General Description

The Series 130 horizontal module comes in a variety of sizes and styles. Some of the included information will depend on the style of unit purchased.

The Series 130 units are constructed of painted steel as standard. This finish is designed to be compatible with normal cleanroom environments. When cleaning is required, a mild soap and water solution is recommended with a distilled water rinse. The distilled water is recommended because it does not have any mineral hardness that may leave a "mineral film" that can be wiped off and cause particulate contamination.

Care should be used when cleaning the protective grills so the HEPA filters are not damaged during the cleaning process. NEVER attempt to clean the HEPA filter except by purging the filter. Rubbing or blowing the HEPA with high pressure air will only cause leaks.

When the units are installed, let them run for a few days to "purge" the filters and to give the units some noncritical run time. Having the units run (with the prefilters in place) with "none cleanroom" activity going on around the units will not hurt the HEPA filter or appreciably shorten the life of the filter. (Prolonged running of the unit may load the filters somewhat, but, by letting them run, clean air coming out of the unit will prevent any contamination from getting onto the HEPA filter face.) The alternative is to tape plastic over the HEPA filters to protect them from dirt during these periods of time.

By letting the units run for a time before "critical operation" start it will allow time for any particulates to purge or blow off from the face of the HEPA filters. It also serves as a burn in time for the equipment prior to production operation. While the units are fully tested prior to shipping at the factory, a problem can sometimes develop because of unseen shipping damage or damage during the installation process.

HEPA Filters

- Sizes – The HEPA filters used in the units are of standard industrial sizes. The size will be:
  24 x 24 x 3
  24 x 30 x 3
  24 x 36 x 3
  23-5/8 x 47-5/8 x 3
  30 x 30 x 8.75
  30 x 36 x 8.75
  30 x 48 x 8.75
- Media Pack: 2.875 with aluminum separators.
- Gasket: 1/4 x 3/4 closed cell, gasket or upstream side of the filter
- Filter Frames: Extruded aluminum
- Filter Efficiency:
  - 99.99% on 0.3 Micron (standard) "HEPA"
  - 99.99% on 0.12 Micron "ULPA"
  - Other

Shipments

Clean Air Products takes every reasonable precaution to ensure that your horizontal air flow cabinet arrives without damage. However, damage can occur in any shipment, and it is important that you note visible damage immediately with a notation on the consignee's copy of the freight bill. Terms are F.O.B. factory, unless otherwise stated. Your inspection of either visible or concealed damage is the basis of your filing claim (which you must do at once) against carrier. An inspection then must be made to verify the claim against the carrier.

Performance Specification

All equipment is thoroughly inspected at the Clean Air Products' factory at the time of shipment. Quality control is maintained by

Series 130

Model CAP 132 - 4 x 6
With top mounted blower and prefilter housing.

For more information or to download or fax this product from the web, simply go to:
www.cleanairproducts.com/130

tel: 763.425.9122 800.423.9728
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constant surveillance over the product, beginning at receipt of purchased material and concluding with a final inspection which certifies performance to Class 100 conditions of Federal Standard 209d, as well as to the unique requirements of each project. In all instances where product quality cannot easily be assessed on the end item, the product is inspected during subassembly fabrication. All electrical components are UL approved; all mechanical components are fabricated or purchased and inspected to performance requirements before assembly into the final product. All Clean Air Products' products have been certified to meet or better the following specifications:

HEPA Filter System

The HEPA Filter System consists of two basic members: the absolute HEPA filter and a flexible duct to form a modular component. All HEPA filters purchased by Clean Air Products have been D.O.P. tested to meet Mil Standard 282 and are tested for leakage for 99.99% removal of all particulate contaminants greater than 0.3 micron. The Clean Air Products' FLEX Filter is proof-tested for leaks in the installation to ensure the continued integrity of the HEPA and of the assembly. D.O.P. smoke at 0.3 micron particle size is introduced into the air, and the air flow is scanned with a light scattering photometer for leaks. All laminar flow equipment must meet or exceed Class 100 Federal Spec 209d.

Prefilter

The prefilter is made of 1 or 2 inch thickness disposable, nonwoven framed fiberglass media, a nominal efficiency of 40% by NBS Test Method using atmospheric dust or better.

Installation

1. Move unit into the general area where it is to be used. Keep all packing material in place while moving the cabinet; this will help reduce any moving damage.
2. Review drawing of complete cabinet assembly.
3. Lay unit on its back and remove the moving casters. Remove any packing materials on the cabinet's bottom. Raise the cabinet into its upright position.
   NOTE: These cabinets are top heavy due to the blower and motor being in the top. Use caution and care so the unit does not tip get bumped over during installation. Ring eyes are provided on top to help lift the unit and should be used to hold the unit to your building.
4. Slide the cabinet into the place where it is to be used. Secure the cabinet. Level the cabinet by slipping shims under the cabinet. Exact leveling is not mandatory for operation.
   On double units, move second unit into place and level like the first. Install bolts between the two units (through the caster plates) and any additional front screws if necessary.
5. Remove any remaining packing material.
6. Make sure cabinet is secure and cannot tip over. Floor anchors can be added by drilling through the cabinet bottom near the back edge or wall anchor holes can be drilled into back of the cabinet.
7. Make necessary electrical connections. Remove front service panel to gain access to the blower and motor. Connect per local codes.
8. Attach the hood to the cabinet if your unit has this option. See separate instructions for hood addition.
9. Install the filters. The filter assembly consists of the HEPA or ULPA filter, 2 inch prefilters and frame, and 1 inch media and frame assembly.
   USE CARE in handling the HEPA filters. DO NOT cut open the cardboard containers. DO NOT "RACK" (twist from corner to corner) or drop the filter. DO NOT push or pull on the filter pleats. USE CAUTION in laying the filter down and, during installation, watch out for the long threaded rods.
   Any of these things can damage the pleats and cause the filter to leak.
   Set the HEPA filter on the threaded rods with the gasket in toward the unit. Hold in place while adding the clamp channels.
   Install springs, washers and hex nut loosely. Position the HEPA filter evenly over the opening and tighten the nuts to hold the filter in place.
   The filter gasket should compress about 1/16 to 1/8 inch DO NOT OVERTIGHTEN; filters can be damaged.
   Insert prefilters into their frame. Note air flow direction arrows.
   Attach the front grills using screws provided.
10. Clean and wipe down the entire unit.
11. Start cabinet and let run approximately one day to purge the filters.
12. The cabinet is not ready for use.

Daily Operation

The factory recommends that the unit be run continuously. The normal HEPA filter life is a number of years when the hood runs continuously, and it will assure a clean work area.

1. When the cabinet runs continuously, it is ready to use at all times. The clear plastic hood will only require occasional cleaning on the inside with alcohol. The hood outside is to be cleaned with a plastic cleaner and soft material. Alcohol will make the clear plastic turn a milky color over a long period of time. Use sparingly and only when needed.
2. Stainless may be cleaned with detergents or alcohol. Abrasive materials will scratch the surface. The top of the clear plastic hood may easily be cleaned by removing the panels.
3. When the cabinet is shut off for a short period of time and is turned on, the hood interior is to be wiped clean. The hood should run for 5 to 10 minutes before use when off for intervals of 1 or 2 days.
4. When the cabinet is to be off for 3 to 4 days or more, a plastic drape should be attached to the front of the hood as tightly as possible to prevent dust from entering the hood and getting into the HEPA filter. When the cabinet has not been used for 2 weeks or more, the filter should be purged 1 to 2 hours.
5. A short interval should be allowed each time an object is set into the hood to allow loose material to be washed off the object.
6. Avoid fanning papers, books, arms, coats and fast walking in front of the hood. Air currents will enter the hood and contaminate the interior. Many organizations have a 6 inch line marked on the table top. All work is performed behind this line to minimize contamination due to drafts.
7. Spills should be cleaned up immediately. Sponge the liquid near the HEPA filter first to keep the liquid away from the filter. Should liquid splash onto the HEPA filter, DO NOT attempt to wipe the filter. Wiping the filter will cause filter leaks. The liquid will dry, discolor and plug a small area of the filter in front. The filter is nearly 4 inch deep, and a small plugged area will have little or no affect on the air flow.
8. Do not use the hood for storage of large objects. Large objects will disrupt the smooth laminar air flow, causing turbulent air flow behind them. A good practice is to place materials on platforms to allow air movement under, as well as around, the object. All work should be performed with the operator's hands downstream of the critical process points.

Service

To Change the Filters:

- Turn off the cabinet
- Remove the front grills; this exposes the filter media, prefilters and final filters
- Remove cap nuts and media keepers
- Undo the hex nuts and springs to release the clamps
- Reverse this procedure to reinstall all the parts – see drawing A41873.0102.06

The new filter should be inspected for damage. Prechecking the new filter for leaks is recommended prior to installing it into the unit. It is easier to repair a filter out of the unit if such repairs are required.

Check the gasket. Replace or repair as required.

With the new filter inspected, it can be installed into the unit. Set the filter into place resting on the threaded rods with the gasket toward the upper plenum of the unit. If should be centered on the opening of the supply plenum. Care should be taken when moving the filter into place that the gasketting is not folded or damaged when positioning the filter. Reattach the clamp channels. The filter gasket should be compressed about 1/16 to 1/8 inch. This is about 1 to 2 turns of the nut with the gasketting just touching the frame. Over tightening the springs can damage the filter or the springs.

Prefilter replacement: Open grills and lift out filters. Replace with the same size and type.

Blowers

The blowers can be direct drive or belt drive depending on what was ordered.

Direct Drive blowers have a fractional horse power, PSC (permanent split capacitor) motor that is attached directly to the blower wheel. The airflow of the unit is controlled by a voltage regulating solid

state speed control located on the side of the blower. By turning the potentiometer on the cover of the electric box you change the speed of the blower.

Some units have two direct drive blowers feeding a single plenum. On this type of unit, both blowers should be set at about the same speed.

NOTE: on dual direct drive blowers the speed controls of both blowers need to be set very close to each other. If one is set too slow, it will not start properly. After the units speed is set, shut the units off. Let both blower wheels come to a complete stop. Turn the unit on. Both blowers should come up to speed at the same rate. If not, turn the speed up on the slightly slower blower.

Belt Drive Blowers

Belt drive blowers use a fixed speed 1725 RPM three phase motor that is connected to the blower by a belt and pulley. The speed of the blowers and air velocity through the filters is changed by changing the diameter of the variable pitch pulley located on the motor. By increasing the diameter of the pulley (turning the pulley so the groove or space between the sides of the pulley becomes narrower) the blower will turn faster, producing more air and a higher filter face velocity. By "opening up" this space or making the pulley smaller the blower is slowed down.

This adjustment is done by first shutting off the unit. Then loosen the belt by loosening the motor from the adjustable base and turning the base adjustment screw. Take the belt off the blower/motor. On the side of the motor pulley is set screw that locks a key. Loosen the set screw, remove the key and turn the pulley. Typically 1/2 to 1 turn of the pulley is enough to change the speed of the blower. Reattach the key and retighten the set screw. Reattach the belt and tighten. The unit can be turned on.

Frequency Modulator Speed Control (Optional)

Three phase motors can have an optional electronic remote speed control used to change the RPM of the blowers. This electronic device changes the frequency of the electric power from 60 Hz to something less. As the frequency decreases, so does the speed of the blower. To change the face velocity of the filters simply change the setting on the frequency modulator.

The manual for the frequency modulating speed control is shipped with the devices in its boxes.

General Maintenance

The units require very little maintenance. The three phase motors have permanently sealed ball bearings and their typical life is over 10 years. The smaller fractional HP on the direct drive blowers have oil ports that the manufacturer recommends oiling every 6 months. This is very difficult to do with the motor mounted inside the blower, and most people do not attempt to oil the motor. The average life of this type of motor is about 5 to 7 years. We do have many that have been in continuous operation for over 10 years. They will typically develop a squeak prior to failing.

The direct drive blowers typically require no maintenance because there are no moving parts that have wear surfaces.

Belt drive blowers will require a possible belt adjustment after 6 months as they "seat" into the pulleys and will sometimes stretch slightly. We would recommend an annual check of the belts there after. Typically these belts will go many years with no maintenance.

The bearings on the belt drive blowers are sealed permanently lubricated ball bearings.

Prefilters

The prefilters should be changed when they are dirty. They are of a standard industrial size.

HEPA Filters

The HEPA filters should be changed when you are not able to maintain the proper face velocity out of the filter or when a filter becomes damaged. The life of the HEPA filter is dependent on the amount of dirt loading the unit is subject to. Typical systems that are located in a relatively "clean" environment will have a filter life of between 5 to 10 years or more.

Curtains

The clear vinyl curtains that are hung around the perimeter of the unit can be adjusted at the top so they will fit tightly together. If the unsealed overlap is a problem; i.e., people are entering the space where in unauthorized places, an optional cleanroom Velcro strip can be purchased and attached at these seams.

Cleaning the curtains can be done with a mild soap and water solution, with a distilled water rinse. Standard vinyl can get a surface static charge that can collect dirt particles, especially on the outside of the curtain that is exposed to the general ambient air. A 2% Joy soap and water

solution can be used and wiped on the vinyl. This will leave a very thin soap film that will help prevent a static charge from building on the surface of the curtains. There are also cleanroom static control solutions that are commercially available. Many people have used both and had no problems. Care should be taken that these liquid solutions do not pose a contamination problem for your operation.

There is an optical conductive vinyl curtain material that is also available if your product is static sensitive. This material has a carbon grid embedded inside the clear vinyl. Please consult the factory for more details. This conductive material can be cleaned in the same manner.

Strip Doors (Optional)

Strip doors can be cleaned in the same manner as the clear vinyl curtains. Strip doors should be cleaned on a more regular basis because they typically see more traffic.

Specifications subject to change. Please contact factory for details.

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