



PERRY EQUIPMENT CORPORATION
AN ISO 9001 COMPANY

SERIES 75 FILTER SEP

GENERAL DATA

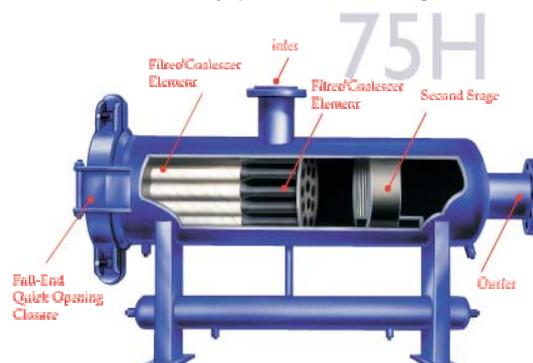
The PECO Filter-Sep is **either a vertical or horizontal** pressure vessel separated into two stages. The first stage contains replaceable elements, either molded fiberglass or PEACH® mounted on supporting carriers welded in an element support plate separating the inlet compartment from the second stage compartment. A quick-opening closure is provided for removing or installing the elements. The second stage compartment contains a high-efficiency liquid separator of the wire mesh or vane type. **The liquid from each stage is drained into its own separate sump compartment** to prevent gas flow between the two stages.

The gas to be filtered enters the vessel in the first-stage compartment. Solids and free liquid droplets 10 microns and larger cannot penetrate the element because of their size and remain on the outside of the element. These liquid droplets collect, drain to the bottom of the vessel, and into the liquid sump through the downcomers. Some solid particles will be washed down by the liquid, others remain on the outside of the element forming a cake. During the operation this cake will normally build up and break off, falling to the bottom of the vessel, due to pulsations in the gas stream. The remaining solids may build up, raising the pressure drop across the first stage.

Because of the nature of the elements, all of the solid particles one micron and larger are trapped in the element. In addition, liquid droplets form on the fibers, and remain attached to them as beads of liquid. As more liquid droplets are separated, these droplets are agglomerated and coalesced into large drops due to their surface attraction to one another. When the coalesced liquid drops reach a sufficient size, from 100 to 200 times their initial size, the force of gravity and the frictional drag of the gas causes them to drain out of the inside of the element into the center core of the element where they are carried into the second stage of the vessel. Due to their size, they are readily stripped out by the second stage separator, draining to the bottom of the vessel, through the downcomers into the liquid sump.

PIPING INSTRUCTIONS

1. The inlet may be located as shown or orientated on the near or far side of the filter maintaining the same dimension from the face of the outlet flange to the center line of the inlet flange.
2. The outlet is normally located as shown.
3. The blow-down connection should be valved and piped to a pit, tank, or blow-down system.
4. **Since the sumps are two separate compartments**, two sets of control equipment are necessary. The gauge glass, liquid level controls and drains must be piped independently and not be manifolded between the first stage sump compartment and the second stage sump compartment because of the pressure differential between the two stages. These controls may be furnished by PECO if requested.
5. Two pressure taps are furnished on the vessel. One is located in the first stage, the other between the element support plate and second stage separator. It is extremely important that an accurate differential pressure gauge be installed on the vessel. Pressure drop is the only indicator that the operator has to tell him when the unit should be blown down or by-passed to change the elements.



ENGINEERED FILTRATION SOLUTIONS

INSTALLATION AND OPERATING INSTRUCTIONS

1. Check the filter-Sep cut-away picture in order to get acquainted with the flow pattern of gas through the first and second stage.
2. Connect the Filter-Sep by the usual piping methods, observing proper inlet and outlet connections as marked on Filter-Sep. Pipe all connections on first and second stages independently. Gauge glasses, liquid level controls and drains should never be manifolded between first and second stage.
3. The filter should be opened before start-up, the element hold-down nuts tightened and the elements securely fastened.
4. Build up pressure and check for leaks. If no leaks are found, check to be sure that all pressure gauge connections, drain connections, etc., are ready for operation.
5. Put the Filter-Sep on stream.
6. Check the pressure drop across the Filter-Sep to determine the initial pressure drop. Units are normally designed for an initial drop of 1 to 4 PSI.
7. The elements have to become completely saturated before stripping liquid. This may take 24 hours or longer, depending upon the amount of free liquid in the stream. Liquid recovered from the first stage sump represents 10 micron or larger-size liquid droplets which have been stripped on the outside of the elements. Recovery from the second stage sump represents the 1 micron and smaller-size droplets coalesced by the element and stripped out by the second stage separator.
8. After the filter-Sep has reached a pressure drop across the first stage elements of 5-6 PSI, the filter should be taken out of service, the elements removed from the case and the bottom of the case cleaned of all solids and liquids.
9. Do not backflow the Filter-Sep. A high velocity flow inside of the element will rupture the fibers and cause channeling.
10. If the unit has been operating at a flow rate far below its design capacity for any period of time, it should be blown down or removed from service and cleaned out, regardless of pressure drop before increasing to maximum capacity.
11. An excessive pressure drop across the second stage separator signifies that the unit is being loaded with heavy hydrocarbons or paraffin. This unit should be taken out of service and the elements removed. Open all of the drains, including the drain in the second stage compartments. Low-pressure steam can be introduced in the supply coupling in the second stage compartment to clean the separator. Steaming should continue for approximately two hours.
12. Do not clean the unit with steam injected into the first stage with the elements in the unit. Steam impingement on the elements will create holes through to the element center tube causing channeling.
13. If the solids removed from the gas may cause combustion with air, the unit may be flooded with water and then drained before the head closure is opened.
14. If the unit has been inoperative for any period of time, the drain behind the separator in the second stage should be opened to remove any condensate which may have collected.



CHANGING THE ELEMENTS

When removing the elements, make certain that the bottom element gasket has not been left on the riser. These gaskets are an integral part of the element and may occasionally stick tight enough to the flared pipe riser to pull free of the element when the elements are removed.

The stems and risers upon which the elements are mounted are tapered on the end near the hold-down bolt. This is designed to facilitate removal, especially if the element has become distorted during use by excessive pressure differentials.

In installing new or old elements, make certain that the element hold-down nuts are properly seated after tightening. This will insure proper sealing of the element and prevent bypass of gas.

Order closure gaskets and elements by Series, Model and Serial Numbers as shown on Filter-Sep nameplate.

IF ANY DIFFICULTIES ARE EXPERIENCED WITH THE PECO FILTER-SEP, CONSULT YOUR LOCAL REPRESENTATIVE OR THE FACTORY.