

User guide



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1 Allée du développement

42350 LA TALAUDIÈRE

www.technomark-marking.com

Tél.: +33 (0)4 77 22 25 91

Fax : +33 (0)4 77 22 38 91

TECHNOMARK

1 Allée du développement
42350 LA TALAUDIÈRE (France)
Tel : +33 (0) 4 77 22 25 91
Fax : + 33 (0) 4 77 22 38 93
E-mail : contact@technomark-marking.fr

www.technomark-marking.com



Before we start the TECHNOMARK company would like to warmly thank you for your confidence. You have chosen the GraphiX range to ensure the identification of your products. More than just a marking machine, we offer a complete solution which addresses all of your traceability requirements.

Our customer service is at your disposal for any further information.

And so now, enjoy your marking...

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1. Introduction

TECHNOMARK reserves the right to change the information and specifications contained in this manual without prior notice. You should consult the TECHNOMARK Company to learn of any changes that may have been made.

The TECHNOMARK Company can in no case be held responsible for any incidental that is related to damages, direct or indirect, or even exceptional, including but not limited to financial losses related to the use of information contained in this manual. This clause also applies in cases where TECHNOMARK has been informed and/or has had prior knowledge of possible risks associated with the use of the equipment.

The TECHNOMARK guarantee of the equipment it manufactures is defined in its terms and conditions. Unless specifically stated otherwise on our acknowledgement of order receipt, our equipment is guaranteed for 1 (ONE) year from the equipment's delivery date. This guarantee consists of our free replacement of defective parts, except with regards to externally supplied sub-assemblies in which case the supplier's warranty is applied. This warranty does not cover defects resulting from normal wear of the products, from incorrect use, maintenance which is not performed in accordance with standard trade practices, inadequate storage conditions, and an inappropriate product environment, excessive use of the equipment or failure to follow the instructions for use and/or connection. Under no circumstances will any repair work covered by the guarantee that causes a loss of time or profit will in no case result in an extension of the guarantee.

The information contained in this manual is confidential and remains the property of the TECHNOMARK Company.

2. Precautions of use

2.1. Designated use

The GraphiX marking machine is used for marking on metals. Many metals will show interaction with the laser beam. However, very clean metallic surfaces which are highly polished cold show no reaction to the laser beam. This is due to too high reflectivity from the material for the kind of laser beam used.

Furthermore, the reflectivity can cause damages on the elements inside the marking head. Consequently, the marking on too brilliant or polished parts is to be banned.

The machine also allows the marking of some plastic parts. You can contact Technomark for check on your samples materials.

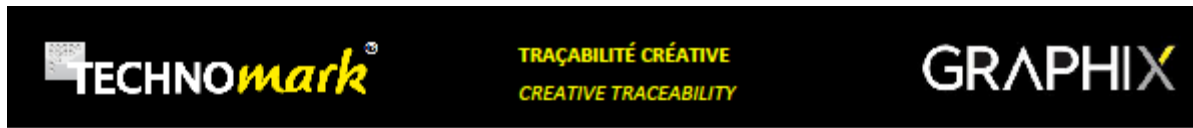
2.2. Disposal remarks

Do not dispose the machine with domestic waste.

Electronic devices have to be disposed according to the country directives on waste disposal.

In case of further questions, please ask to Technomark.

3. Declaration of conformity



**DECLARATION DE CONFORMITE « CE » (originale)
EUROPEAN COMMUNITY « EEC » COMPLIANCE STATEMENT (original)**

Le constructeur soussigné :
The underdesigned manufacturer :



TECHNOMARK SAS
1 allée du développement
42350 La Talaudière
FRANCE

Déclare que la machine de marquage neuve décrite par les éléments suivants :
Declare that the following new machine described by the following elements:

Désignation : Machine de marquage Modèle GraphiX série fibre 10 ou 20 W
Marking machine Model GraphiX fiber serie 10 or 20 W

Référence/type : LMG0-E10-xxxx ou LMG0-E20-xxxx
LMG0-E10-xxxx or LMG0-E20-xxxx

Est conforme aux dispositions des directives Européennes suivantes :
Is in conformity with the following European Directives:

2006/42/CE	Directive Européenne Machine / Machinery
2004/108/CE	Directive Européenne Compatibilité Electromagnétique / Electromagnetic compatibility
2006/95/CE	Directive « Basse Tension » / « Low voltage » directive

Et que les normes et/ou spécifications techniques mentionnées ci-après ont été appliquées :
And the standards and/or technical specifications mentioned below were applied:

ISO60825-1 : 2007
ISO13849-1 : 2008
NF EN 207
NF EN 208

Sous réserve d'une utilisation conforme à sa destination, aux spécifications et instructions du constructeur et d'une installation conforme aux normes en vigueur et aux recommandations du fabricant.

A condition is that it is used in the manner for with it is attended and in accordance with the specifications and instructions of the manufacturer, it is also required to conform to the existing standards

La société TECHNOMARK SAS est habilitée à constituer le dossier technique.
TECHNOMARK SAS Company is allowed to build the technical file.

A La Talaudière (FRANCE)
Le 15/02/2019

Laurent BAUD
Président






TECHNOMARK
1 Allée du développement
42350 LA TALAUDIÈRE (France)
SAS au capital de 500 000 €
Tel : +33 (0) 4 77 22 25 91
Fax : +33 (0) 4 77 22 38 93
E-mail : contact@technomark.fr

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Modèle du 27-11-2012 validé par SJ




4. Safety

-  Defines essential information for user safety.
-  Defines essential information to prevent equipment damage.
-  Defines additional information.

4.1. Safe operation of the machine

This manual provides important information and the safety precautions to be taken for the installation, use, setting, care and maintenance of the machine.

Before operating the machine, you should read the entire manual carefully; this will ensure that you can use the machine safely and get the best performance from it.

If the machine is used in a way other than that intended by Technomark, or without the user having understood this manual, he/she alone will be entirely responsible for any resulting injury to personnel or damage to equipment.

4.2. Laser safety

The GRAPHIX LMG0-E10, GRAPHIX LMG0-E20, GRAPHIX LMG0-E30 and GRAPHIX LMG0-E50 are Class I laser products that do not permit access to levels of laser radiation in excess of Class 1 accessible emission limits (AEL) during operation. Class 1 lasers are considered to be incapable of producing damaging radiation levels during operation and are exempt from any control measures.

The GRAPHIX LMG0-E10, GRAPHIX LMG0-E20, GRAPHIX LMG0-E30 and GRAPHIX LMG0-E50 do however contain an embedded Class 4 laser that performs the intended marking of various substrate materials. The embedded Class 4 laser emits near IR laser radiation (invisible) that is contained within the interlocked protective housing. A Class 4 laser system is a hazard to the eye or skin from the direct beam; may pose a fire hazard or diffuse reflection hazard and may also produce laser generated air contaminants (LGAC) and hazardous plasma radiation.

The GRAPHIX LMG0-E10, GRAPHIX LMG0-E20, GRAPHIX LMG0-E30 and GRAPHIX LMG0-E50 shall not be modified in any way or operated with any portions of the laser protective housing open and/or removed as this will create a hazardous condition.

4.2.1. Laser risks

Everybody works on our GraphiX machine should be trained in the use of the product.

The same people must be also formed at the laser risks in general.

The particular use of enclosures on the machine contributes to it being a class 1 laser.



Do not operate the laser marking head outside the class 1 laser protective enclosure.

4.2.2. Fire risks



When one work of inflammable materials, as for example the plastic, there is a fire risk. It is essential to watch the marking during all the process and to stop the cycle in case of emergency.



It is formally forbidden to mark organic, extremely flammable (Example: wood, paper, textile, ...)



Do not expose to radiation materials other than those for which the marking system was designed.

4.2.3. Electrical risks

Electricity can kill.

Fatal injuries can occur when the manufacturer's warnings and procedures are not followed. Persons who are not authorised or trained should never be allowed to do work on electrical parts of the machine. Safety devices should never be removed and they should be checked regularly to make sure that they are operating correctly.



Inexperienced personnel should never be allowed to work on the electrical part of the machine. Do not remove protective guards.

4.2.4. Residuals hazards

The reaction between the material and the beam causes a heating of the material. For long markings, and according to the material, the marked part can be hot.



Use safety gloves to treat parts after marking, if necessary.

Properly speaking, the machine does not produce any gases or hazardous vapours. However, depending on the material being marked, the process can produce, micro-particles, dust, fumes and vapour which can be irritating or toxic if they are not evacuated and filtered in a adequate way before being again rejected in the air



The evacuation and the treatment of these dusts are of the responsibility of the user.

If you have our optional extraction system, such fumes are removed and treated by the extraction unit.

This equipment should be kept in working order in accordance with the supplier's recommendations and undergo maintenance as often as necessary. (See manufacturer's documentation)



Cleaning of the machine must be scrupulously made to eliminate the residues of dusts bound to the markings. See paragraph **12. Maintenance and routine care**


4.3. Machine safety

4.3.1. Electrical risks

The machine's supply voltage is 220V or 110V. We have taken the customary measures to protect the operator from electric shocks from electrical components and wiring.

Access to electrical components is strictly reserved to qualified, authorised personnel.



Do not ignore the "Electrical risk" symbol . It could cost you your life.

4.3.2. Thermal risks



The electric motors used in the machine to move the marking head and power the extraction system can get hot during continuous use.

When required to work on these motors, maintenance personnel should allow them to cool sufficiently before intervening.

4.3.3. Noise risks

The sound pressure level at the workstation does not exceed 70 dB(A)

4.3.4. Moving parts



Never approach moving parts when the machine is in automatic mode



Never remove protective guards.

Switch the machine off and make it safe before doing any work on moving parts for the purpose of making adjustments, doing servicing work or any other reason.

4.3.5. Protection devices

For safety reasons, this machine has been designed with devices to protect both persons and property.

4.3.5.1. Emergency stop

Everyone should know where the "EMERGENCY STOP" button is and how to use it in the event of an emergency. They should also know what to do in the event of an emergency stop triggered by someone other than the usual operator.

4.3.5.2. *Door safety switch*

Everyone should know the location of safety equipment and how it works.

4.3.5.3. *Enclosures*

The particular use of enclosures on the machine contributes to it being a class 1 laser.



Never remove panels

4.3.5.4. *Isolating switches*

The machine has a main electrical isolator that cuts the power to the machine as a whole. An indicator lamp shows that the machine is receiving power.



Never remove protective guards.



Never bypass damage, remove or re-position protective guards without Technomark's consent.



Do not alter the door safety switch settings.



Before using the machine, check that guards are operating correctly.

4.3.6. Warning labels

Before using the machine, the operator should be familiar with all the warning labels on it.



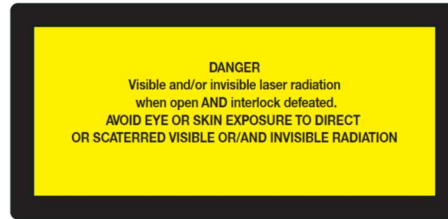
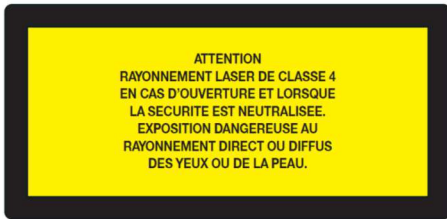
Risque électrique/ Electric shock



Rayonnement laser /Laser radiation



Produit laser classe 1/ Class 1 laser product



Do not remove or bypass the door safety device. Laser radiation.



Do not remove guards. Laser radiation.

Where warning labels have become damaged during normal use, contact Technomark, so that they can be replaced.

6. Installing the equipment

6.1. Unpacking

You have received your GraphiX machine, packed in a wood case to protect it during transport. Accessories are packed in accompanying cartons.



Please follow the steps below very carefully, to ensure that the machine is unpacked correctly.



Packaging and fasteners should be retained for later use.

- Unscrew the screws and remove the upper lid.
- Remove the foam protection.
- Unscrew the screws and remove the side panels. Note: to prevent the panels falling, they should be supported while the fixing screws are removed.

6.2.Contents of the package

Main power supply cable

User manual

Software user manual

Test plate

F254 lens (Option)

Rotary spindle (Accessory)

Fume extraction system (Accessory)

19" screen (Accessory)

Wireless keyboard/mouse (Accessory)

Screen support (Accessory)

6.3.Handling

The greatest of care should be taken when moving the machine and/or its components. Vibration and impacts may damage sensitive components and diminish their accuracy.

The machine weighs 90 kg (without accessories).

Check that the capacity of the lifting equipment used is sufficient for the weight of the machine.



We recommend the use of soft slings slid under the machine to handle it.



Only qualified personnel should be allowed to operate lifting equipment. Under all circumstances, not stand under the machine.



In order to work in a coordinated way, one person should be in charge with the others following that person's instructions.

6.4. Positioning the machine

The machine should be positioned on a stable support, able to take the weight of the machine and any accessories.

We recommend a bench 1500 x 750 x 840 mm in size (L x W x H).

6.5. Installing accessories

The machine may be equipped with several accessories. These accessories must be installed in accordance with the manufacturer's instructions.

6.1.Environment

Storage conditions

Storage temperature	-10°C to 60°C
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Environment for use

Temperature for use	5°C to 40°C
Humidity	<90% non-condensing
Altitude	<2000 m

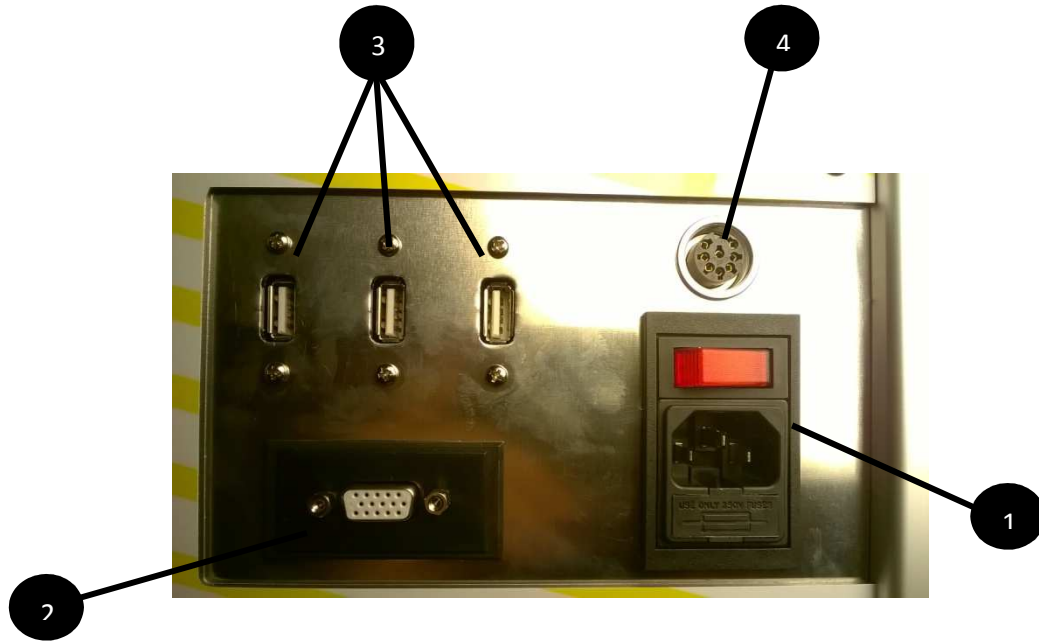
To ensure a long service life and high level of marking accuracy from the machine, we recommend that the machine is installed in an air-conditioned environment at 20°C.

The controller and laser marking head are sensitive to vibration. Consequently, sources of vibration close to the machine, such as presses, etc., should be avoided.

Electrical power supply

Supply voltage	230V ac or 115V ac (±10%)
Power	0.5kW

7. Connections



1	IEC connector	3	USB ports
2	VGA connector	4	Extraction connection



All connections should be made with the power off (except the USB port)

7.1. Connecting the machine

Connect the first end of the power cable supplied to the laser and the other end to the 220V or 110V socket.



External circuits to be connected to the product shall be SELV type, as stated by the standards IEC60950-1:2005 and EN60950-1:2006/+A11.

7.2. Connecting the screen

Connect the screen (supplied as an option or provided by you) to the VGA connector on the right hand side of the machine. Connect the screen's main power supply to a 220V mains socket.

7.3. Connecting the keyboard/mouse

Connect the keyboard and mouse (supplied as an option or provided by you) to the USB ports on the right hand side of the machine.



The remaining USB port may be used to connect an external storage peripheral for saving and importing marking files.

7.4.Connecting the rotary spindle (accessory)

This accessory allows you to mark ring document, on the circumference or on the generator. Once the part was restrained in the chuck, the rotation is automatically piloted for a quality marking.

Axis D low capacity

Capacities:

- Ø100 mm chuck
- Max workpiece volume : 330 mm x Ø100mm (excluding volume clamps in jaws)
- 2 marking areas
- Able to mark parts up to 5 kg (for more please contact us)
- Include storage for the chuck key

Can clamp the part:

- ✓ From inside : from Ø30 to Ø90 mm
- ✓ From outside : from Ø2 to Ø30 mm or from Ø30 to Ø80 mm depending on the chuck jaws type

Axis D high capacity

Capacities:

- Ø 130 mm chuck
- Max workpiece volume : 140 mm x Ø210mm (excluding volume clamps in jaws)
- 1 marking area
- Able to mark parts up to 10kg with a diameter of 80mm (for more please contact us)
- Includes magnetic storage for the chuck key

Can clamp the part :

- ✓ From inside: from Ø40 to Ø130 mm
- ✓ From outside: from Ø3 to Ø40 mm or from Ø40 to Ø120 mm depending on the chuck jaws type

7.4.1. Location

Position the rotary spindle (low or high capacity) on the machine bed using the fasteners supplied and according to the positioning below.



Figure 1 Low capacity

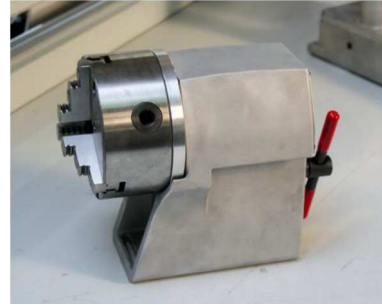
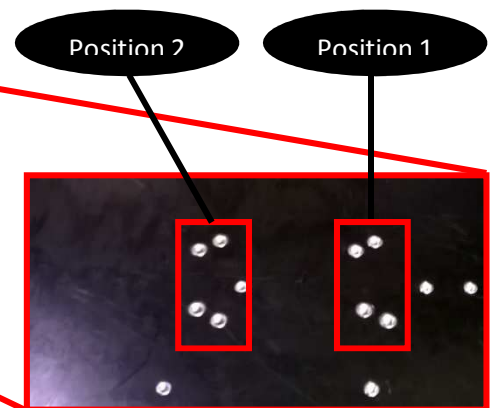
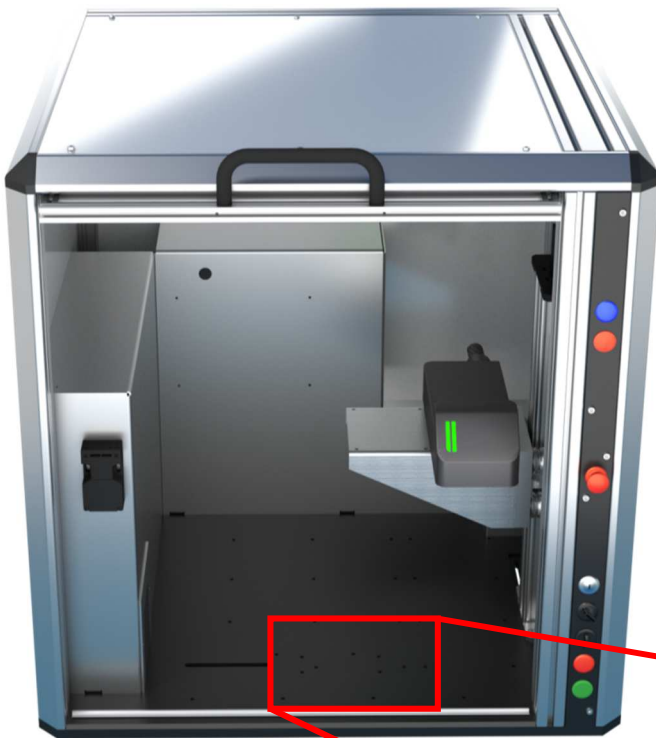


Figure 2 High capacity



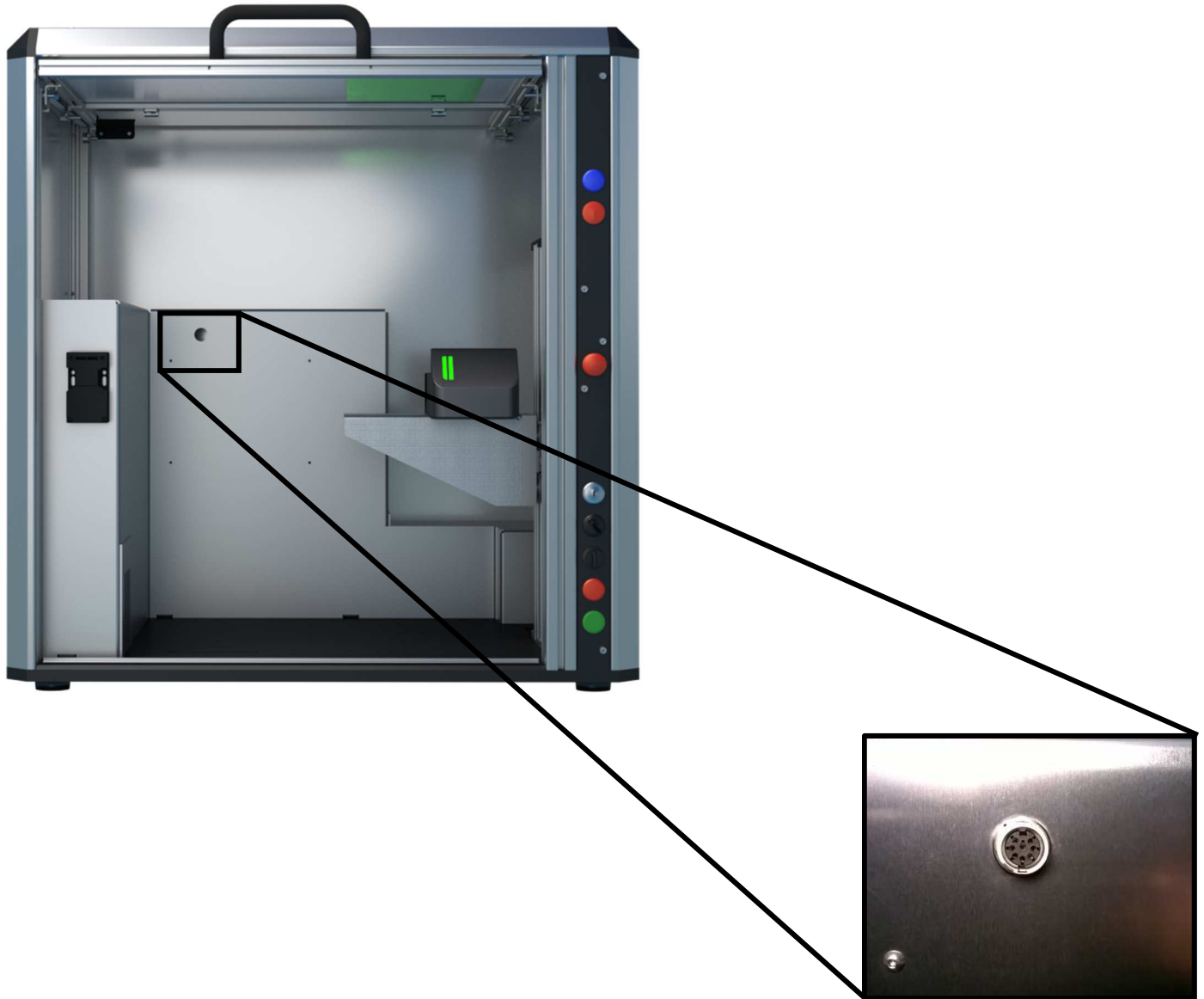
Secure the rotary spindle using M8 inserts (position 1 for the LC and HC spindle) (position 2 for the LC spindle only)

7.4.2. Connections



All connections should be made with the power off.

Connect the communication cable to the D spindle connector inside the machine.

**TECHNOMARK**

1 Allée du développement
42350 LA TALAUDIÈRE (France)
Tel : +33 (0) 4 77 22 25 91
Fax : + 33 (0) 4 77 22 38 93
E-mail : contact@technomark-marking.fr

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ISO 9001
BUREAU VERITAS
Certification



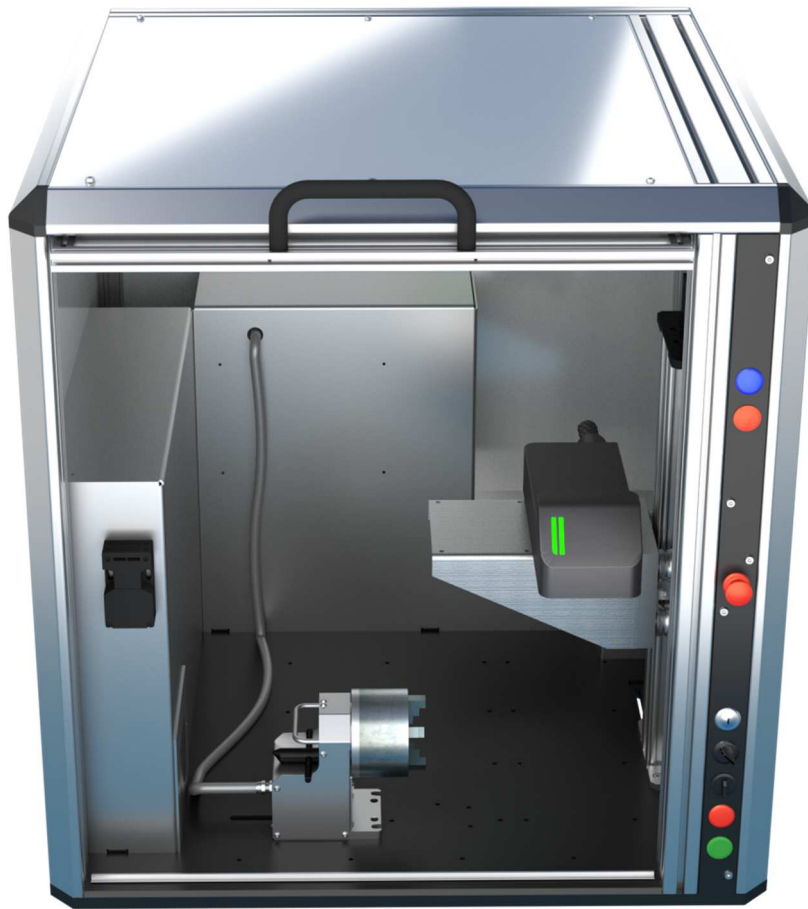


Figure 3 Low capacity spindle in position 2

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1 Allée du développement
42350 LA TALAUDIÈRE (France)
Tel : +33 (0) 4 77 22 25 91
Fax : + 33 (0) 4 77 22 38 93
E-mail : contact@technomark-marking.fr

7.4.1. Setting up the D spindle

Refer to the "Quick start" paragraph to start the machine.

In the "R Spindle" tab, check that the settings are consistent with the settings below, according to the spindle installed ("low capacity" D spindle or "high capacity" D spindle):

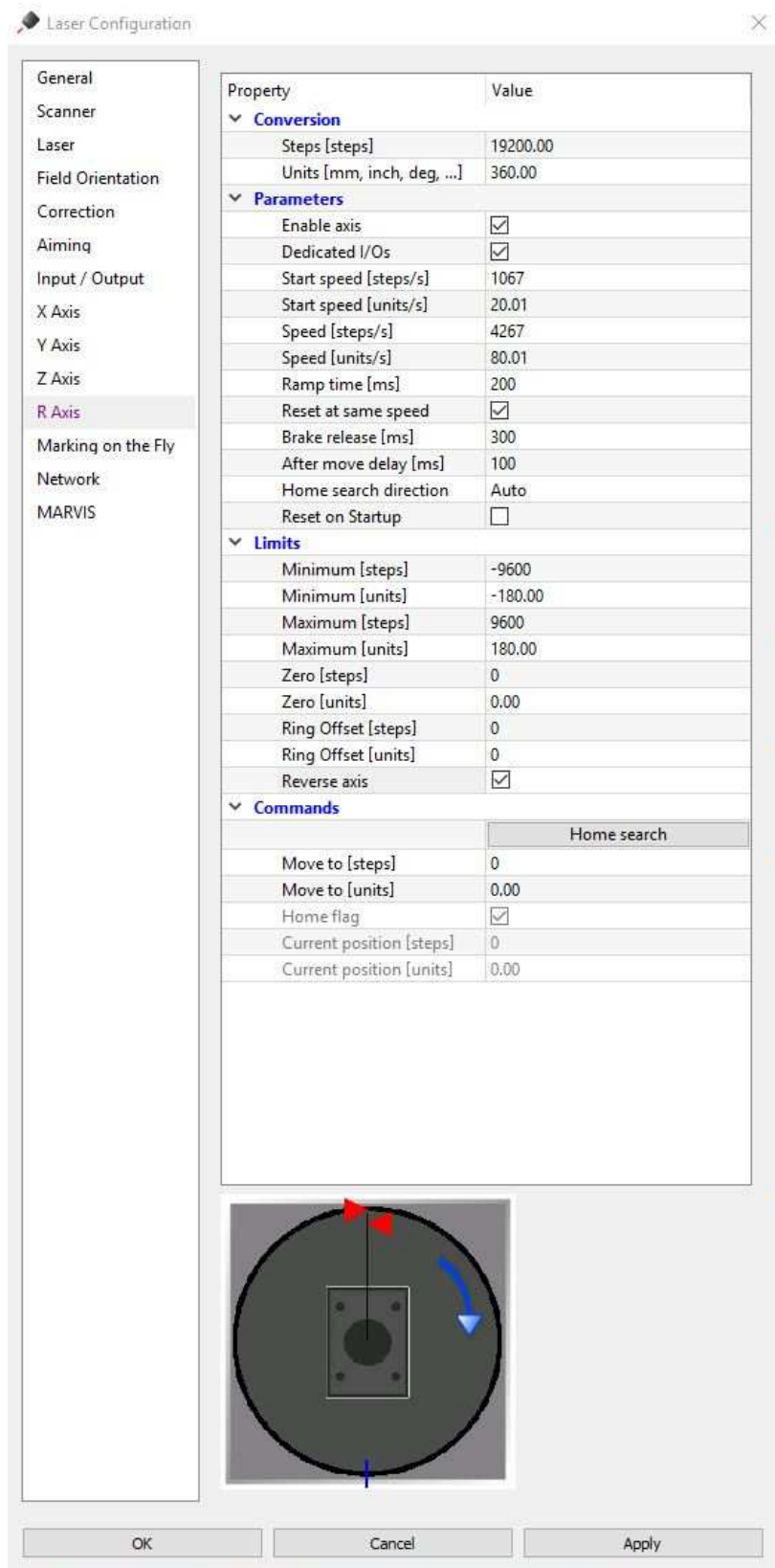


Figure 4 - Low Capacity D spindle parameters

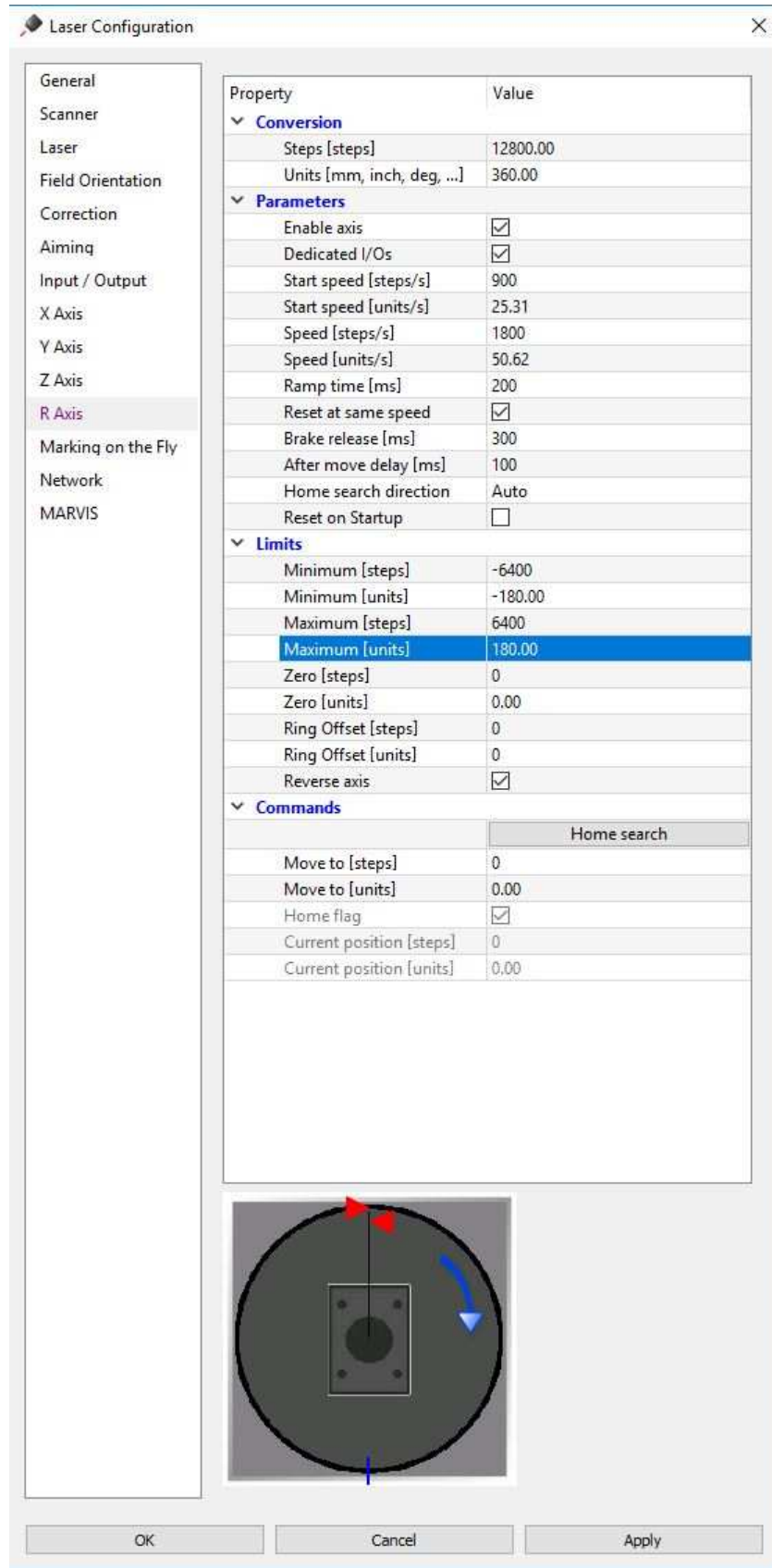


Figure 5 - High Capacity D spindle parameters

Connecting the extraction system (accessory)

The extractor system should be positioned near the machine, in a zone where it does not risk to undergo shocks.

Connect one end of the 3m extraction hose to the connector on the left hand side of the machine and the other end to the top of the extraction system. The hose is reversible.

Connect one end of the connection cable to the 8-pin connector (4) on the top of the machine's main switch and connect the other end to the 8-pin connector behind the extraction system. The cable is reversible.



- For continuous operation of the extraction system, set the switch at the back of the system to the 0 position.
- To operate the extraction system controlled by marking, set the switch at the back to position 1.
In this mode, extraction is triggered automatically at the start of marking and runs for 30 seconds after marking has finished. However, if the machine door is opened before the end of the 30 seconds, extraction stops automatically.



The extraction system is started independently of the laser. Press the green button on the front of the extraction system to start and stop it.



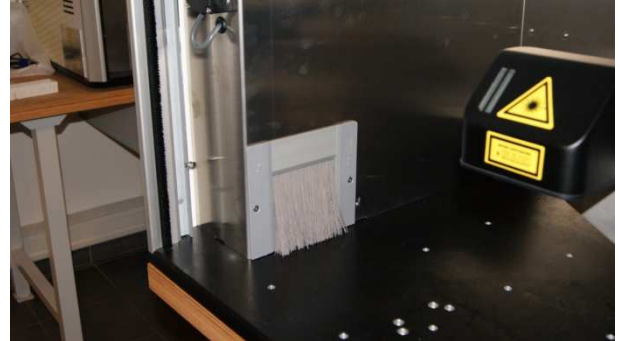
For any question on the operation of the extraction system, refer to the manufacturer's user manual.

7.5.Connecting the side opening for bar passage (accessory)

This accessory consisted of 2 parts. The first is fixed on the left protective panel, outside of the machine. The second is fixed inside the machine. See pictures below:



View outside machine



View inside machine

You can contact TECHNOMARK for the assembly if need.

This accessory allows to introduce lengthy workpiece (bar type) inside the machine to mark them at extremity, safely.



Before marking operation, make sure of the good state of brushes, by following the stages below:

- Fix a lamp inside the machine, towards the brushes
- Visually inspect the absence of light outside of the machine
- Check that all brushes return ready naturally after introducing a bar
- Change the system immediately if this one is damaged (light outside the machine)

This system has been designed for workpiece having simple forms (square, rectangular, triangular, and circular). For complex forms, contact TECHNOMARK.

The side opening allows introducing workpiece of maxi section 80x80 mm. (For example: square tube of 80x80 or a round tube of \varnothing 80mm).



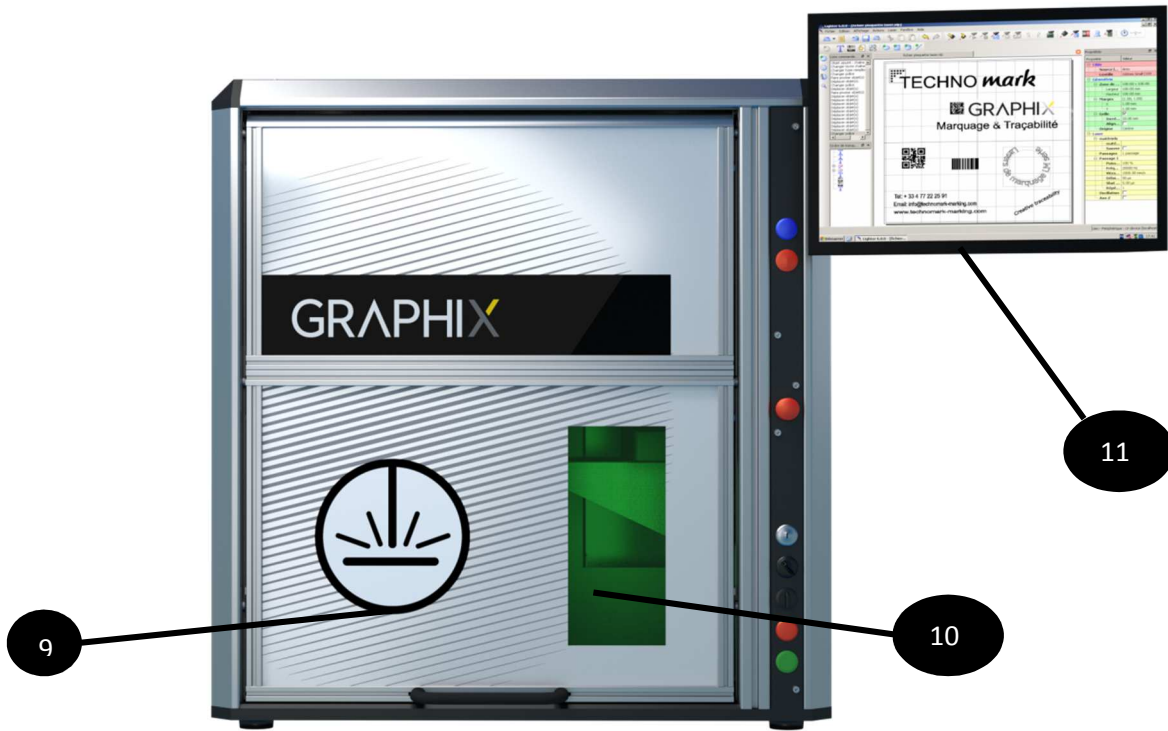
Do not look into the machine during marking.

8. Identification of the components



TECHNOMARK

1 Allée du développement
42350 LA TALAUDIÈRE (France)
Tel : +33 (0) 4 77 22 25 91
Fax : + 33 (0) 4 77 22 38 93
E-mail : contact@technomark-marking.fr



1	Marking head	7	Door safety switch
2	Control unit	8	Connection panel (main switch, USB port, VGA connector, extraction connector (accessory))
3	Electric column	9	Door
4	Bar opening (accessory)	10	Viewing window
5	PC/Laser source	11	Screen support and screen (accessory)
6	Identification plate		

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1) Marking head/Focussing lens

The marking head (scanner), in which the laser source arrives, includes two mirrors mounted on galvanometric motors. These mirrors divert the ray in direction X and direction Y, according to the graphics to be reproduced. The diverted laser ray is then concentrated by an F-Theta focussing lens before being aimed at the part to be marked.

Below is a table of currently available F-Theta focussing lenses:

F-Theta scanning lenses		$f = 160S (M39)$	$f = 254S (M39)$ Option
Lens fixing	mm	39	39
Working distance	mm	183 +/-5	280 +/-4
Fixing distance	mm	197 +/-6*	300 +/-5**
Marking area	mm ²	100 x 100	140 x 140

The working distance is defined as the distance between the centre of the marking area (defined in the focal plane) and the lower edge of the T-theta focussing lens. See the figure below:

WD: Working distance

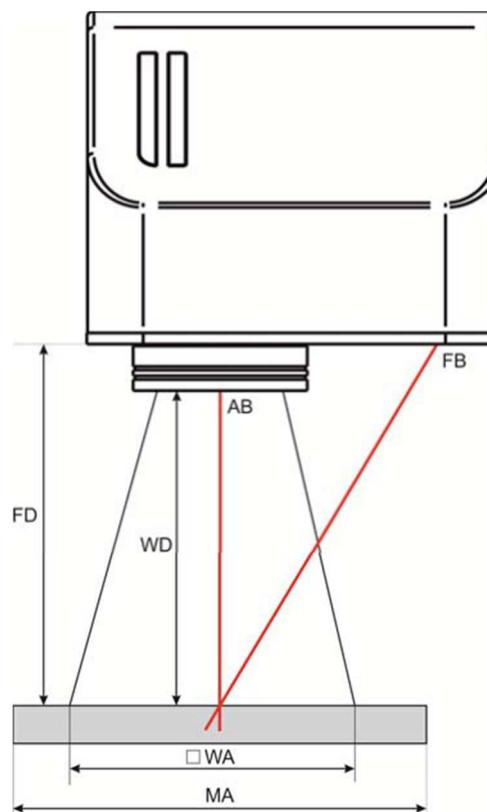
FD: Fixing distance

MA: Part to be marked

WA: Marking area

AB: aiming beam

FB: Focussing beam



For systems equipped with the F-Theta 160S lens, optical focussing is obtained by lining up the aiming beam with the focussing beam.

2) Control unit

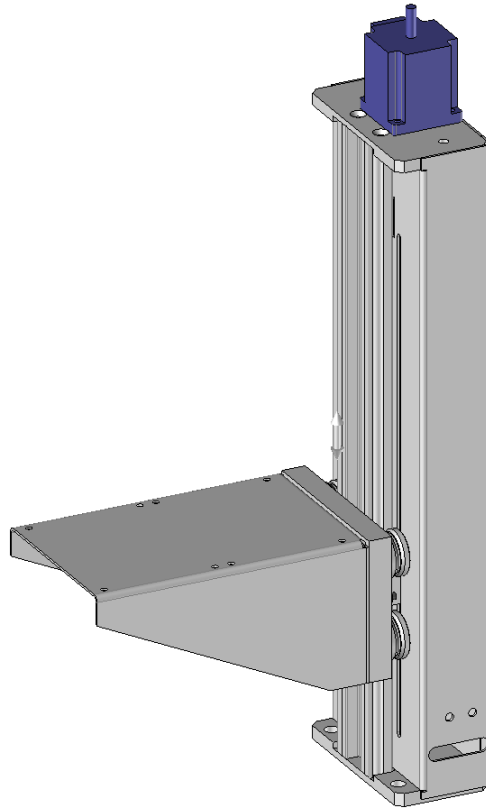
The control unit performs the following functions:

Switching on	This selector switches on the laser source.
"Ready" indicator light	This light indicates that the laser source has started correctly.
"Marking in progress" indicator	This light is on during marking.
"Emergency Stop" mushroom button	Pressing this button switches off the laser source in the event of an emergency.
"Light" selector	This selector switches the light inside the machine on and off.
"Z axis" selector (if manual triggering option available)	This selector moves the marking head to set the working distance.
"Stop" push button/indicator light	This button stops any marking in progress. It is lit during a marking cycle to indicate that it is active.
"Start" push button/indicator light	This button starts a marking cycle. This button is only active in Automatic or Semi-Automatic mode It is on permanently in Automatic mode. It is lit when the door is closed in Semi-automatic mode.

3) Electric column

The electric column supports the marking head. It is used to move the head and consequently for setting the working distance.

It is equipped with an upper limit switch sensor.



- Manually triggered electric column

The focus distance is set using the "Z axis" selector on the control desk.

- Electric column controlled by the marking file.

The focussing distance is set using the "Up" and "Down" keys on the Graph Pro-Laser engine interface or by entering the thickness of the part to be marked in the Graph Pro-Laser Editor software.

For a part with different thicknesses, see the **3D Mark Option** paragraph.

4) Bar opening (accessory)

This accessory allows a part to be marked along its edge.



Do not look into the machine during marking. We recommend the wearing of protective glasses, if the distance between the part and the PVC brush is too great.

5) PC/Laser source

The GraphiX marking system uses an optical fibre laser source. It guarantees a high degree of stability, low sensitivity to the optical offset and a longer product life.

The GraphiX system includes a computer with Windows 7 embedded. The PC is equipped with the GraphPro marking software.

6) Identification plate

7) Door safety switch

The (two-channel) safety switch closes a shutter at the exit from the laser source and blocks emission of the source, as soon as the door is opened.

8) Connection panel

This panel comprises:

- The main switch
- VGA connector
- USB port
- Extraction connector

9) Door

The door provides access to the marking area for loading/unloading parts and for maintenance operations.

Opening the door immediately blocks the emission of the laser source, if marking is in progress. The system changes to marking simulation mode.

10) Viewing window

You can watch marking safely through the protective window. (polycarbonate according NF EN 207°)

11) Screen support/screen

The screen support allows a 19" screen with a VESA 70 or 100 system to be fitted.

9. Before operation

9.1. Points to watch before using the equipment

- Check that all housings and removable guards are correctly in place.
- Check that the machine's access door operates correctly.
- If necessary, wear personal protection equipment.
- The working environment must be kept clean. Where appropriate, clean the machine before switching it on.

From a general point of view, the machine user is responsible for its use and operation and for taking the safety precautions recommended in this manual.

- Do not ignore the points set out below; to do so could cause serious personal injury or damage to the machine.
- Ensure that only trained personnel operate the machine.
- Ensure that only trained and qualified personnel set up, service and maintain the machine, assisted by documentation from the supplier.

10. Operation

10.1. Quick start

10.1.1. Starting the machine

Press the main switch button to switch on the laser. (See [5.Connections paragraphe](#)) The button has a red light when the machine is powered on.

During system start-up, the indicator on the marking head flashes green or orange if the door is open. (See [6.Identification of the components paragraphe](#))

The extraction system is switched on independently of the laser. Press the green button on the front of the extraction system to start or stop the machine. (See the "Connecting the extraction system" paragraph).

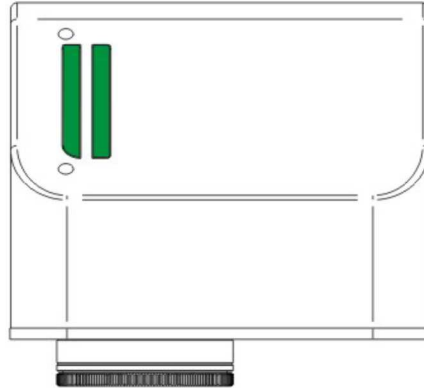
10.1.1. Starting the laser source



The following procedure must be followed to the letter.

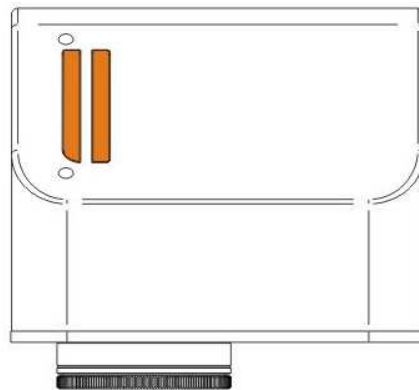
Set the "Switch on" key selector to 0.

Open the machine door. The indicator lamp on the marking head turns green.



Set the "Switch on" key selector to 1. The indicator lamp on the marking head flashes orange for about 20 seconds (laser status: "Laser WARM UP").

Wait for the end of the laser source warm-up phase. The indicator lamp turns a steady orange and the "Ready" light is on steady.



The machine and laser source are running.

Machine status indicator lamps

Main switch indicator lamp	On	The machine is powered on
	Off	The machine is switched off
"Machine on" indicator lamp	On	Correct laser source starting procedure
	Off	Source starting procedure not done or done incorrectly.
	Flashes	Laser source starting procedure correct and extraction system fault

Laser source indicator lights state


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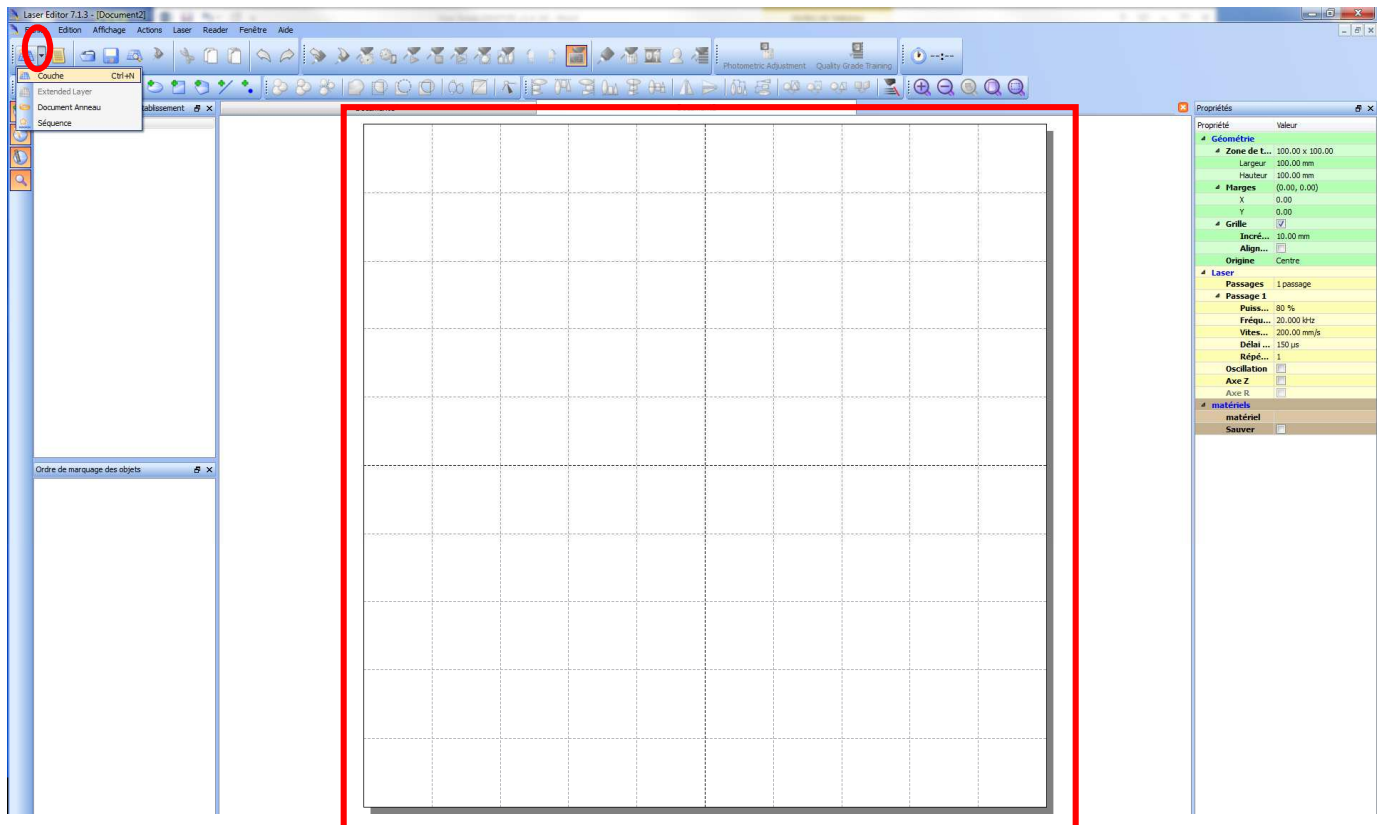
1 Allée du développement
42350 LA TALAUDIÈRE (France)
Tel : +33 (0) 4 77 22 25 91
Fax : + 33 (0) 4 77 22 38 93
E-mail : contact@technomark-marking.fr

	State	Status	Message
Indicator light	Flashes slow green (1 sec)	Computer starts and connects to the laser source	System booting Up
	Steady green	Laser source connected to the computer	Wait for start
	Steady orange	Laser source powered up	Stand-by shutter closed
	Flashes slow orange (2 sec)	Laser source warming up	Warming UP
	Flashes fast orange (1 sec)	Start-up procedure error	Laser Warning
	Steady red	Laser source ready	Laser Ready or Laser Emitting
	Flashes fast red (1 sec)	Emergency stop active	System error

10.2. Creating your first flat marking file

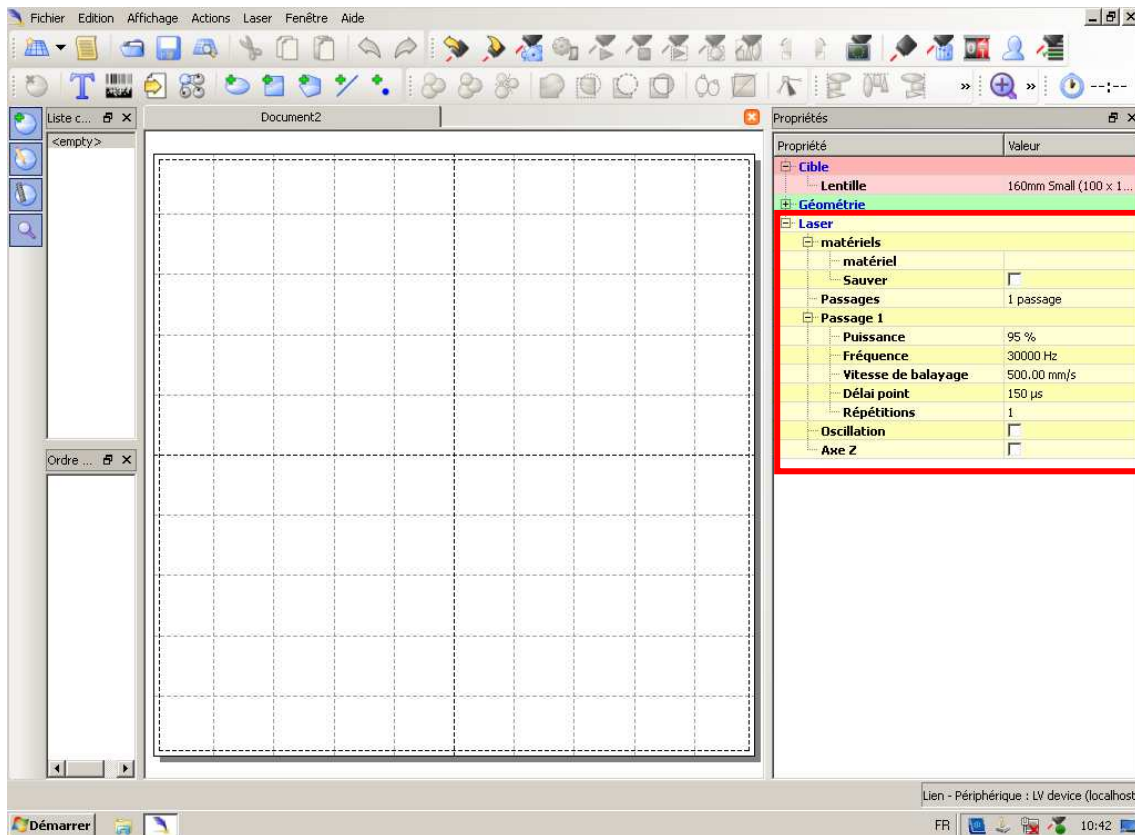
10.2.1. Preparing the marking file

- Double click the "GraphPro –Laser Editor" icon  to start the marking application.
- Select "manual" mode (See **Auto, semi-automatic, manual mode** paragraph).
- Create a new flat document by clicking on the drop-down menu on the "Main" tool bar and select "Layer":



A new document opens. The graphical work area is displayed. This area is 100 x 100 mm for an F160 focal length lens

- 1) Edit the general laser parameters for the document, such as power, frequency and scanning speed. These parameters depend on the material and the desired rendering.



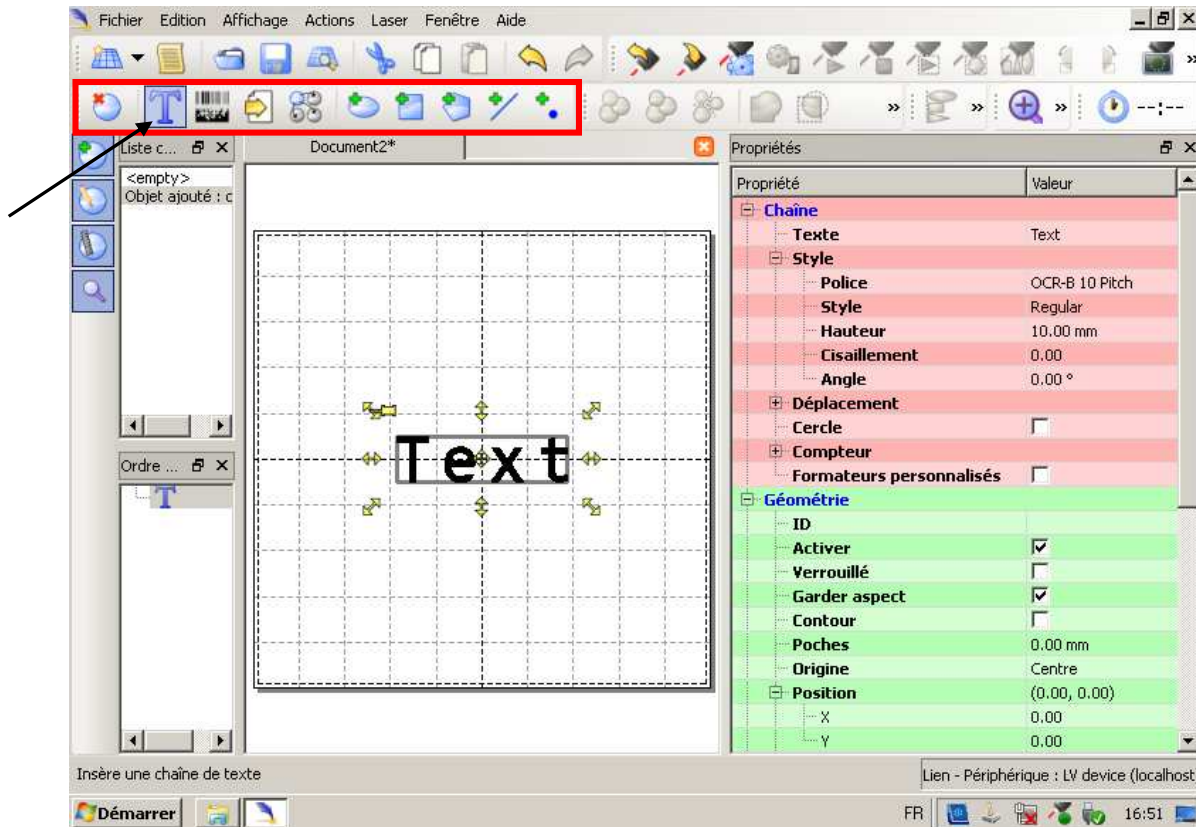
The values below are given for information purposes and will allow you to get started:

Material	Power (% of 10W)	Frequency (Hz)	Scanning speed (mm per sec)
Steel	95	25,000	150
Stainless steel	95	25,000	150
Anodised aluminium	95	25,000	400
Polycarbonate	60	45,000	500

The **Properties** tab, available for documents or objects, allows you to modify properties, in order to respond to your marking needs.

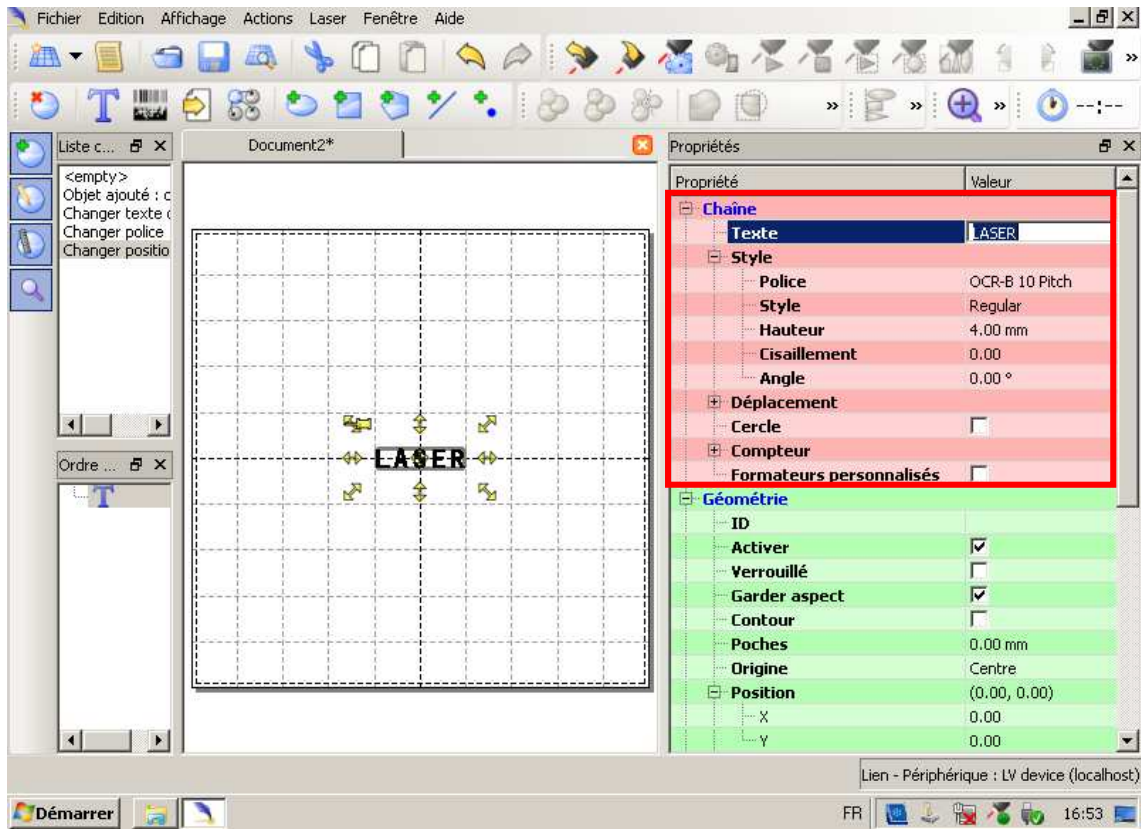
Once the object has been selected, you can customise the parameters of the objects to be marked, particularly the shape, position and fill.

2) Click on the "Text string" icon on the "Insert objects" tool bar, to add a text string to the graphic area.

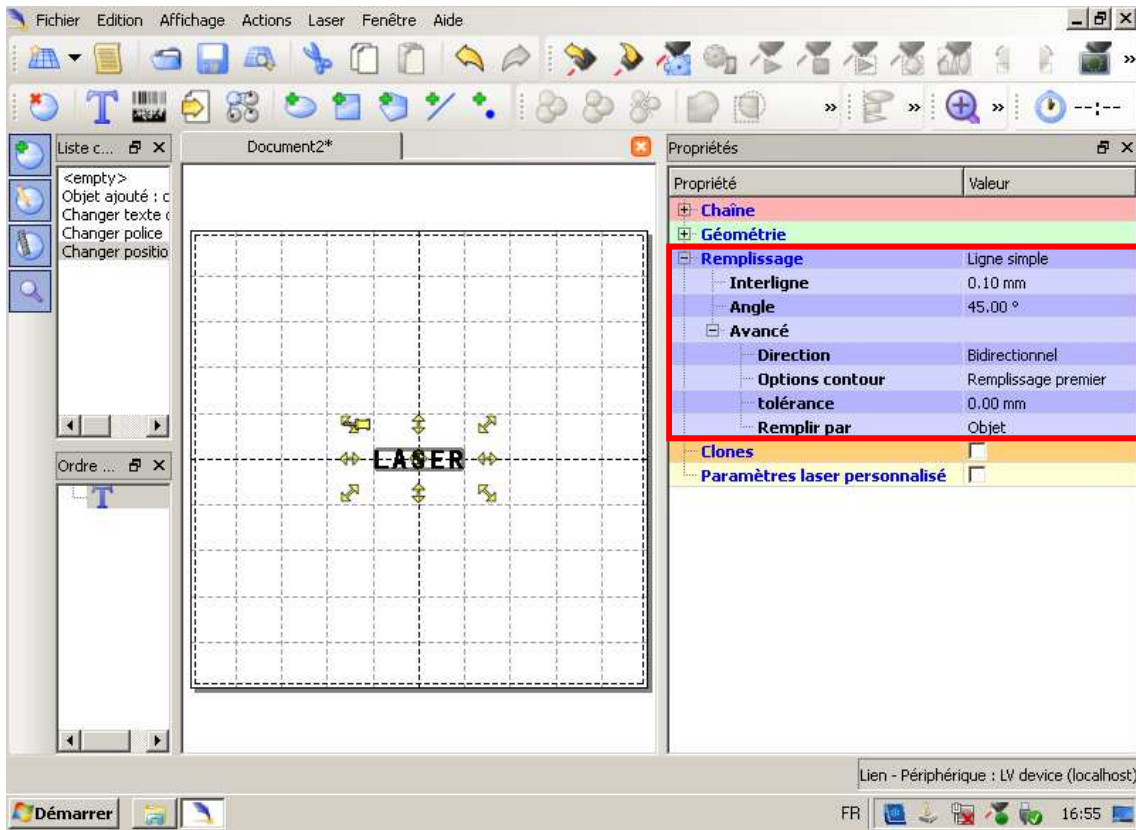


It is possible to add other objects to the document (1D code, 2D code, logos, images, shapes, etc.) from the "insert objects" tool bar.

- 3) With the object selected, edit the properties of the character string, such as value, font, style, etc., using the "Properties/String" tab:



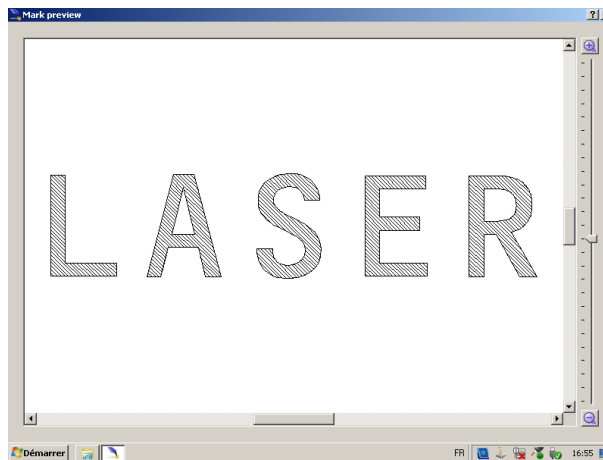
4) Edit the fill properties, such as the type of fill, the inter-line distance, etc. via the "Properties/Filling" tab:



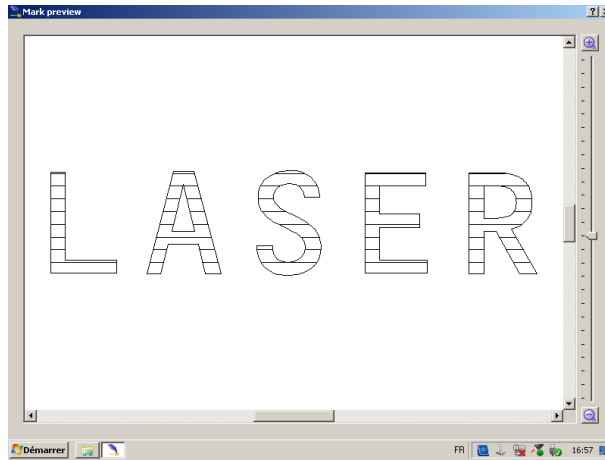
You can press the F8 button to view the laser beam's trajectory and see the rendering of the marking.

See the example fills below:

- 1) Filling: single line
- 2) Inter-line: 0.1mm
- 3) Angle: 45°



- 1) Filling: single line
- 2) Inter-line: 0.5mm
- 3) Angle: 0°

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1 Allée du développement
42350 LA TALAUDIÈRE (France)
Tel : +33 (0) 4 77 22 25 91
Fax : + 33 (0) 4 77 22 38 93
E-mail : contact@technomark-marking.fr

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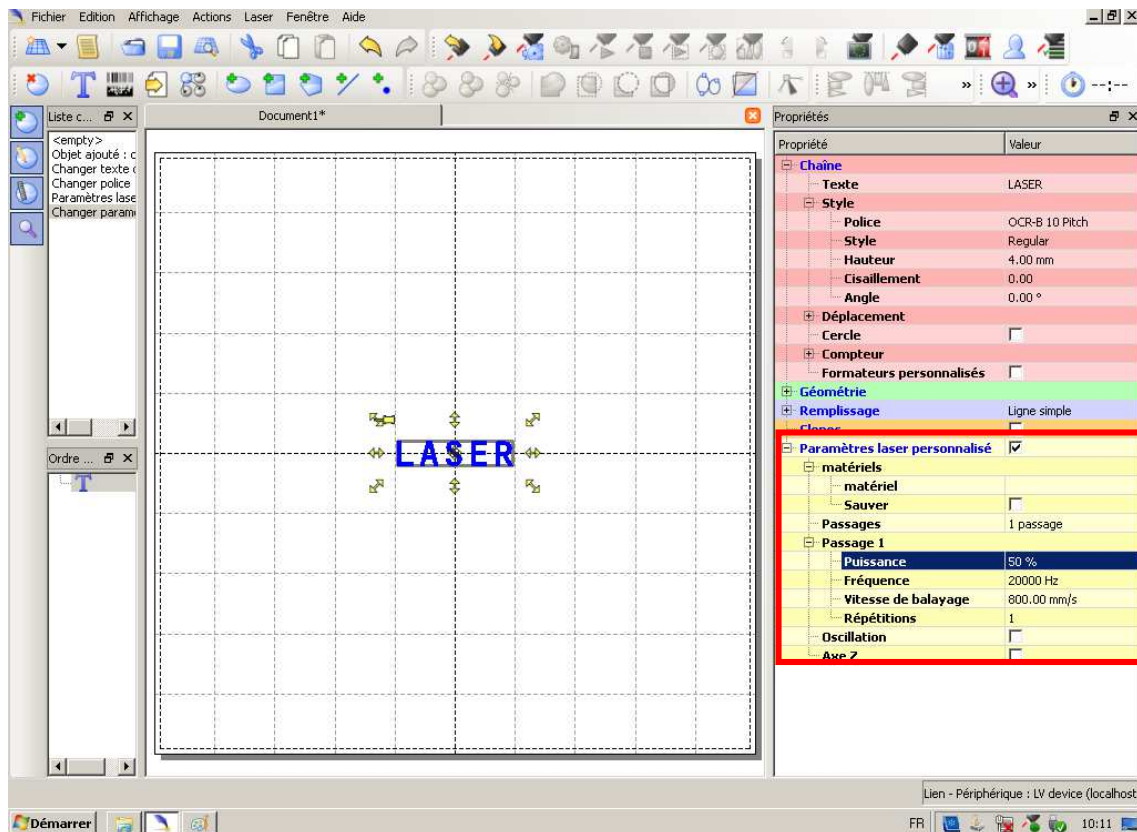
www.technomark-marking.com

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If you want to have a different rendering between several objects in a single marking file, you can customise the laser parameters for each object.

- 1) Tick the "Custom laser parameters" box in the object properties tab.



You can enter different parameters from the general parameters. The object in the graphics area turns blue to tell you that its laser parameters are different from the general laser parameters.


Your file is complete. To start marking, see the **Project and mark your file** paragraph.

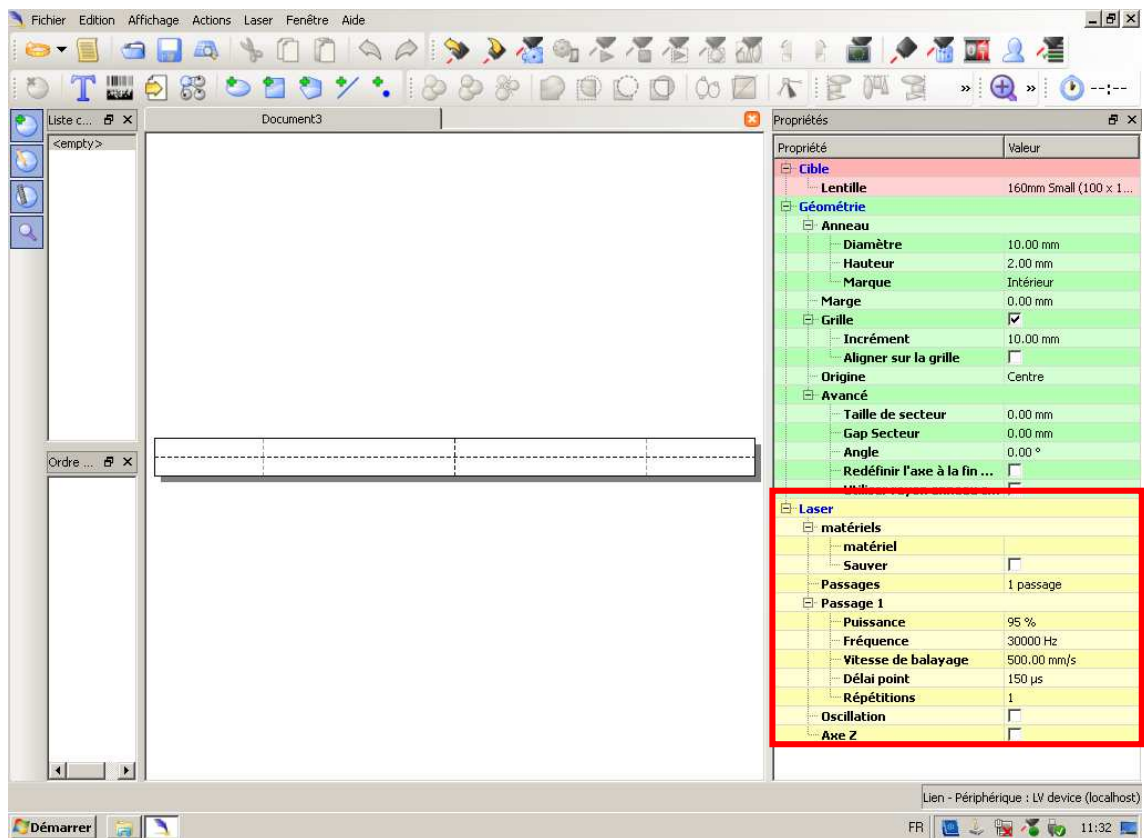
10.3. Creating your first ring marking file (revolving part)



The "D spindle" accessory is essential for marking a ring document.

10.3.1. Preparing the marking file

- 1) Double-click the "GraphPro –Laser Editor" icon  to start the marking application.
- 2) Click on the drop-down menu on the "Main" tool bar and select "Ring document":
- 3) Edit the general laser parameters for the document, such as power, frequency and scanning speed. These parameters depend on the material and the desired rendering.

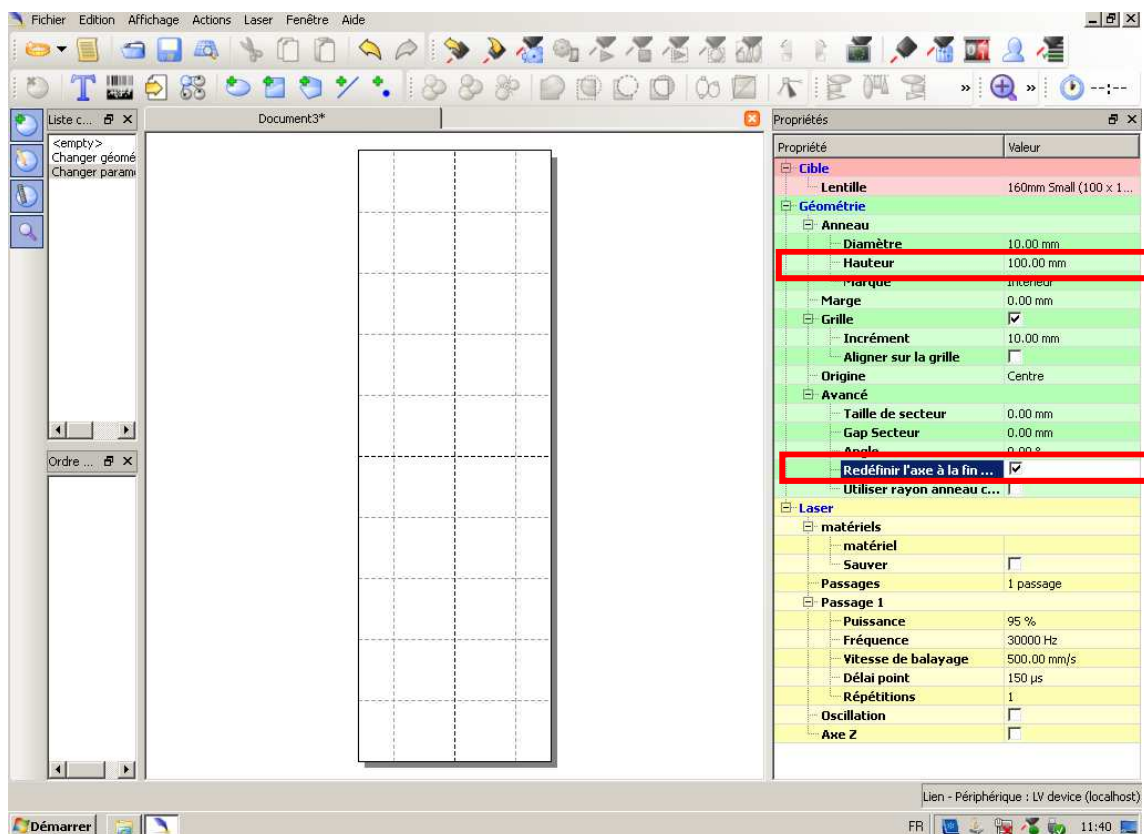


The values below are given for information purposes and will allow you to get started:

Material	Power (% of 10W)	Frequency (Hz)	Scanning speed (mm per sec)
Steel	95	25,000	150
Stainless steel	95	25,000	150
Anodised aluminium	95	25,000	400
Polycarbonate	60	45,000	500

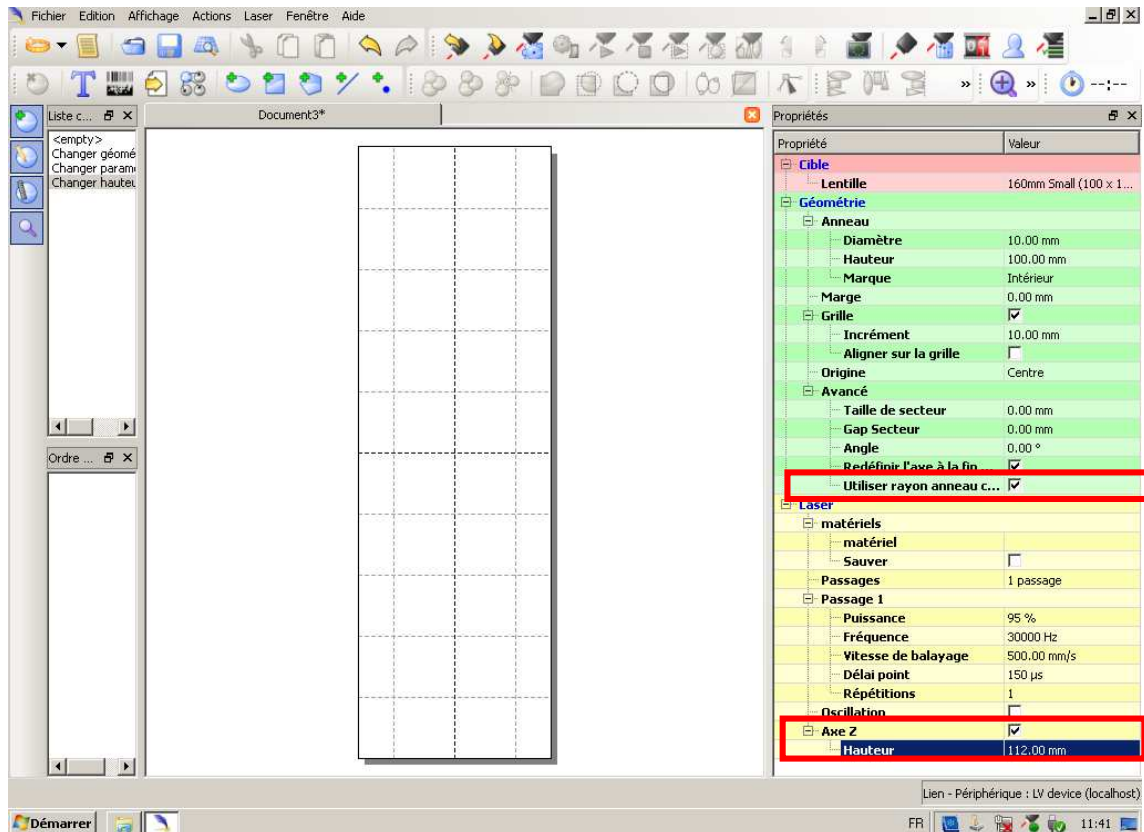
4) We are going to define the parameters necessary for marking a ring document, as below:

- Height of the ring
 - Height = 100 mm for an F160 focal length
 - Height = 140mm for an F254 focal length
- Activate. "Re-define the axis at the end of the execution"



5) If you have our electric column option controlled by the marking file, the parameters below are also necessary for automated control of the working distance:

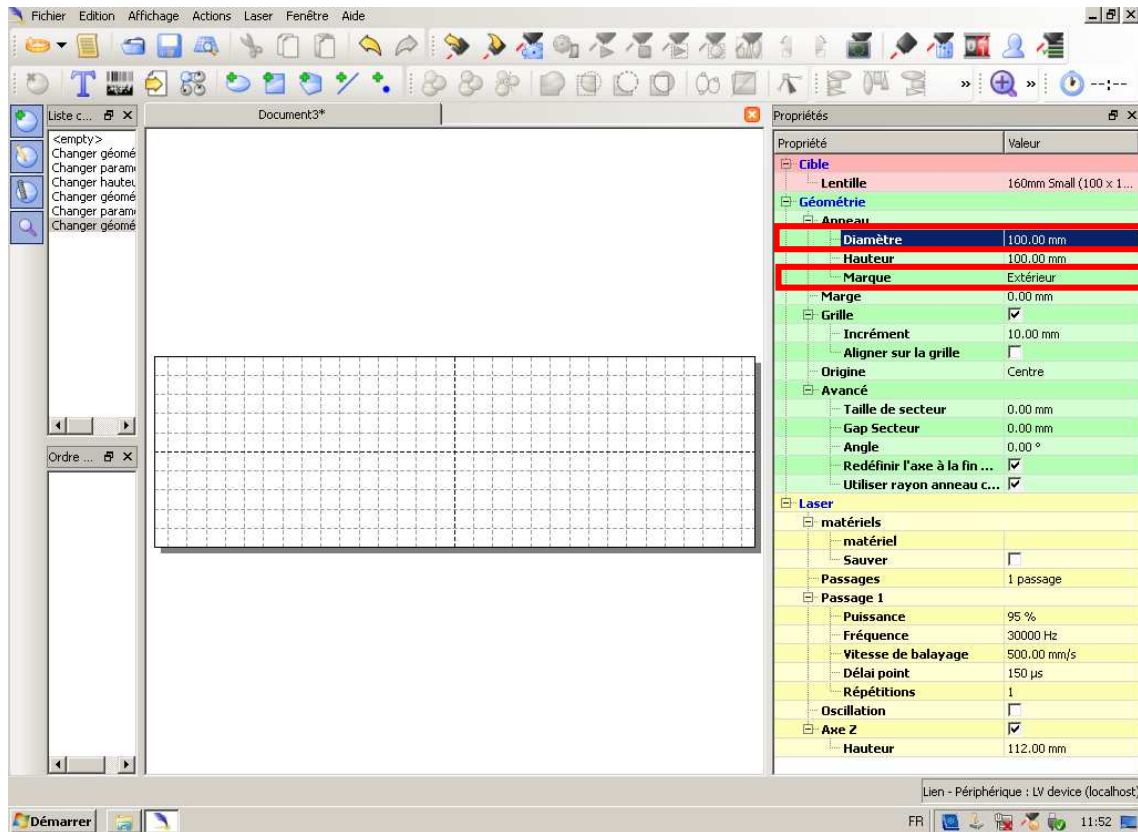
- Activate "Use ring radius as Z axis position".
- Z axis
 - Height = 112 mm for a Low capacity D spindle
 - Height = 144 mm for a high capacity D spindle



The graphical work area is displayed. The graphical work area is an expanded drawing of a circular area defined by the "Diameter" and "Height" parameters, modifiable in the document's "Property/Geometry" tab.

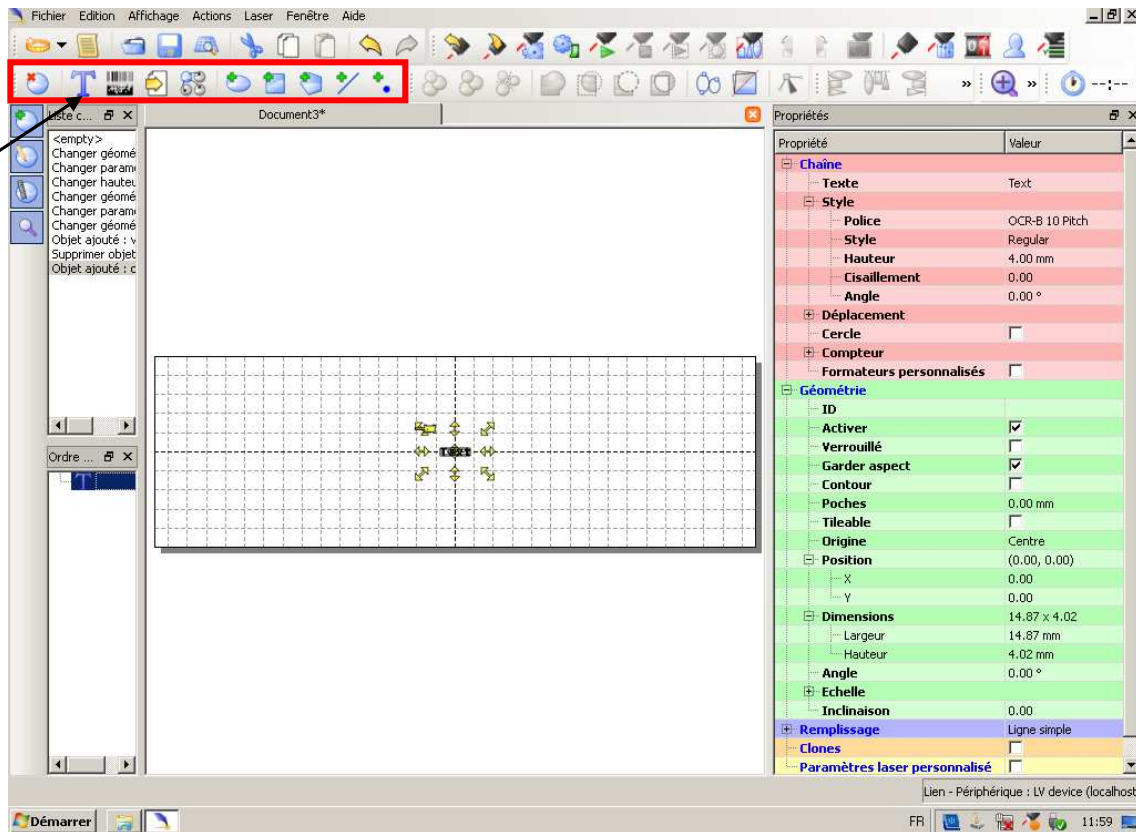
6) Re-define the graphical working area, according to:

- The diameter of the part to be marked.
- Marking on the inside or outside.



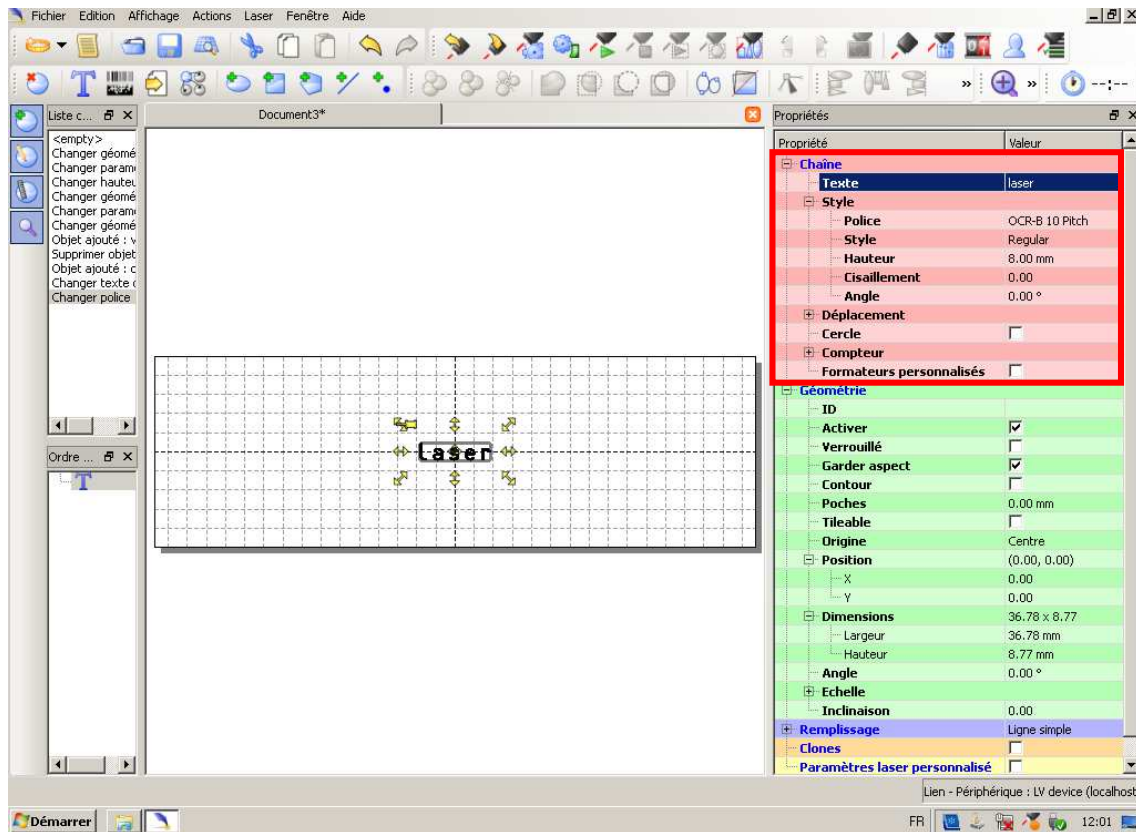
The new graphics zone is displayed.

7) Click on the "Text string" icon in the "Insert objects" tool bar to add a text string to the graphics zone.



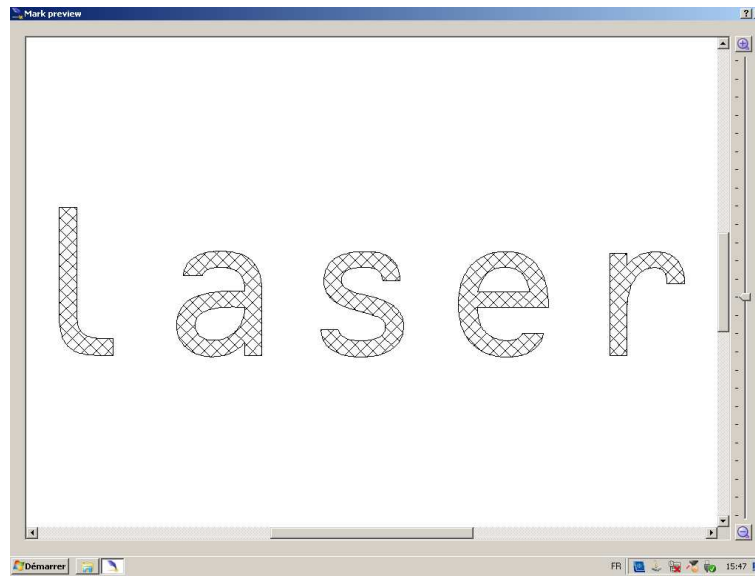
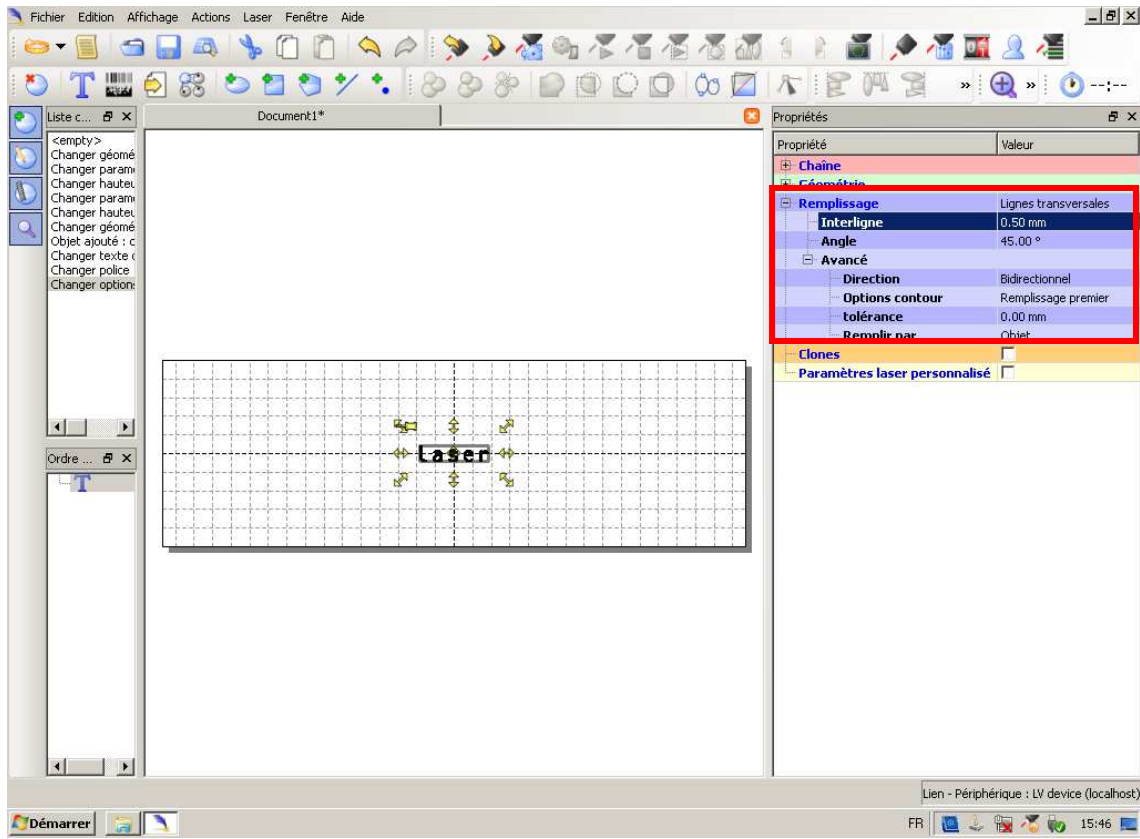
It is possible to add other objects to the document (1D code, 2D code, logos, images, shapes, etc.) from the "insert objects" tool bar.

8) Edit the character string's properties, such as value, font, style, etc., using the "Properties/String" tab:



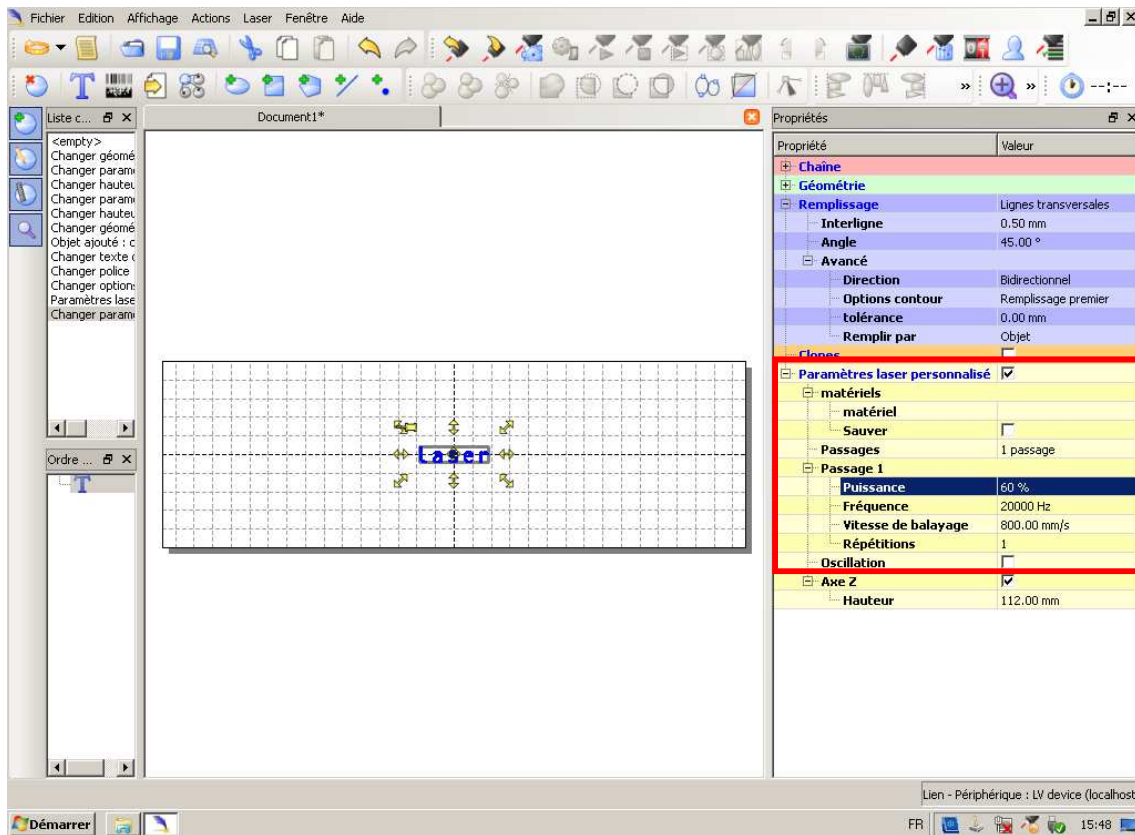
The **Properties** tab, available for documents and objects, allows you to modify properties, in order to achieve your marking needs. You can customise the parameters which define how the objects will be engraved, particularly the size, origins, fill, laser parameters, etc.

9) Edit the fill properties, such as the type of fill, the inter-line distance, etc. via the "Properties/Fill" tab:



10) If you want to have a different rendering between several objects in a single marking file, you can customise the laser parameters for each object.

- Tick the "Custom laser parameters" box in the object properties tab.



You can enter different parameters from the general parameters. The object in the graphics area turns blue to tell you that its laser parameters are different from the general laser parameters.

Your file is complete. To start marking, see the **Project and mark your file** paragraph.

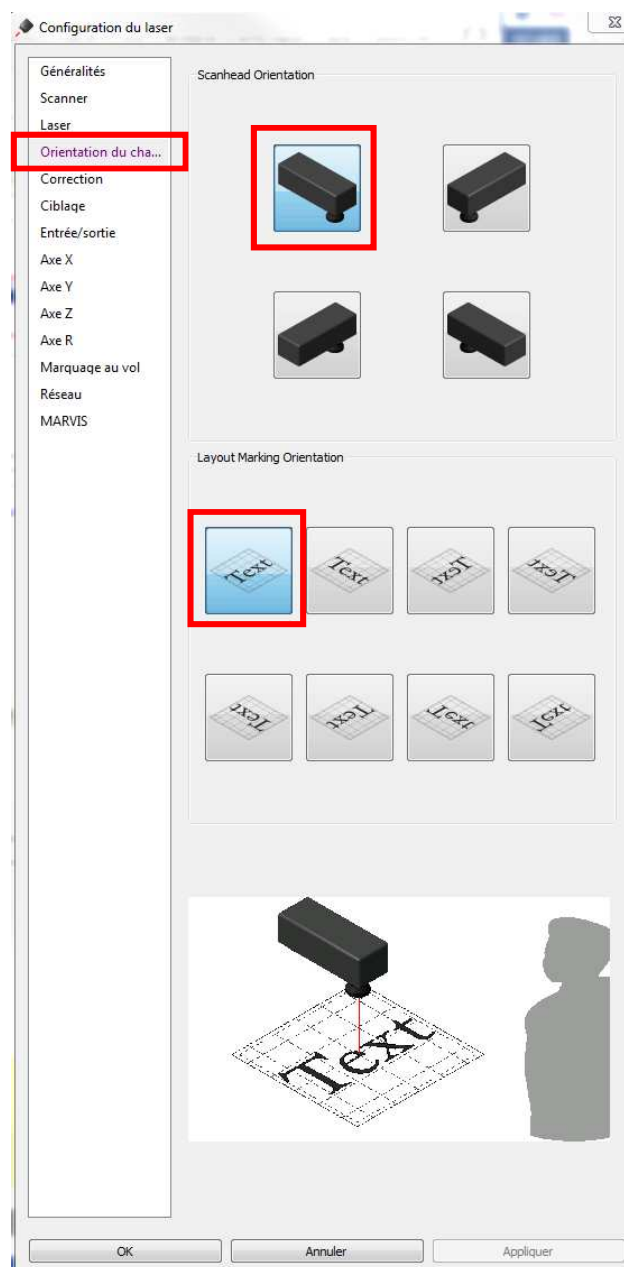
10.3.1. Setting up the D spindle

It is necessary to indicate the position of the D spindle in relation to the marking head, to define the position of the graphics area. On the GraphiX machine, the D spindle is positioned on the left of the head. Consequently, it is necessary to switch the X and Y axes and to reverse the X axis.

In the GraphPro – Laser editor software, click on "Laser configuration" in the "Laser" tool bar.

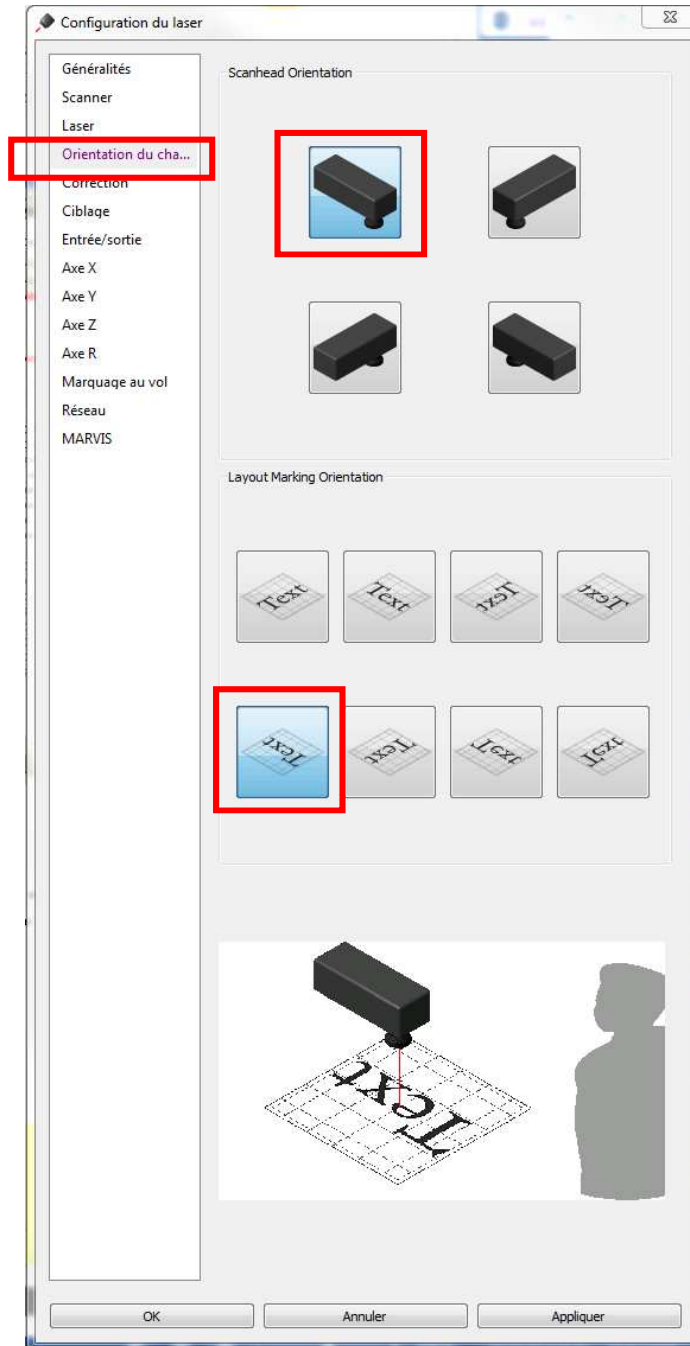
In the "Field orientation", tick the boxes as below:

- 1) Normal Mode : plan marking



Click on "Apply", "OK"

2) Marking mode with D spindle:



Click on "Apply", "OK"

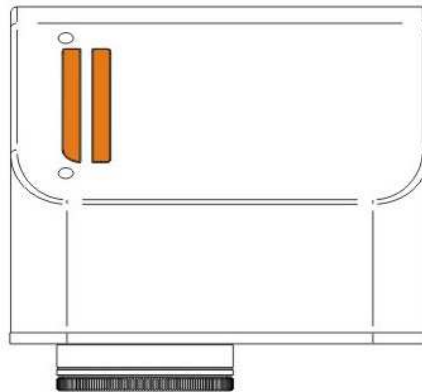


If you don't want to use the D spindle, to mark revolving parts, you can still leave the D spindle connected. However, you must control the parameters mode on the "field orientation" tab.

10.4. Projecting and marking your file

10.4.1. Flat file

When the door is open, the indicator on the marking head is on and a steady orange.



Before projecting the file, it is essential that the focussing distance is set to obtain a realistic projection. **(See [6. Identification of the components](#) paragraph)**

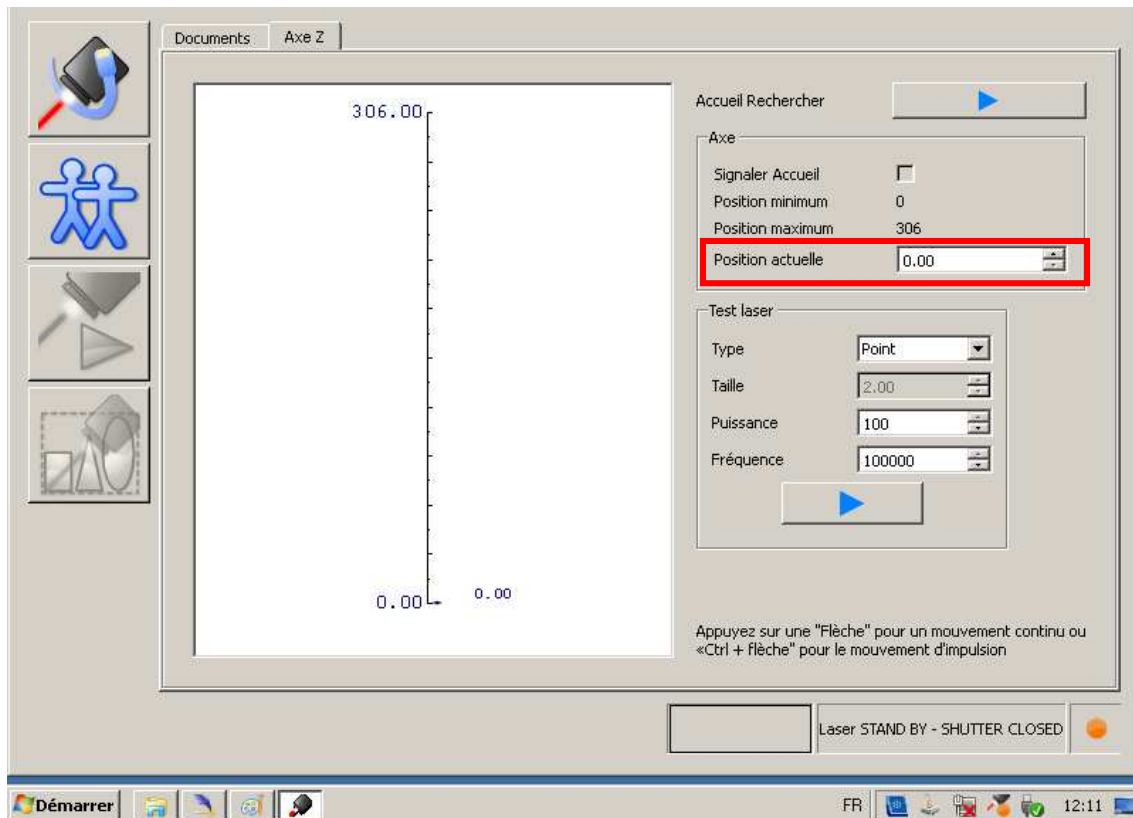


Remove the protective cap from the lens.

- 1) Position the part to be marked inside the machine.
- 2) Manually triggered electric column option

Using the "Z axis" selector, move the marking head so as to direct the two beams at a single point (with an F160 lens).

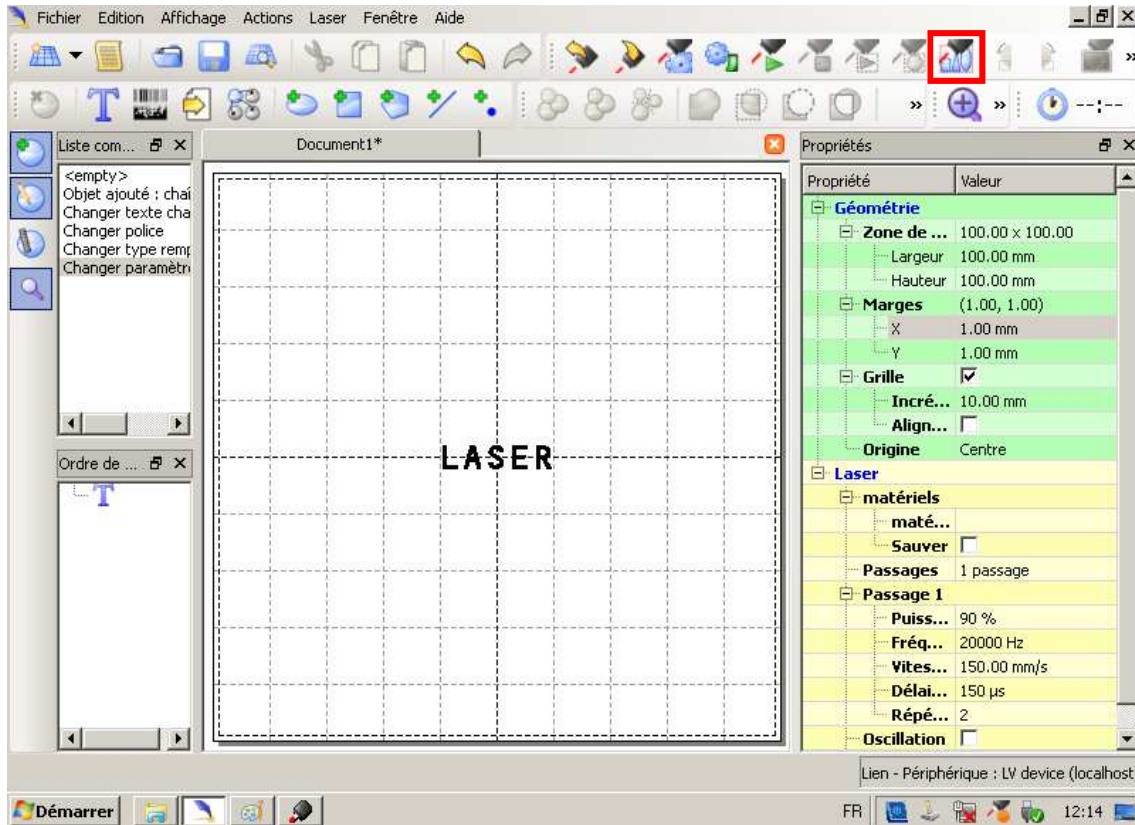
- 3) Option with electric column controlled by the marking file
 - Press the "Show laser engine" button on the "laser" tool bar or double click the "GraphPro – Laser Engine" shortcut on the desktop to open the Laser Engine application.
 - In the "*current position*" field on the "Z axis" tab enter the thickness of the part to be marked.



For a part with different thicknesses, see the [7.5 3D Mark Option](#) paragraph.

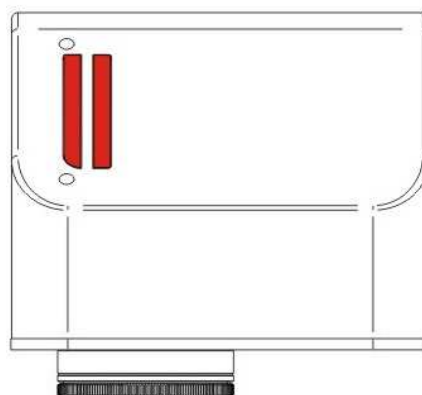
- Press "enter". The marking head moves automatically to set the focussing distance. You can verify the setting by ensuring that the two beams merge at a single point. (with an F160 lens)

- 4) In the "GraphPro – Laser editor" software, press the "Overall limits" button in the "Laser" tool bar to project the overall marking file and position objects within the marking field:

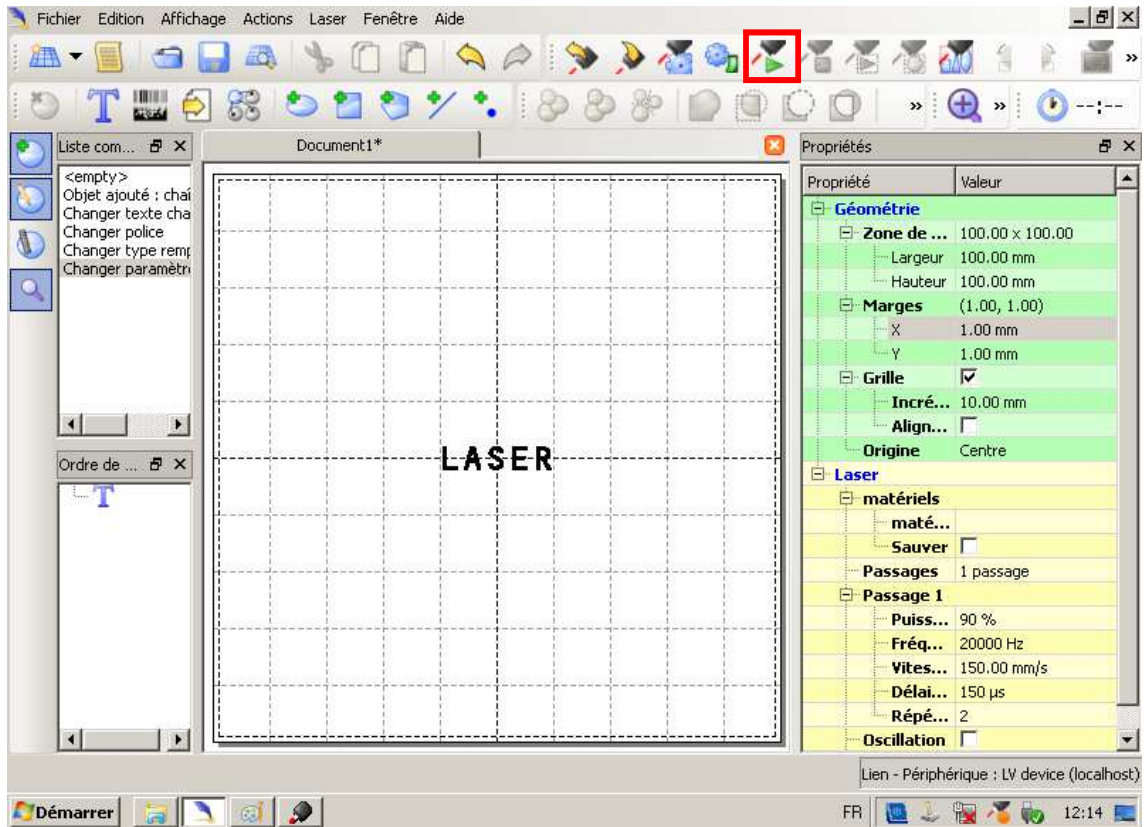


You can project objects individually by clicking the "Limits on selection" button in the "Laser" tool bar. (Lock them if a single object is active in the file)

- 1) Move the part or objects in the graphics area, if necessary.
- 2) Press the "overall limits" or "limits on selection" button again to stop the projection.
- 3) Close the machine door. The indicator light on the marking head turns red.



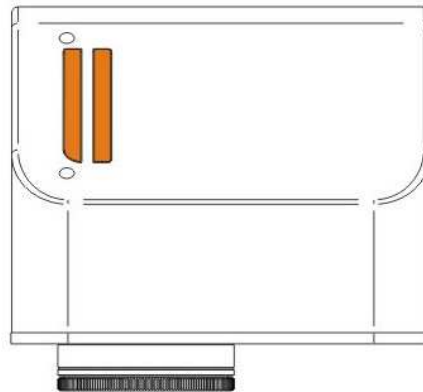
4) Press the "Send marking" button in the "Laser" tool bar to start the marking process:



You can stop marking using the "stop" buttons on the "laser" tool bar or on the control desk.

10.4.1. Ring file

When the door is open, the indicator on the marking head is on and a steady orange.



Before doing any projection, it is essential that the focussing distance is set to obtain a realistic projection.

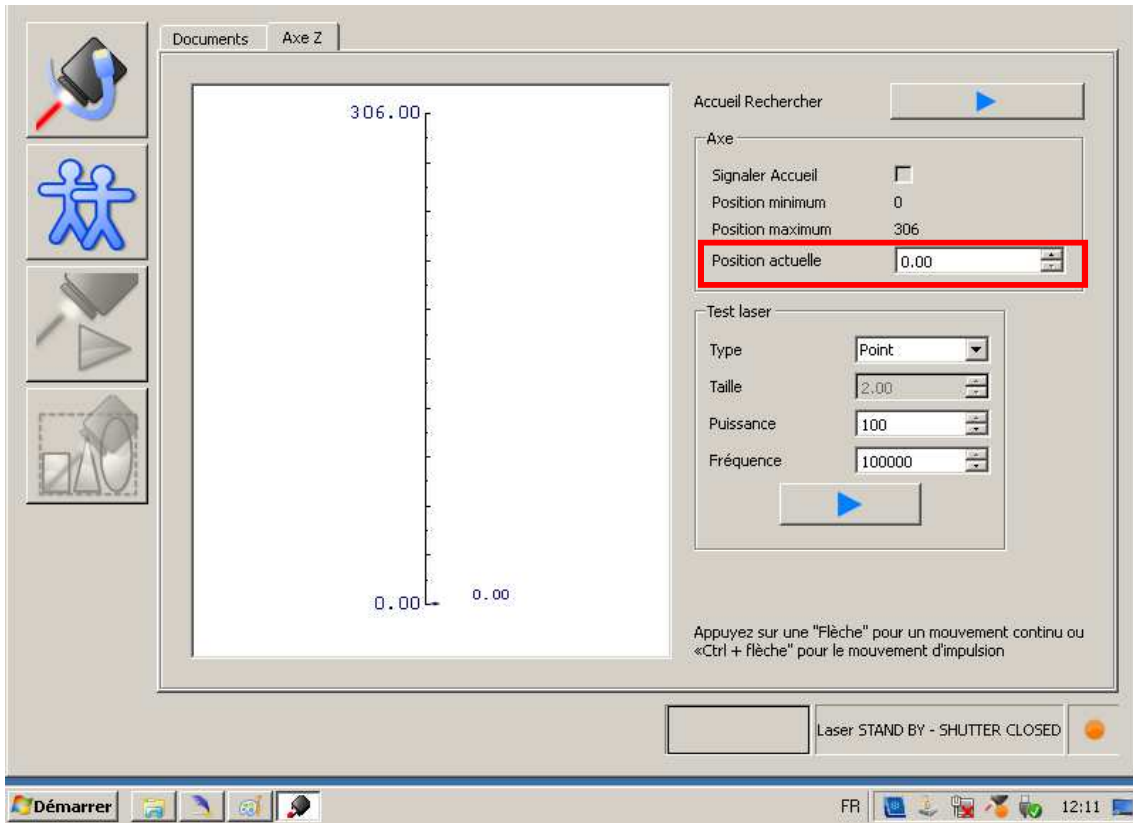


Remove the protective cap from the lens.

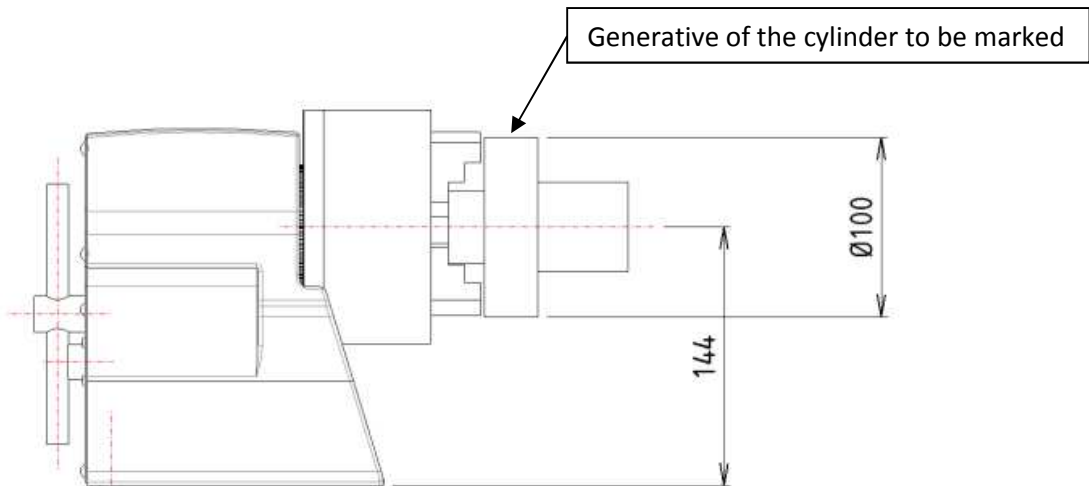
- 1) Set the part to be marked on the D spindle.
- 2) Manually triggered electric column option

Using the "Z axis" selector, move the marking head so as to direct the two beams at a single point (with an F160 lens).

- 3) Option with electric column controlled by the marking file
 - Press the "Show laser engine" button on the "laser" tool bar or double click the "GraphPro – Laser Engine" shortcut on the desktop to open the Laser Engine application.
 - In the "*current position*" field in the "Z axis" tab, enter the height of the part to be marked.



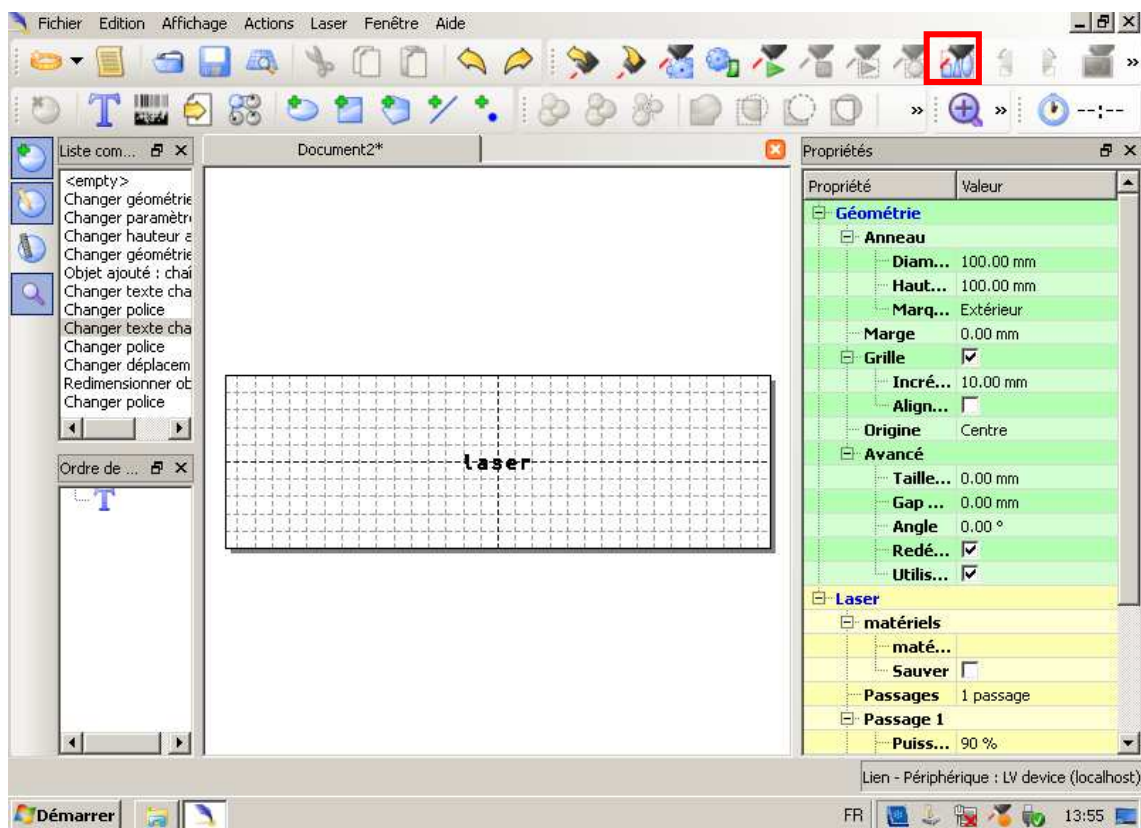
For example, for a part with a diameter of 100 mm, the height of the part to be marked will be the distance between the base and the part's axis plus the part's radius.



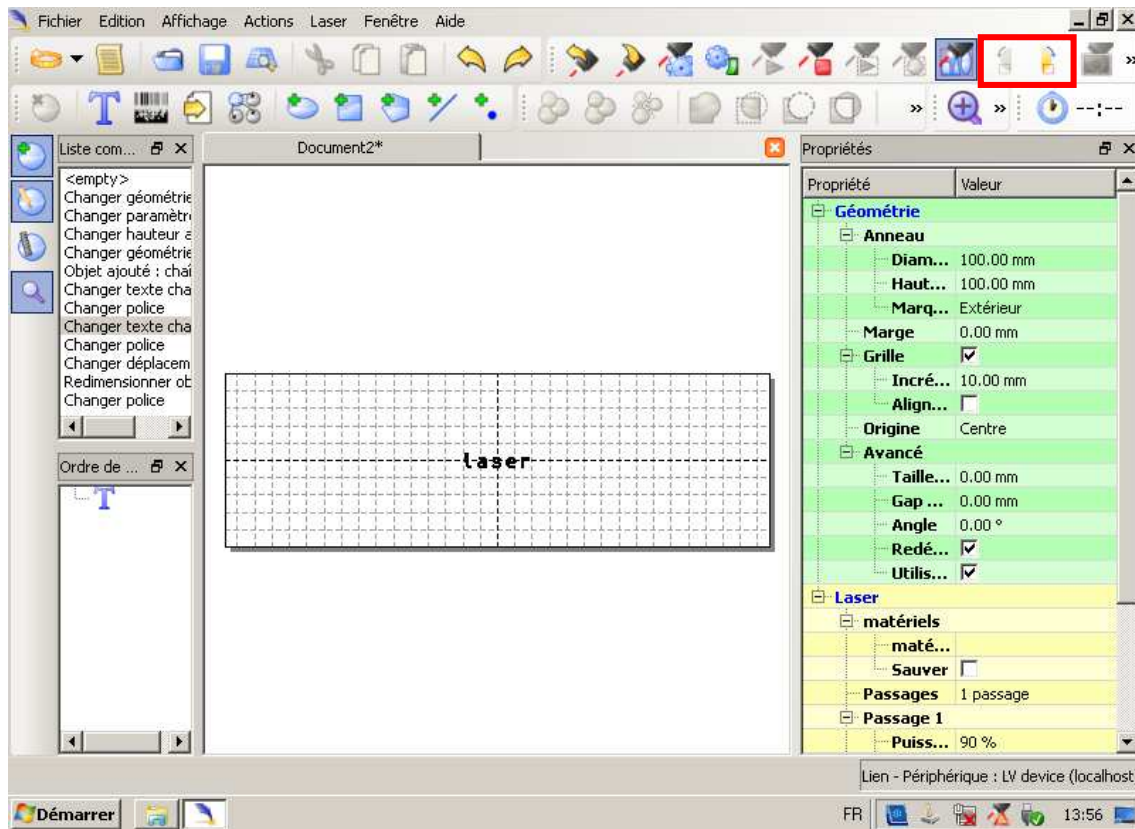
Distance between the base and the part's axis on LC spindle D = 112 mm (see data sheet)

Distance between the base and the part's axis on HC spindle D = 144 mm (see data sheet)

- Press "enter". The marking head moves automatically to set the focussing distance. You can verify the setting by ensuring that the two beams merge at a single point. (with an F160 lens)
- 4) In the "GraphPro – Laser editor" software, press the "Overall limits" button in the "Laser" tool bar to project the overall marking file and position objects within the marking field:

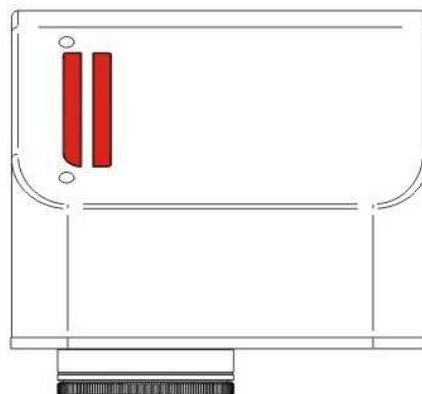


- 5) For a revolving part, the projection will be done letter by letter. Press the "Next sector limits" or "previous sector limits" button to move from one projection to another.

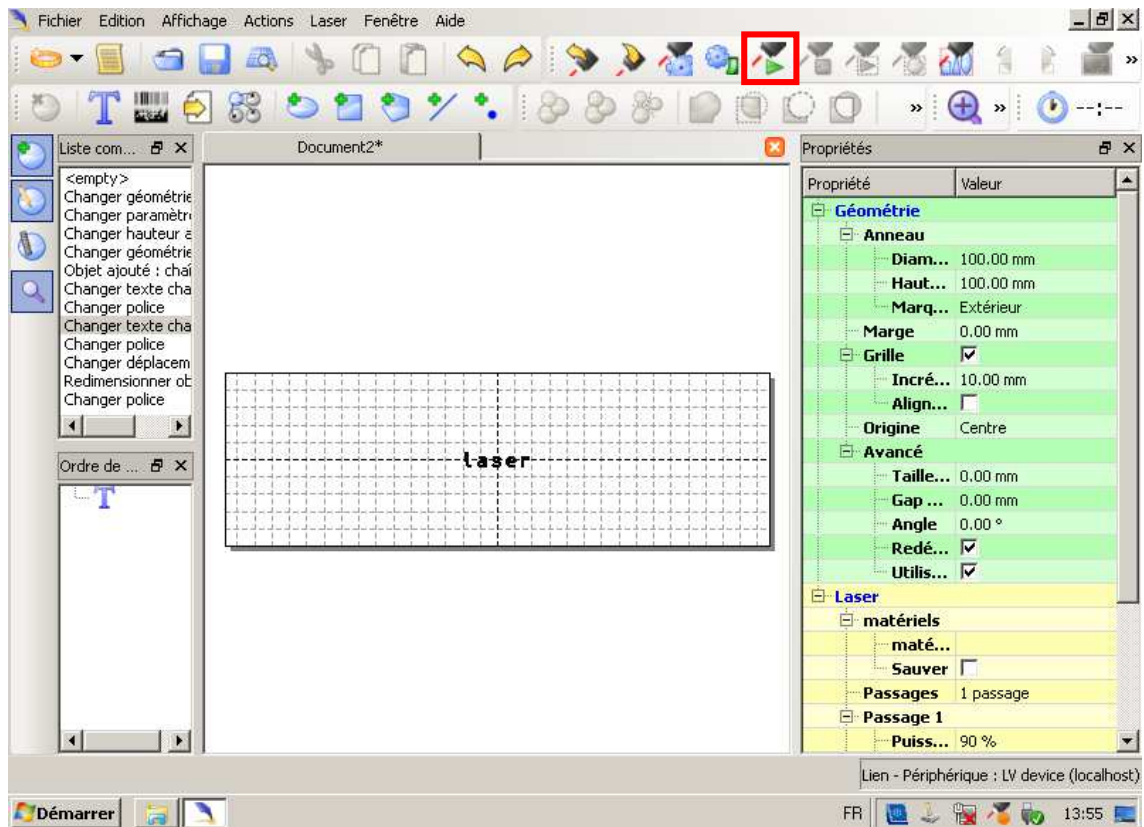


You can project objects individually by clicking the "Limits on selection" button in the "Laser" tool bar. (Lock them if a single object is active in the file)

- 6) Move the part or objects in the graphics area, if necessary.
- 7) Press the "overall limits" or "limits on selection" button again to stop the projection.
- 8) Close the machine door. The indicator light on the marking head turns red.



9) Press the "Send marking" button in the "Laser" tool bar to start the marking process:



You can stop marking using the "stop" buttons on the "laser" tool bar or on the control desk.

10.5. 3D Mark option



This option allows a part to be marked on faces with different thicknesses.

You can enter a different thickness in the custom parameters for each object within your marking file.

When you start marking, the marking head moves to adjust the working distance between each object.



When projecting objects, you should use only the "limits on selection" function and manually set the working distance between each projection using the "GraphPro – Laser Engine" application.

10.6. Save your files

You can save your marking files on the computer (record D or Device) or on an outside device. (*Voir [8.4 Advanced operation](#) Paragraphe*).



Do not save your marking files on the record C of the computer. These will be lost during the next restart.

10.7. Switching off the laser

- 1) Save your work and close all open applications.
- 2) Click the "start" button and then "Stop" on the computer".

The message "Shutting down" appears on the screen. Once the message has disappeared, you can stop the machine by pressing the main switch. The red button is off.

11. Auto, semi-automatic and manual modes

11.1. Automatic mode

Auto mode is the default operating mode.

You can select "auto" mode by click on the button in the "laser" tool bar.

If you select Manual mode, you can adjust the laser's parameters or send the documents to marking.

When the application starts in Auto mode, the document or draft saved on the peripheral and defined by default is automatically sent to marking.

In the case of a draft, the documents sent to marking will depend on the way in which the programme was written. (See the draft Editor Help for further information.) For example, a programme may be used to automate operations such as updating the counter.

Note that, in order to use all the features of GraphPro - Laser Editor, (laser configuration parameters), you must change to Manual mode.

Auto mode is very useful in working environments where the operator assigned to the marking is not authorised to edit the marking file or where complex drafts have to be run.

11.2. Semi-automatic mode

You can select "Work" mode by clicking on the button in the "laser" tool bar. This mode is particularly useful when marking short or medium length series, by using the re-positioning tool.

If you select "Work mode", the "Start" button on the control unit becomes active. You can then chain together the marking cycle starts and reduce the cycle time.

All the laser parameters are locked to prevent any dangerous modification of the marking file.

11.3. Manual Mode

You can select "manual" mode by clicking on the button in the "laser" tool bar.

If you select Manual mode, you can adjust all the laser's parameters or send the documents to marking.

11.4. Advanced operation

For more information on the GraphPro software's possibilities, please refer to the software user manual supplied.

This describes all the functions available for configuring the software and carrying out the most complex marking.



12. Maintenance and routine care

12.1. General information

Systematic and thorough care is essential for ensuring safety in operation and maximising the machine's service life.

First level care concerns mainly inspection and cleaning.

In the following pages, we give care instructions which should be followed at regular intervals. Periodic servicing of the machine will also result in less frequent breakdowns, leading to improved availability and greater accuracy.



Never use air at a pressure of more than 4 bar when cleaning the machine's components.



When doing any work on the machine, to prevent anyone switching it on or inadvertently operating the control unit, it is essential that it is made safe and a notice displayed on the control unit: "WORK IN PROGRESS - DO NOT SWITCH THE MACHINE ON!«

12.2. First level machine servicing

Interval	Weekly	Monthly
General cleaning (lens, marking area)	X	
Check the controller air filter		X
Check the extraction filter blockage indicator	X	
Check the brushes (Accessory "Side opening for bar passage")	X	X

12.3. Troubleshooting tips


- 1) The main switch indicator lamp is not on.

Check the fuse. Replace with a similar fuse, if necessary.

Check the condition of the power cable.

Check that there is power at the mains socket.

- 2) The marking head indicator lamp flashes green all the time.

Connect the laser source to the computer. Double click the GraphPro - Laser Engine icon on the desktop. The  icon appears and the indicator light changes to a steady green.

- 3) The "send to marking" command does not start marking but a simulation cycle.

Check that the door is correctly closed (red indicator light on the marking head and no red pointer on the part).

- 4) The part is not marked.

Check that the protective cap has been removed from the lens.

Check the focus distance according to the lens used.

Check the marking parameters for the material to be marked.

- 5) The "Start" push button does not work.

Change to Automatic or Semi-Automatic mode to activate the "Start" button.

- 6) The tool bars are locked.

Change to manual mode to access all parameters and adjustments.

- 7) The extraction system does not start.

Check that there is power to the system.

Check that the connection cable is in place.

12.4. Spare parts

Référence	Désignation	Quantité
GX-M-0002	Door balancing spring	2
GX-M-0004	Door balancing pulley	4
GX-M-0014	Door roller	6
GX-M-0020	Door side sealing profile	2
GX-M-0021	Door sealing profile	1
GX-M-0087	Laser safety window	1
GX-M-0029	Door balancing pin pusher spring	2
GX-C-0014	Contact for push button « Start » and « Stop »	2
GX-C-0015	LED bulb 24V	4
GX-C-0021	Selector manual column	1
GX-C-0023	Selector light	1
GX-C-0025	Emergency push button « Emergency stop »	1
GX-C-0028	Contact for light	1
GX-C-0035	Key selector On	1
GX-E-0005	Electronic card	1
V3-E-2017	Card for drive axis	1
GX-C-0003	IEC connector	1
GX-E-0001	5A fuse	1
GX-C-0010	Safety switch	1
GX-C-0011	Key for safety switch	1
GX-E-0002	Light 24V	1
GX-M-0048	Shaft coupling	1
MTV2-D-0006	Motor for electrical column	1
GX-C-0052	Limit sensor for electrical column	1

GX-E-0003	Screen 19"	1
GX-E-0004	Pack keyboard/wireless mouse	1
	Pad pre filter (Fume Cube) - 200225 (Pack of 4)	1
	HEPA Filter (Fume Cube) - 110536	1
	LABYRINTH pre filter F8/F9 (Alpha 200) - 202274 (Pack of 2)	1
	HEPA/CHEMICAL filter (Alpha 200) - 113505	1