Pre-Installation Guide

For all Spirit & HighQ-2

Laser Models

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Introduction

Congratulations on your purchase of a Spectra-Physics system. This guide describes pre-installation information for your laser system.

Some preliminary planning is essential to avoid unnecessary delays during installation and to ensure easy operation and access to your system. You are requested to carefully consider your operating environment prior to installation. Proper water, power and room temperature are required for each system.

A checklist of pre-installation considerations is provided in this guide. You are responsible for meeting these requirements prior to installation, with due consideration given to all applicable building and safety codes.

We at Spectra-Physics intend to provide you with responsive support so that you can derive great satisfaction and value in using our systems for your applications. We are available to you at 1-800-456-2552.

When the system Arrives

Inspection

When the system arrives, any sign of damage to the shipping crates should be brought to the attention of the delivering freight company. A claim must be filed with that commercial carrier (usually within 30 days). Notify the originating Spectra-Physics office of any shipping damage. Shipping damage is not covered by Spectra-Physics.

Your packing list will show all items that you have ordered. Open all the packages and check each item for possible damage during shipping. Check the items against your packing list. Some items may have been installed at the factory.

Each system comes with a manual; verify that you have received this item.

Please report any missing or damaged items to Spectra-Physics, or you may contact your Spectra- Physics Sales Engineer.

Review Instruction Manuals

Please read the manual to get vital information about your system. Familiarize yourself with the system. You are encouraged to spend as much time as possible reviewing the system components before your Spectra-Physics Service Engineer arrives for the installation and training.

Laser Safety Considerations

In addition to reviewing the sections in the manual regarding laser safety; be sure to have the proper safety glasses available for ALL lab personnel present during the installation and testing of your system. For more information, please call Spectra- Physics at 1-800-456-2552.

Diagnostics

During the course of installation, power measurements will be demonstrated on all of the appropriate wavelengths. Your Service Engineer can identify which specifications will be demonstrated and the equipment necessary to conduct such tests. A non-standard system will require special consideration.

To have other published specifications demonstrated, consult with your Service Engineer to determine whether additional diagnostic equipment will be required.

Pre-Installation Considerations

Location and Environment

The location of the system and environment of your lab should have the following features:

A. A safe location that meets all applicable building codes.

B. Easy access with adequate clearance around the instrument.

C. An optical table that will meet the space requirement of the instruments to be installed.

D. Proper air conditioning could be critical for the performance of the laser. For certain applications ambient room temperature changes may be an important factor for the laser system's performance. Air ducts should not blow directly on laser or optical path.

E. To ensure stable day-to-day operation, the recommended minimum and maximum operating room temperatures are 20 - 25°C. Room temperature should ideally be 22°C and should not fluctuate ±1°C during any two-hour period.

F. In some applications vibration isolation may be required for your system. Structural integrity of the flooring could play an important role.

G. Please note that the laser head is very heavy and requires a sturdy and stable optical table.

Consider room requirements for future maintenance and upgrades by your Spectra-Physics Field Service Engineer.

Physical Description

Dimensions and Weights

Laser	Dimensions		Weight	
	inches (L,W,H)	mm (L,W,H)	pounds	kilograms
HighQ-2				
Laser Head	8.74 x 8.03 x 4.06	222 x 204 x 103	13.6	6.2
Controller	18.9 x 19.0 x 3.5	479 x 483 x 88	28.2	12.8
Spirit One models				
1040-8 / ps10 Laser Head	26.9 x 12.2 x 6.4	683 x 310 x 163	88.0	40.0
1040-8-SHG Laser Head	29.9 x 12.2 x 6.4	759 x 310 x 163	99.0	45.0
Power Supply	11.0 x 5.7 x 1.9	280 x 144 x 48.5	< 8.60	< 3.9
Chiller	15.7 x 19.0 x 10.5	400 x 483 x 267	68.0	31.0
Spirit 4, 8, 16, 16HE, 30HE				
Laser Head	34.4 x 13.4 x 7.3	874 x 340 x 185	155.0	70.0
Controller / Chiller	25.6 x 22.1 x 29.4	650 x 560 x 746	176.0	80.0
Spirit 70 & 100				
Laser Head	39.7 x 14.6 x 9.0	1009 x 370 x 229	>154.4	>70.00
Controller / Chiller	31.5 x 21.8 x 43.4	800 x 553 x 1103	220.5	100.0

Utility Requirements

Water

The Spirit is a closed loop cooled system. If a water-to-water chiller model is ordered, utility water services with a flow speed of 13 to 20 liters per minute (3.4 to 5.3 GPM) might be required.

Power Requirements

HighQ-2

Controller	100 – 240 VAC, 50/60 Hz Current: <2A

Spirit One

Power Supply	90 – 305VAC, 47 – 63 Hz Current: <10A
Chiller **(HECR008)**	100 – 240VAC, 50/60 Hz Current: 10A

Spirit 4, Spirit 8, Spirit 16 (non-HE)

Controller/Chiller	100 – 230 VAC, 50/60 Hz Current: <16A

Spirit 16HE, Spirit 30HE

Controller/Chiller	100 – 240 VAC, 50/60 Hz Current: <14A

Spirit 70 and Spirit 100

Controller	208 – 230 VAC, 50/60 Hz, Single Phase (NEMA-6- 20 socket) Current: <16A
Chiller	208 – 230 VAC, 50/60 Hz, Single Phase (NEMA-6- 20 socket) Current: <16A

Computer Requirements

- Pentium processor or newer, 1 GHz or higher
- 1 GB RAM, or greater
- 30 MB available disk space for installation, or greater
- a mouse or other Windows-compatible pointing device
- a video display with at least one of the following screen pixel resolutions: 800 x 600, 1024 x 768, 1280 x 768, 1280 x 800, 1280 vx 1024, 1600 x 1200, or 1680 x 1050.
- an available USB port for direct connection to the provided USB-CAN adaptor (avoid using a USB splitter or hub).
- For Spirit 70/100 systems, an available ethernet port is required to utilize the laser's built-in GUI, via direct connection to the Spirit head's ethernet port (RJ-45 connector).

HighQ-2, Spirit One, Spirit 4, Spirit 8, Spirit 16, Spirit 16HE, Spirit 30HE:
Spirit graphical user interface (GUI) control software loaded on a Windows7© or Windows 10© 32-bit or 64-bit computer. For more information on the control software, refer to the User's Manual.

Spirit 70 & Spirit 100:
To access the GUI for the laser, any computer with network hardware and a patch cable is sufficient (RJ-45 connectors). As software, any browser software is suitable. To access the GUI, please refer to the system manual of your Spirit laser system.

In order to maintain CDRH safety requirements, run only the GUI software on the control computer during laser operation, i.e., do not run other software at the same time.

Pre-Installation Checklist

Before the arrival of your Spectra-Physics Service Engineer please review the following pre- installation requirements. When all the requirements have been met, initial the boxes and fax a signed copy to the Spectra-Physics Service department at **(408) 980-6921.**

Physical Locations:

- ❑ A location with adequate clearance around system to conduct service and accessible by Spectra-Physics personnel.
- ❑ A temperature-controlled room.
- ❑ Utility services have been installed.
- ❑ Local building and safety codes are in compliance and have been verified.

When Your System Arrives:

- ❑ Check crates for damage.
  (If damaged, file a claim with the carrier and notify Spectra-Physics.)
- ❑ Uncrate and place the system on your work surface.
  (Two or more people may be required to lift some equipment.)
- ❑ Compare the packing list with your quotation. Call your Spectra-Physics office about any discrepancies.
- ❑ Check that all manuals were received.
- ❑ Save all packing and shipping material until the installation has been completed.
- ❑ Obtain the correct safety glasses and a power meter.

Customer Signature	Date
Phone Number	Fax Number
E-Mail	Sales Order Number

Maintenance Agreement

To maintain a valid warranty on your Spectra-Physics system, it is necessary for the customer to assume the responsibility and perform the routine maintenance program. Failure to do so may result in the warranty being voided.

Nalco Mixture

The Nalco Cleaner (P/N 1607-0547) is used to flush your system clean of ferrous metals and copper alloys as a result of corrosion. It is recommended as a maintenance procedure that the chiller/critical cooling loop in each piece of equipment is cleaned and treated 1x per year. The laser does not have to be lasing. The cleaner should be circulated for a minimum of 8 hours (the longer the better if time permits in order to assure thorough cleaning).

Filters

ALPS filter

All models except HighQ-2 and Spirit One:
When the laser cavity humidity reaches an unacceptable level, the ALPS air purge filter (P/N 90074765) should be replaced. This filter has an average lifetime 1.5 to two years, depending on the relative humidity and the temperature of the operating environment.

All models except HighQ-2:
The Chiller's filter screen should be inspected and cleaned every 3 months, or else exchanged when it can no longer be rinsed clean. You should also monitor the laser Chiller temperature to make sure cooling is within specifications.

If the laser is not going to be used for an extended period of time, turn off the laser and drain the cooling solution.

Chiller Fluid

The chiller fluid level should be appropriate for the model laser and must meet Spectra-Physics specification requirements. Insufficient cooling could result in a decrease of performance or damage to the laser system.

The Antifrogen L coolant solution (P/N 10734) is a concentrated liquid corrosion inhibitor designed for use in closed loop cooling systems. It can be added in combination with distilled water* in a ratio of 1:3 to a closed cooling system, resulting in a proper treatment without dilution for up to 6 months. This solution is a complete inhibitor that protects ferrous metals and copper alloys from corrosion. It is nitrite free and minimizes the challenge of bacteria control (depending on environment and usage). Also, the Antifrogen L coolant solution will ensure a correct coolant level readout of the chiller.

Fill the chiller reservoir with a mixture of Antifrogen L and distilled water, ratio 1:3. Do not use deionized water, and do not place the chiller above the laser (should a leak develop, dripping water may damage the laser). The chiller must always be on when the power supply is on, even if the laser diodes are not on

* CAUTION: DO NOT USE DEIONIZED WATER

NOTE: To restrict the growth of algae in the reservoir, it is recommended that the reservoir cover be kept in place and that all circulation lines be opaque. This will eliminate the entrance of light that is required for the growth of most common algae.

General Procedures

The chiller operation of the laser system should be checked once a week. The power output and the mode-locking of the system should also be checked once a week by verifying the output values.

If any of the output characteristics have changed, please call Spectra-Physics Technical Support at **1-800-456-2552.**