# SSAD – Inline Air and Dirt Separator

The SSAD is a high efficiency in-line air separator combined with a dirt trap, suitable for use on heating and chilled systems.

In sealed heating systems free and dissolved air cause a number of problems. Micro-bubbles form on the pump suction as a direct result of localised pressure drop. This directly affects the liquid displacement of rotary pumps, reducing the flow capacity and therefore the efficiency of the system.

The presence of micro-bubbles and dissolved gas can reduce the liquid displacement of a pump by 10 to 45%.

Heat will also allow dissolved gasses to be drawn out of solution, following Henry's law, placement of this equipment is important to guarantee effective operation.

Corrosion is a process that is difficult, if not impossible, to stop once it has begun. Corroded metal becomes dislodged and becomes water borne debris. This debris, along with other contaminants in the system, clogs heat exchanger channels, fouls filters and causes excessive wear in circulating pumps.

Effective removal of free air and debris is essential for increasing the operational life of the system as a whole.

## FEATURES

- Patented Pall Ring Technology
- Additional Manual Air Vent For Rapid Air Release During Commissioning
- Manual Dirt / Sludge Drain Valve
- Low Pressure Drop

## MAXIMUM OPERATING CONDITIONS

| | |
|---|---|
| Liquid Temperature Range | -10 to 110°C |
| Maximum Working Pressure | 10 bar |
| Ambient Temperature | up to 50 °C |
| Relative Humidity | 95% non condensing |

## SELECTION

Flow Rate (f) l/s
Maximum Velocity (Vp) m/s (3.0 m/s Max)

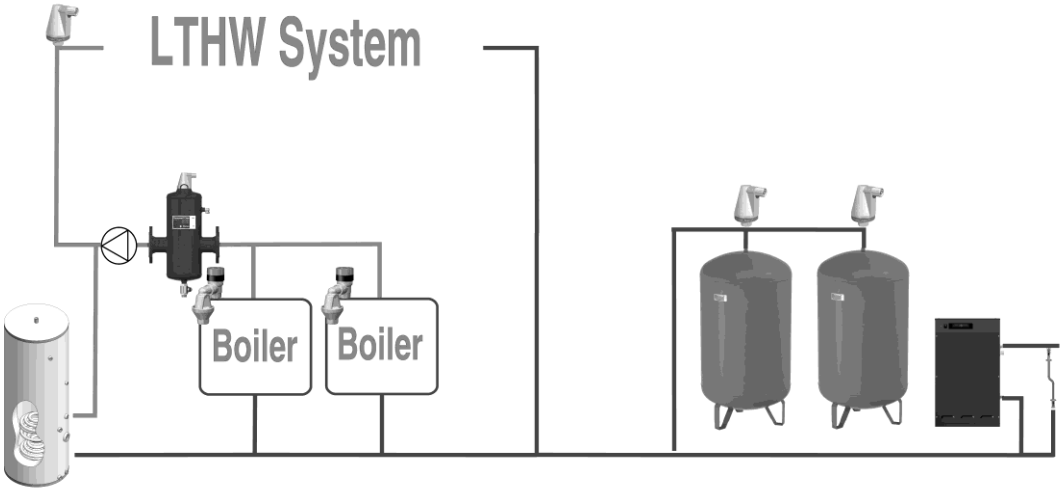
$$\text{Minimum Size (mm)} = 2000 * \sqrt{\frac{\left[\frac{f * 0.001}{Vp}\right]}{\pi}}$$

## LOCATION

The SSAD should preferably be installed in the hottest part of the system, (typically the flow pipe from the heat exchanger).

The SSAD should also preferably be situated on the suction side of the circulating pump to take advantage of the localised pressure drop.

**TYPICAL INSTALLATION (Low Temperature Heating Water <90°C)**



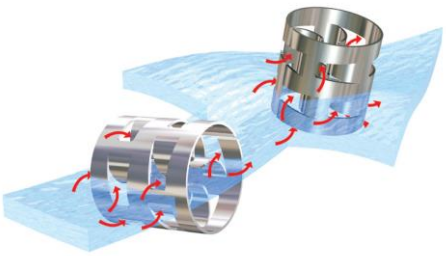

**PRESSURE DROP**

The expression for the calculation of pressure drop in relation to flow rate on Air and Dirt removal equipment is as follows:

**Δp** Pressure Drop (KPa)
**f** Water Flow Rate (l/s)
**K** Equipment Co-efficient (see right)

$$\Delta p = f^2 * K$$

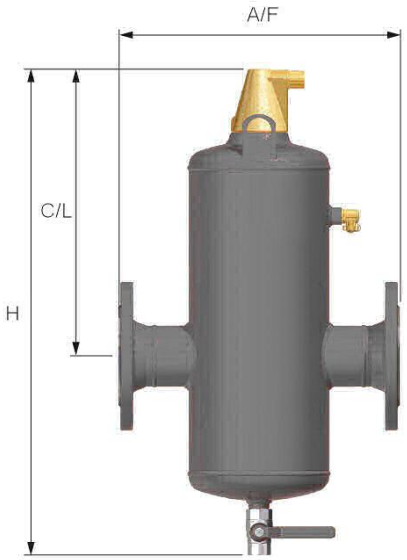
| Size | K |
|---|---|
| 50 | 0.225 |
| 65 | 0.0864198 |
| 80 | 0.046875 |
| 100 | 0.015625 |
| 125 | 0.0073 |
| 150 | 0.0034444 |
| 200 | 0.00125 |
| 250 | 0.0005 |
| 300 | 0.0002667 |
| 350 | 0.0001667 |
| 400 | 0.0001041 |
| 500 | 4.444E-05 |
| 600 | 2.089E-05 |



**PALL RINGS**

The cross section presented to the flowing water has no clear path through, all the water is diverted over the PALL rings. The increased surface area and hydrofoil action of the PALL rings allow further pockets of lower pressure to develop accelerating the de-aeration process and promoting coalescence (microbubbles merging into larger more buoyant bubbles) on the large stainless steel surface area of the PALL rings. The automatic air vent on the top of the unit is then used to vent the larger bubbles to atmosphere.

The SSAD also utilises a sump / sludge trap. As water borne debris hits the Pall rings the forward momentum is lost, the debris is then free to fall into the sludge trap ready for manual venting at a later stage.




| Type | Volume | System connection | | Weight | Dimensions (mm) | | | Order code |
|---|---|---|---|---|---|---|---|---|
| | (l) | DN | mm | kg | H | A/F | C/L | |
| SSAD DN50 PN16 Flanged | 10 | 50 | | 15.0 | 560 | 350 | 333 | 98333312 |
| SSAD DN65 PN16 Flanged | 10 | 65 | | 15.7 | 560 | 350 | 333 | 98333313 |
| SSAD DN80 PN16 Flanged | 33 | 80 | | 26.0 | 756 | 470 | 435 | 98333314 |
| SSAD DN100 PN16 Flanged | 33 | 100 | | 28.5 | 756 | 470 | 435 | 98333315 |
| SSAD DN125 PN16 Flanged | 78 | 125 | | 52.0 | 970 | 635 | 515 | 98333316 |
| SSAD DN150 PN16 Flanged | 78 | 150 | | 56.0 | 970 | 635 | 515 | 98333317 |
| SSAD DN200 PN16 Flanged | 158 | 200 | | 89.0 | 1193 | 774 | 705 | 98333318 |
| SSAD DN250 PN16 Flanged | 370 | 250 | | 175.0 | 1577 | 990 | 892 | 98333319 |
| SSAD DN300 PN16 Flanged | 415 | 300 | | 202.0 | 1742 | 1006 | 1032 | 98333320 |
| SSAD DN350 PN16 Flanged | 840 | 350 | | 322.0 | 1986 | 1214 | 1109 | 98333321 |
| SSAD DN400 PN16 Flanged | 927 | 400 | | 364.0 | 2159 | 1220 | 1252 | 98333322 |
| SSAD DN500 PN16 Flanged | 1768 | 500 | | 663.0 | 2590 | 1580 | 1470 | 98333323 |
| SSAD DN600 PN16 Flanged | 3056 | 600 | | 1098.0 | 3085 | 1870 | 1757 | 98333324 |
| SSAD DN50 For Welding | 10 | | 60.3 | 9.5 | 560 | 260 | 333 | 98333351 |
| SSAD DN65 For Welding | 10 | | 76.1 | 9.7 | 560 | 260 | 333 | 98333352 |
| SSAD DN80 For Welding | 33 | | 88.9 | 18.0 | 756 | 370 | 435 | 98333353 |
| SSAD DN100 For Welding | 33 | | 114.3 | 19.0 | 756 | 370 | 435 | 98333354 |
| SSAD DN125 For Welding | 78 | | 139.7 | 39.0 | 970 | 525 | 515 | 98333355 |
| SSAD DN150 For Welding | 78 | | 168.3 | 40.0 | 970 | 525 | 515 | 98333356 |
| SSAD DN200 For Welding | 158 | | 219.1 | 66.0 | 1193 | 650 | 705 | 98333357 |
| SSAD DN250 For Welding | 370 | | 273.1 | 141.0 | 1577 | 850 | 892 | 98333358 |
| SSAD DN300 For Welding | 415 | | 323.9 | 157.0 | 1742 | 850 | 1032 | 98333359 |
| SSAD DN350 For Welding | 840 | | 355.6 | 256.0 | 1986 | 1050 | 1109 | 98333360 |
| SSAD DN400 For Welding | 927 | | 406.4 | 281.0 | 2159 | 1050 | 1252 | 98333361 |
| SSAD DN500 For Welding | 1768 | | 508.0 | 530.0 | 2590 | 1400 | 1470 | 98333362 |
| SSAD DN600 For Welding | 3056 | | 610.0 | 890.0 | 3085 | 1680 | 1757 | 98333363 |