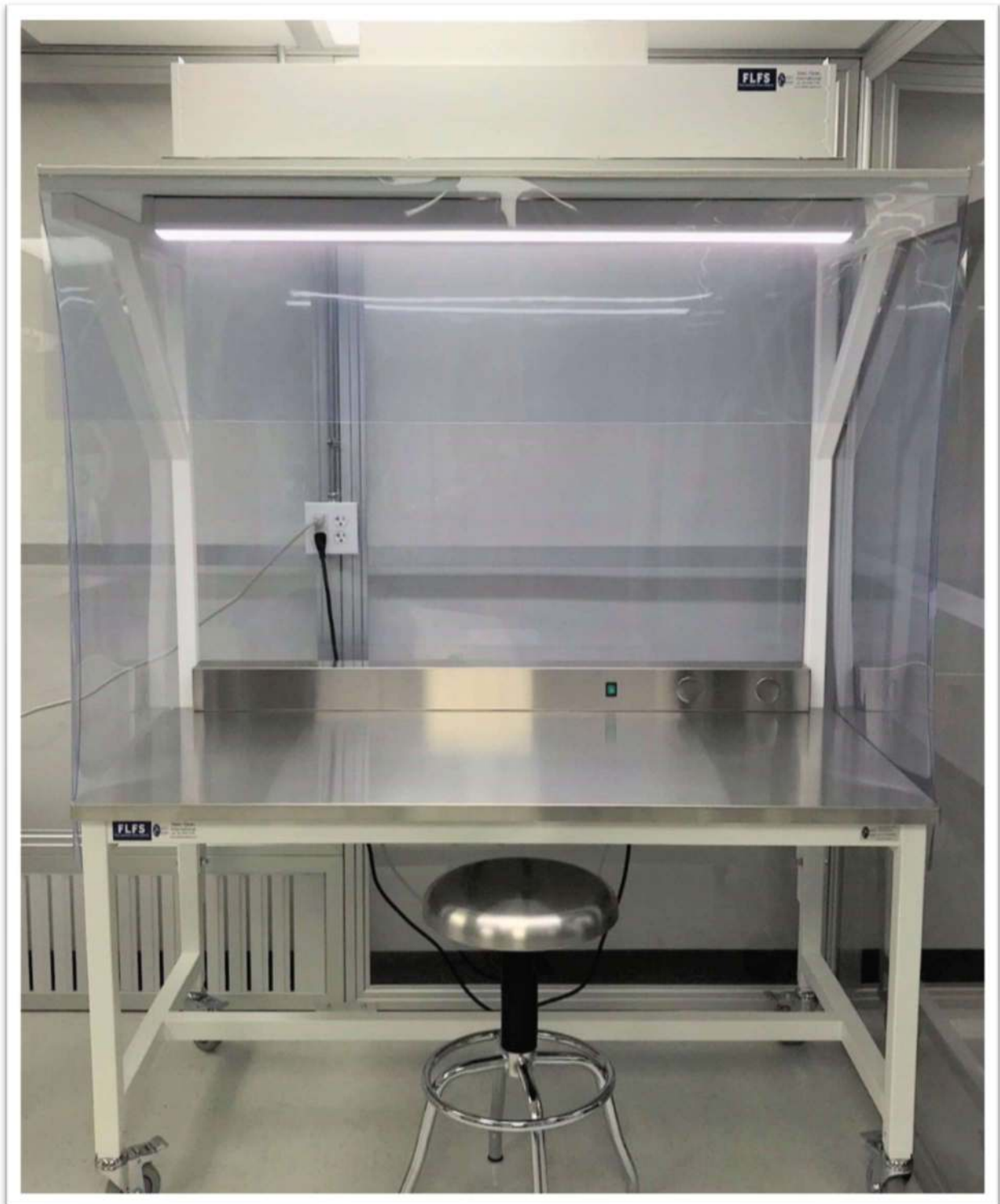


FLFS - Flex Laminar Flow Station

Installation, Operation & Maintenance Manual



Original Language

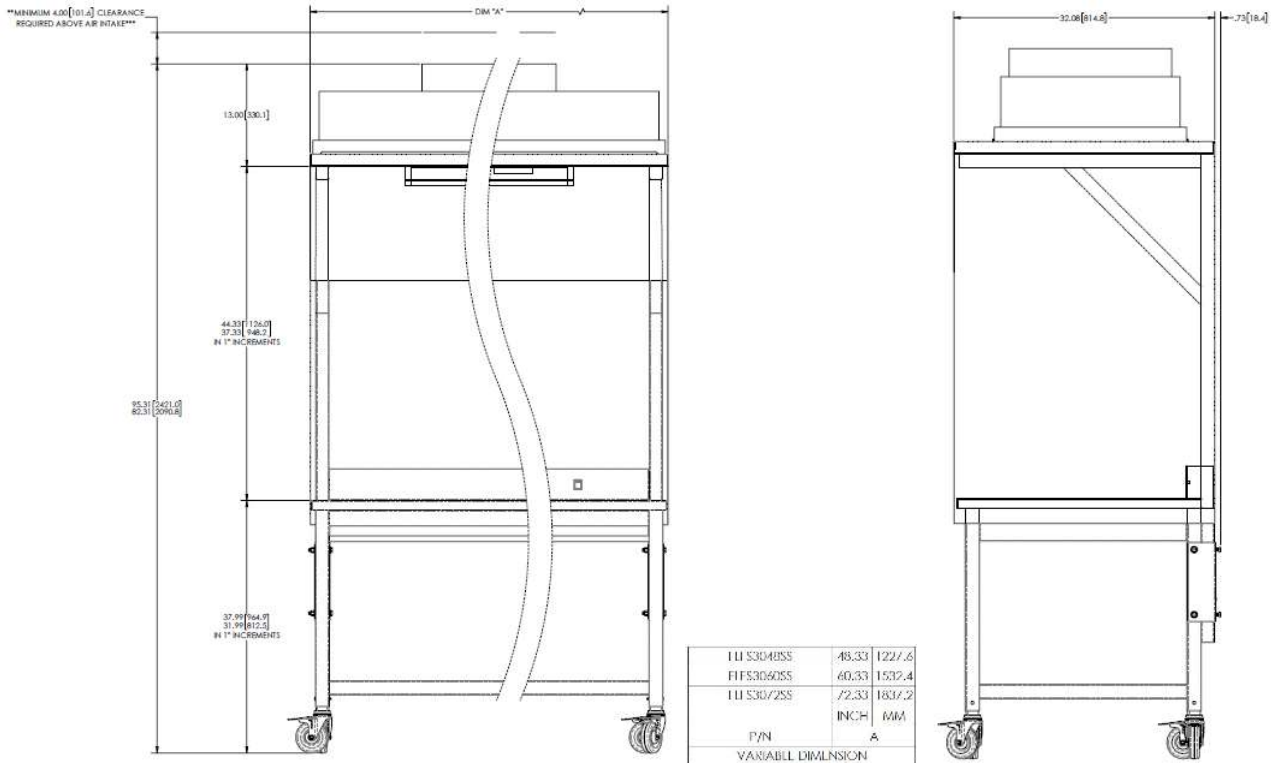
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Introduction

The FLFS (Flex Laminar Flow Station) vertical laminar flow hood provides a comfortable, well-lit workspace with ISO5 cleanroom air quality (measured at rest) designed to efficiently protect materials, products and equipment from particulates outside the station. The quiet 3-speed fan pulls a nominal 632 CFM (cubic feet per minute) of ambient air through a prefilter, gently delivering HEPA filtered vertical laminar airflow at ~90 FPM (feet per minute) to the work surface while pressurizing the station to mitigate ingress of airborne particulates from the surrounding environment.

An optional Ionizer Bar, highly recommended by Static Clean, mounted just beneath the HEPA Filter, enhances the effectiveness of the system by neutralizing any static charges on materials inside the station, eliminating ESA (electrostatic attraction) of particles.

The FLFS comes in standard 30” depth x 4ft, 5ft & 6ft lengths. Very low maintenance and flexible, the FLFS is an ideal choice for a cleanroom rated workstation at an affordable cost.



Specifications

Depth	32.08"
Width	48.33", 60.33" or 72.33"
Work Surface Height	32" ~ 38" in 1" increments
Height Between Work Surface and Ceiling	37.33" ~ 44.33" (at setup, not field adjustable)
Overall Height	82.31" ~ 95.31" (at setup, not field adjustable)
IMPORTANT NOTE: 4" (min) airspace required above unit for air intake	
Approx. Shipping Weight with Wooden Crate	580 lbs. for 4', 670 lbs. for 5' and 780 lbs. for 6' FLFS
Approx. Shipping Crate Dim's = 41"W x 97"H x	55"L for 4', 67"L for 5' and 79"L for 6' FLFS
Input Voltage	115VAC, 50/60Hz, 1-P via 10' Cord w/ NEMA-5-15 Plug
Input Amps for 4' & 5' units only	Fan Off 0.29A; Fan High 3.10A; Fan Med 2.28A, Fan Low 1.80A
Input Amps for 6' units only	Fan Off 0.29A; Fan High 6.49A; Fan Med 4.85A, Fan Low 3.89A
Sound	~50 dBA @ 3' from Front with Fan on High Speed
Air Flow	632 CFM for 2'x4', 300 CFM for 2'x2' (nominal @ hi-speed)
Air Velocity @ 6" from face of HEPA Filter	Fan High 88fpm, Fan Med 66fpm, Fan Low 46fpm
HEPA Filter(s) P/N LFCHFFU22FLTH, 2' x 2'	99.97% Efficient to 0.3-microns
P/N LFCHFFU24FLTH, 2' x 4'	99.97% Efficient to 0.3-microns
Pre-filter(s) P/N LFCHFFUFLTP	1"x20"x20" MERV-8, ASHRE Std. 52,2 1999
Frame	Welded Steel with Power-Coat Finish
Work Surface & Backsplash	Stainless Steel
Surround/Enclosure	40-mil Clear Antistatic Vinyl 'Soft-Wall'
Environmental Conditions	60~86 Degrees F; 15~60% RH (relative humidity)

⚠ Safety Precaution: This system is not a 'fume hood' to be used to protect operators from harmful fumes, contaminants and/or microbes. Its sole purpose is to protect materials and products inside the FLFS system from particulate contamination outside of the enclosure!

⚠ Safety Precaution: You MUST unplug the system from power before performing any service or maintenance other than simple cleaning of surfaces, to avoid injury from moving parts or electrical shock.

Freight Inspection & Claim Information

The FLFS ships in a wooden HT (heat-treated) crate (sold separately) to protect it during transit. Once the crate leaves our facility, it is the responsibility of the freight carrier to protect the crate and its contents from damage and the elements until it is safely delivered to the consignee. On occasion, the crate and its contents can be damaged for any number of reasons and circumstances, all beyond Static Clean's control. In order to best protect your interests, we urge you to inspect the shipping crate as soon as it lands on your dock, before signing the shipping BOL, for any sign of damage during transit, then decide what appropriate action to take. Any/all damage claims for replacement/compensation must be filed with the freight carrier and are not the responsibility of Static Clean.

Package Contents

Qty 1 FLFS system; Qty 1 (this) Manual, Qty 1 CoC & Qty 1 Manual for HEPA Fan Filter Module


Warranty

Static Clean warranties all our products for manufacturers defects for 1 full year from the date of shipment from our facility. Please contact our Customer Service Department right away if you have an issue that you feel is covered under warranty so we can help you resolve it as efficiently as possible.

Uncrating the FLFS

 **Safety Precaution:** We highly recommend having help with uncrating the FLFS, especially when working on a ladder to access the screws and panels up higher. As always, use caution and appropriate tools, ladders and safety practices for the task a hand!!

Here is the recommended procedure but you can do whatever you are comfortable with as long as you put SAFETY FIRST!

1. Remove the screws with a cordless drill and #2 Phillips-bit that hold #1) the wooden top-cover of the crate, #2) one long side panel and #3) one short end panel to access the FLFS inside
 - a. NOTE: You may, at your option and discretion, prefer to remove all 4 wall panels
2. Remove any loose items that might be in the crate with the FLFS
3. Unlock both caster wheels at the open end where you removed the end panel, then crawl under the FLFS to unlock the caster wheel at the back corner where the long side panel and end panel remain. Be sure to lock the one caster wheel near the end panel where the side panel has been removed as you will be pivoting on that caster in the next step.
 - a.  **Safety Precaution:** be sure to keep an eye on that locked caster, so make sure it stays firmly on top of the crate base to the system is stable while you maneuver it out of the crate!
4. With the help of at least one other person, carefully roll/maneuver the end of the FLFS where the end panel was removed, lifting that end and rotating the unit while using the one locked caster as a pivot, off of the crate platform, gently placing the casters at that end onto your floor. At this point the other 2 casters should be firmly, safely on the crate base.
5. Unlock the 4th caster, reposition that end on the crate base so you and your helper can lift that end and wheel the unit away from the base until you can safely lower this end to the floor.

Placement of FLFS

Location impacts the nature and extent of external airflow disturbances, which may affect performance of the cabinet when it is exposed to these disturbances. When installing the cabinet, it should be located as far away as possible from sources of airflow disturbance and in an orientation that optimally shields the cabinet's airflow from all external airflow disturbances. Please note that the cabinet should not be placed in front of another cabinet. Please follow these guidelines when choosing a suitable location for your cabinet:

The location must be far away from: a) personnel traffic flows, b) air vents (in and out), c) doors and windows, d) any other sources of disruptive air currents or air drafts. If drafts or other disruptive air currents exceed the face velocity of the filter, the potential exists for contaminated air to enter the work zone of the cabinet.

- A minimum clearance of 4" from the prefilter at the top of the FLFS is required for adequate intake air flow.
- A clearance of six feet in front of cabinet is strongly advised in order to maintain proper airflow.

The FLFS is designed for indoor use only, in typical manufacturing, laboratory, office and/or cleanroom environments with temperatures ranging from 60~86 degrees Fahrenheit and humidity levels between 15%~60%. The system, especially its electrical and/or filter components, must never get wet. Operating or storing the system in an environment outside of these parameters may result in damage to the system and WILL VOID THE WARRANTY.

Electrical Requirement

The FLFS requires a typical 120VAC, 50/60Hz, 1-Phase, 15-Amp outlet for power. Simply plug the FLFS plug into the outlet and turn it on.

Initial Setup

 **Safety Precaution:** To make adjustments to the FLFS fan speed you will need a properly sized ladder or step-stool to access the speed control dial. As always, use caution and appropriate tools, ladders and safety practices for the task a hand!!

Installing the 3-Sided Enclosure Curtain & Front Fascia

READ THROUGH THIS ENTIRE SECTION BEFORE INSTALLING THE CURTAINS TO GAIN AN UNDERSTANDING OF THE PROCESS, THEN COME BACK TO #1 AND PROCEED.

1. **NOTE:** You will need to clean the clear vinyl curtain material, along with the entire FLFS system before bringing it into a clean room and/or before using it for the first time. We recommend you DO NOT install the curtains until you are ready to begin using the system, and that you clean them after unwrapping them, before you hang them as it will prove to be a lot easier.
2. The curtains ship uninstalled with a paper interleaf to prevent the material from sticking to itself, which helps prevent odd looking watermark-like images on the material. Unroll the material onto a clean work surface or table and discard the paper interleaf. Clean both sides of the curtain & fascia using a mild dish soap and water solution or any biodegradable cleaner. Wash the front and back of the curtains, rinse with clear water then wipe dry with a clean lint free soft cloth.



3. **HINT:** it is helpful to back-cut the ends of the hem at both ends of the curtain and fascia panels before hanging them as this helps to tighten up the corners a bit. This is easily done using a pair of scissors as shown here. Just be careful to only cut the hem up to the crease so it does not show when done.



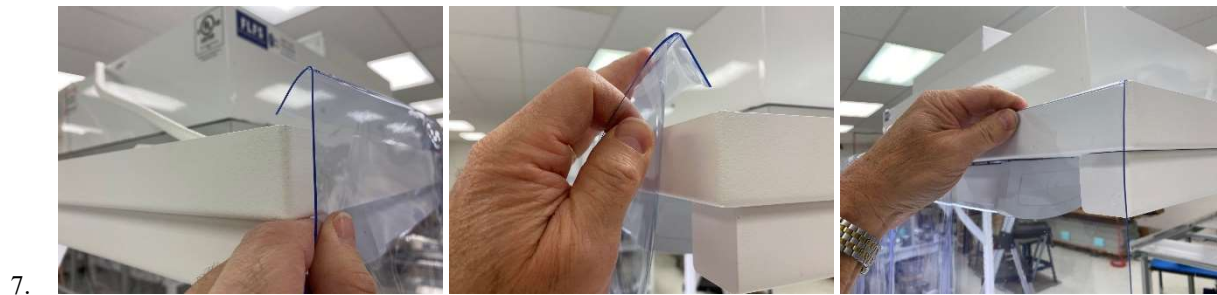
4. Remove the edging (white vinyl U-molding) from the top edge of the sheet metal ceiling (pan) starting at the ends located at the center-back of the ceiling



5. note that the internal gasket in the edging is located inside the ceiling pan. You'll need to be sure to orient it this way when you reinstall it.



6. lay the edging on top of the ceiling and
HFFU



7. starting with the shorter Fascia, hang the 1" hem over the top edge at the front of the ceiling pan as shown



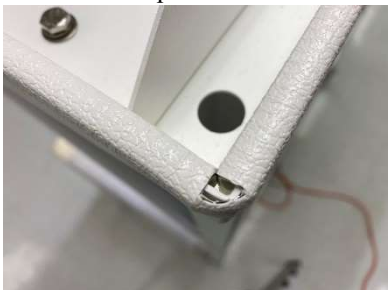
8. HINT: using a small spring-clamp near the ends helps keep the fascia/curtain from falling while working along the length of the ceiling





9. a back-cut at the hem allows the fascia and curtain to be better aligned with the end of the ceiling as shown





10. with the fascia flush at the right end of the ceiling, position the edging over the fascia and press a few inches of the edging down to retain the fascia laterally (left-to-right)



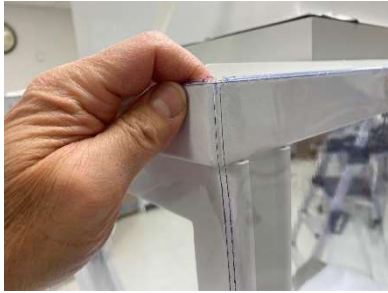


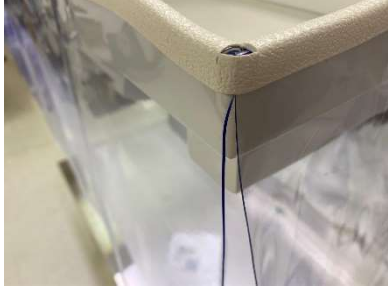

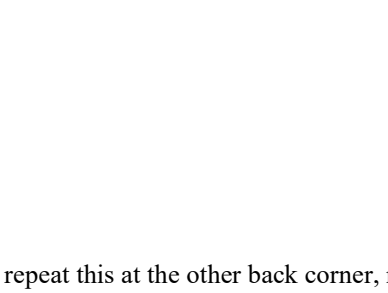

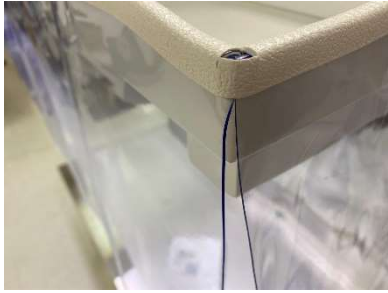
11. IMPORTANT: you must be sure the relief-cut at the back of the edging properly aligns with the outside corner of the ceiling pan as shown before proceeding

12.   with the fascia flush at the left end of the ceiling pan, position the edging over the fascia and press a few inches of the edging down to retain the fascia laterally, again making sure the relief-cut in the edging aligns with the outside corner of the ceiling as shown

13.   the edging and vinyl fascia/curtain are pliable and can be stretched or compressed somewhat to align as needed. Once the 2 ends of the fascia are located flush with the ceiling, manipulate the fascia as needed to look as good and wrinkle-free as possible, then press the edging on every foot or so as shown, making sure it is evenly taut along it's length and properly aligned at the corners.

14.   once you are satisfied that everything aligns properly, firmly press the edging down all the way along the entire middle area, staying about 12" from the ends, as you'll be coming back to that shortly

15.   with the help of a second person, hang the 3-sided curtain that wraps around both ends and the back of the ceiling pan, again using spring-clamps near the ends and as needed to keep it roughly in place

16.   manipulate the curtain laterally (front-to-back and/or left-to-right) as needed so that the vertical heat-crease at the back left or right corner aligns with the corner of the ceiling as shown
17.   as with the fascia panel, position the edging over the hem and press a few inches of the edging down on both sides of the corner to retain the curtain laterally, again making sure the relief-cut in the edging aligns with the outside corner of the ceiling as shown
18.   repeat this at the other back corner, make sure there are no wrinkles, then firmly press the edging down along the entire back edge of the ceiling
19.   at the right end of the unit, align the curtain with the front corner of the ceiling; position the edging over the hem and press a few inches of the edging down on both sides of the corner to retain the curtain laterally, again making sure the relief-cut in the edging aligns with the outside corner of the ceiling as shown; firmly press the edging down along the entire end of the ceiling; repeat at the opposite end to complete the fascia and curtain installation

20.



NOTE: the curtains will have a curl to them from having been rolled up. Over time, they will relax and straighten. It is normal for the front vertical corners, where the fascia and 3-sided curtain meet, to be open due to this curl and/or air pressure exiting the system when turned on. This is normal

Operation

Plug the FLFS power cord into a properly grounded AC outlet providing appropriate MAINS power to the system. Turn the green rocker-switch at the backsplash up, to the 'on' position, the HFFU fan and LED light will turn on. For systems with the optional Ionizer Bar, mounted beneath the HEPA Filter and plugged into the systems power strip inside the backsplash, the same switch will turn that on as well.

With the fan set to (default) high-speed, let the system purge out all airborne particles for 5~10 minutes before bringing your materials, products and/or equipment into the system.

We recommend you have the system certified by a qualified technician using industry standard equipment and test methods, to assure optimal performance.

It is highly recommended that you wipe-down all materials before bringing them into the system and lay them out in a way that minimizes movement inside the system. Be sure to segregate materials known to have or generate particles from others, especially avoid moving dirtier materials over cleaner, to avoid cross-contamination.



The FLFS has

a 3-speed, low-noise HFFU (HEPA Fan Filter Unit) that ship from the factory preset to High Speed. While this default setting works for most applications, you may choose to change the fan speed to medium or low. To do so, you will need a ladder or step-stool to safely access the fan-speed selector switch(es) located on the side(s) of the HFFU(s).

You will need to give the system a good cleaning before bringing your materials, products and/or equipment into the FLFS.

Optional Static Bar




Static Clean offers an optional ionizing bar for the FLFS to keep products and materials inside the enclosure electrostatically neutral, to mitigate ESA (electrostatic attraction) of particles. Ideally, it is factory installed as shown in this series of images but can also be purchased and installed by you as a cost-effective upgrade. Please contact us for more information.

Cleaning

Before plugging the system into power and turning it on for the first time, you must clean all inside and outside surfaces to remove excessive contamination that may have resulted from storing/shipping the unit. If bringing the system into a cleanroom, follow all your normal protocols for cleaning equipment before bringing into your cleanroom. Otherwise, using cool or warm water and a mild detergent-soap mixture and a dampened cotton rag or sponge, wipe-down all surfaces, taking care not to allow water into seams and areas where the filter(s) or electrical components are. Then wipe-down with clean, cool water-dampened rag or sponge and dry immediately with a soft, lint-free towel or rag to avoid spotting.

Hint: It can be helpful, when cleaning the clear vinyl curtains, to have someone backup the curtain material from the opposing side with a clipboard or other flat surface you can press against during cleaning and drying.

 **Precaution:** Do not use any disinfectant containing chlorine-based substance as this will cause corrosion to steel and stainless steel resulting in irreparable damage to the structure.

Maintenance

The FLFS requires very little maintenance other than routine cleaning and replacement of the Pre-Filters and HEPA Filter at various intervals.

Monthly – clean all surfaces inside and outside the FLFS using a damp cloth, especially the top surfaces, to remove any accumulated dust.


Bimonthly / Quarterly - The Pre-Filter should be replaced on a 2~3-month Preventive Maintenance (PM) schedule or by visual inspection for earlier replacement if the need dictates.

Bi-annually – replace the HEPA filter(s)

Anti-Static Vinyl's have additive materials that continuously provide a naturally occurring hydro-scopic surface which is essential for the continuation of the anti-static process. Over time and with exposure to the environment the surface will develop a viscous feel, to remove this viscous coating a periodic cleaning with a 50/50 solution of Isopropyl Alcohol and Di water is recommended using a soft non-abrasive lint free cloth.

Note: Excessive cleaning using harsh or abrasive cleaning compounds such as Ammonia, 100% Isopropyl Alcohol, liquids with chlorinates, Anti-Fungals, highly active sterile cleaning solutions and dry powder additives are not recommended and will increase the aging process.

Changing the Prefilter

 **Safety Precaution:** To change the FLFS Prefilter you will need a properly sized ladder or step-stool. As always, use caution and appropriate tools, ladders and safety practices for the task a hand!!



The Prefilter sits atop the FLFS's HFFU (HEPA Fan Filter Unit). The bulk of debris and dirt will sit on top of the Prefilter pleats. Have a 'kitchen' trash bag at the ready before proceeding. The Prefilter is very easily replaced as follows:



1. Turn the FLFS off and wait ~30 seconds for airflow to stop completely



2. Gently lift the old, dirty filter up, out of the plenum and slide it immediately into a plastic trash bag. Seal/tie-off the bag to contain any dust and debris. DO NOT shake debris from the filter. DO NOT flip the filter over as it may drop debris and dust onto/into the FLFS or nearby surfaces.
3. Wipe-down the entire top of the FLFS with a damp cloth or IPA Wiper, including the support grill beneath the Prefilter and the plenum/housing around it.



4. Place a new LFCHFFUFLTP Prefilter gently into the plenum with the Air Flow arrow pointing down, matching the direction of airflow into the HFFU

Plugging in your Ancillary Equipment

While a dedicated (to the FLFS) 15-Amp circuit is best, you may plug the FLFS into any 110~120V, 50/60Hz, 1-Phase, 3-prong electrical outlet (receptacle) in your facility that is properly wired and grounded per local Electrical Codes and Standards.



The system includes a 6-outlet Power Strip with a 15-Amp Reset (circuit-breaker) tucked up inside the FLFS's backsplash. One of the outlets is used to distribute power to the LED Light and HFFU in the ceiling of the FLFS as well as the optional Ionizer Bar. The remaining 5 outlets can be used to power your 110~120V, 50/60Hz, 1-Phase ancillary equipment provided the total amperage of all the equipment, including the FLFS system, does not exceed ~15 (max) Amps. You will need to add the amperage for all your equipment to the FLFS amperage found on page 3 above, to establish total amps. If you exceed ~15-Amps, the Reset Button on the Power Strip will 'trip', cutting power to the system. To reset, turn the red rocker-switch on the Power Strip to 'OFF', unplug one or more of your ancillary items so the total Amps does not exceed ~15-Amps as described above, press the 'Reset' button then turn the red rocker-switch to 'ON'.



NOTE: the rear panel of the FLFS backsplash can be easily removed if that makes it easier for you to plug/unplug equipment into the Power Strip.

Typical wiring 'circuits' in most facilities have multiple outlets/receptacles on the same circuit, rated at either 15-Amps or 20-Amps per circuit. If the outlet you plug the FLFS into is not 'dedicated' to the FLFS, you will also need to consider all other equipment plugged into that circuit to make sure you do not overload the circuit rating. If you do overload the circuit, you will repeatedly trip the circuit-breaker in the electrical service panel for that circuit until you reduce the total Amperage draw by unplugging something.

Spare & Replacement Parts (call Static Clean for pricing and availability)

<u>Part Number</u>	<u>Description</u>
LFCHFFU22FLTH	Replacement HEPA Filter Only, 2'x2'
LFCHFFU24FLTH	Replacement HEPA Filter Only, 2'x4'
LFCHFFUFLTP	Replacement Prefilter 1" x 20" x 20", for 2'x2' & 2'x4'

1/5 HP 3-Speed Fan Powered Filter Module Low Sound, Economical

SAMMS 3-S Fan Filter Units provide quiet performance and economy while delivering 90 FPM airflow velocities, perfect for most cleanroom applications. Base design includes a 99.99% efficient HEPA filter, a prefilter and a 3-speed switch with an off position which disables the unit while servicing.

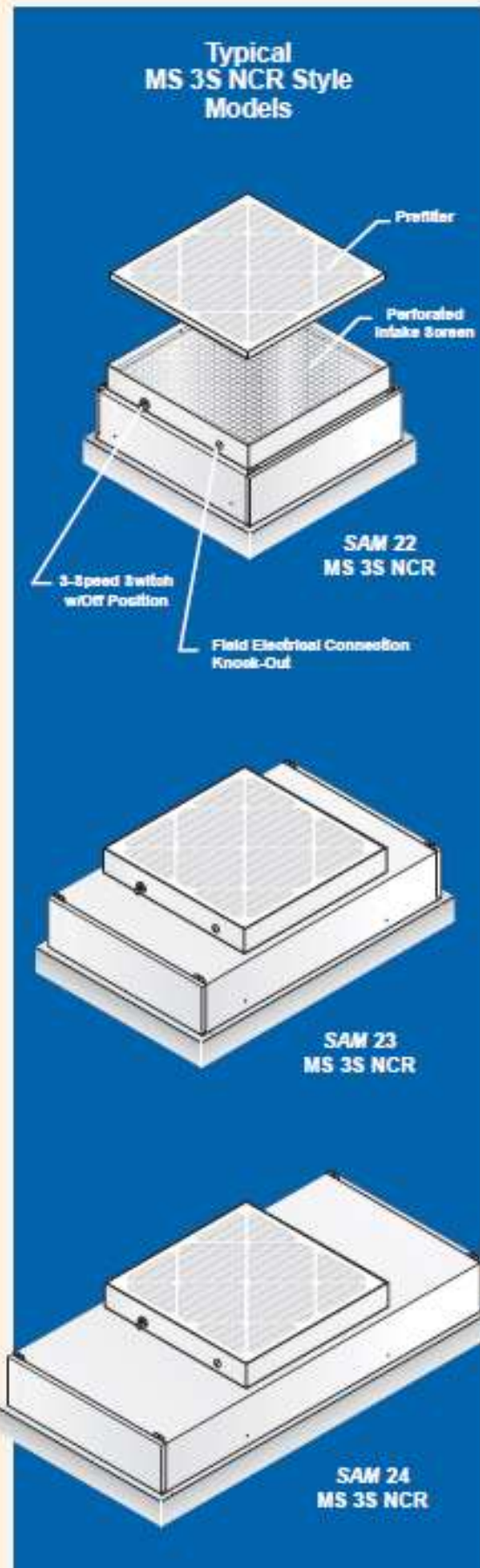
Housings are fabricated from steel with a white powdercoat finish and include seismic clip suspension points.

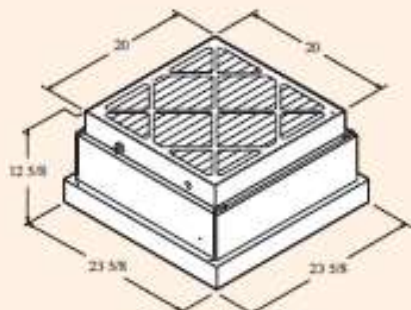
The 1/5 HP motor blower is a forward curved direct drive motor/blower assembly with isolation mounts. Units are available in 115 Volt (60 Hz) and 277 Volt (60 Hz).

Final filters are protected with a white epoxy diamond pattern grille and are tested according to accepted procedures as described by the Institute of Environmental Sciences (IEST) and/or ISO standards. The standard HEPA filter is 99.99% eff. and an ULPA grade 99.9995% eff. filter is available as an option.

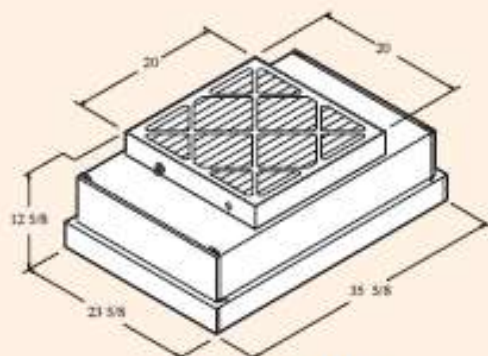
Optional perforated stainless steel or aluminum grilles are available.

Other popular options include an 8' power cord (110 Volt only). Refer to the back of this section for more options and accessories.

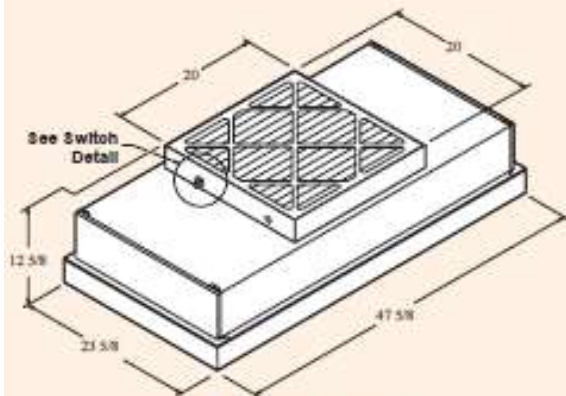




SAM 22 MS 3S NCR



SAM 23 MS 3S NCR



SAM 24 MS 3S NCR

NCR Style Filter Data: The HEPA Filters are designed for 90 FPM average face velocity @ initial 0.47 w.g. and have a rated efficiency of 99.99% @ 0.3 micron or larger. An anodized aluminum frame holds the 53mm media which is protected by a diamond pattern white epoxy coated steel grille.

Final filters can be replaced by removing unit from ceiling, placing on a bench, removing and replacing the filter and re-installing unit in ceiling.

Low Profile: All SAM MicroSound NCR Style Models are 12-5/8" high.

Air Flow: Airflow ranges from 500 to 750 CFM for a 2 x 4 unit and 250 to 400 CFM for a 2 x 2 unit. At 90 FPM, CFM is nominal 632 on a 2 x 4 and 300 on a 2 x 2 unit respectively.

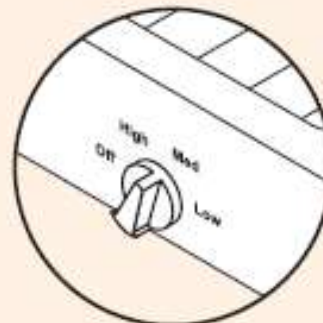
General Information:

Standard Ceiling Size: All 2' x 4' models are designed to fit a nominal 2' x 4' ceiling grid with a 22.5" x 46.5" standard opening.

Sound Level: At average face velocity of 90 FPM measured 30" from face of filter, sound level is approximately 50-52 dba with less than 45 dba ambient sound level. Field conditions, voltage and method of testing could produce different results.

Popular Options: Refer to a following page for a list of popular options.

**Switch Detail
115V/277V**



Motor Data								
Motor	Voltage	Hz	Amps			Start-Up Amps (1), (2)		
			Low	Med	High	Low	Med	High
1/5 HP	115	60	1.45	1.95	2.85	1.70	2.60	5.0
1/5 HP	277	60	.52	.71	1.1	.60	.85	1.5
(1) Line voltage can affect actual start-up amperage								
(2) Use standard NEC tables for sizing circuits								

Replacement Filters	
Mfg. Code	Description
302070	2 x 2 NCR Style HEPA Filter, 99.99% eff. @ 0.3 micron
302071	2 x 2 NCR Style ULPA Filter, 99.9995% eff. @ 0.12 micron
302013	2 x 3 NCR Style HEPA Filter, 99.99% eff. @ 0.3 micron
302015	2 x 3 NCR Style ULPA Filter, 99.9995% eff. @ 0.12 micron
302090	2 x 4 NCR Style HEPA Filter, 99.99% eff. @ 0.3 micron
302100	2 x 4 NCR Style ULPA Filter, 99.9995% eff. @ 0.12 micron
302190	Prefilter 20" x 20" x 1", 30% ASHRAE eff., pleated type

Base Model (Ordering Information)							
Mfg. Code	Model or Description	Style	Size	Voltage	Motor	HEPA Filter	Weight
12339	5.4M 22 MS 3S NCR*	NCR	2 x 2	115	1/5 HP	302070	58 lbs. (26.3 kg.)
12340	5.4M 22 MS 3S NCR*	NCR	2 x 2	277	1/5 HP	302070	58 lbs. (26.3 kg.)
12343	5.4M 23 MS 3S NCR*	NCR	2 x 3	115	1/5 HP	302013	62 lbs. (28.1 kg.)
12344	5.4M 23 MS 3S NCR*	NCR	2 x 3	277	1/5 HP	302013	62 lbs. (28.1 kg.)
12347	5.4M 24 MS 3S NCR*	NCR	2 x 4	115	1/5 HP	302090	65 lbs. (29.5 kg.)
12348	5.4M 24 MS 3S NCR*	NCR	2 x 4	277	1/5 HP	302090	65 lbs. (29.5 kg.)

* UL Listed
3 Speed Switch Standard on all Models

Popular Options: (Consult with factory for other possible options)

Speed Control:

- SAMLink Remote Speed Control System
- Solid State Variable Speed Controller

Final Filters:

- 302027 2 x 4 HO NCR HEPA Filter, 100mm, 99.99% eff.
- 302028 2 x 4 HO NCR ULPA Filter, 100mm, 99.9995% eff.
- 302071 2 x 2 NCR ULPA Filter 99.9995% eff
- 302015 2 x 3 NCR ULPA Filter 99.9995% eff
- 302100 2 x 4 NCR ULPA Filter 99.9995% eff
- 308001 2 x 2 NCR HEPA
- 308002 2 x 4 NCR HEPA
- 308005 2 x 4 NCR ULPA
- 308007 2 x 2 NCR ULPA
- 302072 2 x 2 NCR HEPA with Centerboard and Test Port
- 302094 2 x 4 NCR HEPA with Centerboard and Test Port

Prefilters:

- 309802 Super Clean Prefilter Suitable for Class 1-100

Duct Collar Adapters:

- 19950 10" Duct Collar Adapter
- 19951 12" Duct Collar Adapter
- 19952 Side Load with 10" Duct Collar
- 19953 Side Load with 12" Duct Collar
- 19955 10" Top Load Duct Collar Adapter
- 19956 12" Top Load Duct Collar Adapter

Air Conditioning Mixing Box:

- 19958 Slanted Top with 10" Duct Collar
- 19959 Slanted Top with 12" Duct Collar
- 19947 Square with (2) 10" Duct Collars
- 19948 Square with (2) 12" Duct Collars

Radial Diffuser Grille:

- 19300 2 x 2 Radial Diffuser Grille
- 19301 2 x 4 Radial Diffuser Grille

Miscellaneous:

- 703902 8' Power Cord 110-120V Only
- 603322 Gasket on Downstream Edge of Unit
- Magnehelic Gage: Refer to the Back of this Section
- Static Control: Refer to the Back of this Section

NOTE: Duct collar adapters, air conditioning boxes, pilot lights and adding other electrical components negates UL listing.

READ AND SAVE THESE INSTRUCTIONS

WARNING- TO REDUCE THE RISK OF FIRE, ELECTRICAL SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.

Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.

SAM Fan Filter Units are suitable for commercial and industrial use only. They are designed for suspended installation or installation in T-Grid Ceiling Systems for Vertical Flow.

SAM Fan Filter Units must never be exposed to rain, ice, snow, or excessive moisture. Do not use this product near water, i.e. near bathtubs, washbowls, whirlpools, etc. If the unit is equipped with a flexible power cord, do not handle with wet hands.

Do not place anything on top of the units. Do not restrict the flow of air into the unit.

RECEIVING AND UNPACKING

All shipments are "FOB Ship Point". This means once goods are picked up and signed for by the driver, they are the responsibility of the freight company. When the shipment is delivered and signed for by your receiving personnel, the ownership and responsibility is transferred to the receiving company.

Clean Rooms International, Inc. inspects each product before packaging and does not ship damaged goods. Inspect the incoming shipment with the freight carrier driver present. Note any suspected damage on the receiving papers and immediately inspect the damaged carton(s). Note damages on the receiving documents and file a freight claim with the transportation company. Clean Rooms International does not take responsibility for damages caused by the freight company.

If damage is discovered after the carton is opened, it is the buyer's/receiver's responsibility to file a freight claim. Keep all incoming cartons and the product for inspection. Do not send back to Clean Rooms International.

PRE-INSTALLATION INSTRUCTIONS

WARNING- TO REDUCE THE RISK OF FIRE, ELECTRICAL SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.

SAM Fan Filter Units operate on 115 Volts, 208-230 Volts, 277 Volts at 60 Hz., or 208-240 Volts, 50 Hz. Check the label on the front of the unit for voltage, current and frequency of operation. Verify the rating of the branch circuit protector and branch circuit wiring prior to installation and electrical connection to the unit.

Certain models are provided with an optional flexible power cord with plug. Do not use any type of adapter that will allow the unit to be plugged into an outlet that is not grounded.

Do not plug the unit into an outlet that is controlled by an on/off wall switch or by a facility house lighting control switch.

CAUTION: To Reduce the risk of injury to persons, install the unit at least 7 feet above grade or in ceiling.

INSTALLATION INSTRUCTIONS

CAUTION - HEPA and ULPA filter media is fragile and can be damaged easily. Special precautions must be taken during un-packaging and installation of SAM Fan Filter Units. To avoid damage to the filter media, touch only the frame. DO NOT PLACE HANDS OR ANY OTHER OBJECTS ON THE FILTER SURFACE.

CAUTION: Commercially available 1" or 1-1/2" T-Grid suspended ceiling systems are not designed to support the weight of any fan powered filter units. Clean Rooms International, Inc. 2" T-Grid systems for softwall and hardwall cleanrooms provide the support for direct mounting of SAM Fan Filter Units. If Clean Rooms International, Inc. or equivalent 2" T-Grid system is not installed, it is mandatory that SAM Fan Filter Units be suspended independently from these suspended ceilings.

Mechanical Installation of Suspended Vertical Flow Units: SAM Fan Filter Units are equipped with attachment points to make the installation hanging process easy. Units may be supported with flexible or rigid hangers. Use at least 12 gage hanging wire or the equivalent light chain or cable on each corner to support the unit.

Mechanical Installation of Units in 2" T-Grid Systems:

Install 2" T-Grid system in accordance with site plan and manufacturers instructions. Install seal gaskets (if provided) in pre-designated locations. Carefully place SAM Fan Filter Unit into the grid opening taking care to observe the precautions not to damage the filter media while handling the units.

Electrical Installation:

Refer to wiring schematics at the back pages of these instructions.

Provision of electrical branch circuit supply to the appropriate location within close proximity to the SAM Fan Filter Units is the responsibility of the customer's electrical installer. If local or national electrical codes or the customer's installation specifications require the provision of metal conduit directly to the unit it is recommended that a Listed flexible metal conduit be provided.

SAM Fan Filter Units may be supplied with optional flexible power cord with grounded plug, optional 2"x 4" or 4"x 4" Metallic wiring box with cover, with or without an on-off switch mounted in the wiring box or optionally within the prefilter frame housing. When an on-off switch is provided, field connections are to be made directly to the open supply terminals of the switch. When an on-off switch is not provided, field connections are to be made to the non-connected pigtail leads within the metallic wiring box or pre-filter frame.

CAUTION: When making field wiring connections within the Pre-Filter Frame, make sure that all field installed wiring is routed away from moving motor and fan parts and is secured in place to prevent inadvertent damage to wires.

Start-up Check List—Before Applying Power:

Check the voltage on the Manufacturer's Name Plate and verify that the power supplied to the unit is the same as that listed on the Name Plate. Remove the prefilter and determine if the fan is free to rotate and has not been misaligned during shipment or installation. Check nuts, bolts, screws and electrical connections for tightness.

CAUTION: If the unit is provided with a square perforated metal barrier over the opening to the prefilter frame, it must be re-installed prior to application of power and start-up of the Fan Filter Units.

Apply power and check that the wheel is rotating in the correct direction. Looking through the prefilter frame the fan must be rotating in a clockwise direction.

OPERATING INSTRUCTIONS

Principle of Operation:

SAM Fan Filter Units are self-contained, low profile, electric powered, motor-fan driven HEPA or ULPA Filter, air filtering appliances. The units are heavy-duty units suitable for many industrial/commercial applications where clean air is needed. This is accomplished by maintaining a flow of filtered air to remove airborne particles within an enclosed room or chamber. Where manufacturing and assembly processes require Federal Standard 209 or ISO Classification clean rooms, multiple SAM Fan Filter units can provide a sufficient number of filtered air changes to maintain a positive pressure of clean air within the controlled environment.

Because of the unique variety of sizes and options offered, SAM units can be incorporated into many different areas such as Softwall Cleanrooms, new Hardwall Cleanroom designs, and facility upgrades over conveyors or free standing machinery. They may also be incorporated into custom workbench constructions providing concentrated filtered air to meet critical clean air process requirements.

Method of Operation:

Unfiltered air is drawn into the air inlet at the top of the unit through an optional 20x20 Pre-Filter. This air is pulled through the motor/blower assembly into a plenum designed to evenly distribute air over and through the entire receiving surface of the HEPA Filter. Thus, SAM Fan Filter Units efficiently and quietly deliver the desired volume of cleaned air to the controlled environment. The volume of air delivered can be adjusted by means of a factory installed variable motor speed controller mounted within the unit.

Troubleshooting Guide

Problem: Blower does not run:

Possible Solution :

1. Make sure the unit is properly connected to the power source.
2. Make sure switch is in the On position.
3. Make sure the speed control is in an On position.
4. Verify power to the outlet.
5. Check capacitor for loose connection.

Problem : Blower is running but no or very little air flow:

Possible Solution:

1. Make sure the blower is running clockwise as viewed thru the prefilter frame and blower opening.
2. Prefilter is dirty and should be replaced.
3. HEPA filter is dirty and should be replaced.

SAM Maintenance

Preventive Maintenance

It is the intention of Clean Rooms International, Inc. to deliver a safe and reliable product that will give years of trouble-free service.

To ensure optimum, safe performance and maximum product life a preventative maintenance program must be established.

1. Inspect prefilter and HEPA or ULPA filter after the first three (3) months of operation. Based on the findings, schedule periodic inspections and maintenance for changing prefilter and the HEPA or ULPA Filter.
2. (Fig. 1) Prefilters should be changed at least every six (6) months.
3. Cleaning fan wheel is required to insure smooth quiet operation. Periodic cleaning of all fan equipment is strongly recommended because dirt accumulation on the impeller can cause vibration which greatly increases stress and load on motor bearings.

All services to be performed by a qualified technician.

Order replacement filters and parts from your local CRI distributor or contact CRI Customer Service at (616) 452-8700.

Servicing SAM Units

WARNING - REDUCE THE RISK OF FIRE, ELECTRICAL SHOCK, OR INJURY BY OBSERVING THE FOLLOWING:

1. (Fig. 2) Turn the Safety Switch and Variable Speed Control on each unit to the off position.
2. (Fig. 3) To prevent power from being switched on accidentally before servicing, switch power off at service panel and lock the service disconnecting means.
3. If the service disconnecting means cannot be locked, REFER TO YOUR COMPANY OSHA MANDATED LOCK-OUT/TAG-OUT PROCEDURES.
4. (Fig. 4) For units with an optional power cord, unplug unit and tie cord out of reach of receptacle.

When to Change the HEPA or ULPA Filter

Static pressure can be measured with a Magnehelic gage or manometer.

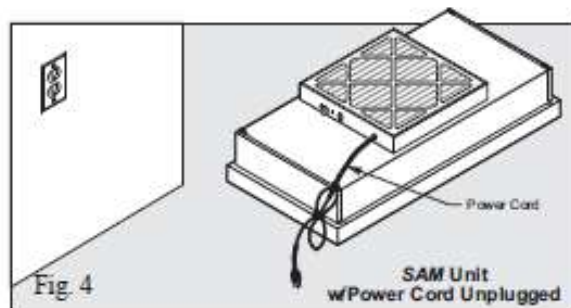
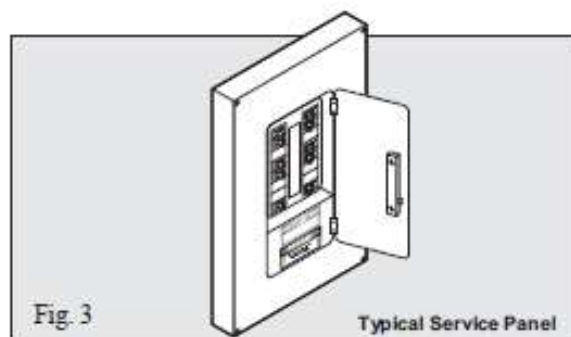
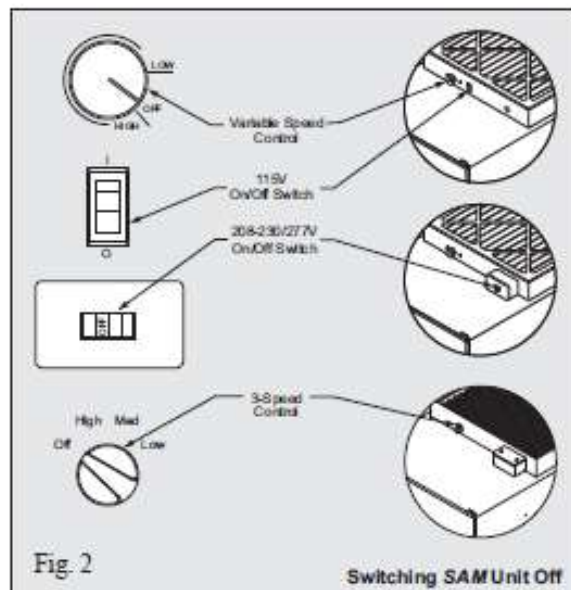
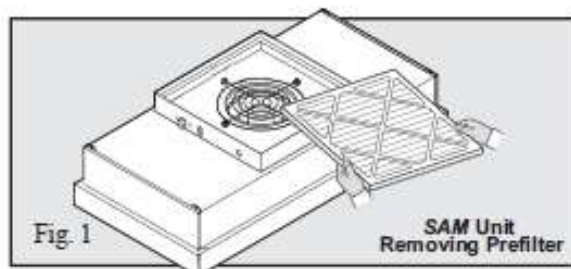
It is time to change the HEPA or ULPA filter when the pressure drop across the filter reaches two (2) times the original resistance.

Tools Required for NCR Style:

1. Power driver, 1/4" socket bit. Or,
2. Standard slotted screw driver.

Tools Required for CRF, CRF LI, GS and GS LI Style:

1. Standard phillips head screw driver.
2. 5/32" allen wrench.
3. (2) persons, if installing from roomside. To hold the filter in place and to position the filter clamps correctly.
4. (1) person, if installing on a bench with housing upside down.



NCR Style units with HEPA or ULPA Filter (are not replaceable from roomside)

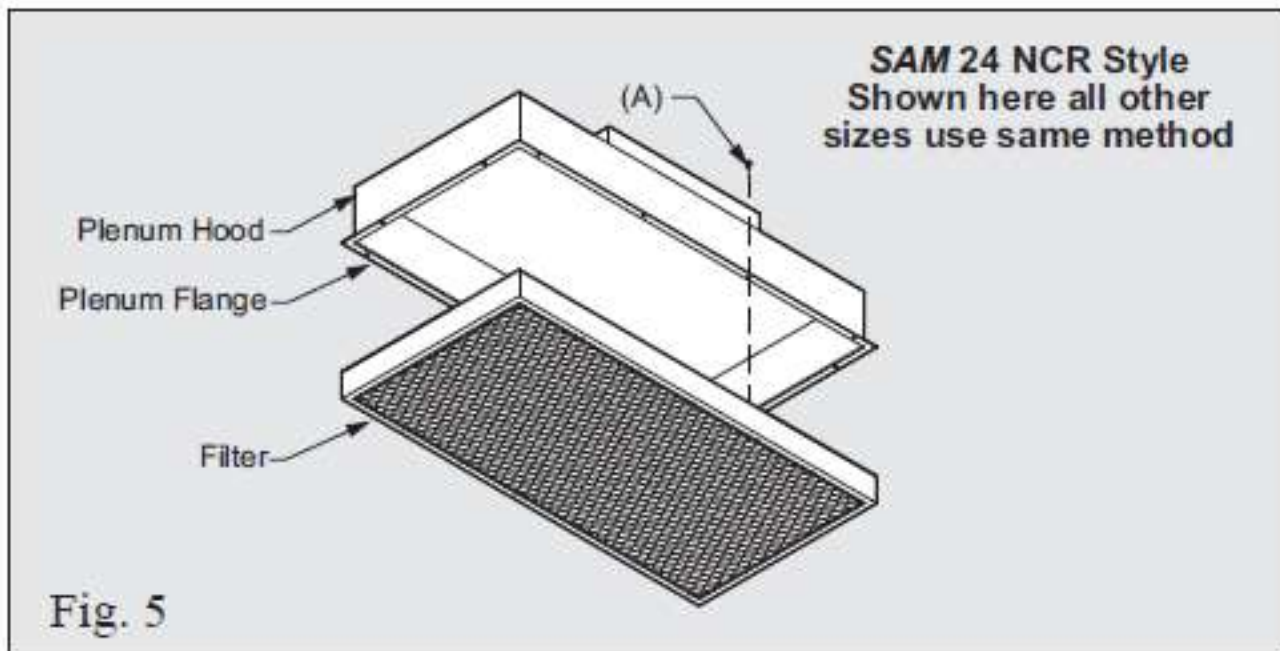
How to Change the HEPA or ULPA Filter

CAUTION: Do not touch either side of the HEPA or ULPA filter surface while installing or removing the filter.

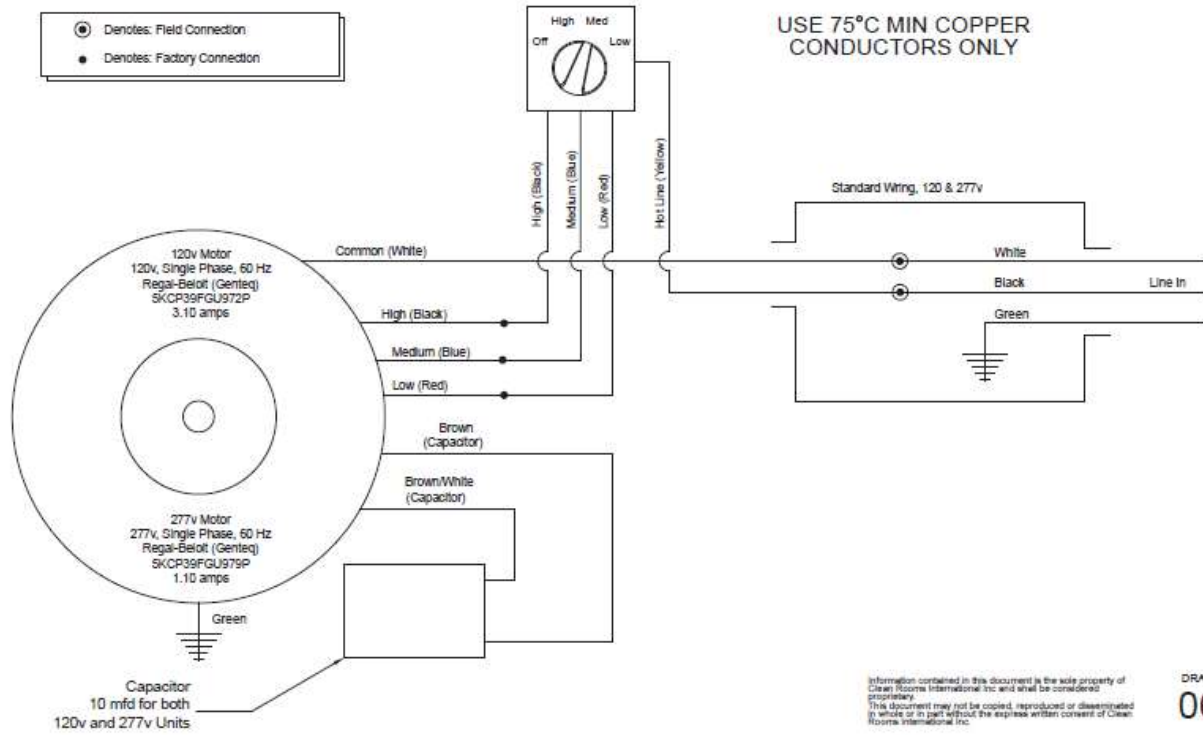
1. Remove *SAM* Unit from ceiling, and place on solid surface.
2. (Fig. 5) Using a power driver and 1/4" socket bit or, phillips head screwdriver, remove twelve Self-Piercing Screws(A) located on plenum flange.
3. Separate plenum hood assembly from filter.
4. Clean plenum flange surface.
5. Place plenum hood assembly on top of replacement filter.

Note: Gasketed surface of filter should mate with plenum.

6. Install all Self-Piercing Screws.
7. Replace *SAM* unit back into ceiling.



WIRING DIAGRAM FOR SAM 22 & 24 MICROSOUND MODELS with 3- SPEED CONTROL and 1/5 HP MOTOR



DRAWING No.
0643-7