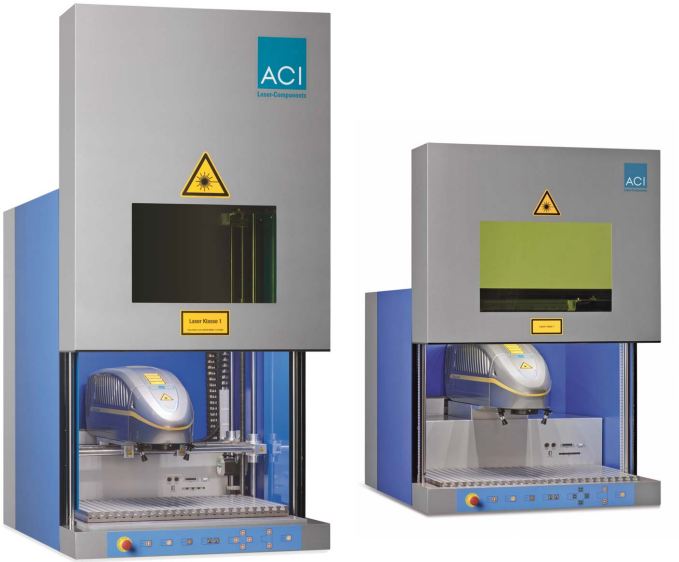
LASER MARKING SYSTEMS

ACI
Laser-Components



Operating Instructions

Workstation *COMFORT*
Workstation *PROFESSIONAL*

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

Manufacturer: ACI Laser GmbH
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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.

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.

Last update: 02/2019-05

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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** *COMFORT* and the **Workstation** *PROFESSIONAL* are state-of-the-art devices. 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** *COMFORT* and the **Workstation** *PROFESSIONAL* are intended exclusively for operation using the following laser marking units and the corresponding **Magic** *Mark* software:

Business *CO2*	**CO** *Two* **Marker**
Economy *Diode*	**DPL** *Smart* **Marker**
Business *Diode*	**DPL** *Magic* **Marker**
	DPL *Genesis* **Marker**
	DPL *Nexus* **Marker**
	DPL *Fortis* **Marker**
	DPL *Nobilis* **Marker**
	DPL *Lexis* **Marker**
Economy/Business *Fibre*	**DFL** *Ventus* **Marker**

  A different design of the workstation for the **Economy/Business***Fibre* laser marking devices than for the other laser types is provided.
- 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:

⚠ 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.

⚠ 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 under warranty

- 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 unauthorised environmental conditions,
- for damage to the device if it is not returned in its original packaging,
- 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.

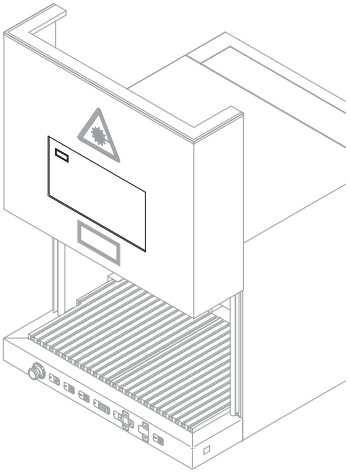
3 Safety

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.

Emissions

- 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.

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

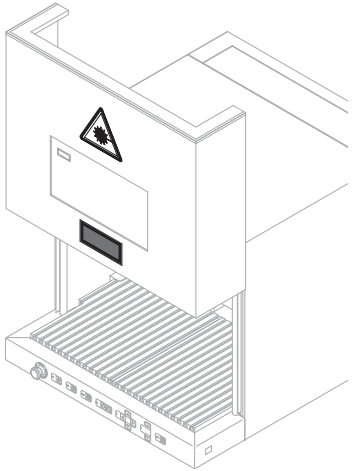
- Maintenance and repair work on the workstation may only be performed by the manufacturer.
- Disconnect the device from the power supply before starting cleaning and care tasks.
- Do not touch the electrical/electronic components.

3.2 Labels at the Device

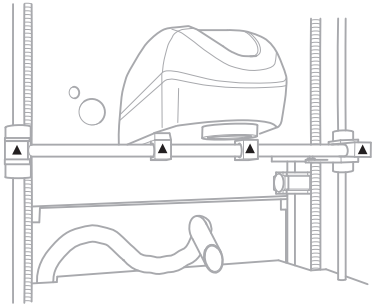
Warning notices

The warning signs on the device indicate possible residual hazards.

- On the workroom door: Warning about laser radiation!



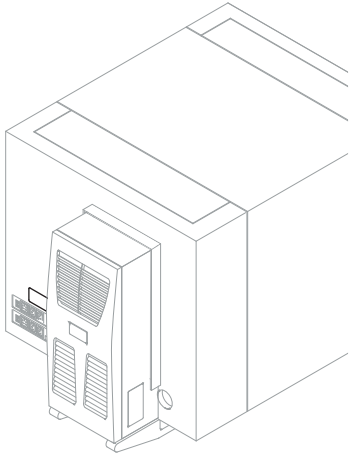
Workstation *COMFORT*



Workstation *PROFESSIONAL*

- In the workroom: Warning of moving axes when the door is open!

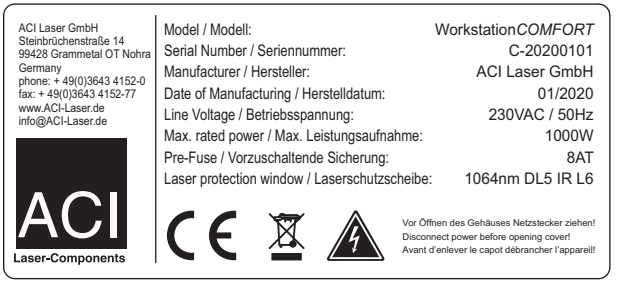
Type plate



Workstation *COMFORT*

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

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



4 Description

4.1 Intended Purpose

The manual **Workstation** *COMFORT* resp. **Workstation** *PROFESSIONAL* are characterized by their big workrooms which have T-slot plates able to hold work pieces having a surface area of 600 mm x 400 mm or, correspondingly, 600 mm x 600 mm.

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

The **Workstation** *PROFESSIONAL* also has an integrated X gantry to extend the working area up to 580 mm, depending on the objective in the X direction.

The integrated electrically driven Z axis allows marking on workpieces with differing heights.

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

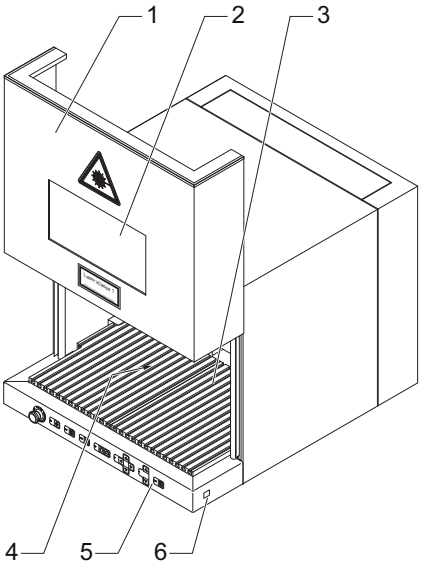
A pilot laser preview function is integrated into the laser system and also provides for the easy positioning of the labelling content in X-Y direction.

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

4.2 View of the Device

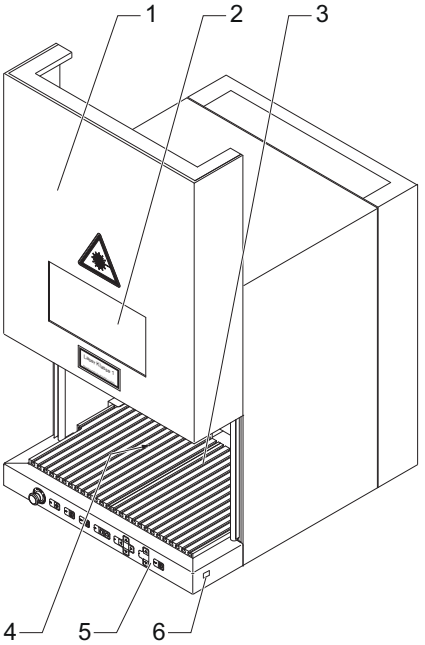
Front side

Workstation *COMFORT*



(1) Safety door
(2) Viewing window
(3) T-slot plate

Workstation *PROFESSIONAL*



(4) Workroom
(5) Control panel
(6) Stand-by button

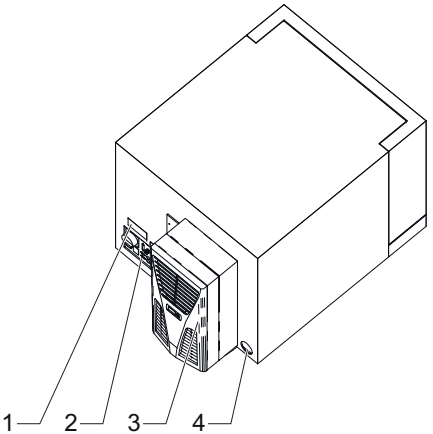
The workroom also contains the following:

- Additional connections
- Mounting panel for laser marking device

Rear side

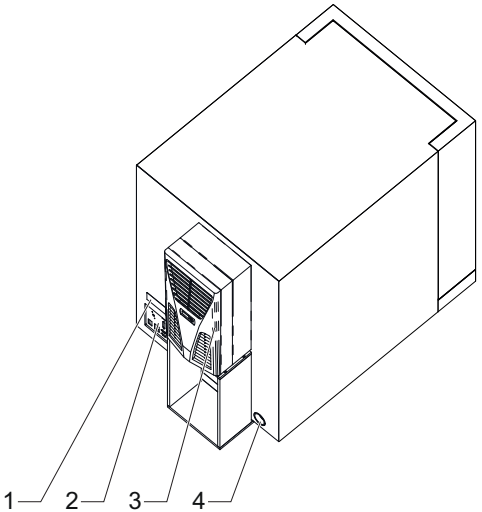
Variant for laser devices Business *CO2* and Economy/Business *Diode*

Workstation *COMFORT*



(1) Type plate
(2) Connections rear side

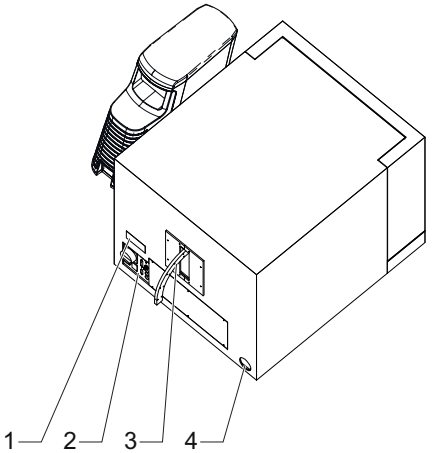
Workstation *PROFESSIONAL*



(3) Air conditioner
(4) Extraction connector

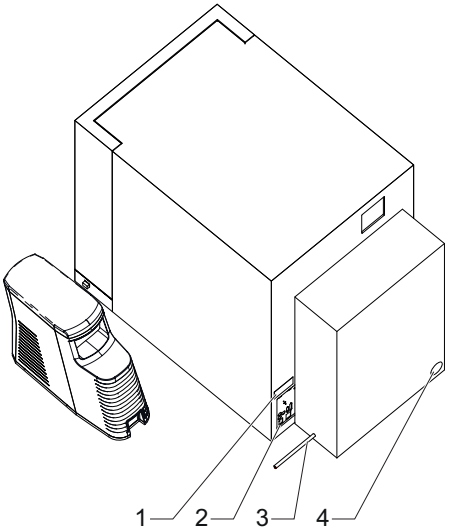
Variant for laser devices Economy/Business *Fibre*

Workstation *COMFORT*



(5) Type plate
(6) Connections rear side

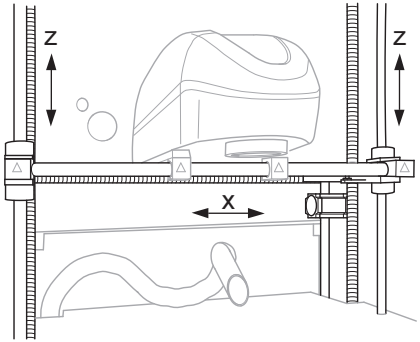
Workstation *PROFESSIONAL*



(7) Fiber laser cable outlet
(8) Extraction connector

Interior

Interior view, showing the motion axes of the **Workstation** *PROFESSIONAL*



4.3 Technical Specifications

Laser marking system

Optional:

Business *CO2*	**CO** *Two* **Marker**
Economy *Diode*	**DPL** *Smart* **Marker**
Business *Diode*	**DPL** *Magic* **Marker**
	DPL *Genesis* **Marker**
	DPL *Nexus* **Marker**
	DPL *Fortis* **Marker**
	DPL *Nobilis* **Marker**
	DPL *Lexis* **Marker**
Economy/Business *Fibre*	**DFL** *Ventus* **Marker**

X stroke length	**Workstation *PROFESSIONAL***	
	Motorised X axis:	Linear axis with stepper motor drive
	Stroke length:	400 mm
Usable mounting area of the T-slot plate	**Workstation *COMFORT***	
	Width x Depth:	600 mm x 400 mm
	Workstation *PROFESSIONAL*	
	Width x Depth:	600 mm x 600 mm
Adjusting the height with the focus finder function	Motorised Z axis:	Linear axis with stepper motor drive
	Stroke length:	**Workstation** *COMFORT* 140 mm **Workstation** *PROFESSIONAL* 440 mm
	Operation:	Integrated membrane keyboard/operating software
	Focus finder:	2 pilot laser diodes
Positioning and repetition accuracy	X and Y axis:	< ± 0.075 mm
	Z axis:	< ± 0.15 mm
Safety door	Automatically movable	
Y axis (optional)	**Workstation *PROFESSIONAL***	
	Load capacity:	25 kg (with even weight distribution)

Maximum component height and marking fields

Workstation *COMFORT*

Laser group	Objective	Max. component height	Marking field
Business *CO2*	CO Two Marker 100	270 mm	50 mm x 50 mm
	CO Two Marker 150	218 mm	90 mm x 90 mm
	CO Two Marker 250	110 mm	150 mm x 150 mm
Economy *Diodel* **Business** *Diode IR*	F-Theta 100	222 mm	60 mm x 60 mm
	F-Theta 163	140 mm	110 mm x 110 mm
Business *Diode GN*	F-Theta 160	150 mm	100 mm x 100 mm
Business *Diode UV*	F-Theta 162	112 mm	95 mm x 95 mm
Economy/Business *Fibre*	F-Theta 163	160 mm	110 mm x 110 mm

Workstation *PROFESSIONAL*

When using the Y axis option, reduce the maximum component heights by about 20 mm.

Laser group	Objective	Max. component height	Marking field
Business *CO2*	CO Two Marker 100	570 mm	50 mm x 50 mm
	CO Two Marker 150	518 mm	90 mm x 90 mm
	CO Two Marker 250	410 mm	150 mm x 150 mm

Laser group	Objective	Max. component height	Marking field
Economy *Diodel* **Business** *Diode IR*	F-Theta 100	522 mm	60 mm x 60 mm
	F-Theta 163	440 mm	110 mm x 110 mm
	F-Theta 254	276 mm	180 mm x 180 mm
Business *Diode GN*	F-Theta 160	450 mm	100 mm x 100 mm
Business *Diode UV*	F-Theta 162	412 mm	95 mm x 95 mm
Economy/Business *Fibre*	F-Theta 100	528 mm	60 mm x 60 mm
	F-Theta 163	460 mm	110 mm x 110 mm
	F-Theta 254	333 mm	180 mm x 180 mm

Maximum working areas

Workstation *COMFORT*

The working areas correspond to the physical marking fields of the laser systems (X and Y axes are not possible).

Workstation *PROFESSIONAL*

Laser group	Objective	Max. working area
Business *CO2*	CO Two Marker 100	450 mm x 50 mm
	CO Two Marker 150	490 mm x 90 mm
	CO Two Marker 250	550 mm x 150 mm

Laser group	Objective	Max. working area
Economy *Diodel* **Business** *Diode IR*	F-Theta 100	460 mm x 60 mm
	F-Theta 163	510 mm x 110 mm
	F-Theta 254	580 mm x 180 mm
Business *Diode GN*	F-Theta 160	500 mm x 100 mm
Business *Diode UV*	F-Theta 162	495 mm x 95 mm
Economy/Business *Fibre*	F-Theta 100	460 mm x 60 mm
	F-Theta 163	510 mm x 110 mm
	F-Theta 254	580 mm x 180 mm

Workstation *PROFESSIONAL* with optional Y axis

Laser group	Objective	Max. working area
Business *CO2*	CO Two Marker 100	450 mm x 290 mm
	CO Two Marker 150	490 mm x 330 mm
	CO Two Marker 250	550 mm x 375 mm
Economy *Diodel* **Business** *Diode IR*	F-Theta 100	460 mm x 300 mm
	F-Theta 163	510 mm x 350 mm
	F-Theta 254	580 mm x 390 mm
Business *Diode GN*	F-Theta 160	500 mm x 340 mm
Business *Diode UV*	F-Theta 162	495 mm x 335 mm

Laser group	Objective	Max. working area
Economy/Business *Fibre*	F-Theta 100	460 mm x 300 mm
	F-Theta 163	510 mm x 350 mm
	F-Theta 254	580 mm x 390 mm

Laser protection screen

Width x Height: 450 mm x 300 mm

Specification: depends on the type of laser device used

CO_2 laser	10600 nm	DI LB 4 (DIN EN 207)
Nd:YAG laser	1064 nm	D AB6 IR AB7 (DIN EN 12254)
Nd:YVO4 laser	532 nm 355 nm	180 - 535 OD 5+ (DIN EN 12254)
Yb:fibre laser	1040 - 1100 nm >1100 - 1185 nm >1185 - 1215 nm	D AB6 IR AB6 (DIN EN 12254) D AB6 IR AB6 (DIN EN 12254) 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	1	
Interfaces	Interface:	USB 2.0
	Power connection:	Connector for non-heating apparatus, filtered
Cooling	Integrated industrial air-conditioning of the workroom (without fiber laser)	
Electrical data	Connection values:	230 V/ 8 A/50 Hz 110 V/16 A/60 Hz
	Power consumption (typical):	max. 400 W plus laser marking device (max. 600 W) and air conditioner (max. 600 W)
	External backup fuse required:	230 V: 8 A 110 V: 16 A
Operating conditions	Working temperature:	15°C - 35°C
	Air humidity (rel.):	30% to 85%, not condensing
Weight	Weight without laser marking device and air conditioner	
	Workstation *COMFORT*	
	75 kg	
	Workstation *PROFESSIONAL*	
	125 kg	
	Workstation *PROFESSIONAL* with Y-table	
	145 kg	

Dimensions

Workstation *COMFORT*

Length x Width x Height: max. 1078 mm x 760 mm x 712 mm

Workstation *PROFESSIONAL*

Length x Width x Height: max. 1278 mm x 760 mm x 1072 mm

Options

- Rotary module
- Workpiece holders
- Laser extraction unit
- Y-table (only with **Workstation** *PROFESSIONAL*)
- Foot switch

4.4 Scope of Delivery

- For laser marking devices without fiber laser:
  - Workstation with air conditioner mounted with condensation water hose and fixing screw,
  - non-heating appliance cable for connecting workstation to air conditioner,
  - power supply for air conditioner with 110 V system,
- For fiber laser devices:
  - Workstation,
  - non-heating appliance cable for connecting workstation to laser marking device,
  - laser interface cable,
  - control cable interlock,
- power cable,
- connecting cable for USB 2.0,

- fixing screws for laser device,
- operating instructions.

Optional:

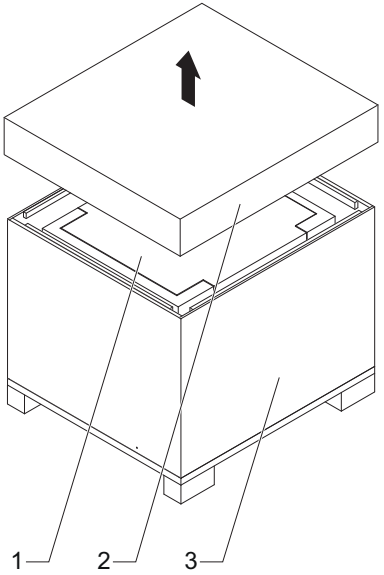
- Extraction unit with control cable and extraction hose, external,
- rotary module,
- Y-table,
- foot switch.

NOTICE

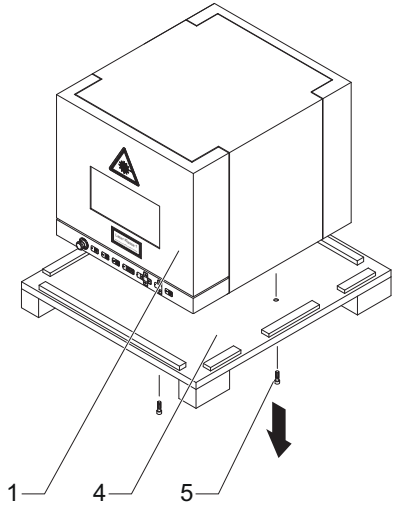
Check that the delivery is complete and undamaged. Please contact our service department if you have any queries.

5 Installation

5.1 Unpacking



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



(4) Pallet
(5) Fixing screws

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.

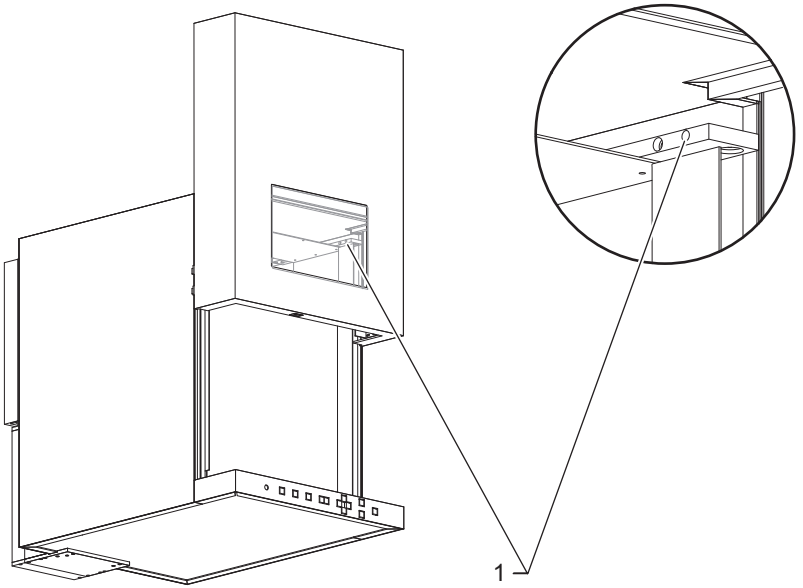
1. Remove the tensioning straps.
2. Remove the lid (2).
3. Remove the carton (3).
4. Lift the pallet (4) bearing the workstation (1) with a suitable device (such as a lifting truck), and remove the fixing screws (5).

NOTICE		
Weight:	**Workstation** *COMFORT*	75 kg
	Workstation *PROFESSIONAL*	125 kg
	Workstation *PROFESSIONAL* with Y-table	145 kg

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

5.2 Setting Up

1. Place the workstation on a stable, flat table.
2. 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.



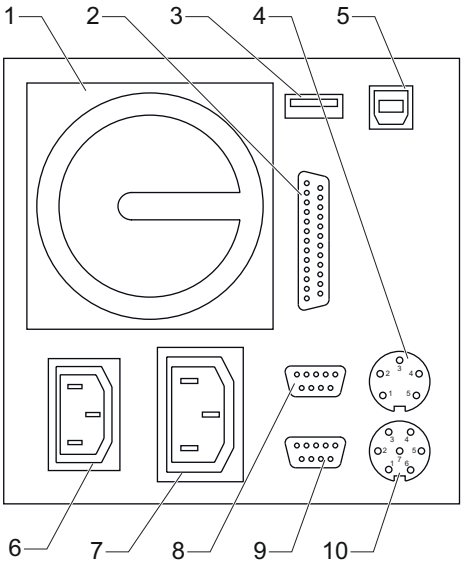
3. Check whether the door is aligned parallel to the housing.
   If necessary, you can adjust the position of the door with the two screws, right (1) and left. Slide the door up as far as possible.

5.3 Assembly

5.3.1 Connections

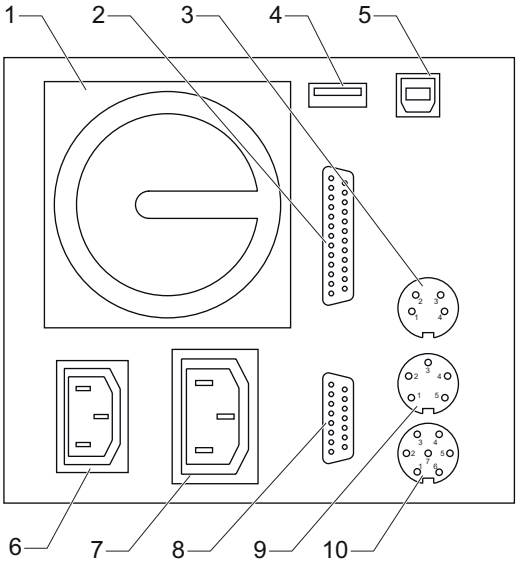
Rear side

Variant **Workstation** *COMFORT* and **Workstation** *PROFESSIONAL* for laser marking devices **Business** *CO2* and **Business/Economy** *Diode*



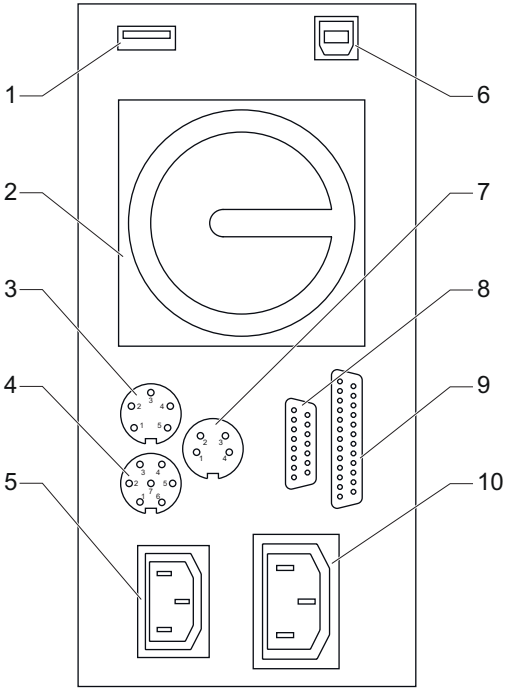
(1) Power switch
(2) Auxiliary
(3) USB external
(4) External start
(5) USB interface to the PC
(6) Power input
(7) Power output for air conditioner
(8) DSub9 optional
(9) DSub9 optional
(10) Extraction

Variant **Workstation** *COMFORT* for laser marking devices **Business/Economy** *Fibre*



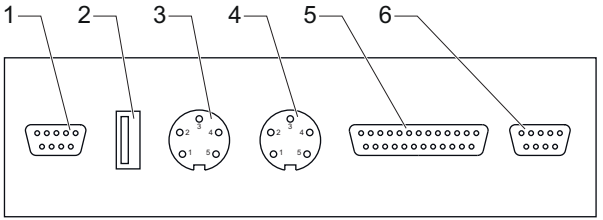
(1) Power switch
(2) Auxiliary
(3) Interlock
(4) USB external
(5) USB interface to the PC
(6) Power input
(7) Power output for air conditioner
(8) Laser I/O
(9) External start
(10) Extraction

Variant **Workstation** *PROFESSIONAL* for laser marking devices
Business/Economy *Fibre*



(1) USB external
(2) Power switch
(3) External start
(4) Extraction
(5) Power input
(6) USB interface to the PC
(7) Interlock
(8) Laser I/O
(9) Auxiliary
(10) Power output for air conditioner

Workroom



(1) Adapter for rotary module
(2) USB external
(3) Power 1
(4) Power 2
(5) Auxiliary
(6) Laser I/O

5.3.2 Laser Marking Device Assembly

1. Fasten the laser marking unit to the mounting panel of the workstation, following the laser marking unit's operating instructions.
2. Connect the three connection cables in the workroom
   - laser interface cable,
   - power cable,
   - USB cable,
   to the laser marking device.
3. Using a laser marking device **Business** *Fibre*:
   Connect the supply cable and the fiber laser cable from the laser head to the supply unit.
4. Using a laser marking device **Economy** *Fibre:*
   Connect the supply cable from the laser head to the supply unit.

5.3.3 Air Conditioner Assembly

1. Remove the locking screw from the air conditioner, and screw in the fixing screw.
2. **230 V:** Connect the system outlet of the workstation to the power input on the air conditioner with the non-heating appliance cable.
   110 V: Connect the system outlet of the workstation with the non-heating appliance cable to the power pack supplied, and connect the power pack to the air conditioner.

5.3.4 Extraction Assembly

1. Connect the control cable between the extraction unit and the workstation.
2. 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.

5.3.5 Power Connection

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

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.

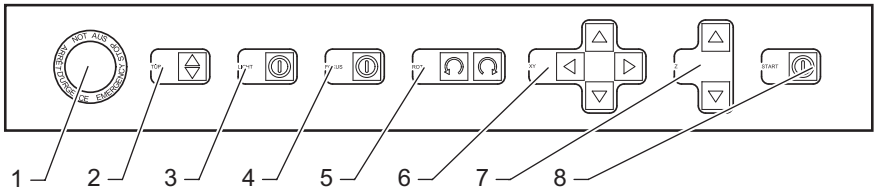
- Have the mechanical and electrical installations been performed correctly and completely?
- Is the electric circuit to the connector of the workstation equipped with the correct fuse (110 V: 16 A or 230 V: 8 A)?
- Do the environmental conditions meet the requirements (temperature, air humidity)?
- 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.

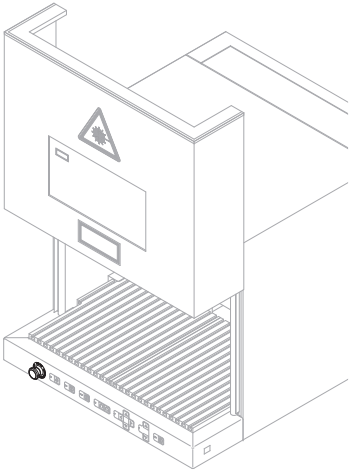


(1) Emergency stop button
(2) Open/close door
(3) Light on/off
(4) Focus on/off
(5) Rotation left/right
(6) X axis left/right
Y axis behind/forward
(7) Z axis top/bottom
(8) External start

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

The rotary module is set up with the **Rotation left and right** buttons (5), the Y-table and the X-gantry are set up with the **X and Y axes left/right/behind/forward** buttons (6).

Emergency stop button



Workstation *COMFORT*

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.

⚠ WARNING

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. Press the **Close door** button to initialize the workstation.
3. 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 laser marking device 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 equipment, the rotary module and the Y-table.

⚠ WARNING

RISK OF INJURY FROM MOVING AXES!
When working with the door open, do not touch the axes!

NOTICE

The door closing sequence is aborted if there is an obstruction in the range of motion.

NOTICE

Opening the door breaks the laser safety circuit.

NOTICE

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

Switch off

Press the stand-by button for normal interruptions to operations.

Switch the system off with the power switch if the stoppage is going to be lengthy.

Switching on again

1. The control PC must be switched on.
2. If it is switched off: Switch on the power switch.
3. Press the stand-by button.
4. Start the marking software.
5. Press the **Close door** button to initialize the workstation.

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 **Door close** button

Problem/Fault	Possible cause	Elimination
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	Device switched on
Axis motions very noisy	Axis not greased	Grease the axis
	Foreign body in the path of the axis	Clean the axis
	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 **Door close** button twice
	Door is not aligned parallel to the housing	Align the door
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 **Door close** button
External start is inactive	Incorrect settings in the software	Check and correct the software settings

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 except greasing the axles 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.

⚠ 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!**

Greasing the axes

Inspect the condition of the axes at regular intervals, and clean and grease them if necessary.

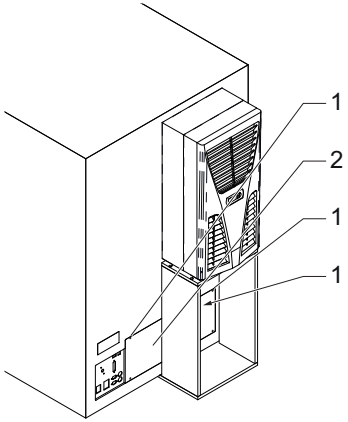
Grease for the Z axis:	HTF & MoS2 hot-bearing grease made by Äronix
Grease for the X axis:	normal multi-purpose grease

Cleaning

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

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

Maintenance flap



Workstation *PROFESSIONAL*

For laser marking devices without fiber laser:

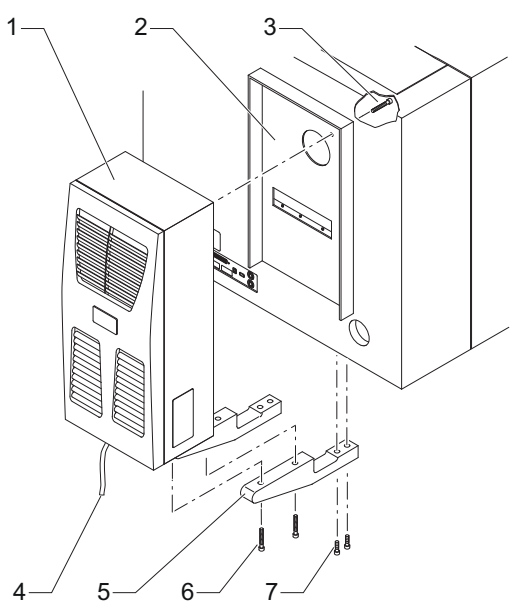
⚠ CAUTION

RISK OF PROPERTY DAMAGE.
Only open the maintenance flap in consultation with the service personnel.

(1) Top fixing screw
(2) Maintenance flap

Unscrew the 3 upper (1) and 3 lower fixing screws from the maintenance flap (2), and remove the flap.

With the **Workstation** *COMFORT*, the air conditioner also has to be dismounted, and remounted afterwards.



(1) Air conditioner
(2) Mounting surface
(3) Fixing screw
(4) Condensation water hose
(5) 2 holding brackets
(6) 4 screws
(7) 4 screws

Dismounting:

1. Remove the condensation water hose (4).
2. Remove the fixing screw (3).
3. Remove the 4 screws (6) from the holding brackets (5), and remove the air conditioner (1).
4. If necessary: remove the 4 screws (7) and the two holding brackets (5).

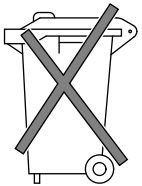
Assembly:

1. If dismounted: Screw the two holding brackets (5) tightly to the workstation with 4 screws (7).
2. Fasten the air conditioner (1) to the holding brackets (5) with 4 screws (6).
3. Attach the air conditioner (1) to the mounting surface (2) of the workstation with the fixing screw (3).
4. Attach the condensation water hose (4).

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.**

Environmentally sensible disposal of electrical and electronic equipment!

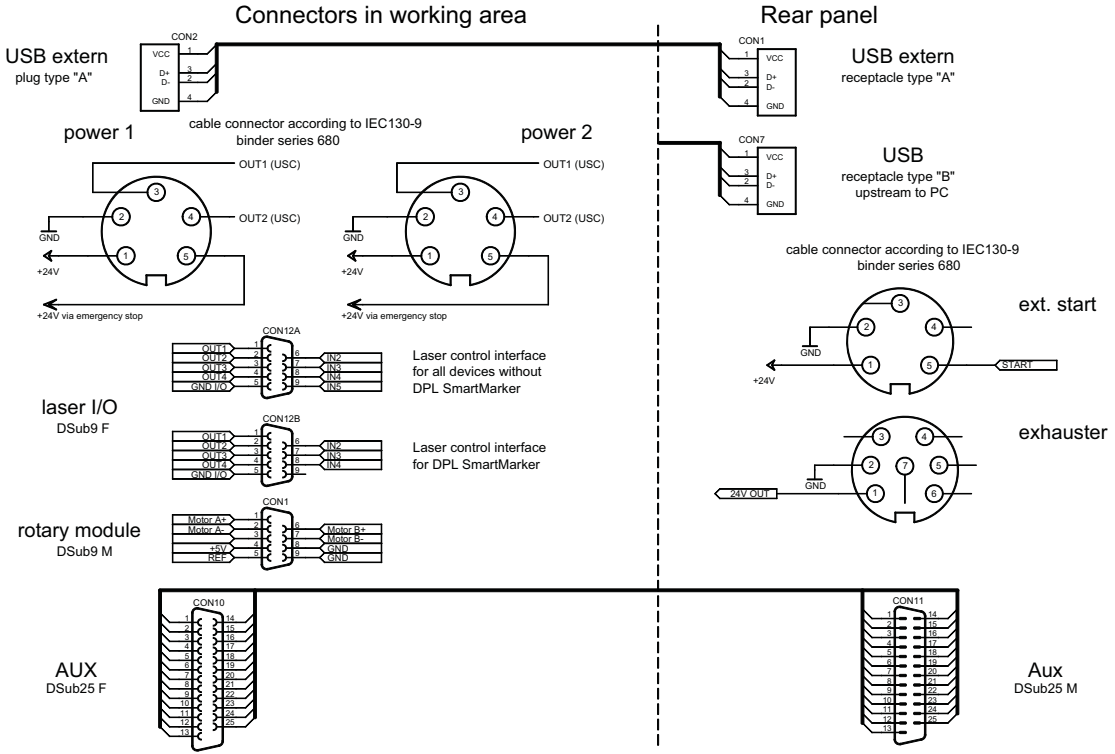


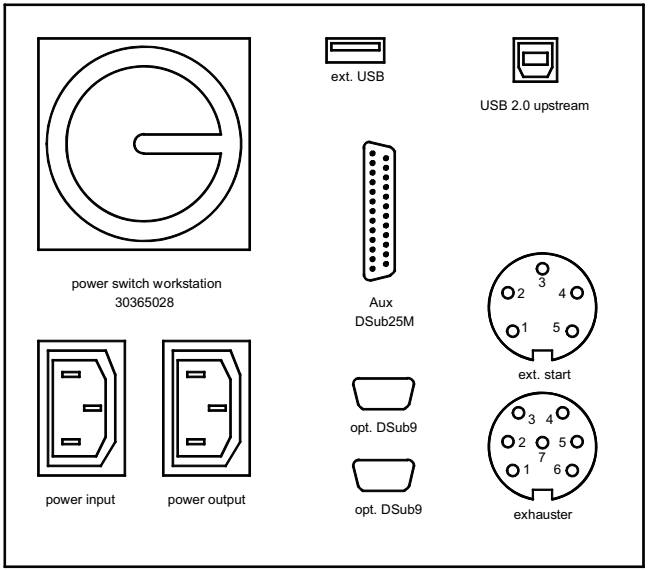
Electrical and electronic equipment contains valuable materials that should be supplied to recycling or recovery.

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

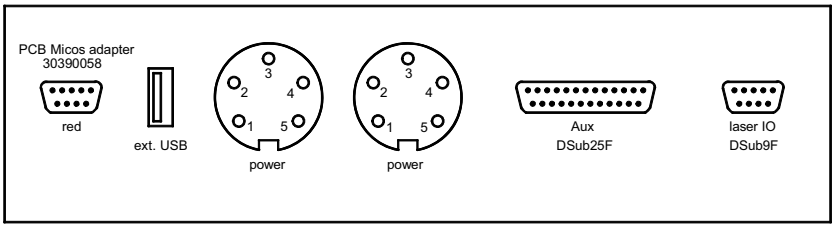
9 Appendix

9.1 Wiring Diagram





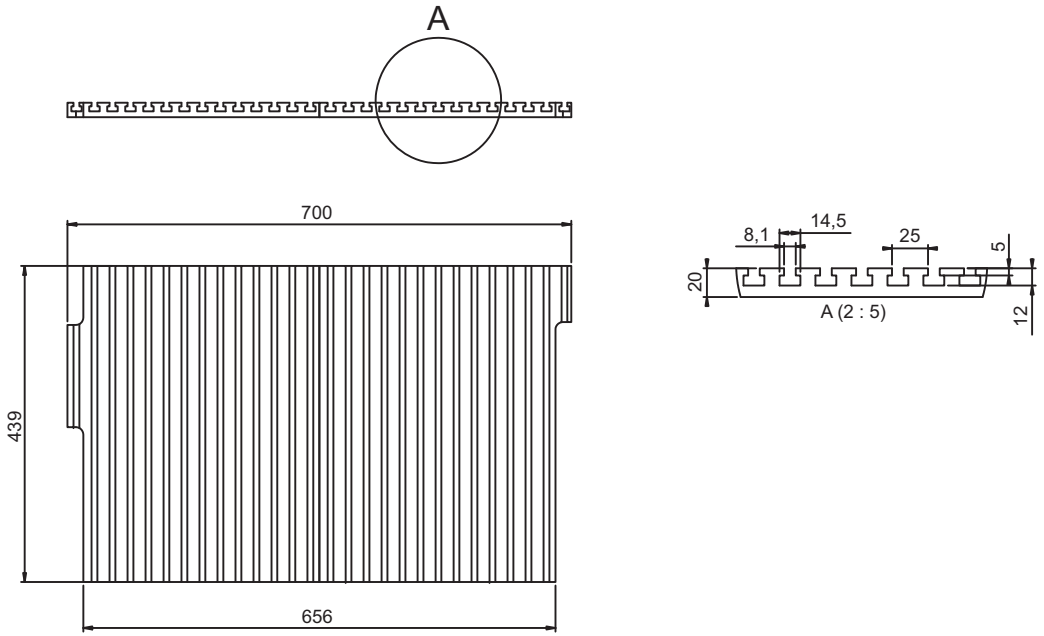
Components mounting plate rear wall



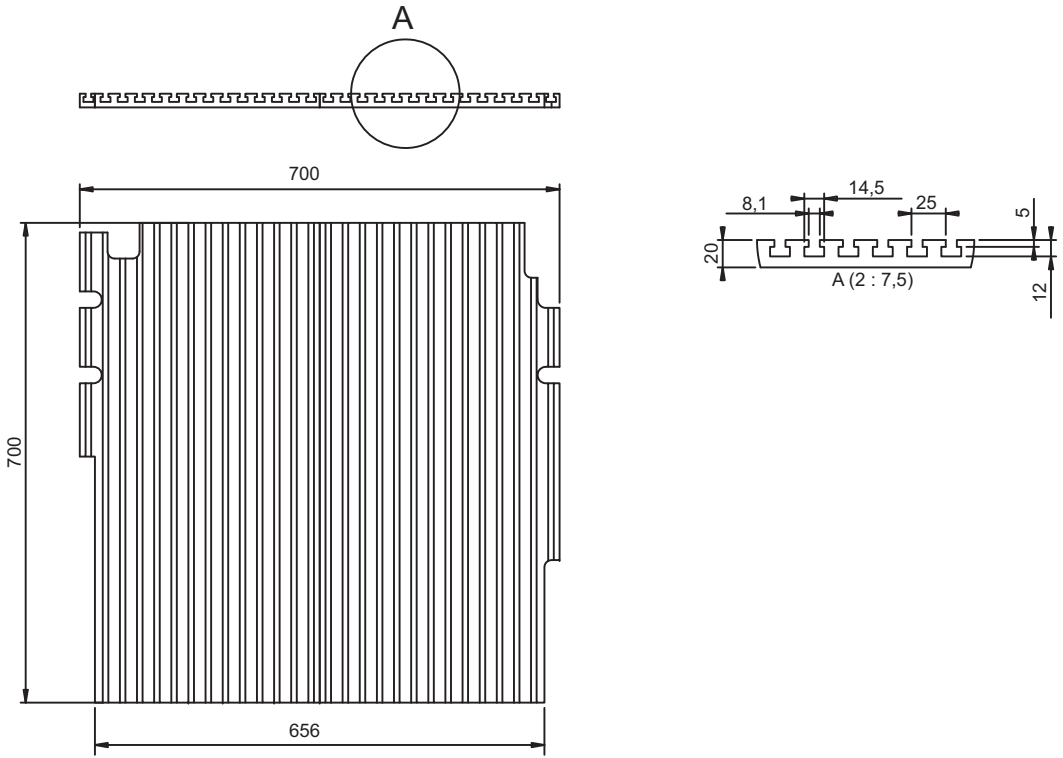
Components interior

9.2 Drawings of the T-Slot Plates

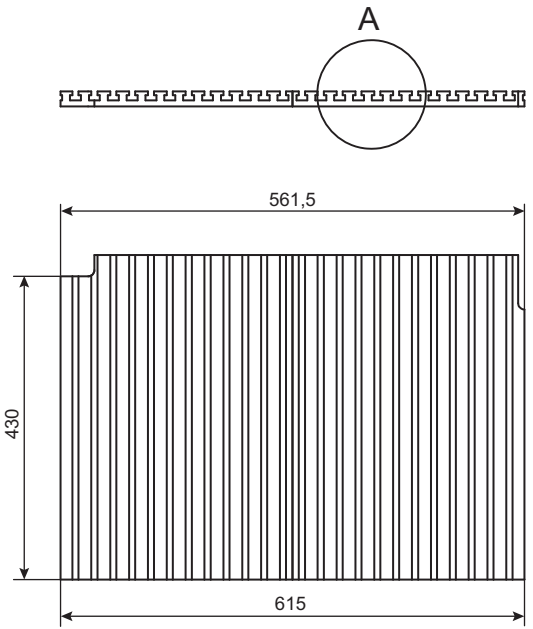
9.2.1 Workstation *COMFORT*

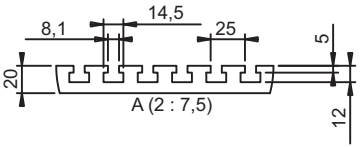


9.2.2 Workstation *PROFESSIONAL*



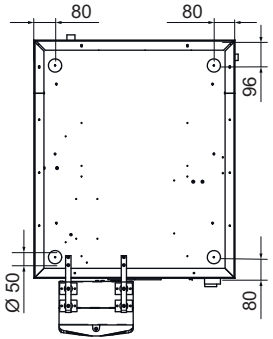
9.2.3 Y-Table

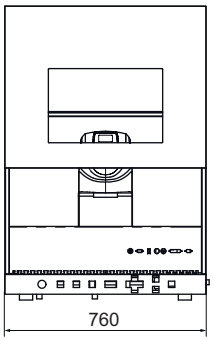


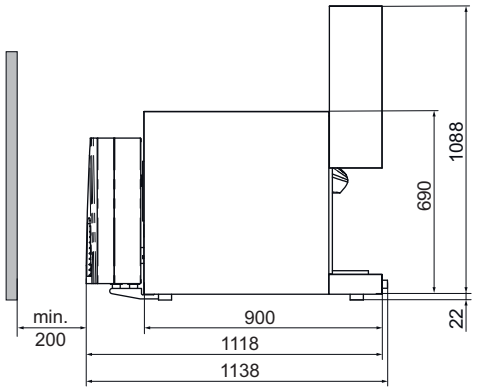


9.3 Assembly Dimensions

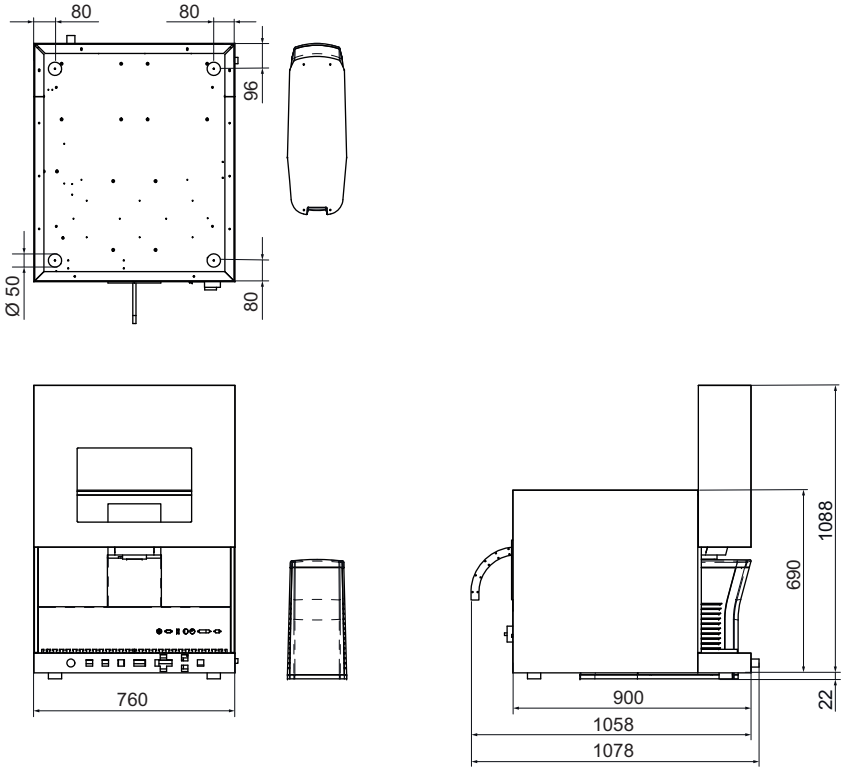
9.3.1 Workstation *COMFORT* for Business *CO2* and Economy/Business *Diode*



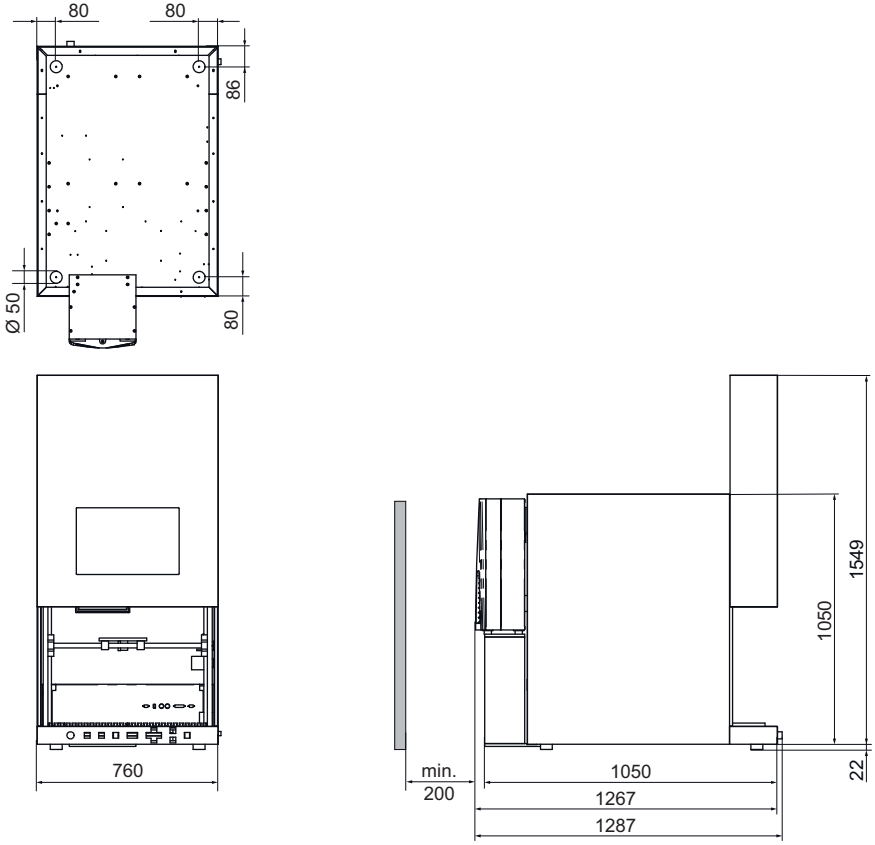




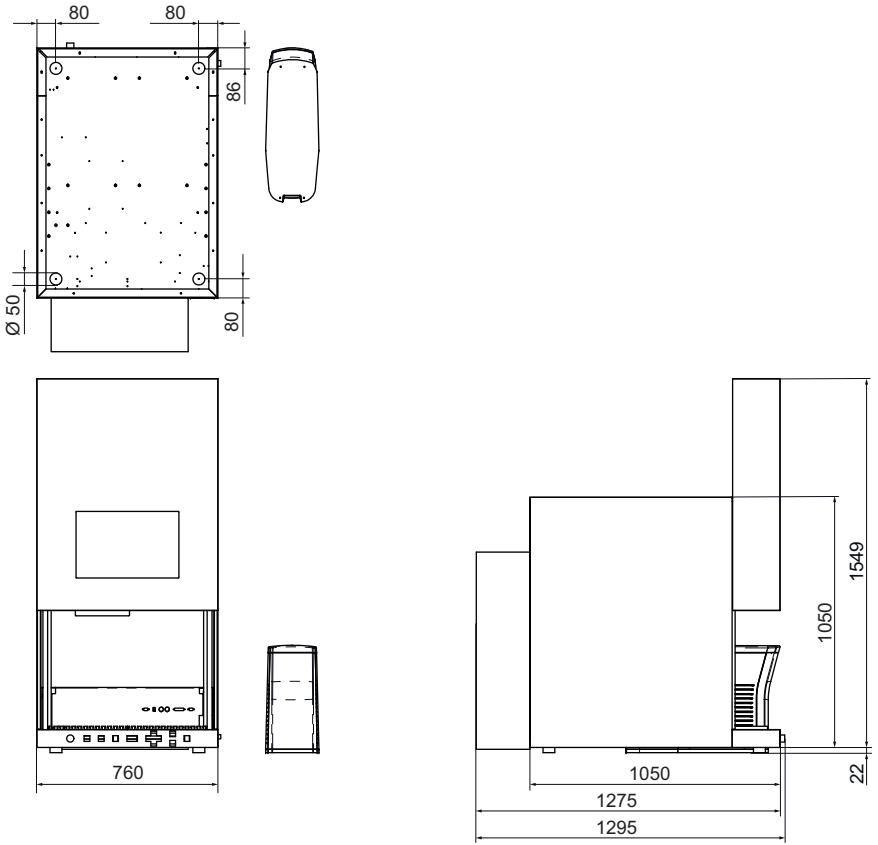
9.3.2 Workstation *COMFORT* for Economy/Business *Fibre*



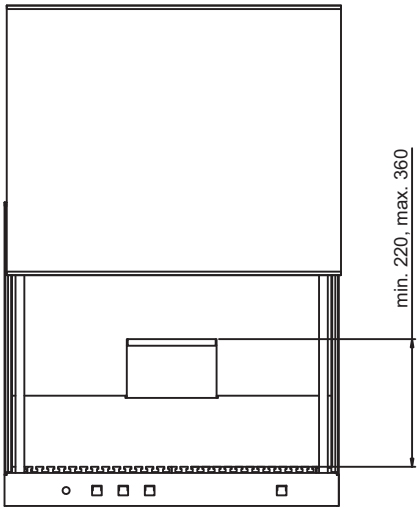
9.3.3 Workstation *PROFESSIONAL* for Business *CO2* and Economy/Business *Diode*



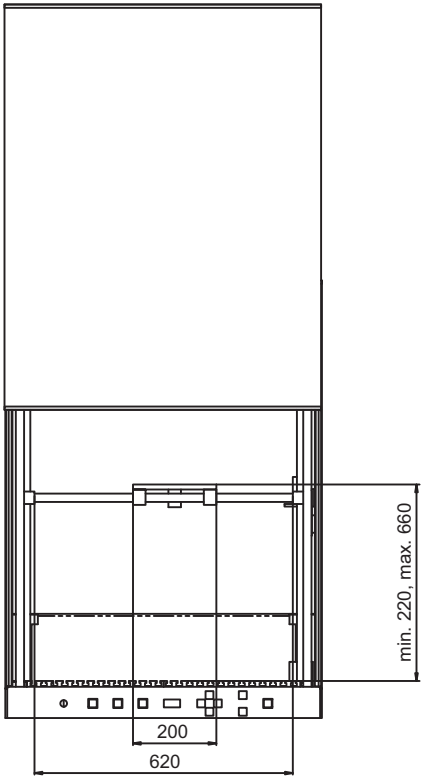
9.3.4 Workstation *PROFESSIONAL* for Economy/Business *Fibre*



9.4 Drawings of the Axis Stroke

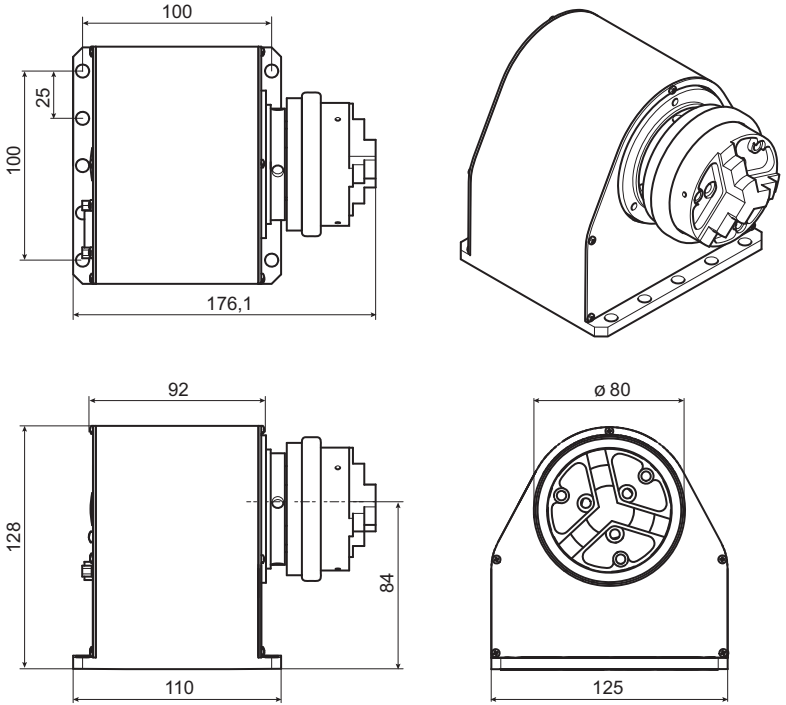


Workstation *COMFORT*



Workstation *PROFESSIONAL*

9.5 Drawing of the Rotary Module

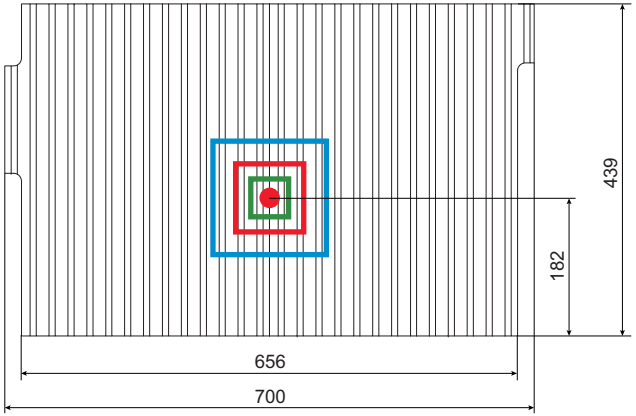


9.6 Illustration of the Working Areas

9.6.1 Workstation *COMFORT* with Business *CO2*

Business *CO2*

CO*Two* Marker 100
CO*Two* Marker 150
CO*Two* Marker 250



Usable mounting area

600 mm x 400 mm

Marking field = Working Area

Business *CO2*

CO*Two* Marker 100	50 mm x 50 mm
CO*Two* Marker 150	90 mm x 90 mm
CO*Two* Marker 250	150 mm x 150 mm

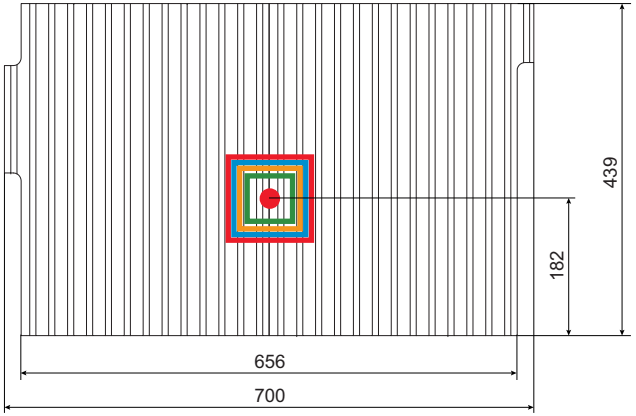
Maximum component height

Business *CO2*

CO*Two* Marker 100	270 mm
CO*Two* Marker 150	218 mm
CO*Two* Marker 250	110 mm

9.6.2 Workstation *COMFORT* with Economy/Business *Diode*

Economy *Diode*/**Business** *Diode IR*
F-Theta 100
F-Theta 163
Business *Diode GN*
F-Theta 160
Business *Diode UV*
F-Theta 162



Usable mounting area

600 mm x 400 mm

Marking field = Working Area

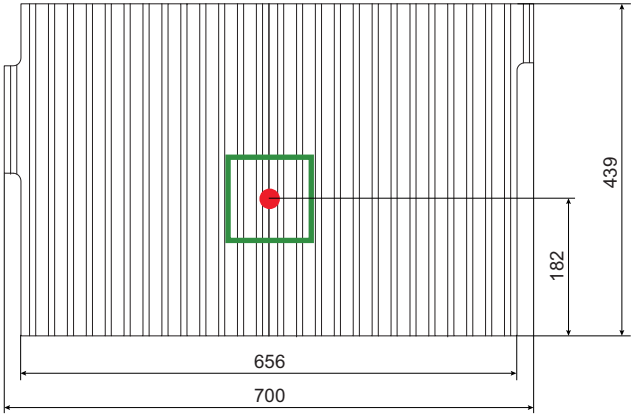
Economy *Diode*/**Business** *Diode IR*	
F-Theta 100	60 mm x 60 mm
F-Theta 163	110 mm x 110 mm
Business *Diode GN*	
F-Theta 160	100 mm x 100 mm
Business *Diode UV*	
F-Theta 162	95 mm x 95 mm

Maximum component height

Economy *Diode*/**Business** *Diode IR*	
F-Theta 100	222 mm
F-Theta 163	140 mm
Business *Diode GN*	
F-Theta 160	150 mm
Business *Diode UV*	
F-Theta 162	112 mm

9.6.3 Workstation *COMFORT* with Economy/Business *Fibre*

Economy/Business *Fibre*
F-Theta 163



Usable mounting area

600 mm x 400 mm

Marking field = Working Area

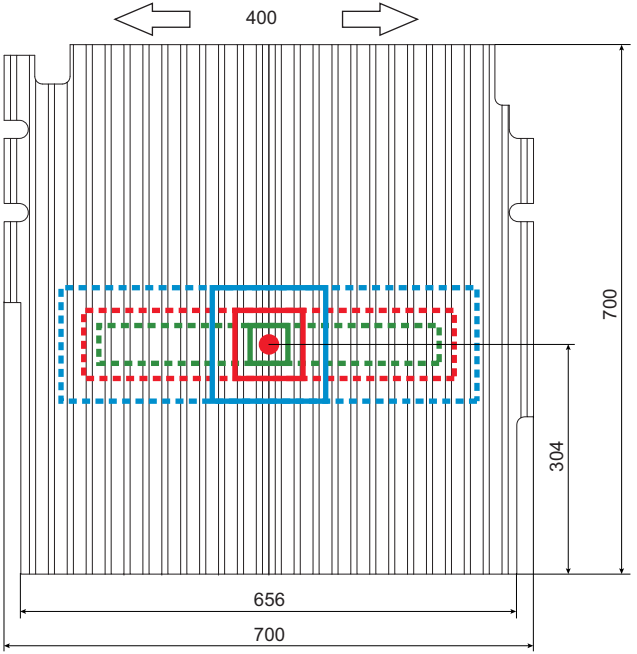
Economy/Business *Fibre*
F-Theta 163 110 mm x 110 mm

Maximum component height

Economy/Business *Fibre*
F-Theta 163 160 mm

9.6.4 Workstation *PROFESSIONAL* with Business *CO2*

Business *CO2*
CO*Two* Marker 100
CO*Two* Marker 150
CO*Two* Marker 250



Usable mounting area

600 mm x 600 mm

Marking field

Business *CO2*

CO*Two* Marker 100	50 mm x 50 mm
CO*Two* Marker 150	90 mm x 90 mm
CO*Two* Marker 250	150 mm x 150 mm

Working area

Business *CO2*

CO*Two* Marker 100	450 mm x 50 mm
CO*Two* Marker 150	490 mm x 90 mm
CO*Two* Marker 250	550 mm x 150 mm

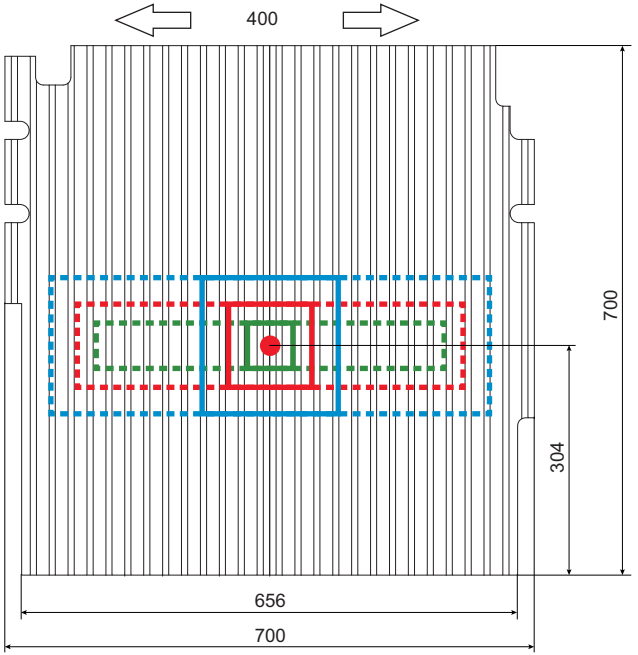
Maximum component height

Business *CO2*

CO*Two* Marker 100	570 mm
CO*Two* Marker 150	518 mm
CO*Two* Marker 250	410 mm

9.6.5 Workstation *PROFESSIONAL* with Economy/Business *Diode*

Economy *Diode*/**Business** *Diode IR*
F-Theta 100
F-Theta 163
F-Theta 254



Usable mounting area

600 mm x 600 mm

Marking field

Economy *Diode*/**Business** *Diode IR*

F-Theta 100	60 mm x 60 mm
F-Theta 163	110 mm x 110 mm
F-Theta 254	180 mm x 180 mm

Working area

Economy *Diode*/**Business** *Diode IR*

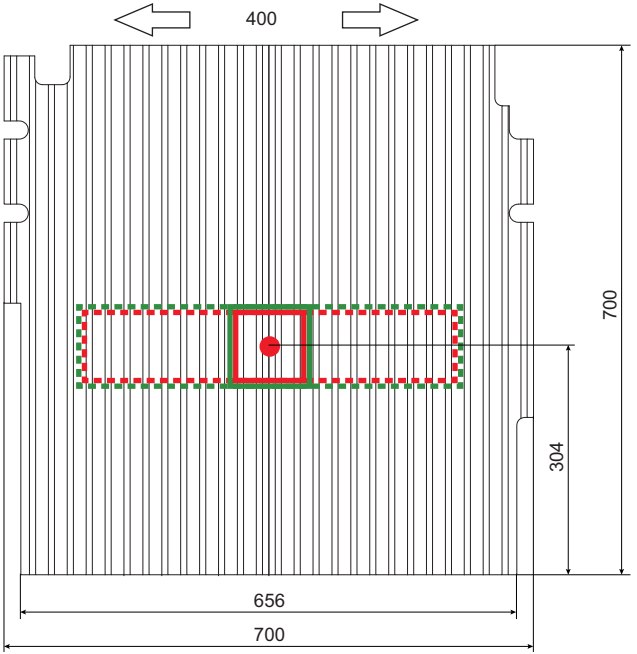
F-Theta 100	460 mm x 60 mm
F-Theta 163	510 mm x 110 mm
F-Theta 254	580 mm x 180 mm

Maximum component height

Economy *Diode*/**Business** *Diode IR*

F-Theta 100	522 mm
F-Theta 163	440 mm
F-Theta 254	276 mm

Business *Diode GN*
F-Theta 160
Business *Diode UV*
F-Theta 162



Usable mounting area

600 mm x 600 mm

Marking field

Business *Diode GN*
F-Theta 160 100 mm x 100 mm
Business *Diode UV*
F-Theta 162 95 mm x 95 mm

Working area

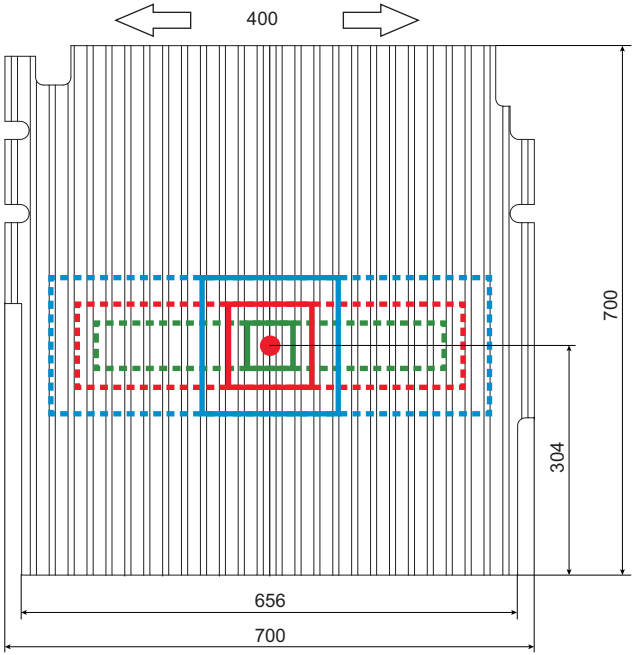
Business *Diode GN*
F-Theta 160 500 mm x 100 mm
Business *Diode UV*
F-Theta 162 495 mm x 95 mm

Maximum component height

Business *Diode GN*
F-Theta 160 450 mm
Business *Diode UV*
F-Theta 162 412 mm

9.6.6 Workstation *PROFESSIONAL* with Economy/Business *Fibre*

Economy/Business *Fibre*
F-Theta 100
F-Theta 163
F-Theta 254



Usable mounting area

600 mm x 600 mm

Marking field

Economy/Business *Fibre*

F-Theta 100	60 mm x 60 mm
F-Theta 163	110 mm x 110 mm
F-Theta 254	180 mm x 180 mm

Working area

Economy/Business *Fibre*

F-Theta 100	460 mm x 60 mm
F-Theta 163	510 mm x 110 mm
F-Theta 254	580 mm x 180 mm

Maximum component height

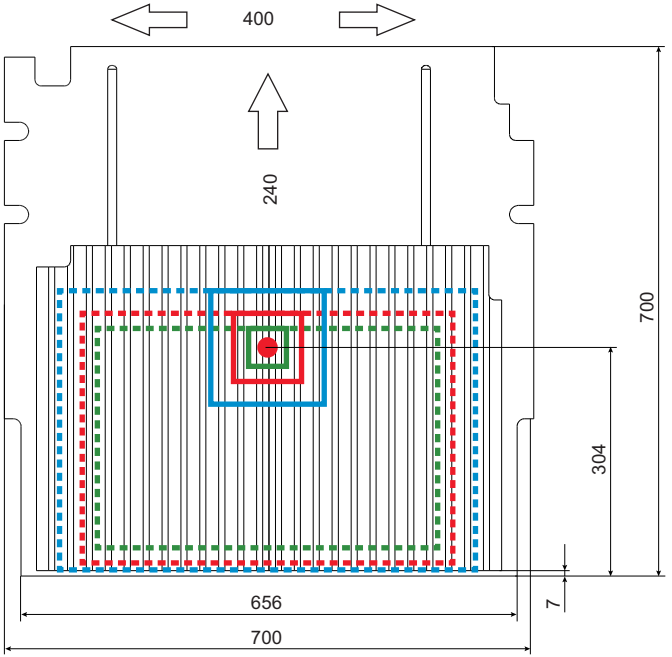
Economy/Business *Fibre*

F-Theta 100	528 mm
F-Theta 163	460 mm
F-Theta 254	333 mm

9.6.7 Workstation *PROFESSIONAL* with Y-Table and Business *CO2*

Business *CO2*

CO*Two* Marker 100
CO*Two* Marker 150
CO*Two* Marker 250



Usable mounting area

600 mm x 400 mm

Marking field

Business *CO2*

CO*Two* Marker 100	50 mm x 50 mm
CO*Two* Marker 150	90 mm x 90 mm
CO*Two* Marker 250	150 mm x 150 mm

Working area

Business *CO2*

CO*Two* Marker 100	450 mm x 290 mm
CO*Two* Marker 150	490 mm x 330 mm
CO*Two* Marker 250	550 mm x 375 mm

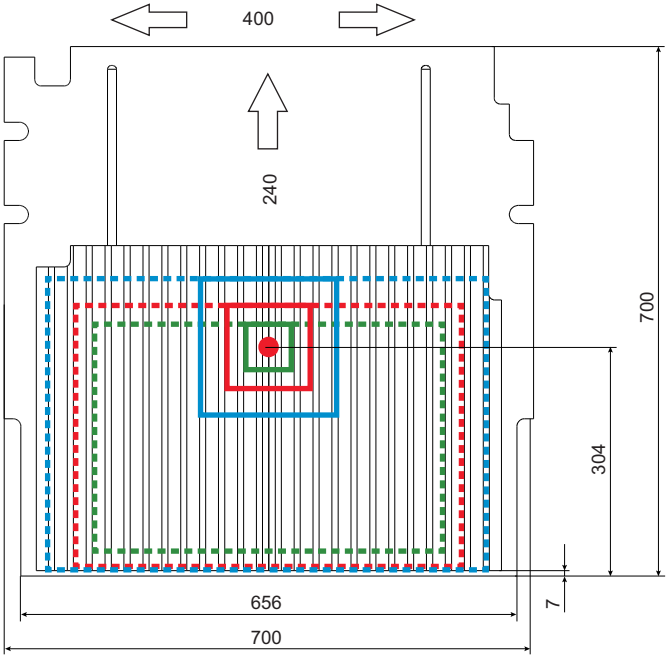
Maximum component height

Business *CO2*

CO*Two* Marker 100	550 mm
CO*Two* Marker 150	498 mm
CO*Two* Marker 250	390 mm

9.6.8 Workstation *PROFESSIONAL* with Y-Table and Economy/Business *Diode*

Economy *Diode*/**Business** *Diode IR*
F-Theta 100
F-Theta 163
F-Theta 254



Usable mounting area

600 mm x 400 mm

Marking field

Economy *Diode*/**Business** *Diode IR*	
F-Theta 100	60 mm x 60 mm
F-Theta 163	110 mm x 110 mm
F-Theta 254	180 mm x 180 mm

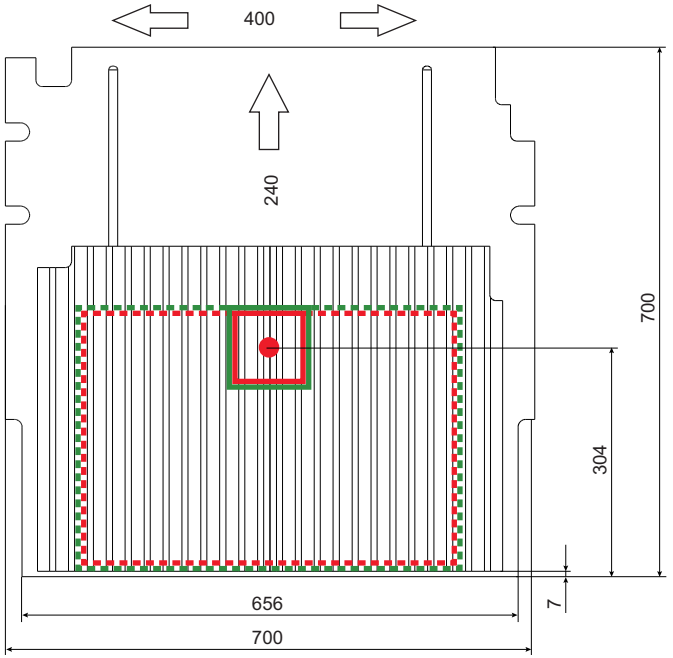
Working area

Economy *Diode*/**Business** *Diode IR*	
F-Theta 100	460 mm x 300 mm
F-Theta 163	510 mm x 350 mm
F-Theta 254	580 mm x 390 mm

Maximum component height

Economy *Diode*/**Business** *Diode IR*	
F-Theta 100	502 mm
F-Theta 163	420 mm
F-Theta 254	256 mm

Business *Diode GN*
F-Theta 160
Business *Diode UV*
F-Theta 162



Usable mounting area

600 mm x 400 mm

Marking field

Business *Diode GN*
F-Theta 160 100 mm x 100 mm
Business *Diode UV*
F-Theta 162 95 mm x 95 mm

Working area

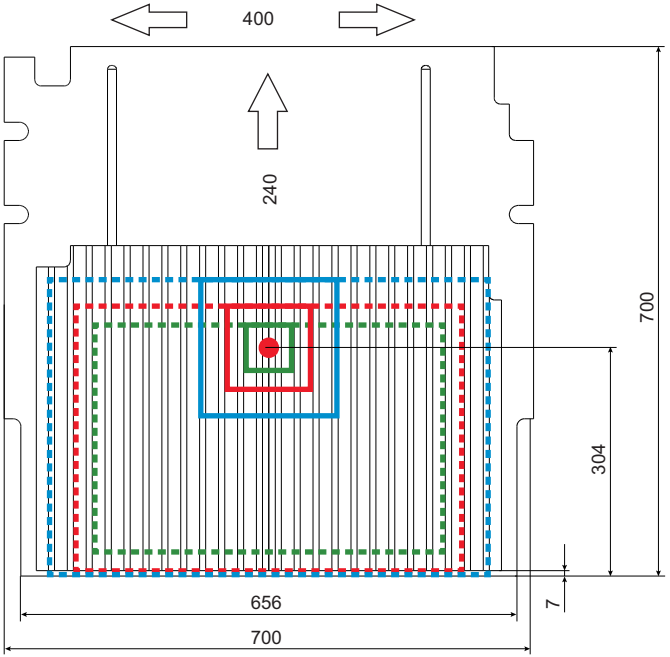
Business *Diode GN*
F-Theta 160 500 mm x 340 mm
Business *Diode UV*
F-Theta 162 495 mm x 335 mm

Maximum component height

Business *Diode GN*
F-Theta 160 430 mm
Business *Diode UV*
F-Theta 162 392 mm

9.6.9 Workstation *PROFESSIONAL* with Y-Table and Economy/Business *Fibre*

Economy/Business *Fibre*
F-Theta 100
F-Theta 163
F-Theta 254



Usable mounting area

600 mm x 400 mm

Marking field

Economy/Business *Fibre*

F-Theta 100	60 mm x 60 mm
F-Theta 163	110 mm x 110 mm
F-Theta 254	180 mm x 180 mm

Working area

Economy/Business *Fibre*

F-Theta 100	460 mm x 300 mm
F-Theta 163	510 mm x 350 mm
F-Theta 254	580 mm x 390 mm

Maximum component height

Economy/Business *Fibre*

F-Theta 100	508 mm
F-Theta 163	440 mm
F-Theta 254	313 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
Directive 2011/65/EU on Hazardous	EN 61000-3-2:2006+A1:2009+A2:2009
Substances (RoHS)	EN 61000-3-3:2008
	EN 50581:2012
Directive 2006/42/EC on machinery	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:	Nohra, 01.02.2019

ACI Laser GmbH
Steinbrüchenstraße 14, 99428 Grammetal OT Nohra

Mirko Wunderlich, Geschäftsführer

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Operating Instructions for **Workstation** *COMFORT*/**Workstation** *PROFESSIONAL*

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