



## SP1500 Operation Manual





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Trotec Produktions und Vertriebs Ges.m.b.H.  
Linzer Strasse 156,  
A-4600 Wels, OÖ.  
AUSTRIA

Tel.: +43-(0)7242-239-0  
Fax: +43-(0)7242-239-7380

trotec@troteclaser.com  
www.troteclaser.com



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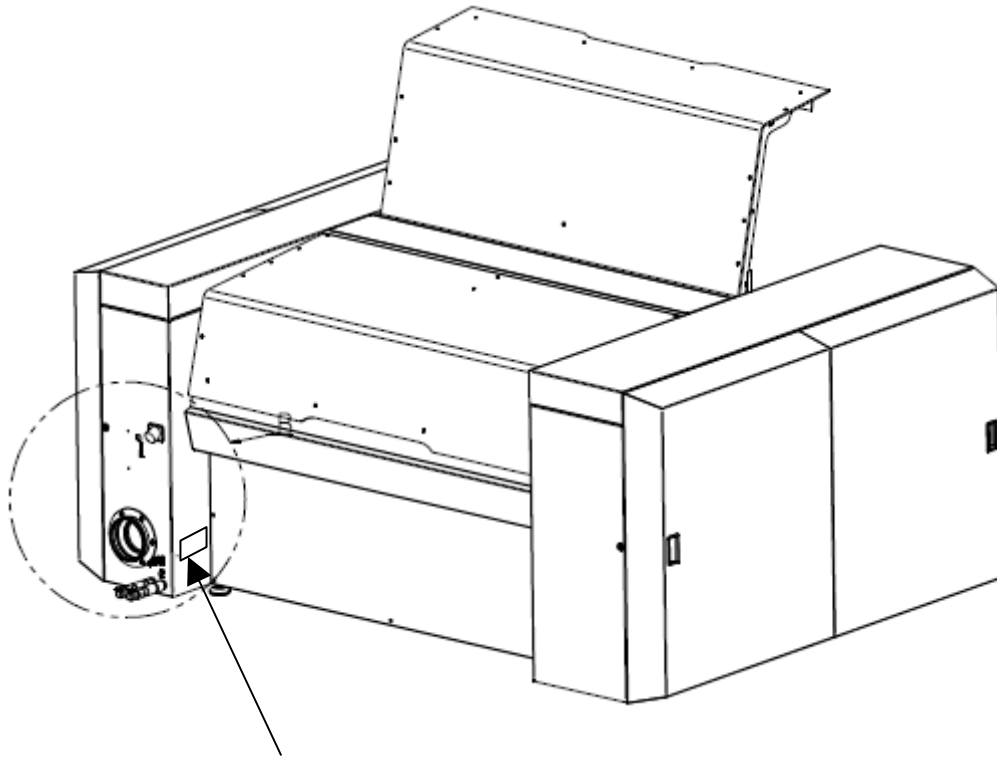
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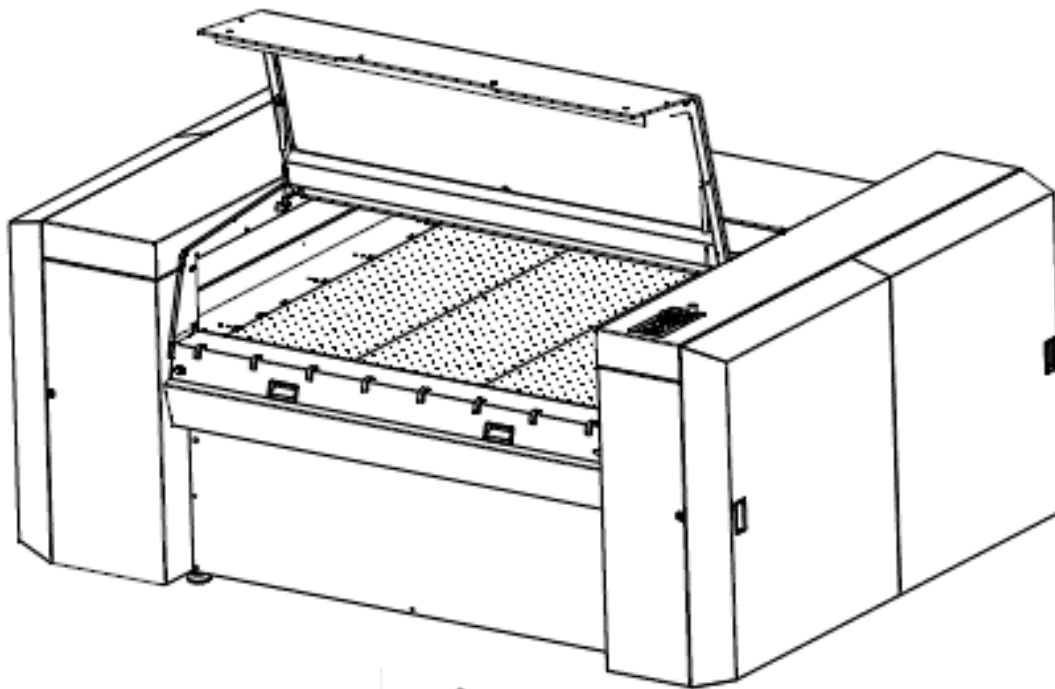
# 1 Manufacturing label

You find the manufacturing label with the CE-sign on the back side of the machine.



Enter the serial number, model and year of manufacture from the manufacturing label here. This information is important for troubleshooting problems with the product and for ordering replacement parts.

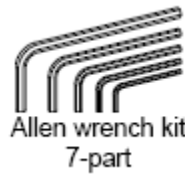
## 2 Product Components



CD-ROM



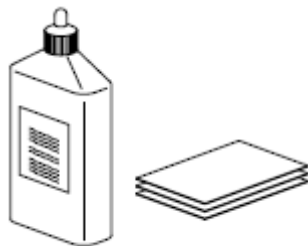
Focusing tool



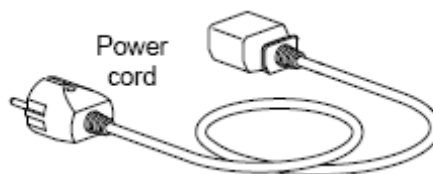
Allen wrench kit  
7-part



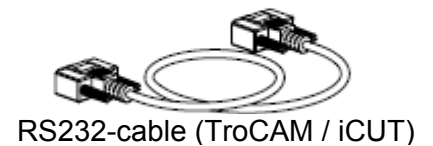
Vacuum connection cable



Cleaning kit



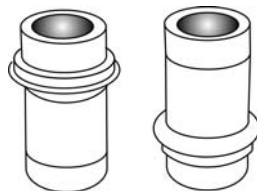
Power  
cord



RS232-cable (TroCAM / iCUT)



USB cable



Lenses 2.5" / 5"  
(7.5" optional)





## 3 Preface

### 3.1 General

This operating manual is intended to simplify the following for you:

- Learning about the machine, and
- Utilizing the machine's capabilities according to its intended use.

The operating manual contains important notes on how to operate the machine:

- Safely,
- Properly, and
- Economically

Following the operating instructions helps you to:

- Avoid hazards and risks,
- Minimize repair costs and downtimes, and
- Increase the reliability and service life of your machine.





## 3.2 Product Tracking

We have a legal duty to track our products after delivery to our customers.

In particular, this relates to:

- Recurring faults in functions
- Anything that is unclear, e.g. in operation, maintenance or instructions
- Any accidents that occur
- Other unusual observations
- Recommendations for improvement, requests

This information serves as a basis for potential corrections and/or changes to the product, and it is therefore of great interest to us.

We request that you inform us of any such events and offer us your recommendations. This is the only way that we can improve our products as necessary, and to make them as safe and reliable as possible.







## 4 Technical Data

### 4.1 General Description

All electronic components are integrated in the machine.

All necessary connections are made on the back side of the SP1500. Controls for the SP1500 are located on the keypad.

The SP1500 is equipped with an interlock safety system. When the interlock is activated, only setup tasks can be performed on the SP1500.

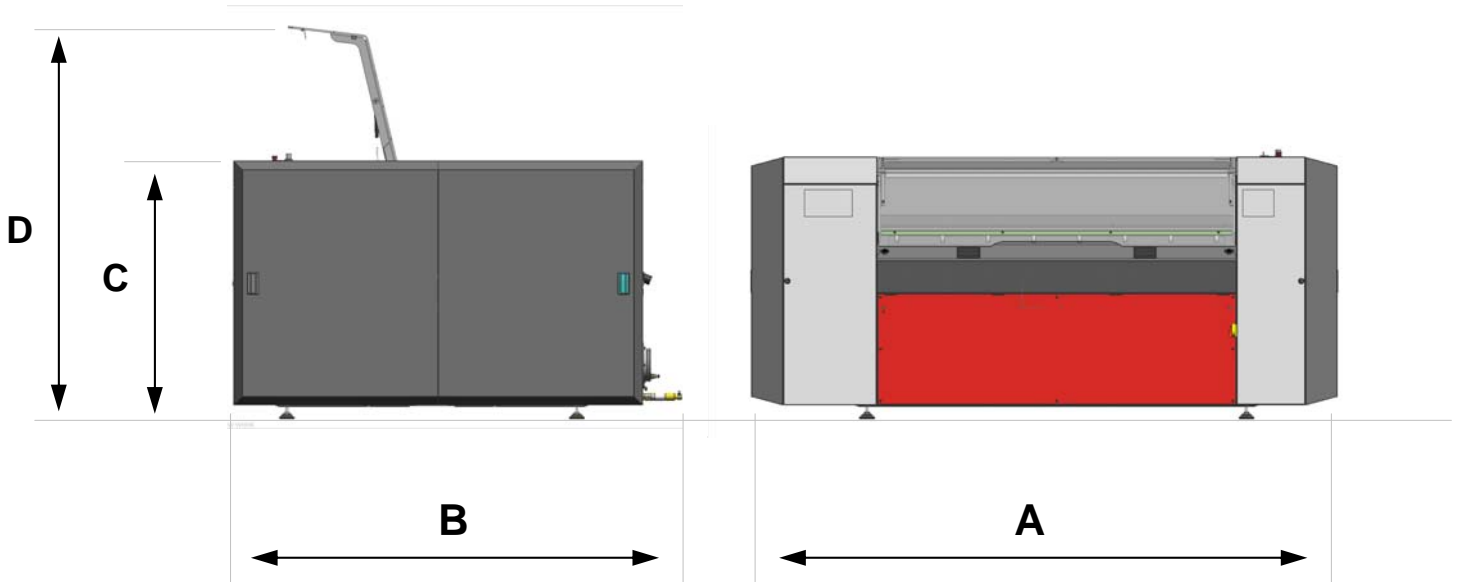
The machine has a manual table changing system that enables use of the optimal table for specific jobs.

### 4.2 Intended Use

The Trotec SP1500 is designed for engraving and cutting of the materials listed in this document.



### 4.3 Dimensions



Item	Description	Dimension	Units
A	Length	2829 (112)	mm (inch)
B	Width	2197 (87)	mm (inch)
C	Height, closed	1293 (51)	mm (inch)
D	Height, open	1950 (77)	mm (inch)

Weight – depends on product model ..... 1200 - 1300kg  
(2646 - 2867 lbs)

## 4.4 Mechanical Design

Working area	1500 x 1250 mm (59 x 49 in)
Feed area	1700 x 1600 mm (66 x 62 in)
Max. height of work piece	30 / 53 / 75 mm (1.18 / 2.08 / 2.95 in) (3 work table levels) 185 mm (7.28 in) without work table (flatness cannot be guaranteed without work table)
Speed of motion system	165 cm/s (65 in/sec)
Acceleration	9,55 m/s <sup>2</sup> (375 in/sec <sup>2</sup> )
Motor	Brushless DC servomotor
Encoder	Increment measuring system
Lenses	2,5" and 5.0" (Standard), 7.5" (optional) Lenses and all reflective mirrors are air-flushed and therefore protected from soiling (preinstalled air pump)
Max. area load of workpiece table	25 kg (55 lbs) over entire working area
Precision	±0,1 mm (±0.004 inch) over entire working area (depends on material)
Repeatability	< ±15 µm (< ±0.00059 inch)

## 4.5 Control System

Laser power	Adjustable 0 – 100% (Typically 10-100%)
Hardware Interface	USB, RS-232 (RS-232 mandatory for TroCAM and iCut)
Software Interface	ASCII, HPGL, Trotec Protocol

## 4.6 Laser Tubes

Laser tubes	Sealed off CO2 laser, maintenance free, Laser power of 60-400W
Wavelength	10,6 µm



### 4.7 Laser Safety

Laser class	CDRH Laser Safety; CE tested Laser class 2
Interlock	Dual interlock safety system

### 4.8 Ambient Conditions

Prescribed ambient temperature of +15° to +25°C (+59° to +77°F)  
 Humidity of 40% to max. 70%, no condensation,  
 dust-free environment (2nd degree per IEC60947-1)

### 4.9 Options

CCD-camera	Registration marks and compensation system „i-Cut“; max. working area: 1100 x 700 mm (43 x 27.5 in)
Gas-Kit (for compressed air respectively process gas)	Considered for control of compressed air and process gas (free of mechanical dust, water and oil) max. flow rate 150 l/min (40 gpm) with max. 10 bar (145 psi) max. limit 4 bar on working head push fitting connection with out diameter) connection on the machine with hose out diameter of 6mm (0.23 in) resp. standard fitting for compressed air.
Vacuum table	Strong vacuum effect for thin or corrugated materials (3500 m³/h at 500 Pa)
TroCAM (refer to TroCAM brochure)	CAD / CAM software for perfect cutting results; inclusively nesting-function, lead-in/lead-out, tool paths
Extraction System lead /follow-up time	Lead- and follow-up time fully adjustable



## 4.10 Electrical Connection

### 4.10.1 Electrical connection for laser system

Laserpower	60 W	100 W	200 W	400 W
Voltage	208/230 V, 1 phase	208/230 V, 1 phase	380/400 V, 3 phases	380/400 V, 3 phases
Fuse	16 A, slow	20 A, slow	3 x 20 A, slow	3 x 25 A, slow
Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Phases	L, N, PE	L, N, PE	L1, L2, L3, N, PE	L1, L2, L3, N, PE
Power	2,6 kW	3,5 kW	5,5 kW	9,5 kW

### 4.10.2 Electrical connection for water cooling (option)

EU

Laserpower	60 W	100 W	200 W	400 W
Required refrigerating capacity [W]	500	2300	4000	8000
Chiller type	Chilly 08-S	Chilly 25-S	Chilly 45-S	CWK 90-S
Refrigerating capacity [W]	890	2400	5300	9500
Rate of flow l/min	7,2	10	16	30
Pressure in bar	2,9	2,7	3,5	3,4
Supply voltage	1x230V 50/60Hz	1x230V 50/60Hz	1x230V 50Hz	3x400V 50/60Hz
Power Requirement	900	1800	3000	5900
Supply voltage	L, N, PE	L, N, PE	L, N, PE	L1, L2, L3, N, PE

US

Laserpower	60 W	100 W	200 W	400 W
Required refrigerating capacity [W]	500	2300	4000	8000
Chiller type	Chilly 08-S	Chilly 25-S	Chilly 35-S	CWK 90-S
Refrigerating capacity [W]	890	2400	4500	11000
Rate of flow l/min	8	10	15,2	36
Pressure in bar	3,7	3,5	3,7	4,8
Supply voltage	1x115V 60Hz	1x115V 60Hz	1x230V 50/60Hz	3x400V 50/60Hz
Power Requirement	900	1800	3000	5900
Supply voltage	L, N, PE	L, N, PE	L, N, PE	L1, L2, L3,N, PE



## 4.11 Materials



**Caution when processing conductive materials (carbon fibers,...)! Conductive dust or particles in the ambient air might damage electrical components and lead to short circuits.**

**Bear in mind that those defects are NOT warranted.**

Material	Engraving	Cutting	Marking
Acrylic	●	●	
Painted metal			●
Delrin	●	●	
Stainless steel (with Thermark)			●
Anodized aluminum			●
Veneer	●	●	
Handicrafts	●	●	
Glass	●		
Wood	●	●	
Gum rubber	●	●	
Ceramic	●		●
Cork	●	●	
Plastics	●	●	
Laser rubber	●		
Leather	●	●	
MDF	●		
Melamine	●	●	
Micro porous rubber	●	●	
Paper	●	●	
Polyester	●	●	
Stone	●		
PC (Polycarbonate)	●	●	

Other materials only with written approval by Trotec

**The following materials are not recommended for processing:**

Polyurethane PUR, Polymethylenoxide POM, Polyvinyl chloride PVC, Polyvinyl butyral PVB, Polytetrafluorethylene PTFE and materials containing epoxy or phenolic resins

**Caution:**



Trotec assumes no responsibility for any consequences of laser processing in any application such as medical or pharmaceutical applications.



# 5 Safety

## 5.1 Safety Instructions

Operating personnel must read and understand the operating instructions, and especially the “Safety” chapter, before operating the equipment. We recommend that the operator create internal instructional documentation for equipment safety and operation and to acknowledge receipt of these instructions/operating manual and participation in training/education in writing (see documents in the Appendices)

### 1.1 Intended user group

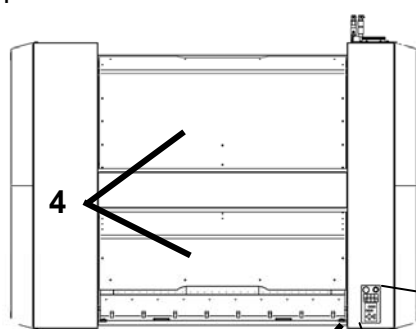
The machine may only be operated by authorized persons. Authorities must be clearly defined and observed, so that no unclear competencies result under the aspect of safety. This applies in particular to work performed on the electrical equipment that may only be performed by specially trained professionals.

Activity	Intended group of users
Control/operation	Trained personnel
Other activities (e.g. error correction, maintenance)	Specially trained personnel or hired tradesmen

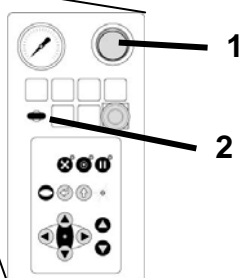
### 1.2 Operating instructions / Safety equipment

The safety zone is defined by the operator. Instructions and guidelines must be observed and followed!

Top view



No.	Description
1	EMERGENCY-OFF pushbutton
2	Key switch
3	ON-OFF switch
4	Safety covers





## 5.2 General Safety Instructions



### 2.1 General

#### **Hazard due to improper use of the machine!**

Improper use may lead to hazards and bodily injury and damage to assets.

- **Prohibit or prevent improper use.**

#### **Hazard due to disregard of safety instructions!**

Improper activities at the machine may lead to death, bodily injury and/or damage to the machine.

- **Before startup read and observe the operating manual and safety instructions!**

#### **Hazard due to faulty behavior by untrained persons!**

Improper activities at the machine may lead to death, bodily injury and/or damage to the machine.

- **Inform personnel about machine functions and potential risks and record this in the training record.**
- **Observe legal regulations related to operation of machines and accident prevention regulations.**

#### **Hazard due to poor lighting, poor housekeeping and moisture!**

Shadows, reflections and poor housekeeping increase the risk of an accident.

- **Light the work area well, and always keep it clean and dry.**

#### **Hazard due to missing, defective or bypassed safety equipment or machine parts!**

Nonfunctioning or missing safety equipment or machine parts may lead to death, bodily injury and/or damage to the machine.

- **Carefully check safety equipment and machine parts for proper operation.**
- **In case of a functional fault or defect, immediately take prescribed actions to correct the problem.**

#### **Hazard due to operator error (especially in setup mode)!**

Adjustment and control with insufficient knowledge of the machine may lead to death, bodily injury and/or damage to the machine.

- **Before startup read and observe the operating manual and safety instructions!**

#### **Hazard due to unsupervised operation of the machine!**

Unsupervised operation may lead to fire resulting in death, bodily injury and/or damage to the machine.

- **Never operate the machine without supervision!**







**Hazard due to reckless actions!**

Reckless actions may lead to death, bodily injury and/or damage to the machine.

- **Make sure that no personnel remain in the hazardous area or at the machine.**
- **Do not leave any foreign objects in the machine (tools, etc.).**

**Hazard due to operator error by unauthorized persons!**

Adjustment and control of the machine by persons with inadequate knowledge of machine operation may lead to death, bodily injury and/or damage to the machine.

- **Never inadvertently actuate the machine.**
- **Turn the main switch off when the machine is not being used.**

**Hazard during faulty work process!**

Deviations in machine processing and work results may be an indication of hazardous conditions (jammed product, loose guides, etc.).

- **Observe machine movements for proper operation and check workresults on a regular basis.**
- **In case of deviations, initiate prescribed actions.**

**Hazard due to premature actuation!**

Premature actuation of the machine may lead to death, bodily injury and/or damage to the machine.

- **Do not reach into hazardous areas until you have turned off the main switch and placed a service sign on it.**

**Hazard due to inadequate cleaning or functional checks!**

Inadequate cleaning or functional checks result in machine damage. Accumulation of dirt could impair mechanical functions.

- **Regularly check machine and connection lines for damage and wear. In case of damage, immediately initiate prescribed actions.**
- **Keep machine, handles and switches free of oil, grease, dirt and moisture.**

**Hazard due to unsuitable tools!**

The use of improper tools could result in a risk of bodily damage and/or damage to the machine. Poor housekeeping leads to elevated accident risk.

- **Use proper tools for maintenance jobs.**





**Hazard due to missing machine signage!**

The risk of machine operator error results from making incorrect assumptions.

- **Replace missing machine signage.**

**Hazard due to fault that cannot be corrected!**

A fault that cannot be corrected may lead to injury and/or damage to the machine.

- **Turn off the machine and call customer service!**

**Hazard due to improper disposal (waste, production materials)!**

Improper disposal of waste materials can lead to environmental damage.

- **Recycle recyclable materials in separated and clean state. Dispose of waste in accordance** with applicable legal regulations.

**Hazard due to inferior replacement parts or parts from other companies!**

The use of inferior replacement parts or parts from other companies impairs machine safety and invalidates the supplied Conformity Declaration (CE).

- **Replace wear parts or damaged machine, safety or electrical components with original replacement parts. Only use the accessories or auxiliary** devices identified in the operating manual.

**Hazard due to unsuitable work clothing or lack of protective equipment!**

Risk of injury due to catching on machine parts, falling loads, inhalation of dust particles and noise.

- **Wear suitable work clothing.**
- **Wear safety glasses.**
- **Wear hearing protection (mandatory for noise levels >85 dB(A))**





## 2.2 Laser

The machine is:

- Safety class 2

### **Hazard due to laser radiation without protective measures!**

Lack of protective measures can result in:

- Burns on the corneas of the eyes,
- Skin burns, and
- Fire hazard for clothing
- **Never operate machine without protective equipment**
- **Unapproved modification or disassembly of the laser is prohibited**
- **Never manipulate the laser unit**
- **Do not bypass the interlock system**

### **Hazard in processing unapproved material!**

Processing of materials not listed and approved in this operating manual is prohibited.

### **Processing medical technology and pharmaceutical products!**

Trotec assumes no responsibility for any consequences or the suitability of laser processing for any applications, especially those in the medical technology or pharmaceutical fields.

### **Hazard when working with the cutting table!**

If not all of the partition plates are used in the cutting table, there is a risk of fire due to reflection of the laser beam.

- **Insert anti-reflective material beneath the partition plates.**





## 2.3 Transport

### **Hazard of loads impacting persons or objects!**

Falling, tipping or sliding loads may lead to death, bodily injury and/or damage to the machine.

- **Never let loads impact persons.**
- **Set up unloading station before lifting loads. Avoid unnecessarily long periods of lifting.**
- **Do not lift loads until you have a clear view of the travel route. Choose travel routes that are as unobstructed as possible.**

### **Hazard due to lifting equipment operator error by untrained personnel!**

Improper operation of lifting equipment may lead to death, bodily injury and/or damage to the machine.

- **Operation of lifting equipment only by trained personnel.**
- **Wear protective helmet, safety shoes and gloves.**



## 5.3 Secondary Risks



### 3.1 General

#### **Hazard due to materials hazardous to health!**

- In processing with or use (cleaning, etc.) of hazardous materials (toxic, etc.), appropriate measures should be taken to avoid health hazards.

#### **Hazard due to operator error!**

Errors are possible even when the machine is operated properly following the functions and sequences described in the operating manual. Such errors may lead to death, bodily injury and/or damage to the machine.

- Do not initiate any work or adjustment activities while any personnel are located in the hazardous area.

#### **Hazard due to add -on options or machines!**

Adding on options or machines can lead to unknown risks and hazards.

- Modifications made to the machine without approval by Trotec invalidates the Conformity Declaration (CE) supplied with the product.



### 3.2 Crushing hazard

#### **Hazard due to moving parts!**

Reaching, stepping or leaning into the hazardous area may result in serious injury by crushing body parts, severing fingers or the hand!

- Do not initiate any work process on the machine while persons (helpers, etc.) are located in the hazardous area of the machine.
- Prohibit access to the hazardous area.
- Wear suitable work clothing (no loose clothing, jewelry, or similar.).



## 5.4 Signage

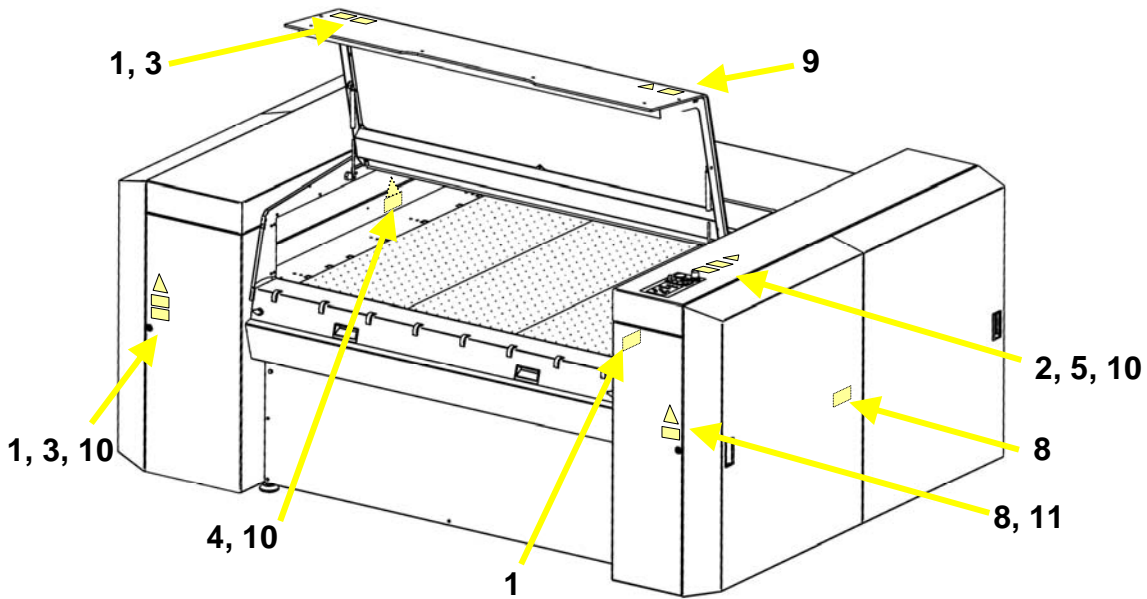


The warning and information labels are attached in such positions of the device that could represent a source of danger during set-up and operation. Therefore, follow the information on the labels. If labels are lost or damaged, they must be replaced immediately.

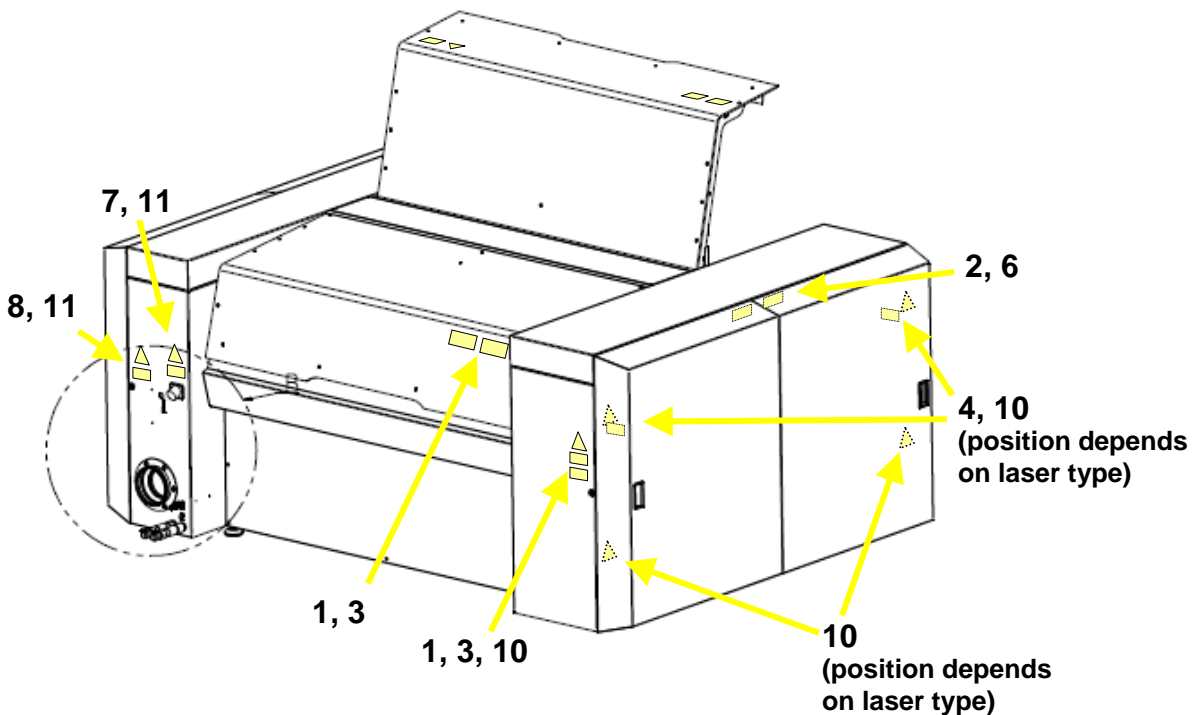
Nr.	Label	Position (see also pictures on the next page)
1	<b>CAUTION</b> CLASS 4 INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION	a) External: frontside top cover, left side b) External: backside top cover, right side c) External: maintenance panel front locker d) External: maintenance panel back locker e) External: next to service plug
2	<b>LASERDIODE</b> MAX. POWER < 1mW cw WAVELENGTH 655nm	a) External: at control panel b) Internal: maintenance panel at the top
3	<b>CAUTION</b> CLASS 2 LASER RADIATION WHEN OPEN DO NOT STARE INTO BEAM	a) External: frontside top cover, left side b) External: backside top cover, right side c) External: maintenance panel front locker d) External: maintenance panel back locker
4	<b>LASER APERTURE</b>	a) Internal: working area, at x-axis left side b) Internal: maintenance panel at laser diode
5	CO2 laser Power Range 40-400 W Wavelength 10600 nm	External: at control panel
6	<b>LASER RADIATION</b> DO NOT STARE INTO THE BEAM CLASS 2 LASER PRODUCT	Internal: maintenance panel at the top
7	<b>INPUT POWER</b> 380-400VAC 50HZ	External: next to the power socket
8	<b>BEFORE OPEN UNPLUG THE MACHINE FIRST</b>	a) External: service panel front locker b) External: service panel back locker c) Internal: service panel, cover of electronics
9	<b>NEVER OPERATE THE LASER SYSTEM WITHOUT CONSTANT SUPERVISION</b> EXPOSURE TO THE LASER BEAM MAY CAUSE IGNITION OF COMBUSTIBLE MATERIALS WHICH CAN CAUSE SEVERE DAMAGE TO THE EQUIPMENT	External: at the front cover, right side
10		a) External: at control panel b) Internal: working area, at x-axis left side c) External: maintenance panel front locker d) External: maintenance panel back locker e) Internal: at mirror 1 f) Internal: at laser diode (mirror 2)
11		a) External: next to the power socket b) External: service panel front locker c) External: service panel back locker



Front and right side



Back and left side





## 6 Transport - Storage - Setup

### 6.1 Forklift transport

You receive your SP1500 packed in a wooden crate. If possible keep the packing box. You might require it in case of a return.

1. Remove the top cover of the wooden box. Then the side covers. For this work we strongly recommend to use an electric screwdriver.



SP1500 kept in position by wooden spacers

Please note that the machine housing is reinforced only on certain positions so that a fork lift truck can lift the machine.

The following suspension points are available:

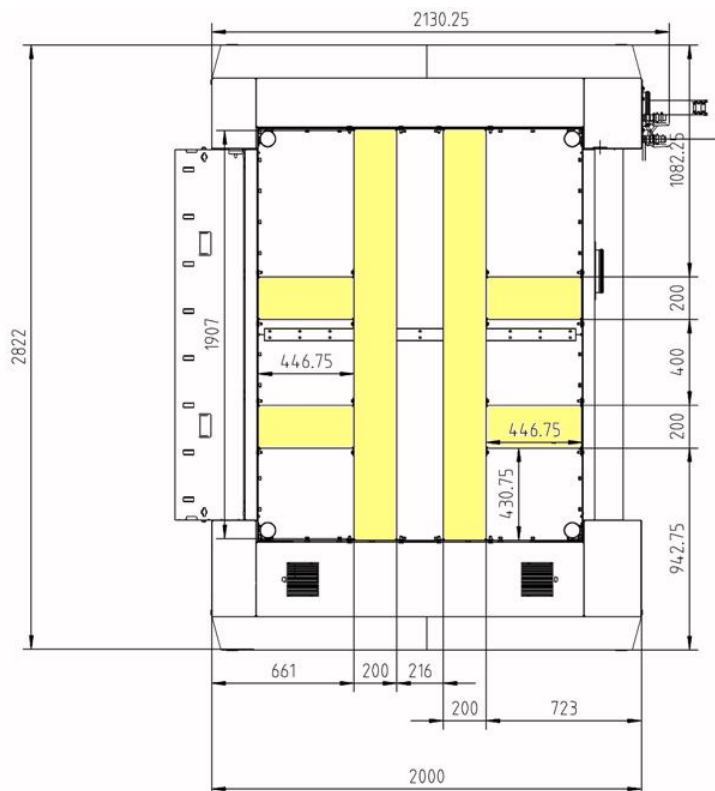
- machine front and back
- left and right side

These positions are marked. See also the yellow colored bars besides (bottom view).

Never place the forks on other positions, as this could cause severe damages on the housing and affect cutting precision as well as life expectancy of the motion system.

The machine may only be lifted and transported:

- under the guidance of a 2nd person
- at the marked points
- with a fork lift carrying 2000kg (4.4 lb) and
- forks of minimum 2m length







2. Carefully lift the machine from the box floor.



3. Position the SP1500 on an even floor capable of carrying the machine weight. This location must meet the ambient requirements mentioned below.





## 6.2 Shipping conditions

- When transporting outdoors, only transport in shipping vehicles with roofs or sufficient weather protection.
- Protect machine from shipping damage using tie-down straps, packaging materials and sufficient gaps to other shipped goods.
- Ambient temperature for transport:
  - Minimum temperature +10 °C (+50 F)
  - Maximum temperature +40 °C (+104 F)
- Handle machine and machine parts with care.
- Do not place any heavy loads on top of the machine or machine parts.
- Avoid harsh impacts.
- Only lift at the specified points.
- Take special care in transporting electronic components.

## 6.3 Unloading, inspection and damage reporting

### After unloading:

- Remove shipping packaging.
- Dispose of packaging according to applicable waste disposal law.
- Inspect machine and machine parts for shipping damage.
- Check shipment for completeness.

### In case of shipping damage or incomplete shipment:

- Immediately document the details of the damage.
- Also note the claim on shipping papers.
- Photograph the damage.
- Send report to TROTEC.

## 6.4 Storage conditions

- Store machine and machine parts in a dry area.
- Protect machine and machine parts from scratches.
- Store electronic components especially carefully in a packaged state.
- In case of longer term storage, protect exposed metal parts (e.g. oil the parts).
- Ambient temperature for storage:
  - Minimum temperature +10 °C (+50 F)
  - Maximum temperature +40 °C (+104 F)

## 6.5 Storage Location

In storage room or packaged with adequate weather protection. The storage location must be free of caustic materials, vapors and combustible materials.



## 6.6 Installation Site

- Weather-protected, roofed building with vehicular access
- Low dust environment

### Properties of the installation site:

- Adequate lighting
- Uniform, level, horizontal and firm floor, planarity +/-5 mm (+/-0.1969 inch), no special foundation required
- Load bearing capacity of base frame at least 500 kg/m<sup>2</sup> (105 lbs/sq.ft.)

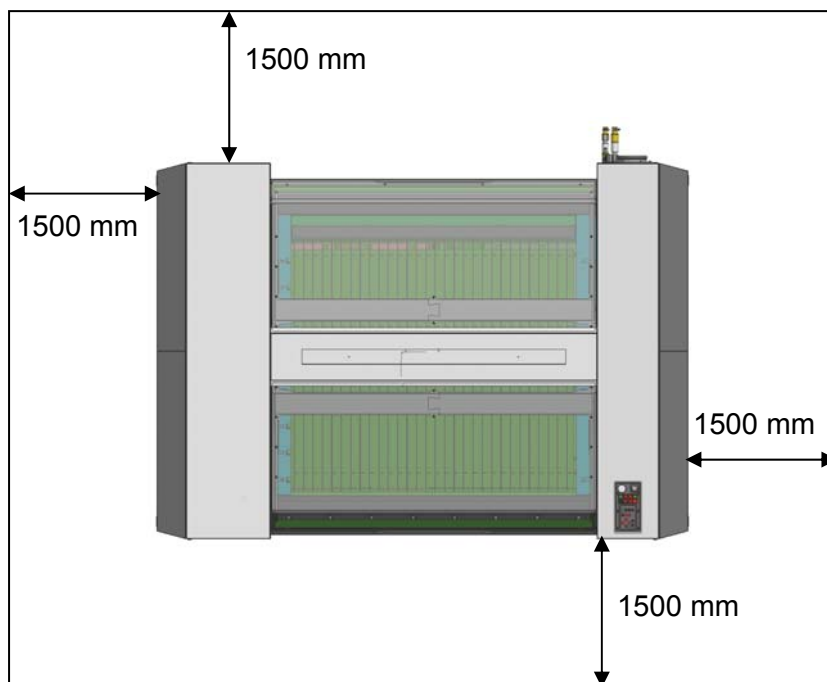
### Installation site must:

- Be free of noisy electrical installations, hoses and pipe lines
- Have power supply that is free of fluctuations
- Be shielded from EMC

### Ambient Conditions:

- Relative humidity: 40% to max. 70%
- Ideal room temperature: +15°C to +25°C (+59 F to +77F)
- Dust-free environment (2nd degree per IEC60947-1)

## 6.7 Space Requirements



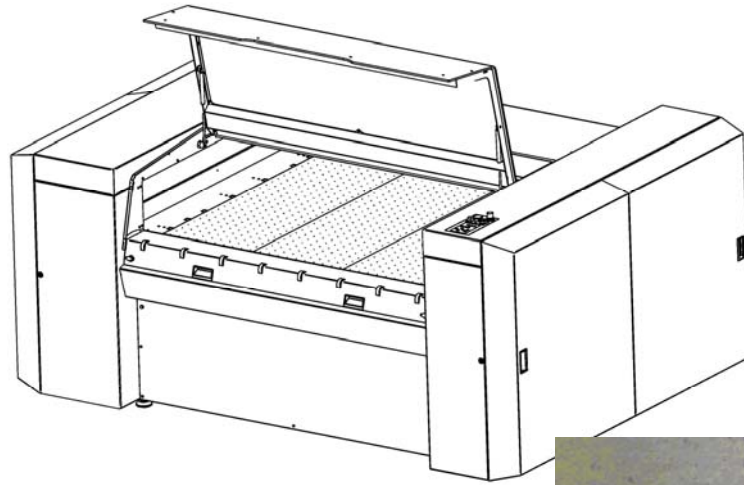
## 6.8 Necessary Feed Lines

- Electrical
- Compressed air: Free of oil, water and dirt at max. 10 bar (145 psi)
- Gases (Neutrogen, Argon, protective gas, ...)





## 6.9 Setup

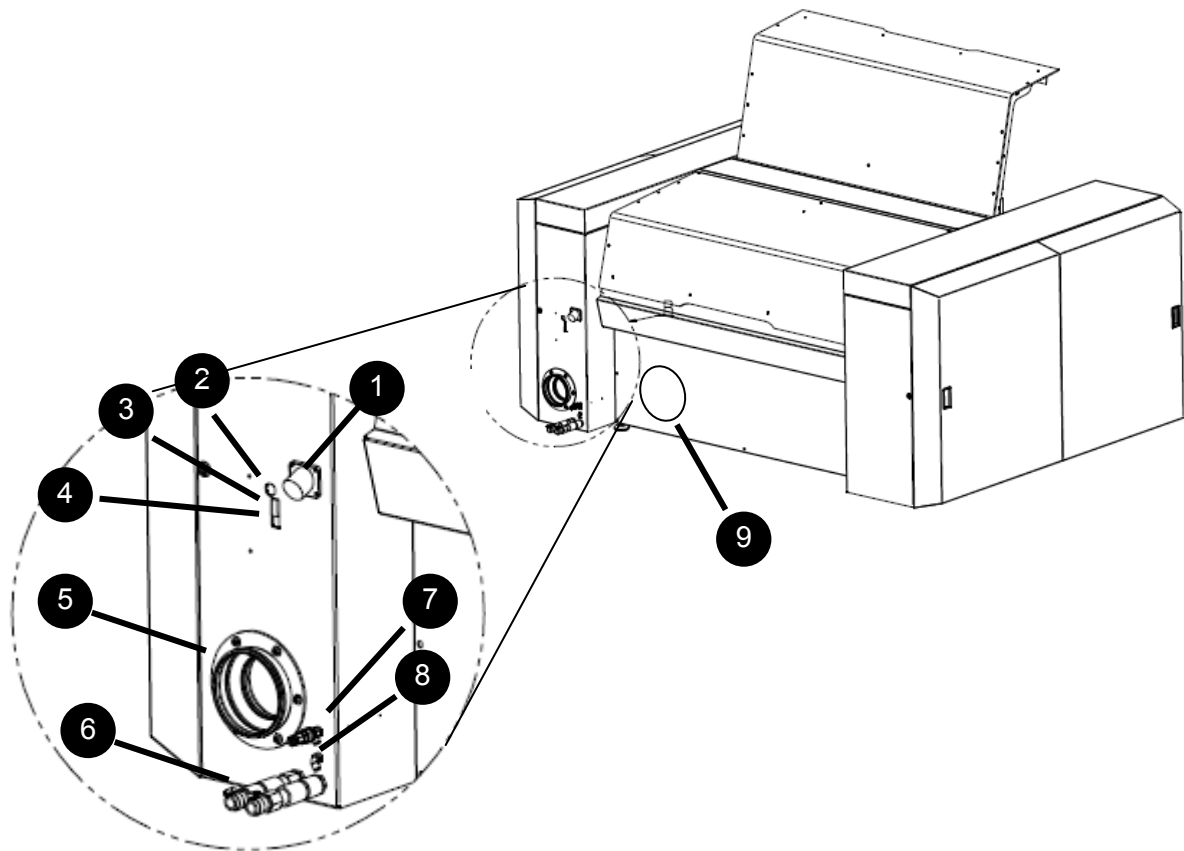


Align machine to horizontal level by adjusting the feet, and check with a water level. Measure the level on the x-axis and y-axis.

For the adjustment of the feet a 24mm wrench is necessary.



## 6.10 Connections

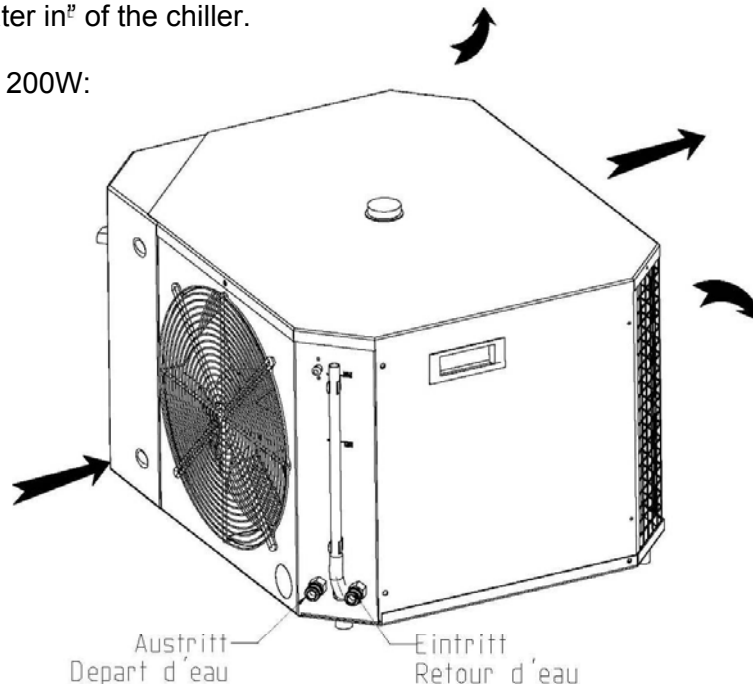


Item	Description	Item	Description
1	Electrical power	6	Cooling water connectors
2	Connection cable exhaust system	7	Compressed air (Gas 1 – standard connector)
3	RS-232 for PC (mandatory for iCut/AlphaCam)	8	Gas 2
4	USB for PC	9	Table exhaust connector (200mm)
5	Head exhaust connector		

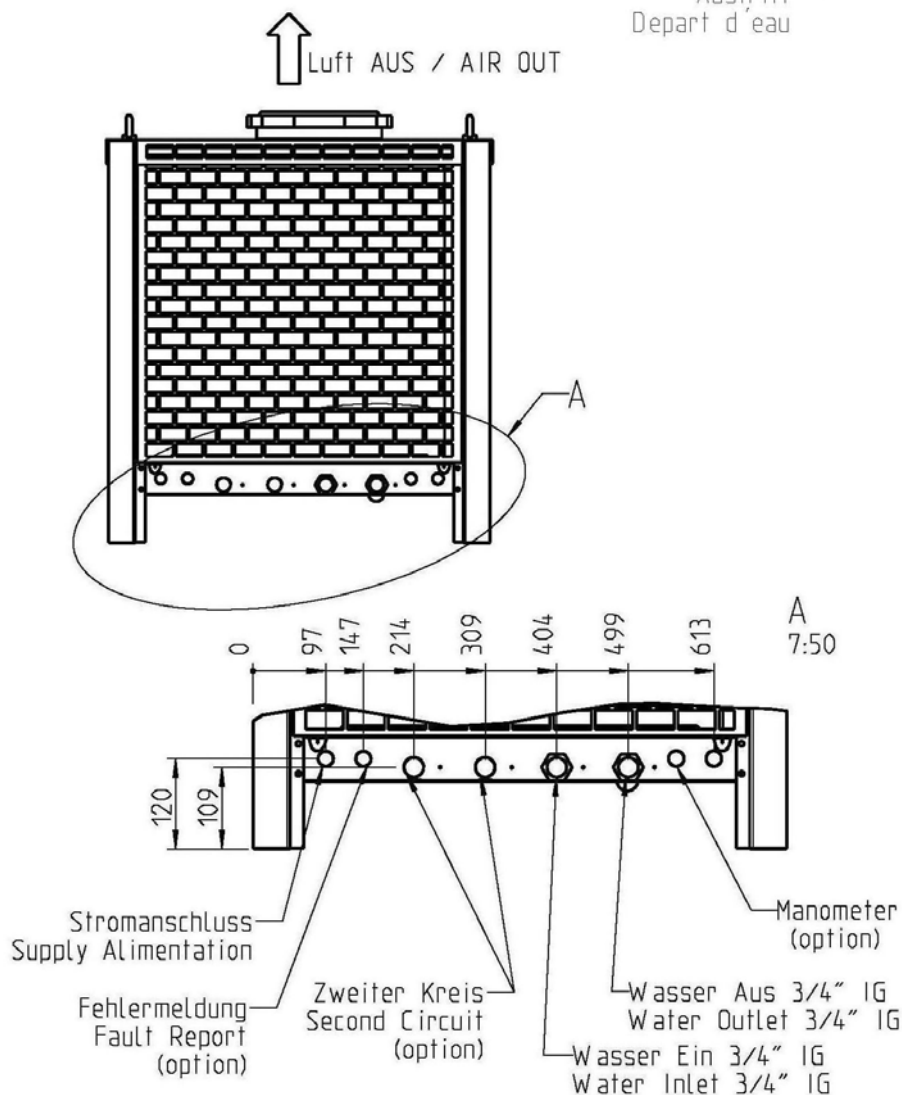
### 6.10.1 Cooling System

**Note:** It's important to connect the "water in" of the SP1500 with the "water out" of the chiller, and the "water out" of the SP1500 with the "water in" of the chiller.

Sketch of Chillers for Laser Power 60W to 200W:

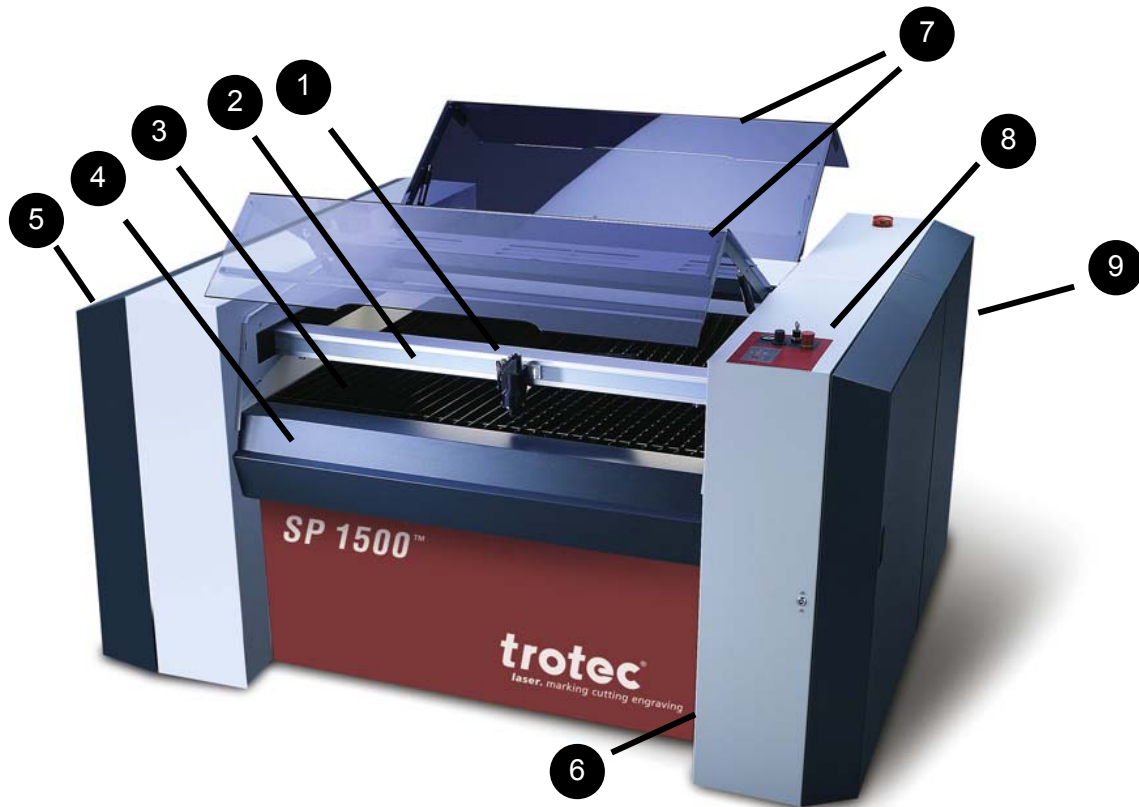


Sketch of Chiller for Laser Power 400W:





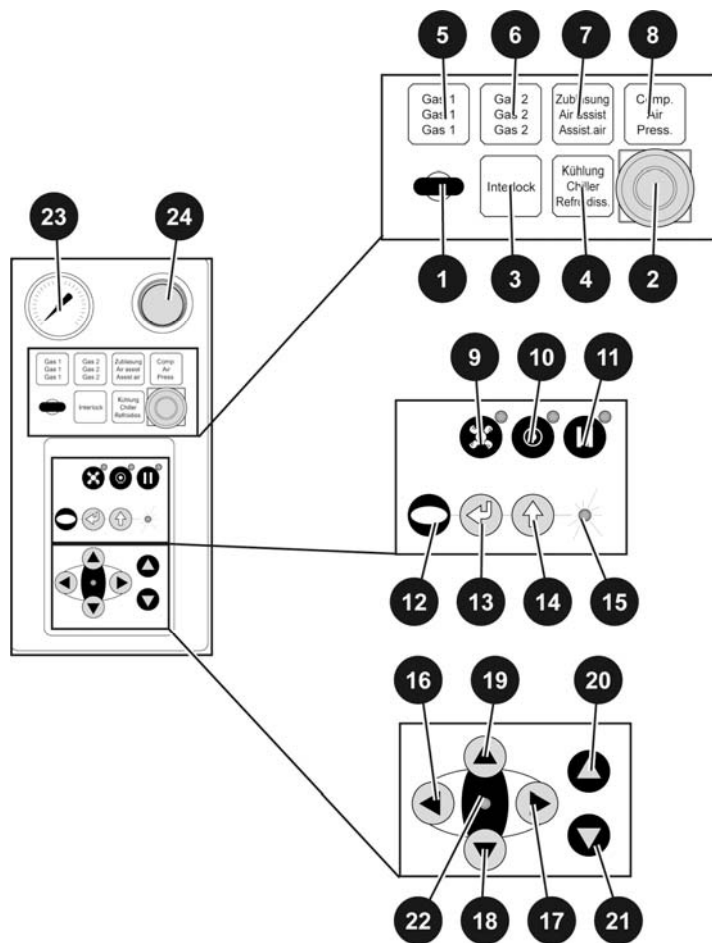
## 7 Machine view



Item	Description	Item	Description
1	Working head	6	Main switch
2	X-Axis	7	Top Cover
3	Working table	8	Keypad
4	Removal door for leavings / waste	9	Service Panel
5	Maintenance panel		

# 8 Operation

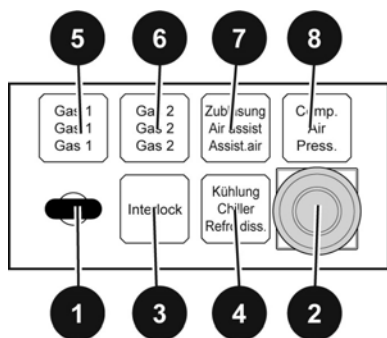
## 8.1 Key pad – Overview



Item	Description	Item	Description
1	Key switch	13	Button: Start (repeat) - JobControl only
2	EMERG. OFF push button	14	Button: "Shift" for 2 <sup>nd</sup> function key level
3	Indicator: Interlock on/off	15	LED status indicator: Laser beam
4	Indicator: Cooling on/off	16	Button: Working head to left
5	Button: Compressed Air (Gas 1)	17	Button: Working head to right
6	Button: Gas 2	18	Button: Working head forward
7	Air assist (internal)	19	Button: Working head backward
8	Light: compressed air, Voltage (AC, DC)	20	Not used
9	Button: Vacuum on/off	21	Not used
10	Button: Standby	22	LED status indicator
11	Button: Pause	23	Manometer for gas pressure
12	Service LED	24	Pressure regulator



## 8.2 Key pad – Description



### Key switch (1)

### EMERGENCY OFF pushbutton (2)

Pressing this button shuts the machine down completely. The EMERGENCY OFF pushbutton must be unlocked to start up the machine again.

### Interlock on/off indicator (3)

Interlock indicator lights when the machine is turned on, and:

- Guard door or door is open
- Cover plate is not installed

If the Interlock Indicator is unlit, the machine is ready for production.

### Cooling on/off indicator (4)

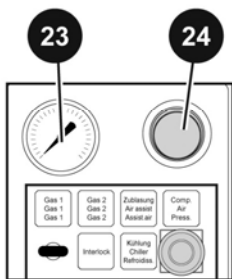
### Switching-in process gas

- Compressed Air (Gas 1) on/off key (5)
- Gas 2 on/off key (6)

### Pressure regulator (24)

This is used to adjust the required gas pressure of the gas used. The pressure setting is displayed on the:

### Manometer for gas pressure (23)



### Air assist on/off indicator (7)

Air assist is switched on/off by simultaneously pressing these keys:

“Shift” for 2nd function key level (14)

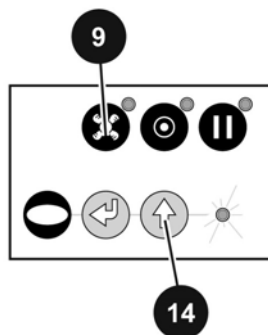
and

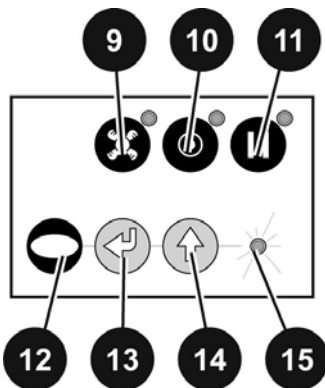
Vacuum on/off (9)

### Compressed air, voltage (AC, DC) (8)

Lights in following conditions:

- Compressed air missing
- AC-Voltage failure (L1, L2, L3, N)
- DC-Voltage failure (power supplies)





#### Vacuum on/off key (9)

When this key is pressed it lights and vacuum is switched on for the vacuum table

#### Standby key (10)

During machine operation key illumination is off. When the key is pressed it lights and the machine is in Standby mode, i.e.:

- Laser in Ready state
- Lighting of work table is deactivated
- Blowers for laser tubes are deactivated

#### Pause key (11)

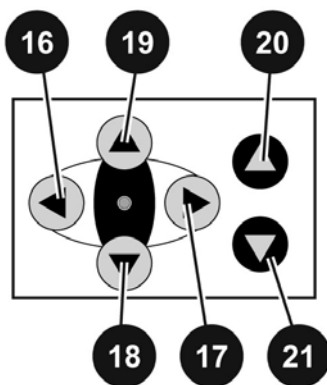
During machine operation key illumination is off. When the key is pressed it lights and the work process being executed is stopped

#### Lamp for service plug (12)

Lights when a service plug is inserted (Technician)

#### Start (Repeat) key (13)

Key for starting the job program and repeating the last job program; see programming manual regarding this



#### “Shift” key for 2nd function key level (14)

For additional operations. When this key is pressed together with the following keys, the functions indicated are activated:

##### Vacuum on/off key (9):

Air assist on/off

##### Pause key (11):

Stops the job program

##### Working head keys (16) to (19)

These keys drive the laser head to the end position (left/backwards)

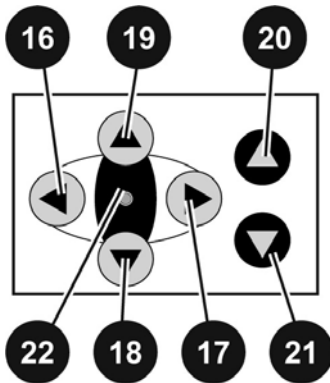
##### Start key (13):

Tests the laser for proper function

#### LED status indicator for laser beam (15)

Lightened when laser is operating





**Movements of the laser head:**

- Key: Working head to left (16)
- Key: Working head to right (17)
- Key: Working head forward (18)
- Key: Working head backward (19)

When 2 adjacent keys are pressed simultaneously (e.g. keys 16 and 19), the laser head moves diagonally.

**Movements of the work table (20, 21):**

Not used on SP1500

**LED status indicator (22)**

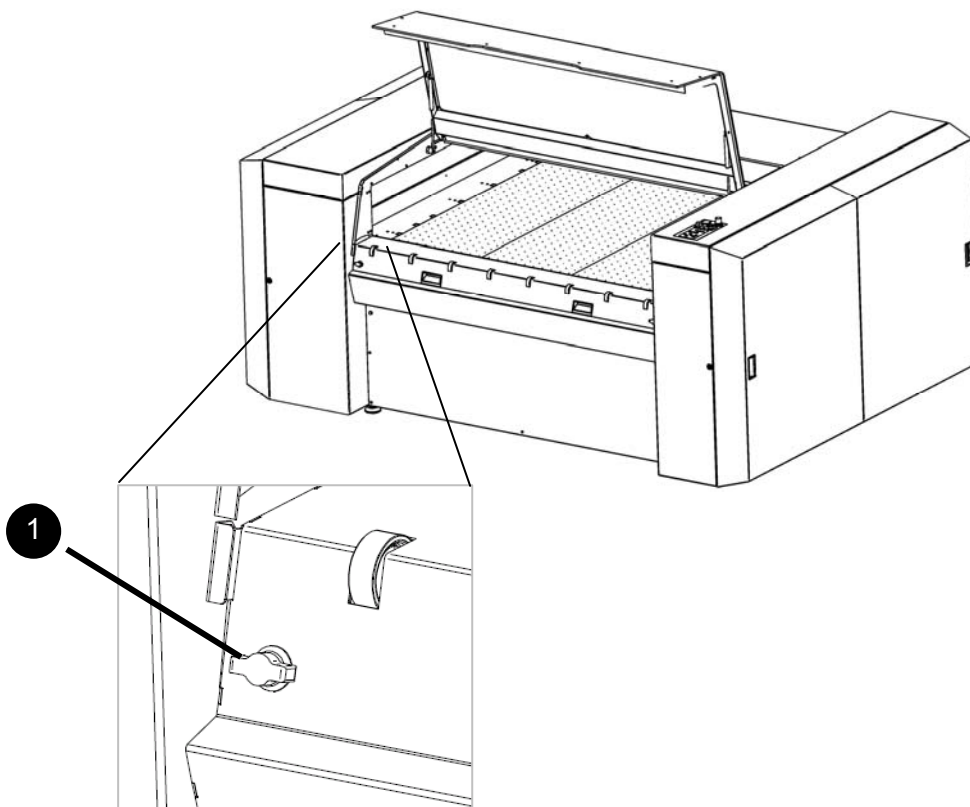
- Flashes 1x/sec -> Machine ready for operation
- Flashes 2x/sec -> Interlock ON



## 8.3 Workpiece Removal Door

- Open door by turning the lock (1) and pulling forward on the two handles  
CAUTION door is HEAVY
- Remove the waste or workpieces

Door must be closed during laser operation.



## 8.4 Tables

### 8.4.1 Cutting Table (Standard Table)

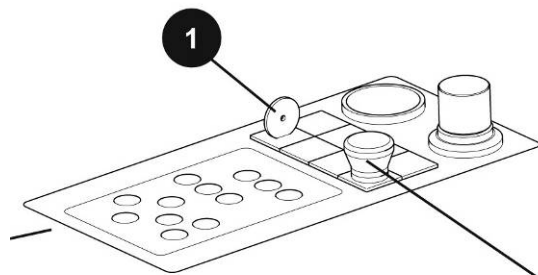


### 8.4.2 Vacuum Table

- The vacuum table is only intended for engraving and/or cutting thin and lightweight materials such as films, plastic laminates, veneers, thin sheets of wood, paper, cardboard, and similar.
- The entire surface of the vacuum table must be covered to ensure the maximum vacuum effect



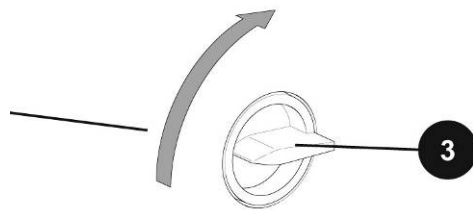
## 8.5 Operation



Enable machine with the key switch (1)

Check whether EMERGENCY-OFF pushbutton (2) is unlocked (pull to release)

Turn on main switch (3)



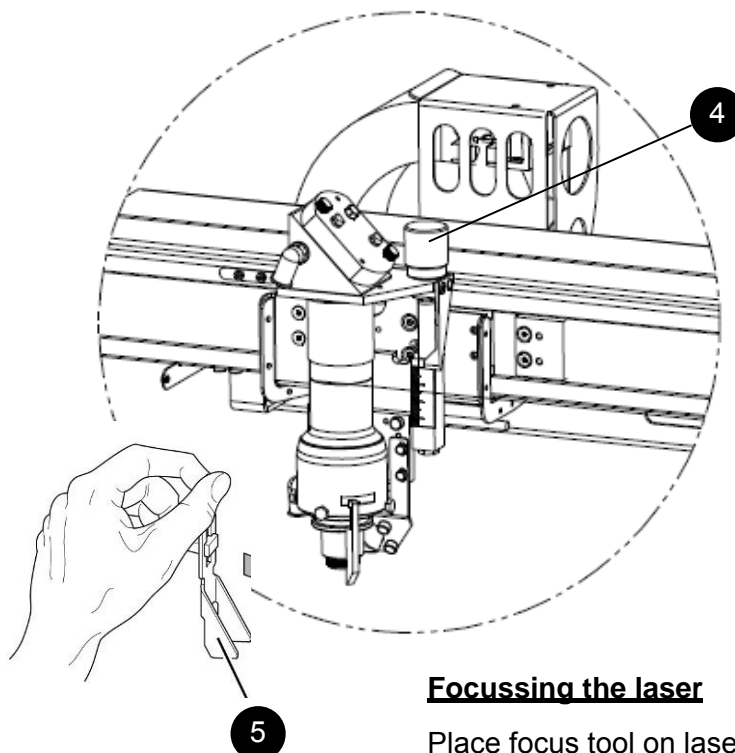
Wait until reference movement is finished (covers have to be closed)

Drive the laser head to its forward-end position and drive it upward with the adjusting screw (4)

Clean lens, reinstall and secure

Install nozzle

Carefully place material on table



### **Focussing the laser**

Place focus tool on laser head

Drive the working head downward until focus tool drops out.

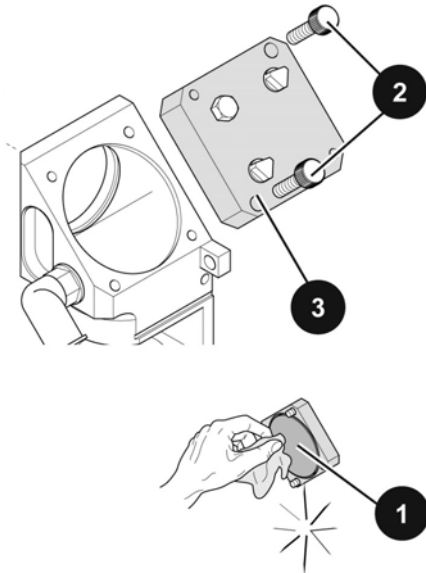
Machine is now ready for production.





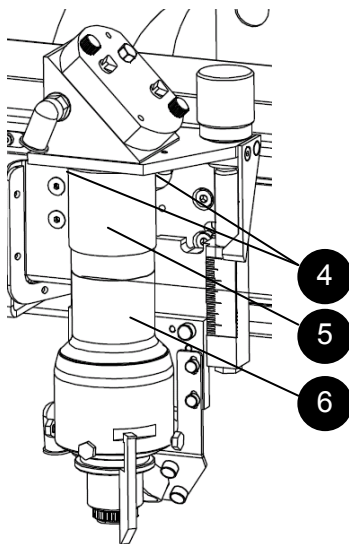
## 9 Maintenance

### 9.1 Cleaning optics on the Laser Head



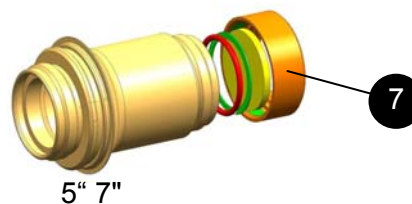
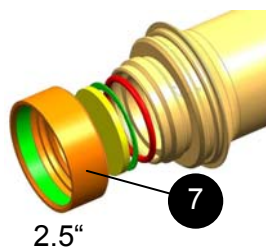
#### Cleaning the mirror (1):

- Loosen and remove both screws (2)
- Remove mirror holder (3)
- Check mirror (1) for damage
- Clean mirror (1) with cleaning fluid and cleaning cloth
- Check mirror (1) for damage once again
- Reinstall mirror holder (3) and secure with two screws (2)

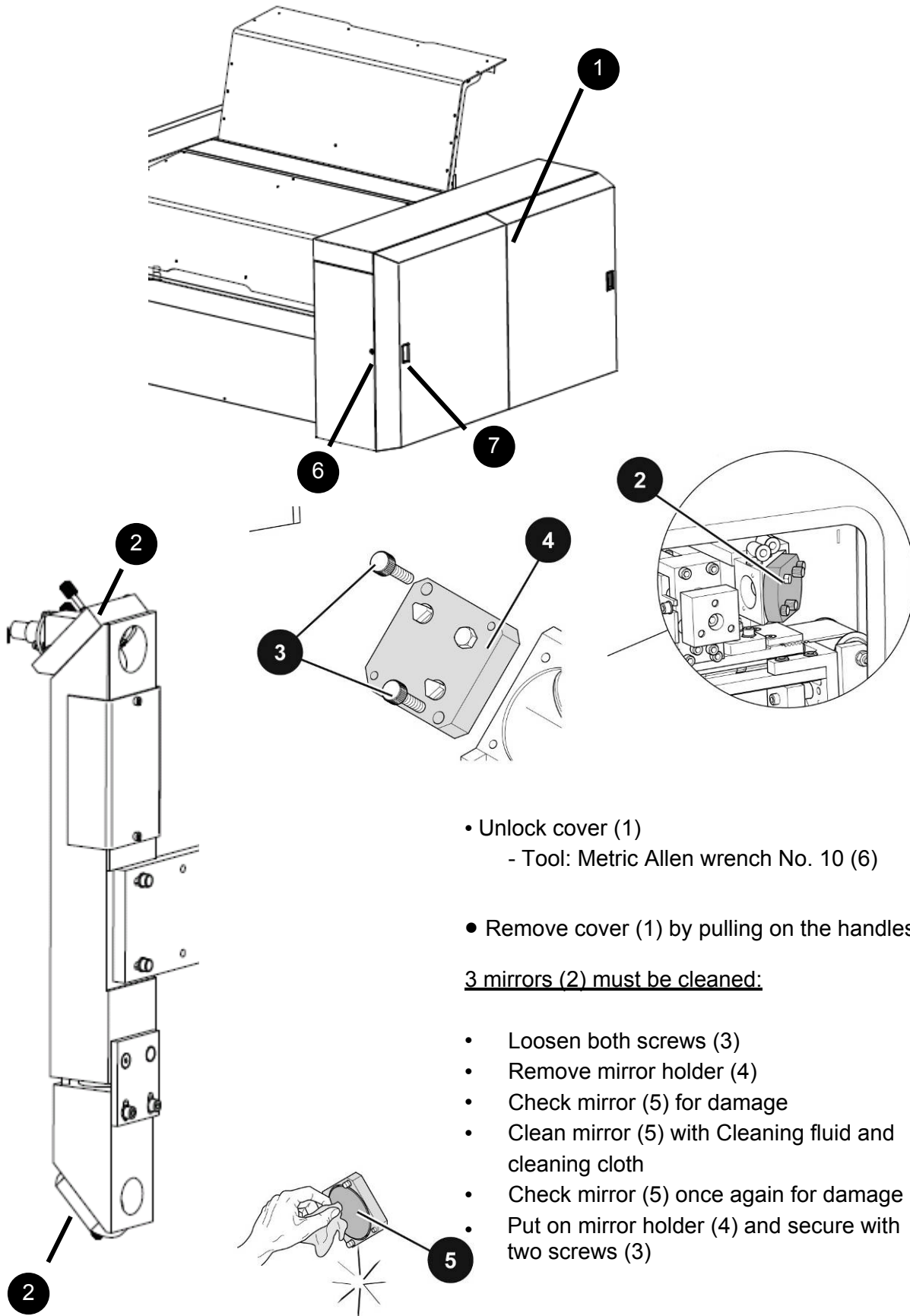


#### Cleaning lenses

- Loosen the two screws (4) holding the upper cylinder (5)
- Loosen the lower cylinder (6) by screwing it inward
- Remove both cylinders together
- Loosen lens holder (7) and remove lens
- Check lens for damage
- Clean both sides of lens with Cleaning fluid and cleaning cloth
- Check lens once again for damage
- Insert and fix lens in the reverse order (CAUTION: round side of lens has to face laser source)



## 9.2 Cleaning the Mirrors



- Unlock cover (1)  
- Tool: Metric Allen wrench No. 10 (6)

- Remove cover (1) by pulling on the handles (7)

### 3 mirrors (2) must be cleaned:

- Loosen both screws (3)
- Remove mirror holder (4)
- Check mirror (5) for damage
- Clean mirror (5) with Cleaning fluid and cleaning cloth
- Check mirror (5) once again for damage
- Put on mirror holder (4) and secure with two screws (3)





### 9.3 Maintenance plan

	daily	weekly	monthly	yearly
<b>Laser</b>				
Lens, mirror #4 <input type="checkbox"/>	Check Cleaning if required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mirrors #1...3		Check Cleaning if required		
Processing table and rulers <input type="checkbox"/>	Cleaning			
Entire working area – general cleaning <input type="checkbox"/>			Cleaning	
<b>Exhaust System</b>				
Bag filter	According to the operation manual of the exhaust system			
Filter mat				
Particle filter				
Activated carbon filter <input type="checkbox"/>				
<b>Cooling System</b>				
Pump filter <input type="checkbox"/>	According to the operation manual of the exhaust system			
Condenser heater <input type="checkbox"/>				
Cooling agent				
Pump				

For detailed information on the maintenance activities on exhaust and cooling systems please refer to the respective manuals.





## 10 Appendix

### 10.1 EU – Declaration of conformity

The manufacturer

**TROTEC Produktions- u. Vertriebs GmbH.**  
Linzer Strasse 156,  
A-4600 Wels, OÖ.,  
AUSTRIA

hereby declares that the following product

**TROTEC 8018 SP1500**  
**Model N° 8018 SP1500**

has demonstrated conformity to the following guidelines:

2006/42/EG Directive for Machines  
2006/95/EG Low Voltage Directive  
2004/108/EG EMC Guideline

Applied during design and construction of this product:

- EN ISO12100 Machine Safety
- EN 60335-1/2007 Safety of Household and similar Appliances
- EN 55014-1/2006, EN 55014-2/1997 Electromagnetic Compatibility
  - EN 60204-1 Machine Safety – electr. Equipment
- EN 60825-1/2007, EN 60825-4/2006 and EN 60825-14/2006  
Safety of Laser Equipment
- EN 60950/2006 Safety of Electric Devices for Informatics including  
electric Office Machines
- EN 55022/2008, EN 55024/2003 Electromagnetic Compatibility

Wels,

Trotec Produktions u. Vertriebs Ges.m.b.H





## 10.2 Acceptance report

Dear customer!

Please check applicable items:

**We request your confirmation of properly completed transfer of the machine**

**Please transmit a copy of this document – filled out and signed by an authorized company representative – to an employee of our sales affiliate for forwarding to the manufacturer.**

- Machine parts checked for shipping damage
- Machine parts checked against delivery note
- Setup of the machine discussed
- Startup of the machine discussed
- Operation of the machine discussed
- Maintenance of the machine discussed
- Electrical voltage checked
- Safety Instructions discussed
- Trial run performed
- Deficiencies determined

Thank you very much.

The machine with the

machine designation: SP1500

has been checked according to the listed items and has been transferred properly.

---

City, Date

---

Company stamp / Signature



### 10.3 Acceptance report

Employee/Trainee: .....

Trainer: .....

Date of Training: .....

The above mentioned Employee received instruction on the operation of the SP1500 Lasersystem.

Especially the following topics are covered:

- Machine Function
- Danger Area
- Warnings
- Position **Emergency-OFF** Button
- Personal Protective Equipment
- Operating Facilities
- Work Flow
- Setting-up
- Taking into Service and Shutdown
- Announcement of unexpected working result and the resulting procedure
- Announcement of Failure and instituting Procedure
- Responsibility on remedial measure
- Operation Manual and its depository for inspection

.....  
Signature of Trainer

.....  
Signature of Trainee



### 10.4 Response Form

If you face any trouble with the machine, please provide the following information and add a Servicefile (procedure is described on the following pages).

Date	
------	--

#### Machine Details

Serialnumber	
JobControl Version	
Driver Version	
Layout Software	
Firmware Version	

#### Contact Details

Name	
Country	
Phone Number	
Email address	

#### Problem Description

Does an Error message show up on the PC, if so which one?

What happened before the error showed up? (Thunder&Lighting, Windows-Update,...)

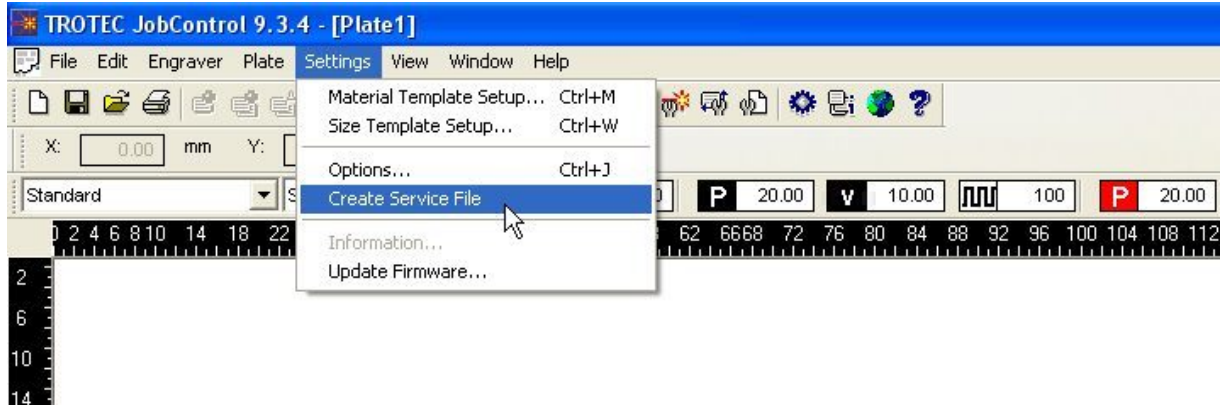
What was tried to solve the problem?

Please send the information to your sales representative or to [techsupport@troteclaser.com](mailto:techsupport@troteclaser.com).

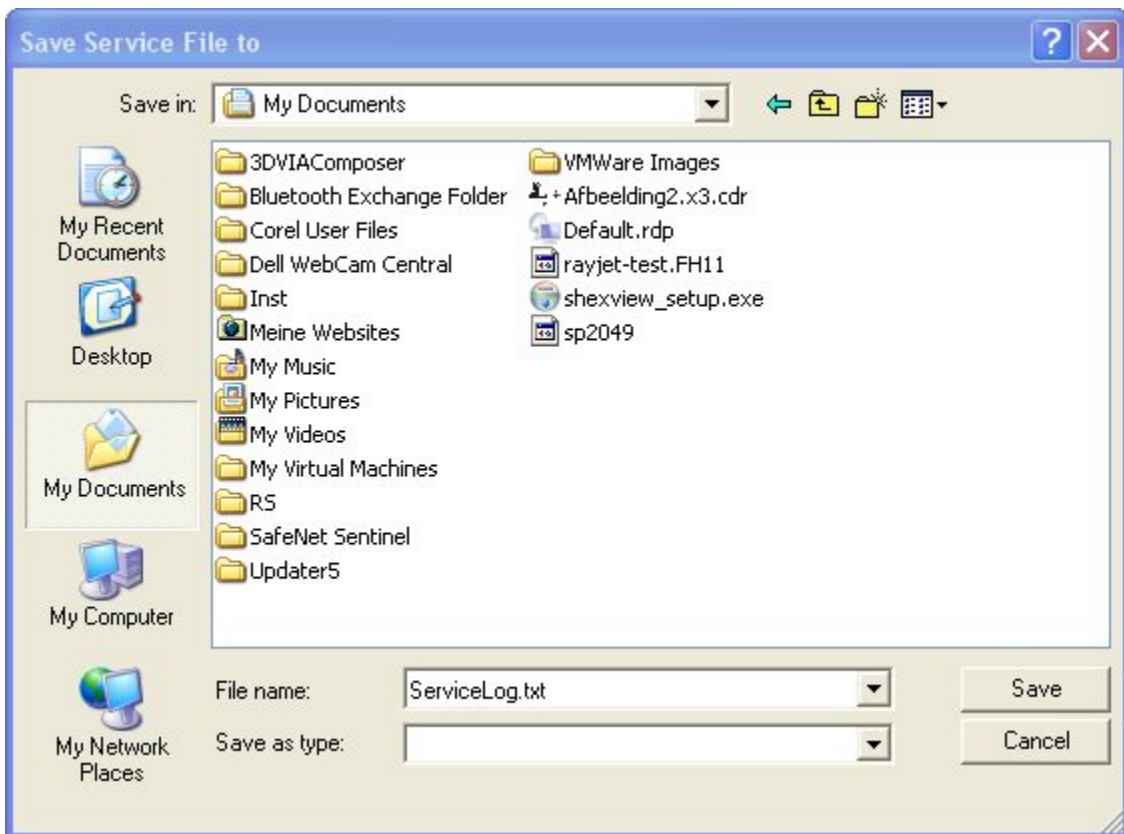


## 10.5 How to create a Service File

1. Start JobControl and go to Settings> Create Service File.

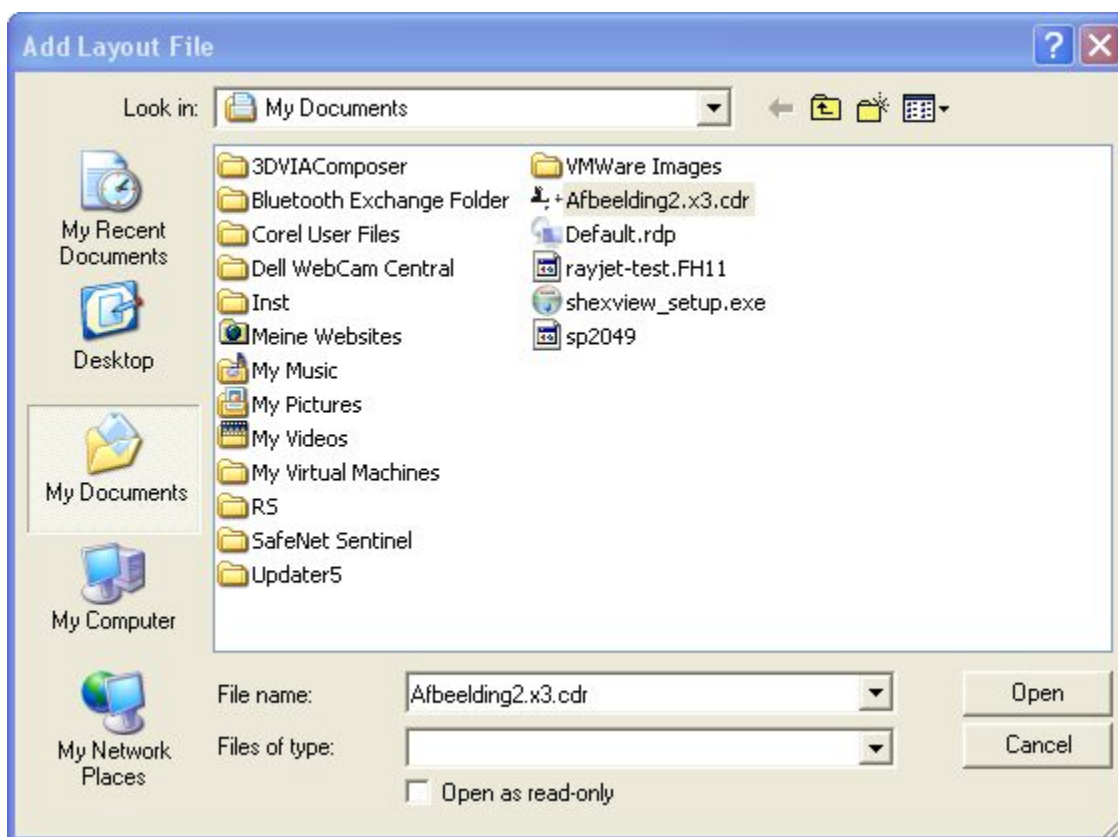


2. The window „Save Service File to“ shows up. Please select a directory to save the file and click on „Save“.

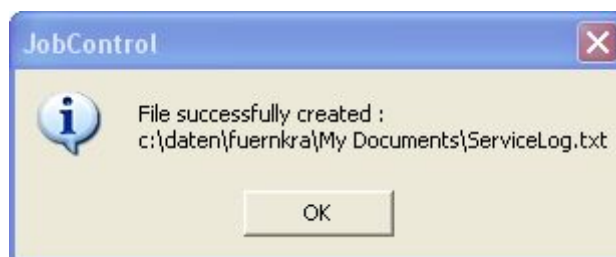


Appendix

- The window „Add Layout File“ shows up. Please select the layout file, which was sent most recently to JobControl and possibly caused a failure (example: Corel file, Photoshop file, AutoCAD file,...). Click on „Open“.



- The following window confirms, that the Service File (ServiceLog.txt) was created successfully.



- Please send the Service File to your sales representative or to [techsupport@troteclaser.com](mailto:techsupport@troteclaser.com).

