




The MAXX-700 User Installation Manual



Version 2.0 - January 2020

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1 Introduction

Dear Customer,

Congratulations on your recent purchase of the MAXX-700 laser patient positioning system from Cemar Electro! The MAXX-700 product is the result of years of continuous quality improvements of laser technologies. After carefully reading the user installation manual, if you have any questions, please feel free to contact our customer service department.

The MAXX-700 user installation manual includes all of the information required to safely and efficiently install, operate, and maintain your new laser positioning system. This MAXX-700 installation manual is intended for the **CEMARLINE** MAXX-700 laser patient positioning system. These patient positioning systems include both the MAXX-700 CH (Crosshair) and MAXX-700 S (Sagittal) along with the corresponding remote control to operate the unit.

1.1 Intended Use

The MAXX-700 lasers are intended to be used to align patients for medical diagnostic imaging and radiation therapy. They are intended to be used in a clinical or hospital setting by professionally trained medical staff. These lasers are not designed to be used around flammable anesthetics, which present a risk of explosion or fire. The lasers are also not intended to be used in a corrosive environment. No other uses of the lasers are intended or implied in the user installation manual.

1.2 Safety

Signal words are used according to the international standards. The meanings of these signal words are:

- **DANGER** - Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.
- **WARNING** - Indicates a potentially hazardous situation which, if not avoided, may result in death or serious injury. This signal word is to be limited to dangerous situations.

- **CAUTION** - Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. This signal word is to be limited to the least dangerous situations.

1.2.1 Laser Safety

WARNING - There is a risk of an incorrect diagnosis or treatment. The isocenter of the lasers must coincide with the isocenter of the diagnostic or treatment equipment. Testing the alignment of the lasers to the isocenter of the diagnostic or treatment equipment is based on the hospital's procedures. Newly installed equipment can possibly shift as building walls and floors settle and as building materials dry out. If the equipment or the lasers have been moved, it is advised to realign the lasers to the isocenter before use.

CAUTION - The laser light is a risk for eye damage. The laser used in the MAXX-700 patient positioning system is a Class 2 laser. To prevent eye damage, do not allow patients to stare into the laser beam. The normal blink reflex will prevent eye damage. If a patient is unable to blink normally, then the laser operator must prevent the laser from shining into the patient's eye.

1.2.2 Safety Labels

Three safety labels are placed on each MAXX-700 laser unit in the locations shown below:



1. At the upper left corner on the left side of the cover.



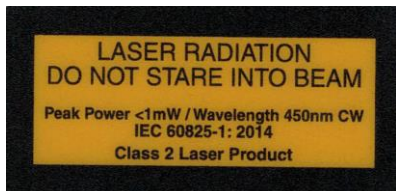
2. Right under the window on the front side of the cover.



3. At the upper right corner on the right side of the cover.

There are different possible safety labels depending on whether the lasers are being used in Europe or North America.

Safety Labels For Europe



The wavelength is 450 nm for a blue laser.

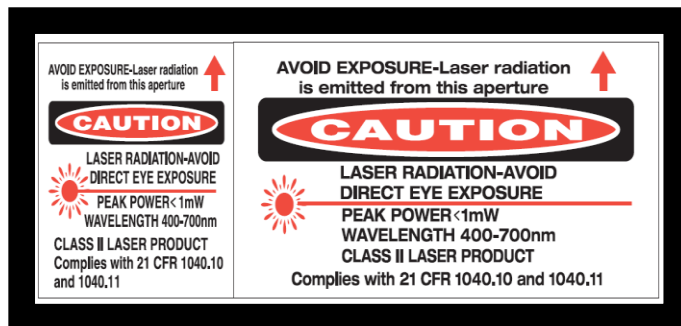


The wavelength is 532 nm for a green laser.



The wavelength is 635 nm for a red laser.

Safety Label For North America



1.3 General Terms

Name	Description
The Sagittal Laser	The sagittal laser is a single vertical line projected from the laser.
The Crosshair Laser	The crosshair laser is a crossed line projected from the laser.
The Isocenter	The isocenter is a center point where the X, Y, and Z planes coincide.
The PAN-ID	The PAN-ID is the network identifier number of the wireless network within a room. The remote control and all of the laser units in the room must have the same PAN-ID to communicate with each other.

1.4 Storage and Transportation

- Do not drop the unit during transportation.
- Store the unit in a non-corrosive environment.
- The average storage temperature is from -20° C to 75° C (-4° F to 167° F).
- The average storage humidity is from 0% to 85% and the relative humidity with no dew condensation.

1.5 Technical Specifications

Category	Feature	Specification
Laser Control	X Axis - Horizontal Movement	20 mm (0.8in) +/-10 mm (from factory center)
	Y Axis - Vertical Movement	20 mm (0.8in) +/-10 mm (from factory center)
	Roll Axis - Horizontal Rotation	10° +/-5°
	Pitch Axis - Vertical Rotation	6° +/-3°
	Crosshair Beam Rotation	15° +/-7.5°
	Laser Power Adjustment	0.1 –1mW
	Maximum Line Width at 5m (16ft)	< 0.5mm (0.02in)
	Focus Adjustment	0.5m to 6m (2 to 20ft)
	Crosshair Beam Fan-Out	~60° in each axis
Crosshair Tolerance	90° ±14.4 arc seconds	
Line Straightness	< 0.05mm deviation over 3m at 3m distance	
Electrical	Power Supply	Input: 100-240V AC, 50-60Hz, 0.8A Output: 12V DC, 1.3A
Mechanical	Laser Unit Dimensions	Length: 260 mm (10.24 in) Width: 116 mm (4.5 in) Height: 94 mm (3.7 in)
	Weight	The mechanical weight is 2.9 kg (6.4 lbs).
Environmental	Operating Temperature	The operating temperature should be in the range of 5° to 35°C (40° to 95°F).
	Operating Humidity	There should be from 0% to 85 % relative humidity with no dew or condensation.
Other	Flammable Anesthetics & Corrosives	No flammable anesthetics. No corrosives.

2 Installation

Once the MAXX-700 unit has been received and the package has been opened it must be properly installed before operation.

2.1 Pre-installation

The MAXX-700 Patient Positioning System provides an optical aid for rapid and accurate patient positioning and repositioning for therapy and virtual simulation machines.

Various combinations of the **MAXX-700 CH (Crosshair)** and the **MAXX-700 S (Sagittal)** are used with different systems. A typical system consists of:

- Two **MAXX-700 CH** crosshair lasers, mounted on each side, beam crosshairs along the X-axis.
- One **MAXX-700 CH** crosshair laser, mounted on the ceiling, beams a crosshair vertically along the Z-axis.
- The **MAXX-700 S** sagittal laser beams a straight line in the Z-Y plane.
- One **MAXX-700** remote control.

2.2 Power Supply

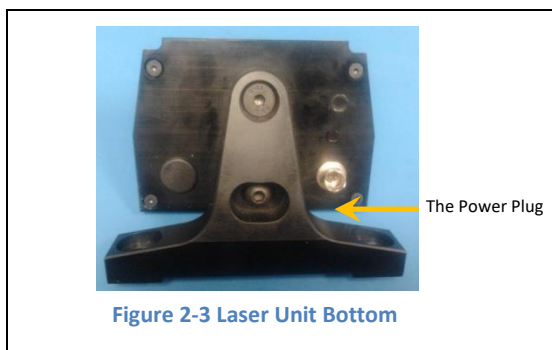
Each laser is provided with a universal power supply (transformer) with an input of 100 to 240 volts at 50 to 60 Hz. A 1.2 meter (4 foot) power cord supplies 12-volt DC power to the MAXX-700 laser unit.



Figure 2-1 Power Supply for the European Union



Figure 2-2 Power Supply for North America

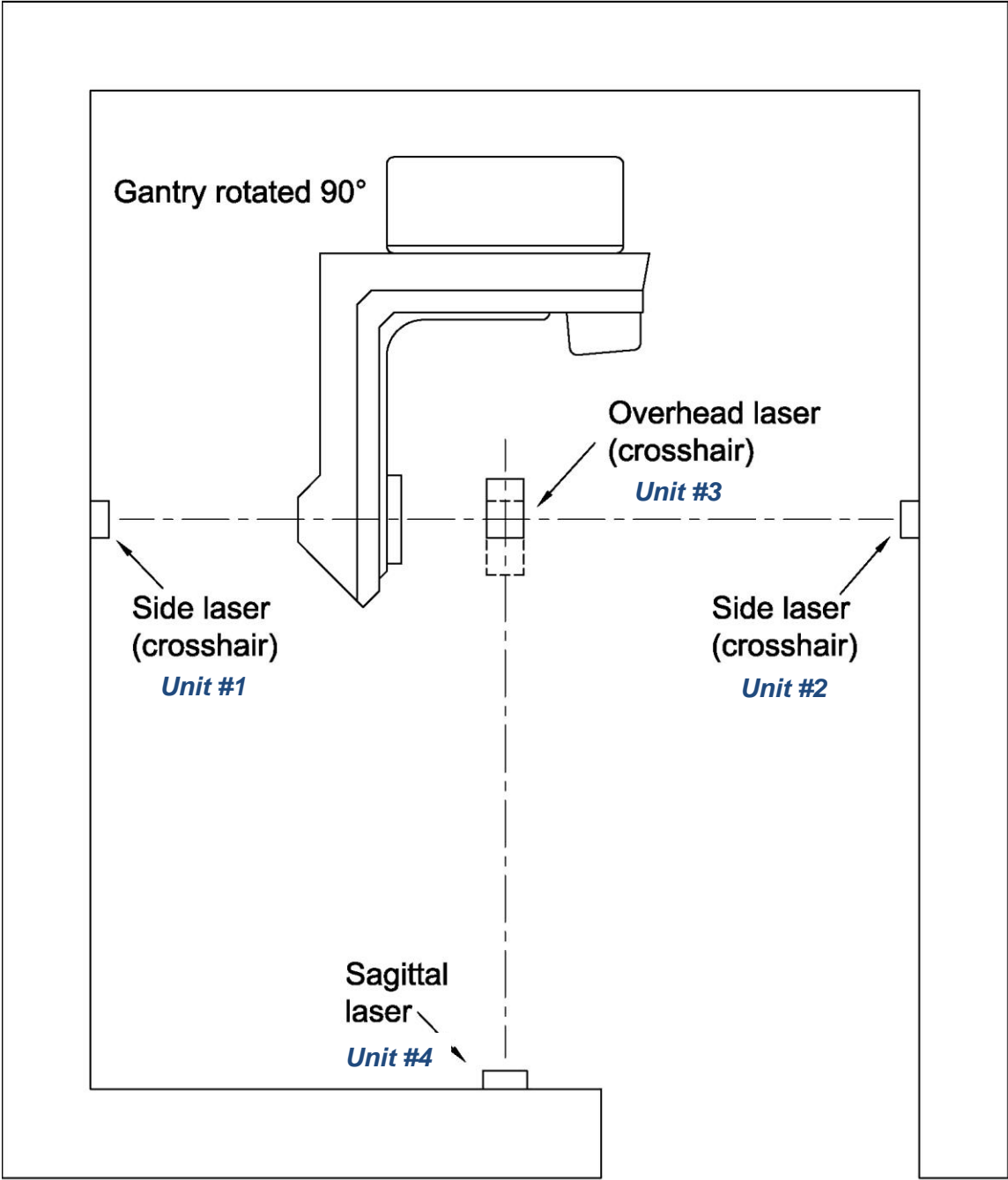


The power supply connector pushes into the base of the laser unit with a screw-on safety ring to keep the power supply connector in place during operation.

- Some facilities prefer to connect all the lasers to one wall switch, so all of the lasers are able to be turned on and off together from a convenient location.
- Some facilities connect the lasers to a timer, so the lasers are automatically turned off.

CAUTION - Use of the controls, adjustments or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

2.3 Typical Room Layout Example



2.4 Location of Installation

Lasers can be installed to either mounting plates (Figure 2-4) or adjustable mounting brackets (Figure 2-5 and Figure 2-6).



Figure 2-4 Mounting Plate - Front

Mount the front plates to the walls first. After attach the MAXX-700 laser units to the plates.



Figure 2-5 Adjustable Mounting Bracket - Front

The adjustable mounting bracket for the front can be used to install all of the units. This is highly recommended for ceiling-mounted crosshair lasers (MAXX-700 CH) as well as sagittal lasers (MAXX-700 S)



Figure 2-6 Adjustable Mounting Bracket - Side

The adjustable mounting bracket for the side can be adjusted to a maximum degree of 45°.

CAUTION - The location of the laser units are determined in relation to the therapy machine's crosshair and isocenter. Before installing the laser units, ask the physicist to verify that the field light aligns properly with the machine's isocenter.

2.5 Powering Up The MAXX-700 System

Plug in the power cable into each laser unit. Please observe the following events (A to D) illustrated in Figure 2-7 on Page 12.

WARNING - Repeatedly turning on and off the MAXX-700 units can cause damage to the hardware.

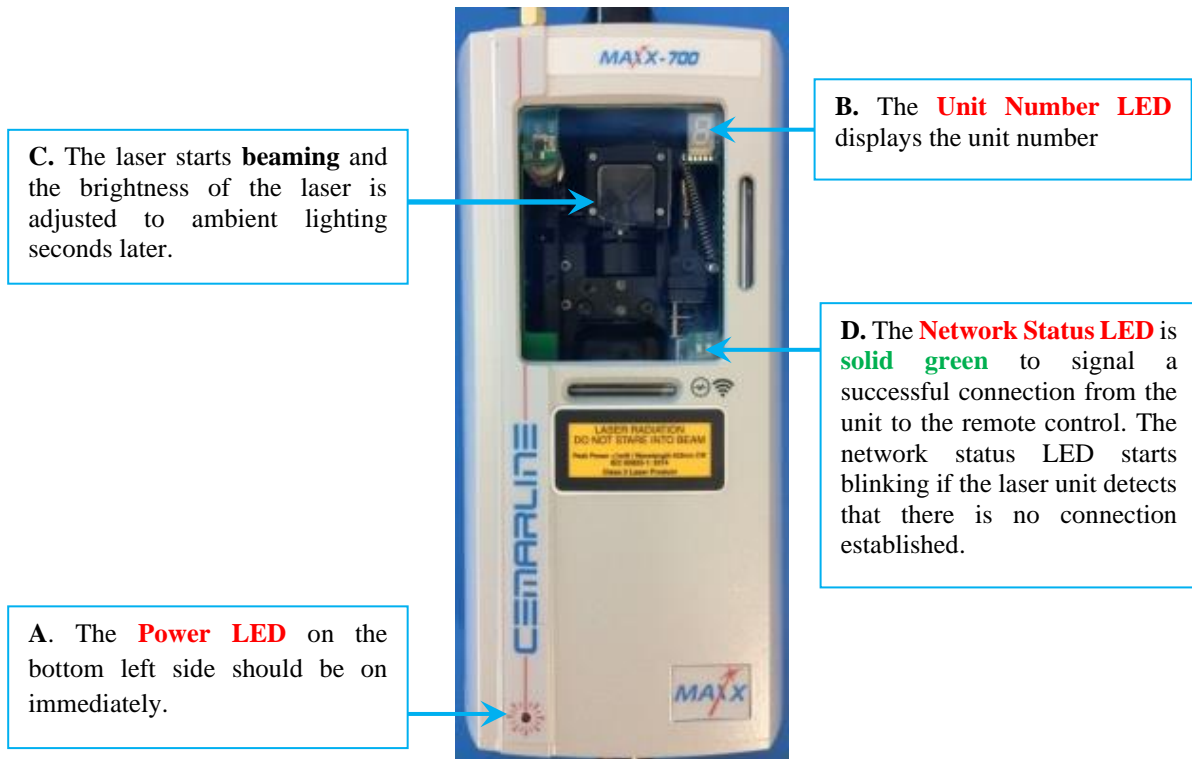


Figure 2-7 Powering Up A MAXX-700

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3 Troubleshooting

3.1 Operation Failure

If any operation cannot be completed successfully, the laser unit's network LED will start blinking to verify that there is a timeout. In most cases, this is due to a wireless communication problem. If linking to the unit is successful, you can repeat the previously failed operation.

If linking fails, please follow the steps below:

1. Make sure there is no other wireless device in the room.
2. Check the network status LED on the target unit. If it is solid green, simply restart the unit and try linking it again. If it is blinking, go to next step.
3. Check the network status LED on other laser units in the same room. If all the other units have solid green LEDs, simply restart the unit and try linking it again. Otherwise if this is not the case, go to the next step.
4. Shut down all of the units and power down the remote control. Wait at least 10 seconds, then power up the laser units, followed by the remote control. The network status LEDs should turn solid green shortly after powering up the unit. Now try linking to each laser unit. If this fails, call our customer service department for more information.

3.2 Other Problems

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
No laser beam	The wall switch is not in the on position	Verify that the switch lever is in the full-on position.
	The power supply is not plugged in or it is partially plugged in	Verify that the power supply is fully plugged into the bottom of the unit.
	The machine timers are not functioning	If lasers are wired into the machine with the time out function, verify that the timers are in working order.
	The power supply is not functioning	Use a voltmeter to measure the voltage output of the power supply wall plug. If the voltage

		is less than 11V or greater than 13V DC, the power supply will need to be replaced.
Intermittent laser	The power supply is not stable	Use a voltmeter to check power the supply. Replace the unstable power supply.

4 Maintenance

4.1 Repair

WARNING— Only certified Cemar Electro Inc. technicians should carry out any repairs to your laser units other than changing the laser module (*Note: Changing the laser module will require an adjustment of the 90-degree cross projection*). Without written permission of Cemar Electro Inc., any unauthorized repairs to the laser unit can cause further damages and will result in the Cemar Electro Inc. warranty becoming null and void. Before any service can be done the unit must be switched off and the power must be disconnected from the supply using the appliance inlet.

WARNING—No modifications may be made to the remote control as this will result in the Cemar Electro Inc. warranty becoming null and void.

4.2 Maintenance, Cleaning, and Disposal

Once the MAXX-700 laser unit is installed, **CEMARLINE** lasers require no maintenance other than cleaning beam splitters and lenses according to standard optical practices.

- Occasional outside dusting of the antireflective window in the cover may be necessary. Use only fiber optic splice and connector cleaner with clean wipes.
- Clean other outside surfaces of the laser unit with a soft cloth slightly moistened with water or a mild detergent solution and then wipe the surface with a dry cloth.
- Do not use any type of abrasive pad, scouring powder, or chemical solvent such as thinner, benzene, alcohol or disposable wipes as these may damage the finish.

- Do not mix this device with general waste upon disposal. For proper treatment, recovery, and recycling, please contact your disposal local supplier for further information.



In a case that a laser fails to function properly, please contact our customer service department as soon as possible.

5 Product Warranty

Cemar Electro Inc. warrants its patient positioning equipment to be free from defects in materials and workmanship under normal use and service for 2 years from the date of the shipment. The sole obligation of Cemar Electro Inc. under this warranty is to repair or replace without charge or to refund the purchase price, at the option of Cemar Electro Inc., of any parts which its examination shall have disclosed to be defective, provided that the buyer shall have given to Cemar Electro Inc., a written notice of the claimed defect no later than 7 days after the end of the warranty period which is two years of the date of the shipment. At the request of Cemar Electro Inc., the buyer, at its expense, shall return the claimed defective part to Cemar Electro Inc.

DISCLAIMER OF OTHER WARRANTIES

The aforesaid warranty rights are buyer's exclusive remedies and are in lieu of any other remedies, obligations, or rights, including, without limitation, any other warranties, expressed or implied (e.g., implied warranties of merchantability or fitness for a particular purpose). Under no circumstances shall Cemar Electro Inc. be liable for any incidental, indirect, special or consequential damages or for any other loss, damage, penalty or expense of any kind, including, without limitation, loss of profits or overhead, reimbursement, personal injury or property damage. The aforesaid warranty obligation of Cemar Electro Inc. constitutes its sole liability, and under no circumstances, shall the maximum liability of Cemar Electro Inc., under any legal theory (e.g., contract, warranty, negligence, promissory estoppel, strict liability, misrepresentation, tort) and for any reason whatsoever (e.g., defect, delay or otherwise) exceed the purchase price of the defective part regardless whether the claim is asserted by buyer or any other person or entity. The liabilities of Cemar Electro Inc. as above set forth, shall not be extended because of advice given by it in connection with the design, installation or use of the equipment or parts, therefore.

6 Customer Service

Cemar Electro Inc. is committed to satisfying our customer's needs. If you have any questions, comments, or suggestions regarding our products and services, please call or email us. Please contact a Cemar Electro Inc. distributor or a representative for a quotation or for a detailed description of our ordering policies, warranties, delivery policy, conditions of sale, damaged goods policy, and returned goods policy.

Cemar Electro Inc. service representatives are available to work with facility planners, architects, and hospital personnel throughout the planning and installation process.

Service department hours are between 8:00 a.m. through 4:30 p.m. (Eastern Time).



Phone: 514-631-5807
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Phone: 518-298-3065
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7 Regulatory Information

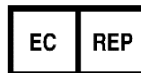
7.1 Manufacturer Information

Manufacturer (Canada):



Cemar Electro Inc.

1370 55th Ave,
Lachine, QC H8T 3J8
Canada



Authorised Representative (Europe):

P. Spirig GmbH

Baunstrasse 23
CH-9435 Heerbrugg,
Switzerland

7.2 Compliance Information










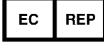




EU Radio Equipment Type Compliance Declaration

The MAXX-700 series which comprises wireless communication equipment complies with Directive 2014/53/EU.

The full text of the EU Declaration of Conformity is available at the following internet address:

<http://www.cemarmedical.com>

8 List of Symbols

	This device complies with the Medical Devices Directive & EMC Directive of the European Economic Community.
	Do not mix this device with general waste upon disposal. For proper treatment, recovery, and recycling, please contact your dealer or supplier for further information.
	Date of Manufacture
	Manufacturer
	Part Number
	Serial Number
	Lot Number
	Authorized Representative (Europe)
	Direct Current (DC)
IP	Ingress Protection
	Caution to the user and/or patient
	Refer to the instruction manual
	Keep dry
FCC ID	Federal Communications Commission (USA) ID number
IC	Industry Canada ID number