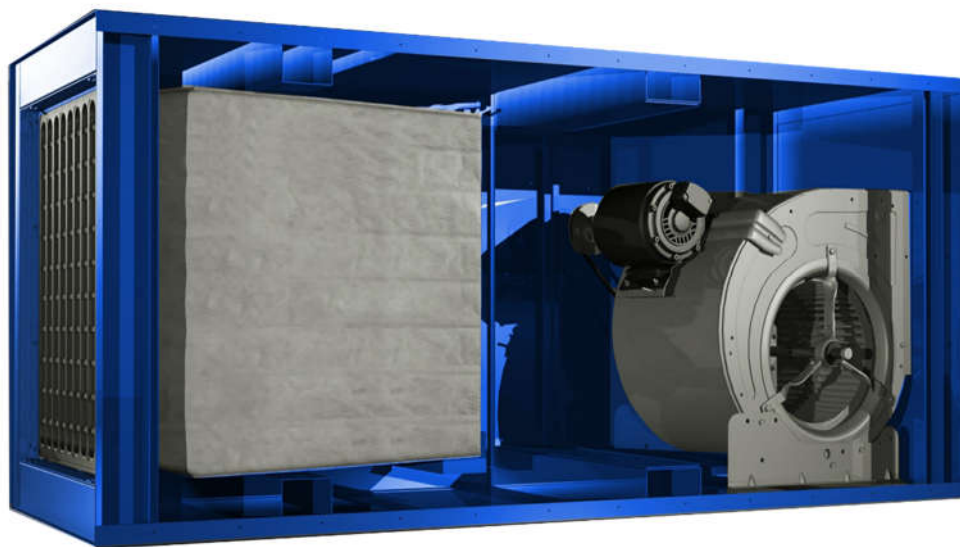


LASERMET SWALLOW 4000

INSTRUCTION MANUAL



THE SWALLOW FILTERED FUME EXTRACTION SYSTEM FOR LASERS

Issue 2

LASERMET SWALLOW 4000

Instruction Manual

Contents

1	Safety Warnings.....	3
2	Concept.....	4
2.1	Main Components.....	4
2.2	System Description.....	5
3	Installation.....	6
3.1	Filter Installation.....	7
4	Wiring.....	8
4.1	Electrical Wiring Connections.....	9
5	Operation.....	10
5.1	Maintenance.....	10
6	Specifications.....	11
7	Warranty.....	11
8	Contact Details.....	12

1 Safety Warnings

This device is intended to be used as part of a safety system which may be used to protect personnel and equipment from possible injury, damage, or loss.

As such it must be installed and wired according to these instructions and tested by suitably qualified persons. No attempt may be made to tamper with the parts, open them, or use them outside of the parameters contained herein.

The units are only designed to be fixed to surfaces using their inbuilt fixing holes. They must not come into contact with each other or any other moving part when in use. The parts should never be subject to impact or mechanical strain.

Safety switches should never be defeated or bypassed. It is imperative that all steps are taken to ensure that any spare actuators are made unavailable, such that they cannot be used to defeat the switch or reduce the protection offered by the system in any way.

2 Concept

The Swallow is an air cleaner designed for the removal of particulates and gaseous contaminants and is typically suspended above the laser process workspace.

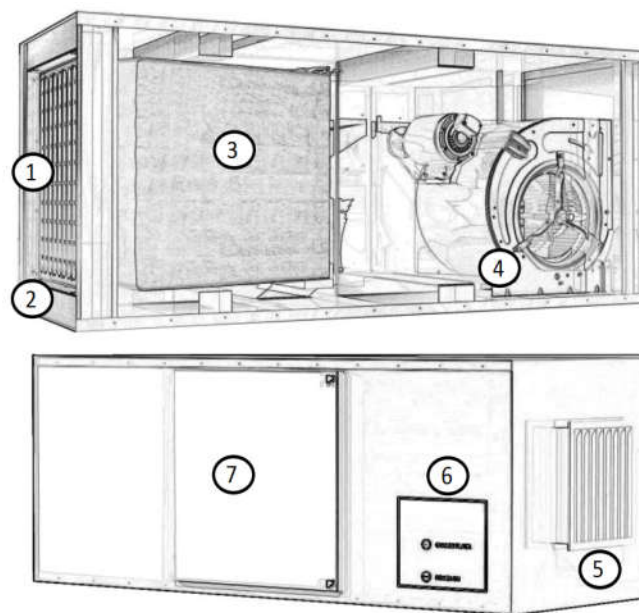
It is designed specifically for applications that include areas having high load particulate concentrations such as laser welding where direct source capture may be difficult.

Laser fume absorbent canisters are also an optional stage of filtration to control odours and gases.

The 4000 cfm unit (6800m³/hr) accepts multiple stages of air filtration where the user can select from a variety of particulate or gaseous/chemical filtration depending on the laser process.

Lasermet provides a full range of laser interlock equipment including control systems, interlock switches, illuminated warning signs, laser shutters, door locks, external power supplies etc. which can be connected to provide a complete laser interlock system. Full support, design and installation is available from Lasermet, please contact us for any queries. Contact details are given at the end of this manual.

2.1 Main Components

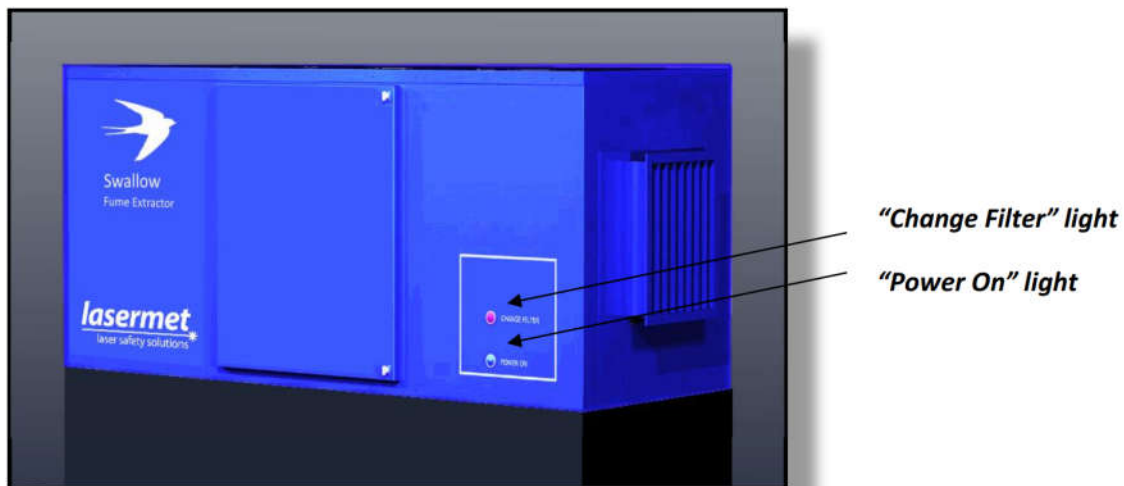


1. **A full-size air intake** draws contaminants and recirculates filtered air
2. **Internal air filters** are sealed with full gaskets
3. **Filter options** include: prefiltration, a secondary filter, HEPA or absorbent filters
4. **4000 cfm** (6800m³/hr) unit
5. **Directional louvers** adjustable for returned air
6. **LED indicators** for filter pressure drop and unit operation
7. **Service door** provides access to all components
8. **Power options** 120VAC-1Ph; 230VAC-3Ph; 480VAC-3Ph

2.2 System Description

The air cleaner is a self-contained unit with a fan, a pre-filter section, final filter section, (a HEPA filter section,) and LED indicator lights to identify power on and filter change time. These indicator lights are shown below.

The “Power On” indicator light illuminates as soon as power is energized to the system. The red “Change Filter” indicator light illuminates once the pressure drop of the filters has exceeded the recommended pressure. This indicates the filters are “dirty” and need to be replaced with new filters.



The unit enclosure is constructed from 16-gauge powder-coated steel. The pre-filter and final filter access is from the air intake end of the unit and includes an integral filter holding frame that enables filters to be installed without using fasteners.

The unit accommodates a 2-inch or 4-inch prefilter. The second stage accommodates a specific HVAC air filter. The third stage includes a HEPA filter holding frame for the HEPA air filter.

The fan is positioned at the air exit side of the unit and has a rated capacity of up to 4000 cfm (6800m³/hr) with air filters installed.

An air supply register with adjustable directional louvers is built into the air exit side of the unit.

Main Features

The unit has a full-size air intake that draws fumes and other contaminants from the room. This air is then filtered through each stage and re-circulated back into the conditioned space.

Typical Air changes per hour

Lasernet’s standard cabin measures 25’3” x 16’5” x 11’6” or 8 x 5 x 3.5m which is 140m³. For this size of cabin, the Swallow Fume Extraction System will provide 50 air-changes per hour.

Internal air filter holding assemblies include gaskets which prevent air bypass and ensure that all of the air is being treated by the system. Primary and secondary air filters are installed from this end of the unit. Installation of replacement filters does not require tools or fasteners.

Filter options: Air filters can be selected specific to the volume and type of contaminant concerned. The options include prefiltration, a secondary or final filter, and/or a HEPA or absorbent filter(s) at the final stage.

The 4000 cfm (6800m³/hr) rated unit has a fan that provides a uniform airflow at sustainable noise levels.

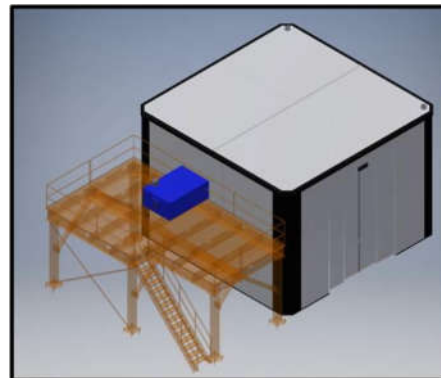
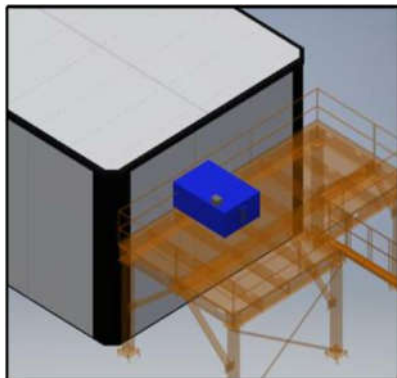
Adjustable directional louvers return the filtered air into the working space.

LED lights show when the unit is ON and the particulate air filter pressure drop (and unit operation).

Power Supply Options and ordering data	
Power Supply	Part No.
120 VAC 1-Phase	FES-SW-4000-120-1
230 VAC 3-phase	FES-SW-4000-230-3
480 VAC 3-phase	FES-SW-4000-480-3

3 Installation

The system is designed to be mounted on a platform structure adjacent to the laser safety cabin so that the inlet port connects to the cabin wall.



Typical Installation of Fume Extraction System with *Laser Castle* Laser Safety Cabin

3.1 Filter Installation

Warning: Do not install or replace filters with the system operating. Do not operate without the proper filters installed.

The system is designed to accommodate up to (2) stages of filtration. Filters are installed in the inlet FastFrame holding frame.

Bag filters, up to 30" depth, are the primary filtration with the optional addition of a 2" or 4" prefilter in front of the primary filter, if required.

Primary Filter Installation

1. Justify the filter's bottom edge to the back of the holding frame, allowing the filter to rest on the compression tabs.



2. While pressing down on the filter, compress the tabs and rock filter forward into place.
3. Push and seat the filter against the gasket seal.



Pre-filter Installation (Optional)

Only use 2" or 4" depth cardboard frame prefilters.

1. Use the same method as previously described to install prefilter in front of primary filter.
2. Push and seat the filter against the primary filter. (Note: minor prefilter frame deflection is expected.)



4 Wiring

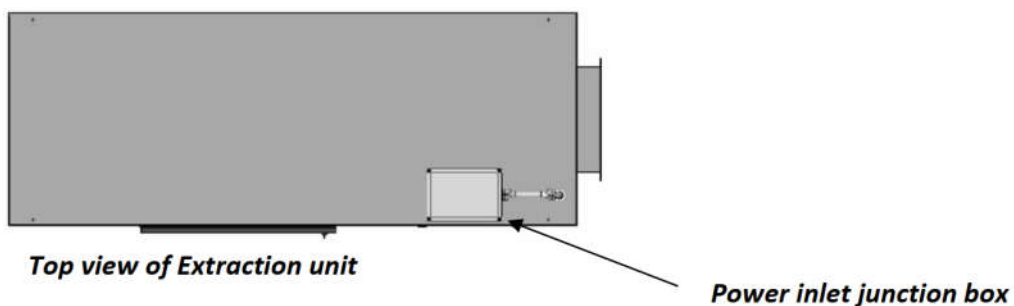
The system is completely factory wired to a junction box located on the top panel.

See system label attached to top of system beside the junction box and apply correct inlet power (see wiring diagrams on following pages).

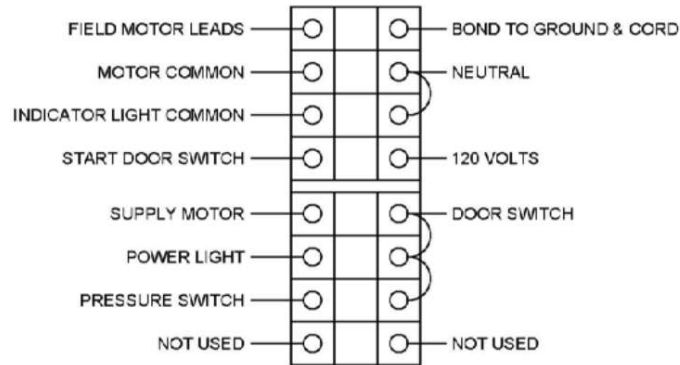
Follow local electrical codes for inlet power connection.

Once local power is energized the Swallow Fume Extraction System will power on.

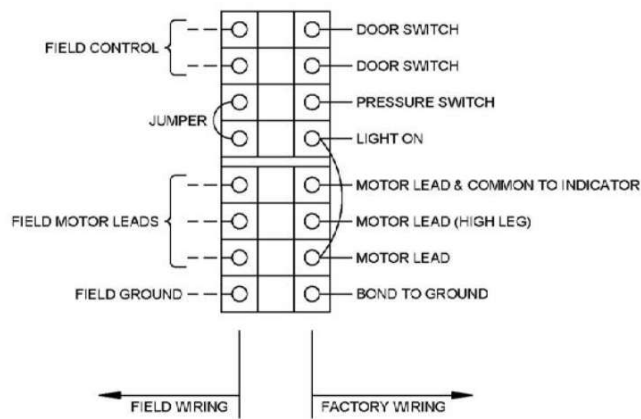
The green "Power on" indication light will illuminate to indicate power is applied.



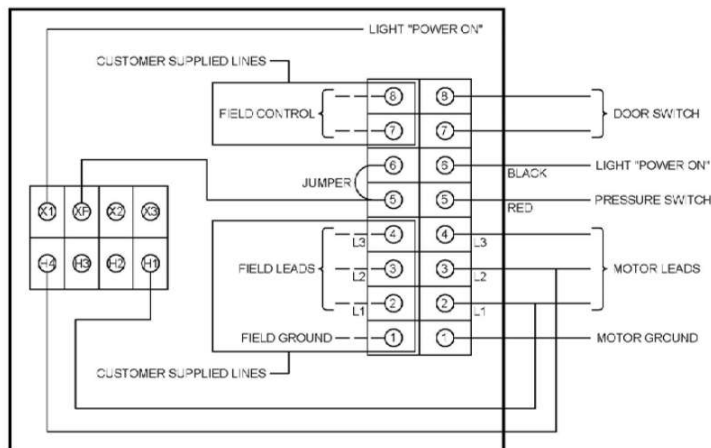
4.1 Electrical Wiring Connections



120VAC 1 Phase



230VAC 3 Phase



480VAC 3 Phase

5 Operation

Quick Start-Up

- Install filters into inlet holding frames and secure all doors.
- Connect inlet power and energize system. Green light will illuminate indicating “Power On”

5.1 Maintenance

Proper maintenance of the Swallow Fume Extraction System is vital for proper operation. To maintain optimum performance, it is necessary to replace filters when they are no longer as efficient as required or when the pressure drop becomes too high.

To determine when media change-out is required, the system is equipped with a red “Change Filters” indicator light. Follow these guidelines to ensure your system is in optimal operation.

1. Filters

The pressure drop across the filter exceeds the recommended change-out pressure drop or system design pressure. The recommended “dirty” or change-out pressure drop will illuminate the red “Change Filters” light.

Disconnect power and refer to the filter installation.

2. System

The system should be periodically inspected, and routine maintenance checks or other planned surveillance should be conducted. Check each system for torn gasket, broken welds, fan belts, or any other indication that the system’s ability to contain the process airstream has been compromised.

When placing an order for replacement filters, provide Lasernet with the serial number and part number. This information can be found on the system label on top of the housing next to the inlet power junction box. Refer to contact information at the back of this manual.

6 Specifications

Part No.	FES-SW-4000	
Rated Airflow	4,000 cfm (6800m ³ /hr)	
Air Changes per hour for 140 m ³ cabin	50 Air changes per hour	
Pre-filter	Optional	
Final Filter	HEPA or Absorbant Filter	
Canisters	Optional	
Sound Level @ 5 ft perimeter	73 dB	
Operating Weight	500 lbs	
Width	54-3/4"	
Depth	30-3/4"	
Height	74"	
Voltage	120 VAC	1-phase
	230VAC	3-phase
	480VAC	3-phase
Power Consumption	1,030 Watts	
Throw (distance @ 100 fpm)	100 ft	

Dimensions are approximate. Values given as 'typical' are average values measured across a number of samples and are not guaranteed. Lasernet reserve the right to alter any specification without prior notice.

7 Warranty

Lasermet provide a 12-month warranty for defects in materials and manufacture, from the date of installation or delivery. Installations completed by Lasermet are covered against defects in workmanship for 12 months.

Damage or defects caused by other factors are not covered. For example, industrial contamination, incorrect cleaning, storm damage. Consequential loss is not covered under warranty. Compensation for indirect or direct loss or damage is expressly excluded. Rectification of the defects or a replacement does not initiate a new warranty period.

For all deliveries, payments and other legal transactions, English law takes precedence for any litigation.

8 Contact Details

Lasernet provide a full range of laser interlock equipment including interlock switches, illuminated warning signs, laser shutters, entry keypads with built-in fail-safe override timer, door locks, external power supplies etc. which can be interconnected to provide a complete system. We also supply equipment and consultancy covering all aspects of laser safety. Full support, design, and installation is available from Lasernet, please contact us for any queries.

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