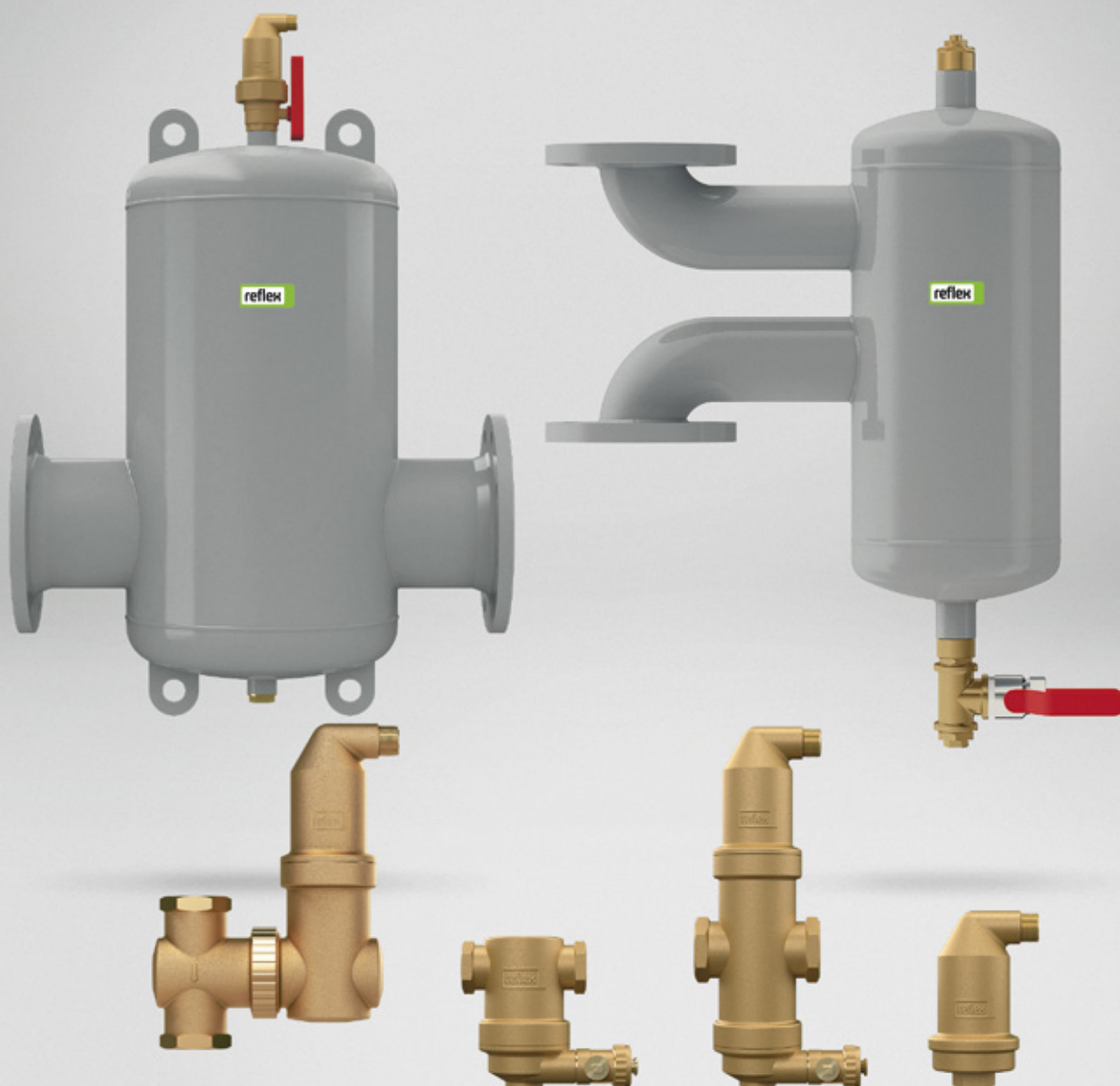




Thinking solutions.

# Separation technology



Exvoid, Exdirt, Extwin

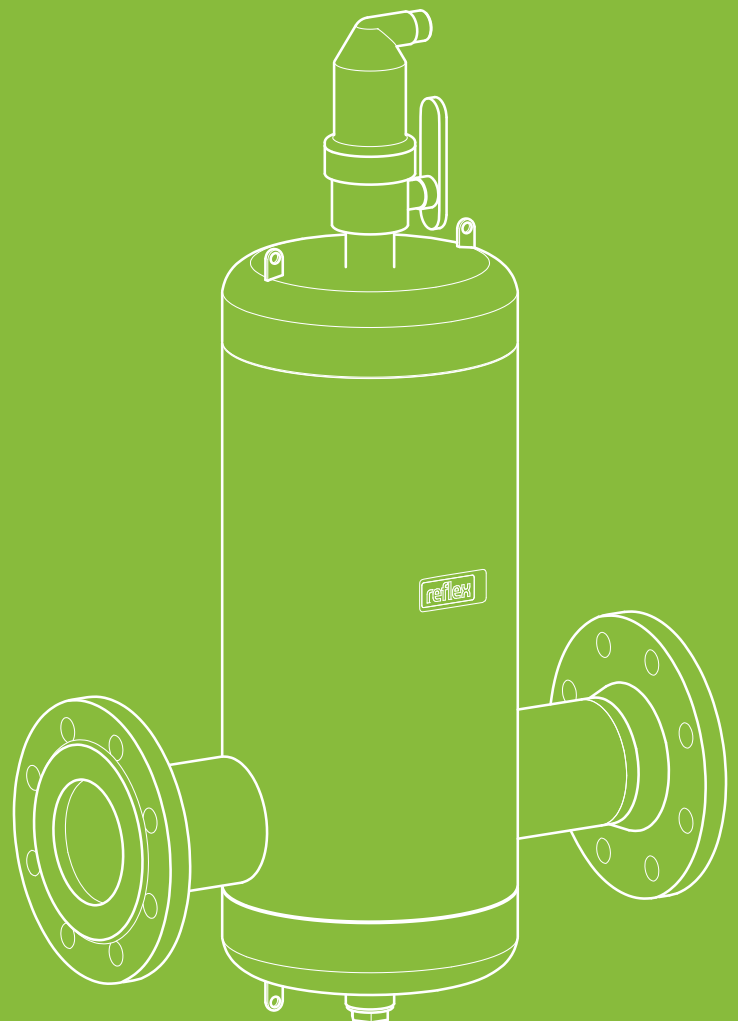
## Key advantages

### Exvoid T large and quick air vent

- Reliably assures the automatic elimination of air and other gas pockets in heating, solar and cooling systems
- Prevents flow noises, disruptions to circulation, performance impairment and avoidable corrosion damage
- Reduces the need for maintenance
- Suitable for various temperatures and applications

### Exvoid air and micro-bubble separator

- Extracts circulating free air and gas bubbles from heating, solar and cooling systems and when filling and draining new and existing facilities
- Fully automatic continuous operation
- Generates only a minimal, constant pressure drop
- Enables much faster hydraulic balancing after filling processes
- Protects against noise, corrosion wear and impaired performance caused by the formation of larger air pockets

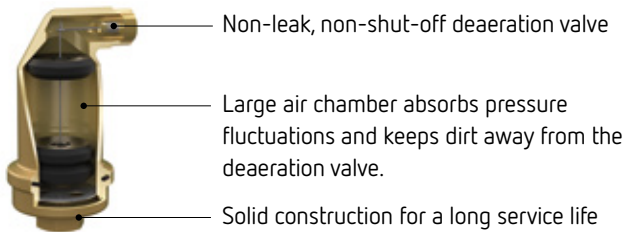


\* 5 years guarantee for brass separators from date of manufacture.  
Please consider the guarantee conditions and guidelines at [www.reflex-winkelmann.com/en](http://www.reflex-winkelmann.com/en)

# Construction, function and installation

## Exvoid T Large and quick vent valves

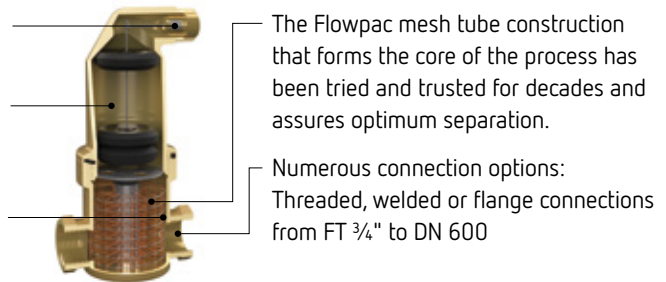
### Construction



Exvoid T (brass type)

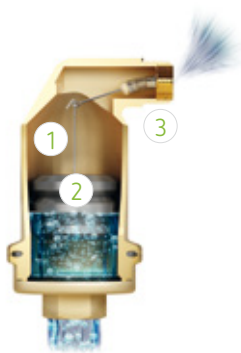
## Exvoid Air and microbubble separator

### Construction



Exvoid (brass type)

### Exvoid T function principle



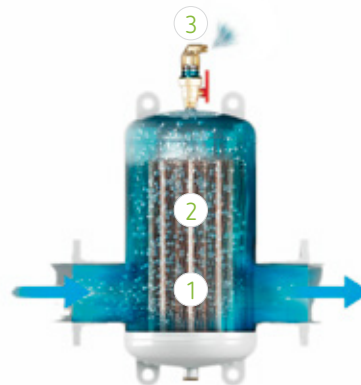
Exvoid T (brass type)

Intelligent design engineering guarantees permanently reliable automatic operation:

1. Gas is collected in a large chamber.
2. As a result, the water level in the chamber drops, taking a float down with it.
3. Once the float has sunk to a certain level, it opens the deaeration valve.

The combination of the valve, which is subjected to fourfold testing, and the large air chamber assure reliable operation, even if pressure fluctuates enormously or the medium is very dirty.

### Exvoid function principle



Exvoid (steel type)

As micro-bubbles are carried in the flow, special measures are needed to remove them efficiently.

1. The cross section of the housing is larger than the connection dimensions, which reduces flow speed in the separator.
2. At the same time, the flow is passed through a special wire mesh. The resulting turbulence excites gas bubbles to move in an indeterminate direction.
3. Depending on the flow rate, density and volume of the particles, the natural settling of some of the gas bubbles is supported. Micro-bubbles that are moving freely and have settled on the Flowpac mesh tube join, rise and are discharged from the system through the upper vent.

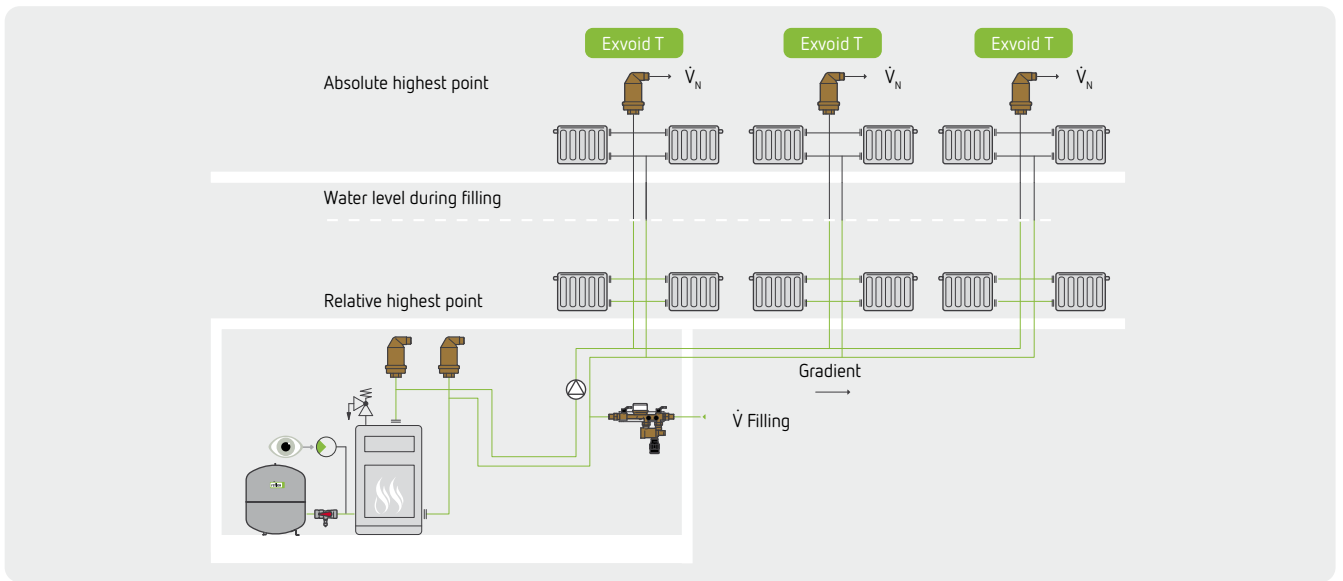
## Exvoid T Large and quick vent valves

### Installation

#### Installation location

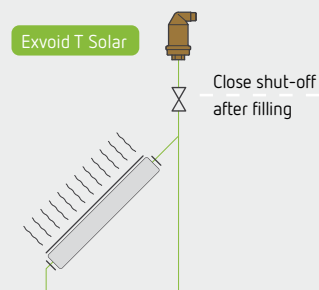
Automatic vents, suitable for any facility, for initial venting or venting after repairs. They are installed at all relative and absolute highest points or in collection areas designed specifically for the purpose.

- Facilities must be carefully vented at the highest points during filling, e.g. using Exvoid T quick air vents. Exvoid T vents help to partially automate the venting process. They are used to vent boilers and ensure that the water is kept free from air and that heat transfer is optimised. At the end of venting, the water level rises sufficiently to automatically close them.
- Exvoid T must always be installed in accessible areas, do not cover them with insulation! Make sure the piping gradient is appropriate.
- The facility must be filled at a flow rate  $\dot{V}$  to prevent any noticeable increase in pressure in the system when air is discharged through the vents. The flow rate must be smaller than the rated volumetric flow:  $\dot{V} \leq \sum \dot{V}_N$ .



Displacement venting using Exvoid T in a heating system

Special vents with higher permissible temperatures must be used in solar systems. These vents must be shut off during operation to prevent the risk of steam which forms in the collector escaping out through the vent.



Displacement venting using Exvoid T Solar in a solar system



The installation of a Reflex Servitec vacuum spray-tube degassing is recommended to ensure an absolutely air- and gas-free system as well as the removal of dissolved gases.

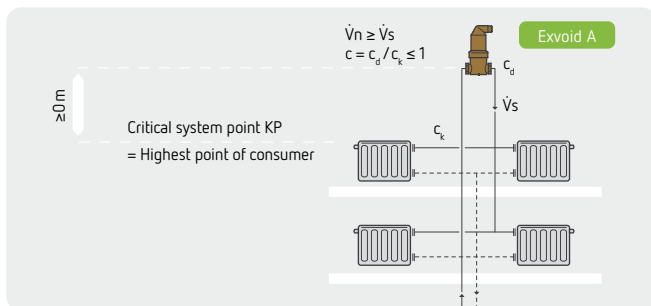
## Exvoid T Large and quick vent valves

### Installation

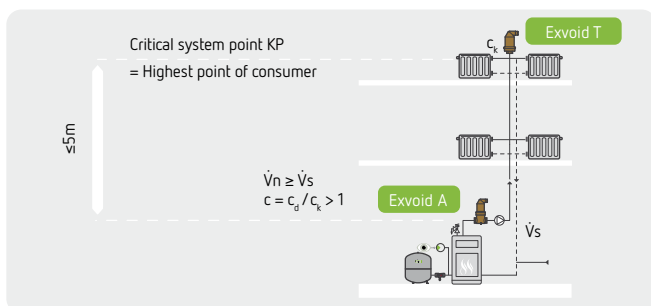
#### Installation location

In a heating system: right after the boiler upstream of the pump; in a cooling system: upstream of the cold generator in the return flow.

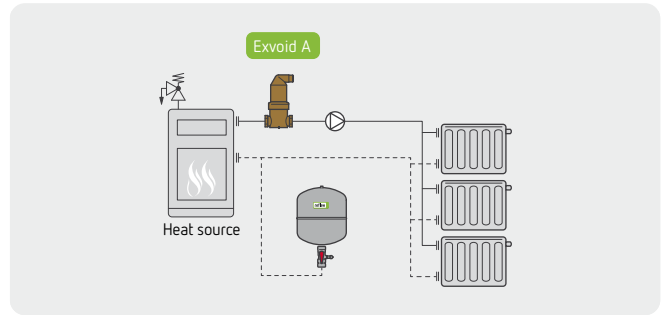
- Gas is released at higher pressures and temperatures. Micro-bubble separators therefore need to be installed at the hottest point; right after the boiler or mixing valve in a heating system and upstream of the cold generator in the return flow in a cooling system. Exvoid must be installed upstream of any bypass.
- It is installed right next to the heat generator or cooling source, in areas such as roof central heating systems or technical centres located in high places, air collecting points and all areas where pressure- or temperature-related degassing processes take place.
- Relative to the gas concentration in the water, installation is ideal at high points where dissolved gases may be released. This is, however, often difficult to implement in practice as rising pressure can cause free gases to dissolve again right beneath the highest point. So the functional reliability of micro-bubble separators can be impaired just 5 metres below the highest point. The basic principle applies that the higher the installation location and the warmer the medium, the better the functional performance.



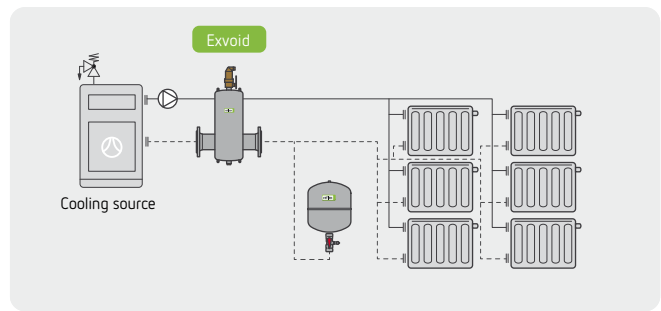
Exvoid A micro-bubble separator at the highest point (or higher)



Exvoid A micro-bubble separator beneath the highest point



Exvoid (brass) in a heating system



Exvoid (steel) in a cooling system

#### Observe the critical system point during installation

Critical system point (KP) describes the point during operation at which the greatest risk of bubble formation exists, which must, however, be prevented to avoid malfunctions. The pressure at the critical system point has been specified as 0.5 bar, which is equivalent to the minimum requirements for highest points at temperatures < 100 °C. The pressure must be provided via supply pressure  $p_s$  by the pressure maintenance system.

#### Exvoid A micro-bubble separator at the highest point (or higher)

Installing at the level of the critical system point or above it (as shown in the illustration) offers two advantages:

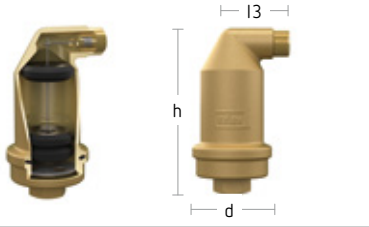
The micro-bubble separator can act as a vent as well when filling the facility, and adherence to the recommended nitrogen limits relevant to stationary gas content in facility water is assured.

#### Exvoid A micro-bubble separator beneath the highest point

In smaller, compact facilities with short flow paths, installation of the micro-bubble separator up to 5 metres below the critical system point can be tolerated. The installation of Exvoid T at the critical system point is then recommended. The recommended nitrogen limits  $c_k$  at installation location where gas content is  $c_d$  is then no longer possible.

# Exvoid product range

## Exvoid T Large and quick vent valves



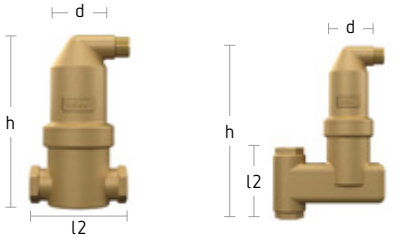
### Technical features

- Fourfold tested venting valve for superb operational reliability
- For vertical installation
- System connection FT 1/2" and MT 3/8" incl. one 1/2" connecting thread on the venting valve

Exvoid T

	Type	Art. No.	DG	PQ [pce]	Connection c	Ø d [mm]	Height h [mm]	Length l3 [mm]	Weight [kg]
<b>Brass, Vertical</b>									
10 bar 110 °C	T 1/2	9250000	0082	12	IG 1/2"	63	122	46	0.63
	T 3/8	9250038	0082	12	AG 3/8"	63	132	46	0.73
<b>Solar, Brass, Vertical</b>									
10 bar 180 °C	T 1/2 S	9250600	0082	12	IG 1/2"	63	122	46	0.64
	T 3/8 S	9250638	0082	12	AG 3/8"	63	132	46	0.67

## Exvoid Air and microbubble separator



### Technical features

- Connection diameter: A22–2" (DN 20–DN 50)
- Flow rate: 1.25–8.0 m³/h (at v ≈ 1.0 m/s)
- Exiso heat insulation A22–2" (DN 20–DN 50)
- Application: up to 110 °C or 180 °C and 10 bar
- Installation position (solar up to 180 °C): horizontal, vertical

Exvoid horizontal

Exvoid vertical

	Type	Art. No.	DG	PQ [pce]	Connection c	V <sub>max</sub> [m³/h]	Ø d [mm]	Height h [mm]	Length l2 [mm]	Weight [kg]
<b>Brass, Horizontal</b>										
10 bar 110 °C	A 22	9251000	0082	12	22 mm	1.2	63	165	99	1.08
	A 3/4	9251010	0082	12	IG 3/4"	1.2	63	165	85	1.03
	A 1	9251020	0082	8	IG 1"	2.0	63	182	88	1.12
	A 1 1/4	9251030	0082	8	IG 1 1/4"	3.8	63	202	88	1.23
	A 1 1/2	9251040	0082	8	IG 1 1/2"	5.0	63	236	88	1.44
A 2	9251050	0082	1	IG 2"	7.5	100	277	112	3.18	
<b>Brass, Vertical</b>										
10 bar 110 °C	A 22V	9251500	0082	8	22 mm	1.2	63	216	104	1.09
	A 3/4V	9251510	0082	8	IG 3/4"	1.2	63	206	84	1.90
	A 1V	9251520	0082	8	IG 1"	2.0	63	206	84	1.57
<b>Solar, Brass, Horizontal</b>										
10 bar 180 °C	A 22 S	9251600	0082	12	22 mm	1.2	63	165	99	1.20
	A 3/4 S	9251610	0082	12	IG 3/4"	1.2	63	165	85	0.94
	A 1 S	9251620	0082	8	IG 1"	2.0	63	182	88	1.10
	A 1 1/4 S	9251630	0082	8	IG 1 1/4"	3.7	63	202	88	1.40
	A 1 1/2 S	9251640	0082	8	IG 1 1/2"	5.0	63	236	88	1.43
<b>Solar, Brass, Vertical</b>										
10 bar 180 °C	A 22 SV	9251700	0082	8	22 mm	1.2	63	216	104	1.67
	A 3/4 SV	9251710	0082	8	IG 3/4"	1.2	63	206	84	1.90
	A 1 SV	9251720	0082	8	IG 1"	2.0	63	206	84	1.90

## Exvoid Twist Air and microbubble separator



Twist separator connections are infinitely rotatable 360° (non-ratcheting), making them suitable for a wide range of different installation positions. The connection can be rotated by hand.



Exvoid Twist

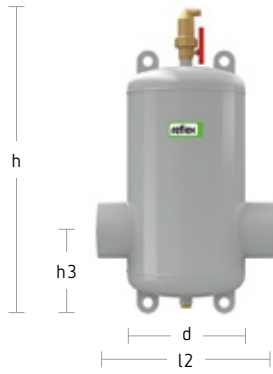
### Technical features

- Infinitely rotatable (non-ratcheting) brass separator for installation in any position
- Connection diameter: A 22–1 ½" (DN 20–DN 40)
- Volumetric flow: 1.25–5.0 m<sup>3</sup>/h (at v ≈ 1.0 m/s)
- Exiso heat insulation A 22–1 ½" (DN 20–DN 40)
- Brass casing
- Area of application: up to 110 °C
- Installation position: 360° infinitely rotatable (non-ratcheting)
- Water/glycol mixture up to a mixing ratio of 50 :50 (at least 25%)

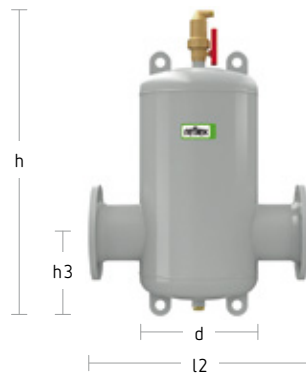
	Type	Art. No.	DG	PQ [pce]	Connection c	V <sub>max</sub> [m <sup>3</sup> /h]	Ø d [mm]	Height h [mm]	Length l2 [mm]	Weight [kg]
Twist, Brass, Rotatable										
10 bar 110 °C	AT 22	9257200	0092	6	22 mm	1.2	63	218	109	2.01
	AT 28	9257210	0092	6	28 mm	2.0	63	219	111	2.18
	AT ¾	9257220	0092	6	IG ¾"	1.2	63	207	85	1.90
	AT 1	9257230	0092	6	IG 1"	2.0	63	214	100	2.03
	AT 1 ¼	9257240	0092	4	IG 1 ¼"	3.8	63	264	100	2.64
	AT 1 ½	9257250	0092	4	IG 1 ½"	5.0	63	264	100	2.48

The Exiso heat insulation for the above separators can be found under accessories on page 35.

**Exvoid** Air and microbubble separator



Exvoid Steel welded connection



Exvoid Steel flange connection



Exvoid Steel cutaway model

Technical features

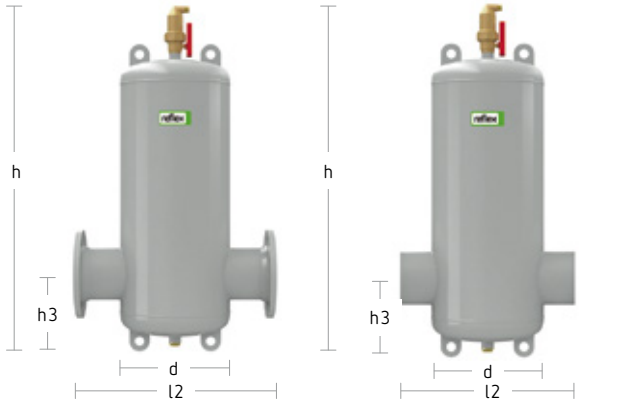
- Connection: DN 50 – DN 600
- Flow rate: 12.5 – 405 m<sup>3</sup>/h
- Exiso heat insulation: DN 50 – DN 150, other types and nominal diameters on request
- Steel housing
- Automatic venting with integrated shut-off valve
- Application: up to 110 °C and 10 bar, further pressure ratings and temperatures on request

	Type	Art. No.	DG	Connection c	V <sub>max</sub> [m <sup>3</sup> /h]	Ø d [mm]	Height h [mm]	Height h3 [mm]	Height h6 [mm]	Length l2 [mm]	Weight [kg]
<b>Painted steel, Flange</b>											
10 bar 110 °C	A 50	8251300	0083	DN50/PN16	12.5	132	625	153	50	350	9.00
	A 65	8251310	0083	DN65/PN16	20.0	132	625	163	50	350	10.00
	A 80	8251320	0083	DN80/PN16	27.0	206	740	159	50	470	16.00
	A 100	8251330	0083	DN100/PN16	47.0	206	740	169	50	475	19.00
	A 125	8251340	0083	DN125/PN16	72.0	354	915	214	50	635	35.00
	A 150	8251350	0083	DN150/PN16	108.0	409	915	229	50	635	39.00
	A 200	8251360	0083	DN200/PN16	180.0	409	1.125	284	50	775	65.00
	A 250	8251370	0083	DN250/PN16	288.0	480	1.402	351	50	890	108.00
	A 300	8251380	0083	DN300/PN16	405.0	634	1.612	406	50	1.005	158.00
<b>Painted steel, Welded connector</b>											
10 bar 110 °C	A 60.3	8251100	0083	60.3	12.5	132	625	153	50	260	3.00
	A 76.1	8251110	0083	76.1	20.0	132	625	163	50	260	3.00
	A 88.9	8251120	0083	88.9	27.0	206	740	159	50	370	9.00
	A 114.3	8251130	0083	114.3	47.0	206	740	169	50	370	9.00
	A 139.7	8251140	0083	139.7	72.0	354	915	214	50	525	22.00
	A 168.3	8251150	0083	168.3	108.0	354	915	229	50	525	24.00
	A 219.1	8251160	0083	219.1	180.0	409	1,125	284	50	650	44.00
	A 237.0	8251170	0083	273.0	288.0	480	1,402	351	50	750	70.00
	A 323.9	8251180	0083	323.9	405.0	634	1,612	406	50	850	112.00

Other designs (higher operating temperatures, higher operating pressures) are available upon request.



## Exvoid Hi-Cap Air and microbubble separator



Exvoid (steel) Hi-Cap  
flange connection

Exvoid (steel) Hi-Cap  
welded connection

Higher flow rates cause the flow characteristics to change on entry into the body. The flow and idle zones shift. Enlarging the body enables optimum incorporation of this change in flow behaviour to ensure continued assured maximum separation performance in the high flows.



### Technical features

- For high flow rates and high flow speeds up to 3 m/s
- Connection: DN 50–DN 600
- Flow rate: 25–3,000 m<sup>3</sup>/h
- Steel housing
- Application: up to 110 °C and 10 bar, further pressure ratings and temperatures on request

	Type	Art. No.	Connection c	V <sub>max</sub> [m <sup>3</sup> /h]	Ø d [mm]	Height h [mm]	Height h3 [mm]	Length l2 [mm]	Weight [kg]
Steel with welded connection, 110 °C, 10 bar									
10 bar 110 °C	A 60.3 HC	8251105	60.3	25	132	810	153	260	23,0
	A 76.1 HC	8251115	76.1	40	132	810	163	260	23,0
	A 88.9 HC	8251125	88.9	54	206	965	159	370	36,0
	A 114.3 HC	8251135	114.3	94	206	965	169	370	37,0
	A 139.7 HC	8251145	139.7	144	354	1,225	214	525	85,0
	A 168.3 HC	8251155	168.3	216	354	1,225	229	525	86,0
	A 219.1 HC	8251165	219.1	376	409	1,495	284	650	129,0
	A 273.0 HC	8251175	273	576	480	1,609	351	750	175,0
	A 323.9 HC	8251185	323.9	810	634	2,225	406	850	340,0
Steel with flange connection, 110 °C, 10 bar									
10 bar 110 °C	A 50 HC	8251305	DN 50 / PN 16	25	132	810	153	350	23,0
	A 65 HC	8251315	DN 65 / PN 16	40	132	810	163	350	23,0
	A 80 HC	8251325	DN 80 / PN 16	54	206	965	159	470	36,0
	A 100 HC	8251335	DN 100 / PN 16	94	206	965	169	470	22,0
	A 125 HC	8251345	DN 125 / PN 16	144	354	1,225	214	635	85,0
	A 150 HC	8251355	DN 150 / PN 16	216	354	1,225	229	635	86,0
	A 200 HC	8251365	DN 200 / PN 16	376	409	1,495	284	775	90,0
	A 250 HC	8251375	DN 250 / PN 16	576	480	1,609	351	890	175,0
	A 300 HC	8251385	DN 300 / PN 16	810	634	2,225	406	1.005	340,0
	A 350 HC	8251915	DN 350 / PN 16	1,000	650	2,460	501	1.128	293,0
	A 400 HC	8251925	DN 400 / PN 16	1,300	750	2,740	580	1.226	540,0
	A 450 HC	8251945	DN 450 / PN 16	1,700	750	3,030	609	1.330	570,0
	A 500 HC	8251955	DN 500 / PN 16	2,120	1,000	3,310	671	1.430	1.000,0
A 600 HC	8251965	DN 600 / PN 16	3,060	1,200	3,160	832	1.630	2.420,0	