

VORTEX
by HumiTech



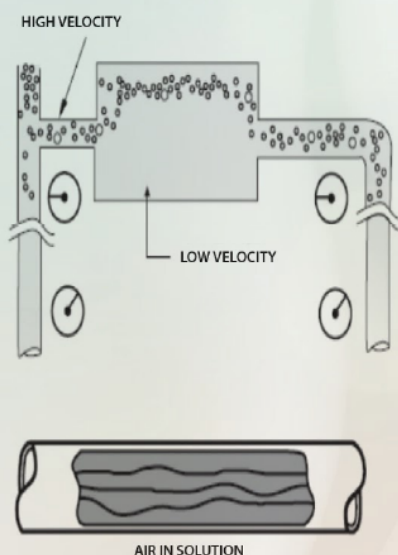
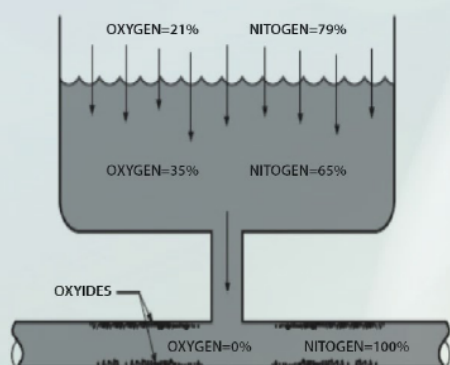
AIR SEPARATORS

Made In Turkey

Description:

Water contains a certain amount of entrained air. If this air comes out of solution, it can increase the corrosion rates of metals within the system. In addition, air can form sinus at the top of pipes and cooling or heating units. These air sinuses can actually resist or block the water flow in a hydronic piping system.

VORTEX is an in-line air separator is used to continuously remove the air and micro-bubbles contained in the closed hydronic circuits of cooling and heating systems. The VORTEX air separator is capable of removing automatically all the air present in circulating fluid down to micro-bubble level.



The circulation of fully de-aerated water enables the equipment to operate under optimum conditions, free from any noise, corrosion, cavitation or any mechanical damage. Micro-bubbles, fusing with each other, and increase in its volume until they become large enough to rise to the top where they are automatically released out through the automatic air vent located at the top of the air separator.

VORTEX air separator installed in-line for horizontal pipes, made of steel with flanged connections and comes with air vent, drain and flushing outlets.

VORTEX Air Separating and Elimination Components:

a.

Air separator which separates entrained air from flowing system water by the creation of a vortex that allows free air bubbles to rise in the center, the point of lowest velocity, to an air collection chamber.

b.

A unique, automatic air vent, capable of eliminating air to the atmosphere as fast as it is separated from system water, through a full open orifice.

Benefits of The VORTEX Air Separators:

- Removes all circulating air and micro bubbles effectively.
- Removes trapped air when installed at the correct location.
- Greatly reduces the need for manual venting.
- Constant low-pressure drop.
- No unnecessary shutdown.
- Connection diameters from DN50 to DN600.
- Suitable for various pressures and temperatures.
- Exceptional guarantee.
- Reduced commissioning times after initial fill.
- Optimum heat transfer.
- Increased component life.
- No pump cavitation.
- Quiet operation.
- Two-year guarantee



Technical Specifications and Materials:

- Body : Carbon Steel - ST37 / Nickel Coated.
- Internal Element : Stainless steel.
- Max. working pressure : 10 Bars.
- Max. Working Temperature : 110 oC.
- Test pressure : 15 Bars (Hydrostatic pressure test for 240 Sec.).
- Nominal flow velocity : 1.5 m/s.
- Max. flow velocity : 3 m/s.
- Max. percentage of glycol : 50%
- Flange : PN16 (EN-1092).

Installations For Better Performance:

Microbubbles are released at the hottest spot in an installation, and this release of gas is determined by the solubility of gases in water. The solubility reduces with an increase in temperature. In case of a decrease in pressure, Henry's law implies further solubility. In simple terms, the air is released from the water as the temperature increases or the pressure decreases.

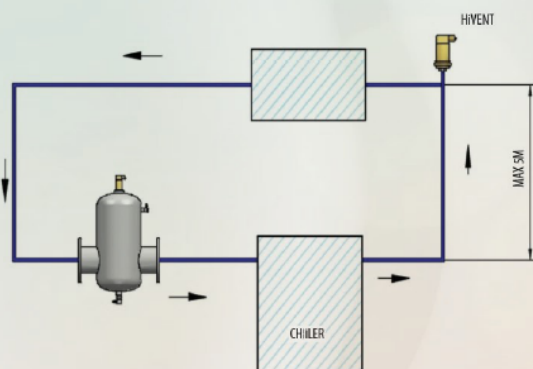
VORTEX air separators must be installed at the hottest part of the system for optimum performance. The static head must not exceed 15m for heating system and 5m for cooling system.

VORTEX units may be used in heating or cooling systems to ensure the progressive removal of air which is continuously formed. The units should preferably be installed on the pump suction side or after the boiler, as these are the points where the formation of micro-bubbles is greatest. In chilled water systems the unit must be located in the return close to the Chiller.

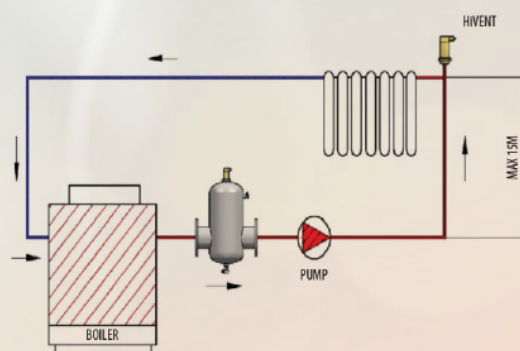


VORTEX air separators for horizontal pipes must be installed vertically. Flow direction of the air separator is bidirectional (flow in either direction is permitted).

The efficiency of the unit will be reduced if the static head is exceeded and/or maximum flow velocity of 3 m/s is exceeded.

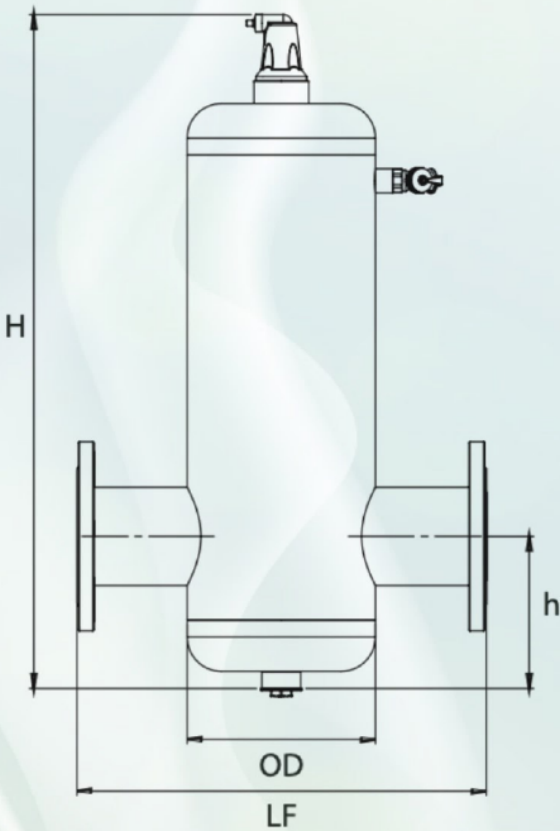


Air Separator in Cooling Systems



Air Separator in Heating Systems

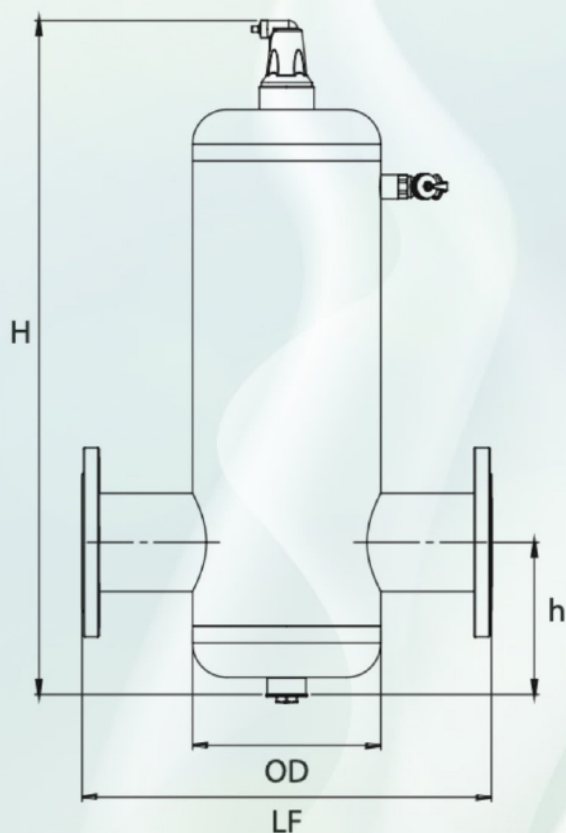
Dimensions:



Code	Dimensions (mm)						Standard Flow (1.5 m/s Flow Speed)		
	DN	H	LF	OD	h	Kg	L/S	M3/h	Kpa
VAS-50	50	482	350	168.3	138	12	3.3	12	3
VAS-65	65	482	350	168.3	138	12	6.3	22.5	2.7
VAS-80	80	607	470	219.1	177	21	8.3	30	2.9
VAS-100	100	607	475	219.1	177	22	12.5	45	3.7
VAS-125	125	797	635	323.9	267	44	20.8	75	4.2
VAS-150	150	797	635	323.9	267	46	31.3	112.5	4.9
VAS-200	200	997	775	400	297	55	52.1	187.5	5.8
VAS-250	250	1237	890	500	357	90	83.3	300	6.9
VAS-300	300	1557	1005	600	395	150	114.6	412.5	7.7
VAS-350	350	1940	1128	700	430	210	143.8	517.5	
VAS-400	400	2170	1228	800	480	285	188.3	678	
VAS-450	450	2388	1330	900	540	330	238.3	858	
VAS-500	500	2680	1430	1000	590	440	294.2	1059	
VAS-600	600	3020	1630	1200	680	540	423.8	1525.5	

• NOTE: Dimensions may not reflect the actual size of the air separators.

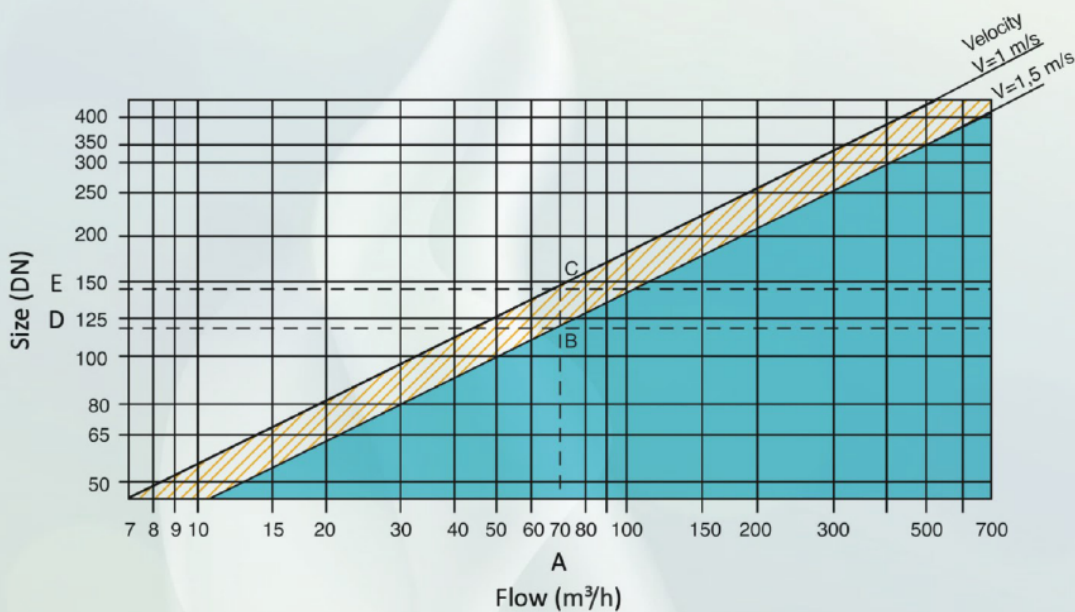
Dimensions:



Code	Dimensions (mm)					Maximum Flow (3 m/s Flow Speed)			
	DN	H	LF	OD	h	Kg	L/S	M3/h	Kpa
VAH-50	50	650	350	168.3	150	25	5.8	21	11.8
VAH-65	65	650	350	168.3	150	26	10	36	11.6
VAH-80	80	730	470	219.1	200	28	15	54	12.4
VAH-100	100	730	475	219.1	200	30	23.3	84	14.6
VAH-125	125	1067	635	323.9	250	58	36.7	132	16.8
VAH-150	150	1067	635	323.9	250	60	52.8	190	19.4
VAH-200	200	1317	775	400	300	110	94.2	339	23.1
VAH-250	250	1677	890	500	360	145	146.9	529	27.7
VAH-300	300	2032	1005	600	410	220	211.9	763	31
VAH-350	350	2430	1128	700	543	320	288.3	1038	
VAH-400	400	2707	1228	800	609	390	376.7	1356	
VAH-450	450	2998	1330	900	650	570	476.7	1716	
VAH-500	500	3220	1430	1000	703	690	588.6	2119	
VAH-600	600	3870	1630	1200	820	850	847.8	3052	

• NOTE: Dimensions may not reflect the actual size of the air separators.

Sizing:



This above selection chart can be used for both heating and cooling systems.

For optimum results, a flow velocity should be less than 1,5 m/s. Above 1,5 m/s flow velocities will affect the air separates' ability to eliminate air.

Two examples of different installation place possibilities:

A) If the installation place is low pressure and high temperature, the velocity should be 1,5 m/s.

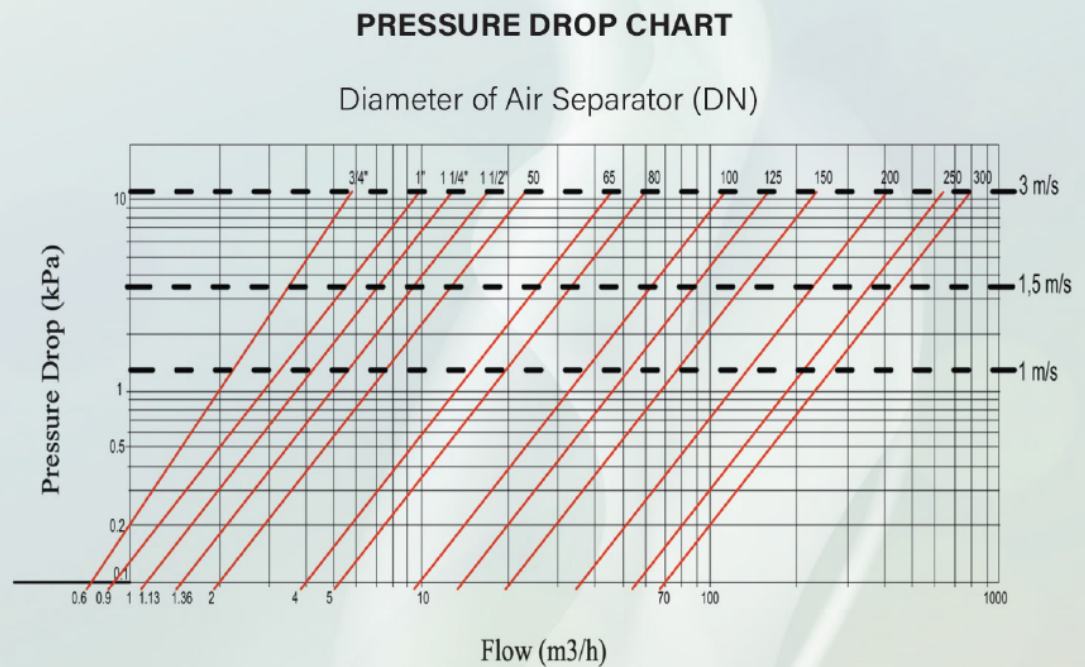
1. From the 'Flow' axis at 70 m³/h at point A, move vertically to the 1,5 m/s water velocity curve at point B.
2. Move left from point B to meet the "Dimension" axis at point D.
3. Always choose the dimension that is the nearest above the endpoint on the axis, for this example choose DN125.

B) If the installation place is high pressure and high temperature, the velocity should be 1 m/s.

1. From the 'Flow' axis at 70 m³/h at point A, move vertically to the 1 m/s water velocity curve at point C.
2. Move left from point C to meet the "Dimension" axis at point E.
3. Always choose the dimension that is the nearest to the endpoint on the axis, for this example choose DN150.

Pressure Drop:

Resistance graph to flow various diameters of VORTEX Air Separators as below:



Example:

What will be the pressure drop of VORTEX air separator size DN150 at water flow of 70 m³/h ?

1. From the "Flow axis" at 70 m³/h, move vertically to intersect with Dimension curve size DN150.
2. Move left from intersection point to meet the "Pressure Drop" axis.
3. For this example; the Pressure Drop will be 1 kPa



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