OPERATION AND MAINTENANCE MANUAL
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INTRODUCTION

The TRI-LOCK FS/GS HEPA Side Access air filter unit is a permanent housing designed to hold either gasket or fluid seal filters. It is an intermittently welded and caulked product (seal welded construction optional) designed for critical clean air applications.

The factory-assembled unit is of one-piece construction with a broken channel and no extrusion. Hat sections are located on the top, bottom and back of the unit for structural support. Each housing is custom manufactured to meet specific end user requirements.

The unit is constructed of either galvanized steel or optional stainless steel and is welded together with no bolt connections. An optional prefilter section is available to accommodate 2" or 4" filters.

APPLICATION

TRI-DIM®'S TRI-LOCK FS/GS HEPA Side Access air filter housing is designed for and not limited to the following applications:

- HVAC Systems
- Air Handlers
- Industrial Plants
- Food Industry
- Pharmaceutical
- Microelectronics
- Hospital
- Bio Medical

PERFORMANCE

The TRI-LOCK FS/GS HEPA Side Access air housing accommodates different TRI-PURE™ HEPA and Tri-Dim ASHRAE filters. Standard housings accommodate 24" X 24" X 11 ½" deep HEPA filters with DOP efficiencies 95%, 99.97% or 99.99% @ 0.3 µm. See filter manufacturer's individual filter efficiency requirements.

FLUID SEAL DESIGN CONCEPT

The filter to housing fluid seal is effected by means of a continuous perimeter knife-edge on the interior of the housing, which mates into the gel filled perimeter channel on the face of the filter to effect the seal. The hand operated locking
mechanism guides and secures the filter into the knife-edge penetrating the gel and forming a positive seal on the filter face.

DESCRIPTION OF FLUID SEAL FILTER LOCKING SYSTEM

The fluid seal TRI-LOCK FS HEPA Side Access housing has a filter-locking arm in each tier to operate the replaceable filter locking mechanism. By operating the internal filter-locking arm - the filter is engaged on, or disengaged from, the housing knife-edge (internal sealing frame). The filter-locking arm and the access door interface in such a manner that minimizes the possibility of the door being closed until the filters are correctly sealed in the housing and sealed to the mounting frame.

GASKET SEAL DESIGN CONCEPT

The filter to housing gasket seal is effected by means of a continuous flat mounting surface on the interior of the housing, which mates to a perimeter gasket on the filter. To affect the seal, the bolt-activated top and bottom hand operated crank locking mechanisms secure the filter(s) against the housing’s perimeter mounting surface, compressing the gasket.

OPENING AND CLOSING GASKET SEAL LOCKING MECHANISM

By turning a drive bolt located at the front interior of the housing-clockwise, independent pressure bars with preloaded springs, located in the filter locking mechanism, force the filter against the interior-mounting frame (there are two drive bolts per filter). Preloaded springs on each pressure bar, for each filter element, apply consistent pressure to maintain filter seal. The applied force has a minimum-clamping load of 1,400 pounds per perimeter of the filter and the gasket on the filter is compressed to 1/8” against the mounting frame. This force is applied as an even, uniform load along the top and bottom of each filter frame. *Caution, Do not compress the filter beyond 1/8”, excessive compression can cause filter leakage.* The standard locking mechanism hardware is 18-8 stainless steel with a 360-brass nut.
DOOR DESIGN

Hand torqued door latches provide a positive pressure door to housing seal as well as to ease filter servicing. A unique door hinge allows the door to either remain on its hinges or be completely removed when servicing filters. When the housing is fully loaded and the door sealed properly, the housing efficiency is equal to that of the filter rating.

HANDLING AND STORAGE OF FILTER ELEMENTS

Particulate filters include a wide range of filter types, sizes and performance capabilities. These filters are designed to remove airborne particulates from an air stream. Filters can consist of 30% efficient (MERV 7) prefilters and up to 99.97% @ 0.3\(\mu\)m efficient HEPA (high efficiency particulate air) filters. In general, all particulate air filters are fragile and should be handled with care. The following precautions should be observed upon storing filters:

- Keep in a clean low humidity air controlled environment.
- Filter should remain in its original shipping container with correct orientation until put in use.
- Temperature in storage area shall not be less than 0° Fahrenheit or more than 100° Fahrenheit.
- Stacking of filters is prohibited.
- Moving of filters should be restricted- lest the media become damaged.
- All filter manufacturer’s instructions and warnings shall be followed as well.

INSTALLATION OF NEW HOUSINGS

1. Position the housing adjacent to the ductwork. Housing should be welded, bolted or gasketed permanently to the ductwork.
2. Housing should be securely mounted to either a base or other permanent edifice.
3. Unit should be orientated so the access door(s) can be easily removed and replaced.
4. Following installation, ductwork and housing should be cleaned to eliminate any and all contaminants as well as any other items, which may have been stored in the unit during shipping.
5. Install filter(s) - tighten mechanism (gasket seal) or engage arm (gel seal).
6. Perform designated leak test/DOP test (designated by either the chief safety officer or engineer) to insure that the unit is working properly and is not leaking.
START UP PROCEDURES

• System must be shutdown prior to any filter installation or removal. Airflow should be stopped or a bypass of the air system must be made.

• Consult with safety officer and perform both a job safety analysis prior to installing or removing any filter(s) and make sure all personnel are wearing the required personal protective equipment (PPE).

1. Clean outside door, work area and all metal surfaces.

2. Provide Filter: Provide a new HEPA filter(s) and or prefilter for each tier.

3. Remove Door: Loosen all doorknobs on the section where the filter(s) are to be removed. Lift door off of door studs and swing open on hinge. *Option - lift door off of hinge and place door in a safe location.

4. Unseal the Filter: Pull the arm all the way outward to the open position. Mechanism will pull filters from gel track via extractor clips on the filters. This allows the filter to release from the knife-edge.

   For a gasket seal housing, unlock filter by turning both bolt locking mechanisms counterclockwise with a ratchet. This will release the filter from the flat edge.

   * If there are multiple filters per tier steps 2-4 should be repeated until all filters are removed.

5. Remove dirty filter(s) and dispose of in accordance with all applicable state and federal laws.

6. Slide new filter(s) into housing and engage locking mechanism to seal off filter(s) on knife edge(s).

7. Close swing bar and latch for a gel seal filter or screw down drive bolts clockwise on a gasket seal filter.

8. Replace the Door and tighten all Door Latches.
APPENDIX A

It is recommended that the buyer supply complete information about the operating conditions of the ventilation system prior to installation of any HEPA Side Access filter housing. Location specific conditions may prevent the system from operating satisfactorily in certain applications. Any non-factory alterations to the product may result in a compromised installation. Please contact the manufacturer for any questions not addressed in this manual.

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APPENDIX B

LOCKING TRAY CHANGE OUT

It is advised that any locking tray mechanism replacement or change out be done in a decontaminated environment. One of the advantages of the TRI-LOCK FS/GS HEPA Side Access housing is the ability to change out locking trays in the field.

Change out is a simple task. The same concept applies to locking mechanisms as that to filters. (refer back to start up procedures).

First, remove all filters from the contamination unit following the Start Up Procedures aforementioned.

FLUID SEAL METHOD

1. Using the ratchet with the ½” socket remove the two hex nuts and washers for both the top and bottom locking trays.

2. Then switch to the ⅜” socket and remove the hex nut and washers from the linkage to the door swing arm.

3. Remove both the top and bottom parts to each pair of locking trays.

4. Treat the locking mechanism as a dirty filter and continue the appropriate steps.

GASKET SEAL METHOD

1. Using the ratchet with the ½” socket remove the two hex nuts and washers for both the top and bottom locking trays.

2. Lift the top half of each locking tray off of the studs and into the bag.

3. Remove the pipe bearings from the locking mechanism and back off the drive bolts to release the bottom locking trays.

4. Remove the bottom-locking tray.

5. Treat the locking mechanism as a dirty filter and continue the appropriate steps.