



wavestream™

WSS3 SS DF

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WSS3 SS DF CARTRIDGE FILTER SYSTEM

Replacement Cartridge Part No. WS-C3

This housing is suitable, at the operating parameters stated, for all liquids and gases classified as Group 2 and all liquids in Group 1 except for those classified as oxidising or explosive. These fluid groups are as defined in the European Pressure Equipment Directive 97/23/EC. The housing meets the ATEX Directive 94/9/EC Protection level CE Ex II 2 GD c X

ATEX Directive 94/9/EC Protection Level



II 2 GD c X
Surface Temperature determined by process (Note 11)
Constructional safety
For use in Gas/vapour/mist and dust atmospheres
Category 2 (Zone 1 and 21)
Equipment in this category is intended for use in areas in which
explosive atmospheres caused by gases, vapours or air/dust mixtures
are likely to occur.
Non-mining products Group II

Design Data

Working Temperature

Min.

0°C

Max.

110°C

Maximum Working Pressure

Liquid

10 Bar g

Gas

6 Bar g

******IMPORTANT SAFETY NOTES – PLEASE READ BEFORE USING THIS HOUSING******

1. Never attempt to open the housing whilst under pressure. It is recommended that the user provide a suitable system to prevent opening under pressure.
2. Never operate the housing outside of its permitted operating parameters as stated (i.e. over pressure, under vacuum, over or under temperature).
3. Housings using Vee clamps should not be used in cyclic pressure or shock load environments, or where highly viscous fluids could solidify the closure seal.
4. For safety, it is the user's responsibility to ensure a suitable pressure relief device is installed in the system to prevent over-pressurisation.
5. Never use the housing for fluids other than those it is rated for, and ensure that the housing & seal materials are compatible with the process fluid.
6. Care must be taken to protect operators from hot surfaces if the housing is being run at high temperatures.
7. Failure of the filter housing could result from misuse – please ensure that these installation, operating & maintenance procedures are strictly adhered to.
8. After shutdown leave the vessel to stand for 45 minutes before opening to allow for any static dissipation.
9. Minimum flow time after the filter to any open vessel to permit relaxation time (static dissipation) of non-conductive fluids must be greater than 100 seconds.
10. For safety, it is the user's responsibility to ensure the housing is suitably bonded and earthed.
11. The surface temperature of the housing must not exceed the value shown above and 80% of the minimum ignition temperature of the gas atmosphere. For dust deposits the surface temperature must be 75°C less than the minimum ignition temperature of the dust layer.

The following factors have not been considered in the design of this housing, as they are either negligible or not considered appropriate for this product, unless specifically stated:

1. Static pressure/head
2. Traffic, wind and earthquake loading
3. Decomposition effects of unstable fluids
4. Creep, fatigue and corrosion allowances
5. External fire

Connections

Inlet:	the higher of the two larger connections
Outlet:	the lower of the two larger connections
Vent:	located in the lid of the housing
Dirty drain:	located in the inlet chamber of the housing

Installation

Vent:	Fit the blanking cap (supplied) or the vent and gauge kit as appropriate, to the lid. Seal with the aid of PTFE tape or an appropriate sealant as required.
Drain:	Fit the blanking cap (supplied) or drain valve as appropriate, to the drain connection. Seal with the aid of PTFE tape or an appropriate sealant as required.
Inlet/Outlet:	Connect the inlet and outlet pipework to the housing connections. For threaded connections use PTFE tape or an appropriate sealant as a seal. For flanged connections use a suitable gasket, and for dairy connections use the correct sealing ring.

If the filter housing is supplied with adjustable legs, the vertical height of the housing can be adjusted to suit the pipework connections by releasing the leg clamp around the housing, adjusting the filter to the required height, and re-clamping the legs to the filter body. Housings with fixed legs have no vertical height adjustment. It is essential always to bolt the legs in place for maximum security, particularly if the housing has a davit assembly (as the swinging away of the lid creates a risk of the housing falling)

It is important that the pipework to and from the filter is adequately supported - **THE FILTER HOUSING MUST NOT BE USED AS A SUPPORT POINT.**

BEFORE OPERATING WE RECOMMEND THAT THE FILTER IS FLUSHED THOROUGHLY

**IMPORTANT: ALWAYS ENSURE THAT THE SYSTEM IS NOT UNDER PRESSURE
BEFORE OPENING THE HOUSING**

Operation

Opening the filter

If the filter housing has been in service, refer to the instructions given in the section “**Removing the Filter from Service**”. Release the Vee clamp by undoing both clamp adjusters evenly. Remove the Vee clamp, lid and gasket. Store them in a safe place where they cannot get dirty or damaged. Remove the compression nut.

Fitting the Filter Cartridges

Inspect the cartridge, ensure there is no damage. Do not fit damaged cartridges. The cartridge is loaded into the housing through the top opening.

Fitting Double Open End style (DOE) cartridges

Locate the cartridge over the tie rod fitted and push it firmly down onto the fixed cartridge stand pipe located at the base of the housing. Screw the compression nut down on the tie rod to compress the cartridge down onto the base. The compression nut should be screwed down **Hand Tight** only.

Closing the Filter Housing

Check the body flare, gasket, lid and the Vee Clamp for any dirt or damage. Clean away any foreign objects and replace defective parts as necessary.

Place the gasket onto the flare at the top of the housing. Replace the lid.

The clamp has two adjusters, the normal open coupler that is to be placed at the front of the housing, and a second retained adjuster at the rear. These should be loosened before fitting the clamp around the cover lip and housing flare. A small amount of suitable lubricant can be used on the sliding faces of the clamp. Tighten both clamp adjusters evenly by **Hand Only** to ensure that there is even pressure by the clamp around the periphery of the housing and lid.

Putting the Filter into Service

Ensure the inlet and outlet valves are shut. Ensure that the drain valves (if fitted) are closed or the drain plugs are fitted.

Open the vent valve or plug.

Gradually open the inlet valve on the upstream side of the filter housing whilst ensuring that the down stream valve remains closed. As the housing fills, air will be expelled from the vent. When all the air has been expelled, fluid will begin to flow from the vent. For safety reasons, it is important to ensure that vent and drain connections are secure and that released fluid is disposed of to an appropriate drain or container. Appropriate measures should be taken if the liquid is hazardous. Close the vent valve or plug, then slowly open the outlet valve – **the filter is now in service and no attempt should be made to open the cover**.

Regular venting of the housing, by opening the vent to permit any trapped air to be expelled, will maintain the operating efficiency of the filter. For safety reasons, it is important to ensure that venting is **ONLY** performed via a valve, that the valve is opened with extreme care and that released fluid is disposed of to an appropriate drain or container. Appropriate measures should be taken if the liquid is hazardous.

The filter can be operated until the increase in the pressure differential across the filter cartridge reaches approximately 1.5 bar g (25psi); at this point the filter cartridges should be replaced.

Removing the Filter from Service

Close the outlet valve

Close the inlet valve

Caution - the filter housing will still be under pressure at this point.

Before opening the filter housing, the pressure must be relieved. This can be done either by carefully opening the vent valve or plug or the drain valve or plug, whichever is most appropriate.

Before opening the closure, open both the drain valves or plugs to allow all of the fluid to drain out of the housing. The vent must be open to allow the housing to drain properly.

If the fluid is hazardous, appropriate measures should be taken before opening the closure.

For safety reasons, it is important to ensure that vent and drain connections (such as any valves or hoses) are secure and that released fluid is disposed of to an appropriate drain or container.

Replacing the Filter cartridges

Open the filter housing according to the instructions given in the section “**Opening the filter housing**”

Remove the compression nut, store it in a safe place to ensure that it will not get dirty or damaged.

Removal of Double Open End style (DOE) cartridges

Remove the spent cartridge by sliding them off the cartridge stand pipe and tie rod.

The new cartridge should be installed according to the instructions described under “**Fitting the Filter Cartridges**”.

Spent Cartridge disposal

The spent filter cartridges should be disposed of in a responsible manner. The filter itself can be disposed of by incineration or as landfill by an authorised contractor; however, it is important for the user to check how the contaminant contained in the filter should be disposed of.

