

# LASER MARKING SYSTEMS



# **Operating Instructions**

Workstation CLASS/C Fibre

Workstation CLASS/C Fibre XL

This product conforms to the requirements of the Directive 2006/42/EC on machinery. The CE symbol is located on the type plate.

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We are constantly working on further developments.

Therefore, please understand that we must reserve the right to change the scope of the delivery in respect of the form, equipment and technology at any time.

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All rights under the copyright laws are expressly reserved by ACI Laser GmbH.

The manufacturer shall only be responsible for the safety characteristics of this device within the scope of the legally applicable regulations if it is operated by the user in accordance with the operating instructions and repaired by ACI Laser GmbH itself or someone appointed by and acting under the instructions of ACI Laser GmbH.

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# **Table of Contents**

#### 1 Introduction

Dear customer,

Thank you for the confidence which you have shown in us by purchasing our quality product. We would like to wish you every success with the use of the devices.

Make yourself familiar with these operating instructions before starting use. It tells you how to use the new devices correctly and safely, and takes you step by step through the actions which have to be performed before using it for the first time.

You will find more detailed information on the enclosed CD-ROM.

## 2 Important Information

Our products are developed and manufactured under strict quality monitoring to give a long and fault-free service life.

This guarantees:

- · highest quality and a long life,
- · easy and safe operation,
- functional design,
- optimization for the intended purpose.

The **Workstation** *CLASSIC* **Fibre** is state-of-the-art. The Declaration of Conformity confirms that the manufacturer has complied with the relevant directives. The CE mark is located on the type plate.

Please read these operating instructions carefully from the beginning in order to avoid errors and risks.

Reference is made to residual hazards at the relevant places in the operating instructions. Please also take note of the warning notice stickers on the device.

#### 2.1 Intended Use

The **Workstation** *CLASSIC* **Fibre** is intended exclusively for use with the following laser marking devices and the associated **Magic** *Mark* software:

#### Economy/Business Fibre DFL Ventus Marker

 Usage for the intended purpose includes observance of these operating instructions, the operating instructions of the laser marking device, the instructions in the software manual and the warning stickers on the device.

# 2.2 Improper Use

All other uses other than use for the intended purpose shall be deemed to be improper use!

The workstation must not be used by:

- persons who have not read or understood these operating instructions,
- persons who have not been instructed in the proper operation,
- persons who are under the influence of alcohol and or drugs, or
- persons whose alertness is impaired by medicines or other influences.

The workstation must not be used:

- if protective/safety devices are bridged, defective or if they cannot reliably fulfil their function,
- if there is a suspicion that direct or leakage radiation can emanate.

The supplier/manufacturer shall not be liable for personal injury or material damage resulting from improper use of the workstation itself or the safety devices.

#### 2.3 Notices in the Document

Take note of the warning notices, take the specified actions and observe the prohibitions. A warning notice warns of a possible hazard and contains recommendations for preventing the hazard occurring. Key words indicate the type of hazard, symbols emphasise this visually.

Follow the stated measures for preventing hazards to the operator or tangible material assets.

The following classification of dangers are used in these safety instructions:

#### **A** DANGER

#### **RISK OF DEATH OR SERIOUS INJURIES!**

Indication of an imminent danger, which will result in death or serious injuries if the appropriate precautionary measures are not taken.

## **M** WARNING

#### DANGER OF INJURIES AND/OR RISK OF PROPERTY DAMAGE.

Indication of an immediately impending hazard which can cause serious injuries or property damage if the appropriate precautionary measures are not taken.

## **⚠** CAUTION

#### RISK OF PROPERTY DAMAGE.

Indication of a possible hazard which may cause damages of the equipment if the appropriate precautionary measures are not taken.

Additional information on working with the device and protection of the environmental are emphasised as follows:

#### **NOTICE**

Useful additional information and tips!

#### **ENVIRONMENT**

Protect the environment!

Instructions for observing environmental protection regulations!

## 2.4 Warranty

The manufacturer guarantees that the product does not have any manufacturing or material defects.

The warranty period shall be 12 months from the dispatch date in as far as no other contractual ruling has been made.

The scope of warranty is limited to the repair or replacement of the product supplied by the manufacturer.

The manufacturer is responsible for returning repairs under warranty to the customer, the customer is responsible for returning the device to the manufacturer.

The manufacturer does not accept any liability,

- if the product has been damaged by incorrect handling or operation, or as a result of improper use,
- if seals on the device have been broken,
- · for damage caused by use under unauthorized environmental conditions,
- for consequential damage.

## 2.5 Technical Customer Service

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#### NOTICE

The workstation may only be maintained and repaired by the manufacturer. Any manipulations on the device or breaking the warranty seal will void any claims under warranty.

# 3 Safety

# 3.1 Basic Safety Instructions



The following safety instructions have fundamental importance for the use of the workstation, and for its care and maintenance.

They must always be followed and are only stated centrally here.

## Laser safety



If used properly, the workstation with an integrated laser marking device can be operated in laser protection class 1.

The laser protection screen in the viewing window is matched to the characteristics of the laser marking device. The specification corresponds at least to the required protection level and can be taken from the adhesive label on the window.

- Only use the workstation and laser marking device in the combination supplied by the manufacturer!
- If the protection screen is damaged, the device must not be operated.

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- Chemical and physical reactions during the laser marking can cause
  - gases,
  - vapours,
  - aerosols.
  - dusts.
  - mists or
  - other reaction products

to be given off from the material surface.

These may be toxic, depending upon the material being processed. The operating company must therefore provide effective extraction. Information about this can be found, for example, in the VDI Guideline 2262 1 to 3 "Air Quality in the Work Place".

#### General

- Read the Operating Instructions, and keep them at hand at all times.
- Follow the Operating Instructions for the laser marking device.
- Follow the Operating Instructions for the air conditioner and the instructions for any other devices made by other manufacturers (for example extraction units).
- Do not mark any easily flammable or combustible materials.

## Start up

- Each time before starting up, ensure that all safety devices are mounted and working perfectly.
  - Covers
  - Door mechanism
  - Emergency stop button
- · Never use the device system immediately after large temperature changes. Condensation water may damage the device.

## Safety

## Operation

- The workstation may only be operated by trained personnel.
  It is advisable to log both the initial training as well as the regular refresher courses.
- The device may only be operated when connected to an alternating voltage supply corresponding to the specifications on the type plate.
- The effectiveness of the protective conductor must be regularly checked and confirmed by an authorized skilled worker.
- If a defect occurs in the workstation, it must be disconnected from the power supply system and secured against being switched on again.

#### Maintenance/care

- Maintenance and repair work on the workstation may only be performed by the manufacturer.
- Disconnect the device from the power supply before starting cleaning and care tasks.
- Do not touch the electrical/electronic components.

# 3.2 Labels at the Device

# Warning signs



The warning signs on the device indicate possible residual hazards.

• On the workroom door: Warning about laser radiation!

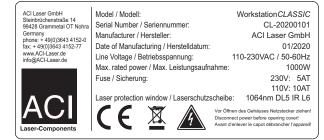




# Type plate

The type plate on the rear of the workstation contains information about:

- · Serial number,
- Manufacturer.
- · Date of manufacture,
- · Operating voltage/frequency range,
- · Power consumption,
- · Fuse,
- · Laser protection screen on the device.



# 4 Description

# 4.1 Intended Purpose

The manual workplace solution **Workstation** *CLASSIC* **Fibre** is characterized by its large workroom. You can mount workpieces with an area of up to 340 mm x 360 mm on its T-slot plate.

Depending on the laser system and objective used, a marking field of maximum 180 mm x 180 mm is available.

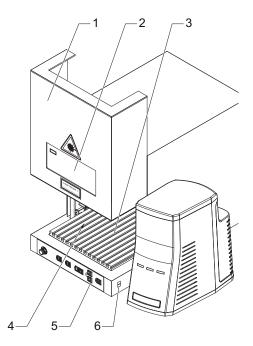
The integrated electrically driven Z axis allows marking on workpieces with differing heights. The stroke length of the Z axis is 150 mm.

A focus finder (consisting of two pilot lasers) assist the operator in setting up the proper working distance within a few seconds.

The electrically driven safety door enables workpieces to be changed easily.

## 4.2 Views of the Device

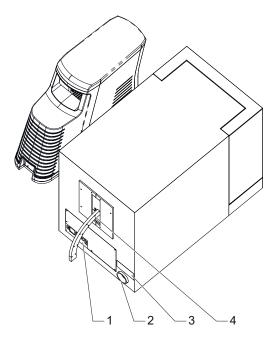
#### Front side



- (1) Safety door
- (2) Viewing window
- (3) T-slot plate
- (4) Workroom
- (5) Control panel
- (6) Power switch

There are also additional connections in the workroom.

# Rear side



- (1) Connections rear side
- (2) Extraction connector
- (3) Type plate
- (4) Fiber laser cable

## Description

# 4.3 Technical Specifications

Laser marking system Economy/Business Fibre: DFL Ventus Marker

Usable mounting area of the T-slot plate

Width x Depth:

340 mm x 360 mm

Adjusting the height with the focus finder function

Motorized Z axis:

Linear axis with stepper motor drive

Stroke length: 150 mm

Operation: Integrated membrane keyboard/operating software

Focus finder: 2 pilot laser diodes

Positioning and repetition accuracy

Z axis:

< ± 0.15 mm

Safety door

Automatically movable

Max. component heights and marking fields

	Objective	Max. compo- nent height	Marking field
CLASSIC Fibre	F-Theta 163	150 mm	110 mm x 110 mm
CLASSIC Fibre XL	F-Theta 163	270 mm	110 mm x 110 mm
	F-Theta 254	143 mm	180 mm x 180 mm

Maximum working areas

The working areas correspond to the physical marking fields of the laser systems.

**Laser protection screen** Width x Height: 276 mm x 200 mm

Specification: Depends on the type of laser device used

Yb:fibre laser	1040 - 1100 nm	D AB6 IR AB6 (DIN EN 12254)
	>1100 - 1185 nm	D AB6 IR AB6 (DIN EN 12254)
	>1185 - 1215 nm	D AB5 IR AB5 (DIN EN 12254)

The listed laser protection screen specifications are the minimum requirements for the protective windows. Depending on the application, laser protection screens with higher levels of protection may be installed. The specifications of the laser protection screen can be found on the adhesive label on the window.

**Lighting** Integrated workroom lighting

**Extraction** Connection for external extraction unit is ready

Operation Integrated membrane keyboard/operating software

Laser protection class

Interfaces USB 2.0

Power connection: Connector for non-heating apparatus, filtered

Electrical data Connection values: 230 V/ 5 A/50 Hz

110 V/10 A/60 Hz

Power consumption (typical): Max. 400 W plus

laser marking device (max. 600 W)

Fuse: 230 V: 5 A

110 V: 10 A

## Description

**Operating conditions** Working temperature: 15°C - 35°C

Air humidity (rel.): 30% - 85%, not condensing

Weight without laser 45 kg

Options • Workpiece holders

· Laser extraction unit

· Rotary module

Foot switch

# 4.4 Scope of Delivery

Workstation,

connecting cable for USB 2.0,

· laser interface cable,

· power cable,

· control cable interlock,

extraction hose, internal,

· operating instructions.

#### Optional:

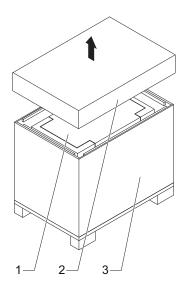
- Extraction unit with control cable and extraction hose,
- · rotary module,
- · foot switch.

#### **NOTICE**

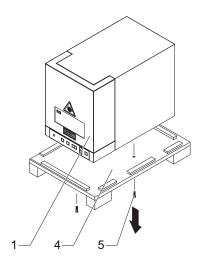
Check that the delivery is complete and undamaged. Please contact our service department if you have any queries.

# 5 Installation

# 5.1 Unpacking



- (1) Workstation
- (2) Lid
- (3) Carton



- (4) Pallet
- (5) Fixing screws

#### Installation

The workstation is supplied packed in a carton on a pallet. It is screwed to the pallet, and secured by tensioning straps.

The accessories are located in the workroom.

- 1. Remove the tensioning straps.
- 2. Remove the lid (2).
- 3. Remove the carton (3).
- 4. Lift the pallet (4) bearing the workstation (1) with a suitable device (such as a lifting truck), and remove the fixing screws (5).

#### **NOTICE**

The Workstation CLASSIC Fibre weighs 45 kg.

- 5. Place the device on a suitable flat surface.
- 6. Remove the accessories from the workroom, and put them in a safe place.
- Check the scope of delivery.

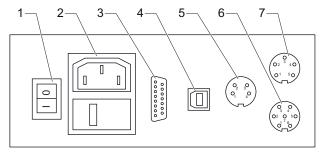
# 5.2 Setting Up

- 1. Place the workstation on a stable, flat table.
- Use a spirit level to check that the workstation is horizontal.
   It can be adjusted by screwing the four feet in or out as necessary.

# 5.3 Assembly

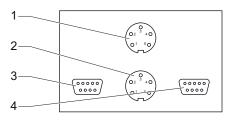
## 5.3.1 Connections

#### Rear side



- (1) Power switch
- (2) Power input module with fuse module
- (3) Laser I/O
- 4) USB interface to the PC
- (5) Interlock
- (6) Extraction
- (7) External start

#### Workroom



- (1) Power 2
- (2) Power 1
- (3) Laser I/O
- (4) Adapter for rotary module

# 5.3.2 Laser Marking Device Assembly

- Fasten the laser marking unit to the mounting panel of the workstation, following the laser marking unit's operating instructions.
- 2. Connect the three connecting cables
  - laser interface cable.
  - power cable,
  - USB cable,

to the laser marking device.

## 5.3.3 Extraction Assembly

- 1. Connect the control cable between the extraction unit and the workstation.
- Connect the extraction hose.
- 3. Connect the power cable to an earthed socket.

#### **NOTICE**

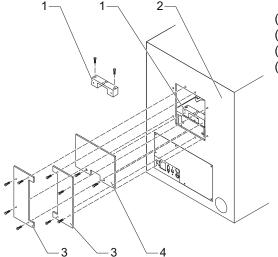
For all other work, follow the operating instructions for the extraction unit.

#### 5.3.4 Power Connection

- 1. Ensure that the device power switch is switched off.
- 2. Connect the supplied power cable to the power input module of the workstation.
- 3. Connect the power cable to an earthed socket.

# 5.3.5 Connection of Supply Cable and Fiber Laser Cable

The supply cable and the BDO fiber laser cable between the laser head and supply unit must be connected.



- 1) Mounting block
- (2) Workstation real wall
- 3) Front cover plate, 2-part
- (4) Rear cover plate

- 1. Unscrew the 2-part front cover plate, the rear cover plate and the mounting block.
- Plug in the supply cable and the BDO fiber laser cable.
   Ensure that the fiber laser cable is not kinked observe the operating instructions of the laser marking device.

Screw the mounting block, the rear cover plate and the 2-part front cover plate in finger tight.

Ensure that the cables are not pinched in the process.

#### 5.3.6 Connection with PC

Connect the USB interface on the workstation to the PC.

## 5.4 Checking the Installation

# **⚠** CAUTION

#### RISK OF PROPERTY DAMAGE.

Perform the following tests to avoid material damage.

Please check the following points again before you bring your workstation into operation.

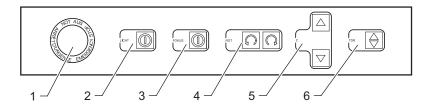
- Have the mechanical and electrical installations been performed correctly and completely?
- Does the fuse for the device correspond to the available operating voltage? (110 V: 10 AT or 230 V: 5 AT)?
- Do the environmental conditions meet the requirements (temperature, air humidity)?
- Are you familiar with the essential laser protection regulations? Have all the laser safety measures been taken?

# 6 Operation

## 6.1 Operating and Display Elements

#### Control panel

In the setting-up mode, various functions may be controlled using the buttons on the operator control panel.



- (1) Emergency stop button
- (2) Light on/off
- (3) Focus on/off

- (4) Rotation left/right
- (5) Z axis top/bottom
- (6) Open/close door

## **NOTICE**

Only the buttons enabled will be lit, depending on the current settings.

The rotary module is set up with the **Rotation left/right** (4) buttons.

## Operation

## **Emergency stop button**



The emergency stop button is located on the left-hand side of the operating panel on the front of the device.

Stop the machine by pressing the emergency stop button whenever a situation arises which poses danger to the operating personnel or the device system.

The emergency stop button stops movements of the door and axes, and breaks the laser safety circuit.

## 

DANGER OF INJURIES AND/OR RISK OF PROPERTY DAMAGE.

Before releasing the emergency stop button, ensure that the cause of the danger has been rectified!

#### **NOTICE**

After the emergency stop button has been released, the workstation has to be reinitialised.

#### 6.2 Start

#### **NOTICE**

Keep to the switching sequence on each start.

- 1. Start the laser marking device in accordance with the operating instructions.
- 2. Activate the power switch for the workstation.
- 3. Press the **Close door** button to initialize the workstation.
- When the workstation is started up for the first time, you need to enter the settings for the external units in the software.

You will find more detailed information in the software manual.

# 6.3 Handling

The system is operated via the marking software.

All operating sequences are controlled from the control PC via the laser control interface of the laser marking device.

All the parameters are exclusively entered on the keyboard of the control computer.

This also applies to operation with the optional rotary module.

#### **NOTICE**

Opening the door breaks the laser safety circuit.

#### **NOTICE**

Detailed information for using the marking software is contained in the provided software manual.

# Operation

# 6.4 Fault Finding

Problem/Fault	Possible cause	Elimination
Cut off	Emergency stop button pressed	Releasing the emergency stop button
Not referenced	Cover not initialised/referenced	Press the <b>Door close</b> button
Offline	Driver not installed	Install driver
	Device not listed in the Device manager of the operating system	Check the USB plug
	Device not switched on	Switch on the device
Axis motions very noisy	System is not aligned horizontally	Adjust the system
Door does not fully close	Foreign body in the door gap	Remove the foreign body, press the <b>Door close</b> button
Safety circuit open	Door not fully closed, there may be a flat foreign body in the door gap	Check and clear the door gap, press the <b>Door close</b> button

# NOTICE

Please contact our Technical Customer Service in the first instance if the fault cannot be eliminated as described above.

## 7 Maintenance, Repair, Care

All maintenance and repair work must be performed exclusively by the manufacturer.

We recommend you to perform maintenance at intervals of 24 months.

The right to claim under warranty is lost as soon as third parties work on or modify the device.

#### Cleaning

# **⚠** WARNING



DANGER OF INJURIES AND/OR RISK OF PROPERTY DAMAGE. Ensure that the power plug has been pulled out before starting the maintenance and cleaning work!

Clean the normally accessible areas of the workstation at regular intervals.

Do not use any sharp objects or aggressive cleaning agents for cleaning.

# 8 Scrap Disposal

#### **ENVIRONMENT**

#### Protect the environment!

For a fee, the customer will accept return of the laser device and dispose of it properly in a manner that is environmentally compatible.



Electrical and electronic equipment contains valuable materials that should be supplied to recycling or recovery.

Please dispose of electrical and electronic equipment at qualified collecting points separate from municipal waste.

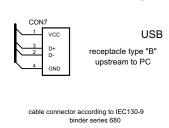


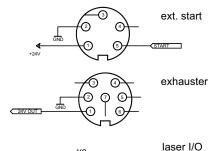
# 9 Appendix

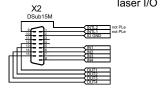
# 9.1 Wiring Diagram

# Connectors in working area power 1 power 2 cable connector according to IEC130-9 binder series 680 OUT1 (USC) OUT1 (USC) OUT2 (USC) OUT2 (USC) GND GND +24V via emergency stop +24V via emergency stop laser I/O DSub9 F laser control interface rotary module DSub9 M

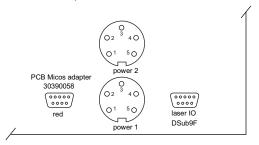
## Connectors on the rear panel



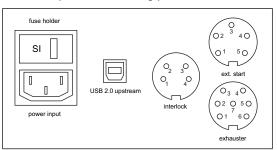




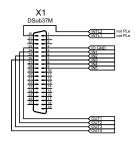
## Components inside wall



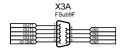
## Components mounting plate rear wall



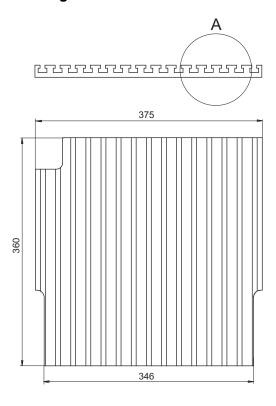
#### Connection laser interface

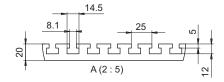


#### Connection laser I/O interior

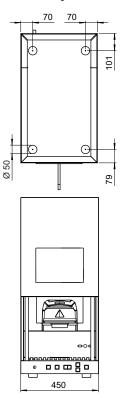


# 9.2 Drawing of the T-Slot Plate

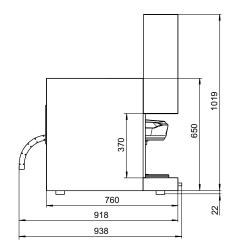


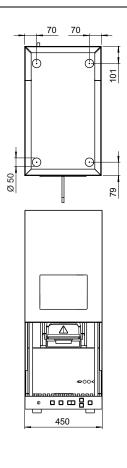


## 9.3 Assembly Dimensions

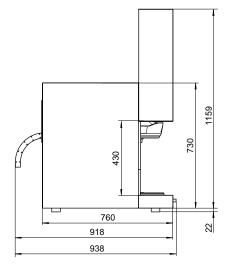


### **Workstation** CLASSIC Fibre

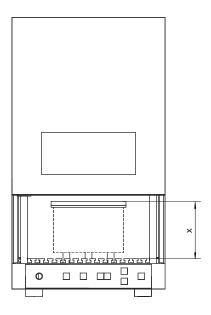




## Workstation CLASSIC Fibre XL



## 9.4 Drawing of the Axis Stroke



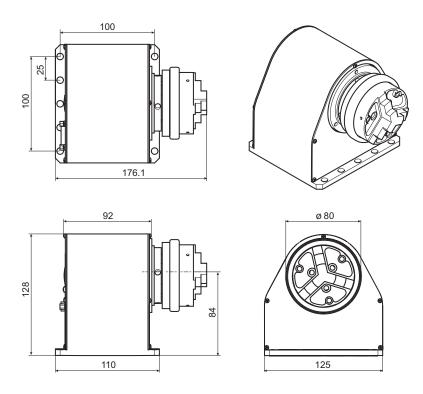
Workstation CLASSIC Fibre:

x = min. 200 mm, max. 350 mm

Workstation CLASSIC Fibre XL:

x = min. 320 mm, max. 470 mm

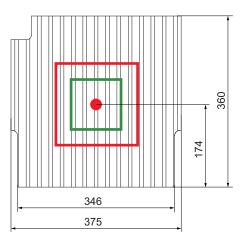
# 9.5 Illustration of the Rotary Module



## 9.6 Illustration of the Working Areas

#### **Economy/Business** Fibre

F-Theta 163 F-Theta 254



### Usable mounting area

340 mm x 360 mm

#### Marking field = working area

F-Theta 163 110 mm x 110 mm F-Theta 254 180 mm x 180 mm

#### Maximum component height

#### Workstation CLASS/C Fibre

F-Theta 163 150 mm

#### Workstation CLASSIC Fibre XL

F-Theta 163 270 mm F-Theta 254 143 mm

### 9.7 EC Conformity Declaration

We herewith declare that the device described below, by virtue of its design and construction and moreover in the type brought onto the market by us, conforms to the relevant safety and health requirements of the applicable EU Directives. We further declare that the device as defined hereinbelow conforms to class laser safety class 1.

In the event of any alteration to the device or the intended purpose which has not been approved by us, this statement shall thereby be made invalid.

Device:	Laser protection housing with marking laser			
Type:	Laser protection housing:	Marking laser:		

Applied EC directives and standards:

Directive 2014/30/EC through EN 55022:2010

Electromagnetic compatibility EN 55024:2010 + A1:2015

 Directive 2011/65/EU on Hazardous
 EN 61000-3-2:2014

 Substances (RoHS)
 EN 61000-3-3:2013

EN 50581:2012

Directive 2006/42/EC through Machines EN ISO 12100:2010

EN ISO 13857:2008 EN 349:1993+A1:2008 EN 60204-1:2006+A1:2009

EN 60825-4:2006+A1:2008+A2:2011

Representative for compiling technical documents: Mirko Wunderlich, Steinbrüchenstraße 14, 99248 Grammetal OT Nohra

Signed on behalf of the manufacturer by: Nohra, 01.08.2019

ACI Laser GmbH Mirko Wunderlich, Geschäftsführer

Steinbrüchenstraße 14, 99428 Grammetal OT Nohra

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Operating Instructions for Workstation CLASS/C Fibre/Workstation CLASS/C Fibre XL

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