Data Sheet 10- 1Pass Microbubble air & dirt separator

The Combined Air (Deaerator) & Dirt Separator

1. High capacity auto air vent
2. Fast bleed Valve
3. Drain Valve

Dimensions (mm)								
Model No.	A	B	C	D	E	F	G	Tested to
1 Pass-50	50	430	338	170	25	380	718	21 bar
1 Pass-65	65	430	338	170	25	380	718	21 bar
1 Pass-80	80	490	408	220	25	440	848	21 bar
1 Pass-100	100	490	408	220	25	440	848	21 bar
1 Pass-125	125	630	518	325	25	550	1068	21 bar
1 Pass-150	150	630	518	325	25	550	1068	21 bar
1 Pass-200	200	810	695	410	50	625	1320	21 bar
1 Pass-250	250	880	845	510	50	775	1620	21 bar
1 Pass-300	300	1100	945	610	50	875	1820	21 bar
1 Pass-350	350	1500	1020	770	50	950	1970	21 bar
1 Pass-400	400	1500	1195	770	50	1125	2320	21 bar
1 Pass-450	450	1750	1195	920	50	1125	2320	21 bar

- Maximum flow rate up to 3m/sec

Dearation

The word Dearation describes the removal of dissolved gases from liquids such as air from water. When water is heated or the pressure reduced, gas microbubbles are released into the system. Microbubbles can be the cause of major problems such as pump failure, corrosion and energy loss.

The Solution

The **1Pass** combines the removal of air and dirt through a single unit. Installed at the hottest point in the system the **1Pass** will eliminate these microbubbles from heating and chilled water systems.
The special design of the filter ensures all dirt including magnetite down to 2/3 micron and less is removed.
All magnetite and any other debris will be removed very quickly, ensuring the minimum amount of time the dirt will be in the water system concerned.

Features and Benefits

- Removes air, microbubbles and all types of dirt including magnetite down to 2/3 micron and less
- Greatly reduced commissioning times after initial fill.
- Removes 99% of all types of dirt including magnetite on the first pass through the unit
- Longer system life (through rapid air and dirt elimination)
- Cleans and de-aerates the system quicker
- Low-pressure drop
- One directional flow.
- Water flows in one side and comes out clean and de-aerated the other.
- Works exceptionally well at 6 bar in heating systems and 4 bar in chilled water for Microbubble removal.
- Maximum Temperature. 110 °c. Higher temperature units available on request.
- Tested to 21 bar
- All stainless steel vessel
- Air collects in the air chamber before being automatically vented
- Floating dirt can be removed by opening the 3 way valve situated under the air vent.
- The same valve is used for releasing air when filling the system
- Can be flushed while fully operational (no need to shut down)
- An internal stainless steel filter to aid removal of air, microbubbles and dirt.
- Smooth surfaces with Stainless Steel lead to lower friction
- Stainless will not degrade in service thanks to its excellent resistance to corrosion.
- Stainless Steel is extensively more resistant to oxidation by water and biocides than carbon steel. Therefore Stainless Steels does not contribute to oxidation, sludge's etc.;
- Thermal properties of stainless steel. They are far superior to iron or carbon steel.

Stainless Steel: Safe, Clean, Efficient and Hygienic

- Stainless is highly resistant against micro bacteria attacks plus lower bacteria colonization
- Hygienic and cleanable material (Smooth surface internally & externally), due to their very high passive film (protecting the surface)
- Lower adhesion of deposits (dirt and sludge) with the smooth internals of Stainless Steels. Sludge & magnetite is washed/ removed from the collection chamber far easier than the inferior iron/ carbon steel
- Stability, Stainless Steel is basically inert in water. Leaching of alloying elements is within safe limits, as a result they provide better quality water. No turbidity problems. All resulting in less bacterial slime, low energy consumption, low cleaning costs, good for conveying wet solids.
- Excellent durability and abrasion resistance, as Stainless Steels are resistant to crevice corrosion, cavitations and wear in pure and polluted waters as well as in atmosphere (even polluted), they are cost effective for long term use and do not cause environmental pollution.

The 1Pass location

Positioning the **1Pass** in the pipework system is vital for optimum performance.
Specific rules:

Chilled water

- In cooling systems this should be in the return. The **1Pass** should always be installed before equipment that needs protection from air, dirt, sludge etc.

Heating Systems

- In heating systems when microbubble air removal is the primary concern the **1Pass** should be installed in the flow, preferably at the highest temperature next to the heat source.

- In heating systems where dirt removal is the primary concern the 1 pass should be in the return. It should always be installed before equipment that needs protection from dirt, sludge, etc. (i.e. boilers, control valves, pumps, etc.)

Please Note:
When a **1Pass** Separator is installed on the return to the boiler an Air Separator (model CleanVent) should also be installed on the flow out of the boiler.

The static head must not exceed 60 metres in a Heating system.
Maximum static head must not exceed 40 metres in a chilled water system.

N.B. if the static head is greater than these figures the efficiency of the **1Pass** is reduced

Commissioning

The **1Pass** requires no special commissioning. All units are fitted with a 3 way ball valve, which should be opened when initially filling the system. The same valve is used for draining off floating scum and also prevents the possibility of dirt clogging the air vent. Maintenance will be required to remove trapped dirt and sludge. Opening the ball valve at the bottom of the unit does this. The valve may be opened while the system is under pressure.

Flushing

The filter can be cleaned by back flushing the separator under system pressure.
Just simply open the ball valve at the bottom of the separator Leave the ball valve open till the water runs clear. The separator is now clean

You can backflush the 1Pass through the 3-way ball valve with mains water as another method of cleaning the filter inside the unit. Two isolation valves (not supplied) fitted either side of the unit must be closed and the ball valve at the bottom of the 1Pass must be opened.

Cleaning the Internal Filter

Periodically the special filter may need cleaning. Isolate the **1Pass**, drain the unit. Remove the top flange. Remove the filter located inside the housing and rinse to remove all dirt/debris. Refit the filter. Tighten all bolts on the flange.

Scalding is a danger at high pressures and temperatures. Ensure that the water is safely piped to drain before opening the valve.
The system pressure will flush the dirt out. Leave the valve open until the collected dirt has been flushed out; repeat this operation every few days. Once the water is clear it may be possible to drain every 6 months or so depending on the size and age of the system.
Most of the dissolved air will be removed in a few days. However this may vary from system to system.
1Pass Dirt separators can only remove dirt that is circulating.

On problematic and especially very dirty systems the **1Pass** may require the filter cleaning several times in one day
On time sensitive systems where shut downs are limited by very short periods of time, all **1Pass** separators may need a by-pass installed around the unit or a standby **1Pass** suitably located in pipework. Please allow approximately *10 minutes to remove clean and refit the filter.
*Larger units may take more time to clean the filter.

Flanges

All flanges are drilled to BS 4504 PN16 as standard.

Drain valve

All models are supplied with a ball valve for draining the collected dirt and sludge.