Pre-Installation Guide for Ascend

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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/coolant, 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.

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 Location:

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 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.

When the system Arrives (Continued)

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.

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Pre-Installation Considerations

Location and Environment

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

A safe location that meets all applicable building codes.

Easy access with adequate clearance around the instrument.

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

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.

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.

See specifications in Table 1-1 and table 1-3 in the User's Manual.

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

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.

System Components

The Ascend laser system is comprised of four basic components:

1. Ascend laser head
2. Model APS-160 power supply
3. Ascend control software installed on a system computer
4. Refrigerated Chiller

Pre-Installation Considerations (Continued)

System Weights

Component Weight	Specifications
Weight	
Laser head (OEM)	47 lb. (21 kg)
Power supply Chiller	35 lb. (16 kg)
(dry, typical)	122 lb. (55 kg)

Cable and Hose Descriptions

Cable	Length
Power supply, power cable with a NEMA 5-15P plug and IEC 60320 C19 Connector	99” (251 cm)
Power supply, power cable, European with a CEE 7/7 plug and IEC 60320 C19 connector	96” (244 cm)
USB cable	117” (3 meters)
Power supply to laser head signal cable	109” (2.8 meters)
Power supply to laser head power cable	109” (2.8 meters)
2x TNC 50Ω, RF cables	109” (2.8 meters)
2x Coolant Hoses	117” (3 meters) with quick connect fittings

Outline Drawings

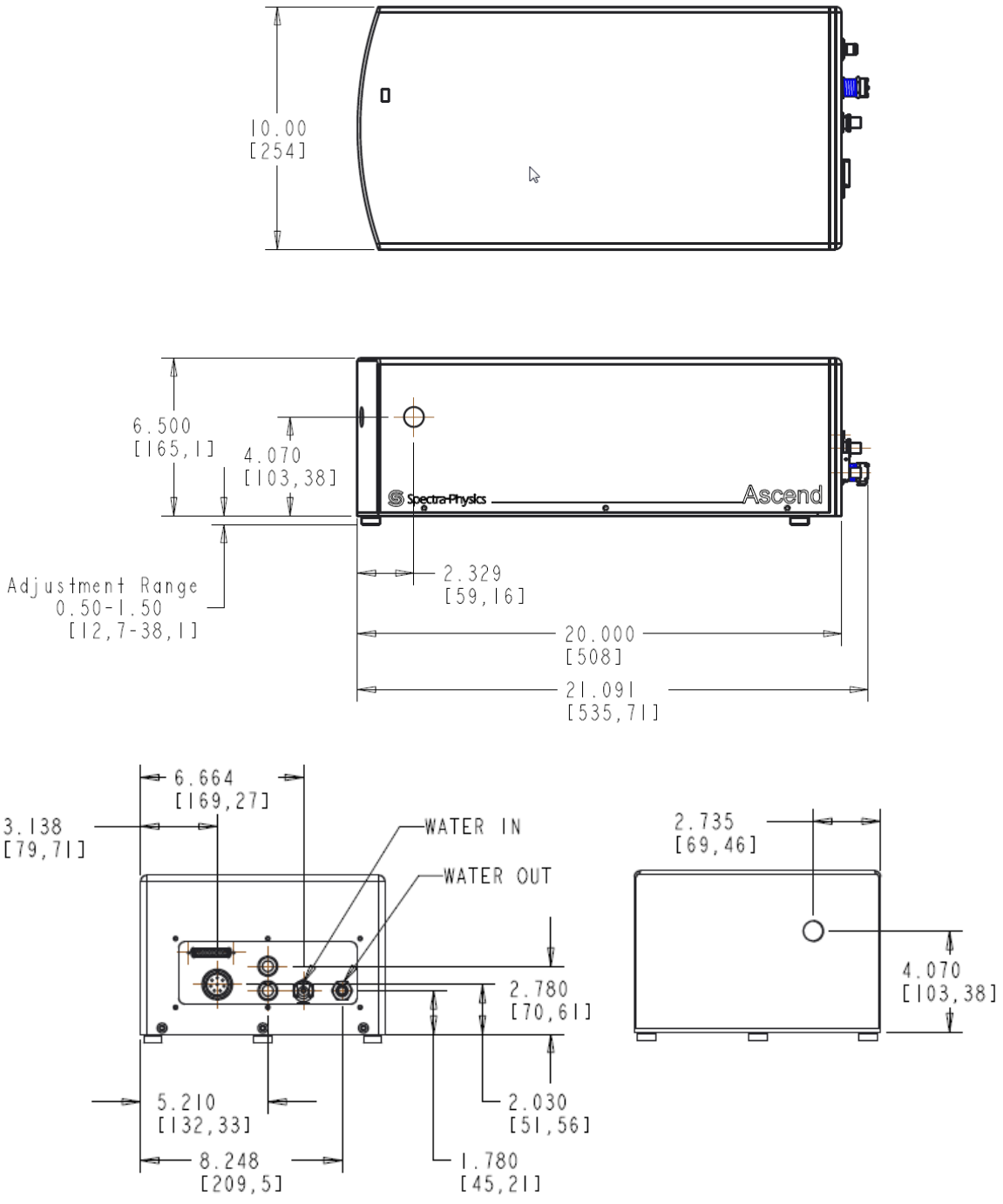

Figure 14. *Laser head Beauty Cover outline drawing*

Pre-Installation Considerations (Continued)

. Environmental Specifications

The environmental conditions under which the laser system will function are listed below. These specifications reflect *indoor* use conditions.

Feature	Specification
Altitude	Up to 3000 m
Temperatures	18℃ to 28℃
Maximum relative humidity	85% at 18℃, decreasing to 45% at 28℃ to maintain a non-condensing humidity on the 20º cooling loop.
Mains supply voltage	Do not exceed ± 10% of the nominal voltage

Utility Requirements

Component	Maximum Current / Power
Laser Power Supply	
100 – 240 V / 50 – 60 Hz	15A / 1100VA
Chiller	
100 to 130Vac, 60Hz	15A
208 to 220Vac, 60 Hz	10A
200 to 240Vac, 50 Hz	10A

Routine Maintenance

The *Ascend* laser system was designed for minimal maintenance. Follow the routine procedures described in this chapter to keep the system in good working condition for the life of the laser. For further information, contact your Spectra-Physics service representative.

Pre-Installation Considerations (Continued)

Cleaning the Output Window

The *Ascend* cavity is sealed to keep the internal optics clean. The optical cavity should never be opened. Depending on the cleanliness of the operating environment it is possible that dust or debris can accumulate on the output window external surface, which might affect the output power of the laser.

If the output window is contaminated, a spray of very clean, dry air or nitrogen can help remove it. The pressure should not be more than 10 psi to avoid damaging the window.

Danger! 

Never try to clean the output window while the laser is operating. Such an action could result in serious physical injury. Always make sure the laser is off and the AC power is disconnected before attempting to clean the window.

The output window is antireflection coated to minimize power loss and back reflections. It can be damaged by incorrect contact cleaning. The window can be cleaned with lens tissue dampened with methanol, but it is difficult to accurately reach the optical surface. It is recommended that you contact your Spectra-Physics service representative for additional window cleaning techniques, if needed.

Do not remove the optical cavity cover or the window seal for any reason, or you will void your warranty and may damage your laser.

Pre-Installation Considerations (Continued)

Power Supply Air Filter Replacement

The power supply requires a steady supply of clean, cool air for proper operation. It is equipped with several fans that pull in room air and circulate it across the RF drivers and other electronics for cooling. The air intake is equipped with a removable particle filter to prevent dust or other foreign material from entering the power supply. The power supply air intakes should be kept clean. The exterior metallic filters should be periodically cleaned with a vacuum from the outside of the power supply, when the power supply is turned off. Do not remove the metallic filter or open the power supply for cleaning. Vacuum any debris that is on the exterior of the filter.

The air intake on the power supply front panel has a removable particle filter that sits behind the front grill of the power supply. If this filter becomes contaminated, it can be removed and replaced with the spare filter that is included in the laser accessory kit.

To replace the filter, turn off the laser and power supply and disconnect the power supply from the power source. Loosen the 4 captive screws on the grill with a number 1 flat blade screwdriver. Remove the grill with the filter mesh attached from the supply. Remove the old filter mesh from the grill by pulling it off the hook and loop fastener strips holding it to the grill. A new filter can then be stuck to the hook and loop fastener and the grill replaced in the reverse order of disassembly.

Coolant Maintenance

To prevent metal corrosion and growth of algae in the *Ascend* closed-loop cooling system, Nalco corrosion inhibitor is required. This coolant prevents galvanic corrosion from dissimilar metals, prevents oxidation of ferrous metals and acts as an algaecide.

Nalco coolant must be used regardless of the chiller used, and it should be changed once a year

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

Regularly inspect filter on the power supply for any buildup of dust. If dirty, remove the filter and wash it in clean water. The rate at which the filter becomes more restrictive is mainly dependent on the cleanliness of the environment.

*__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.

Pre-Installation Considerations (Continued)

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.

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.

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