Microlock HEPA Side Access Crank Lock Housings Operation & Maintenance Manual

Leadership in Filtration

MANN+HUMMEL

Microlock HEPA SA Crank Lock Housings

CONTENTS

Microlock HEPA SA Crank Lock Housings Introduction

INTRODUCTION

The Microlock HEPA SA Crank Lock Housing is a permanent housing designed to hold either gasket or fluid seal filters. It is an intermittently welded and caulked product with an optional seal welded construction, designed for critical clean air applications.

The unit is constructed of either galvanized steel or stainless steel, and is welded together without bolt connections. An optional prefilter section is available to accommodate 2" or 4" filters.

The factory assembled unit is a 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.

APPLICATIONS

MANN+HUMMEL Microlock HEPA SA Crank Lock Housings are designed for a range of applications, including:

- HVAC systems
- Air handlers
- Industrial plants
- Food industry
- Pharmaceutical
- Microelectronics
- Hospital
- Bio medical

Microlock HEPA SA Crank Lock Housings Performance - Fluid Seal

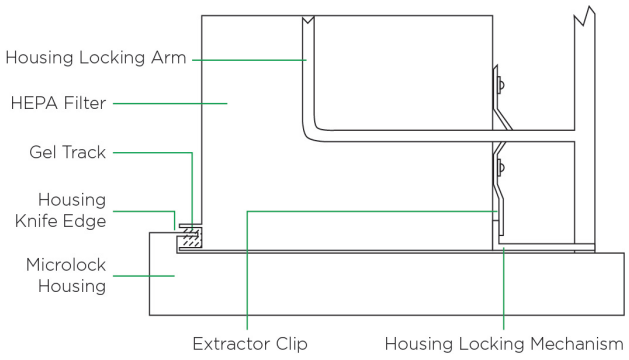
INSTALLABLE FILTERS

The Microlock HEPA SA Crank Lock Housings accommodate different Microlock HEPA and MANN+HUMMEL ASHRAE filters. Standard versions of the housings accommodate 24″x 24″x 11½″ deep HEPA filters with DOP efficiencies of 95%, 99.97% or 99.99% @ 0.3µm. See filter manufacturer's individual filter efficiency requirements.

FLUID SEAL DESIGN CONCEPT

The filter to housing fluid seal is affected 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. 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



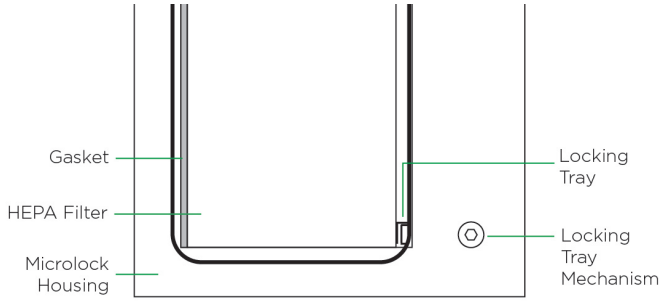
The Microlock HEPA SA Crank Lock Housing has a filter locking arm in each tier to operate the replaceable filter locking mechanism. By operating the internal filter locking arm, the filter is engaged or disengaged from the housing knife edge (internal sealing frame). The filter locking arm and access door operate 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.

Microlock HEPA SA Crank Lock Housings Performance - Gasket Seal

GASKET SEAL DESIGN CONCEPT

The filter-to-housing gasket seal is affected 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 filters 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 the filter seal.

The applied force has a minimum clamping load of 1,400 pounds per perimeter of the filter. 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. The standard locking mechanism hardware is 18-8 stainless steel with a 360-brass nut.

Caution: Over compression of the gasket can lead to leaks. 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 ease filter servicing. A unique door hinge allows the door to remain either 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, Storage & Installation

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 range from 30% efficient (MERV 7) prefilters up to 99.99% @ 0.3µm 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 the correct orientation until it is installed.
- The temperature in the storage area should not be lower than 0° F or higher than 100° F.
- Stacking of filters is not recommended.
- Movement of filters should be restricted to reduce the chance of damage to the media.
- Any additional filter manufacturer's instructions and warnings should also be followed.

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 doors 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 that may have been stored in the unit during shipping.
5. Install filters and tighten the mechanism (gasket seal) or engage the arm (fluid seal).
6. Perform designated leak test/DOP test (designated by either the chief safety officer or engineer) to ensure that the unit is working properly and not leaking.

Start-Up Procedures Getting Started

BEFORE YOU START

- The system must be shutdown prior to any filter installation or removal. Air flow should be stopped or a bypass of the air system must be made.
- Consult with the safety officer and perform a job safety analysis prior to installing or removing any filters. Make sure all personnel are wearing the required personal protective equipment (PPE).

START-UP PROCEDURE

1. Clean outside the door, work area and all metal surfaces.
2. Provide filter: Provide new HEPA filter(s) and or prefilter(s) for each tier.
3. Remove door: Loosen all doorknobs on the section where the filter(s) are to be removed. Lift the door off the door studs and swing open on the hinge. *Optional - lift the door off the hinge and place in a safe location.
4. Unseal the filter: Pull the arm all the way outward to the open position. The mechanism will pull the filters from the gel track via extractor clips on the filters. This allows the filter to release from the knife edge.

   For a gasket seal housing, unlock the 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 the dirty filter(s) and dispose in accordance with all applicable state and federal laws.
6. Slide the new filter(s) into the housing and engage the locking mechanism to seal off the filter(s) on the knife edge(s) for gel seal or seal surface for gasket seal.
7. Close the swing bar and latch for a gel seal filter, or screw down the drive bolts clockwise on a gasket seal filter.
8. Replace the door and tighten all the door latches.

Appendices

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 and performance.

Please contact the manufacturer for any questions not addressed in this manual.

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 Microlock HEPA SA Crank Lock Housing is the ability to change out locking trays in the field.

Change out is a simple task. The same concept that applies to filters applies to locking mechanisms. Refer back to the “Start-Up Procedures”.

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

FLUID SEAL METHOD

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

2. Then switch to a 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 a ratchet with a 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 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.

MANN+HUMMEL - Air Filtration Americas
112 S. Respess St.
Washington, NC 27889

T +1 877 752 5811

airfiltration.mann-hummel.com/us-en