

**PROLINE 150 Installation, Operation & Maintenance**

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**Description**

The PROLINE150 is a multi-bag filter vessel designed to remove unwanted solids from fluids, where the flow can be temporarily interrupted to change the filter bags. The multi-bag filter vessel consists of a body housing made of type 304 stainless steel. Depending on the style of vessel chose, each housing can hold either 3, 4, 6, or 8 filter bags. Each filter bag sits inside a restraining basket that keeps the oriented. The bags are held in place with a 3 point hold down that facilitates quick and easy bag change out. The multi-bag vessel cover is secured by a number of swing bolts and is easily opened via the attached spring assisted lifter.

Process fluid enters the vessel from the upper connection and fills the cover. It then flows through all of the filter bags. Filtrate flows out the bags and exits via the bottom connection on the vessel. The contaminants are retained in the filter bags. Bags are periodically changed out when they reach their holding capacity.



**WARNING:** This filter is a pressure vessel designed to operate under specific pressure, temperature, and other engineering parameters. There is a risk of explosion, process fluid leakage or electrical shock if the requirements set forth in this Manual are not

followed during either installation, operation, inspection or servicing of this equipment. Equipment should be shut down and isolated from energy sources and other equipment before any inspection or servicing to prevent risk of shock or process fluid leakage. Appropriate PPE required. **FAILURE TO FOLLOW THIS WARNING COULD LEAD TO DEATH, SEVERE INJURY OR PROPERTY DAMAGE.**

**Specifications**

The general specifications for a PROLINE 150 multi-bag filter vessel are:

**Materials of Construction**

All welded and wetted materials are type 304 SS.  
*It is the customer's responsibility to ensure material compatibility with process and environment conditions. SPECIFICATION OF INCOMPATIBLE MATERIALS MAY LEAD TO PRODUCT FAILURE, LEAKAGE, DEATH, SEVERE INJURY OR PROPERTY DAMAGE.*

**Connections**

- 3 Bag: inlet & outlet: 3" 150# ANSI raised face flange
- 4 Bag: inlet & outlet: 4" 150# ANSI raised face flange
- 6 Bag: inlet & outlet: 6" 150# ANSI raised face flange
- 8 Bag: inlet & outlet: 8" 150# ANSI raised face flange
- Vent: 1" NPTI
- Drain: 1" NPTI
- Gauges: ½" NPTI

**Elastomers**

Buna-N O-rings

**Design Pressures**

150 PSIG (10 Bar ) maximum

**Design Temperature**

Temperature limits vary based on process liquid and elastomers  
 Maximum design temperature for metal is 200°F (93 °C ) at MAWP

## Filter Volume

3 Bag:	34 US Gallons	(129 L)
4 Bag:	53 US Gallons	(200 L)
6 Bag:	75 US Gallons	(284 L)
8 Bag:	123 US Gallons	(446 L)

## Installation

This document applies to the installation of the filter vessel.

### Transportation

Move the filter system as close as possible to the installation site before it is removed from the crate or skid. Position the filter frame on a prepared, level foundation. Level the filter frame before it is anchored to the foundation.

### Securing to Foundation

Anchor the filter legs to the foundation using the four, 5/8" diameter anchor holes located at the base of each leg. Ensure the filter is grounded to a suitable earth ground point.

### Connecting to Process Piping

1. Attach the inlet and outlet connections to the interconnecting piping (customer supplied). Take care to avoid excessive nozzle loading at the filter connections. Consult your pump manufacturers' installation guide for minimum pipe run length between the pump outlet and the inlet of the filter unit.



**Notice:** Isolation/block valves (supplied by others) are required on all process connections on the filter unit. These valves allow the filter to be isolated from the process liquid in the event that service is required. Pressure gauges are also recommended on all process connections.

2. Connect a drain valve/ line (customer supplied) to the filter's 1" drain nozzle. Connect a vent valve/line (customer supplied) to the 1" vent nozzle on the cover. Ensure that the vent connection is flexible or easily removable and that the cover can swing completely open with the vent valve installed.
3. Connect a vent valve/line (customer supplied) to the 1" vent nozzle on the cover. Ensure that the vent connection is flexible or easily removable and that the cover can swing completely open with the vent valve installed.
4. Connect pressure gauges, transducers, or switches to the 1/2" gauge nozzles located on the inlet and outlet.
1. Open the cover and remove the restraining baskets. Clean the inside of the housing to remove any dust or packing debris, and re-insert the restrainer baskets.
5. Install the appropriate filter bag (sold separately) for your application.

## Checklist

- Verify that all process connections are secure and free of leaks.
- Check that the cover opens and closes freely
- Confirm that the filter bags are installed and the 3 point hold downs are secure.
- Confirm that the O-ring sealing the cover to the filter housing is in good condition and properly installed.

- Verify that all cover bolts are tight. Do not over tighten. Damage may occur to the cover O-ring and flange surfaces if over tightened.
- Check that the drain line is directed in a suitable fashion to accept fluid when opened.

## Start Up Procedure

1. Inspect the piping connections to the filter. Verify that the inlet connection on the filter is connected to the pipe containing the incoming process fluid. Repeat this procedure for the outlet and backwash connections.
2. Insert the appropriate filter bag into the restrainer basket. Ensure that the bag is pushed to the bottom of the basket and install the 3 point hold down ring to secure the bag inside the housing.
6. All isolation and drain valves to the filter should be closed. If there is a bypass loop around the filter, that loop should be closed to prevent back flushing dirty process fluid into the filter.
7. Open the isolation valve for the outlet piping and vent valve
8. Open the inlet isolation valve to allow approximately 25% of the flow to reach the filter. Close the vent valve once all of the air is purged from the filter vessel



**Notice:** Opening the inlet valve to the fully open position without proper ramping may cause damage to the filter bags. If this happens, the bags will have to be replaced.

9. Slowly introduce more of the flow until you reach 100%.

## Operation



**Notice:** Do not exceed 200 °F normal operating temperature.

3. When the vessel is in operation, the differential pressure across it should be monitored to determine when filter bag replacement is necessary. Eaton recommend changing the filter bag at a differential pressure of 20 psi. Higher levels cause inefficient operation of the filter system and may force particulate through the filter bag material and contaminate the downstream liquid.
4. When not in use, the filter should be drained of all process fluid and the vent valve should be left open.

## Operational Modes

### Filtering

Dirty process fluid enters thru the inlet nozzle and passes through the filter bags where contaminants are collected. Clean process fluid passes through the bags and exits through the outlet nozzle.

## Maintenance

Frequency of inspection is at the discretion of the customer and may need to be increased or decreased accordingly. The wear of certain items depends on how often the filter is used and the abrasiveness of the product being filtered.

## Filter Bag Replacement

The filter housing does not require any special maintenance other than cleaning with normal use. All parts should be regularly checked for corrosion and other damage. Install a new filter bag at every product change or if the bag becomes blinded.

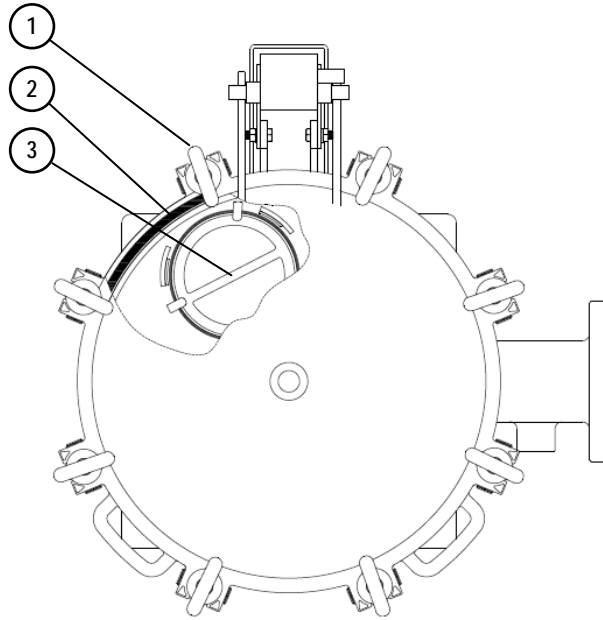


Figure 1

Table for Figure 1-Cover/Filter bag hold down

Ref	Part Number	Description (qty)
1	F4R40182	RING NUT; DIN 582 M24
2	RPS00000XX	COVER O-RING
3	L0000584-304	3 POINT BAG HOLD DOWN RING



**WARNING:** Despite the ease with which the cover is lifted, the cover is very heavy. Do not place any part of your body under the cover while it is moving. The cover should always be in the fully opened position before changing the filter bag.

1. Tightly close the isolation/block valves near the inlet and outlet of the filter, release the pressure in the housing by opening the vent or drain valve
2. Loosen all cover ring nuts (Figure 1, item 1) and sing the bolts off of the cover.
3. Lift the cover to reveal the filter bags. Inspect the cover O-ring for damage and replace if necessary (Figure 1, item 2)
4. Remove the filter bag 3 point hold down (Figure 1, item 3) from each bag by rotating it counter clockwise.
5. Remove the filter bag and discard.
6. Insert a new filter bag and push the inside of the bag to the bottom of the basket. Push the bag seal onto the top of the restrainer basket.

7. Re-install the filter bag hold down by pressing it on top of the filter bag seal and rotating it clockwise so that the tangs, on the 3 point hold down, engage the hold down clips on the filter vessel.
8. Inspect the cover O-ring (Figure1, item 2) for damage and replace as needed.
10. Lower the cover and tighten the cover bolts in diametric order to ensure the cover O-ring is not damaged and is uniformly compressed.
11. Place the system back on line using proper plant procedures.

## Spring Lift Mechanism

The cover lifting spring mechanism is maintenance free. If the mechanism starts to emit noise:

1. Remove dust cover and spray in a small amount of oil.



**WARNING:** The cover spring lift mechanism stores a large amount of energy and should never be unbolted from filter vessel body unless the tension is completely removed from the internal spring.

The cover lifting spring mechanism is balanced at the factory for the weight of the cover. Additional fixtures, such as gauges, can increase the weight and make a re-adjustment necessary. To adjust the spring:

1. Remove the dust cover from the bottom of the spring cover.
2. Loosen the two lock nuts.
3. Adjust the spring tension by simultaneously turning the two adjusting nuts that are located above each lock nut. Turn the nuts clockwise to increase the tension and increase the lifting capacity. Turn the nuts counterclockwise to decrease the tension and lifting capacity.
4. After making adjustments, re-tighten the lock nuts and replace the dust cover.

## Spare Parts

The following spare parts are recommended for PROLINE 150 filter vessel. Cover O-rings are dependent on the size of the vessel.

Ref	Part Number	Description
	L0000584-304	FILTER BAG HOLD DOWN
	L0003232	RESTRAINER BASKET
3BAG	RPS0000084	COVER O-RING
4BAG	L0000292	COVER O-RING
6BAG	RPS0000085	COVER O-RING
8BAG	RPS0000068	COVER O-RING

## Troubleshooting

### Symptoms

- A Leakage at cover seal
- B Reduction in flow rate or high differential pressure
- C Drop in filtrate quality

# PROLINE 150 Installation, Operation & Maintenance

## Possible Faults

- A **Leakage at cover seal**
  - 1 Loose cover nuts
    - a Tighten cover nuts
  - 2 Dirty cover sealing surfaces
    - a Clean cover sealing surfaces
  - 3 Damaged cover O-ring
    - a Remove and replace with factory cover O-ring
- B **Reduction in flow rate or high differential pressure**
  - 1 Dirty or damaged filter bag
    - a Inspect and clean or replace filter screen
  - 2 Flow, viscosity or solids increase
    - a Increase frequency of bag replacement
- C **Drop in filtrate quality**
  - 1 High differential pressure
    - a Refer to reduction in flow rate or high differential pressure above
  - 2 Improper Assembly
    - a Confirm the bag 3 point hold down ring is properly installed
  - 3 Damaged filter bag
    - a Remove and replace with EATON filter bag
  - 4 Filter bag too coarse
    - a Consult factory for ability of filter system to accept finer retention. Remove and replace with appropriate EATON filter bag

## WARRANTY

All products manufactured by Seller are warranted against defects in material and workmanship under normal use and service for which such products were designed for a period of eighteen (18) months after shipment from our factory or twelve (12) months after start up, whichever comes first. OUR SOLE OBLIGATION UNDER THIS WARRANTY IS TO REPAIR OR REPLACE, AT OUR OPTION, ANY PRODUCT OR ANY PARTS OR PARTS THEREOF FOUND TO BE DEFECTIVE. SELLER MAKES NO OTHER REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. WE SHALL NOT BE LIABLE FOR CARTAGE, LABOR, CONSEQUENTIAL DAMAGES OR CONTINGENT LIABILITIES. OUR MAXIMUM LIABILITY SHALL NOT IN ANY EVENT EXCEED THE CONTRACT PRICE FOR THE PRODUCT.

If you are interested in ordering spare parts or having service performed on your filter, please contact Customer Service

*Eaton reserves the right to change specifications, dimensions and model designations without prior notice*