

LW15A Series – Facility Requirements

Effected Models: LW2AG(E), LW5AG(E), LW5AM(E), LW5A(E), LW15A(E) and LW25A(E)
ML-8050A(-CE), ML-8150A(-CE), ML-2052A(-CE), ML-2051A(-CE), ML-2050A(-CE), ML-2150A(-CE)

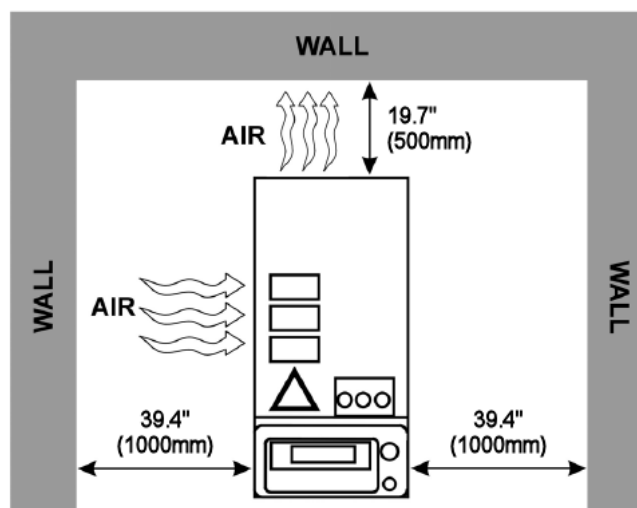
Purpose:

The purpose of this document is to describe the facility requirements for proper installation of the LW2AG(E), LW5AG(E), LW5AM(E), LW5A(E), LW15A(E) and LW25A(E) Laser(s). For the rest of this document all laser models will be simply referred to as the **LW15A Series Lasers**. This document supplements the information found in the Laser Operator Manual. The contents of this document are subject to change without notice.

Planning:

When planning for the installation of the Laser, verify that the following conditions are met:

- ☐ Install the laser in an isolated “laser operation area” away from common work areas (*unless the laser is used with a Class I workstation*).
- ☐ Appoint a Laser Safety Officer (LSO) to be responsible for the “laser operation area”.
- ☐ The LSO should be responsible for controlling the Laser Operation key-switch.
- ☐ Post warning signs to keep unauthorized personnel away from the “laser operation area”.
- ☐ Install the laser on a firm, level floor that is free from vibration or impact.
- ☐ Do not operate the laser where there is considerable dirt, dust, oil mist, chemicals, fumes, moisture, or near a high-frequency noise source.
- ☐ Use the laser only when the relative humidity $\leq 85\%$ (non-condensing).
- ☐ Operate the laser where the ambient temperature is above 41°F (5°C).
- ☐ Do not operate the laser where sudden temperature fluctuations can occur.
- ☐ Never operate the laser where the ambient temperature falls below 32°F (0°C). The water inside the laser can freeze and damage the unit.
- ☐ Do not operate the laser in a confined space. Allow sufficient space around the laser as shown below.

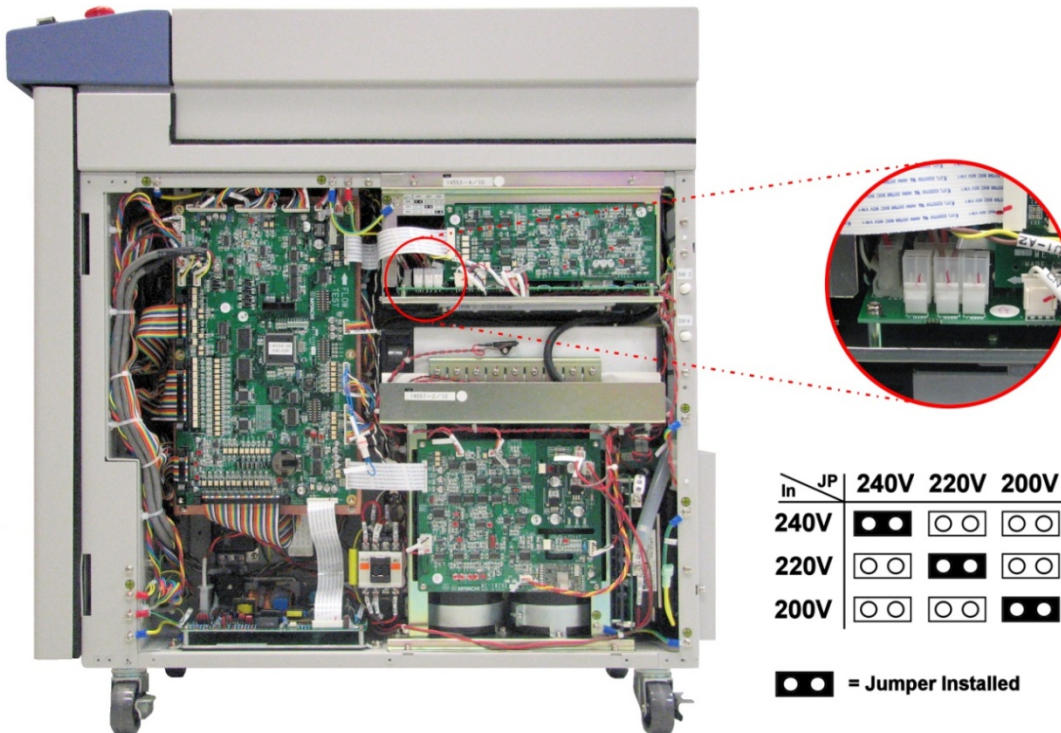


Power Supply Requirements:

All LW15A Series Lasers operate off a single-phase power of 200, 220 or 240 VAC (+10%/-15%), 50/60Hz. The input voltage selection is accomplished by setting the loop-back jumper position located on the ME-1927 Charge Power PCB (part of the Charge Assembly).

Maximum Apparent Power:	1.4 kVA	
Idle Power Consumption:	0.185 kW	
Maximum Input Current:	7.0 A @ 200VAC	(at maximum output)
	6.4 A @ 220VAC	(at maximum output)
	5.9 A @ 240VAC	(at maximum output)
Breaker Rated Current:	15 A	
Recommended Service:	15 A	

Before setting the Input Voltage jumper, measure the available power at the installation site and choose the input voltage setting that best matches the available power. Make sure that the door switch and circuit breaker (located behind the front door) are in the **OFF** position before setting the Input Voltage jumper. Loosen the two screws at the back of the laser used to fasten the right-side panel to the laser, then slowly hinge the side panel outward to remove. Remove the ground connection that connects the chassis to the right-side panel. Once the right-side panel is removed, remove the 4 screws used to hold the plastic protective side cover and locate the ME-1927 Charge Power PCB (as shown below). Configure the Input Voltage Selection jumper position based on the illustration below.



Grounding

To ensure safety and optimal operation, the laser must be properly grounded. The **PE** (protective earth) *Ground* is provided and **MUST** be used. **DO NOT connect the Neutral line to the PE terminal.**

If the laser is being used in conjunction with a workstation or system, verify that the potential (voltage) between the Laser PE Ground and the Workstation/System PE Ground is at or near zero volts. In practice, it is best to measure this potential at multiple times throughout the day to verify that no other equipment is causing a potential difference due to leakage current. For more information on proper grounding techniques, consult an electrician that is familiar with the laws and regulations in your area. An improperly grounded system can damage the electronics in your equipment.

Power Transformation and Protection

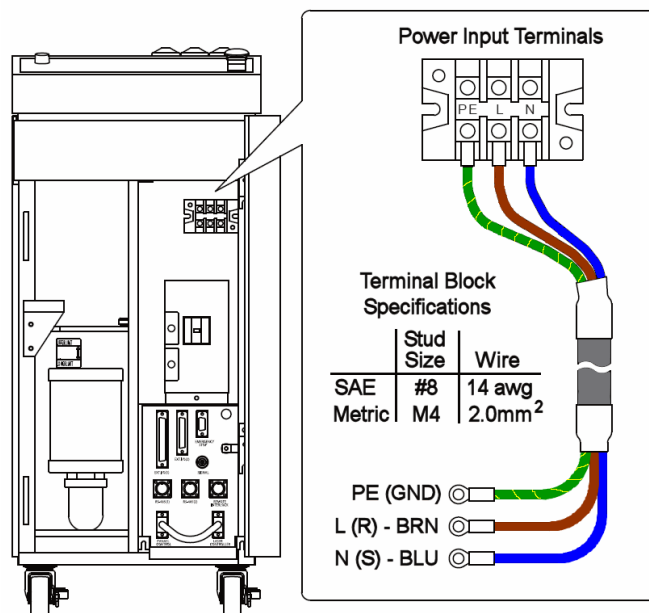
If the available A.C. service voltage in your area does not fall within the required voltage range, a step-up or step-down transformer may be required. Choose a transformer with a kVA rating at or greater than the maximum apparent power rating for your laser (as listed above). These power transformers can be very heavy and extremely expensive to ship. The best option is to consult a local electrician and they can recommend a suitable power transformer for your facility from a local electrical supply house.

The laser itself is fairly immune to power disturbances but is not immune to power surges due to electrical storms. In these areas, the use of an isolation transformer and noise filter may be needed to help suppress the large power transients. Consult with a local electrician for ways to protect the laser from lightning transients.

Typical Wiring

The standard wiring color codes vary from country to country. No matter what color the wires are, it is important to connect power such that the AC Line (L), AC Neutral (N) and Protective Earth Ground (PE) connections are used.

The Power Cable connects to the terminal block located behind the front door of the Laser. Connect the power cable to laser as follows:



Cooling Requirements:

The temperature in the LW15A Series Lasers is maintained by a series of internal cooling fans. In order to maintain a proper operating temperature, there must be adequate space around the laser (see the “Planning” section above for exact requirements). If the laser cannot maintain a proper operating temperature, the laser will produce a temperature alarm and will not operate until the laser is able to maintain a proper operating temperature.

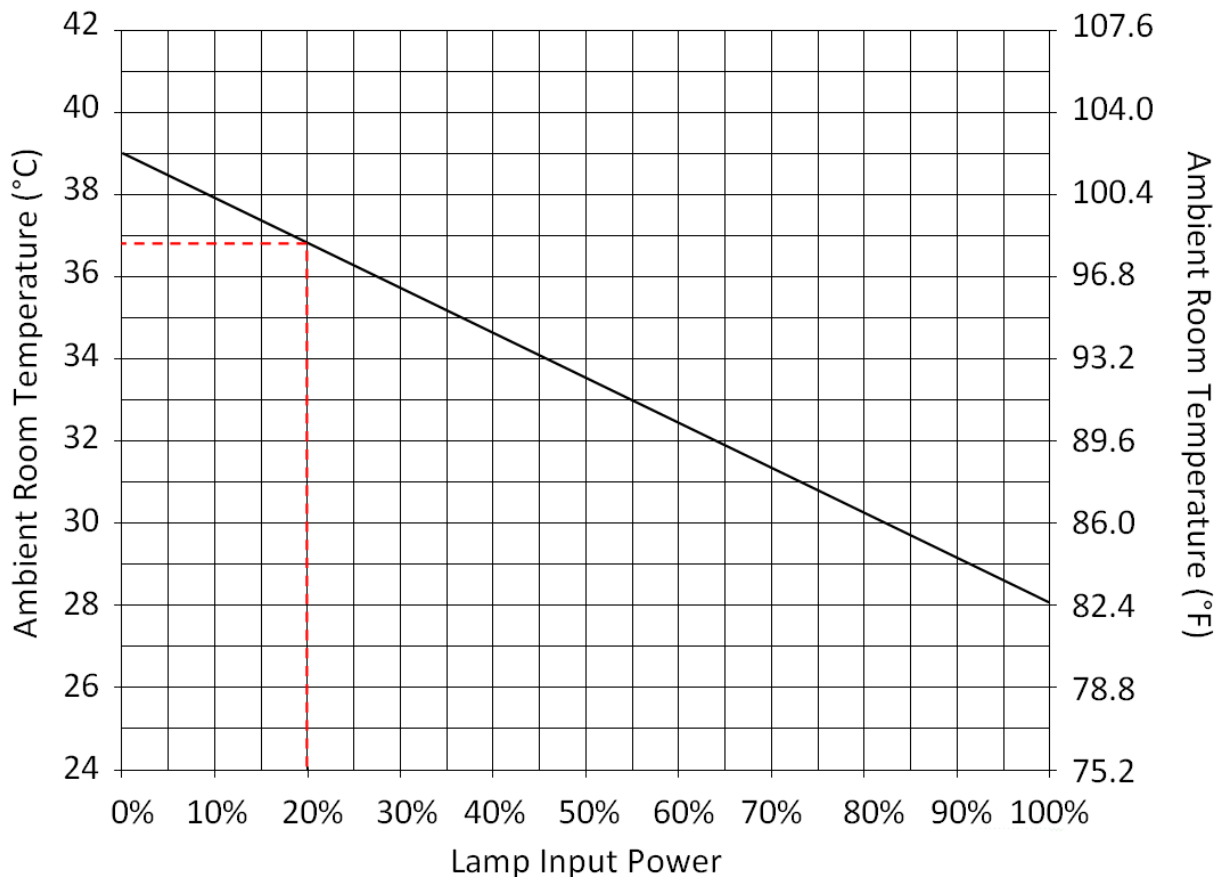
Since the laser is air-cooled, there is a limitation on the available output power based on ambient room temperature. The graph below shows the absolute maximum ambient room temperature allowed for any given Lamp Input Power setting.

Example (illustrated in red on the graph below):

If the **LAMP INPUT PWR** setting is 80% and the laser is cycled 10mS **ON** and 40mS **OFF**, then the effective “Lamp Input Power” would be:

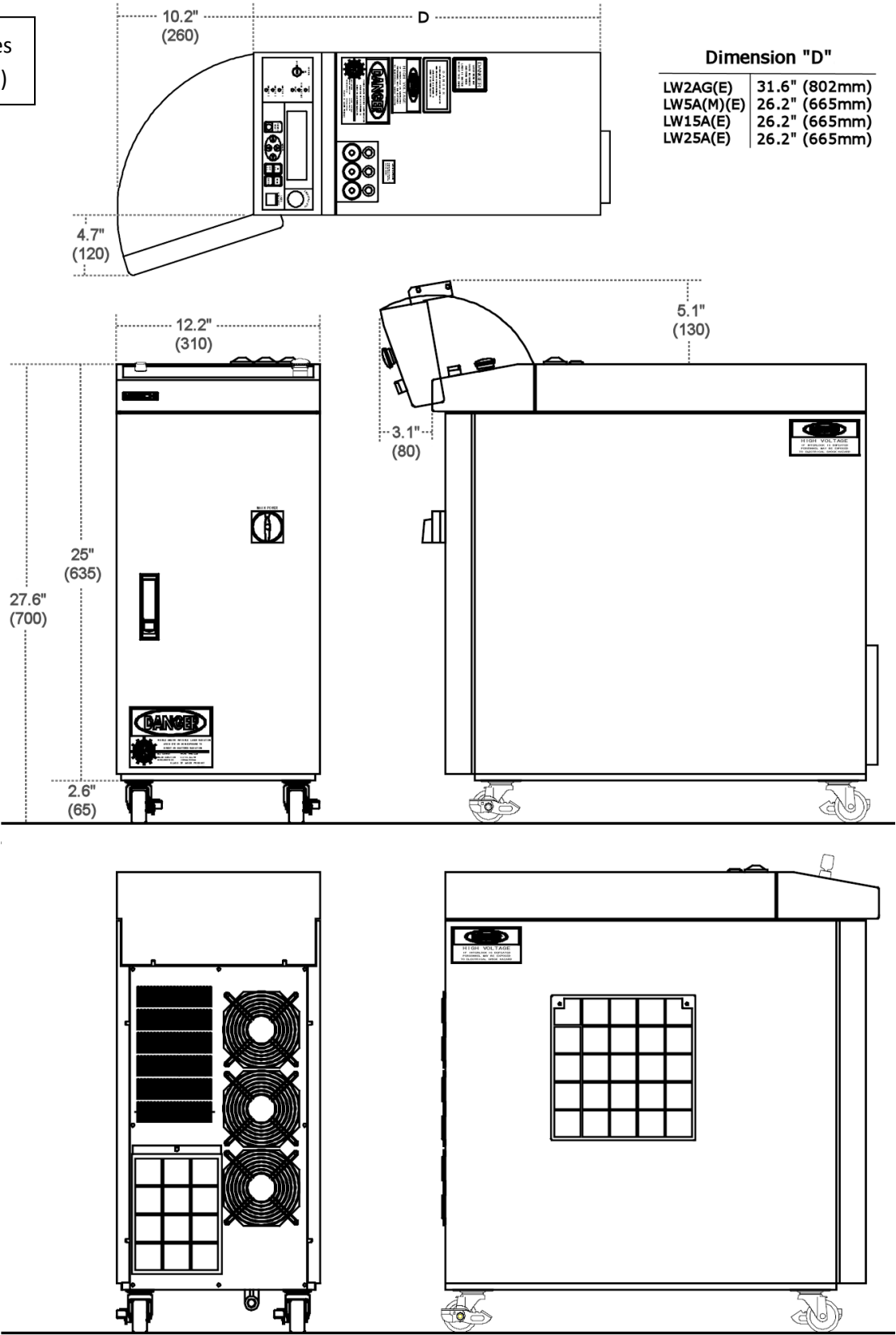
$$\text{Lamp Input Power} = 80\% \times \frac{10\text{mS}}{40\text{mS}} = 20\%$$

According to the graph below, the maximum allowable Ambient Room Temperature with a 20% effective lamp input power is 36.8°C.



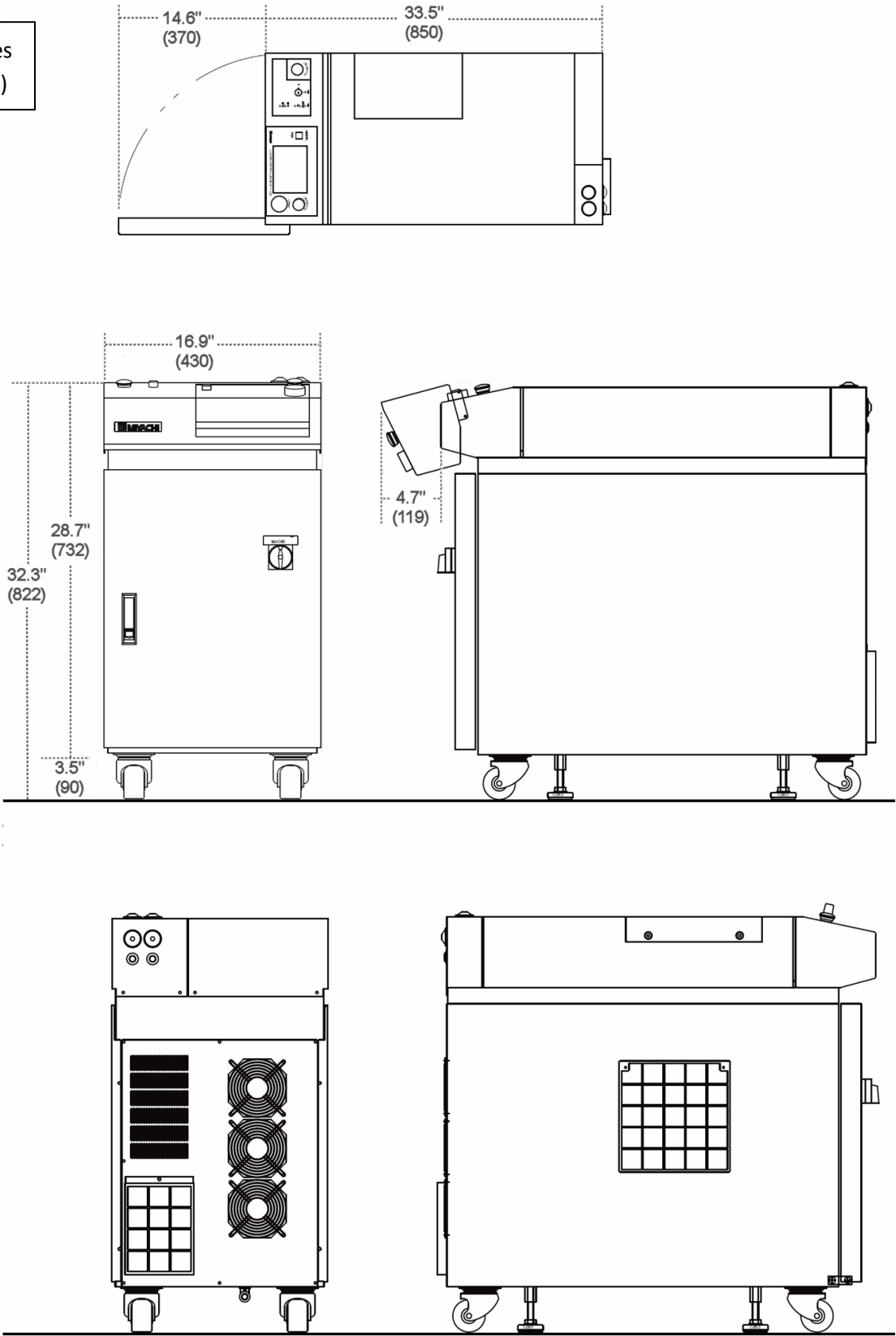
Dimensions: LW2AG(E), LW5A(E), LW5AM(E), LW15A(E), LW25A(E)

Inches
(mm)



Dimensions: LW5AG(E)

Inches
(mm)



Mass (Weight):

The LW2AG(E) laser model weighs 185 lbs (84kg).

The LW5AG(E) laser model weighs 265 lbs (120kg).

The LW5A(M)(E), 15A(E), 25A(E) laser models weigh 154 lbs (70kg).

CDRH Accession:

The LW15A Series Lasers are sold worldwide under two different Model Numbers, **LW** and **ML**. The **LW** Series are sold by Amada Miyachi America (AMYA) and the **ML** Series are sold by Amada Miyachi Japan (AMY). All LW15A Series Lasers are Class IV devices that are fully compliant with all applicable standards and regulations as set forth by the United States of America's Health and Human Services (HHS), Food and Drug Administration (FDA), Center for Devices and Radiological Health (CDRH), standard 21 CFR 1040.10 for Class IV laser devices. The CDRH Accession Number is issued for both **LW** & **ML** model numbers. The Accession Numbers are as follows:

AMYA Model ¹	AMY Model ¹	Wavelength	Average Output Power	Accession #
LW2AG(E)	ML-8050A(-CE)	532nm	2W	0122213-05
LW5AG(E)	ML-8150A(-CE)	532nm	5W	0920119-000
LW5AM(E)	ML-2052A(-CE)	1064nm	0.25W	0122213-00
LW5A(E)	ML-2051A(-CE)	1064nm	5W	0122213-00
LW15A(E)	ML-2050A(-CE)	1064nm	15W	0122213-00
LW25A(E)	ML-2150A(-CE)	1064nm	25W	0122213-00

- Both the AMYA and AMY models are functionally equivalent and differ only in labeling

CSA Compliance:

If the Laser is to be used in Canada, the laser must be CSA compliant. All laser welders manufactured by the Amada Miyachi are not CSA compliant. In order to be CSA compliant the laser can be converted for CSA compliance at the factory. This request should be made at the time of order. In addition, the laser can also be CSA certified by a CSA approved agency at an additional cost.

CE Documentation:

All LW15A Series Lasers are CE compliant. The difference between the LW15A Series CE Laser Welders and non-CE Laser Welders is the labeling. All CE models are noted with an "E" or "-CE" suffix in the model number. Electrically and functionally the CE and non-CE models are identical. For convenience, the CE declarations are included at the end of this document.


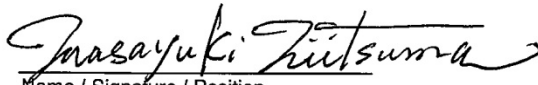
Service:

If the Laser produces an Error Code or is in need of service, contact the Amada Miyachi America at (626)-303-5676 during normal business hours (7:00 am – 5:00 pm PST).


For after-hours support, please call: **(866) 751-SERV (7378)**

Spare Parts *(parts used on all models, except as noted):*



Description	AMYA Pt #
Flashlamp (MLD-0902)	435-195
Guide Beam Assembly	4-60301-01
Glass Plate, A4-00719 (26.2 × 80 × 2t mm)	4-35229-01
Chamber Cover O-Ring, 22mm I.D.	WG-22
Flashlamp O-Ring, 8mm I.D. (qty. 2 required)	570-153
Nd:YAG Rod O-Ring, 12mm I.D. (qty. 2 required)	570-155
SHG Crystal, 4mm x 4mm x 5mm (LW2AG / ML-8050A only)	A-05754-001
SHG Crystal Assy, 4mm x 4mm x 7mm (LW5AG / ML-8150A only)	A-08405-001
Stopper / Vent Plug O-Ring, 8mm I.D.	570-153
Ion-exchange Resin Kit, MLF-0024 (includes resin powder + cartridge)	318-024
└ Ion-exchange resin powder, MLF-0020	318-023
└ Ion-exchange cartridge, MLF-0022	318-022
Ion-exchange cartridge wrench	451-082
Water Filter	MLF-0006
Floating Panel (used in cooling tank)	Z-01835-001
Water Hand Pump	PH-10
Case of Steam-Distilled Water (6 gallons)	900-241
Air Filter (200 × 210 × 15t mm) – Left Side	MLF-0007
Air Filter (135 × 180 × 10t mm) – Rear Panel	HR1310TX135X180
Lithium Battery, 3.0v Lithium Coin Cell (CR2450)	145-014
A.C. Power Cable	A-03651-002
Ext I/O (1) Connector (DB-37M)	250-409
Ext I/O (1) Connector Backshell	250-537
Ext I/O (2) Connector (DB-25M)	250-479
Ext I/O (2) Connector Backshell	250-536
Emergency Stop Connector (DB-9M)	250-193
Emergency Stop Connector Backshell	250-535
Ext I/O (3) Connector (DB-25F) – some models, if equipped	250-480
Ext I/O (3) Connector Backshell	250-536
Remote Interlock Connector (2-pin)	451-035
RS-485 (1) or RS-485 (2) Connector (5-pin)	451-052
RS-232 to RS-485 Converter	270-205
Optical Lens Cleaner (RoHS compliant)	900-342
Lens Cleaning Tissue (7.75" × 4")	900-314
Fiber Inspection Scope (EC-0002)	4-60091-01
IR Safety Glasses ($\lambda = 1064\text{nm}$)	475-118
Over-the-Glasses IR Safety Glasses ($\lambda = 1064\text{nm}$)	475-160
SHG/IR Safety Glasses, Standard ($\lambda = 532\text{nm} + 1064\text{nm}$)	475-156
SHG/IR Safety Glasses, Over the Glasses ($\lambda = 532\text{nm} + 1064\text{nm}$)	475-157
LW2AG(E) Laser Operator Manual	990-544
LW5AG(E) Laser Operator Manual	990-558
LW5AM(E)/5A(E)/15A(E)/25A(E) Laser Operator Manual	990-534
Laser Safety Manual	990-502

		MIYACHI TECHNOS CORPORATION
EC Declaration of Conformity		
The company/manufacturer: Miyachi Technos Corporation 95-3, Futatsuka, Noda city, 278-0016 JAPAN		
Herewith declares conformity of the products		
Designation: Type/Serial Number, etc:	Power Supply Unit ML-2052A-CE / ML-2051A-CE / ML-2050A-CE ML-2150A-CE LW5AME / LW5AE / LW15AE / LW25AE	
With applicable regulations below		
EC Directive:	EMC Directive 89/336/EEC amended by: 91/263/EEC, 92/31/EEC, 93/68/EEC (465) Machinery Directive 89/392/EEC amended by: 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/373/EC	
Harmonized European Standards applied:		
EN 55011 Group 2 Class A:1998 +A1:1999; EN 50082-2:1996; EN 60204-1:1997; EN 50178:1997; VDE 0113:1998-11 and VDE 0160:1998-04; EN 292-1 and EN 292-2; EN 418;EN 60825-1:1994+A11:1996		
Importer Distributor in EU:	UNITEK EAPRO B.V. Schootense Dreef 21,5708 HZ HELMOND, The Netherlands MIYACHI TECHNOS EUROPE GmbH Pleidelsheimer Strasse 11, D-74321 Bietigheim, Germany	
Division: Japan / Noda - City	Miyachi Technos Corporation	
Oct. 12, 2004 _____ Place and Date	 _____ Name / Signature / Position	

Note: This Declaration certifies conformity with the above mentioned Directives, but gives no assurance of properties within the meaning of the Law concerning product liability. It becomes invalid if any technical or other modifications are carried out without manufacturers consent.

	MIYACHI TECHNOS CORPORATION
<h2 style="margin: 0;">EC Declaration of Conformity</h2>	
The company/manufacturer: Miyachi Technos Corporation 95-3, Futatsuka, Noda city, 278-0016 JAPAN	
<p>Herewith declares conformity of the products</p> <p>Designation: Power Supply Unit Type/Serial Number, etc: ML-8050A-CE LW2AGE</p> <p>With applicable regulations below</p> <p>EC Directive: EMC Directive 89/336/EEC amended by: 91/263/EEC, 92/31/EEC, 93/68/EEC (465)</p> <p style="margin-left: 150px;">Machinery Directive 89/392/EEC amended by: 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/373/EC</p> <p>Harmonized European Standards applied:</p> <p style="margin-left: 150px;">EN 55011 Group 2 Class A:1998 +A1:1999; EN 50082-2:1996; EN 60204-1:1997; EN 50178:1997; EN 292-1 and EN 292-2; EN 418;EN 60825-1 :1994 + A11 :1996</p>	
Importer Distributor in EU: MIYACHI EUROPE CORPORATION Linbergstrasse 1, D-82178 Puchheim, GERMANY Tel: + 49 8983 940323	
Division: Japan / Noda - City <div style="border-top: 1px solid black; width: 100%;"></div> Place and Date	Miyachi Technos Corporation <div style="border-top: 1px solid black; width: 100%;"></div> Name / Signature / Position

Note: This Declaration certifies conformity with the above mentioned Directives, but gives no assurance of properties within the meaning of the Law concerning product liability. It becomes invalid if any technical or other modifications are carried out without manufacturers consent.

		MIYACHI CORPORATION
<p align="center">EC Declaration of Conformity</p>		
The company/manufacturer: MIYACHI CORPORATION 95-3, Futatsuka, Noda-City, 278-0016 JAPAN		
<p>Herewith declares in his own sole responsibility conformity of the product</p> <p>Designation: Power Supply Unit Types/Serial Number, etc.: ML-8150A-CE LW5AGE</p> <p>With applicable regulations below</p> <p>EC Directive: Machinery Directive 89/392/EEC amended by: 91/368/EEC, 93/44/EEC, 98/37/EG, 98/79/EG EMC Directive 89/336 and 2004/108EG</p> <p>Harmonized European/International Standards applied: EN 55011 Group2 Class A:1998 +A1:2007; +A2:2002; EN 60204-1:1997; EN 50178:1997; EN 61000-6-2:2001; ISO 14121:1999; IEC 60825-1:1993 + A2:2001 ISO 12100-1: 2003-11; ISO12100-2003-11;</p>		
Importer Distributor in EU: (please place distributor/importer stamp here)		MIYACHI EUROPE CORPORATION Lindberghstrasse 1, D-82178 Puchheim, GERMANY Tel: + 49 8983 9403 - 1
Division: JAN. 28. 2011 <u>Noda-City/Japan</u> - - Place and Date		MIYACHI CORPORATION  <u>Minoru Saitou / Quality guarantee general manager</u> Name/Signature/Position

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