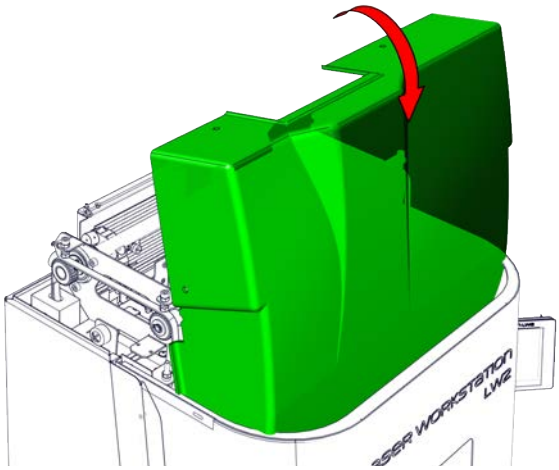
2. **Tilt the cover forward slightly.**



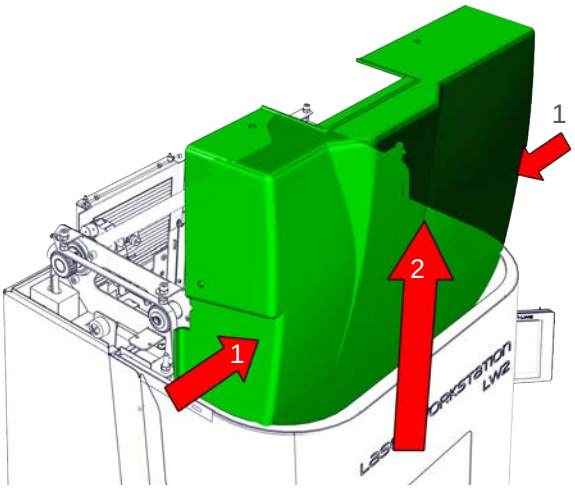
3. **Raise the cover by approximately 10 mm (0.394 in) by pulling it towards the rear in order to free up space at the front, between the cover and the door.**



4. **Tilt the cover until vertical.**

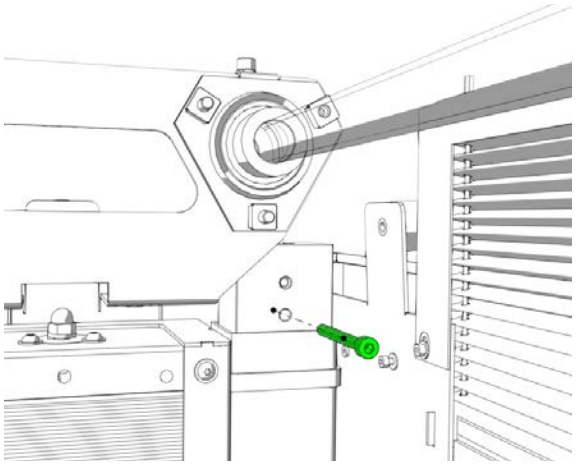


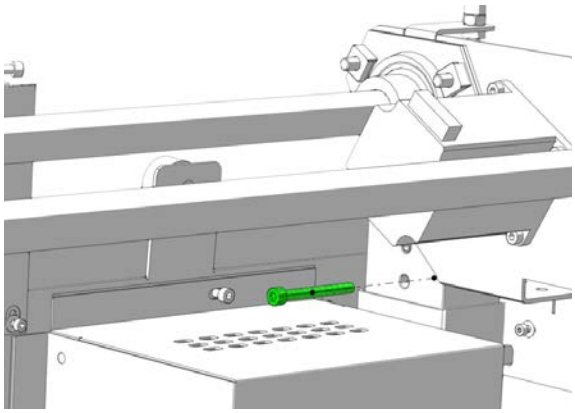
5. **Lift off the cover, pressing its sides lightly.**



■ Step 2

Remove 2 screws CHC M5x45 in order to release the counterweights. Retain the screws for any future shipping operation (maintenance, after-sale service, etc.)

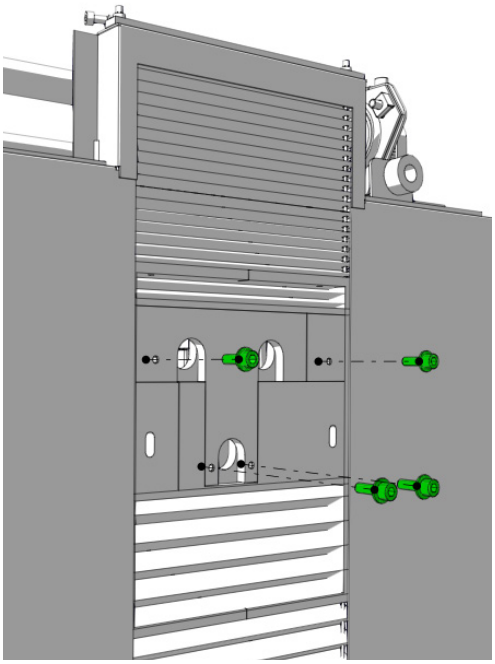




3. Fiber series (+ Energy)

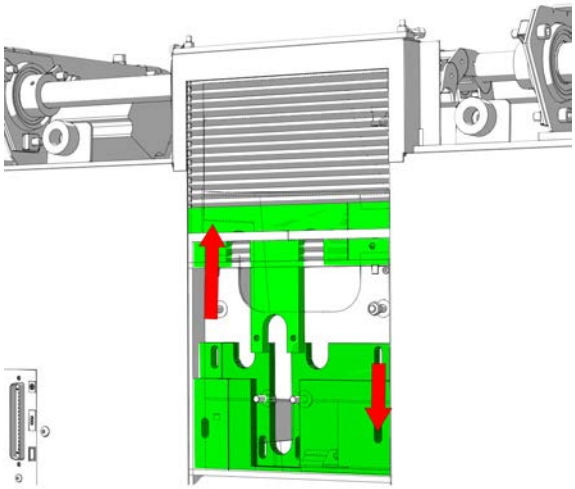
■ Step 3

1. **Remove the screws (x4).**



Installation

2. **Open the flange at the back.**



If there is already a laser in the machine:

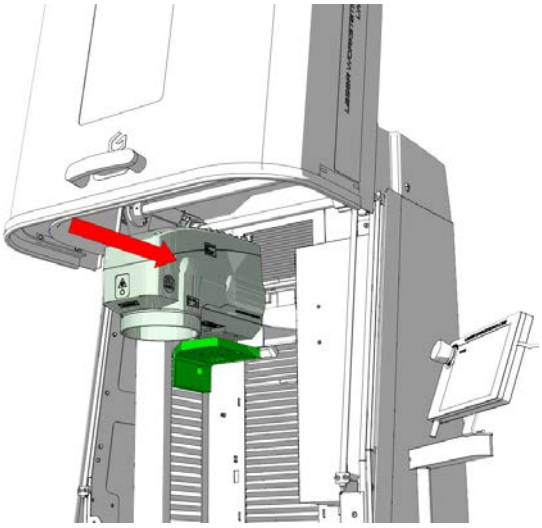
1. **Remove the screws (x4):**

2. **Open the flange at the back.**

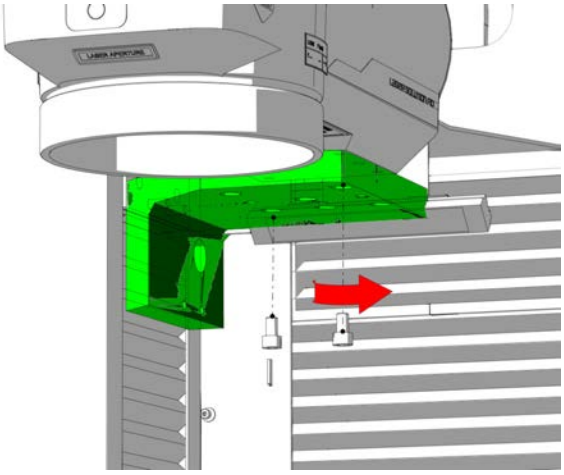
Installation

Step 4

1. **Place the laser in the LW2 Touch, on its support (Z axis).**



2. **Use the screws provided to attach the marking head to the frame designed for this purpose.**



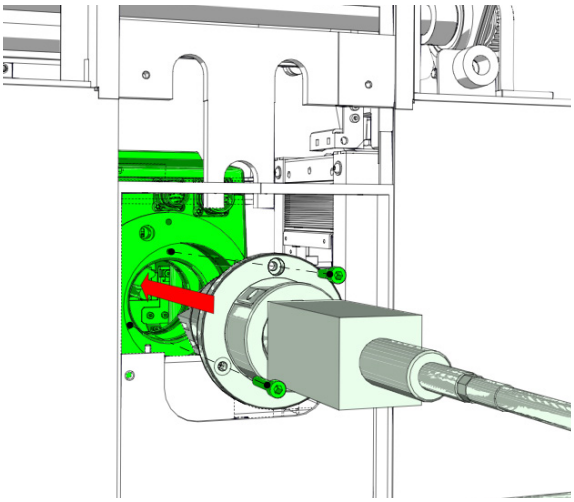
Do not touch the other screws in the marking head.

Installation

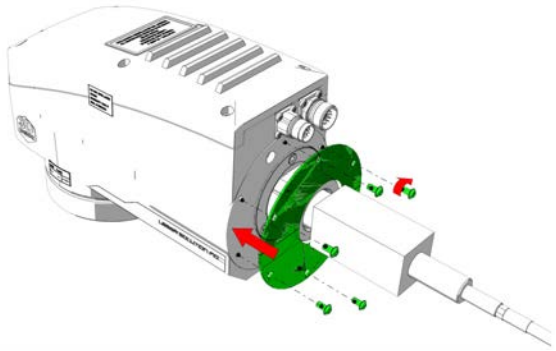
Step 5: Optical head connection

	**Never hold or manipulate the optical head by the fiber.** **Always use the aluminium isolator mount to manipulate.**

1. **Insert the optical head in the marking head and fasten with the 3 M5 screws supplied (3D lens: Mount with the 2 screws).**



2. **Mount the 2 flanges using the 6 M5 screws provided.**

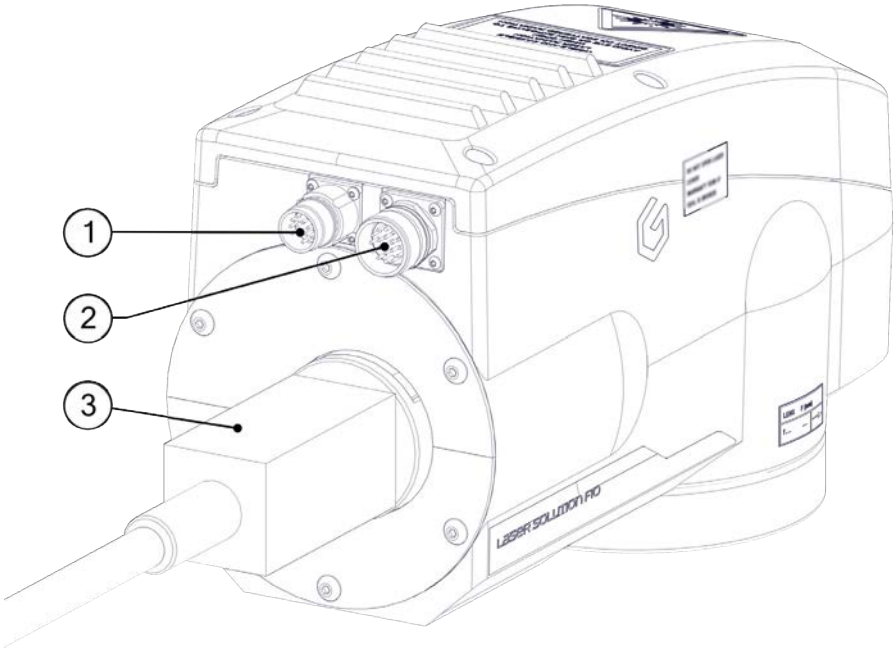


Installation

■ Step 6: Connection of the marking head to the CCU

	**Do not touch the other screws in the optical head.** **See below.**

Marking head - View of connectors



1. *17 point connector - Head/CCU connecting cable*
2. *19 point connector - Head/CCU connecting cable*
3. *Optical head*

1. **Connect the 17 point connector.**
2. **Connect the 19 point connector.**

Do not touch the optical head.

3. **Installing the laser module.**

Installation

Fit the protection caps (supplied with the machine).

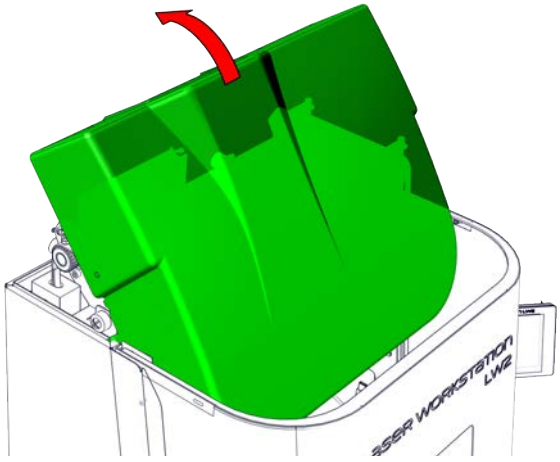
Protection cap(s)

⚠	**No light must be allowed to pass between the flange, the laser and the cables.**

4. **Re-close and lock the upper flange.**

If closing the flange is difficult, unplug the laser connectors or tighten the flanges using locking pliers, protecting the bellows (thick plastic or cardboard).

5. **Close the housing (reverse of the disassembly operation).**

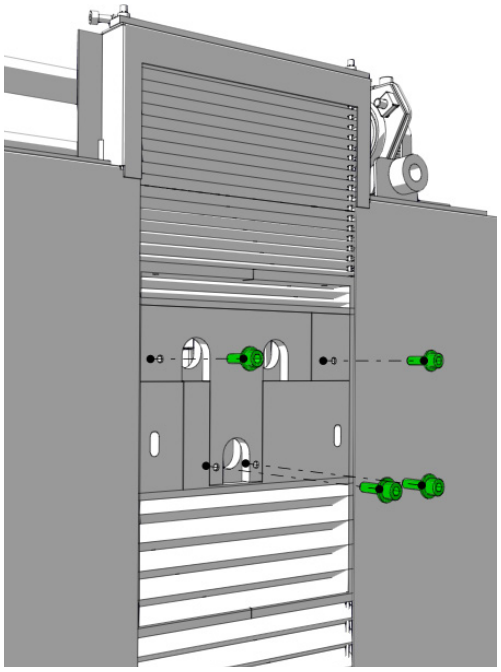


Installation

4. Hybrid - Green - CO2 Energy series

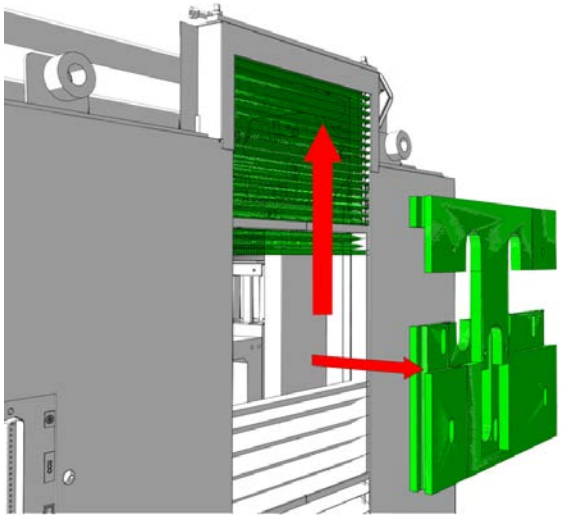
- Step 3

1. **Remove the screws (x4).**



Open the flange at the back. Remove the laser, if present.

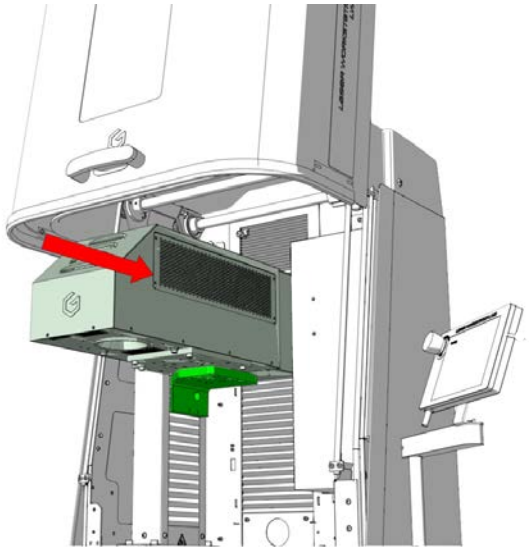
Remove the closing plate at the back of the machine to install the Laser module.



Installation

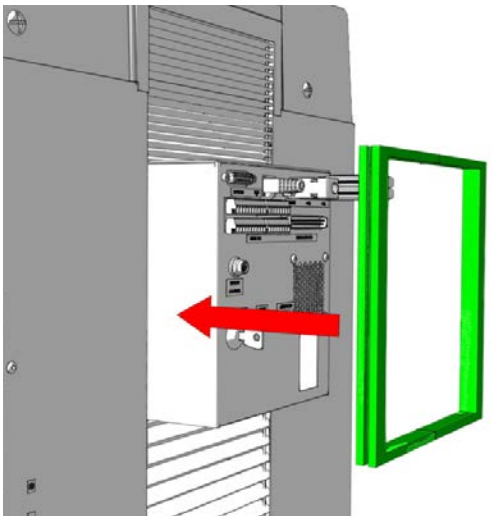
Step 4

1. **Place the laser in the LW2 Touch, on its support (Z axis).**

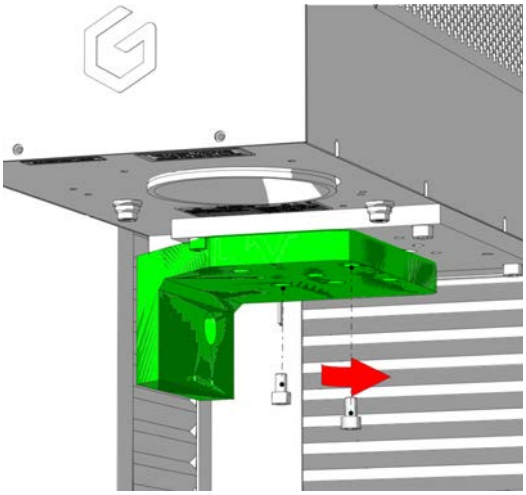


2. **Reclose and lock the flange.**

No light must be allowed to pass between the flange, the laser and the cables.



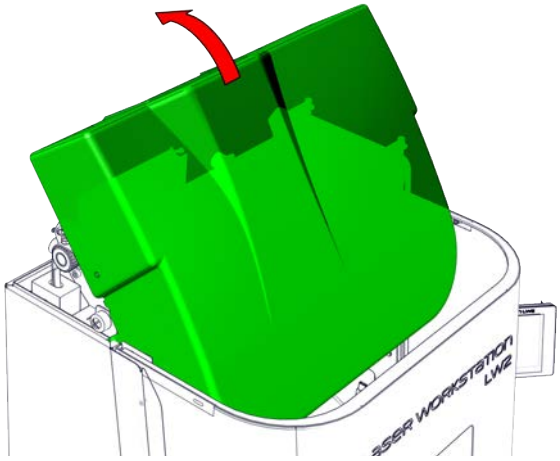
3. **Use the screws provided to attach the marking head to the frame designed for this purpose.**



Do not touch the other screws in the marking head.

Installation

4. **Close the housing (reverse of the disassembly operation).**

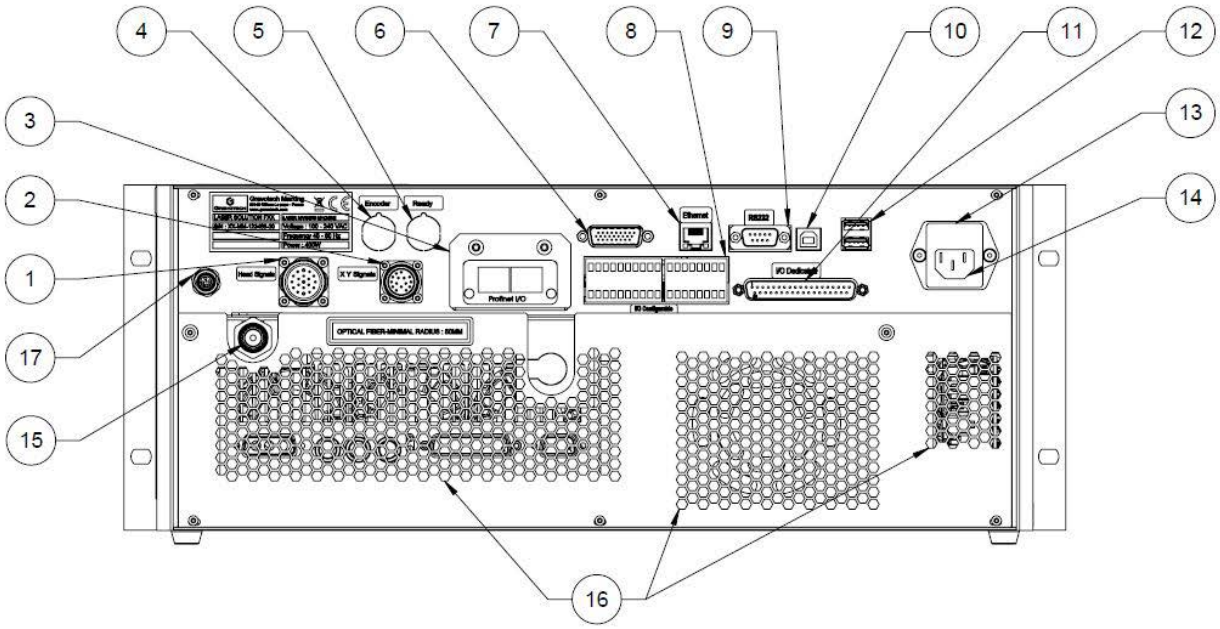


K. Connections - Installation

1. Connecting the Control Unit (Fiber series (+ Energy))

	**The different elements of the equipment must be connected with the power off. The power supply should be connected last.**

Control Unit - LW2 Touch: View of connectors



1. *19 point connector Head/CCU connecting cable (cable supplied): Marking-head signals*
2. *17 point connector Head/CCU connecting cable (cable supplied): X-Y signals*
3. *Profinet/Ethernet IP module (optional)*
4. *7 point connector (DIN F) - Not available*
5. *3 point connector (DIN F) - Not available*
6. *DB15F connector*
7. *Ethernet connection (RJ45)*
8. *I/O connector (screw terminal block)*
9. *RS232 link (DB9M)*
10. *Port: USB-B*
11. *DB37F: Dedicated Inputs/Outputs*
12. *Port: USB-A (x2)*
13. *Fuse*
14. *110 - 230 V AC / 10 A power connection (cable supplied)*
15. *Optical fiber*
16. *Air outlet*
17. *Autofocus connector*

Connections - Installation

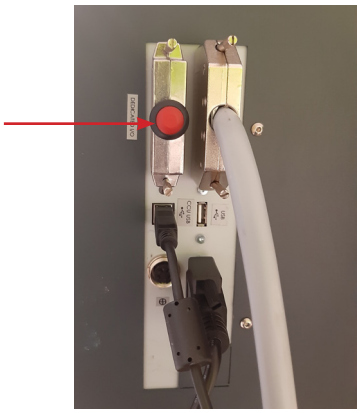
- **Connection of the marking head to the CCU**

1. **Connect the marking head to the CCU with the two connection cables provided (17 points - 19 points).**
2. **Push the connectors into the socket and tighten the locking rings.**
3. **Make sure the connection is correct.**

- **Connection to DB37M connector (Ref: 54260)**

LW2 Touch	Control Unit
	

- **Connection to DB37F connector (Ref: 50875)**



- **Connection USB**

Connections - Installation

- **Connection: Tablet**

- **Connection RD1/RD2 (optional)**

Cable + flange kit

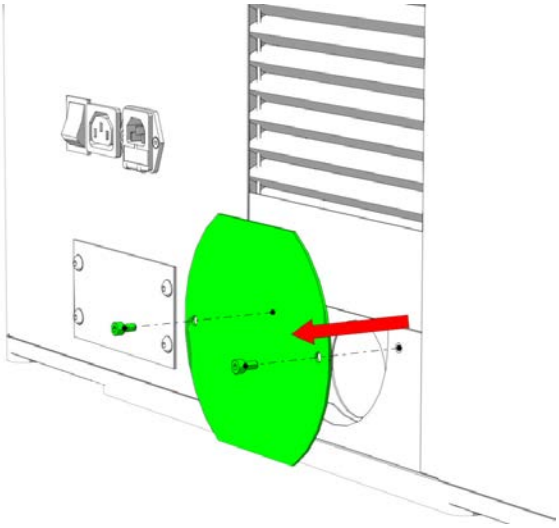
LW2 Touch	Control Unit
	

Connections - Installation

- **Fume extractor connection: ES30 (optional)**

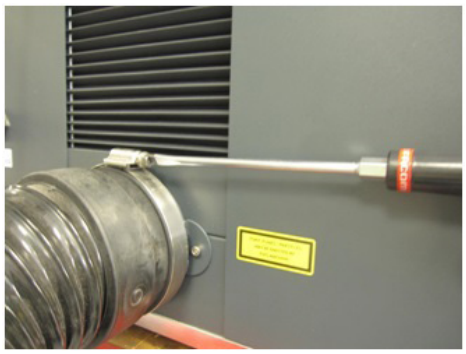
1. **The different elements of the equipment must be connected with the power off. The power supply should be connected last.**

2. **Remove the cover.**

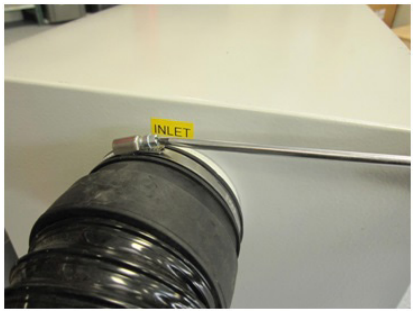


3. **Attach the exhaust tube adapter.**

4. **Connect the tube to the LW2 Touch (diameter 100). Tighten the hose clamp.**



5. **Connect the tube to the extractor (diameter 100). Tighten the hose clamp.**



Connections - Installation

6. **Connect the cable ES30 / LW2 Touch.**

- **Power supply connection**

LW2 Touch	Control Unit
 	

Connections - Installation

2. Installation

■ Possible integration and operating positions for the Fiber Series (+Energy)

Position the Control Unit horizontally, in a dry, ventilated area, at least 20 cm (7.874 in) from the floor. Always leave a free space of 50 mm (1.969 in) in front of the CCU and of 150 mm (5.906 in) in back for good air circulation. As components are air-cooled, air circulation in the CCU must not be perturbed.

Version rack 19" 4U-5U: used to integrate the CCU in a cabinet. Vertical position possible

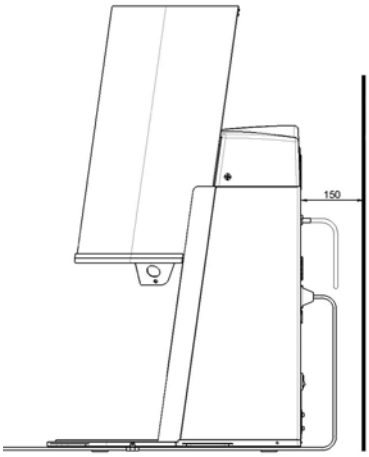
	**Analyse the CCU's integration in order to avoid problems due to the fiber's minimum bend radius.**

■ Possible integration and operating positions for the Hybrid - Green - CO2 Energy Series

We recommend the horizontal position, with the laser beam directed downwards.

	**Clean the protective glass regularly to prevent loss of power and deterioration of the marking quality. It must be cleaned with an appropriate lens paper using acetone.**

Position the machine at a distance of at least 150 mm (5.906 in) from the wall.



Connections - Installation

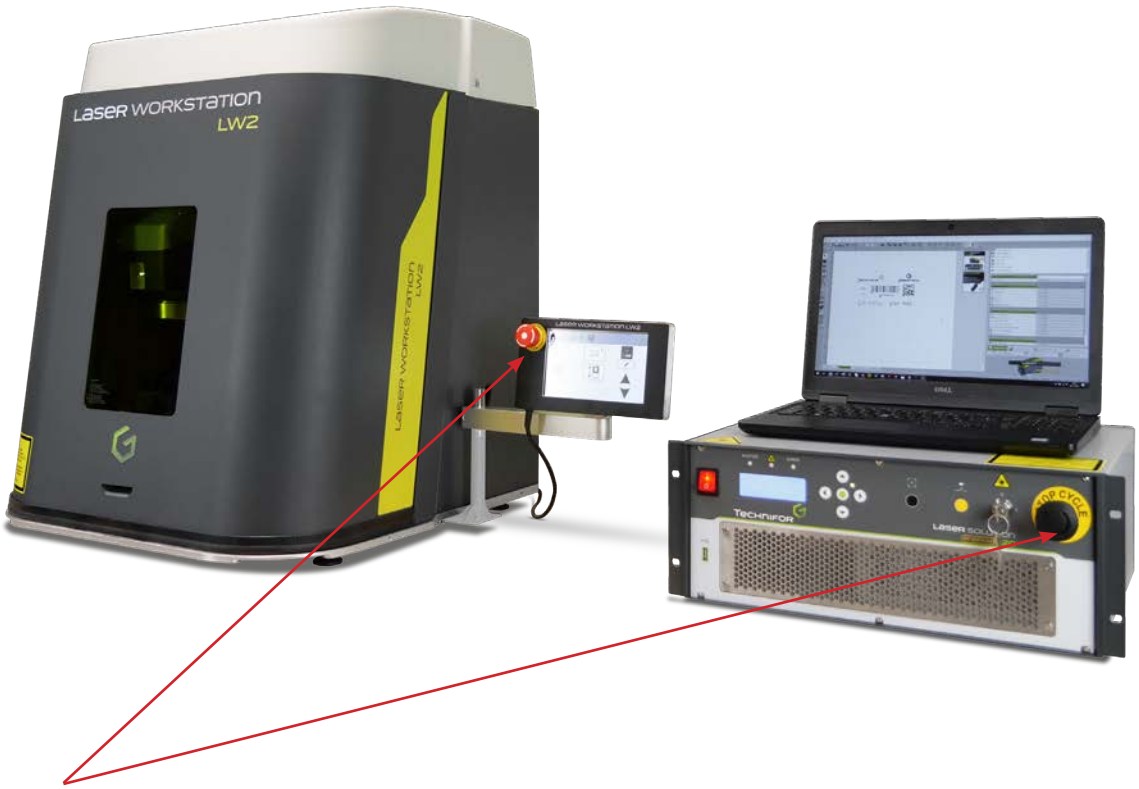
Laser startup

See the user manual of the machine.

	**The shutter closes automatically when the door opens and it opens automatically when the door closes. The marking can only be carried out if the door is closed.** **When the machine is working in Class 1 - 2M protective goggles are not obligatory.**

Emergency stop

In case of emergency, press on the CCU or LW2 Touch's emergency stop button.

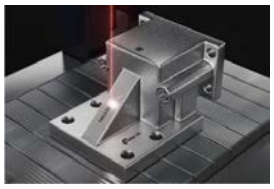
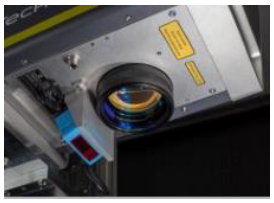
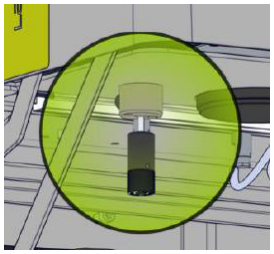
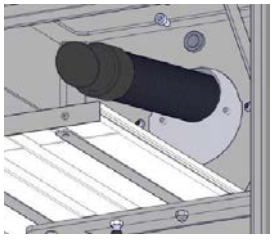


Emergency stop push button

L. Accessories available upon request

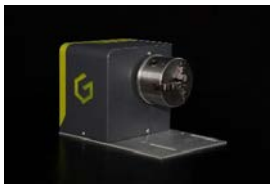
Please give the item codes with your order to speed processing.

1. List of accessories and options available upon request

Reference	Description	
77650 (Hybrid Energy Series) 78636 (Fiber Series (+Energy))	3D module Built-in system mounted in factory Used to mark at different distances without the need to refocus. - +/- 30 mm (1.181 in) (F160) - +/- 60 mm (2.362 in) (F254)	
78272 (Hybrid - Green - CO2 Energy Series) 78853 (Fiber Series (+Energy))	Autofocus Automatic focus adjustment (automatic Z Ref.) The kit comprises: - distance sensor - head/CCU connecting cable (3 m (9.842 ft)) This option must be used with the 3D module.	
77787 77789	- Focusing diode (Hybrid - Fiber Series (+ Energy)) - Focusing diode (Green Energy Series)	
78389	Extension for the focusing diode - Focusing diode not included Order references for the various options separately.	
79080	Fume extraction - filtration (adapter) The kit comprises: - Adaptor for the fume extraction system - Fume extraction - filtration	

Accessories available upon request

■ Rotary device

Reference	Description	
79251	RD1 - Marking small to medium diameter cylinders - Key chuck Diameter: 3 mm (0.118 in) - 98 mm (3.858 in) For more information, consult the manual of the machine in question.	
79252	RD2 - Marking small to large diameter cylinders - Key chuck Diameter: 3 mm (0.118 in) - 152 mm (5.984 in) For more information, consult the manual of the machine in question.	
79253	RDM - Manual chuck - Easy to manipulate Diameter: 4 mm (0.157 in) - 129 mm (5.079 in) For more information, consult the manual of the machine in question.	
TBC	RD Jewel	

■ Work station safety

Reference	Description	
75038	Extra pair of glasses (DIR LB6 - 532 nm -1064 nm) (Hybrid - Green Energy Series) It is mandatory that the operator wear eye protection with the suitable filter lenses.	
75741	Extra pair of glasses (DIR LB6 - 10600 nm) (CO2 Energy Series) It is mandatory that the operator wear eye protection with the suitable filter lenses.	

Accessories available upon request

Reference	Description	
60995 60996 60997 60998 76287	ES10: Fume extractor for small applications, in the case of occasional marking (marking on plastic) Connecting cable(s): Laser fume extractor (ES10) / Hybrid-Green - CO2 - Fiber Series (+ Energy) - 230 V (UE) - 230 V (UK) - 230 V (CH) - 115 V (US) - 230 V (CN)	
69835 69836 69837 69838 76288	ES30: Fume extractor for applications of medium size, in the case of continuous marking (marking on plastic) Connecting cable(s): Laser fume extractor (ES30) / Hybrid-Green - CO2 - Fiber Series (+ Energy) - 230 V (UE) - 230 V (UK) - 230 V (CH) - 115 V (US) - 230 V (CN)	

■ Other accessories

Reference	Description	
60287 D16206	Button box for start / stop cycle: - Emergency stop - Start marking - Stop marking	
26327	Optical cleaning kit	
66254	EZ-FIX Used to rapidly fix small objects or items with various shapes.	

Accessories available upon request

2. Wearing and spare parts

■ Spare parts

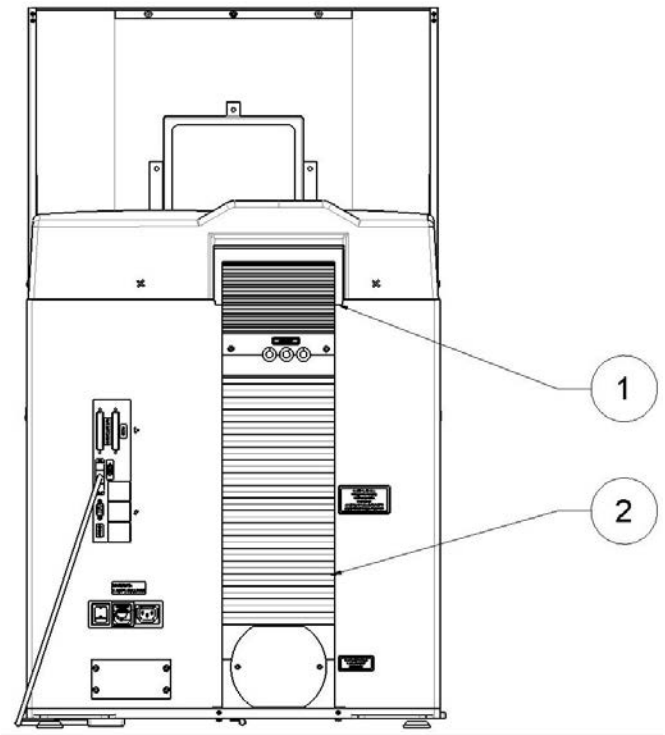
Reference	Description
81949	Color touch screen
TBC	Kit: support feet
54260	CCU/LW2 Touch connection cable (37 point connector)

■ Wearing parts

Reference	Description
66539	Door seal
69908	Microswitch kit (1 microswitch + fastenings)

M. Preventive maintenance

1. Visual inspection of the bellows (rear of LW2 Touch)



1. *Upper bellows*
2. *Lower bellows*

	**Check the condition of the bellows in the event of burning or perforation.**

2. Every year

(Or in the event of noise emanating from the Z axis screw)

1. **Raise the bellows.**
2. **Re-lubricate the Z axis screw using the grease pack supplied.**

■ Cleaning the sensors

The Z axis is equipped with a sensor to detect the end of travel along Z.

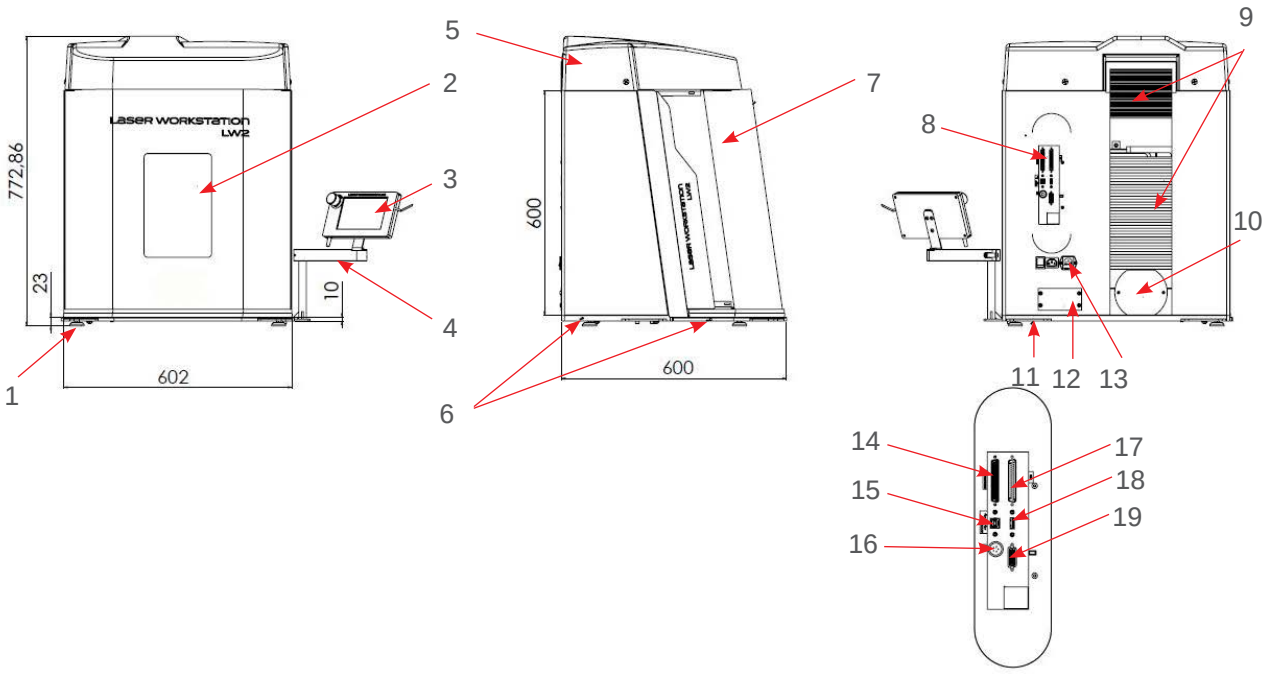
This optoelectronic fork sensor indicates the presence of the 2 carriages at the origin.

Certain exterior elements (chips, shavings...) can get stuck between the sensors and disrupt their functioning.

To remove these foreign objects, use an air gun to direct a shot of air between the sensor.

N. Dimensional drawings

1. LW2 Touch dimensional drawing



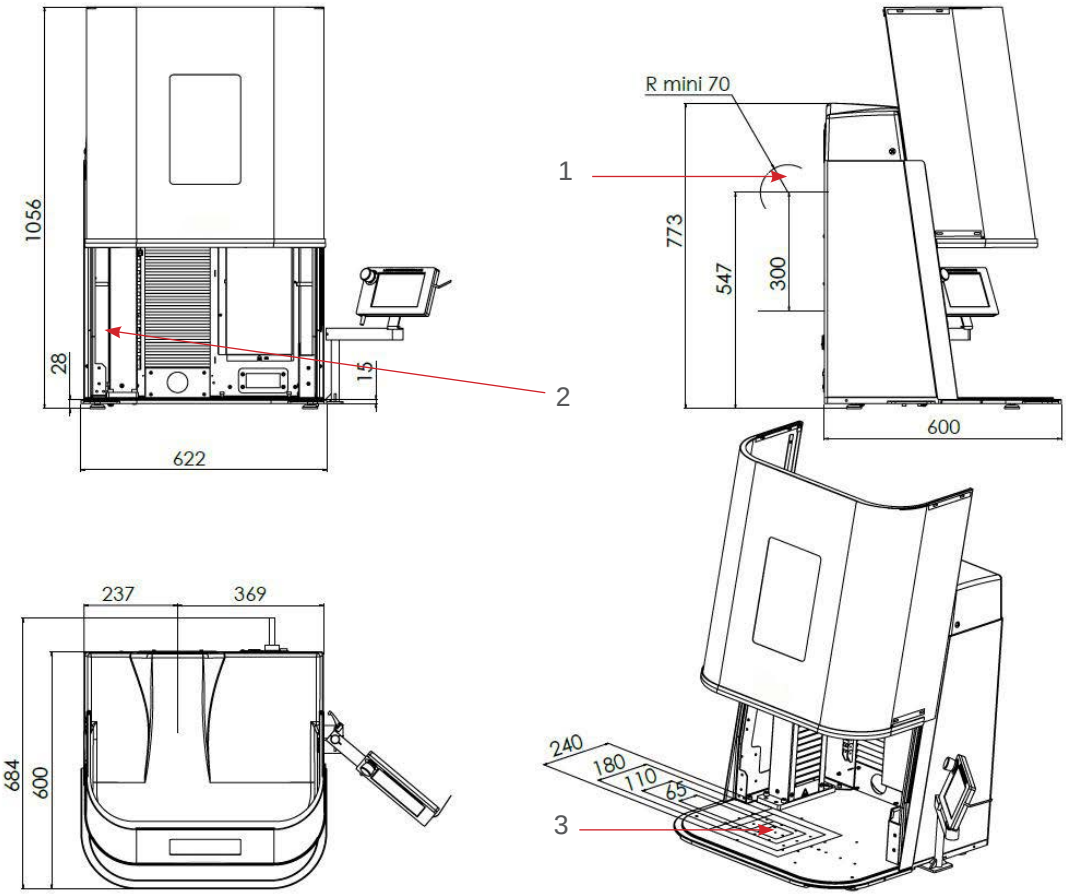
1. *4 support feet (adjustable)*
2. *Laser protection glass: 180 mm (7.087 in) x 280 mm (11.024 in)*
3. *Color touch screen*
4. *Mount (color touch screen)*
5. *Cover*
6. *M6 packing bolts (x4)*
7. *Door*
8. *Control interface board*
9. *Mobile protective shutters*
10. *Connection: Suction hose (optional)*
11. *Handles (x6): Handling the machine*
12. *Cable transit*
13. *Fuse carrier*
14. *SUBD37F - Input*
15. *Port: USB (Control Unit)*
16. *Fume extractor connection*
17. *SUBD37M - Output*
18. *Port: USB*
19. *SUBD25F - Color touch screen*

Weight: 60 kg (132.277 lb)

Dimensional drawings

2. Fiber - Hybrid - Green - CO2 Energy Series

- LW2 Touch dimensional drawing

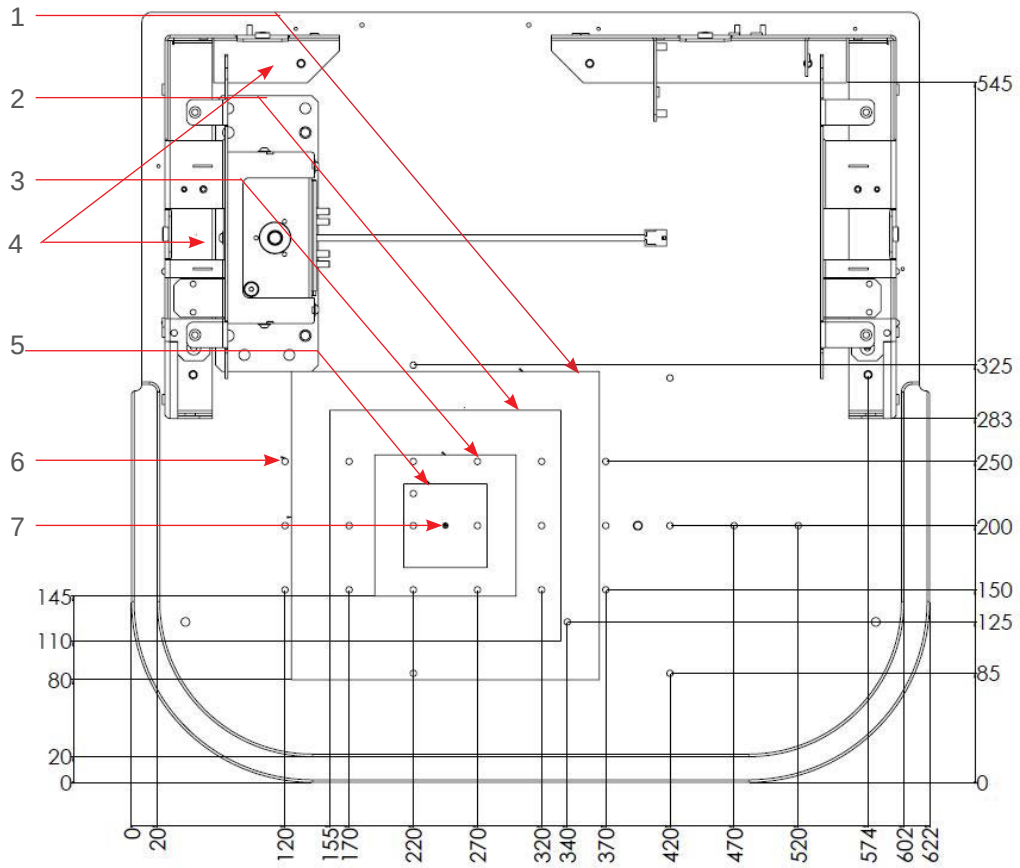


1. *Optical fiber axis*
2. *Z axis (Travel distance 295 mm (11.614 in))*
3. *Marking area: 100/160/254/330 Focal lens*

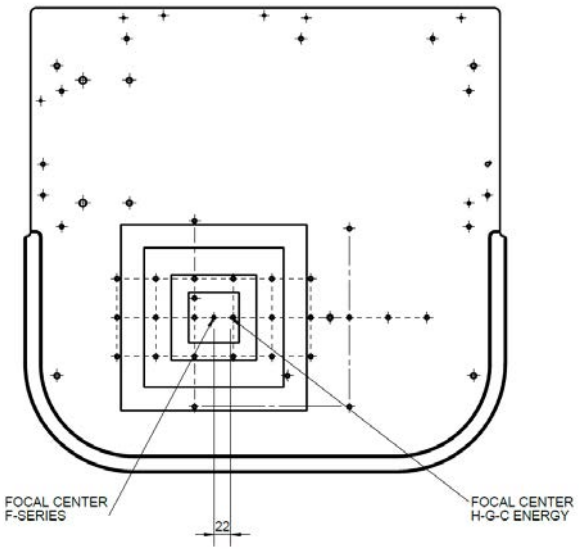
Weight: 69 kg (152.119 lb) (LW2 touch + Fiber series (+ Energy) marking head)

Dimensional drawings

Dimensional drawing of the table



1. *Marking area: 205 mm (8.071 in) x 205 mm (8.071 in)*
2. *Marking area: 175 mm (6.890 in) x 175 mm (6.890 in)*
3. *Marking area: 110 mm (4.331 in) x 110 mm (4.331 in)*
4. *Handles (x4)*
5. *Marking area: 65 mm (2.559 in) x 65 mm (2.559 in)*
6. *27 fastening holes (M6)*
7. *Origin*



Dimensional drawings

3. Max height of the part to be marked

■ 100 Focal lens

Fiber Series (+ Energy)	Hybrid Energy Series	Green Energy Series	CO2 Energy Series
345 mm (13.583 in)	-	-	-

■ 160 Focal lens

Fiber Series (+ Energy)	Hybrid Energy Series	Green Energy Series	CO2 Energy Series
160 Focal lens: 255 mm (10.039 in) F20 Energy: 261 mm (10.276 in)	160 Focal lens: 216 mm (8.504 in)	165 Focal lens: 219 mm (8.622 in)	150 Focal lens: 337 mm (13.268 in)

■ 254 Focal lens

Fiber Series (+ Energy)	Hybrid Energy Series	Green Energy Series	CO2 Energy Series
159 mm (6.260 in)	122 mm (4.803 in)	122 mm (4.803 in)	200 Focal lens: 262 mm (10.315 in)

■ 330 Focal lens

Fiber Series (+ Energy)	Hybrid Energy Series	Green Energy Series	CO2 Energy Series
42 mm (1.654 in)	-	-	-

These values are approximative. Distances may vary approximately +/- 20 mm (0.787 in) depending on the laser's and focal lens' specific characteristics.

Max height of the part to be marked = Maximum distance between the marking head and the table (fixed value: 442 mm (17.402 in)) - Focal distance - Tolerance

Example: LW2 Touch + F20 Energy (160 Focal lens):

442 mm (17.402 in) - 176 mm (6.929 in) - 5 mm (0.197 in) = 261 mm (10.276 in)

O. Noise emission of the machine

1. Test code

■ Measurement method

The measurements were taken according to the regulations of standard ISO 12001:1996.

■ Material used for marking:

- Machine: LW2 Touch + Fiber Energy Series 20 W
- One electronic command unit
- An interface computer (used by the operator)

■ Definition of the microphone position

The microphone is positioned 1 m (3.281 ft) in front of the machine and 1.4 m (4.593 ft) from the floor.

The measurements were taken according to the regulations of standard ISO 12001:1996.

■ Test conditions

- Marking speed: 100 mm/s
- Power: 100%
- Frequency: 30 kHz
- Marking of 3 lines of 10 characters 5 mm (0.197 in) high
- Steel plate with dimensions 110 mm (4.331 in) x 100 mm (3.937 in) x 3 mm (0.118 in)

2. Noise emission information

The equivalent continuous sound level A (L_{Aeq}) is below 70 dB(A).

P. Technical specifications

1. Physical characteristics

Dimensions (L x w x h): Machine	600 mm (23.622 in) x 622 mm (24.488 in) x 772 mm (30.394 in)
Dimensions (L x w x h): Laser protection glass	180 mm (7.087 in) x 280 mm (11.024 in)
Net weight: Machine (no accessories)	60 kg (132.277 lb)
Dimensions (L x D x H): With packaging	778 mm (30.630 in) x 764 mm (30.079 in) x 985 mm (38.779 in)
Weight: With packaging	66 kg (145.505 lb)
Object to be engraved: Dimensions	502 mm (19.764 in) x 477 mm (18.779 in) x 322 mm (12.677 in) (according on the lens used) (Maximum)
Motorized Z-axis: Travel distance Z	295 mm (11.614 in)
Classification	Class 1 (EN 60825-1 standard)

- Marking area

100 Focal lens	**160 Focal lens**	**254 Focal lens**	**330 Focal lens**
65 mm (2.559 in) x 65 mm (2.559 in)	110 mm (4.331 in) x 110 mm (4.331 in)	175 mm (6.890 in) x 175 mm (6.890 in)	205 mm (8.071 in) x 205 mm (8.071 in)

CO2:

150 Focal lens	**200 Focal lens**
100 mm (3.937 in) x 100 mm (3.937 in)	140 mm (5.512 in) x 140 mm (5.512 in)

- Safety door

Force exerted on the human body	35 N
Kinetic energy of the mobile part	0.3 J
Contact pressure	5 N/cm²

Technical specifications

2. Electrical characteristics

Nominal voltage	100 - 240 V AC
Frequency	50 / 60 Hz
Power	800 W
Electrical protection by fuse	6.3 A --> Voltage: 115 V 3.15 A --> Voltage: 230 V
Phases	1

3. Environment

Operating temperature	15 °C (59 °F) - 35 °C (95 °F)
Storage temperature	10 °C (50 °F) - 40 °C (104 °F)
Humidity level	20 - 80%

4. Laser beam

- Class 4 (EN60825-1) (class 1 with suitable protection)

	Fiber Series	**Fiber Energy Series**	**Hybrid Energy Series**	**Green Energy Series**	**CO2 Energy Series**
Wavelength	1064 nm	1064 nm	1064 nm	532 nm	10 600 nm
Power	20 - 30 - 50 W	20 W	10/20 W	5 W	20/30 W
Minimum pulse duration	100 ns	100 ns	5 ns	5 ns	CW
Frequency	F20: 20 kHz - 100 kHz F30: 30 kHz - 100 kHz F50: 50 kHz - 200 kHz	30 kHz - 60 kHz	10 kHz - 100 kHz	10 kHz - 100 kHz	CW

5. Aiming diode - Focusing diode

Power	Maximum: 1 mW
Wavelength	650 nm
Classification	Class 2M (EN 60825-1 standard)

Technical specifications

6. Material

		Fiber Series (+ Energy) 20 - 30 - 50 W	Hybrid Energy Series 10 - 20 W	Green Energy Series 5 W	CO2 Energy Series 20 - 30 W
Metal support	**Steel, stainless steel**	O	O	X	X
	Aluminium	O	O	X	X
	Carbide	O	O	O	X
	Copper, brass	O	O	X	X
	Titanium	O	X	X	X
	Gold, silver, nickel, platinum	X	O	O	X
Plastic	**ABS**	O	O	O	X
	Polyamide (PA)	O	O	O	X
	PC	X	O	O	X
	PE - PET	X	X	O	X
	POM - PBT	O	O	O	X
	PP	X	X	O	X
Organic material	**Wood, varnished wood**	X	X	X	O
	Rubber	X	X	X	O
	Leather	X	X	X	O
	Paper, cardboard, cork	X	X	X	O
	Stone, marble, granite	X	X	X	O
Others	**Terracotta**	X	X	X	O
	Ceramics (applications: electric, medical)	O	O	O	X
	Silicone	X	X	O	O
	Glass, crystal	X	X	X	O

O = Marking: contrasting

X = Marking: non-contrasting