



Pre-Installation Instructions

8014 Trotec Speedy 500





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1 Laser Machine Requirements

1.1 Transportation and Handling

Dimensions of wooden crate (W x D x H)	2160 x 1810 x 1490 mm 85.5 x 71.5 x 59 inches
Forklift requirement for unloading	minimum 1000 kg or 2200 lb

1.2 Dimensions and Mass of machine

Dimensions of the machine (W x D x H)	1920 x 1280 x 1153 mm 76 x 50 x 45 in.
Mass of the machine	550 - 600 kg 1210 - 1320 lbs (depending on laser power)
Min. door width	1300 mm 51 in.



1.3 Unloading of the crate and machine

The Speedy 500 is transported in a wooden crate.

A suitable fork-lift is required to unload from the courier vehicle and lift the machine off its pallet.

A powered screwdriver with cross-head bit is recommended for dismantling the wooden crate.

If possible keep the packaging in case the machine ever needs to be relocated or shipped for any reason.

Perform the following steps to unpack the machine properly:

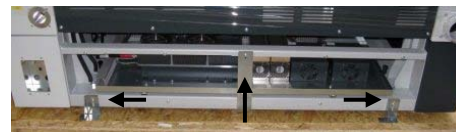
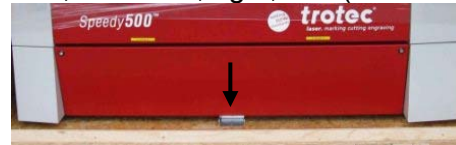
- 1 Dismantle top and rear of the crate.
- 2 Remove all tables and accessory found in the slots on the rear.



- 3 Remove the front and side plates.



- 4 Remove the transportation safety device. Front: mid, back: left, right, mid (PSU-vat)



- 5 Open door on the front door of Speedy500 (10mm Allen-Key).



- 6  **Follow the safety instructions!**

Caution:

Lift only on indicated lifting points!

Lifting the machine on any other point will cause extensive damage.



Only lower the machine onto an even surface.

- 7 Lift Speedy 500 with forklift on indicated lifting points. Adjust rollers and feet as necessary.



- 8 Remove the transportation safety device of the x-axis.



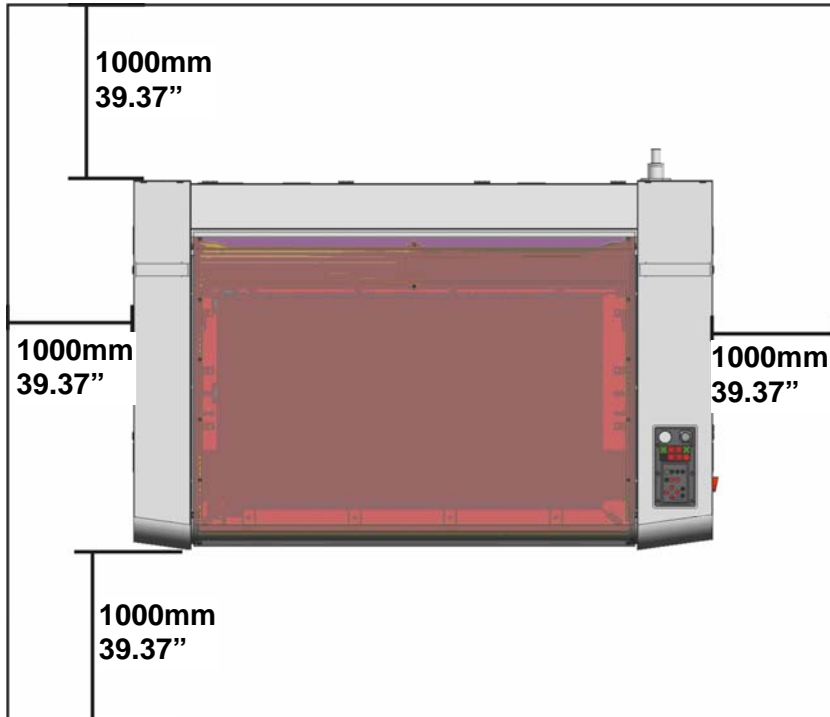
- 9 The machine must be allowed to stand for 24 hours before use.



1.4 Floor plan for the Speedy 500

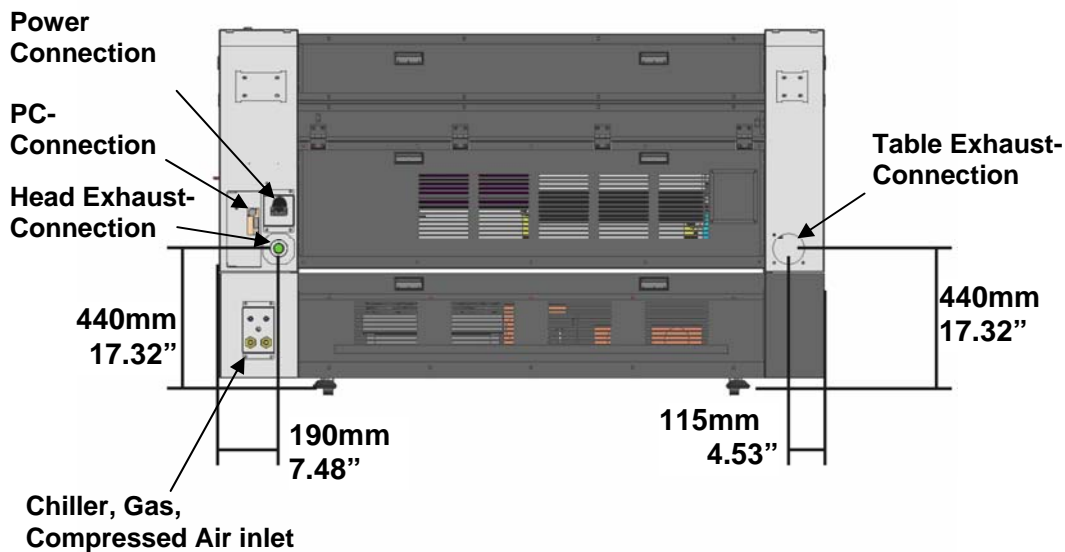
It is necessary to have sufficient clear space to the sides, front and rear of the machine for installation, operation and maintenance.

Top View



Rear View

Mains power inlet, PC connection and exhaust port locations.





1.5 Operating Environment and Safety

Laser safety class	Class 2 Class 4 with pass through option
Wavelength of the laser radiation	10.6 μm
Ambient room temperature	MUST be between 15 and 25°C (59 and 77°F);
Humidity	40% - 70%, not condensing



Follow the local laws and regulations regarding operation of laser machines.

It is important that the machine is installed in an appropriate operating environment. This will reduce the risk of possible downtime plus increase performance and quality of output.

Operating outside of this temperature range can have a detrimental effect to the working life and/or performance of the system, particularly the laser tube. If transporting the laser system from a very cold or very hot environment to the proper operating environment, the laser system must not be turned on before it has adjusted to the temperature conditions. Therefore, once the system has been moved to the desired area it must be allowed to stand for **24 hours** before use. Rapid changes of temperature during operation can risk condensation forming within the laser tube and/or electronics and increases the potential risk of electronic failure.

These guidelines must be followed to ensure a proper operating environment for the laser system. Although conforming to these guidelines will greatly reduce the chance of a problem occurring, it does not guarantee it. **It is your responsibility to provide a proper operating environment.**

- Dusty or dirty air environments can damage the laser system. Keep the laser system isolated from any type of sandblasting, sanding equipment, or any other machinery or processes that produce airborne particles.
- Avoid small, enclosed, non-ventilated areas. Some materials, after laser engraving or cutting, continue emitting fumes for several minutes after processing. Having these materials present in a confined, unventilated room can contaminate the room.

We recommend installing the laser system on a concrete floor. The floor underneath the laser system should be flat within 3mm from wheel to wheel. An uneven surface may cause a twisting of the main enclosure. This can cause motion system binding as well as engraving problems.





1.6 Electrical Requirements

Make sure that your electrical outlet is capable of providing the proper voltage, frequency and amperage that the laser system requires.

We recommend having individual circuits for

- laser engraver
- extractor
- water chiller

Please install your computer to the same circuit as the laser engraver to prevent electromagnetic interactions!

Every order has to include information regarding the desired frequency.

The following table provides information regarding power requirements, which depends on the laser tube specification (“ac” = air-cooled tube, “wc” = water-cooled).

Laser Power	60Wac	60Wwc	75Wac	85Wac	95Wac
Voltage	208/230V	208/230V	208/230V	208/230V	208/230V
Fuse	16A slow	16A slow	16A slow	16A slow	16A slow
Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Phases	1	1	1	1	1
	L,N, Ground (PE)	L ,N , Ground (PE)	L , N, Ground (PE)	L , N, Ground (PE)	L , N, Ground (PE)
Power consumption	2100W	1600W	2100W	2800W	2800W

Laser Power	105Wac	120Wac	120Wwc	200Wwc	200Wwc US
Voltage	208/230V	208/230V	208/230V	400V	208/230V
Fuse	16A slow	16A slow	16A slow	16A slow	20A slow
Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Phases	1	1	1	3	3
	L , N, Ground (PE)	L , N, Ground (PE)	L , N, Ground (PE)	L1,L2,L3,N, Ground (PE)	L1,L2,L3, Ground (PE)
				L – L: 400V L - N: 230V	L – L: 208/230V
Power consumption	3100W	3100W	3100W	4500W	4500W





The machine is supplied with the following cable for mains supply connection, depending on laser tube specification and region.

	60Wac	60Wwc	75Wac	85Wac	95Wac	105Wac	120Wac	120Wwc	200Wwc
EU	86956								39886
USA	5664								
UK	16369								

Part #	Description	Picture
86956	Europe CEEVII+C19 (250V/16A) Cable length: 2,5 m / 8 ft	
5664	USA NEMA 6-20+C19 (250V/20A) Cable length: 2,5 m / 8 ft	
16369	IEC309 Plug IP44 2P+E (220V/16A) Cable length: 2 m / 6.5 ft	
39886	CEE Plug 3x16A Cable length: 5 m / 16 ft	

Female connectors on machine side are the following:

60W – 120W:



200W:





1.7 Electrical Connection

DAMAGES FROM AN INADEQUATE OR INAPPROPRIATE POWER SOURCE ARE NOT COVERED UNDER WARRANTY.

Noisy or unstable electricity as well as voltage spikes can cause interference and possible damage to the electronics of the laser system. It is better to connect the laser system to a dedicated electrical line.

It is highly recommended that you use a surge protection device to protect your equipment.

If electrical power fluctuations, brown outs, or power outages are a problem in your area, an electrical line stabilizer, UPS (Uninterruptible Power Supply), or backup generator may be required. If installing any of these devices, make sure that they meet the electrical requirements of the laser system.

It is your responsibility to provide a suitable electrical supply.





1.8 Gas Requirements for Gas Kit

An external gas or compressed air supply is required for machines with gas assist as well as for applications where the amount of air provided by the internal compressor is too small.

The following requirements must be met:
The gas/air must be

- free of mechanical particles (dust)
- free of liquid substances (oil, water)
- flow rate: 150 l/min (40gpm)
- max. pressure: 10 bar (145 psi)
- connected with a push fitting with 6 mm / 0.23" outside diameter.

Gases to be used:

- Compressed air
- Argon
- Nitrogen
- Inert gas





2 Computer and Software Requirements

Remember that the laser system is an output device just like a printer. With a higher specified computer you can create graphics and manipulate your software faster and process data faster to the laser, increasing your productivity.

Also in order to install and configure software during installation, full administrative rights access is required.

2.1 Minimum Computer Configuration for JobControl

- Windows 7® 32/64-bit or
Windows Vista® 32/64-bit (with Service Pack 1 or later) or
Windows® XP 32/64-bit (with Service Pack 2 or later)
- 512 MB of RAM
- 400 MB of hard disk space
- Pentium® 1 GHz processor or AMD Athlon™ XP
- 1024 x 768 or better monitor resolution
- 24-bit color depth graphics card
- 1 free USB interface
- CD drive
- Mouse

2.2 Minimum Computer Configuration for TroCAM

- Windows® XP Service Pack 3 or
Windows 7® 32/64-bit
- 2 GB RAM for 32 bit / 6 GB RAM for 64 bit
- 120 GB hard disk space
- Intel i5 / i7 Processor
- DVD drive
- Serial Port (preferred) or
USB port for connection between PC and Laser

2.3 Minimum Computer Configuration for I-Cut

- Windows 7® 32/64-bit or
Windows Vista® 32-bit (with Service Pack 1 or later) or
Windows® XP 32-bit (with Service Pack 2 or later)
- 1 GB RAM
- 500 MB hard disk space
- 2 GHz Processor
- PCI-Express-Slot X1 (22 + 14 Pins)
- USB port for I-Cut Dongle
- Serial port (preferred) or
USB port for connection between PC and Laser





2.4 Software Recommendation

The following is a list of recommended software programs.

- Graphics Software - CorelDraw version X3 to X5 for raster engraving
- Bitmap Editing Software – Corel PhotoPaint (supplied with CorelDraw graphics suite)
- CAD/CAM Software - troCAM – also can convert raster to vector images.
- Camera software - I-Cut

Trotec software has been designed to interpret objects either as engraving or as cutting objects. If you use the Trotec printer driver interface and the line thickness (object dimension) exceeds 0.2 mm items will be engraved, if the smallest possible line thickness that your Desktop publishing program offers is chosen (e.g. 0.001mm/hairline in Corel Draw) they will be cut. Additionally, you have the possibility to use up to 16 colors and define a process for each color. This means you can engrave with different power and cut with different depths in one run.

If you use CAD software for the design and transfer data via the HPGL interface, all lines will be interpreted as cut lines.

When a software company updates their version of their programs, it can sometimes cause conflicts with our printer driver/manager. Our programmers constantly test new software programs and updated versions for compatibility. We will update our software/firmware to address issues that we have control of. For bugs or problems with your software not related to the laser system, please contact the software manufacturer.



3 Exhaust Requirements



Trotec advises to use the *Atmos Duo Plus* for the Speedy 500.
If only a Cutting table is installed, a VENT 3000 would be sufficient.



The laser may only be operated with properly installed and operating exhaust system.



Damage to the system caused by the use of no or improper extraction equipment will not be covered by warranty.



Fumes and dust created during cutting or engraving have to be exhausted properly. Some materials when cut or engraved can produce fumes that are hazardous in concentrated amounts.



The life time of optics and mechanical components will be reduced by fumes and dust accumulating in the machine. This will be avoided by a capable exhaust system.



The cutting quality will be reduced by fumes and dust accumulating in the machine. This will be avoided by a capable exhaust system.



The laser power interacting with the work-piece will be reduced by fumes and dust accumulating in the machine. This will be avoided by a capable exhaust system.

Depending on the type of table installed in the machine the exhaust requirements and recommended Trotec exhaust systems for standard applications are:

	Flow rate	Pressure	Atmos Mono	Atmos Duo	Vent 3000	Vent HP
Head Exhaust (45mm)	50 m ³ /h	5300 Pa	✓	✓	✗	✓
Vacuum table (75mm)	250 m ³ /h	3900 Pa	✗	✓	✗	✓
Cutting table (75mm)	350 m ³ /h	1500 Pa	✗	✓	✓	✓
Standard table	Not applicable (Table Exhaust inactive)					

Monitoring point for flow-rate and pressure is at the exhaust port at the laser machine. Pressure loss by hoses / pipes or filter parts of the exhaust has to be determined and additionally calculated when selecting a proper exhaust.



The exhaust power which is available for the application will be reduced by e.g. bending, small hose diameters and long hoses. Therefore, avoid bending, keep hoses as short as possible and use hoses with diameters as large as possible.



Applications generating large amounts of dust or fumes may require a stronger exhaust system. Also the use of separate exhaust systems for head and table exhaust may be necessary. It is absolutely necessary to consult your distributor in such cases.



4 Water Chiller Requirements

For machines fitted with water-cooled laser tubes, you need a water cooling unit.

4.1 Cooling Requirements for laser tubes

Laser power [W]:	60	120	200
Minimum cooling capacity [W]	500	2300	4000
Minimum flow rate [l/min] at 18 to 22°C	6	10	11,4
Maximum pressure [bar]	4,2	4,2	4,2
Pressure loss [bar]	1,2	-	1,4

4.2 Electrical Requirements and other specifications for Trotec chillers

	EU			US		
	60	120	200	60	120	200
Laser power [W]	60	120	200	60	120	200
Voltage [V]	1x230	1x230	1x230	1x115	1x115V	1x230
Frequency [Hz]	50/60	50/60	50	60	60	50/60
Phases	L, N, Ground	L, N, Ground	L, N, Ground	L, N, Ground	L, N, Ground	L, N, Ground
Power consumption [W]	900 W	1800 W	3000	900	1800	3000

4.3 General notes regarding Trotec chillers

All chillers are delivered with Europe CEEVII+C19 plugs.



The coolant temperature has to be between 18 and 25°C.

If temperature falls below this range, the chiller might not be ready for operation and the coolant has to be warmed.

4.4 Water Requirements for chiller and laser tube

Please, use normal tap water as coolant. The use of de-ionized, de-mineralized or distilled water is not recommended and can destroy the laser tube.

Ideal water quality

Ph-value: 7-9

Alkalinity (°dH): <1

Conductivity: <300 µS/cm

Chloride content: <20 mg/L

Hardness (°dH): <0,1

Organic germs: <1000 KBE/ml

In case of deviations of water quality, it is recommended to use softening agents, corrosion inhibitors or biocide additives.





5 Installation Preview

The following list gives a preview of the installation procedure. This will assist you to prepare yourself and your premises for the arrival of your new Speedy 500.

- 1.) Tools for initial installation
 - a. Power screwdriver + set of bits
 - b. Measuring tape
 - c. Double ended spanner (Wheels: 22mm Feet: 24mm)
 - d. Water-level – min. 20cm
- 2.) Set-up
 - a. Fork lift (compare label [lift here])
 - b. Footprint
 - c. Unpack (take care on tables)
 - d. Retention time 24h at ambient temperature (unpacked)
 - e. Alignment with level (water level – min. 20cm)
- 3.) Connecting
 - a. Electricity
 - b. Gas
 - c. Cooling
 - d. Exhaust
- 4.) Initial operation
 - a. Activate peripherals (Electricity, gas, cooling, exhaust)
 - b. Unlock emergency switch
 - c. Main switch (striking sound)
 - d. Turn on key-switch
 - e. Machine starts - initializing
- 5.) Factory Setting check
 - a. Check optics (Lens, mirrors) to be clean
 - b. Check laser beam
 - c. Check table adjustment
 - d. Check air assist and gas
 - e. Check offset (0/0)
 - f. Check exhaust power
- 6.) Engraving sample / Cutting sample
 - a. Check correction factors, overtook, and tickles with any engraving job
 - b. Check laser correction with a cutting job
- 7.) End customer training according to user manual.

