Gerber Innovations
M Series Laser™

Site Preparation & Installation Manual

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Chapter One: Introduction

This manual is divided into the following sections:

Chapter One: Introduction

Chapter Two: Site Preparation and Installation

Appendix A: Fax Form

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Conventions used in this manual

WARNING: A warning statement contains information which, if not followed, could result in electrical shock hazard.

CAUTION: A caution statement contains information which, if not followed, could result in personal injury or equipment damage.

NOTE: A note contains important information that affects the successful completion of a task.

TIP: A tip contains a suggestion to make your task easier or to remind you of something that may appear elsewhere in the booklet.

Technical Support

If you have questions regarding using, maintaining, or troubleshooting the Fastrack Laser please contact Gerber Innovations.

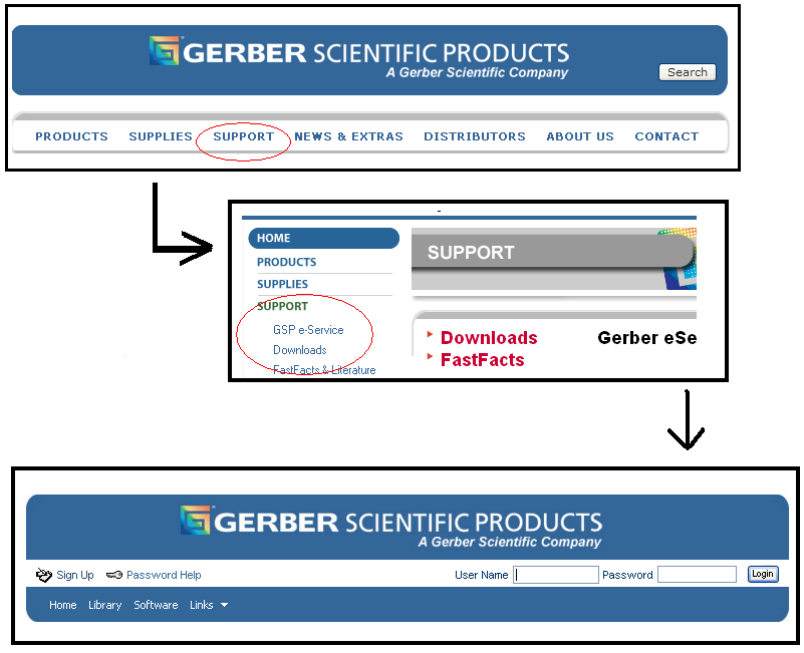
☎	800-400-3458 (Toll free in USA) 860-871-3757 (Outside the USA)
✉	gicsc@gerberscientific.com
	www.gerberinnovations.com

GERBERnet

GERBERnet is an online resource for the latest documentation, service notes and firmware downloads. A password is required for access to service level items.
Follow the instructions below to register for an account.

How to open a GERBERnet account

1. Go to the Gerber Scientific Products website, www.gspinc.com.
2. Click Support located at the top of your screen.
3. Click GSP e-Service located on the left of your screen to open the GERBERnet log in page.
4. From this page you can sign up for a GERBERnet account by clicking Sign Up on the top left of the page.
5. When you have a GERBERnet account, type your User Name and Password on the right to log into GERBERnet.
6. Once into GERBERnet you can choose Document Library or Software Library.



Chapter Two:
Site Preparation and Installation

Prior to the arrival of your machine, there are certain things you can have prepared to facilitate a quick and smooth installation. The following information will guide you.

Floor Plan

Refer to Appendix B – Typical Floor plans for the dimensions of the machine and necessary clearance.

Preparation

- Allow sufficient room for operator access and work handling.
- Exhaust, electrical and pneumatic connections are most conveniently attached at the rear of the machine.
- Clean and wax the floor if appropriate. To avoid static electricity, which can interfere with computer operations, carpets are not recommended.
- Isolation of machine by partitions or windowed walls should be considered, as the machine generates noise and fumes and contains a class IV laser device.
- Floor stability is important due to the precision requirements of a die board. If there is other equipment in the building that generates vibration in the floor, such as presses or fork truck traffic, you will need to install the laser in a way that isolates it from these vibration sources.

Riggers

Depending on the location of the equipment in your plant you may want to use the services of a professional rigger. Contact Gerber Innovations to discuss whether this will be required in your case.

External Inputs and Connections

Exhaust Blower

Prior to delivery of your machine, the exhaust blower should be shipped to you. The blower is usually installed on the roof and as close as is practical to the laser. See Figure 1 for dimensions.

The blower moves a high volume of air, on the order of 2200 cfm (62.3 cmm). You should check with your HVAC supplier as to the impact this will have on your environmental controls.

Assembly

The blower is shipped in a kit form. You must install the pulleys and belt. Be sure to put the larger pulley on the motor and the smaller pulley on the wheel. This acts as a speed increaser and is the correct way to assemble the blower.

Exhaust Ducting

Ten inch sheet metal ducting must be provided between the inlet of the blower and the rear of the rotary laser system. The use of elbows should be kept to a minimum. There should be three 5" (12.7 mm) connections on the rear of the rotary. From these connections a 5" (12.7 mm) flexible hose is used to connect to the rear of the machine. Gerber Innovations supplies 22' (6.7meters) of this hose, so the connections must be within 7' (2.13 meters) of the rear of machine. Next to the middle 5" (12.7 mm) connection there should be a 2" (5.08 cm) connection for the nozzle exhaust hose. See Appendix D – Exhaust Ducting for a drawing of a typical installation.

Electrical

Note: Contact customer service to be sure the exhaust blower is shipped early.

The 5.0 HP motor is nameplate rated at 208-230/460 VAC, 14.2-12.8/6.4 Amps, 60 Hz, 3 Phase. The motor started is customer-supplied and must be wired in conformance with local electrical codes. The start/stop switch should be mounted near to the front left of the Laser System.

Automatic Blower Operation

If you would like to use a magnetic starter as opposed to a manual starter, provision is made inside the Gerber Innovations controller to pilot the starter. We provide a normally open set of relay contacts and two terminals for field hookup. The exhaust can then be automatically controlled by the cutting system. The contact is rated for 110V or lower.

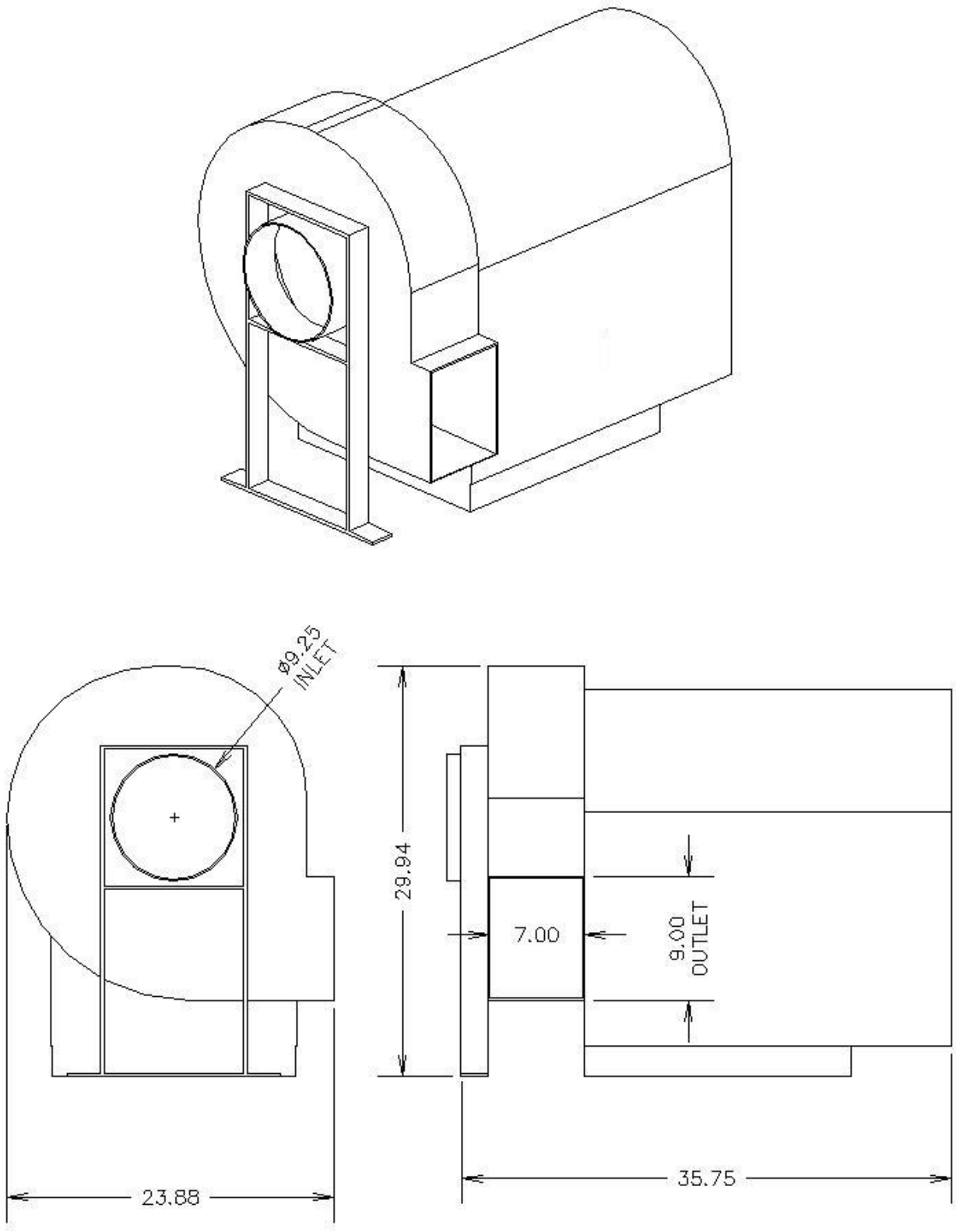


Figure 1 – Exhaust Blower

Chiller

The Chiller is required for the proper operation of the laser. It generates heat and noise which usually determines where it will be located and how it will be vented. The following list contains points of consideration.

- Due to the heat generated you may want to vent chiller out of the room.
- If the chiller is more than 15' (4.57 meters) away you may want to consider hard piping to a location at the rear of the machine. See the following optional piping section.
- The Laser includes 50' (15.25 meters) of flexible hose for connecting to the chiller or hard piping. The hose is 1½"ID.
- It is recommended to have the chiller visible from the operator's position on the laser system. This makes turning it on and off convenient and allows monitoring of the set-point and any fault conditions.
- The chiller is designed for an ambient temperature of 50 – 104° F. Please consult Gerber Innovations if your expected ambient temperature is outside this range.

Hard Piping

If you plan on installing hard piping from the chiller refer to the following points of consideration.

- The piping should have a pressure rating of 100 PSI and should be copper, schedule 80PVC or stainless steel. No other materials are allowed.
- The chiller has ½" NPTF fittings for inlet and outlet.
- The piping should be 1½" and have a minimum of elbows. Sweep elbows are recommended if more than 2 bends are required.
- Ball valve shutoffs should be provided at the end of the run. Both valves should terminate with a ½" NPTF connection fro the Gerber Innovations supplied hose barbs.
- As the water temperature is 74°F, the pipes should be insulated to minimize sweating and maintain the temperature.
- Hard piping should be installed before the installation date of the laser system.

Electrical

The chiller is nameplate rated at 460VAC, 60Hz, three phase, 17.5 amps.

Coolant Fluid

The coolant is not shipped with the laser. The chiller has a capacity of 36 gallons. The chiller requires distilled water which is readily available in the states. 30 gallons will be sufficient for most installations. In addition, a corrosion inhibitor must be added to the water. 10 gallons of Dowfrost SR1, (inhibited propylene glycol) must be purchased by the customer. This is to be mixed to a concentration of 20% - 35% by volume. (6 gal/30gal + 20%) so 6 gallons is the minimum you MUST use.

Rofin-Sinar Laser Services

The laser system consists of an X-Y gantry system to carry the laser resonator plus a power supply/control. The laser system only requires electrical hookups.

Electrical

The Laser Control Cabinet requires 400 VAC, 60Hz, Three Phase, 25 Amp service.

Note: 440VAC is at 10% threshold for Rofin Sinar Rating. If voltage is unstable in your area an AVR or a transformed voltage closer to 400 VAC.

Gerber Innovations supplies two buck/boost transformers to convert to 440 VAC. These will need to be installed by an electrician, conforming to local electrical codes. If your facility voltage exceeds 460VAC then you will need to provide your own transformer to reduce the voltage to 400VAC.

X-Y Table

The X-Y system requires compressed air and electrical connections and optionally bottled cutting assist gas. In addition the X-Y system includes a computerized operator interface requiring an electrical connection. There is also a supplied refrigerated compressed air dryer that requires an electrical hookup.

Pneumatic

The optics and gas assist require extremely clean and moisture free air. The machine is supplied with a 4 stage filtration system and a refrigerated air dryer to provide high quality air for these functions. However, the plant air MUST be high quality to start with. An old compressor that is putting oil or oil vapor in the air or large amounts of water will quickly clog the supplied filtration. Your compressed air should be of good quality and water droplet free by the time it reaches the machine. You should provide at least 80PSI with a flow capacity of 15 SCFM to the machine.

Electrical

The motion controller requires a dedicated 120VAC single phase 60 Hz, 20 Amp service. The service outlet must be within 4 feet of the left rear of the machine. The machine must not be run thru an extension cord. The pneumatic sir drier and the operator interface computer can be supplied by a 4 outlet 120VAC single phase 60 Hz 20 Amp service.

Optional Assist Gas

If you have purchased the optional metal cutting kit then you can supply Oxygen and Nitrogen to the table. The MAXIMUM pressure is 300 PSI. These assist gases connect to the back of the machine using 5/16" OD tubing.

Laser Installation Check list

See Appendix A – Fax Form for a Fax back form. Please FAX this form when the tasks are completed to the service department at (866) 418-4847.

Shipping and Handling

Access

During installation, large machine parts will need to be moved into final position. Any large objects in the work area should be moved out of the way prior to installation.

Arrival

Refer to Appendix C – Shipping Crates for dimensions of the shipping crates.

Four persons can handle the major assemblies, all of which break down into sub assemblies weighing 250lbs or less.

Note: The exhaust blower is not listed and is usually shipped early.

Loading Dock

The availability of a loading dock will determine what type of truck is used. Please inform Gerber Innovations of this in advance of installation.

Fork Lift

A forklift is desirable but not necessary. A pallet and hand-operated jack and dollies are necessary.

Uncrating

Please wait for a Gerber Innovations service person before uncrating.

Safety

Please review the safety information as stated in the Laser Installation guide

Tools

When installing the machine, Gerber Innovations personnel will need access to the following:

- Claw hammer
- Pry bar
- 3/8" reversible/variable speed pistol drill
- Extension cord
- Fantastic or another general purpose cleaner
- Cloth rags
- Spray can of 10-weight oil
- Vacuum cleaner

Electrical Summary

600 WATT M LASER ELECTRICAL REQUIREMENTS			
DESCRIPTION	AC VOLTAGE	AMPERAGE	FREQ., PHASE, OTHER
Exhaust Blower	208-230/460	14.2-12.8/6.4	60Hz, 3 Phase
Chiller	460	17.5	60Hz, 3 Phase
Laser	440	25.0	60Hz, 3 Phase
X-Y Table	120	20.0	60Hz, 1 Phase
Computer, Air Drier	120	20.0	60Hz, 1 Phase, 4 outlets

WARNING! This equipment utilizes a Class IV laser and appropriate safeguards associated with safe laser operation should be followed. Further information can be obtained via the Occupational Safety and Health Administration's (or OSHA's) Technical Manual (TED 01-00-015) and through the Laser Safety Institute of America (http://www.laserinstitute.org/). In addition, it may be advisable or required to designate a Laser Safety Officer (LSO) to ensure continued and safe operation of the laser.

Appendix A:
Fax Form

Fax Form – Laser Install

Gerber Innovations

24 Industrial Park Road West

Tolland, CT 06084

Fax number – 866-418-4847

Date:_____

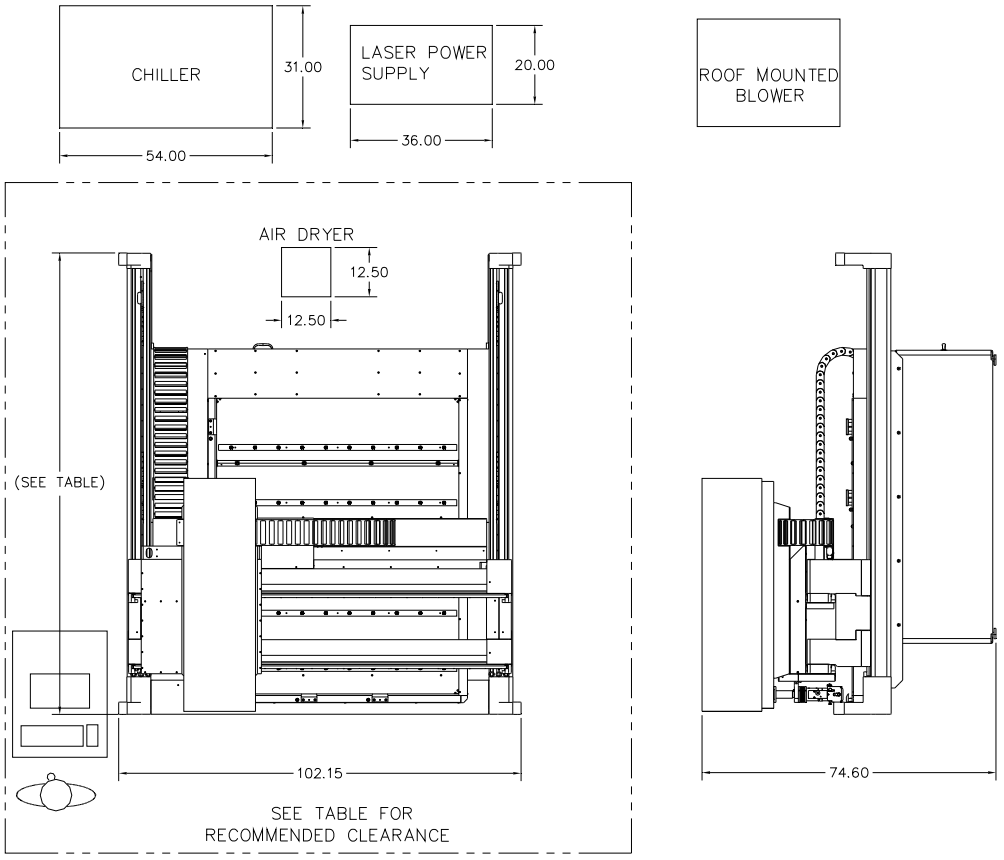
# of pages: _____

Please put a checkmark in appropriate column	YES	NO
1) 440 VAC 3 Phase 20 KVA service for laser * (25A)		
2) 460 VAC service for the chiller (17A)		
3) 230/460 VAC service for exhaust blower (14.2-12.8/6.4)		
4) 120VAC dedicated service for the motion controller (20A)		
5) 120 VAC 4 outlet service for the air drier and computer (20A)		
6) Compressed air lines		
7) Exhaust blower installed and ducting run		
8) Distilled water available (36 gallons)		
9) Chiller hard piping (if desired)		
10) Purchased 10 Gallons of Dowfrost SR1		

* If facility voltage EXCEEDS 480 VAC then it must be lowered using a transformer prior to installing the laser.

Appendix B:
Typical Floor Plans

	Floor Plans	Recommended Total Clearance
M1800L	102" x 117" 259 cm x 297 cm	159" x 170" 404 cm x 432 cm
M2400L	102" x 157" 259 cm x 399 cm	159" x 210" 404 cm x 533 cm



Appendix C:
Shipping Crates

Description	**M1800L**		**M2400L**	
	Dimensions L x W x H	Weight	Dimensions L x W x H	Weight
Skid – Base & Tub	106" x 90" x 48" 269 cm x 229 cm x 122 cm	1000 lbs 454 kg	138" x 90" x 48" 351 cm x 229 cm x 122 cm	1300 lbs 590 kg
Crate – Gantry	105" x 63" x 55" 267 cm x 160 cm x 140 cm	800 lbs 363 kg	105" x 63" x 55" 267 cm x 160 cm x 140 cm	800 lbs 363 kg
Crate – Side Beams	119" x 31" x 29" 302 cm x 79 cm x 74 cm	500 lbs 227 kg	153" x 31" x 29" 389 cm x 79 cm x 74 cm	575 lbs 261 kg
Crate – Resonator	74" x 28" x 28" 188 cm x 71 cm x 71 cm	350 lbs 159 kg	74" x 28" x 28" 188 cm x 71 cm x 71 cm	350 lbs 159 kg
Crate – DC Power Supply	38" x 33" x 20" 97 cm x 84 cm x 51 cm	150 lbs 68 kg	38" x 33" x 20" 97 cm x 84 cm x 51 cm	150 lbs 68 kg
Crate – Chiller	56" x 38" x 54" 142 cm x 56 cm x 137 cm	1000 lbs (454 kg)	56" x 38" x 54" 142 cm x 56 cm x 137 cm	1000 lbs (454 kg)
Crate – RF Power Supply	54" x 19" x 29" 137 cm x 48 cm x 74 cm	150 lbs 68 kg	54" x 19" x 29" 137 cm x 48 cm x 74 cm	150 lbs 68 kg

Dimensions – Length x Width x Height (Weight)