8.

Venting Range and Air/Dirt Separators

Systems in which the water is properly de-aerated and free of contamination are more efficient, produce less noise and have a longer service life. Our products use proven technology to remove air and solid particles from the water, i.e. using coalescence, flow velocity reduction and pressure drop.
Regardless of whether in a domestic environment or commercial installations with large heating or cooling systems, Flamco's range of automatic air vents and air/dirt separators provide the most efficient solution.


Flamcovent
65 F
Flamco

Venting Range and Dirt Separators

Floatvents

Flexvent
- Automatic floatvent.
- For domestic and commercial applications.

Flexvent H
- Automatic floatvent.
- Right-angled ½" connection for simple connection to the radiator.
- For domestic and commercial applications.

Flexvent Top
- Automatic high output floatvent.
- For commercial systems.
- Also available in white.

Flexvent Super
- Automatic high output floatvent.
- Brass housing.
- For industrial systems.

Flexvent Max
- Automatic high output floatvent.
- Brass housing.
- For industrial systems.
- 25 bar.

Flexvent Solar
- Manually operated de-aerator for solar installations.
- Without either valve housing or radiator key.
- 200 °C (473 K).

Flexvent Top Solar
- Automatic floatvent with ball valve.
- -30 °C (243 K) - 180 °C (453 K).

Air Reservoirs

LTA air reservoirs
- Vertical installation for central de-aeration.

Air Separators for High Flow Rates

Flexair G
- Tangential air separator.
- Designed for high flow rates.

Flexair S
- Tangential air separator.
- Welded connections.
- For pipe diameters from DN 25 - DN 600.
- Designed for high flow rates.

Flexair F
- Tangential air separator.
- Flanged connections.
- For pipe diameters from DN 65 - DN 600.
- Designed for high flow rates.

Micro-bubble Air Separators

Flamcovent
- Air separator using the principle of coalescence.
- Can be installed in vertical pipes (Flamcovent V), too.

Flamcovent Ecoplus
- Similar to the Flamcovent, but with an insulation mantle.

Flamcovent Smart
- Air separator using the principle of coalescence.
- Horizontal and vertical version in one.
- 60% better performance compared to conventional air separators.

Flamcovent Smart Ecoplus
- Similar to the Flamcovent Smart, but with an insulation mantle.

Flamcovent Solar
- Air separator using the principle of coalescence.
- Can be installed in vertical pipes (Flamcovent Solar V), too.
- Manually operated air separator for solar installations.
- Including insulation.

Flamcovent S
- Air separator using the principle of coalescence.
- With welded connections.
- For commercial systems.
- Steel model.

Flamcovent F
- Air separator using the principle of coalescence.
- With flanged connections.
- For commercial systems.
- Steel model.

Flamcovent R
- Air separator using the principle of coalescence.
- With grooved connections.
- For commercial systems.
- Steel model.

Bleeding and Topping Up

Flamco ENA 5
- Vacuum de-aerator with top-up function.
- Programmable and user friendly.
- Wall mounted.
- Integrated break tank.

Flamco ENA 7-30
- Vacuum de-aerator with top-up function.
- Programmable and user friendly.

Dirt Separators

Flamco Clean
- Dirt separator using the principle of coalescence.
- Can be installed in vertical pipes (Flamco Clean V).

Flamco Clean Ecoplus
- Similar to the Flamco Clean, but with an insulation mantle.

Flamco Clean Smart
- Dirt separator using the principle of coalescence.
- Horizontal and vertical version in one.
- 60% better performance compared to conventional dirt separators.

Flamco Clean Smart Ecoplus
- Similar to the Flamco Clean Smart, but with an insulation mantle.

Flamco Clean S
- Dirt separator using the principle of coalescence.
- For large commercial systems.
- With welded connections.
- Steel model.

Flamco Clean F
- Dirt separator using the principle of coalescence.
- For large commercial systems.
- With flanged connections.
- Steel model.

Flamco Clean R
- Dirt separator using the principle of coalescence.
- For large commercial systems.
- With grooved connections.
- Steel model.

Air and Dirt Separators

Flamcovent Clean
- Air/dirt separator using the principle of coalescence.
- Brass model.

Flamcovent Clean Smart
- Air/dirt separator using the principle of coalescence.
- Horizontal and vertical version in one.
- 60% better performance compared to conventional air and dirt separators.

Flamcovent Clean Smart Ecoplus
- Similar to the Flamcovent Clean Smart, but with an insulation mant

Flamcovent Clean S
- Air/dirt separator using the principle of coalescence.
- With welded connections.
- Steel model.

Flamcovent Clean F
- Air/dirt separator using the principle of coalescence.
- With flanged connections.
- Steel model.

Flamcovent Clean R
- Air/dirt separator using the principle of coalescence.
- With grooved connections.
- Steel model.

Air in central heating systems

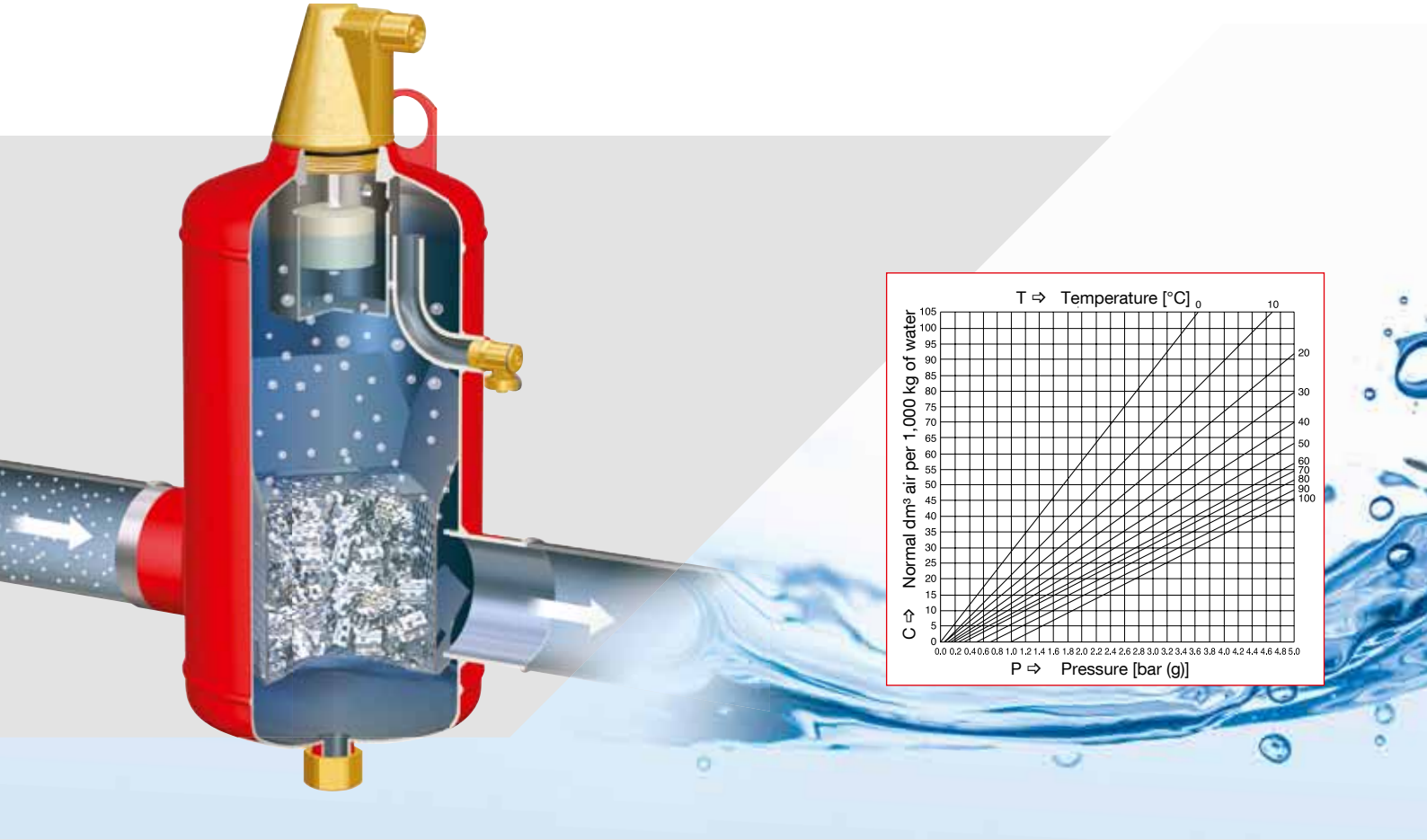
Air in a central heating system leads to:

- Irritating noise.
- Loss of heat from radiators.
- Corrosion.
- Damage to the circulation pump.
- Reduced system service life.
- Increased energy consumption.
- Higher maintenance costs.

Possible causes of air in central heating systems

To prevent or eliminate air problems in a system, it is important to understand the causes:

- Air in the system prior to filling.
- Air enters the system during filling.
- Air in the water with which the system is filled.
- Air dissolved in the system water.

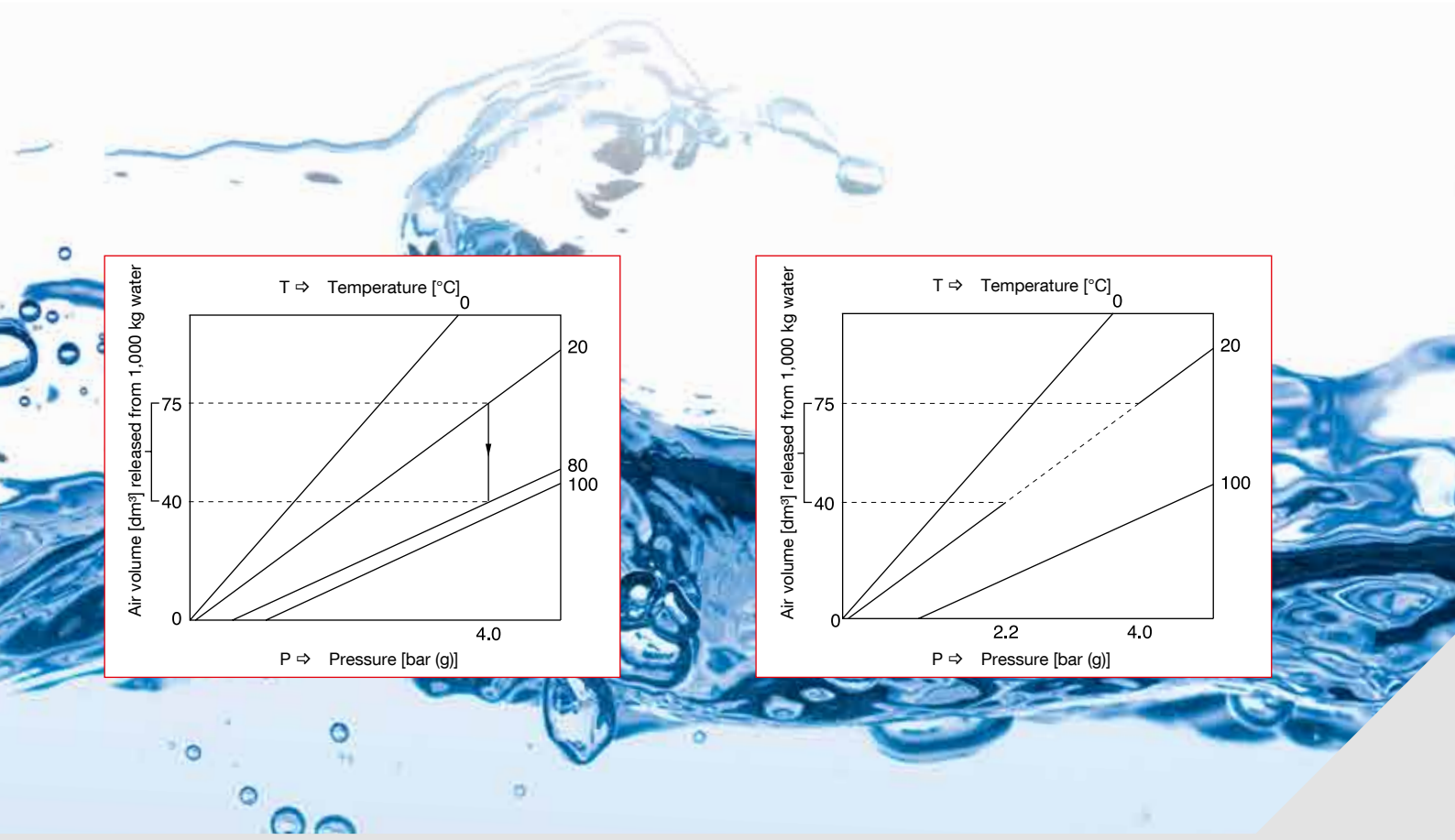


The presence of dissolved air in water can be quantified using Henry's law. which states that: C = K x P
C = concentration of the dissolved air
K = absorption factor (depending on the temperature)
P = pressure

As the diagram shows, the air that can be dissolved in the water depends on both the temperature and the pressure. When the temperature increases or the pressure drops, dissolved air in the water is released.

Henry's law in a central heating system

Very high temperatures can occur at the boiler walls. Aerated water can release tiny bubbles here. These 'micro-bubbles' dissipate in other parts of the central heating system at low temperatures if they are not removed immediately. If the micro-bubbles are immediately removed before the boiler, the system water is free of air (unsaturated). Air from other parts of the system can dissolve and be absorbed by this water. This absorption effect can be exploited to coalesce all the free air in a system and help the air out of the system with the boiler/Flamcovent absorption air separator combination. This venting procedure is a process that continues until only unsaturated water, which can absorb more air, remains.



Henry's law allows us to calculate how much dissolved air will be released from the water when heated up, for example from 20 °C to 80 °C.

If the pressure decreases or the temperature increases, dissolved air will escape. If the temperature decreases or the pressure increases, air bubbles will be absorbed by the water.

Flexvent Floatvents
Reliable and Easy to Mount

Most Flexvent types are supplied with a brass shut-off valve to facilitate installation and removal. When the floatvent is unscrewed from the shut-off valve, the valve will close automatically and the system need not be de-pressurized or drained. Under normal circumstances, the Flexvent floatvent needs no maintenance.

Due to the particularly compact dimensions of the floatvent, it is possible to install Flexvent floatvents on the best suitable places.

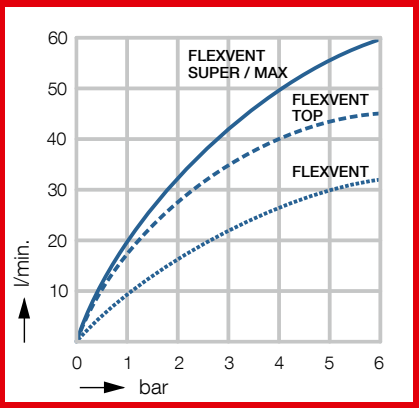
Protective cap including expansion sealer rings to prevent leaks.

Substantial distance between the water and the closing mechanism, reducing the chance of contamination.

Flexvent floatvents are made of brass.

Mostly supplied standard with a shut-off valve for easy removal.

The Flexvent H has a ½" right-angled connection which means it can be mounted directly on one of the radiator ports.



Flexvent Automatic Air Vents

The float floats on the water and keeps the venting valve closed. When air is collected in the floatvent, the water level will drop and the venting valve will be opened. The collected air will escape, causing the water level to rise and the venting valve to close. This process continues as long as air is collected in the floatvent during operation.
The air cushion in the upper part of each Flexvent protects the valve seat against contamination.

The amount of air that is allowed to escape through the Flexvent floatvent depends on the system pressure. The graph above shows the relationship between the amount of air in litres/min at 15 °C and the system pressure.

Flexvent Super/ MAX

The cap of the Flexvent Super is conical in shape. The advantage of this construction is that the clearance between the water level and venting valve is maximized. The air escape duct can be opened or closed with an adjusting screw.
The venting valve forms an integral part of the cap, so that it is impossible to damage the floatvent mechanism from outside.

FLEXVENT MAX

FLEXVENT SUPER ½"

Flexvent open

Flexvent closed

Flexvent Top

LTA Air Pots

The Flamco air pot is mounted on riser pipes in the supply or return lines. In the air pot the water returns to a non-turbulent state and the free air can collect in the upper part. The air can be released from the Flexvent mounted on top of the air pot.

LTA AIR POTS

FLEXVENT AUTOMATIC AIR VENTS

The compact, proven design has high efficiency and guaranteed operation for heating and air conditioning.
The water within the installation contains air which can form corrosion and reduce the thermal transfer. A Flexvent is fitted at places where the air collects. Float operated, the air is collected in the Flexvent causing the float to drop and open the air release valve. When the air is eliminated the float rises and closes the valve.

Flexvent float vents are made of brass. Most types are equipped with a shut-off valve for easy fitting and dismantling.
A Flexvent float vent is easy to fit in any installation due to its very small dimensions. The relatively large air cushion at the top of each type of Flexvent float vent protects the valve seat sufficiently against contamination, so that the Flexvent will not leak.
To guarantee top quality, we test all Flexvents before they leave our facility!

- Maximum operating pressure: 10.0 bar (Flexvent MAX: 25.0 bar).
- Maximum supply temperature: 120 °C (Flexvent Solar: 200 °C / Flexvent Top Solar: - 30 ~ 180 °C).

Flexvent


Flexvent ½"


Flexvent ³/₈"


Flexvent ¹/₈" / ³/₈"


Flexvent ¹/₈"

Type	Dimensions Ø [mm]	Dimensions H. [mm]	Connection	Shut-off valve		Order Code
Flexvent ¹/₈	30	67	R ¹/₈" M	no	50	27775
Flexvent ³/₈	30	78	R ³/₈" M	yes	50	27750
Flexvent ³/₈ without shut-off valve	30	66	G ³/₈"	no	100	27725
Flexvent ¹/₈ - ³/₈	30	86 - 75,5	R ¹/₈" / R ³/₈"	yes	50	27780
Flexvent ¹/₂	30	75,5	R ¹/₂" M	yes	50	27740
Flexvent ¹/₂ -White with bubble breaker, without shut-off valve	31	71	R ¹/₂"	no	50	27743
Flexvent ³/₄	30	74,5	R ³/₄" M	yes	50	27735
Valve sleeve with shut-off valve	-	23	G ³/₈" x R ³/₈"	-	1	27700

Flexvent H

Type	Dimensions Ø [mm]	Dimensions Ø conn. inc. [mm]	Dimensions H. [mm]	Connection	Shut-off valve		Order Code
Flexvent H ¹/₂ Nickel plated	31	50,5	70	R ¹/₂" M	no	50	27710
Flexvent H ¹/₂ White	31	50,5	70	R ¹/₂" M	no	50	27711
Shut-off valve Flexvent H ZD	-	-	-	R ¹/₂"	-	25	27703

Flexvent Top

Type	Dimensions Ø [mm]	Dimensions H. [mm]	Connection	Shut-off valve		Order Code
Flexvent Top	54	86	Rp ¹/₂"	no	25	28515
Flexvent Top White	54	86	R ³/₈"	yes	20	28510

Flexvent Super

Type	Dimensions Ø [mm]	Dimensions H. [mm]	Connection	Shut-off valve		Order Code
Flexvent Super 1/2	73	119	1/2" F	no	1	28520
Shut-off valve Flexvent Super	-	-	1/2"	-	1	28525

Flexvent MAX

- Maximum operating pressure: 25.0 bar.

Type	Dimensions Ø [mm]	Dimensions H. [mm]	Connection	Shut-off valve		Order Code
Flexvent MAX 3/4	77	120	Rp 3/4"	no	1	28550

Flexvent Solar

Manually operated de-aerator for solar systems with glycol based solutions.

- Non automatic, without shut off valve and key (manual operation).
- Maximum operating temperature: 200 °C.

Type	Dimensions Ø [mm]	Dimensions H. [mm]	Connection	Shut-off valve		Order Code
Flexvent Solar 3/8 M	30	75.5	3/8" M	no	1	27785

Flexvent Top Solar

- With ball valve.
- Minimum/maximum operating temperature: - 30 ~ 180 °C.

Type	Dimensions Ø [mm]	Dimensions H. [mm]	Connection	Shut-off valve		Order Code
Flexvent Top Solar 3/8	30	75.5	G 3/8"	no	1	28505

AIR ACCUMULATOR

Flamco LTA Air Accumulator

Type	Capa-city [l]	Dimensions Ø [mm]	Dimensions H. [mm]	Connection Airvent	Connection System	Weight [kg]		Order Code
Flamco LTA 1	1.0	110	185	3/8" F	1/2" F	1.3	1	27581
Flamco LTA 2	1.6	110	233	3/8" F	1/2" F	1.7	1	27582
Flamco LTA 5*	5.0	196	221	1/2" F	1/2" F	4.0	1	27585

* Also available with manual de-aerator.

FLEXAIR AIR SEPARATORS

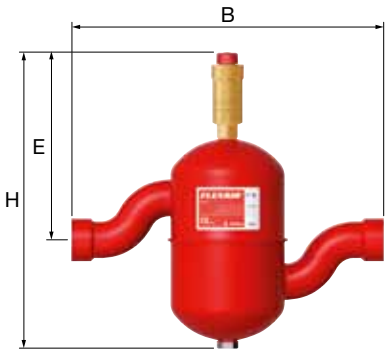
For the removal of air from heating and cooling installations.

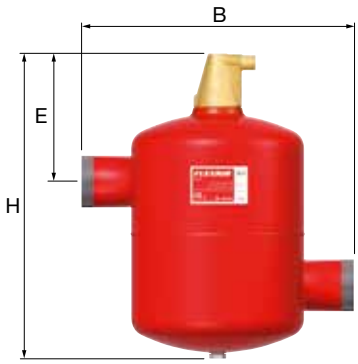
The function of the Flexair air separator is based on the principle of a centrifuge.
The tangentially-fitted connections induce a vortex within the water in the Flexair, causing the water, being heavier, to be pushed against the sides whilst the air, being lighter, collects in the middle of the Flexair, from where it can easily be separated. The best results are achieved at higher water speeds.
Flexair range from 1" - DN 600 with various connecting options. Sizes above DN 600 available on request.

- Maximum recommended flow velocity: 5 m/s.
- Maximum working temperature: 120 °C.

Flexair G

Flexair S





Flexair G

With BSP threaded connections.

- Maximum operating pressure: 10.0 bar.

Type	Connection	Capacity [l]	Dimensions B [mm]	Dimensions H [mm]	Dimensions E (mm)	Weight [kg]		Order Code
Flexair 1 G	1" F	1.2	284	275	176	1.8	1	27512
Flexair 1 ¼ G	1 ¼" F	1.2	297	275	176	2.0	1	27513
Flexair 1 ½ G	1 ½" F	1.5	330	285	180	2.5	1	27514
Flexair 2 G	2" F	2.3	352	305	192	3.0	1	27515

Flexair S

With welded connections.

- Maximum operating pressure: 10.0 bar.

Type	Connection [DN]	Connection [mm]	Capacity [l]	Dimensions B [mm]	Dimensions E [mm]	Dimensions H [mm]	Weight [kg]		Order Code
Flexair 25 S	25	33.7	1.2	252	176	275	1.7	1	27550
Flexair 32 S	32	42.4	1.2	262	176	275	1.8	1	27551
Flexair 40 S	40	48.3	1.5	290	180	285	2.0	1	27552
Flexair 50 S	50	60.3	2.3	310	192	305	2.5	1	27553

Flexair S

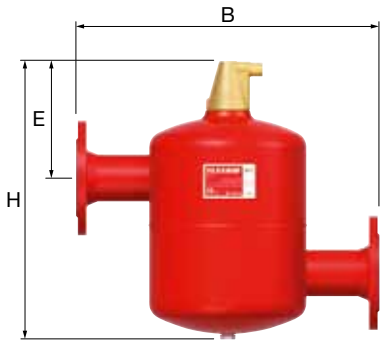
With welded connections.

- Maximum operating pressure: 10.0 bar.

Type	Connection [DN]	Connection [mm]	Capacity [l]	Dimensions B [mm]	Dimensions E [mm]	Dimensions H [mm]	Weight [kg]		Order Code
Flexair 65 S	65	76.1	17	400	190	448	10	1	27558
Flexair 80 S	80	88.9	17	400	190	448	11	1	27554
Flexair 100 S	100	114.3	79	568	277	675	34	1	27555
Flexair 125 S	125	139.7	79	563	290	675	38	1	27556
Flexair 150 S	150	168.3	38	563	289	754	91	1	27557
Flexair 200 S	200	219.1	125	780	543	1275	261	1	27560
Flexair 250 S	250	273.0	235	1040	620	1555	510	1	27561
Flexair 300 S	300	323.9	275	1170	697	1765	700	1	27562
Flexair 350 S	350	355.6	455	1300	710	2100	1000	1	27563
Flexair 400 S	400	406.4	665	1560	846	2480	1900	1	27564
Flexair 500 S	500	508.0	1260	1950	994	2950	3500	1	27565
Flexair 600 S	600	610.0	1955	2000	1132	3380	6000	1	27566

CE Nr. 0045 97/23/EC-PED

Flexair F



Flexair F - PN 10

With flanged connections.

- Maximum operating pressure: 10.0 bar.

Type	Connection *		Capacity [l]	Dimensions			Weight [kg]		Order Code
	[DN]	[mm]		B [mm]	E [mm]	H [mm]			
Flexair 65 F	65	185	17	487	190	448	17	1	27538
Flexair 80 F	80	200	17	487	190	448	19	1	27534
Flexair 100 F	100	220	79	673	277	675	50	1	27535
Flexair 125 F	125	250	79	673	290	675	73	1	27536
Flexair 150 F	150	285	91	674	289	754	75	1	27537
Flexair 200 F	200	340	261	904	543	1275	140	1	27527
Flexair 250 F	250	405	510	1180	620	1555	260	1	27528
Flexair 300 F	300	460	700	1326	697	1765	320	1	27529
Flexair 350 F	350	520	1000	1464	710	2100	505	1	27530
Flexair 400 F	400	580	1900	1730	846	2480	745	1	27531
Flexair 500 F	500	715	3500	2130	994	2950	1370	1	27532
Flexair 600 F	600	840	6000	2190	1132	3380	2090	1	27533

* According to EN 1092-1 PN16.

CE Nr. 0045 97/23/EC-PED

Flexair F - PN 16

With flanged connections.

- Maximum operating pressure: 16.0 bar.

Type	Connection		Capacity [l]	Dimensions			Weight [kg]		Order Code
	[DN]	[mm]		B [mm]	E [mm]	H [mm]			
Flexair 65 F	65	185	17	487	190	448	25.5	1	28242
Flexair 80 F	80	200	17	487	190	448	26.7	1	28243
Flexair 100 F	100	220	79	673	277	675	62	1	28244
Flexair 125 F	125	250	79	673	290	675	70	1	28245
Flexair 150 F	150	285	91	674	289	754	82	1	28246
Flexair 200 F	200	340	261	904	543	1275	192	1	28247
Flexair 250 F	250	405	510	1180	620	1555	308	1	28248
Flexair 300 F	300	460	700	1326	697	1765	413	1	28249
Flexair 350 F	350	520	1000	1464	710	2100	625	1	28250
Flexair 400 F	400	580	1900	1730	846	2480	970	1	28251
Flexair 500 F	500	715	3500	2130	994	2950	1860	1	28252
Flexair 600 F	600	840	6000	2190	1132	3380	3225	1	28253

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Flexair F - PN 25

With flanged connections.

- Maximum operating pressure: 25.0 bar.

Type	Connection [DN]	Connection [mm]	Capacity [l]	Dimensions B [mm]	Dimensions E [mm]	Dimensions H [mm]	Weight [kg]		Order Code
Flexair 65 F	65	185	17	487	190	448	31	1	28262
Flexair 80 F	80	200	17	487	190	448	34	1	28263
Flexair 100 F	100	220	79	673	277	675	85	1	28264
Flexair 125 F	125	250	79	673	290	675	95	1	28265
Flexair 150 F	150	285	91	674	289	754	115	1	28266
Flexair 200 F	200	340	261	904	543	1275	253	1	28267
Flexair 250 F	250	405	510	1180	620	1555	432	1	28268
Flexair 300 F	300	460	700	1326	697	1765	578	1	28269
Flexair 350 F	350	520	1000	1464	710	2100	872	1	28270
Flexair 400 F	400	580	1900	1730	846	2480	1395	1	28271
Flexair 500 F	500	715	3500	2130	994	2950	2150	1	28272
Flexair 600 F	600	840	6000	2190	1132	3380	3386	1	28273

FLEXAIR ACCESSORIES

Automatic Air Vent

For Flexvent Super, Flamcovent and Flexair.

Type	Used for	Max. working pressure [bar]		Order Code
Spare vent cap 10 S	Flamcovent 22 mm - 2", Flexair DN 65 - 150	10	1	28554

CE Nr. 0045 97/23/EC-PED

The best air separator in every situation

The mode of operation of the Flamcovent is based on a special process of separating gases from fluid (water).

The benefits of Flamcovent:

- Even the smallest micro-bubbles adhere to the PALL rings, separating them from the system water.
- The air chamber is conical, so the greatest possible distance can be maintained between the water level and the vent valve.
- The vent valve with regulating screw can be shut off.

Mode of operation

The water flows through and around each of the PALL rings so that each gaseous particle comes into contact with the surface of the PALL ring, to which it will adhere.

The flow rate of the water decreases as a consequence of the rise in the discharge cross-section.
Air bubbles can rise through it to the air chamber. The float gauge, float mechanism and vent valve remove air that has been separated from the water in the system.

Flamcovent Solar

In solar thermal systems, steam (vapour) may arise due to the high temperatures involved. If a floatvent is in direct communication with the vapour, the float will not close off the vent (i.e. the vent floats on the water, not the vapour).

The Flamcovent Solar is a type of through-flow air separator in which the vent head cannot be disconnected from the system. That is why the Flamcovent Solar has a manual vent, so the system will not boil dry when vapour is created.

FLAMCOVENT

FLAMCOVENT ECOPLUS

FLAMCOVENT V

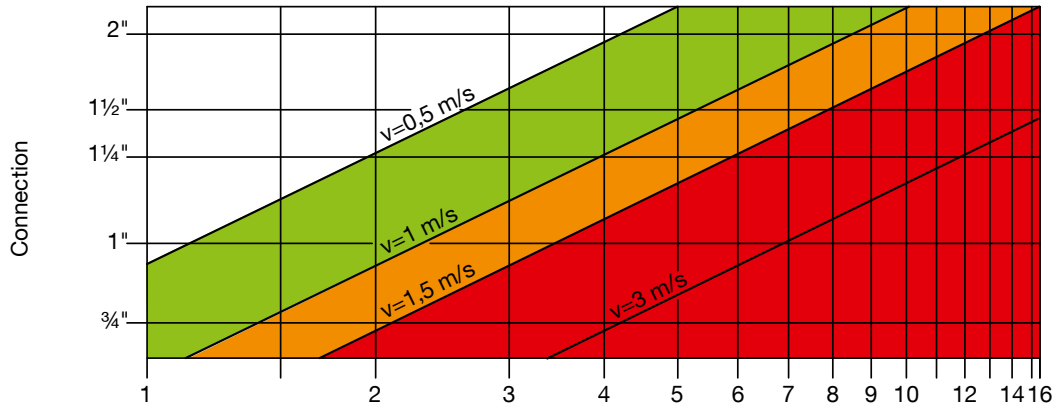
FLAMCOVENT ECOPLUS V

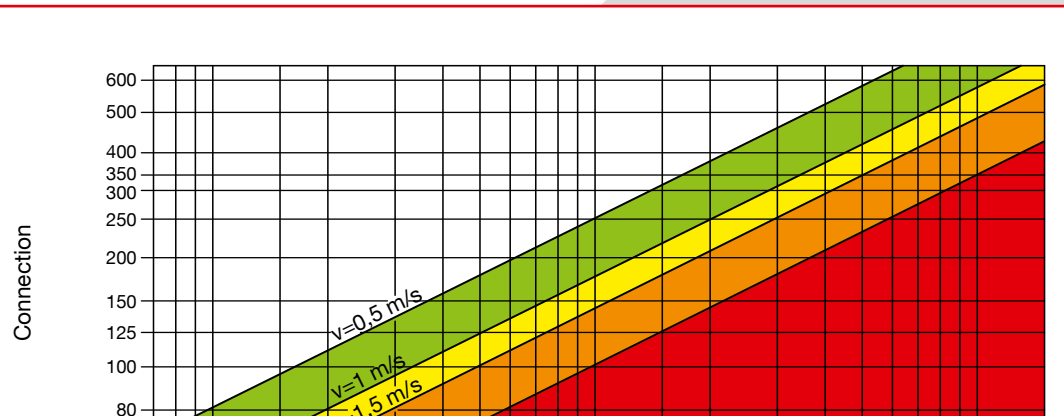
FLAMCOVENT
SOLAR

FLAMCOVENT
SOLAR V

Determining the Appropriate Size of a Flamcovent

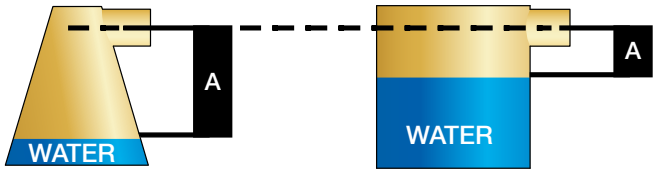
The information below is applicable to heating and cooling systems. The effectiveness of the Flamcovent air separator depends on the speed of water flowing through the system. For the best results, Flamco advises a flow speed of between 0,5 and 1 m/s, assuming the Flamcovent is installed in the right place in the system (with the lowest pressure and the highest temperature). Even at flow speeds of between 1 and 1,5 m/s, the vent's function is still adequate. Higher speeds (above 1,5 m/s) are not recommended. In such cases, a Flamcovent with a greater connection diameter should be used with adapters, in order to reduce the water speed inside the Flamcovent.





Flamcovent flow rate
V = 1,0 m/s max. speed at the lowest point of the system.
V = 1,5 m/s max. speed at the highest point of the system.

The air chamber of the Flamcovent is conical in shape. The advantage of this construction is that the distance (**A**) between the water level and the vent valve is larger than with a straight air chamber. This means that there is little chance of pollution.

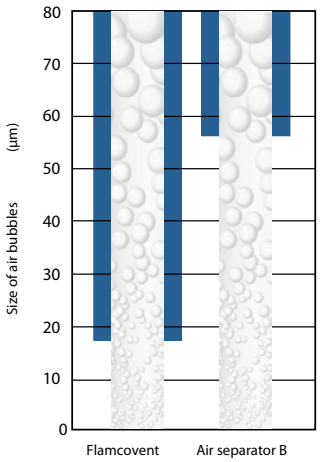


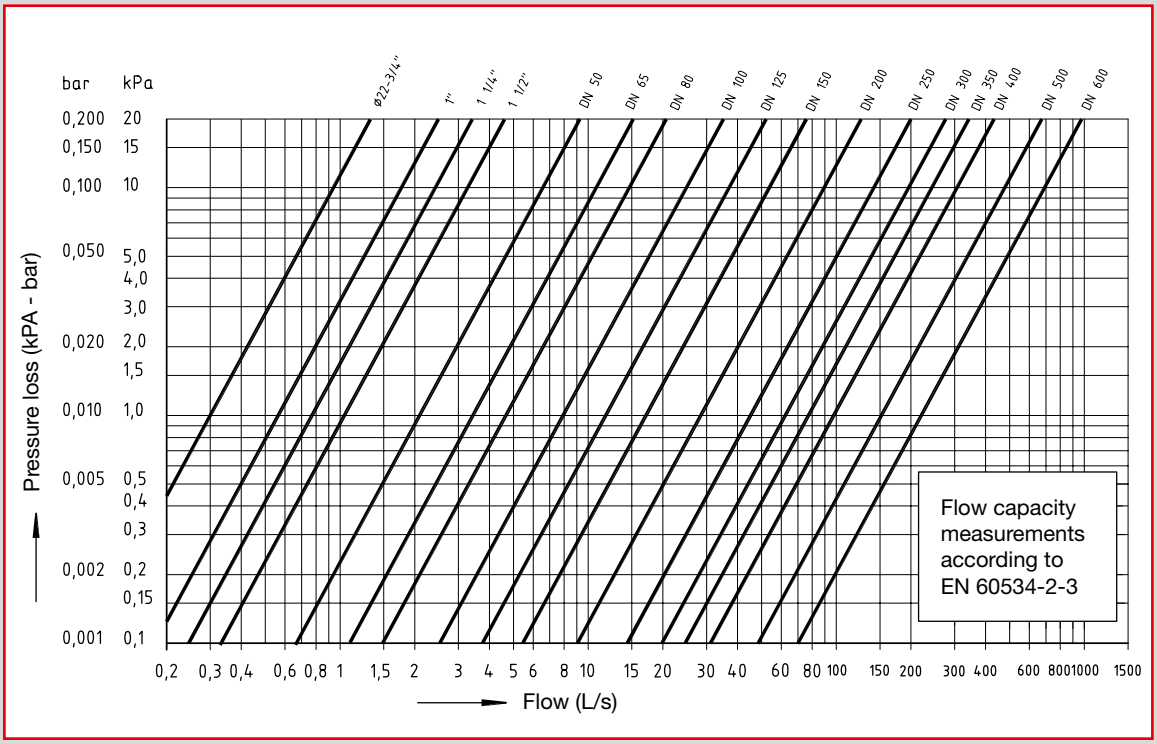
Flamcovent valve

'Regular' vent valve

Flamcovent air separators are outperform other air separators

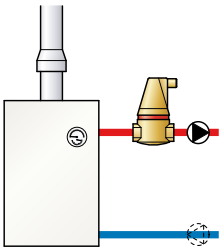
Research at the Delft Technical University has shown that Flamcovent air separators remove all micro-bubbles from 15 µm. This is three times better than comparable air separators.
You will find the report at www.flamcogroup.com



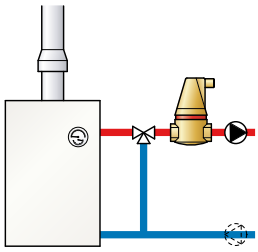


Our air and dirt separators are top of the line when it comes down to reducing pressure loss in the system. A low pressure loss saves energy consumption and contributes to a sustainable environment.

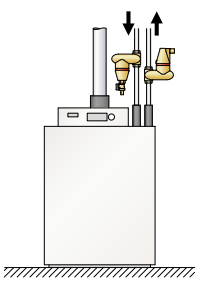
In order to vent the system in the best possible way, the Flexair or Flamcovent air separator must be fitted immediately behind the boiler or tempering valve in the supply line.



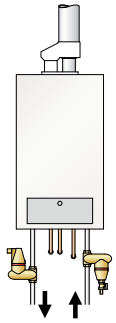
Without mixing valve



With mixing valve



Upright boiler



Wall-mounted boiler

Groundbreaking Innovation:

Flamcovent Smart
Flamco Clean Smart
Flamcovent Clean Smart

More compact, lighter, cleaner and even more efficient
The Flamcovent Smart, Flamco Clean Smart and Flamcovent Clean Smart air and dirt separators are smart products in every aspect. And just as in other innovations from Flamco, their groundbreaking new design also delivers optimal performance.
These air and dirt separators for heating and cooling systems are the new standard.

Flamcovent
Clean Smart

Flamcovent
Clean Smart
EcoPlus

Flamco has the answer

The Smart air and dirt separators remove even the smallest microbubbles and minuscule dirt particles from the system water. They are near enough maintenance-free and the flow resistance is negligibly low. The magnetite particles present in the water are directly attracted by the magnetic field and all other dirt particles are also trapped extremely efficiently.

Flamco Clean Smart

Flamco Clean Smart EcoPlus

Flamcovent Smart

Flamcovent Smart EcoPlus

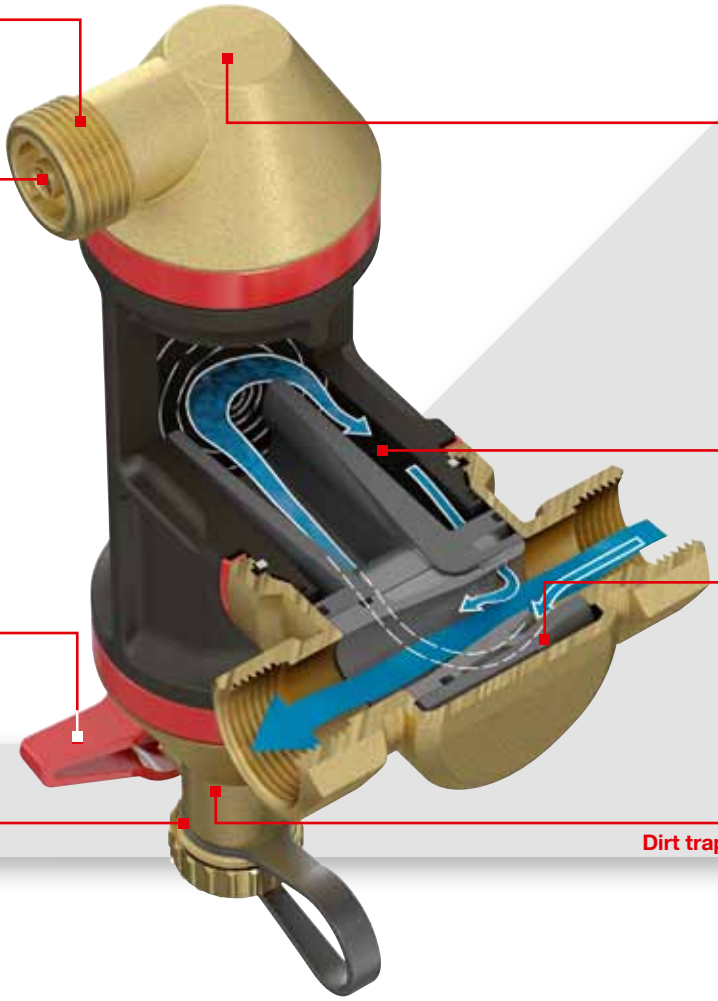
Main advantages

- 60% better performance compared to conventional air and dirt separators.
- Suitable for temperatures of up to 120 °C.
- Suitable for operating pressures of up to a maximum of 10 bar.
- Unique flow velocities, up to 3 m/s.
- Can be used with all kinds of pipework.
- Compact dimensions, light weight.
- Available in various sizes up to 2".
- Extremely low flow resistance and pressure loss and therefore low loss of energy.
- Consistent performance throughout its service life.

Double Thrust Function

The new standard

Two thrust functions ensure efficient dirt removal and de-aeration of the system water. The first function is achieved by the action of the separating element built into the body in the path of the water flow through the unit. Contaminated water is diverted through the separating element. The second effect is achieved by combining the increased return flow of clean water from the plenum opposite the separation element back into the main stream. This forces the micro-bubbles and dirt particles towards the sides of the body and into the plenum chamber to be removed.



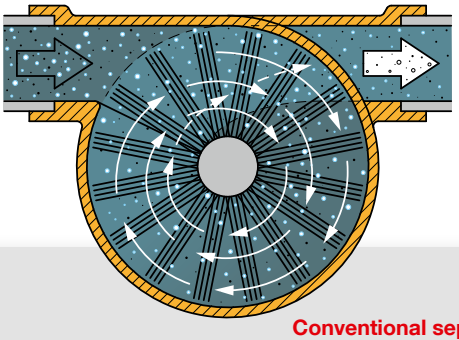
Exceptional air and dirt removal performance

Inside the enclosure of the separator the water velocity is heavily reduced which efficiently separates microbubbles and dirt particles. The air particles automatically rise to the air release valve device at the top. Particles are passed along bulkheads and trapped in the enclosure thanks to the low flow velocity.

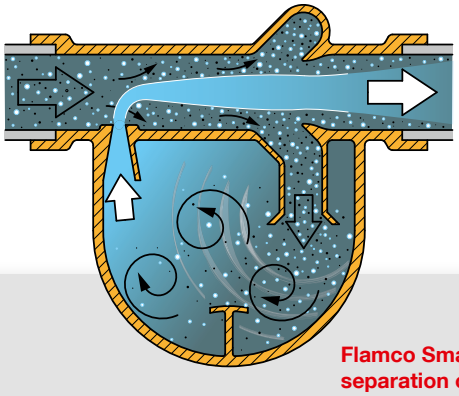
A supermagnet additionally helps to trap ferrous particles. Flow resistance is negligible. Important advantages of this are the low energy consumption and the high removal performance for each passage of the water through the system.

Performs 60% better

Flamco Smart performs 60% better than conventional air and dirt separators, while the flow resistance has been reduced to a negligible level. This avoids wear to the pump of the central heating boiler and reduces energy costs.



Conventional separator with complete throughflow: separation of at most 25% per cycle.



Flamco Smart: separation of at least 40% per cycle.

Supermagnets

Four neodymium supermagnets are incorporated into the logo on the outside of the Flamco Clean Smart and the Flamcovent Clean Smart (fig. A). These are so powerful that they can lift a steel object weighing three kilograms. The logo/magnet holder is situated right opposite the outflow opening, through which all ferrous particles are directly attracted and held. Even particles as small as 4 µm are removed.

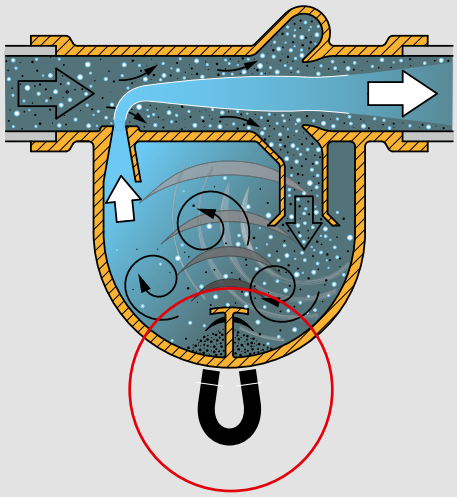


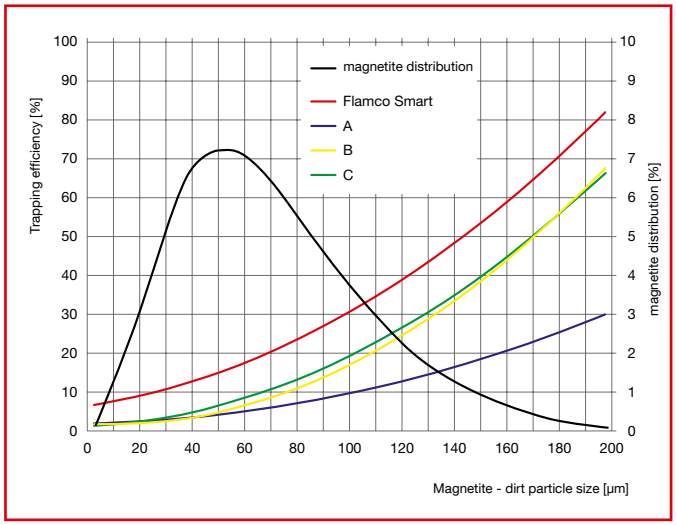
Fig. A

Fig. B

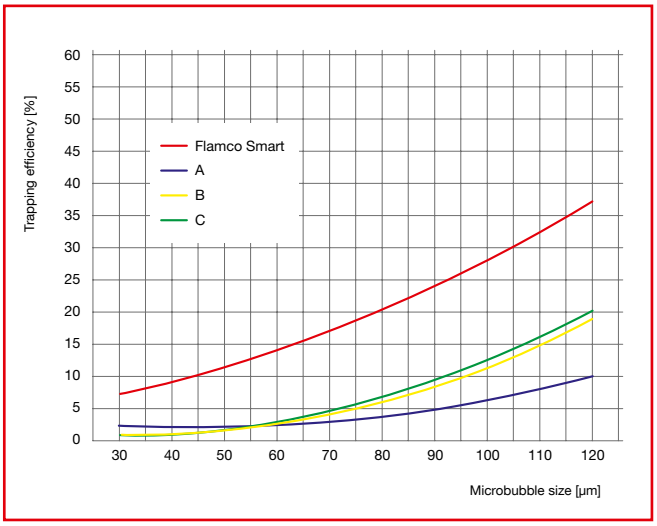
By pushing the logo/magnet holder downwards, the dirt particles are drawn to the underside of the dirt separator (fig. B) where they can be removed via the drain valve. Always keep the logo/magnet holder at a safe distance from pacemakers, electronic equipment and payment cards.

Optimal Performance

Efficient dirt separation

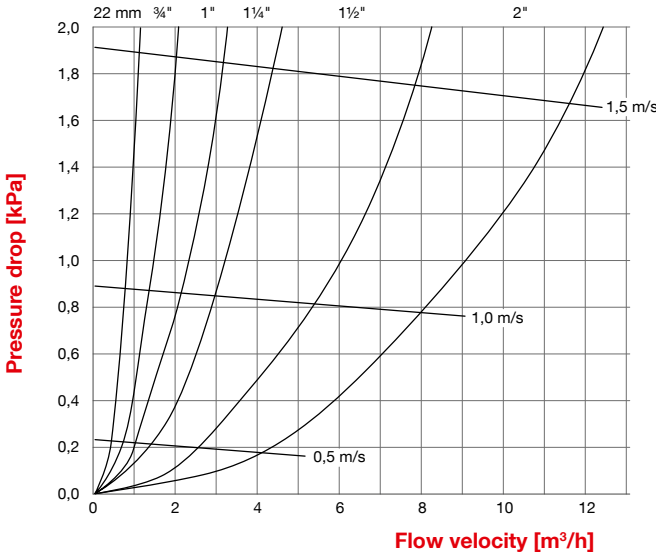


Efficient air separation



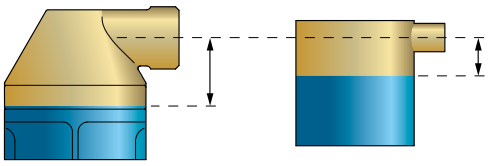
Measuring method verified by Deltares, measurement results based on silica particles.

Selection table for Flamcovent & Clean Smart series



Thanks to the innovative design of this Smart series of air and dirt separators the pressure loss in the system is kept to a negligible minimum. Even at flow velocities of 3 m/s, the Smart series delivers the best performance on the market. The high efficiency of these devices ensure that cooling and heating systems provide optimum performance.
The table is extremely easy to use for selecting the correct model.

Flamco Smart air and dirt separators are suitable for water and water/glycol mixtures of up to 50% glycol. They can be used with inhibitors that slow chemical reactions or with other approved chemical additives, subject to these meeting the guidelines contained in VDI 2035.
Flamco Smart air and dirt separators are not suitable for potable water systems.



Flamco vent valve Regular vent valve

The air chamber of the Flamcovent is conical in shape. The advantage of this construction is that the distance between the water level and venting valve is larger then in a straight air chamber. This means that there is little chance of contamination.

Flexible assembly

An important feature of the latest generation of air and dirt separators is that they can be incorporated in a variety of heating and cooling systems. The compact dimensions of the Flamcovent Smart series enables them to be easily installed even when space is limited.

Low-maintenance

The low-maintenance characteristic of the dirt separators is also a great advantage. The renewed technology ensures extended periods between necessary maintenance. A sticker can be affixed to the handle of the drain valve that makes it simple to show when maintenance was last performed.

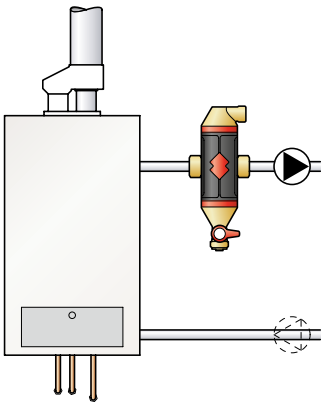


Fig. 4A

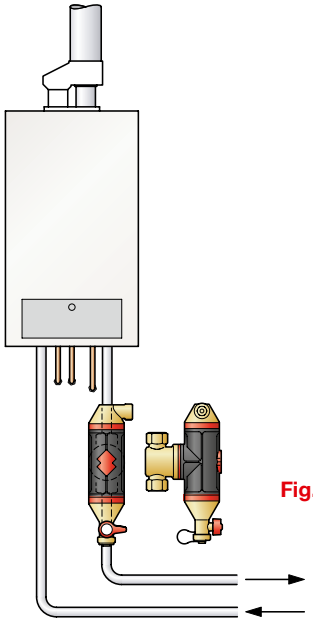


Fig. 4B

Installation

Depending on the primary function (dirt or air separator), the air, dirt and combined air/dirt separators can be installed in a variety of ways (see fig. 4A, 4B, 4C, 4D). Place the product upstream of the boiler in the return line, if dirt separation is the primary function.
If the primary function is air separation or a combined air/dirt separator is being used, the optimum location is immediately downstream of the boiler or mixing valve, and upstream of the circulation pump. This traps bubbles produced immediately after heating the water.
In a cooling system that is just before the chiller.

The bleeding devices and dirt separators are manufactured with a ¾" connection to enable the connection of any drain line. Do not use these connections for filling the system.

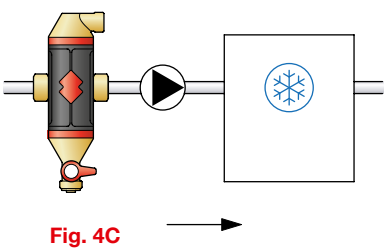


Fig. 4C

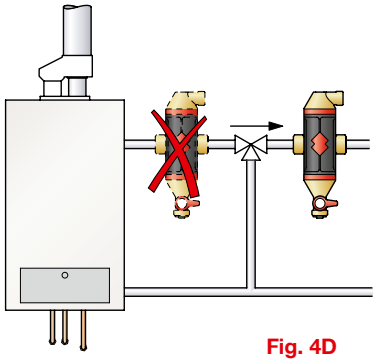


Fig. 4D

FLAMCOVENT MICROBUBBLE AIR SEPARATORS (22 MM - 2")

For total elimination of air from heating and cooling installations. Removes not only the smallest air bubbles, but even the air which has been absorbed into the water. Even microbubbles from 15 - 20 µm!
To prove this, the Technical University of Delft, the Netherlands, has run tests which have shown that the Flamcovent can remove even the smallest bubbles from the water. The Flamcovent's air chamber is conical in shape, which means that a large distance can be achieved between the water level and the venting valve. This prevents leaks. Flamcovent range from 22 mm up to DN 600 with various possibilities for connection.

- Low flow resistance.
- Maximum operating pressure: 10.0 bar.

Flamcovent

- Large contact surface (PALL-ring filling).
- Maximum working temperature: 120 °C.

Type	Connection	Weight [kg]	Capacity [l]	Dimensions* Ø [mm]	Dimensions* H. [mm]		Order Code
Flamcovent 22	22 mm	1.4	0.22	98	151	1	28060
Flamcovent 3/4	3/4" F	1.4	0.22	88	151	1	28020
Flamcovent 1	1" F	1.8	0.35	100	171	1	28021
Flamcovent 1 1/4	1 1/4" F	2.4	0.48	114	192	1	28022
Flamcovent 1 1/2	1 1/2" F	2.5	0.48	114	192	1	28023
Flamcovent 2	2" F	2.6	0.75	131	213.5	1	28024

* Including connections.

Flamcovent V

For mounting in vertical rising pipes.

- Large contact surface (PALL-ring filling).
- Maximum working temperature: 120 °C.

Type	Connection	Weight [kg]	Capacity [l]	Dimensions* W. [mm]	Dimensions* H. [mm]		Order Code
Flamcovent V 22	22 mm	1,9	0.4	160.5	189	1	28069
Flamcovent V 3/4	3/4" F	1.9	0.4	160.5	182	1	28005
Flamcovent V 28	28 mm	1.9	0.4	160.5	191.5	1	28006
Flamcovent V 1	1" F	2.95	0.5	184	204	1	28007
Flamcovent V 1 1/4	1 1/4" F	2.8	0.5	184	204	1	28008

* Including connections.

Flamcovent Smart

More compact, lighter, cleaner and even more efficient.
The new Flamcovent Smart air separators are smart products in every aspect. And just as in other innovations from Flamco, their groundbreaking new design also delivers optimal performance. These air and dirt separators for heating and cooling systems are the new standard.

The Smart air separators remove even the smallest microbubbles from the system water. They are near enough maintenance-free and the flow resistance is negligibly low.

- 60% better performance compared to conventional air separators.
- Suitable for water and water/glycol solutions of up to 50% glycol.
- Suitable for temperatures of up to 120 °C.
- Can be used with all kinds of pipework.
- Compact dimensions, light weight.
- Available in various sizes up to 2".
- Extremely low flow resistance.
- Low energy consumption.

Type	Connection	Weight [kg]	Dimensions Ø [mm]	Dimensions H. [mm]		Order Code
Flamcovent Smart 3/4	3/4"	0.904	60	151	1	30001
Flamcovent Smart 22	22 mm	0.948	60	161	1	30002
Flamcovent Smart 1	1"	1.118	75	192	1	30003
Flamcovent Smart 1 1/4	1 1/4"	1.271	75	194	1	30004
Flamcovent Smart 1 1/2	1 1/2"	1.732	92	238	1	30005
Flamcovent Smart 2	2"	2.162	92	243	1	30006

Flamcovent EcoPlus

- Similar to the Flamcovent V, but with Styropor insulation included.

Type	Connection	Weight [kg]	Capacity [l]	Dimensions* L x W x H [mm]		Order Code
Flamcovent EcoPlus 22	22 mm	1.4	0.22	102 x 98 x 151	1	28660
Flamcovent EcoPlus 3/4	3/4" F	1.4	0.22	102 x 113 x 188	1	28620
Flamcovent EcoPlus 1	1" F	1.8	0.35	110 x 117 x 207	1	28621
Flamcovent EcoPlus 1 1/4	1 1/4" F	2.4	0.48	116 x 121 x 227	1	28622
Flamcovent EcoPlus 1 1/2	1 1/2" F	2.5	0.48	116 x 121 x 227	1	28623
Flamcovent EcoPlus 2	2" F	2.6	0.75	125 x 135 x 258	1	28624

* Dimensions including insulation.

Flamcovent EcoPlus V

- Similar to the Flamcovent V, but with Styropor insulation included.

Type	Connection	Weight [kg]	Capa-city [l]	Dimensions* L x W x H [mm]		Order Code
Flamcovent EcoPlus V 22	22 mm	1.9	0.4	100 x 190 x 215	1	28670
Flamcovent EcoPlus V 3/4	3/4" F	1.9	0.4	100 x 190 x 215	1	28671
Flamcovent EcoPlus V 1	1" F	2.95	0.5	115 x 215 x 227	1	28672
Flamcovent EcoPlus V 1 1/4	1 1/4" F	2.8	0.5	115 x 215 x 227	1	28673

* Dimensions including insulation.

Flamcovent Smart EcoPlus

- Similar to the Flamcovent Smart, but with a 20 mm EPP insulation mantle included.

Type	Connection	Weight [kg]	H. [mm]		Order Code
Flamcovent Smart EcoPlus 3/4	3/4"	0.904	194	1	30011
Flamcovent Smart EcoPlus 22	22 mm	0.948	194	1	30012
Flamcovent Smart EcoPlus 1	1"	1118	233	1	30013
Flamcovent Smart EcoPlus 1 1/4	1 1/4"	1271	233	1	30014
Flamcovent Smart EcoPlus 1 1/2	1 1/2"	1732	279	1	30015
Flamcovent Smart EcoPlus 2	2"	2162	279	1	30016

Flamcovent Solar

For mounting in solar powered installations.

- Styropor insulation included.
- Large contact surface (PALL-ring filling).
- Maximum working temperature: 200 °C.

Type	Connection	Weight [kg]	Capacity [l]	Dimensions* L x W x H [mm]		Order Code
Flamcovent Solar 22	22 mm	1.4	0.22	102 x 113 x 188	1	28062
Flamcovent Solar 3/4	3/4" F	1.4	0.22	102 x 113 x 188	1	28663
Flamcovent Solar 1	1" F	1.8	0.35	110 x 117 x 207	1	28664
Flamcovent Solar 1 1/4	1 1/4" F	2.4	0.48	116 x 121 x 227	1	28665
Flamcovent Solar 1 1/2	1 1/2" F	2.5	0.48	116 x 121 x 227	1	28666
Flamcovent Solar 2	2" F	2.6	0.60	125 x 135 x 258	1	28667

* Dimensions including insulation.

Flamcovent Solar V

For mounting in vertical riser pipes in solar powered installations.

- Styropor insulation included.
- Large contact surface (PALL-ring filling).
- Maximum working temperature: 200 °C.

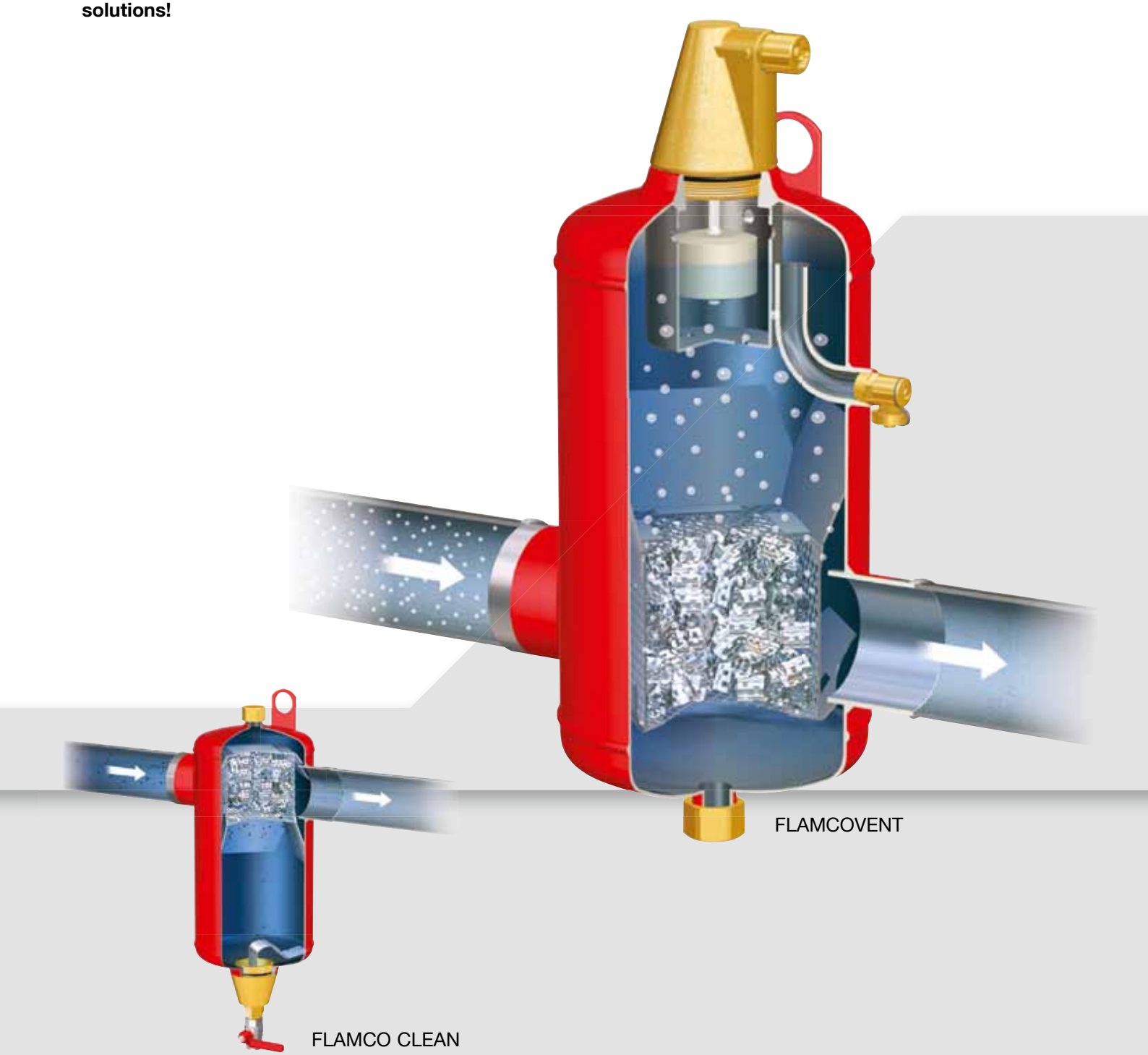
Type	Connection	Weight [kg]	Capacity [l]	Dimensions* L x W x H [mm]		Order Code
Flamcovent Solar V 22	22 mm	1.9	0.4	100 x 190 x 215	1	28065
Flamcovent Solar V 3/4	3/4" F	2	0.4	100 x 190 x 215	1	28009
Flamcovent Solar V 1 1/4	1 1/4" F	2.95	0.5	115 x 215 x 227	1	28686

* Dimensions including insulation.

Flamco Dual Zone Flow Diversion

Systems in which the water is sufficiently de-aerated and free of solid particles of all kinds give a better yield, produce less noise and have an improved service life.
Good reasons to opt for Flamco's innovative solutions!

Research carried out at the University of Antwerp shows that our air separators remove all microscopic air-bubbles from 15 µm and larger and all solid particles between 15 and 200 µm (normal spectrum of particles in a HVAC system).



FLAMCOVENT

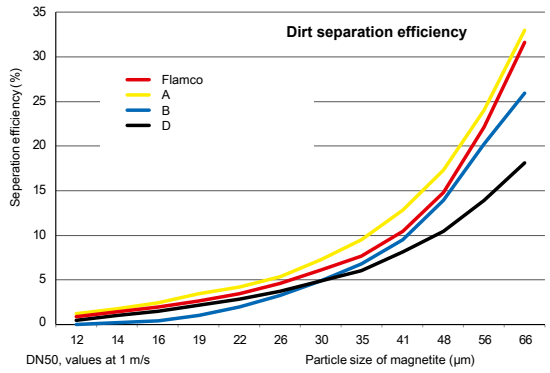
FLAMCO CLEAN

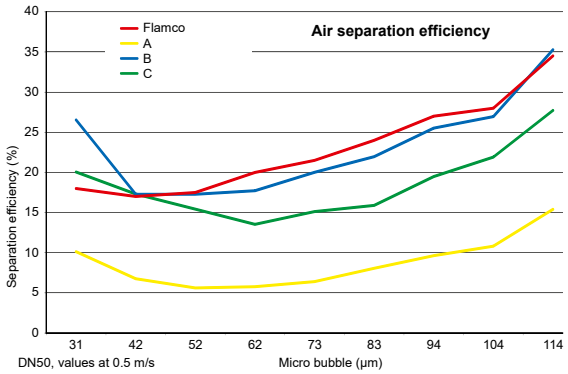
Significant Benefits and High Output

Superior Performance

The performance of our comprehensive range of air and dirt separators are widely accepted as the best in their field. Apart from air-bubbles, solid particles such as grains of sand, fragments of metal and paint or tape residue flow through every system. They can cause rust, blockages and compromised output. The consequences could prove costly.
Such problems can be prevented.

Our extensive new range of brass or steel air and dirt separators with welded, flanged or grooved connections offers you the best result for any situation. The function of Dual Zone Flow Division has been extensively tested by the University of Antwerp in Belgium.





Minimal Loss of Pressure

In order to remove both solid particles and air from your system, Flamco's new inventions are the perfect solution. Our easy-to-install device for separation of air and solid particles from the system water is undeniably the most practical solution with minimal pressure loss and resultant energy savings.

The Advantages of Dual Zone Flow Division:

- Maximum separation of air and solid particles.
- Better yield and a longer service life.
- Supreme performance and minimal loss of pressure.
- Extensive range for domestic and commercial applications.
- Innovative, economical and energy efficient.

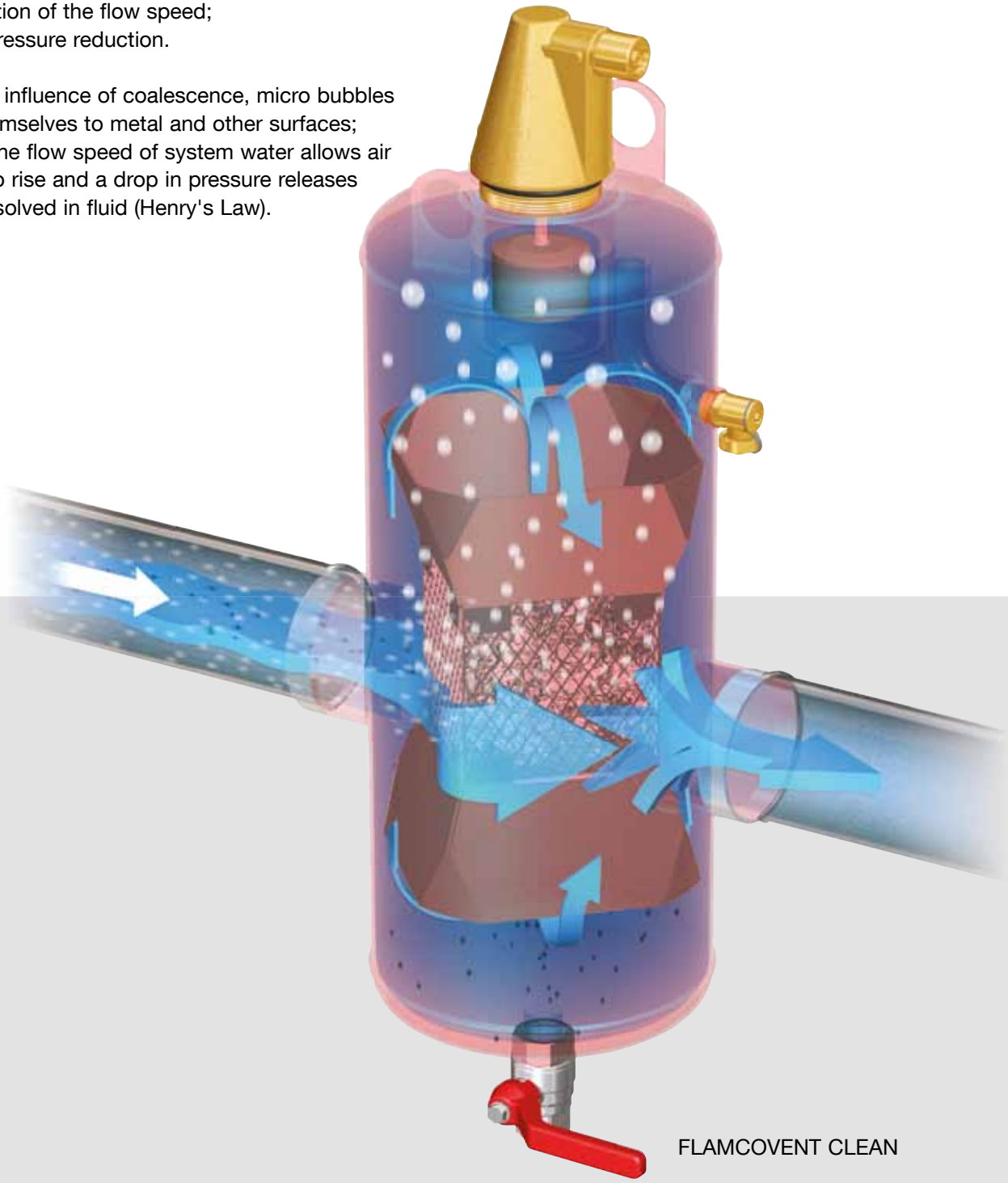
Three Technologies in One

Flamco's patented Dual Zone Flow Diversion unites all existing technologies to separate air and solid particles from system water:

1. coalescence;
2. reduction of the flow speed;
3. and pressure reduction.

Under the influence of coalescence, micro bubbles attach themselves to metal and other surfaces; lowering the flow speed of system water allows air bubbles to rise and a drop in pressure releases gases dissolved in fluid (Henry's Law).

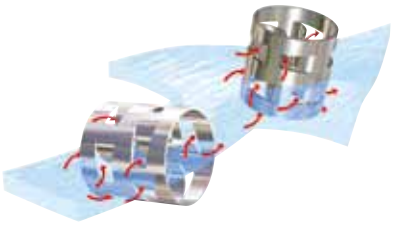
The combination of these three technologies, combined with optimum system flow, guarantees the best possible result.

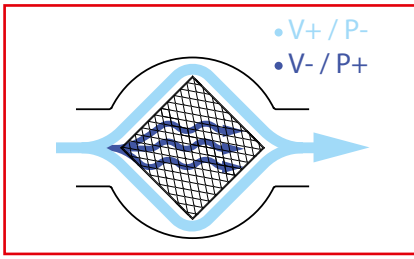


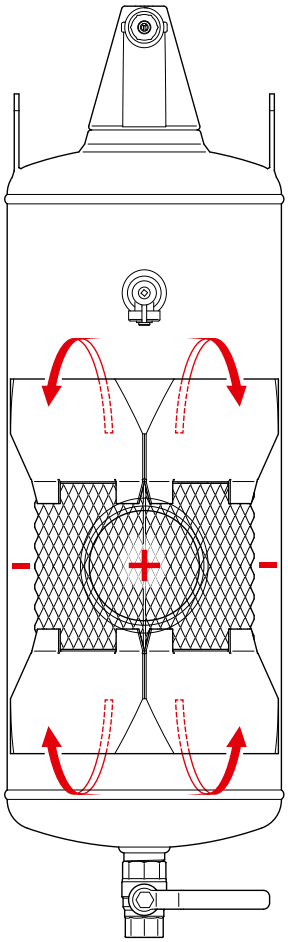
FLAMCOVENT CLEAN

How does it work?

There is a perforated cubic basket fitted in the separator. The PALL rings in the basket have a relatively large surface area, so that even micro-bubbles of 15 µm can adhere to them. Solid particles that are heavier than water sink to the bottom of the unit. In the “quiet” zone, the micro-bubbles coalesce and rise to be released by the automatic de-aerator. For solid particles that remain floating on the water there is a blow-off cock fitted under the automatic de-aerator, whilst larger solid particles can be removed via a tap on the bottom of the unit. All this happens with the minimum loss of pressure.







FLOW (FRONT)

Step 1
Because the basket's corners are at an angle to the flow direction, the system water is split at the inlet. The water that is forced against the basket causes the pressure inside the basket to rise.

Step 2
The difference in pressure (higher in the basket and lower in the separate streams) means that when the pressure drops, a slow secondary stream will flow from the basket over the edges of the partitions and back into the quicker main stream.

Step 3
The water in the basket is fed along all surfaces of the PALL rings. Micro-bubbles and solid particles are led to the “quiet” zones by the slow secondary stream. The flow area on the way to the “quiet” zones becomes increasingly large, while the pressure drops.

FLAMCOVENT S/R/F MICROBUBBLE AIR SEPARATORS (DN 50 - DN 600)

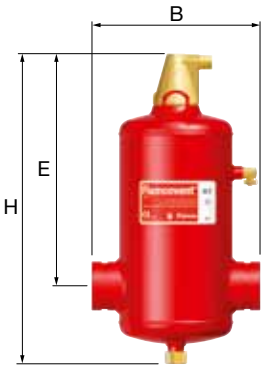
For total elimination of air from heating and cooling installations. Removes not only the smallest air bubbles, but even the air which has been absorbed into the water. Using the special PALL-ring procedure patented by Flamco, it is possible to remove all air from the installation. Even microbubbles from 15 - 20 µm!
To prove this, the Technical University of Delft, the Netherlands, has run tests which have shown that the Flamcovent can remove even the smallest bubbles from the water. The Flamcovent's air chamber is conical in shape, which means that a large distance can be achieved between the water level and the venting valve. This prevents leaks.

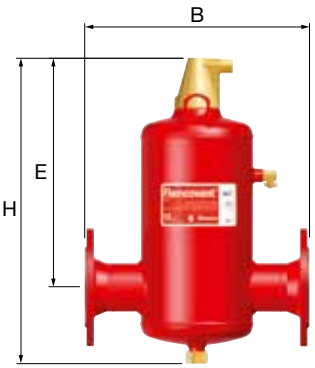
- Large contact surface (PALL-ring filling).
- Low flow resistance and separation of micro air bubbles.
- Maximum working temperature: 120 °C.

Flamcovent S

Flamcovent R

Flamcovent F





Flamcovent S

With welded connections.

- Maximum operating pressure: 10.0 bar.

Type	Capacity [l]	Connection [DN]	Connection [mm]	Dimensions B [mm]	Dimensions E [mm]	Dimensions H [mm]	Weight [kg]		Order Code
Flamcovent 50 S	8	50	60	260	338	470	8.0	1	28131
Flamcovent 65 S	8	65	76	260	338	470	8.1	1	28132
Flamcovent 80 S	25	80	89	370	435	621	14.5	1	28133
Flamcovent 100 S	25	100	114	370	435	621	15.5	1	28134
Flamcovent 125 S	59	125	140	525	515	790	33.0	1	28135
Flamcovent 150 S	60	150	168	525	510	790	34.0	1	28136
Flamcovent 200 S	123	200	219	650	670	970	56.5	1	28137
Flamcovent 250 S	287	250	273	850	892	1277	120.0	1	28138
Flamcovent 300 S	333	300	324	850	1032	1442	139.0	1	28139
Flamcovent 350 S	646	350	356	1050	1109	1586	238.0	1	28140
Flamcovent 400 S	731	400	406	1050	1252	1759	263.0	1	28151
Flamcovent 500 S	1384	500	508	1400	1470	2090	502.0	1	28153
Flamcovent 600 S	2390	600	610	1680	1760	2485	820.0	1	28155

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Flamcovent R

With grooved pipe system connections.

- Maximum operating pressure: 10.0 bar.

Type	Capacity [l]	Connection [DN]	Connection [mm]	Dimensions B [mm]	Dimensions E [mm]	Dimensions H [mm]	Weight [kg]		Order Code
Flamcovent 50 R	8	50	60	260	338	472	8.0	1	28111
Flamcovent 65 R	8	65	76	260	338	472	8.1	1	28112
Flamcovent 80 R	25	80	89	370	435	612	14.5	1	28113
Flamcovent 100 R	25	100	114	370	435	612	15.5	1	28114
Flamcovent 125 R	59	125	140	525	515	740	33.0	1	28115
Flamcovent 150 R	60	150	168	360	510	740	34.0	1	28116
Flamcovent 200 R	123	200	219	450	670	975	56.5	1	28117

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Flamcovent F - PN 10

With flanged connections.

- Maximum operating pressure: 10.0 bar.

Type	Capacity [l]	Connection * [DN]	Connection * [mm]	Dimensions B [mm]	Dimensions E [mm]	Dimensions H [mm]	Weight [kg]		Order Code
Flamcovent 50 F	8	50	60	350	338	470	13,1	1	28141
Flamcovent 65 F	8	65	76	350	338	470	14,1	1	28142
Flamcovent 80 F	25	80	89	470	435	621	22,4	1	28143
Flamcovent 100 F	25	100	114	470	435	621	24,8	1	28144
Flamcovent 125 F	59	125	140	635	515	790	45,6	1	28145
Flamcovent 150 F	60	150	168	635	510	790	50,0	1	28146
Flamcovent 200 F	123	200	219	774	670	970	79,5	1	28147
Flamcovent 250 F	287	250	273	990	892	1277	154,0	1	28148
Flamcovent 300 F	333	300	324	1016	1032	1442	184,0	1	28149
Flamcovent 350 F	646	350	356	1214	1109	1586	304,0	1	28150
Flamcovent 400 F	731	400	406	1220	1252	1759	346,0	1	28152
Flamcovent 500 F	1384	500	508	1580	1470	2090	635,0	1	28154
Flamcovent 600 F	2390	600	610	1870	1760	2485	1028,0	1	28156

* According to EN 1092-1 PN16.

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Flamcovent F - PN 16

With flanged connections.

- Maximum operating pressure: 16.0 bar.

Type	Capacity [l]	Connection		Dimensions			Weight [kg]		Order Code
		[DN]	[mm]	B [mm]	E [mm]	H [mm]			
Flamcovent 50 F	8	50	60	350	338	470	21	1	28401
Flamcovent 65 F	8	65	76	350	338	470	22	1	28402
Flamcovent 80 F	25	80	89	470	435	621	40	1	28403
Flamcovent 100 F	25	100	114	470	435	621	43	1	28404
Flamcovent 125 F	59	125	140	635	515	790	69	1	28405
Flamcovent 150 F	60	150	168	635	510	790	77	1	28406
Flamcovent 200 F	123	200	219	774	670	970	136	1	28407
Flamcovent 250 F	287	250	273	990	892	1277	275	1	28408
Flamcovent 300 F	333	300	324	1016	1032	1442	321	1	28409
Flamcovent 350 F	646	350	356	1214	1109	1586	583	1	28410
Flamcovent 400 F	731	400	406	1220	1252	1759	660	1	28411
Flamcovent 500 F	1384	500	508	1580	1470	2090	1188	1	28412
Flamcovent 600 F	2390	600	610	1870	1760	2485	1900	1	28413

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Flamcovent F - PN 25

With flanged connections.

- Maximum operating pressure: 25.0 bar.

Type	Capacity [l]	Connection		Dimensions			Weight [kg]		Order Code
		[DN]	[mm]	B [mm]	E [mm]	H [mm]			
Flamcovent 50 F	8	50	60	350	338	470	22	1	28601
Flamcovent 65 F	8	65	76	350	338	470	24	1	28602
Flamcovent 80 F	25	80	89	470	435	621	52	1	28603
Flamcovent 100 F	25	100	114	470	435	621	56	1	28604
Flamcovent 125 F	59	125	140	635	515	790	91	1	28605
Flamcovent 150 F	60	150	168	635	510	790	102	1	28606
Flamcovent 200 F	123	200	219	774	670	970	186	1	28607
Flamcovent 250 F	287	250	273	990	892	1277	374	1	28608
Flamcovent 300 F	333	300	324	1016	1032	1442	432	1	28609
Flamcovent 350 F	646	350	356	1214	1109	1586	704	1	28610
Flamcovent 400 F	731	400	406	1220	1252	1759	802	1	28611
Flamcovent 500 F	1384	500	508,0	1580	1470	2090	1428	1	28612
Flamcovent 600 F	2390	600	610	1870	1760	2485	2222	1	28613

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ACCESSORIES FLAMCOVENT

Automatic Air Vent

For Flexvent Super, Flamcovent and Flexair.

Type	Used for	Max. working pressure [bar]	Float		Order Code
Spare vent cap 10 S	Flamcovent 22 mm - 2", Flexair DN 65 - 600	10	-	1	28554
Spare vent cap 10 L	Flamcovent (Clean) DN 50 - 650	10	✔	1	28555

Flamco IsoPlus

Flamco IsoPlus insulation for the Flamcovent S+F and Flamco Clean S+F.

- Melamine resin foam insulation with polystyrene surface and thermoformed deep-drawn covers.
- Fire class B2, according to DIN 4102.
- Temperature resistant to 120 °C (393 K).
- Colour white/aluminium RAL 9006.
- The outer polystyrene layer (thickness 1 mm) is laminated on the melamine foam (thickness 50 mm).
- Easy to install, two piece insulating plates are joined by attached hook fasteners.
- Retrospective installation permissible.
- Available for Flamcovent S+F and Flamco Clean S+F with connections from DN 50 to DN 200.
- Flamco IsoPlus is 100 % recyclable.

Type	Dimensions Ø [mm]	Dimensions H. [mm]	Weight [kg]		Order Code
Flamco IsoPlus 50	285	510	1,5	1	28160
Flamco IsoPlus 65	285	510	1,5	1	28161
Flamco IsoPlus 80	400	660	2,5	1	28162
Flamco IsoPlus 100	400	660	2,5	1	28163
Flamco IsoPlus 125	500	810	3,5	1	28164
Flamco IsoPlus 150	500	810	3,5	1	28165
Flamco IsoPlus 200	560	1010	5,0	1	28166

CE Nr. 0343 97/23/EC-PED

ENA: The Effective De-aeration and Top-Up Unit

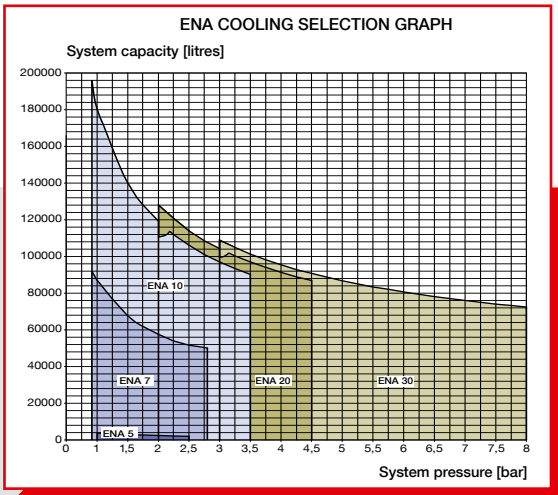
De-aeration and leakage of the system, will reduce the pressure in the system. This may result in damage to the system or impaired performance. The Flamco ENA water de-aeration and top-up unit is the solution.

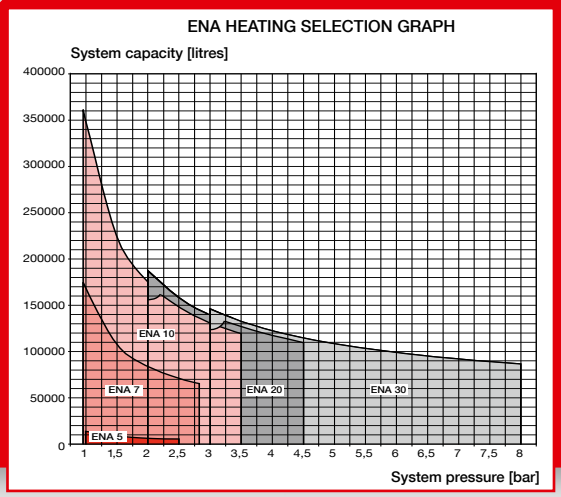
Decreases in pressure can be compensated with automatic topping up. The water is de-gassed before being pumped into the system. The vacuum thus created means that the system can be de-aerated in the most effective way possible.

ENA 5

ENA 30

ENA 7/10/20



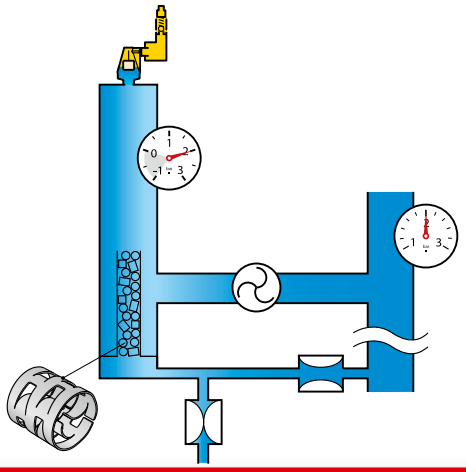


The benefits to you:

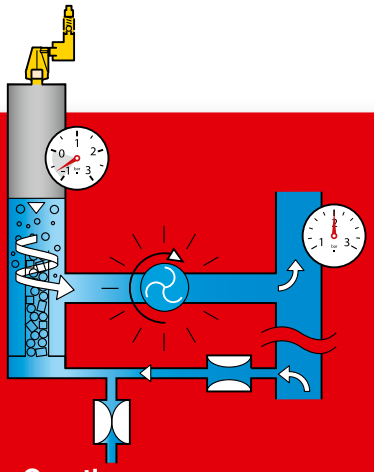
- High performance de-aeration.
- Excellent degassing in low temperature systems and systems with significant height.
- Central degassing for both system and top-up water.
- Compact, sturdy design.
- Programmable control unit.
- Easy to operate.
- Assembled and ready for connection.

The ENA is suitable for heating and cooling systems and can easily be used in combination with a Flexcon expansion vessel or pressure expansion automat. The ENA has a potential-free contact, through which status can be transmitted to a building management system. The clear operation via the display and complete pre-assembly make the ENA very easy to install.

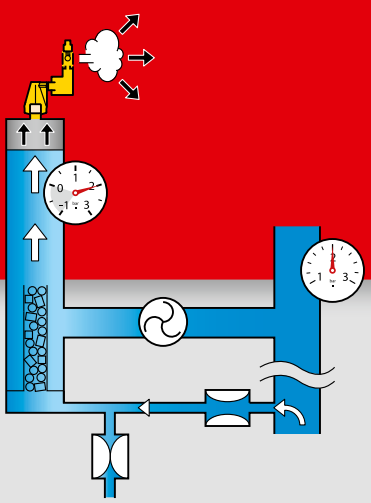
How the ENA works



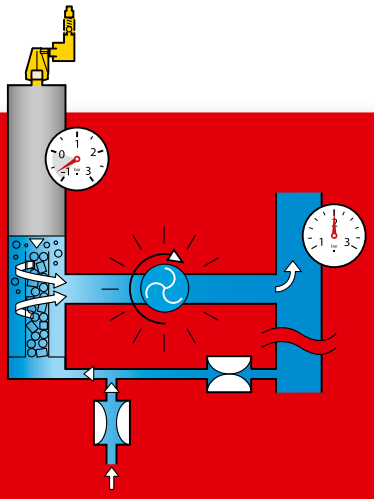
1. Not active
When the ENA is inactive, the stainless steel column is filled with water and the pressure is equal to the system pressure.



2. Creating a vacuum
As the pump draws more water out of the column than can flow back in, a vacuum is created. Gas is released and collects on the surface of the water.



3. Water intake
The pump stops and the column fills up again with water. The gas is then expelled via the automatic air vent.



4. Topping-up
If water is lost from the system on installation the volume, and as a conse-quence the pressure will drop. Water for topping-up is de-aerated in the column and fed into the system in small doses (until the correct pressure has been restored).

ENA DE-AERATION AND MAKE-UP

For central de-aeration of both system fluid and make-up fluid. Exceptional de-aeration and (optional) make-up performance with compact and robust design, taking up minimal space.

- Easy to operate.
- No on-site assembly.
- System connection: Rp ¾".
- Freely programmable control unit with RS 485 connection.
- Increased system computer control.
- Noise level: ca. 55dB.
- Maximum working temperature: 70 °C.
- Maximum ambient temperature: 45 °C.

ENA 5 - 30

Type	Max. work. press. [bar]	Operating pressure [bar]	Dimensions W. [mm]	D. [mm]	H. [mm]	Weight [kg]		Order Code
ENA 5	6	1.0 - 2.5	490	320	710	28	1	17085
ENA 7	8	0.8 - 2.7	740	325	1270	40	1	17070
ENA 10	8	0.8 - 3.5	740	325	1270	40	1	17090
ENA 20	8	2.0 - 4.5	740	325	1270	45	1	17091
ENA 30	10	3.0 - 8.0	710	525	1270	60	1	17092

Gas Sensor

Type		Order Code
Gas sensor for ENA 7 - 30	1	17071

FLAMCO CLEAN DIRT SEPARATORS (22 MM - 2")

Removes solid particles that need to be flushed out before they can cause damage to the pump or water heater, for example.

- Maximum operating pressure: 10.0 bar.
- Maximum operating temperature: 120 °C.

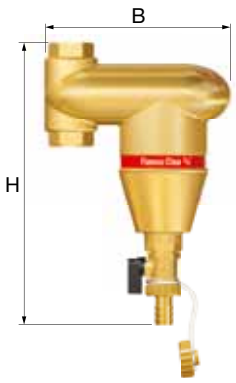
Flamco Clean

For mounting in horizontal pipes.
- Brass housing, corrosion resistant internals.

Type	Connection	Weight [kg]	Capacity [l]	Dimensions B [mm]	Dimensions H [mm]		Order Code
Flamco Clean 22	22 mm	1.4	0.22	118	196	1	28029
Flamco Clean 3/4	3/4" F	1.4	0.22	118	196	1	28030
Flamco Clean 1	1" F	1.8	0.35	100	216	1	28031
Flamco Clean 1 1/4	1 1/4" F	2.4	0.48	114	237	1	28032
Flamco Clean 1 1/2	1 1/2" F	2.5	0.48	114	237	1	28033
Flamco Clean 2	2" F	2.6	0.75	131	255	1	28034

Flamco Clean V

For mounting in vertical pipes.
- Brass housing, corrosion resistant internals.



Type	Connection	Weight [kg]	Capacity [l]	Dimensions B [mm]	Dimensions H [mm]		Order Code
Flamco Clean V 22	22 mm	2.15	0.4	158	230	1	28039
Flamco Clean V 3/4	3/4" F	2.15	0.4	158	223	1	28035
Flamco Clean V 1	1" F	3.2	0.5	184	247	1	28036
Flamco Clean V 1 1/4	1 1/4" F	3.05	0.5	184	247	1	28037

Flamco Clean Smart

More compact, lighter, cleaner and even more efficient.
The new Flamco Clean Smart dirt separators are smart products in every aspect. And just as in other innovations from Flamco, their groundbreaking new design also delivers optimal performance. These dirt separators for heating and cooling systems are the new standard.

The Smart dirt separators remove minuscule dirt particles from the system water. They are near enough maintenance-free and the flow resistance is negligibly low. The magnetite particles present in the water are directly attracted by the magnetic field and all other dirt particles are also trapped extremely efficiently.

- 60% better performance compared to conventional dirt separators.
- Suitable for water and water/glycol solutions of up to 50% glycol.
- Can be used with all kinds of pipework.
- Compact dimensions, light weight.
- Available in various sizes up to 2".
- Extremely low flow resistance.
- Low energy consumption.

Type	Connection	Weight [kg]	Dimensions Ø [mm]	Dimensions H. [mm]		Order Code
Flamco Clean Smart 3/4	3/4"	0.939	60	190	1	30021
Flamco Clean Smart 22	22 mm	0.983	60	200	1	30022
Flamco Clean Smart 1	1"	1.109	75	321	1	30023
Flamco Clean Smart 1 1/4	1 1/4"	1.263	75	233	1	30024
Flamco Clean Smart 1 1/2	1 1/2"	1.724	92	277	1	30025
Flamco Clean Smart 2	2"	2.154	92	282	1	30026

Flamco Clean EcoPlus

- Similar to the Flamco Clean, but with insulation included.

Type	Connection	Weight [kg]	Capacity [l]	Dimensions* L x W x H [mm]		Order Code
Flamco Clean EcoPlus 22	22 mm	1.4	0.22	102 x 113 x 157	1	28635
Flamco Clean EcoPlus 28	28 mm	1.8	0.35	110 x 117 x 175.5	1	28636
Flamco Clean EcoPlus 3/4	3/4" F	1.4	0.22	102 x 113 x 157	1	28630
Flamco Clean EcoPlus 1	1" F	1.8	0.35	110 x 117 x 175.5	1	28631
Flamco Clean EcoPlus 1 1/4	1 1/4" F	2.4	0.48	116 x 121 x 196	1	28632
Flamco Clean EcoPlus 1 1/2	1 1/2" F	2.5	0.48	116 x 121 x 196	1	28633
Flamco Clean EcoPlus 2	2" F	2.6	0.75	125 x 135 x 258	1	28634

*Dimensions including insulation.

Flamco Clean EcoPlus V

- Similar to the Flamco Clean V, but with an insulation mantle included.

Type	Connection	Weight [kg]	Capa-city [l]	Dimensions* L x W x H [mm]		Order Code
Flamco Clean EcoPlus V 22	22 mm	2.15	0.4	100 x 190 x 230	1	28676
Flamco Clean EcoPlus V 3/4	3/4" F	2.15	0.4	100 x 190 x 223	1	28677
Flamco Clean EcoPlus V 1	1" F	3.2	0.5	115 x 215 x 247	1	28678
Flamco Clean EcoPlus V 1 1/4	1 1/4" F	3.05	0.5	115 x 215 x 247	1	28679

*Dimensions including insulation.

Flamco Clean Smart EcoPlus

- Similar to the Flamco Clean Smart, but with a 20 mm EPP insulation mantle included.

Type	Connection	Weight [kg]	H. [mm]		Order Code
Flamco Clean Smart EcoPlus 3/4	3/4"	1.009	196	1	30031
Flamco Clean Smart EcoPlus 22	22 mm	1.053	196	1	30032
Flamco Clean Smart EcoPlus 1	1"	1.214	241	1	30033
Flamco Clean Smart EcoPlus 1 1/4	1 1/4"	1.372	241	1	30034
Flamco Clean Smart EcoPlus 1 1/2	1 1/2"	1.879	285	1	30035
Flamco Clean Smart EcoPlus 2	2"	2.316	285	1	30036

FLAMCO CLEAN DIRT SEPARATORS (DN 50 - 600)

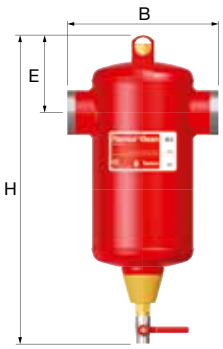
Removes solid particles that need to be flushed out before they can cause damage (to pumps or water heaters for example), using the Dual Zone Flow Diversion technology.

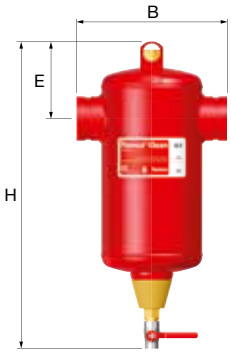
- Materials used: Welded steel body EN/ISO S235JRG2, equivalent to ASTM A181 class 60.
- Wall thickness: >10 mm.
- External coating: 2 part Epoxy (RAL 3002), > 45µm.
- Maximum operating pressure: 10.0 bar.
- Maximum operating temperature: 120 °C.

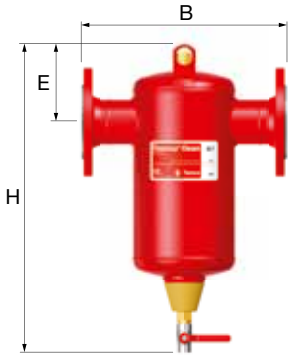
Flamco Clean S

Flamco Clean R

Flamco Clean F







Flamco Clean S

With welded connections.

Type	Capacity [l]	Connection DN	Connection [mm]	Weight [kg]	Dimensions B [mm]	Dimensions E [mm]	Dimensions H [mm]		Order Code
Flamco Clean S 50	8	50	60.3	8.0	260	135	517	1	28118
Flamco Clean S 65	8	65	76.1	8.1	260	135	517	1	28119
Flamco Clean S 80	25	80	88.9	14.5	370	180	651	1	28120
Flamco Clean S 100	25	100	114.3	15.5	370	180	651	1	28121
Flamco Clean S 125	59	125	139.7	33.0	525	225	780	1	28122
Flamco Clean S 150	60	150	168.3	34.0	525	230	780	1	28123
Flamco Clean S 200	123	200	219.1	56.5	650	300	1013	1	28124
Flamco Clean S 250	287	250	273.0	120.0	850	400	1330	1	28125
Flamco Clean S 300	333	300	323.9	139.0	850	420	1495	1	28126
Flamco Clean S 350	646	350	355.6	238.0	1050	490	1636	1	28127
Flamco Clean S 400	731	400	406.4	263.0	1050	520	1810	1	28128
Flamco Clean S 500	1384	500	508.0	502.0	1400	630	2140	1	28129
Flamco Clean S 600	2390	600	610.0	820.0	1680	795	2535	1	28130

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Flamco Clean F

With flanged connections.

Type	Capacity [l]	Connection * [DN]	Connection * [mm]	Weight [kg]	Dimensions B [mm]	Dimensions E [mm]	Dimensions H [mm]		Order Code
Flamco Clean F 50	8	50	60.3	13.1	350	135	517	1	28188
Flamco Clean F 65	8	65	76.1	14.1	350	135	517	1	28189
Flamco Clean F 80	25	80	88.9	22.4	470	180	651	1	28190
Flamco Clean F 100	25	100	114.3	24.8	470	180	651	1	28191
Flamco Clean F 125	59	125	139.7	45.6	635	225	780	1	28192
Flamco Clean F 150	60	150	168.3	50.0	635	230	780	1	28193
Flamco Clean F 200	123	200	219.1	79.5	774	300	1013	1	28194
Flamco Clean F 250	287	250	273.0	154.0	990	400	1330	1	28195
Flamco Clean F 300	333	300	323.9	184.0	1016	420	1495	1	28196
Flamco Clean F 350	646	350	355.6	304.0	1214	490	1636	1	28197
Flamco Clean F 400	731	400	406.4	346.0	1220	520	1810	1	28198
Flamco Clean F 500	1384	500	508.0	635.0	1580	630	2140	1	28199
Flamco Clean F 600	2390	600	610.0	1028.0	1870	795	2535	1	28200

* According to EN 1092-1 PN16.

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Flamco Clean R

With grooved pipe system connections.

Type	Capacity [l]	Connection [DN]	Connection [mm]	Weight [kg]	Dimensions B [mm]	Dimensions E [mm]	Dimensions H [mm]		Order Code
Flamco Clean R 50	8	50	60.3	8.0	260	135	517	1	28181
Flamco Clean R 65	8	65	76.1	8.1	260	135	517	1	28182
Flamco Clean R 80	25	80	88.9	14.5	370	180	651	1	28183
Flamco Clean R 100	25	100	114.3	15.5	370	180	651	1	28184
Flamco Clean R 125	59	125	139.7	33.0	525	225	780	1	28185
Flamco Clean R 150	60	150	168.3	34.0	525	230	780	1	28186
Flamco Clean R 200	123	200	219.1	56.5	650	300	1013	1	28187

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FLAMCO CLEAN ACCESSORIES

Dirt Wiper

Type		Order Code
Dirt wiper	1	28560

Flamco IsoPlus

Flamco IsoPlus insulation for the Flamcovent S+F and Flamco Clean S+F.

- Melamine resin foam insulation with polystyrene surface and thermoformed deep-drawn covers.
- Fire class B2, according to DIN 4102.
- Temperature resistant to 120 °C.
- Colour white/aluminium RAL 9006.
- The outer polystyrene layer (thickness 1 mm) is laminated on the melamine foam (thickness 50 mm).
- Easy to install, two piece insulating plates are joined by attached hook fasteners.
- Retrospective installation permissible.
- Available for Flamcovent S+F and Flamco Clean S+F with connections from DN 50 to DN 200.
- Flamco IsoPlus is 100 % recyclable.

Type	Dimensions Ø [mm]	Dimensions H. [mm]	Weight [kg]		Order Code
Flamco IsoPlus 50	285	510	1,5	1	28160
Flamco IsoPlus 65	285	510	1,5	1	28161
Flamco IsoPlus 80	400	660	2,5	1	28162
Flamco IsoPlus 100	400	660	2,5	1	28163
Flamco IsoPlus 125	500	810	3,5	1	28164
Flamco IsoPlus 150	500	810	3,5	1	28165
Flamco IsoPlus 200	560	1010	5,0	1	28166

FLAMCOVENT CLEAN AIR & DIRT SEPARATORS (22 MM - 2")

Flamcovent Clean has been specially designed to remove solid particles as well as air from a heating installation.

- Maximum operating pressure: 10.0 bar.
- Maximum working temperature: 120 °C.

Flamcovent Clean

Type	Dimensions* Ø [mm]	Dimensions* H. [mm]	Connection		Order Code
Flamcovent Clean 22	115	283	22 mm	1	28680
Flamcovent Clean 3/4	90	283	3/4"	1	28681
Flamcovent Clean 1	104	315	1"	1	28682
Flamcovent Clean 1 1/4	114	345	1 1/4"	1	28683
Flamcovent Clean 1 1/2	114	345	1 1/2"	1	28684

* Ø including connection.

Flamcovent Clean Smart

More compact, lighter, cleaner and even more efficient.
The new Flamcovent Clean Smart air and dirt separators are smart products in every aspect. And just as in other innovations from Flamco, their groundbreaking new design also delivers optimal performance. These air and dirt separators for heating and cooling systems are the new standard.

The Smart air and dirt separators remove even the smallest microbubbles and minuscule dirt particles from the system water. They are near enough maintenance-free and the flow resistance is negligibly low. The magnetite particles present in the water are directly attracted by the magnetic field and all other dirt particles are also trapped extremely efficiently.

- 60% better performance compared to conventional air and dirt separators.
- Suitable for water and water/glycol solutions of up to 50% glycol.
- Can be used with all kinds of pipework.
- Compact dimensions, light weight.
- Available in various sizes up to 2".
- Extremely low flow resistance.
- Low energy consumption.

Type	Connection	Weight [kg]	Dimensions Ø [mm]	Dimensions H. [mm]		Order Code
Flamcovent Clean Smart 3/4	3/4"	1.198	60	241	1	30041
Flamcovent Clean Smart 22	22 mm	1.242	60	241	1	30042
Flamcovent Clean Smart 1	1"	1.447	75	318	1	30043
Flamcovent Clean Smart 1 1/4	1 1/4"	1.600	75	318	1	30044
Flamcovent Clean Smart 1 1/2	1 1/2"	2.189	92	385	1	30045
Flamcovent Clean Smart 2	2"	2.619	92	385	1	30046

Flamcovent Clean Smart EcoPlus

- Similar to the Flamcovent Clean Smart, but with a 20 mm EPP insulation mantle included.

Type	Connection	Weight [kg]	H. [mm]		Order Code
Flamcovent Clean Smart EcoPlus 3/4	3/4"	1.281	258	1	30051
Flamcovent Clean Smart EcoPlus 22	22 mm	1.325	258	1	30052
Flamcovent Clean Smart EcoPlus 1	1"	1.567	335	1	30053
Flamcovent Clean Smart EcoPlus 1 1/4	1 1/4"	1.733	335	1	30054
Flamcovent Clean Smart EcoPlus 1 1/2	1 1/2"	2.379	403	1	30055
Flamcovent Clean Smart EcoPlus 2	2"	2.816	403	1	30056

FLAMCOVENT CLEAN AIR & DIRT SEPARATORS (DN 50 - DN 600)

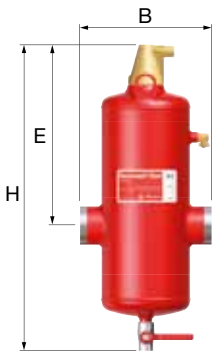
Flamcovent Clean has been specially designed to remove solid particles as well as air from a heating installation, using the Dual Zone Flow Diversion technology.

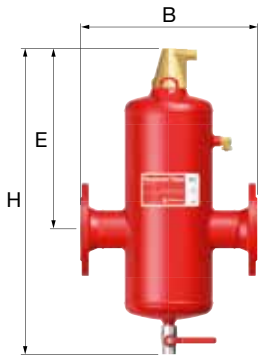
- Maximum operating pressure: 10.0 bar.
- Maximum working temperature: 120 °C.

Flamcovent Clean S

Flamcovent Clean R

Flamcovent Clean F





Flamcovent Clean S

With dirt chamber and welded connections.

Type	Capacity [l]	Connection [DN]	Connection [mm]	Dimensions B [mm]	Dimensions E [mm]	Dimensions H [mm]	Weight [kg]		Order Code
Flamcovent Clean 50 S	10	50	60.3	260	54.5	560	9,5	1	28070
Flamcovent Clean 65 S	10	65	76.1	260	70.3	560	9,7	1	28071
Flamcovent Clean 80 S	33	80	88.9	370	82.5	756	18	1	28072
Flamcovent Clean 100 S	33	100	114.3	370	107.1	756	19	1	28073
Flamcovent Clean 125 S	78	125	139.7	525	130.7	970	39	1	28074
Flamcovent Clean 150 S	78	150	168.3	525	159.3	970	40	1	28075
Flamcovent Clean 200 S	158	200	219.1	650	206.5	1193	66	1	28076
Flamcovent Clean 250 S	370	250	273.1	850	260.4	1577	141	1	28077
Flamcovent Clean 300 S	415	300	323.9	850	309.7	1742	157	1	28078
Flamcovent Clean 350 S	840	350	355.6	1050	339.6	1986	256	1	28079
Flamcovent Clean 400 S	927	400	406.4	1050	388.8	2159	281	1	28095
Flamcovent Clean 500 S	1768	500	508.0	1400	486.0	2590	530	1	28096
Flamcovent Clean 600 S	3056	600	610.0	1680	585.0	3085	890	1	28097

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Flamcovent Clean R

With dirt chamber and mechanical couplings.

Type	Capacity [l]	Connection [DN]	Connection [mm]	Dimensions B [mm]	Dimensions E [mm]	Dimensions H [mm]	Weight [kg]		Order Code
Flamcovent Clean 50 R	10	50	60,3	260	55	560	9.5	1	28101
Flamcovent Clean 65 R	10	65	76,1	260	70,3	560	9,7	1	28102
Flamcovent Clean 80 R	33	80	88,9	370	82,5	756	18	1	28103
Flamcovent Clean 100 R	33	100	114,3	370	107,1	756	19	1	28104
Flamcovent Clean 125 R	78	125	139,7	525	130,7	970	39,0	1	28105
Flamcovent Clean 150 R	78	150	168,3	525	159,3	970	40,0	1	28106
Flamcovent Clean 200 R	158	200	219,1	650	206,5	1193	66	1	28107

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Flamcovent Clean F

With dirt chamber and welded connections.

Type	Capacity [l]	Connection ** [DN]	Connection ** [mm]	Dimensions * B [mm]	Dimensions * E [mm]	Dimensions * H [mm]	Weight [kg]		Order Code
Flamcovent Clean 50 F	10	50	60.3	350	54.5	560	15	1	28080
Flamcovent Clean 65 F	10	65	76.1	350	70.3	560	15,7	1	28081
Flamcovent Clean 80 F	33	80	88.9	470	82.5	756	26	1	28082
Flamcovent Clean 100 F	33	100	114.3	470	107.1	756	28,5	1	28083
Flamcovent Clean 125 F	78	125	139.7	635	130.7	970	52	1	28084
Flamcovent Clean 150 F	78	150	168.3	635	159.3	970	56	1	28085
Flamcovent Clean 200 F	158	200	219.1	774	206.5	1193	89	1	28086
Flamcovent Clean 250 F	370	250	273.1	990	260.4	1577	175	1	28087
Flamcovent Clean 300 F	415	300	323.9	1006	309.7	1742	202	1	28088
Flamcovent Clean 350 F	840	350	355.6	1214	339.6	1986	322	1	28089
Flamcovent Clean 400 F	927	400	406.4	1220	388.8	2159	364	1	28090
Flamcovent Clean 500 F	1768	500	508.0	1580	486.0	2590	663	1	28091
Flamcovent Clean 600 F	3056	600	610.0	1870	585.0	3085	1098	1	28092

* Width including connections.
** According to EN 1092-1 PN16.

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FLAMCOVENT CLEAN ACCESSORIES

Automatic Air Vent

For Flexvent Super, Flamcovent and Flexair.

Type	Used for	Max. working pressure [bar]		Order Code
Spare vent cap 10 L	Flamcovent (Clean) DN 50 - 650	10	1	28555