



Filter Element Replacement Instructions for Sahara Air Products Regenerative Air Dryers

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Service Guide



Before servicing components, it is advised that this entire Service Guide be studied and clearly understood.

These instructions apply to the following Sahara Regenerative Air Dryers:

Blower Purge (BP)
Closed System (CS)
Exhaust Purge (EP)
Heat-of-Compression (HC & SP)
T Heatless (T)

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INTRODUCTION

About This Service Guide

This guide contains maintenance procedures for replacing filter elements installed on Sahara Air Products regenerative air dryers.

Before Servicing Equipment

- Read and understand all instructions and procedures before servicing equipment.
- Read and observe all warnings and cautions in this Service Guide, as well as those in the air dryer instruction manual which was included with the air dryer upon shipment. They provide information that can help prevent serious injury, damage to components, or both.
- Follow your company's maintenance and service, installation, and diagnostics guidelines.
- Use proper tools to help avoid serious personal injury and damage to components.

Hazard Alert Messages and Symbols



ATTENTION / WARNING!

This symbol indicates there are important operating and maintenance instructions which any and all operators should read closely to avoid danger and prevent problems. The instructions must be followed to avoid serious injury and/or damage to components.



ADVICE

An advice symbol alerts of an instruction or procedure of particular interest or importance that must be followed to avoid damage to components and/or ensure proper use of the air dryer.

SECTION 1: PREFILTER

1.1 General Comments and Use

The prefilter eliminates liquid water and oil carryover into the desiccant dryer. The desiccant dryer cannot remove liquid water or oil from the air stream, so it is important for the dryer to have a prefilter.

1.2 Function

The soiled medium flows through the filter element from the inside to the outside. Liquids are filtered out by impact or by the effect of inertia.

1.3 Assembly and Installation



The piping system must be cleaned before assembling filter.

The filter must always be installed vertically.

1.4 Maintenance

The filter element(s) should be replaced when a differential pressure of 7-10 PSID / 0.48 Bar(G)-0.69 Bar(G) has been reached, plant pressure demands more often, or at least after 12 months of operation.

- If the dryer **is** equipped with filter block & bypass, the filter housings can be isolated and depressurized by themselves and the dryer can continue to operate.
- If the dryer **is not** equipped with filter block & bypass, the full dryer skid must be isolated and depressurized. **The dryer should be powered off before performing this maintenance work!**



1.5 Optional Filter Accessory



We recommend installing a pressure differential gauge, if not already factory installed.

This will indicate the degree to which the elements are soiled and show when they need to be replaced.

SECTION 1: PREFILTER

1.6 Changing of Prefilter Elements



Attention / Warning! The filter housings must be DEPRESSURIZED prior to replacing elements!

- If the dryer **is** equipped with filter block & bypass, the filter housings can be isolated and depressurized by themselves and the dryer can continue to operate.



- If the dryer **is not** equipped with filter block & bypass, the full dryer skid must be isolated and depressurized. **The dryer should be powered off before performing this maintenance work!**



Filter elements should NOT be cleaned with compressed air.

The prefilter elements are to be changed using the following steps:

1.6.1 HEF-350 and smaller

- Isolate the filter by closing the manual valves before and after the filter, if supplied, or by isolating complete drying system.
Note: When changing the filter element in the HEF-60 pilot air filter, if equipped with isolation valves, can isolate pilot air line only.
- Completely depressurize the filter or dryer as required.
- Disconnect and move the drain piping to accommodate lowering of the filter bowl.
- Support the lower part of the housing.
- Remove bowl assembly.
- Unscrew element from its stud.
- Install the new element to the stud. Make sure the element seats securely.
- Replace housing seal.
- Reinstall bowl assembly.
- Reconnect the drain piping to the bottom of the filter bowl.
- Slowly repressurize the filter or dryer as required.
- Check for air leaks with soap solution.
- Place back into service.

SECTION 1: PREFILTER

1.6 Changing of Prefilter Elements (continued)



Attention / Warning! The filter housings must be DEPRESSURIZED prior to replacing elements!

- If the dryer **is** equipped with filter block & bypass, the filter housings can be isolated and depressurized by themselves and the dryer can continue to operate.



- If the dryer **is not** equipped with filter block & bypass, the full dryer skid must be isolated and depressurized. **The dryer should be powered off before performing this maintenance work!**



Filter elements should NOT be cleaned with compressed air.

The prefilter elements are to be changed using the following steps:

1.6.2 **HEF-700 and larger with split bowl design (for HEF-700 and larger with handhole design, reference following page)**

- Isolate the filter by closing the manual valves before and after the filter, if supplied, or by isolating complete drying system.
- Completely depressurize the filter or dryer as required.
- Disconnect and move the drain piping to accommodate lowering of the filter bowl.
- Support the lower part of the housing.
- Remove bolts and nuts from filter rings which hold the two halves of housing together.
- Lower the lower half of the housing 18"-20" / 457.2mm-508mm to allow access to elements.
- Unscrew each element from its stud.
- Install a new element to each stud. Make sure the elements seat securely.
- Replace o-ring gasket.
- Be sure o-ring is arranged neatly in gasket groove in lower ring before mating the housing rings.
- Raise the lower half of the filter housing back into place. Install bolts and nuts and tighten in a cross pattern.
- Reconnect the drain piping to the bottom of the filter bowl.
- Slowly repressurize the filter or dryer as required.
- Check for air leaks with soap solution.
- Place back into service.

SECTION 1: PREFILTER

1.6 Changing of Prefilter Elements (continued)



Attention / Warning! The filter housings must be DEPRESSURIZED prior to replacing elements!

- If the dryer **is** equipped with filter block & bypass, the filter housings can be isolated and depressurized by themselves and the dryer can continue to operate.



- If the dryer **is not** equipped with filter block & bypass, the full dryer skid must be isolated and depressurized. **The dryer should be powered off before performing this maintenance work!**



Filter elements should NOT be cleaned with compressed air.

The prefilter elements are to be changed using the following steps:

1.6.3 HEF-700 and larger with handhole design

- Isolate the filter by closing the manual valves before and after the filter, if supplied, or by isolating complete drying system.
- Completely depressurize the filter or dryer as required.
- Disconnect and move the drain piping to accommodate lowering of the filter bowl.
- Open the handhole. Take care not to drop the handhole cover in the vessel.
- Unscrew each element from its stud.
- Install a new element to each stud. Make sure the elements seat securely.
- Replace the handhole gasket.
- Put back handhole, then reattach yoke assembly and tighten.
- Slowly repressurize the filter or dryer as required.
- Check for air leaks with soap solution.
- Place back into service.

SECTION 2: AFTERFILTER

2.1 General Comments and Use

The afterfilter virtually eliminates the possibility of desiccant dust carryover into the instrument air system.

2.2 Function

The soiled medium flows through the afterfilter element from the outside to the inside. Solids are filtered out by impact or by the effect of inertia.

2.3 Assembly and Installation



The piping system must be cleaned before assembling filter.

The filter must always be installed vertically.

2.4 Maintenance

The filter element should be replaced when a differential pressure of 7-10 PSID / 0.48 Bar(G)-0.69 Bar(G) has been reached, plant pressure demands more often, or at least after 12 months of operation.

- If the dryer **is** equipped with filter block & bypass, the filter housings can be isolated and depressurized by themselves and the dryer can continue to operate.
- If the dryer **is not** equipped with filter block & bypass, the full dryer skid must be isolated and depressurized. **The dryer should be powered off before performing this maintenance work!**



2.5 Optional Filter Accessory



We recommend installing a pressure differential gauge, if not already factory installed.

This will indicate the degree to which the elements are soiled and show when they need to be replaced.

SECTION 2: AFTERFILTER

2.6 Changing of Afterfilter Elements



Attention / Warning! The filter housings must be **DEPRESSURIZED** prior to replacing elements!

- If the dryer **is** equipped with filter block & bypass, the filter housings can be isolated and depressurized by themselves and the dryer can continue to operate.



- If the dryer **is not** equipped with filter block & bypass, the full dryer skid must be isolated and depressurized. **The dryer should be powered off before performing this maintenance work!**



Filter elements should NOT be cleaned with compressed air.

The afterfilter elements are to be changed using the following steps:

2.6.1 **AF-350/AFH-350 and smaller with lower bowl**

- Isolate the filter by closing the manual valves before and after the filter, if supplied, or by isolating complete drying system.
- Completely depressurize the filter or dryer as required.
- Disconnect and move any drain piping, if installed, to accommodate lowering of the filter bowl.
- Loosen and drop bottom bowl.
- Remove the element from the filter housing.
- Install new element to original position in housing.
- Replace housing seal.
- Screw bottom bowl assembly to top head.
- Slowly repressurize the filter or dryer as required.
- Check for air leaks with soap solution.
- Place back into service.

SECTION 2: AFTERFILTER

2.6 Changing of Afterfilter Elements (continued)



Attention / Warning! The filter housings must be DEPRESSURIZED prior to replacing elements!

- If the dryer **is** equipped with filter block & bypass, the filter housings can be isolated and depressurized by themselves and the dryer can continue to operate.



- If the dryer **is not** equipped with filter block & bypass, the full dryer skid must be isolated and depressurized. **The dryer should be powered off before performing this maintenance work!**



Filter elements should NOT be cleaned with compressed air.

The afterfilter elements are to be changed using the following steps:

2.6.2 **AF-550/HAF-550 and AF-1000/HAF-1000 with cover plate**

- Isolate the filter by closing the manual valves before and after the filter, if supplied, or by isolating complete drying system.
- Completely depressurize the filter or dryer as required.
- Remove cover plate.
- Remove the wing nut from the filter top plate(s) and remove the plate(s).
- Remove the element(s) from the filter housing.
- Inspect the filter top plate(s), base plate(s), and t-bar(s). Replace as needed.
- Install new element(s) to original position in housing.
- Put back top plate and wing nut.
- Replace o-ring.
- Be sure o-ring is arranged neatly in gasket groove in lower ring before mating the housing rings.
- Put back cover plate and tighten.
- Slowly repressurize the filter or dryer as required.
- Check for air leaks with soap solution.
- Place back into service.

SECTION 2: AFTERFILTER

2.6 Changing of Afterfilter Elements (continued)



Attention / Warning! The filter housings must be **DEPRESSURIZED** prior to replacing elements!

- If the dryer **is** equipped with filter block & bypass, the filter housings can be isolated and depressurized by themselves and the dryer can continue to operate.



- If the dryer **is not** equipped with filter block & bypass, the full dryer skid must be isolated and depressurized. **The dryer should be powered off before performing this maintenance work!**



Filter elements should NOT be cleaned with compressed air.

The afterfilter elements are to be changed using the following steps:

2.6.3 AF-1400/HAF-1400 and up to AF-7200/HAF-7200 with cover plate

- Isolate the filter by closing the manual valves before and after the filter, if supplied, or by isolating complete drying system.
- Completely depressurize the filter or dryer as required.
- Determine anchoring and support points for the cover plate.
- Loosen and remove cover plate bolts as needed.
- Remove cover plate by rotating or lifting out of place.
- Remove the wing nut from the filter cover and remove.
- Remove the element(s) from the filter housing.
- Inspect the filter cover, base plate(s), t-bar(s), and hardware. Replace as needed.
- Install new element(s) to original position in housing.
- Put back cover and wing nut.
- Set new gasket in place on lower flange. Be sure gasket is properly centered.
- Rotate or lower the cover plate back into place.
- Reinstall bolts to secure cover plate in place.
- Evenly tighten bolts using recommended pattern.
- Torque all bolts to spec using recommended pattern and recommend torque values.
- Slowly repressurize the filter or dryer as required.
- Check for air leaks with soap solution.
- Place back into service.

SECTION 2: AFTERFILTER

2.6 Changing of Afterfilter Elements (continued)



Attention / Warning! The filter housings must be DEPRESSURIZED prior to replacing elements!

- If the dryer **is** equipped with filter block & bypass, the filter housings can be isolated and depressurized by themselves and the dryer can continue to operate.



- If the dryer **is not** equipped with filter block & bypass, the full dryer skid must be isolated and depressurized. **The dryer should be powered off before performing this maintenance work!**



Filter elements should NOT be cleaned with compressed air.

The afterfilter elements are to be changed using the following steps:

2.6.4 **AF-9000/HAF-9000 and larger with handhole**

- Isolate the filter by closing the manual valves before and after the filter, if supplied, or by isolating complete drying system.
- Completely depressurize the filter or dryer as required.
- Open the handhole. Take care not to drop the handhole cover in the vessel.
- Remove the wing nut from the filter top plate(s) and remove the plate(s).
- Remove the element(s) from the filter housing.
- Inspect the filter top plate(s), base plate(s), t-bar(s), and filter union(s) (if applicable). Replace as needed.
- Install new element(s) to original position in housing.
- Put back top plate and wing nut.
- Replace the handhole gasket.
- Put back handhole, then reattach yoke assembly and tighten.
- Slowly repressurize the filter or dryer as required.
- Check for air leaks with soap solution.
- Place back into service.

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Filter Element Replacement Instructions

FIELD & TECHNICAL SUPPORT

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INSIDE SALES FOR PARTS

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When contacting Henderson Engineering, please have the following information available:

- **Serial Number** which can be found on the air dryer; either on the ASME code nameplate on the dryer towers or in the electrical enclosure.
- **Model Number** which can be found on the air dryer; either on the ASME code nameplate on the dryer towers or in the electrical enclosure.
- Inlet air temperature and pressure.
- Actual inlet flow rate.



Henderson Engineering Co., Inc.,
is proud to be certified to the
ISO 9001 Quality Management System
standards and guidelines.

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