

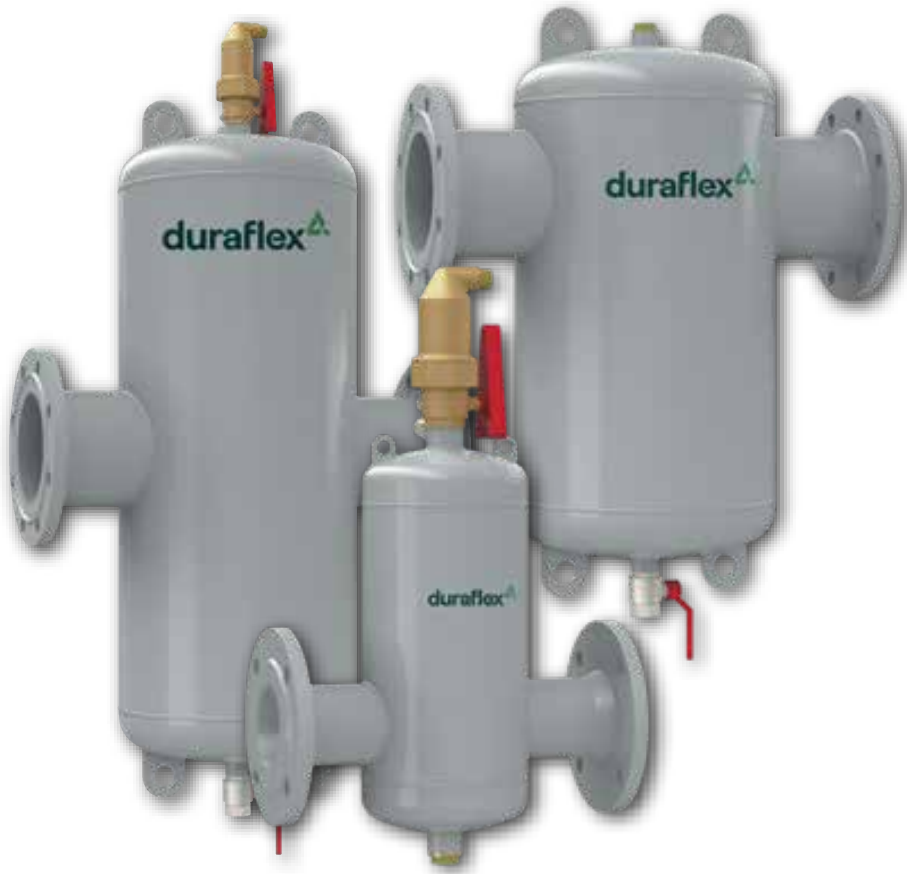
Duraflex EcoTwin Dirt & Air Separator Flanged Standard Flow

SPEC SHEET

PRODUCT CODE: As below.

KEY FEATURES

- Duraflex EcoTwin Dirt Air Separators work ultra-efficiently in every heating & cooling system. Even scarcely visible, harmful particles of dirt and sludge are separated, looking after the system and saving operating and maintenance costs.
- The air discharge capacity of these devices is very high. They are capable of automatically removing all the air present in the system down to micro-bubble level. At the same time, they separate dirt and sludge contained in the water in the circuit and collect it in the lower part of the valve body, from where it can be drawn off.
- Deaerated and cleaned water circulating through the system allows it to function under optimal conditions without encountering problems of noise, corrosion, localised overheating or mechanical damage.



Size	50mm	65mm	80mm	100mm	125mm	150mm
Code	TW50	TW65	TW80	TW100	TW125	TW150



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Dirt

Due to the nature of fluid systems, it is impossible to prevent dirt from accumulating in the system.

Dirt can accumulate through:

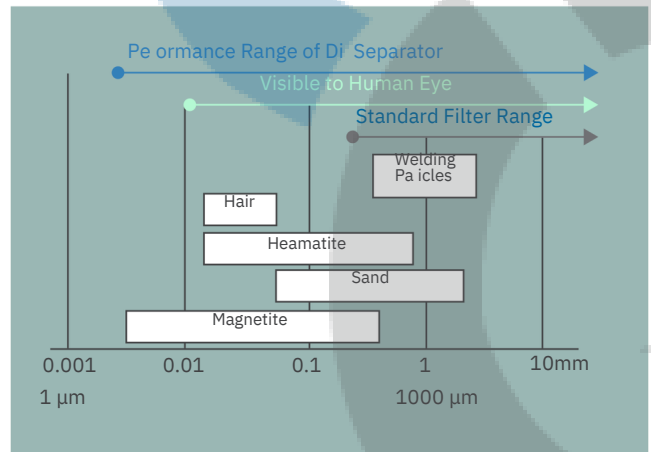
- Dirt via the filling and makeup water
- Sludge as a result of corrosion of system components
- Calcification when heating
- System alterations and maintenance
- Open header tanks

Any hydronic heating or cooling or domestic hot water system works at optimal efficiency when it's running with perfectly clean water. The introduction of dirt, corrosion by-products and other particulates are detrimental to the health and longevity of the components and system as a whole.

The removal of harmful dirt and sludge is an important step in the flow of a water based heating or cooling system and can be managed by the inclusion of dirt and air separators sometimes in tandem and sometimes in combined units.

Air and dirt work together to attack any water based cycle that is housed in materials that are liable to corrosion. Most people have seen the thick black sludge that collects in the bottom of domestic radiators that we see when the central heating is drained, this is generally produced by corrosion of the components. Air makes the corrosion possible and the by-products help keep oxygen present to react further, removing both has many benefits.

Dirt Particle Sizes



- Fewer instances of downtime
- Increased lifespan of components and system as a whole
- Lower fuel costs
- Lower environmental impact
- Quieter operation
- Lower cost of maintenance
- Decreased wear and tear



Particle Removal

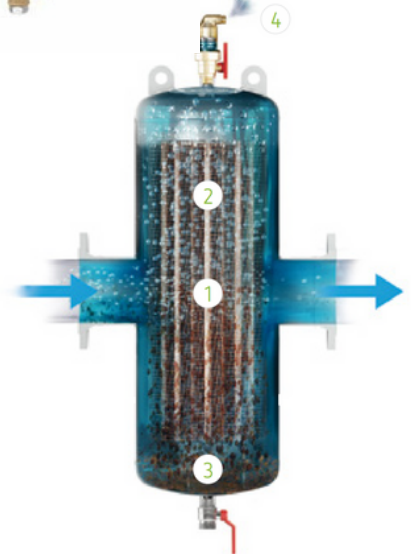
Specialist equipment can be incorporated into any system to alleviate if not totally eradicate the whole issue cost effectively. We have dealt with the problems that air brings to the table in another article but in basic terms while isolated in a vessel full of water, air will rise and dirt will sink. Reservoirs for the trapped gas and collected solids can be above and below the plane of the pipework and automatically released or collected and removed.

Various methods can be used to encourage the quicker separation at the required point in the system. Mesh, pall rings and perforated tubing can disrupt the flow and cause the dirt and corrosion particles to drop to the bottom and the air bubbles to rise to the top.

The dirt is periodically decanted off as sludge and disposed responsibly where as the gases can be bled continuously and released to the atmosphere.

Extwin combines the functional modes of Exvoid and Exdirt

1. The flow is fed through an area with a larger cross section than the connection dimensions to reduce the flow speed.
2. The turbulence caused by the mesh tube excites gas bubbles and heavy solids to move in an indeterminate direction.
3. Depending on the flow rate, density and volume, the natural settling of some of the sludge particles is supported, and the particles are guided to the lower area of the housing.
4. At the same time, 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.



Not All Dirt & Air Separators Are Created Equal

At first glance, some separators on the market may appear the same—but choosing the wrong one can turn into a nightmare purchase.

Why Cheap Separators Fail

Separator body too short

The principle of a separator is that as the water velocity slows, the dirt and air are released. If the body is too short, the water never slows enough—so the separator doesn't actually work.

Faulty construction

Some separators use a **steel bottle brush** to create turbulence. This design has caused major issues: strands coming loose, getting stuck in pump seals, and damaging large heating equipment. Even a well-known European manufacturer had to re-engineer their product after costly failures.

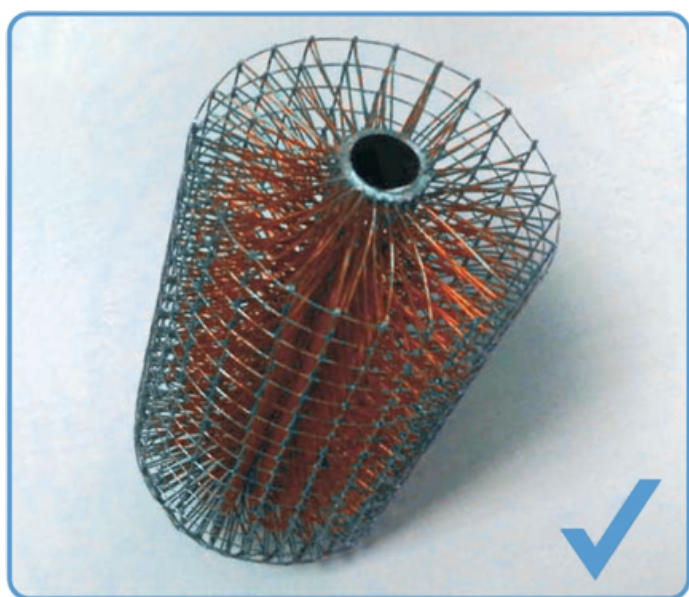
Did You Know?

Not all Dirt & Air Separators are created equal.

- Always check the internal construction before you buy.
- Don't get stuck with a lemon.

Remember:

The taste of poor quality will last much longer than the extra cost.



EcoTwin (Steel)

Advantages

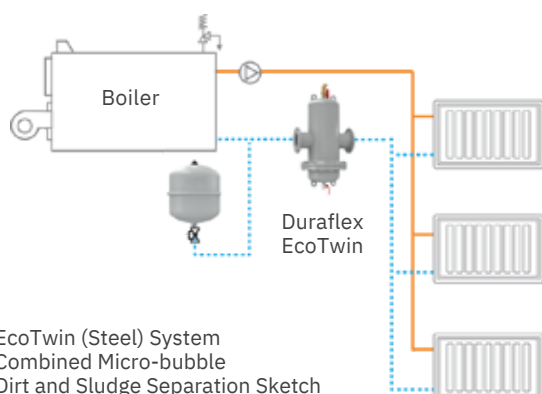
- Combines the protective functions of Duraflex EcoVent and EcoTrap in a single component in chilled water systems
- Single installation, doubled effect
- A more cost-effective solution than using both the individual components
- Full range in terms of operating pressures and materials

Features

Connection - DN 50 - DN 600

Volumetric flow - 12.5-405 m³/h

Thermal EPP foam insulation - DN 50 - DN 125



Steel, 110°C 10 bar - Flange Connection

Type	Weight kg	Connection	V max m ³ /h	L mm	Ø mm	H mm	HB mm
TW 50	13	DN 50/PN 16	12.5	350	132	785	370
TW 65	13	DN 65/PN 16	20.0	350	132	785	370
TW 80	37	DN 80/PN 16	27.0	470	206	940	370
TW 100	43	DN 100/PN 16	47.0	475	206	940	370
TW 125	70	DN 125/PN 16	72.0	635	354	1200	430
TW 150	75	DN 150/PN 16	108.0	635	354	1200	430
TW 200	108	DN 200/PN 16	180.0	775	409	1470	430
TW 250	230	DN 250/PN 16	288.0	890	480	1916	500
TW 300	300	DN 300/PN 16	405.0	1005	634	2237	500
TW 350	Upon request	DN 350/PN 16	500.0	1128	634	2600	500
TW 400	Upon request	DN 400/PN 16	650.0	1226	750	2900	600
TW 450	Upon request	DN 450/PN 16	850.0	1330	750	3150	600
TW 450	Upon request	DN 450/PN 16	850.0	1430	1000	3500	600
TW 500	Upon request	DN 500/PN 16	1060.0	1630	1200	4100	600
TW 600	Upon request	DN 600/PN 16	1530.0				600



EcoTwin HF (Steel)

High Flow Dirt and Air Separator

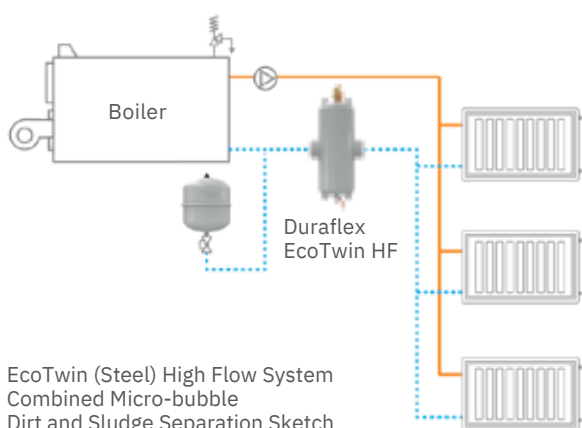
Advantages

- Combines the protective functions of Duraflex EcoVent and EcoTrap in a single component in chilled water systems
- Single installation, doubled effect
- A more cost-effective solution than using both the individual components
- Full range in terms of operating pressures and materials
- Specially designed for bigger systems with longer heights and higher volumetric flow

Features

Connection - DN 50 - DN 600

Volumetric flow - 25 -3000 m³/h



EcoTwin (Steel) High Flow System
Combined Micro-bubble
Dirt and Sludge Separation Sketch



Steel, 110°C 10 bar - Flange Connection

Type	Weight kg	Connection	V max m ³ /h	L mm	Ø mm	H mm	HB mm
TW 50 HF	12	DN 50/PN 16	25.0	350	132	1050	430
TW 65 HF	14	DN 65/PN 16	40.0	350	132	1050	430
TW 80 HF	20	DN 80/PN 16	54.0	470	206	1285	430
TW 100 HF	25	DN 100/PN 16	94.0	475	206	1285	430
TW 125 HF	41	DN 125/PN 16	144.0	635	354	1710	500
TW 150 HF	50	DN 150/PN 16	215.0	635	354	1710	500
TW 200 HF	104	DN 200/PN 16	360.0	775	409	2035	500
TW 250 HF	168	DN 250/PN 16	575.0	890	480	2764	600
TW 300 HF	300	DN 300/PN 16	810.0	1005	634	3330	600
TW 350 HF	331	DN 350/PN 16	1000.0	1128	634	3600	700
TW 400 HF	429	DN 400/PN 16	1300.0	1226	750	4000	700
TW 450 HF	573	DN 450/PN 16	1700.0	1330	750	4500	700
TW 500 HF	853	DN 500/PN 16	2120.0	1430	1000	4900	700
TW 600 HF	1217	DN 600/PN 16	3000.0	1630	1200	5800	700



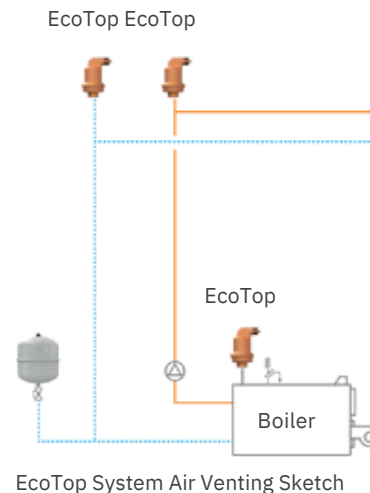
EcoTop Automatic Air Vent

Fields of Application

The automatic air vent in the Duraflex EcoTop series is an ongoing and effective way of removing air and other gases from heating, solar, and cooling systems, including under constant operating conditions, in filling processes after having emptied the system, and in new installations. The vents are applied at high points within the system or at specially identified collection points.

Mode of Operation

In order to ensure ongoing safe and automatic operation, Duraflex EcoTop automatic air vents follow a sound engineering design formula: Gases collect in a generously sized chamber. This causes the water level in the chamber to drop and a float to fall, which opens the deaeration valve once it reaches a certain depth. The combination of a multiple-tested valve and a generously sized air chamber ensures flawless operation, even in extreme pressure fluctuations.



Features

- Brass casing
- Multiple testing procedure on the deaeration valve
- Vertical installation
- Rp 1/2 system connection and a G 1/2 connection thread on the deaeration valve
- Application limits 110 / 180°C and 10 bar

Advantages

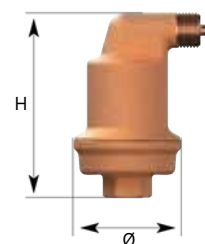
- Reliable, automatic deaeration
- Reduces flow noise, circulation problems, drop in performance and helps to avoid corrosion damage
- Optimum function reliability, even in tough conditions
- Reduces maintenance requirements
- Suitable for a variety of temps and applications

T, brass - 110°C 10 bar

Type	Weight kg	Connection	Ø mm	H mm
EcoTop 1/2	0.7	G 1/2 female	63	120
EcoTop 3/8	0.7	G 3/8 male	63	132

T Solar, brass - 180°C 10 bar

Type	Weight kg	Connection	Ø mm	H mm
EcoTop 1/2 S	0.7	G 1/2 female	63	120



Pressure Loss Diagram for EcoVent, EcoTrap and EcoTwin Standard Models

Connection	kvs, m ³ /h	V max. m ³ /h
Rp 3/4	10.7	1.25
Rp 1	17.2	2.00
Rp 1 1/4	31.8	3.70
Rp 1 1/2	40.0	5.00
Rp 2	56.1	7.50
DN 50	72.2	12.50
DN 65	121.7	20.00
DN 80	158.5	27.0
DN 100	244.3	47.0
DN 125	351.3	72.0
DN 150	487.9	108
DN 200	780.6	180
DN 250	1185.7	288
DN 300	1696.4	405
DN 350	1790.3	500
DN 400	2242.7	650
DN 450	2687.9	850
DN 500	3196	1,060
DN 600	4416.7	1,530

Pressure Loss Calculation for all Volume Flows

$$\Delta p = \left(\frac{V}{Kvs} \right)^2 \times 1 \text{ bar}, V \leq V_{\text{max}}$$

Example:

Heating circuit 70/55°C, heat generator output 40 kW

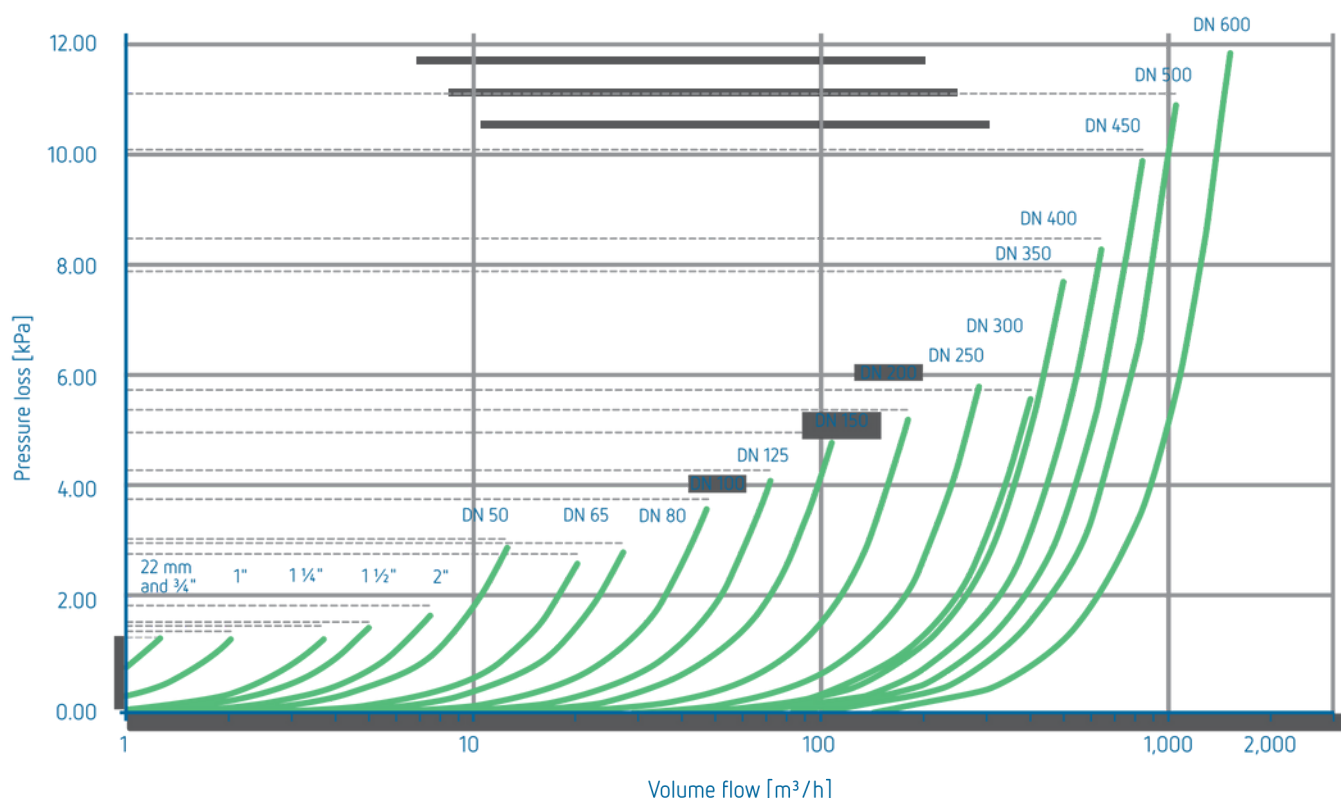
Volume Flow Calculation

$$V = \frac{40 \text{ kW}}{4.2 \text{ kJ} / (\text{kg K}) \cdot (70 - 55) \text{ K}} \times 3.600 \frac{\text{s}}{\text{h}} \times \frac{1 \text{ m}^3}{1.000 \text{ kg}}$$

$$= 2.3 \text{ m}^3/\text{h} \rightarrow \text{selected size Rp 1 1/4}$$

$$\Delta p = \left(\frac{2.3 \text{ m}^3/\text{h}}{31.8 \text{ m}^3/\text{h}} \right) \times 1 \text{ bar} = 5.23 \times 10^{-3} \text{ bar}$$

$$= 0.53 \text{ kPa}$$



Accessory



Duraflex Magnetic Separator

- Solenoid insert for sludge separator
- 110°C/10 bar
- Magnetic bar screwed into thermowell/T-piece
- For uptake of ferromagnetic substances

Type	D 50 - 100 (60.3-114.3)	Weight kg	Area of Application	Installation Length mm
	D 125 - 200 (139.7-219.1)	0.63	DN 50 - DN 100	300
	D 250 - 300 (273.0-323.9)	1.13	DN 125 - DN 200	350
	D 350 - 600 (355.6-610)	1.63	DN 250 - DN 300	400
			> DN 300	500