I. Introduction
The ZPC filter housings are designed for use with Cuno Zeta Plus® cartridges. These housings are available with a clamp closure system rated at 75 psi (5 bar) service. Always operate within the pressure and temperature design limits of the housing and cartridge. See Literature LITHS.ZPBC for actual ratings available.

II. Recommendations
ZP filters should be used for liquid filtration only. A Pressure relief valve or burst disk should be installed upstream of housing.

III. Preparation
Before unpacking, bring the housing package to the installation site.
If possible handle the housing manually, decreasing the risk of damage to the polished surfaces.
If handling devices are required:
A. Use either non-metallic soft slings on the dome handles, or
B. Lift with a 1-1/2" triclover connector fitted to the pressure gauge connection on top of the dome.
Carefully unpack all parts and check for transport damage. Ensure no parts are missing.

IV. Housing Installation
Place the housing on a solid surface. Ensure that enough space above the housing is available to remove the dome.
If not already assembled, assemble all accompanying parts to the housing:
   • Outlet check valve (Item A13). Assemble as shown Figure 1.
   • Vent Valve (Item A11 in Figure 2)
A. Connect the inlet and outlet to the process system in accordance with indicated flow direction through the filter housing. The outlet check valve protects the cartridges from back flow.

Figure 1. -Model ZPC Check Valve (Item A13 in Figure 2)

Figure 2. - Zeta Plus Model ZPC Filter Housing

B. Remove the dome (Item A10, Figure 2) by releasing the clamp (Item A12, Figure 2). See detailed Clamp Operating Instructions (Section X).
C. Place dome on a pallet, cardboard or similar surface to protect the sealing edge from damage.
D. Place the dome o-ring in o-ring groove (Item A2) in the base (Item A1).
E. Install the centerpost o-ring (Item A4) onto the centerpost (A5) with the short threaded end down before threading the centerpost into the baseplate (Item A1).
F. Keep the baffle (Item A3), protecting plate (Item A7) and protecting plate gasket (Item A8) along with the cartridge seal nut assembly (Item A9) separate as they will be assembled later during cartridge installation.
G. If required, clean all internal parts.
H. Place the dome on the baseplate.
I. Install the dome clamp (figure 5).

Pressure test:
   • Fill the housing with clean water at room temperature.
   • Pressurize the housing up to the maximum operating pressure (75 psi).
   • Inspect and correct any leaks.

Flush the housing and its pipes with a clean process compatible fluid.
V. Cartridge Installation

**IMPORTANT**

- Before installing cartridges, verify that the whole process system is clean and ready for normal operation (to avoid premature cartridge plugging due to other than normal process fluid impurities).
- If required, flush the whole process system before cartridge installation.

Before installing cartridges into the housing, check that each cartridge:

- is new, clean and without damage
- is of the required filtration grade
- is equipped with a gasket at each end.

A. Remove and save the cartridge identification label for traceability.

B. Open the housing vent (Item A11, Figure 2) to ensure all pressure has been released from the housing.

C. Remove the dome (Item A10, Figure 2) and install the baffle with the raised portion of the center hole pointing down (Figure 3). Install the required number of Cuno Zeta Plus cartridges on the centerpost (Item A5, Figure 2). Align each cartridge individually on the lower one. Be sure that the flat cartridge gaskets meet and seal.

D. Put the protecting plate with its gasket on the upper cartridge as shown in Figure 3. The gasket of the top cartridge should fit snugly into the recessed center of the protecting plate.

E. Inspect o-ring in the follower tube of the seal nut assembly (Figure 4). If flattened or defective, replace.

F. Cartridge sealing - (See Figure 4)
   1. Place the follower tube over the centerpost onto the Protection plate gasket.
   2. Slide the spring over the seal nut shaft.
   3. Place the seal nut onto the centerpost and through the follower tube.
   4. Tighten the seal nut until the spring is fully compressed, then tighten another one turn per cartridge (One turn = 360°)

G. Place the dome on the baseplate and install the clamp.

For cartridge sanitizing, sterilization, or flushing procedures see the specific Zeta Plus cartridge specifications, or consult your local distributor.

VI. Operation

**IMPORTANT:**

- When constant displacement pumps are used, provide a relief valve for filter housing protection against over pressurization. When using the following procedures, turn the pump on and off as required to avoid exceeding the maximum recommended operating pressure or activating the pressure relief valve.
- The operating pressure and temperature should NEVER exceed the cartridge and housing design conditions.
- The outlet pressure should NEVER exceed the inlet pressure (Install outlet check valve) because of water hammer, back pressure or incorrect valve operations (back flow).

Filling and Venting the Housing:

- Close all valves except the vent valve (Item A11, Figure 2) which should be open.
- Fill the upstream system. Once the fluid is at the inlet valve, open the inlet valve slowly. When filled close the vent valve (Item A11, Figure 2).
- The down stream system should be filled through the filter housing. Keep the inlet valve open and partially open the outlet valve in order to keep the housing under pressure.
- Once the downstream portion of the housing is filled, keep the outlet valve closed until ready for filtration start-up.

Start Up

When the process system is clean, fully filled, and all air has been vented, then:

- pressurize the upstream system and verify the correct operation of the relief valve
- slowly open the outlet valve.

Operation

- If there is no automatic venting device installed, regularly open and close the vent valve (Item A11, Figure 2) during operation to eliminate any accumulated air.

Shut Off

- To stop the flow through the housing, slowly close the outlet valve, then close the inlet valve in order to keep the housing under pressure isolated from the process system in stand-by position.
VII. Cartridge Change-Out
Replace the cartridges:
- When the pressure drop across the cartridges reaches a maximum of 35 PSIG (2.4 bar)
- According to users' application requirements.
Empty the housing:
- Close outlet and inlet valves - if installed, open the drain valves and the vent valve.
IMPORTANT:
BEFORE opening the housing always be sure it is completely empty and at ZERO PRESSURE.
Prepare the housing:
- Remove the dome (Item A10, Figure 2) Place dome on pallet, cardboard or similar surface to protect the sealing edge from damage.
- Remove the cartridge seal nut and follower tube (Figure 4).
- Remove the protection plate (Figure 3)
- Remove used cartridges
- Clean all internal surfaces
Install new cartridges as described in Section V.

VIII. Maintenance
Air presence in the housing leads to:
- Decreased use of filter surface area
- Increased velocity through the remaining filter surface
- Reduced cartridge lifetime
When air is frequently detected during operation, it is recommended to:
- search for possible air leaks in the process line
- install an automatic venting device
At each cartridge change out:
- Check gaskets (Items A2, A4, A8 and especially the follower tube o-ring, Item A9, Figure 2) for damage and replace as required.
Once a year:
- Inspect the check valve for functionality and cleanliness.
- Replace all seals
Recommended spare parts on hand:
- Complete set of all housing seals
- Sufficient supply of replacement cartridges
- Complete set of all connection gaskets
- Complete Cartridge Sealing Assembly
Seals:
- Never lubricate the housing gaskets
Surface care:
- During all handling, care should be given not to damage the polished surfaces of the housing, in particular those which come in contact with the process fluid.
- Do not use abrasives for cleaning.

IX. Safety
Before opening the dome closure system:
- Always verify that drain and vent valves are open and that the housing is at ZERO pressure.
- Always operate within the pressure and temperature design limits of the housing and the cartridges.
- Always eliminate water hammer from the system.
- Always eliminate air from the system.
- Always open and close valves SLOWLY to avoid water hammer and damage to the cartridges and housing.

X. Model ZPC Housing Clamp Assembly
IMPORTANT
Before any maintenance on the clamp assembly:
1. Be sure that the housing is off line and at zero pressure and clamp is in the open position.
2. Do Not turn the adjusting nut (Item 4, Figure 5) on the swing bolt when assembling the clamp.
3. Do Not modify the clamp.
4. Do Not weld on any clamp part.
5. Do Not drill holes into any clamp part.
6. Keep the clamp mechanism sufficiently oiled and clean for smooth functioning of the safety device -- Clean threaded surface on a regular basis.
For ease of understanding these instructions, please refer to Figure 5.
The operation and maintenance of the clamp assemblies should be followed exactly as indicated in the following sections.

A. Assembly and Installation
IMPORTANT: Before opening the filter housing ensure that it is at zero pressure (vent valve fully open).
1. Before installing the clamp onto the housing, perform maintenance as specified below.
2. Put one of the two clamp halves (Item 1 or 2 in Figure 5) around the housing flanges so that the lever (Item 3) will be accessible but positioned so that it is not subject to accidental opening by passerby. (See Figure 5.)
3. Keep the lever (Item 3) in open position and connect the two clamp halves (Item 1 and 2) to each other by engaging the swing bolt (Item 4) into the socket (Item 5) of the opposite clamp half. (See Figure 5)
4. Tap, with the palm of each hand, on the middle of each clamp half to get them as tight as possible around the housing flanges.
5. Move the lever (Item 3) manually into its closed position and check that the swing bolt (Item 4) is still fixed in the socket (Item 5). (See Figure 5)
B. Removing the Clamp
1. Before removing the clamp, ensure that the housing is empty and verify that the housing is at ZERO PRESSURE (VENT OPEN). Relieve pressure if required.
2. Open the clamp lever (Item 3) manually to its travel stop (Item 6, Figure 5).
3. Move the lever (Item 3) slightly back in the closing direction and push on the security latch (Item 7) to unlock the security device. This will release the lever (Item 3) for complete clamp opening (See Figure 5).
4. Once the lever (Item 3, Figure 5) is in a fully open position, take the swing bolt (Item 4) out of the socket (Item 5) WITHOUT UNSCREWING THE NUT. (See Figure 5)
5. Take off both clamp halves (Item 1 and 2) from the housing flanges.

C. Maintenance
1. Check the clamp each time the housing is opened:
   a. for any damage
   b. for any deformation
   c. for correct functioning of the security mechanism.
   d. to clean threads
2. If required, oil the security mechanism sparingly for smooth functioning.
3. IN CASE OF NONCONFORMITY ----- REPLACE THE CLAMP.
4. The position of the nut on the swing bolt (Item 4) is factory set and sealed and should not be changed.
5. Consult your local Cuno Distributor before use:
   a. for any malfunction
   b. for any readjustment of the swing bolt
   c. for replacement or adjustment of the clamp

Figure 5. - Model ZPC Clamp Assembly