



Installation & Operation Manual HP Series

WARNING!

To minimize the risk of serious injury and property damage:

- Do not exceed maximum operating pressure & temperature
- Do not open vessel until pressure has been relieved
- Read & follow instructions & safety information in this manual

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Note: Keep this IOM in a protected pouch & permanently retain on or adjacent to filter vessel.

I. GENERAL WARNINGS

WARNING! USE PROTECTIVE CLOTHING. Operator should wear protective clothing including protective gloves and face shield. If handling hot liquids, the operator should wear heat resistant clothing made from materials such as Nomex® to avoid possible burning or scalding. Refer to the material safety data sheets (MSDS) for specific handling instructions.

WARNING! Operating vessel with damaged or worn parts could cause serious injury and/or damage. Inspect vessel interior and all components for wear, corrosion or damage. Replace all damaged components.

WARNING! Do not exceed the operating limits of this vessel and gasket. Property damage, serious injury or death can result if limits are exceeded. The maximum vessel operating pressure and temperature is stamped on the ASME code plate.

WARNING! The maximum operation temperature of this vessel may be limited by the closure seal o-ring material. The maximum operating temperature may be lower than the maximum design temperature stamped on the vessel nameplate. The maximum operating temperature can be increased up to the maximum design temperature by substituting an appropriate alternate o-ring gasket material.

In all cases, it is extremely important to match the temperature and chemical compatibility of the seal with actual conditions. Reference table 1 on page 3 for general guidelines.

II. GENERAL NOTES

The HP Series filter assembly will accept a 2-3/4" OD X 1" ID X 9-3/4", 10", 19-1/2", 20", 29-1/4" or 30" long cartridge. The only difference between assemblies is the length of cartridge each vessel will hold.

III. FILTER INSTALLATION & START-UP

Installation

The HP Series is designed to be used as an in-line filter assembly, supported by the inlet/outlet nozzles. Attention must be given during the installation process to ensure the unit is installed in the proper 'flow' direction as indicated by the IN and OUT decals on the inlet/outlet flanges. Make sure there is adequate space around the assembly to remove the body during element changeout. If the application requires continuous flow when the filter is isolated during element changeout, a bypass line and valve(s) should be installed. It is also recommended to install valves at the inlet and outlet positions. A pressure gauge capable of reading 1.3x the expected pressure should be installed on the inlet side, between the valve and assembly head. The unit comes with a vent and dirty drain connection (FNPT or flanged) on the inlet side of the upper and lower heads in which a threaded plug or blind flange should be installed.

Start-up Procedure

1. Clean and inspect closure o-ring and o-ring groove. Lubricate o-ring with suitable lubricant that is compatible with the seal material & the application, then install.
2. The mating surfaces of the assembly head and body are machined to normally provide self-alignment, however, the following steps in tightening are recommended to ensure a proper seal.
 - a. Lift the body of the assembly up to the head, lining up the four closure holes. Make sure the body is properly seated in the head. Do not slam body against the head or pinch the o-ring as damage to the seal or sealing surfaces may occur. Install four hex bolts into the holes and hand tighten bolts.
 - b. Tighten bolts in an alternate criss-cross pattern until head is securely in place. Do not apply excessive torque nor over-tighten any bolt at one time.
 - c. When completely tight, the assembly head o-ring sealing face will be in firm, metal-to-metal contact with the assembly body face.
 - d. Different configurations of the HP Series filter assembly may use a qty. (4) of a specific size closure bolt. To ensure proper sealing during operation, each bolt must be tightened to the proper torque. Relaxation

of the bolts may occur, causing leakage and damage to the head seal surface. Leakage may not start until a considerable time after startup. Tighten each 5/8" bolt to torque value 70 ft-lbs. Tighten each 7/8" bolt to a torque value of 130 ft-lbs.

3. Close drain valve and open vent valve
4. Open inlet valve and allow assembly to fill slowly taking care to not allow process fluid to spray from the vent.
5. When air is expelled from vent and liquid begins to bleed from vent, close the vent valve.
6. Open outlet valve.
7. Run the unit until the cartridge reaches terminal ΔP

IV. FILTER SHUTDOWN

WARNING! Do not service this vessel while inlet or outlet valves are open or while unit contains pressure. Do not, at any time, loosen closure bolts before draining. Failure to open drain and vent will result in pressurized liquid being trapped in vessel. Pressurized liquid will spray out when the bolts are loosened which could cause death, serious injury or property damage.

WARNING! USE PROTECTIVE CLOTHING! Operator should wear protective clothing including protective gloves and face shield. If handling hot liquids, the operator should wear heat resistant clothing made from materials such as Nomex® to avoid possible burning or scalding. Refer to the material safety data sheets (MSDS) for specific handling instructions.

Shutdown Procedure

1. Before opening assembly, turn off pump and lock it out.
2. Close inlet and outlet valves. Inlet or pressure side should always be closed first.
3. Open vent valve. Make sure the valve is piped such that escaping fluids do not cause personal injury or property damage.
4. Check pressure gauges to ensure the vessel's internal pressure is zero. Note: A DIFFERENTIAL pressure gauge connected between the inlet and outlet WILL NOT show internal pressure. Differential pressure gauges are usually marked "PSID" on the gauge face.
5. Open drain valve. Gravity will move fluid through drain. After vessel has drained, close drain valve.
6. Loosen the four hex bolts to free the body from the assembly head.
7. Lower the assembly body gaining access to the filter cartridge.

V. MEDIA REPLACEMENT

1. Follow shutdown procedure in Section III.
2. Loosen the four bolts. DO NOT remove the bolts until ALL bolts are loosened and the body and head have separated.
3. Remove the body from the filter head by slipping it off over the cartridge and support tube.
4. Loosen and remove the cartridge retainer screw (if equipped) and remove the dirty cartridge.
5. Install the new cartridge on the support tube and replace the cartridge retainer screw. Tighten the retainer screw until the washer indents into the new cartridge and a seal is formed. DO NOT over tighten.
6. Follow startup procedure in Section III.

VI. SEAL COMPATIBILITY & BOLT TORQUE VALUES

Notice: Standard vessels are designed to use gaskets made of self energizing material such as Buna-N, EPR, or Viton®. Since the torque requirement to seal a vessel with these seals is minimal, it is normally not necessary to use extensions or cheater bars when torquing bolts & nuts. Standard vessels are not designed to use gaskets made of non-energizing material or rope type gaskets. These types may require tightening torque beyond that which the vessel is designed for causing damage to vessel. Reference table 2 below for maximum torque values.

READ BEFORE OPERATING

Warning! The maximum operation temperature of this vessel may be limited by the closure seal (o-ring or gasket) material. The maximum operating temperature may be lower than the maximum design temperature stamped on the vessel nameplate. The maximum operating temperature can be increased up to the maximum design temperature by substituting an appropriate alternate gasket material.

In all cases, it is extremely important to match the temperature and chemical compatibility of the seal with actual conditions. Reference table 1 below for general guidelines.

Table 1 - Properties of Gasket Materials

	Max. Oper. Temp. °F.	Resistance to Acids	Resistance to Alkalis	Resistance to Petroleum Oils	Resistance to Water Swelling	Resistance to Animal and Vegetable Oils	RESISTANCE TO SOLVENTS			
							Lacquers and Thinners	Aliphatic Hydrocarbons, Gasoline, etc.	Aromatic Hydrocarbons, Benzene, etc.	Oxygenated Ketones, etc.
Nitrile (Buna N)	250	Poor	Poor	Excellent	Excellent	Excellent	Poor	Excellent	Fair	Good
Neoprene	250	Good	Good	Good	Good	Good	Poor	Good	Fair	Poor
Butyl	250	Excellent	Excellent	Poor	Excellent	Excellent	Excellent	Poor	Poor	Good
Ethylene Propylene (EPR)	300	Excellent	Excellent	Poor	Good	Good	Good	Poor	Poor	Good
Fluorocarbon (Viton®)	400	Excellent	Poor	Excellent	Excellent	Excellent	Poor	Excellent	Excellent	Poor
PTFE (Teflon®)	500	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Silicone	500	Good	Good	Poor	Excellent	Excellent	Poor	Poor	Poor	Excellent

Note: This table shows the general characteristics of various gasket materials. Consult the Parker Catalog CAT-500-XX USA materials selection chart or ask a Wessels Application Engineer for assistance with your specific application.

Table 2 – Maximum Cover Bolt Torque Values

Nominal Bolt Diameter	Carbon Steel Bolt – Max Torque ft-lb	Stainless Steel Bolt – Max Torque ft-lb
5/8	70	50
7/8	100	80

Questions? Call a Wessels Application Engineer for assistance at (317) 898-9800