

Reflex Microbubble and Dirt Separators



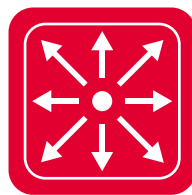


Reflex – known for competence and reliability

The Reflex brand is known in many countries around the world for its pressurization systems in heating and drinking water systems. The successful range offered by our company Reflex Winkelmann GmbH + Co. KG, headquartered in Ahlen in Westphalia, Germany, also includes other proven product lines such as compressor and pump-controlled pressurization systems, deaeration and make-up stations as well as hot water tanks. These products are manufactured both in Ahlen as well as in Wabrzezno in Poland, using the most modern manufacturing methods to guarantee consistently high quality.

A high quality standard, excellent price/performance ratio and competent advice from experienced employees working in the field and in the office have enabled Reflex to steadily grow and keep expanding its market position in Europe.

Since 1989 we have been an independent entity within the Winkelmann Group, which also includes other companies specializing in the manufacture and marketing of products from the automotive and heating area. The Winkelmann Group has more than 2,500 employees in total and has been in business for over 100 years.



Pressurization systems



*Make-up and
deaeration systems*



*Heat exchanger
systems*

Contents:



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reflex 'extop': Automatic air vent

The reflex 'extop' reliably discharges air and other gases from the system.

The purging of free gas bubbles is necessary to enable the heat transfer medium to circulate in liquid-filled system circuits. This purging can either be done using manually or, better still, automatically operated devices.

In the case of the automatic variant, a key requirement for the relevant fitting is sustained reliability and, above all, freedom from leaks. The reflex 'extop' has been developed with this in mind. It automatically purges air and other gases from the system into the surrounding atmosphere. This enables problem-free filling and draining operations when filling or refilling heating, solar or cooling systems, for example. The reflex 'extop' discharges the air that has collected at high points or specifically designated collection points quickly and reliably into the atmosphere.

Technical data for reflex 'extop':

- Housing made of brass
- For vertical installation
- With system connection Rp ½ and a connecting thread G ½ at the vent valve
- Application limits: 110 or 180 °C and 10 bar overpressure

See page 5 for further technical details.

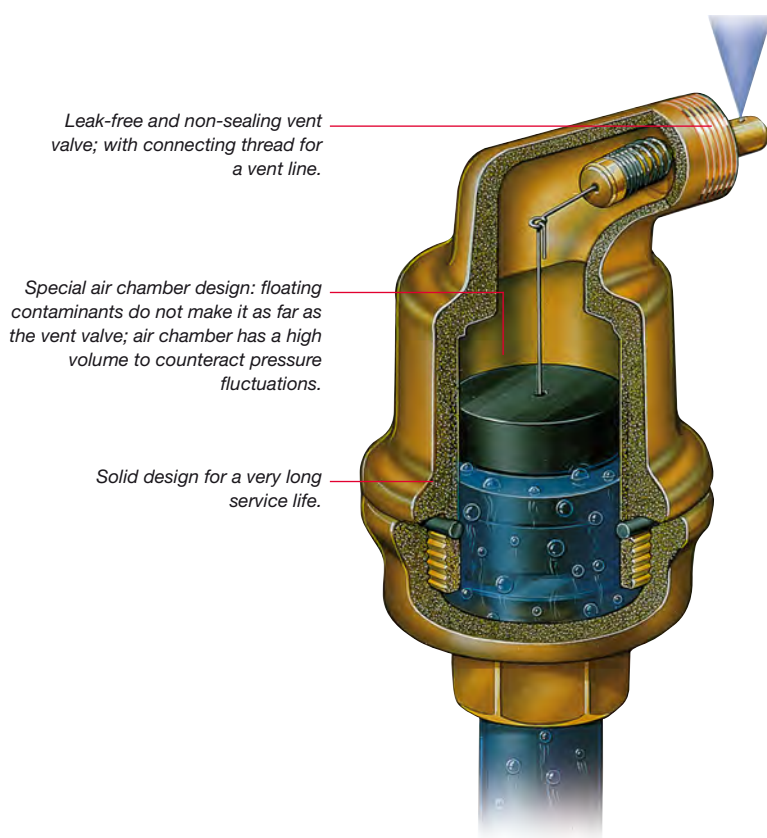
Functional description:

The air collection chamber of the reflex 'extop' contains a float-controlled vent valve. If the freely suspended float loses buoyancy due to the air that has accumulated in the collection chamber, it sinks and in the process opens the vent valve. The float has enough space to move freely even if there are dirt deposits in the air collection chamber.

The special design of the vent valve ensures smooth operation even under difficult conditions.

Fields of application:

- Venting during filling operations after draining or new construction
- In-service venting of fittings, high points, and air collection points
- Automatic pressurization during draining operations



reflex 'extop' made by Spirotech.



reflex 'extop'



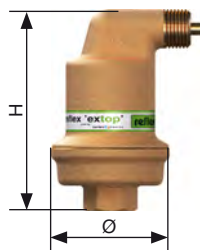
reflex 'extop solar' for temperatures up to 180 °C

Information in brief:

- High venting capacity
- Solid brass design
- Designed for simple pressurization and venting of the system with consistently high reliability
- Reliable operation, even if the medium is dirty
- Range of products for different temperatures and applications

reflex 'extop'

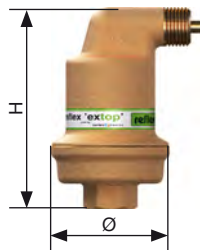
Brass, 110 °C, 10 bar



Type	Item no.	Weight kg	Product group	PU	Connection	Ø mm	H mm
T 1/2	9250000	0.7	82	12	Rp 1/2	65	112

reflex 'extop solar'

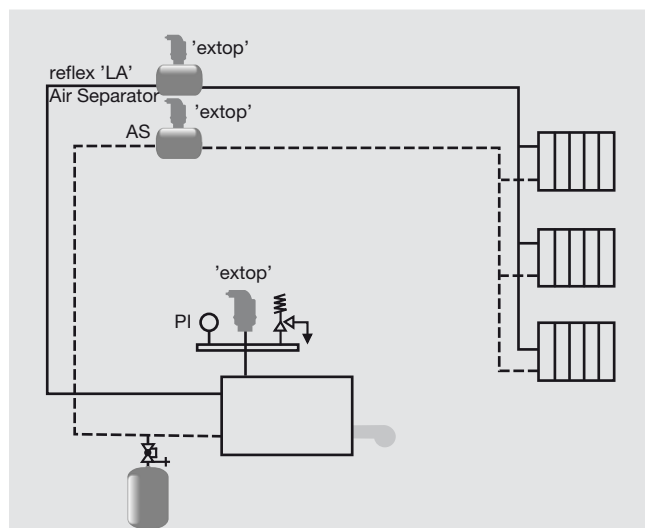
Brass, 180 °C, 10 bar



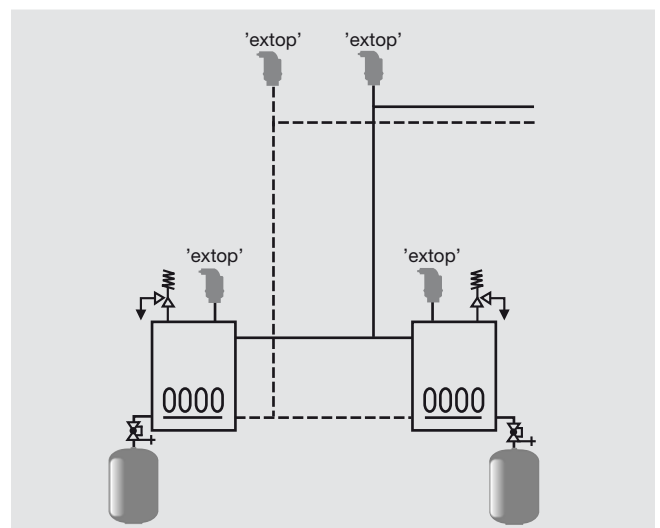
Type	Item no.	Weight kg	Product group	PU	Connection	Ø mm	H mm
T 1/2 S	9250600	0.7	82	12	Rp 1/2	65	112

Further technical details at www.reflex.de

Installation examples



'extop' and air separator for system venting after filling operations



'extop' for system venting after filling operations

reflex 'exair': Microbubble separator

The reflex 'exair' systematically removes microbubbles from the water circuit.

Free gas bubbles in circulation cause noise, prevent circulation of the heat transfer medium, erode deposits at the pipelines, and thus interfere with the proper functioning of systems that are filled with water or water/glycol mixtures for heat transport. In most cases, special devices are needed to collect these gas bubbles and purposefully transport them to a point from which they can be discharged. Otherwise they will be carried along by the flow and collect at undesired points (heaters, horizontal pipeline sections, etc.).

The reflex 'exair' has been developed for the reliable separation of gas bubbles, and microbubbles, carried along by the flow. This separator is particularly effective in systems with minimal overlaid static heights (central boiler systems in attics, elevated equipment rooms) and at points where thermal deaeration can result in free gas bubbles.

Technical data for reflex 'exair':

- Size-dependent versions
- With integrated reflex 'extop' air vent
- Housing made of brass, steel
- Horizontal, vertical installation position
- Connection options: thread, compression coupling, flange, welding ends
- Max. operating pressure: 10 bar
- Operating temperature: 110°C/180°C

See pages 8 and 9 for further technical details.

Functional description:

The cross section in the reflex 'exair' is larger than the connection dimensions. This greatly reduces the flow rate of the heat transfer medium (water, water/glycol mixture). At the same time, the particular flow configuration of a special wire mesh traps the smallest free gas bubbles. The gas bubbles get bigger and rise into the overhead collection chamber. From there, they are automatically and reliably removed by the integrated reflex 'extop' air vent

and purged into the surrounding atmosphere.

Fields of application:

Heating and solar systems with minimal or no static height differences above the separator (e.g. central boiler systems in attics, elevated equipment rooms), to a certain extent cooling water systems.

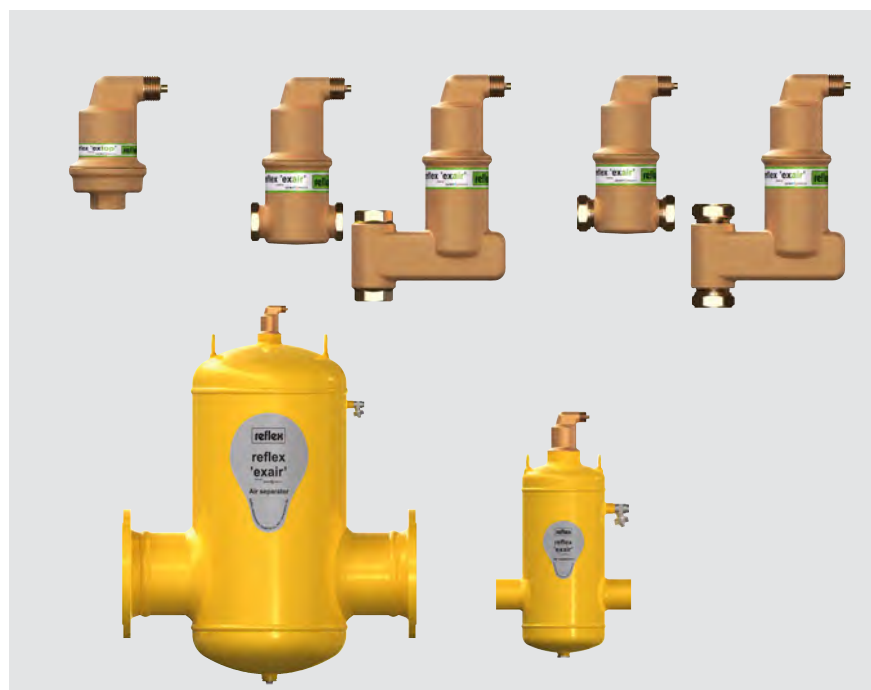
- Venting during filling operations after draining or new construction
- In-service venting at high points, air collection points, and areas with thermal deaeration



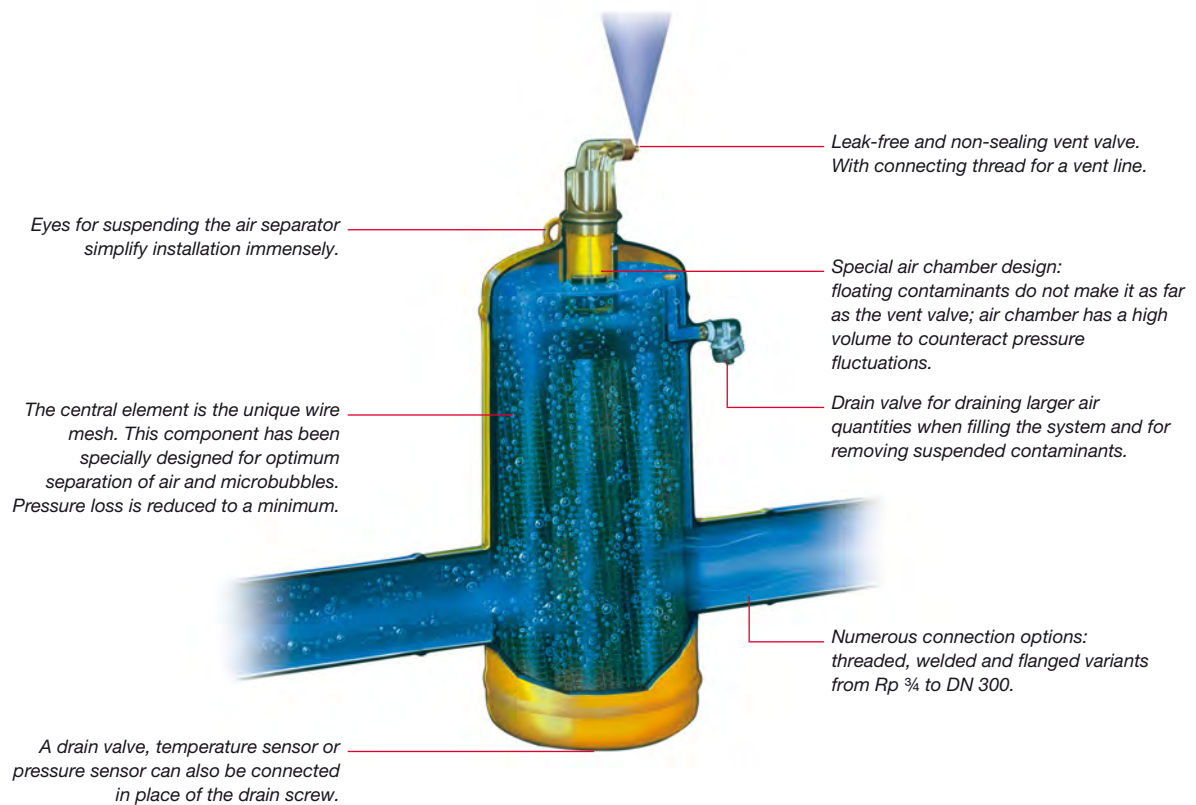
reflex 'exair' – vertical variant with compression coupling



Integrated reflex 'extop'

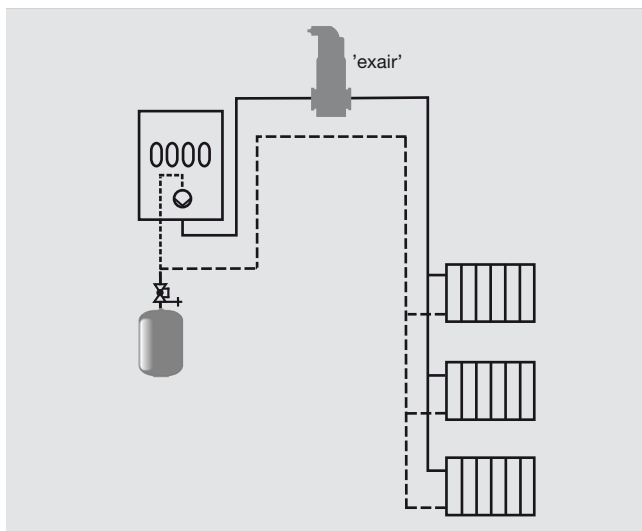


Product variants for reflex 'exair'

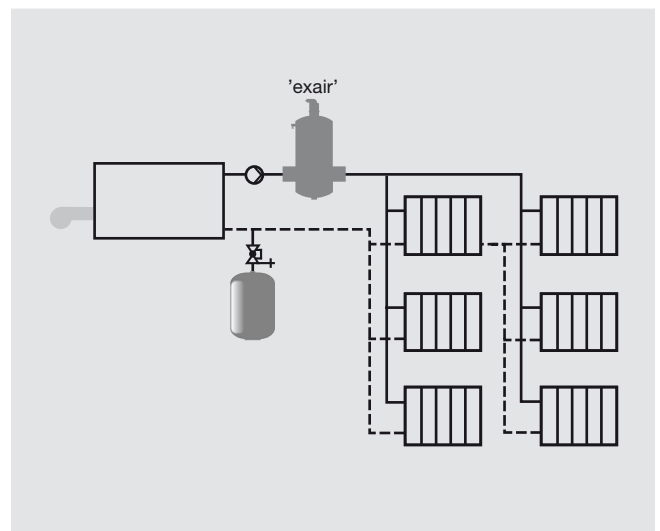


reflex 'exair' made by Spirotech.

Installation examples



Wall-mounted boiler in an elevated boiler room, air separation at the high point with thermal deaeration effect



Central boiler system in attic with minimal dust. Height difference above the separator

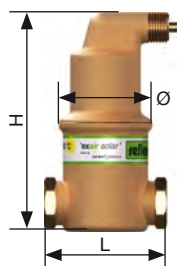
reflex 'exair': Microbubble separator

Information in brief:

- Removes circulating free air and gas bubbles
- Much faster hydraulic equalization after filling operations
- Minimal, constant pressure drop
- Connection diameter Rp ¾ to DN 300
- Complete range of products in terms of operating pressures, temperatures, and materials
- Solar variant available

reflex 'exair solar'

Brass, 180 °C, 10 bar

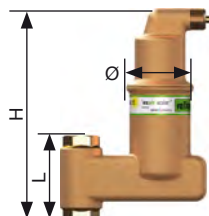


Type	Item no.	Weight kg	Product group	PU	Connection	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
A 22 S	9251600	1.2	82	12	*22 mm	1.25	106	65	153
A 3/4 S	9251610	1.1	82	12	Rp ¾	1.25	85	65	153
A 1 S	9251620	1.3	82	8	Rp 1	2.00	88	65	180
A 1 1/4 S	9251630	1.4	82	8	Rp 1 ¼	3.70	88	65	200
A 1 1/2 S	9251640	1.6	82	8	Rp 1 ½	5.00	88	65	234

*Compression coupling

reflex 'exair solar'

Brass, vertical, 180 °C, 10 bar

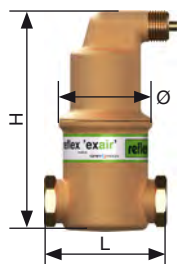


Type	Item no.	Weight kg	Product group	PU	Connection	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
A 22 SV	9251700	2.0	82	8	*22 mm	1.25	104	65	220
A 3/4 SV	9251710	1.9	82	8	Rp ¾	1.25	84	65	210
A 1 SV	9251720	1.9	82	8	Rp 1	1.25	84	65	210

*Compression coupling

reflex 'exair'

Brass, 110 °C, 10 bar

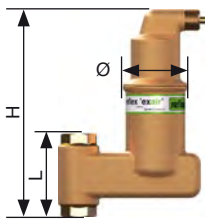


Type	Item no.	Weight kg	Product group	PU	Connection	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
A 22	9251000	1.2	82	12	*22 mm	1.25	106	65	153
A 3/4	9251010	1.1	82	12	Rp ¾	1.25	85	65	153
A 1	9251020	1.3	82	8	Rp 1	2.00	88	65	180
A 1 1/4	9251030	1.4	82	8	Rp 1 ¼	3.70	88	65	200
A 1 1/2	9251040	1.6	82	8	Rp 1 ½	5.00	88	65	234
A 2	9251050	3.9	82	1	Rp 2	7.50	132	65	275

*Compression coupling

reflex 'exair'

Brass, vertical, 110 °C, 10 bar



Type	Item no.	Weight kg	Product group	PU	Connection	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
A 22 V	9251500	2.0	82	8	*22 mm	1.25	104	65	220
A 3/4 V	9251510	1.9	82	8	Rp ¾	1.25	84	65	210
A 1 V	9251520	1.9	82	8	Rp 1	2.00	84	65	210

*Compression coupling

reflex 'exair'

Steel with welding ends, 110 °C, 10 bar



Type	Item no.	Weight kg	Product group	Connection mm	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
A 60.3	9251100	9	82	60.3	12.5	260	159	470
A 76.1	9251110	9	82	76.1	20	260	159	470
A 88.9	9251120	18	82	88.9	27	370	219	590
A 114.3	9251130	18	82	114.3	47	370	219	590
A 139.7	9251140	42	82	139.7	72	525	324	765
A 168.3	9251150	42	82	168.3	108	525	324	765
A 219.1	9251160	48	82	219.1	180	650	406	975
A 273.0	9251170	135	82	273.0	288	750	508	1215
A 323.9	9251180	200	82	323.9	405	850	610	1,430

reflex 'exair'

Steel with flanged connection, 110 °C, 10 bar



Type	Item no.	Weight kg	Product group	Connection	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
A 50	9251300	14	82	DN50/PN16	12.5	350	159	470
A 65	9251310	15	82	DN65/PN16	20	350	159	470
A 80	9251320	25	82	DN80/PN16	27	470	219	590
A 100	9251330	27	82	DN100/PN16	47	470	219	590
A 125	9251340	54	82	DN125/PN16	72	635	324	765
A 150	9251350	57	82	DN150/PN16	108	635	324	765
A 200	9251360	106	82	DN200/PN16	180	775	406	975
A 250	9251370	170	82	DN250/PN16	288	890	508	1,215
A 300	9251380	250	82	DN300/PN16	405	1,005	610	1,430

reflex 'exdirt':

Dirt and sludge separator

The purpose of the reflex 'exdirt' is to continuously separate contaminants from the water circuits.

In systems filled with water or water/glycol mixtures for heat transport, free suspended matter in circulation such as corrosion products, dirt particles from installation work and repairs or limescale that has come away often interfere with the proper functioning of heat generators, thermostatic valves, or similarly sensitive components. Such contaminants frequently also result in defects in these components.

To minimize the risk of dirt deposits, sludge and dirt must be collected and purposefully transported to a point from which they can be discharged from the system. In most cases, special devices are needed for this. Otherwise the contaminants will be carried along by the flow and collect at undesired points (heaters, horizontal pipeline sections, heat generators, fittings, etc.).

Technical data for reflex 'exdirt':

- Size-dependent versions
- Housing made of brass, steel
- Horizontal, vertical installation position
- Connection options: thread, compression coupling, flange, welding ends
- Max. operating pressure: 10 bar
- Operating temperature: 110 °C
- Inspection opening

See pages 12 and 13 for further technical details.

Functional description:

The reflex 'exdirt' sludge separators differ from conventional filters in every respect. They have the same principle of operation as the reflex 'exair' micro-bubble separators. Sludge separation also takes place in two phases. In the first phase, the sludge particles are carried along by the flow. In the second phase, these particles are separated by the unique effect of the wire mesh tube in combination with a reduction in speed and are collected in a

special collection area. This collection area can be easily emptied at regular intervals using a drain valve while the system remains in operation. Moreover, the generous capacity means that the collection area does not have to be emptied very often. The collection and separation chambers can optionally be fully opened for inspection purposes.

Fields of application:

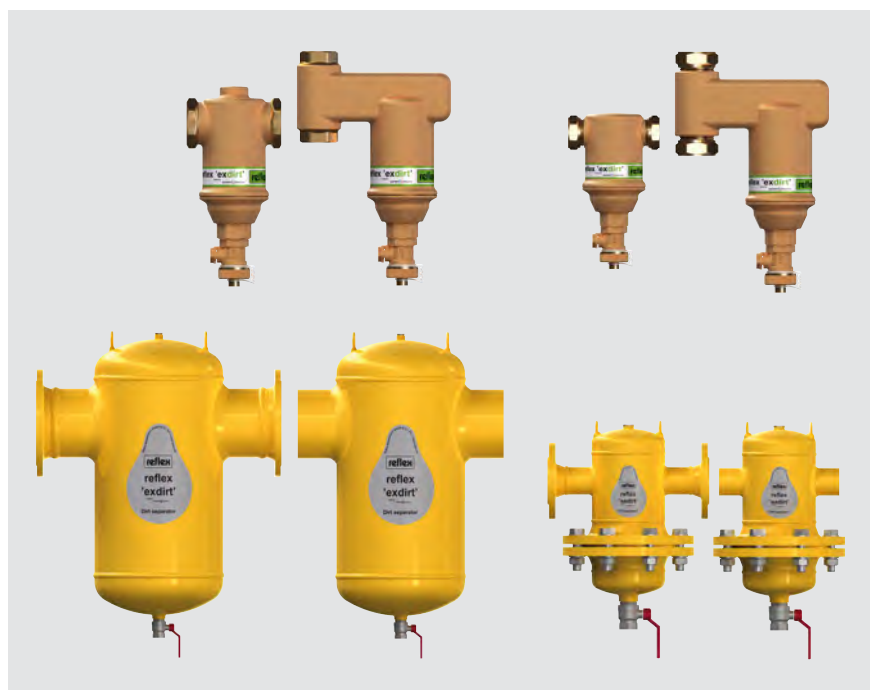
- In the return upstream of heat generators and heat exchangers
- Upstream of fittings and pipeline sections that are sensitive to dirt



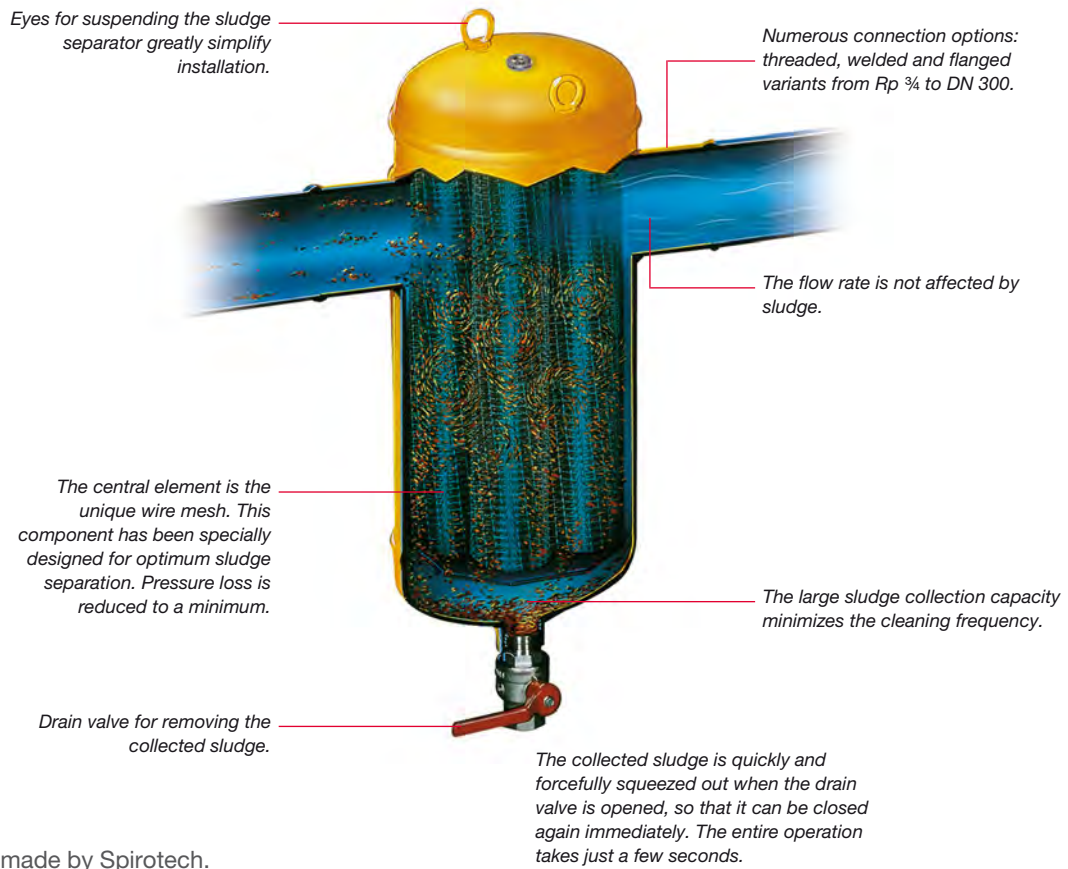
reflex 'exdirt' – variant with compression coupling



reflex 'exdirt' – variant with inspection flange

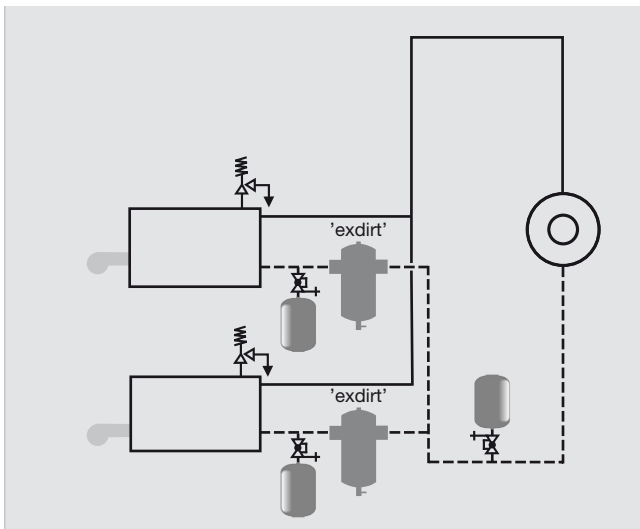


Product variants for reflex 'exdirt'

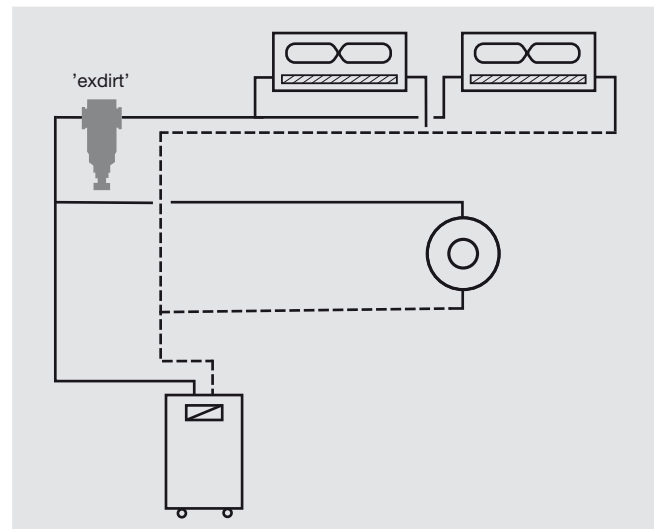


reflex 'exdirt' made by Spirotech.

Installation examples



Protection against accumulation of sludge by 'exdirt' in a multi-boiler system



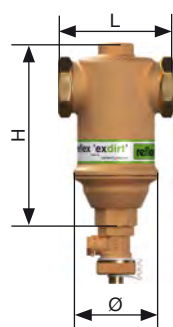
Protection of sensitive consuming devices (fan convectors, precision regulators, etc.)

reflex 'exdirt': Dirt and sludge separator

Brief information:

- Fully automatic continuous operation
- Maintenance takes just 5 seconds
- Suitable for large and small systems
- Connection diameter Rp ¼ to DN 300
- Permanently free discharge opening for the water
- Also removes very small sludge particles above 5 µm (= 0.005 mm)
- Sludge removal is possible while the system is in operation
- No closing valves or bypass lines required
- Minimal, constant pressure drop
- Complete range of products in terms of operating pressures and materials

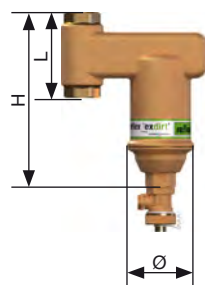
reflex 'exdirt' Brass, 110 °C, 10 bar



Type	Item no.	Weight kg	Product group	PU	Connection	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
D 22	9252000	1.0	82	12	*22 mm	1.25	106	65	116
D 3/4	9252010	1.0	82	12	Rp ¾	1.25	85	65	116
D 1	9252020	1.2	82	12	Rp 1	2.00	88	65	143
D 1 1/4	9252030	1.3	82	8	Rp 1 ¼	3.70	88	65	161
D 1 1/2	9252040	1.5	82	8	Rp 1 ½	5.00	88	65	197
D 2	9252050	3.9	82	1	Rp 2	7.50	132	65	238

*Compression coupling

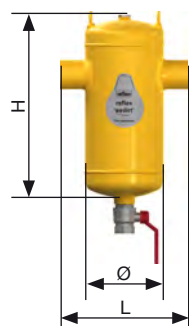
reflex 'exdirt' Brass, vertical, 110 °C, 10 bar



Type	Item no.	Weight kg	Product group	PU	Connection	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
D 22 V	9252500	1.9	82	8	*22 mm	1.25	104	65	182
D 3/4 V	9252510	1.8	82	8	Rp ¾	1.25	84	65	172
D 1 V	9252520	1.8	82	8	Rp 1	2.00	84	65	172

*Compression coupling

reflex 'exdirt' Steel with welding ends, 110 °C, 10 bar

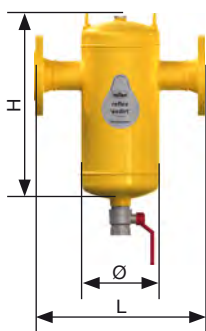


Type	Item no.	Weight kg	Product group	Connection mm	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
D 60.3	9252100	9	82	60.3	12.5	260	159	395
D 76.1	9252110	9	82	76.1	20	260	159	395
D 88.9	9252120	17	82	88.9	27	370	219	515
D 114.3	9252130	17	82	114.3	47	370	219	515
D 139.7	9252140	41	82	139.7	72	525	324	690
D 168.3	9252150	42	82	168.3	108	525	324	690
D 219.1	9252160	83	82	219.1	180	650	406	900
D 273.0	9252170	135	82	273.0	288	750	508	1,145
D 323.9	9252180	200	82	323.9	405	850	610	1,360

Further technical details at www.reflex.de

reflex 'exdirt'

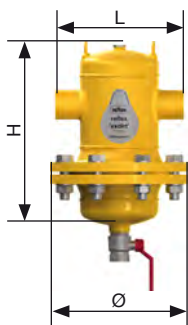
Steel with flanged connection, 110 °C, 10 bar



Type	Item no.	Weight kg	Product group	Connection	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
D 50	9252300	13	82	DN50/PN16	12.5	350	159	395
D 65	9252310	15	82	DN65/PN16	20	350	159	395
D 80	9252320	25	82	DN80/PN16	27	470	219	515
D 100	9252330	26	82	DN100/PN16	47	470	219	515
D 125	9252340	54	82	DN125/PN16	72	635	324	690
D 150	9252350	56	82	DN150/PN16	108	635	324	690
D 200	9252360	105	82	DN200/PN16	180	775	406	900
D 250	9252370	170	82	DN250/PN16	288	890	508	1,145
D 300	9252380	250	82	DN300/PN16	405	1,005	610	1,360

reflex 'exdirt'

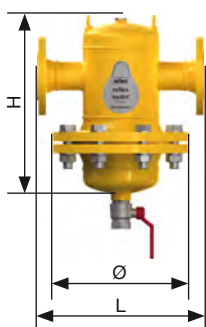
Steel with welding ends, 110 °C, 10 bar, inspection flange



Type	Item no.	Weight kg	Product group	Connection mm	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
D 60.3 R	9252200	23	82	60.3	12.5	260	159	395
D 76.1 R	9252210	23	82	76.1	20	260	159	395
D 88.9 R	9252220	36	82	88.9	27	370	219	515
D 114.3 R	9252230	37	82	114.3	47	370	219	515
D 139.7 R	9252240	85	82	139.7	72	525	324	690
D 168.3 R	9252250	86	82	168.3	108	525	324	690
D 219.1 R	9252260	129	82	219.1	180	650	406	900
D 273.0 R	9252270	230	82	273.0	288	750	508	1,145
D 323.9 R	9252280	340	82	323.9	405	850	610	1,360

reflex 'exdirt'

Steel with flanged connection, 110 °C, 10 bar, inspection flange



Type	Item no.	Weight kg	Product group	Connection	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
D 50 R	9252400	28	82	DN50/PN16	12.5	350	159	395
D 65 R	9252410	29	82	DN65/PN16	20	350	159	395
D 80 R	9252420	44	82	DN80/PN16	27	470	219	515
D 100 R	9252430	46	82	DN100/PN16	47	470	219	515
D 125 R	9252440	98	82	DN125/PN16	72	635	324	690
D 150 R	9252450	100	82	DN150/PN16	108	635	324	690
D 200 R	9252460	151	82	DN200/PN16	180	775	406	900
D 250 R	9252470	265	82	DN250/PN16	288	890	508	1,145
D 300 R	9252480	390	82	DN300/PN16	405	1,005	610	1,360

reflex 'extwin': Combined microbubble and sludge separator

Combined microbubble separator for free gas bubbles and dirt and sludge particles.

The reflex 'extwin' is ideal for those who want to exploit the advantages of both bubble as well as sludge separation, which can be useful downstream of heat generators from which lime-scale, for example, can become loose (see also VDI 2035 Part 1). The reflex 'extwin' is a combination of 'exair' and 'exdirt'. Its ingenious design combines the functions of the specialized individual components in one unique and compact fitting.

Separator for dirt and sludge particles from the liquid flow of pipeline systems (heating, solar and cooling water systems) filled with water or water/glycol, combined with a separator for free air and gas bubbles. The proven reflex 'extop' air vent is integrated for purging the air into the atmosphere.

Technical data for reflex 'extwin':

- Size-dependent versions
- Housing made of brass, steel
- Horizontal, vertical installation position
- Connection options: thread, compression coupling, flange, welding ends
- Max. operating pressure: 10 bar
- Operating temperature: 110 °C

See pages 16 and 17 for further technical details.

Functional description:

Combination of reflex 'exdirt' and 'exair'. See pages 6 and 10 for functional descriptions.

Fields of application:

- Downstream of a heat generator in heating systems with minimal or no static height differences above the separator, combined with the desired protection of the subsequent components (e.g. thermostatic valves) against contamination
- Venting with dirt separation in the return of a cooling circuit upstream of a refrigerating machine or heat exchanger



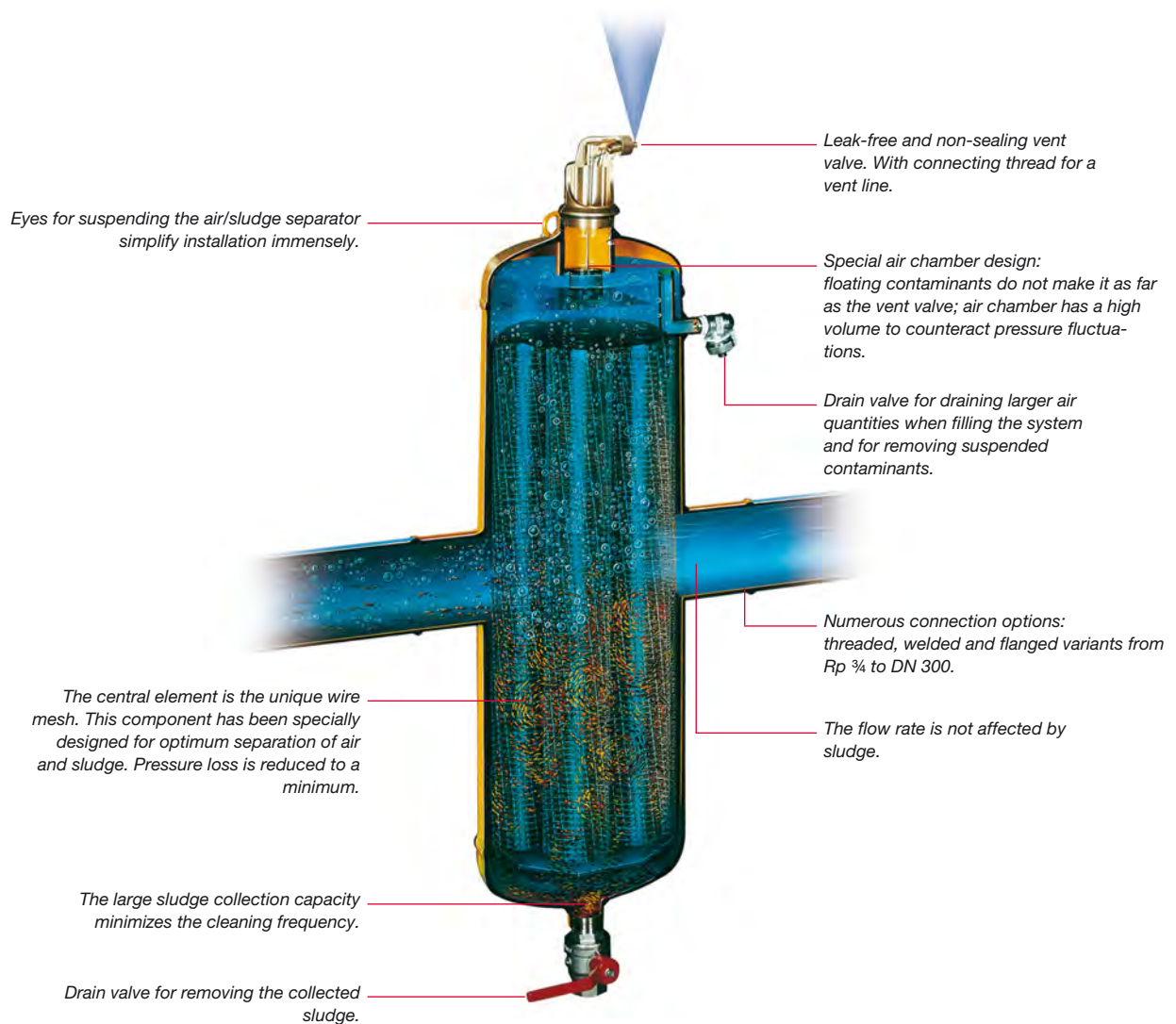
Integrated reflex 'extop'



Product variants for reflex 'extwin'

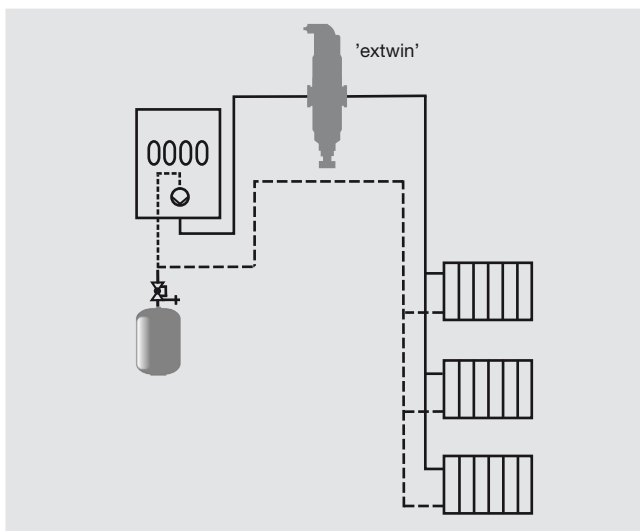


Desludging ball valve on brass models with 3/4" tube coupling



reflex 'extwin' made by Spirotech.

Installation example



Wall-mounted boiler in an elevated boiler room, air separation at the high point with thermal deaeration effect

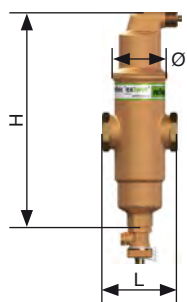
reflex 'extwin': Combined microbubble and sludge separator

Information in brief:

- Removes circulating free air bubbles
- Also removes very small sludge particles above 5 µm (= 0.005 mm)
- Fully automatic continuous operation
- Maintenance takes just 5 seconds
- Sludge removal is possible while the system is in operation
- Much faster hydraulic equalization after filling operations
- No closing valves or bypass lines required
- Minimal, constant pressure drop
- Complete range of products in terms of operating pressures and materials
- Connection diameter Rp ¾ to DN 300

reflex 'extwin'

Brass, 110 °C, 10 bar

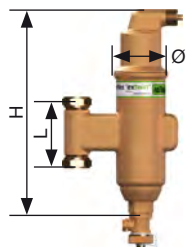


Type	Item no.	Weight kg	Product group	PU	Connection	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
TW 22	9253000	1.8	82	6	*22 mm	1.25	106	65	257
TW 1	9253010	1.7	82	6	Rp 1	2	88	65	257

*Compression coupling

reflex 'extwin'

Brass, vertical, 110 °C, 10 bar

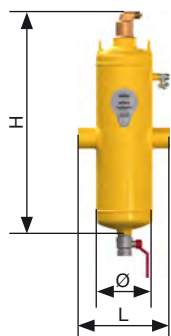


Type	Item no.	Weight kg	Product group	PU	Connection	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
TW 22 V	9253500	2.1	82	6	*22 mm	1.25	97	65	246

*Compression coupling

reflex 'extwin'

Steel with welding ends, 110 °C, 10 bar

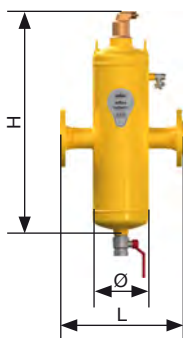


Type	Item no.	Weight kg	Product group	Connection mm	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
TW 60.3	9253100	12	82	60.3	12.5	260	159	630
TW 76.1	9253110	12	82	76.1	20	260	159	630
TW 88.9	9253120	24	82	88.9	27	370	219	785
TW 114.3	9253130	24	82	114.3	47	370	219	785
TW 139.7	9253140	58	82	139.7	72	525	324	1,045
TW 168.3	9253150	58	82	168.3	108	525	324	1,045
TW 219.1	9253160	113	82	219.1	180	650	406	1,315
TW 273.0	9253170	215	82	273.0	288	750	508	1,715
TW 323.9	9253180	275	82	323.9	405	850	610	2,025

Further technical details at www.reflex.de

reflex 'extwin'

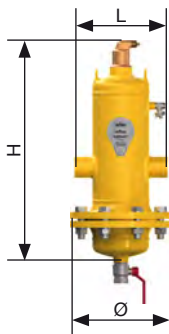
Steel with flanged connection, 110 °C, 10 bar



Type	Item no.	Weight kg	Product group	Connection	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
TW 50	9253300	17	82	DN50/PN16	12.5	350	159	630
TW 65	9253310	18	82	DN65/PN16	20	350	159	630
TW 80	9253320	31	82	DN80/PN16	27	470	219	785
TW 100	9253330	33	82	DN100/PN16	47	470	219	785
TW 125	9253340	70	82	DN125/PN16	72	635	324	1,045
TW 150	9253350	73	82	DN150/PN16	108	635	324	1,045
TW 200	9253360	135	82	DN200/PN16	180	775	406	1,315
TW 250	9253370	250	82	DN250/PN16	288	890	508	1,715
TW 300	9253380	325	82	DN300/PN16	405	1,005	610	2,025

reflex 'extwin'

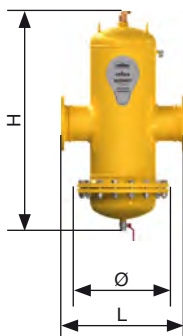
Steel with welding ends, 110 °C, 10 bar, inspection flange



Type	Item no.	Weight kg	Product group	Connection mm	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
TW 60.3 R	9253200	29	82	60.3	12.5	260	159	630
TW 76.1 R	9253210	29	82	76.1	20	260	159	630
TW 88.9 R	9253220	46	82	88.9	27	370	219	785
TW 114.3 R	9253230	47	82	114.3	47	370	219	785
TW 139.7 R	9253240	102	82	139.7	72	525	324	1,045
TW 168.3 R	9253250	102	82	168.3	108	525	324	1,045
TW 219.1 R	9253260	182	82	219.1	180	650	406	1,315
TW 273.0 R	9253270	320	82	273.0	288	750	508	1,715
TW 323.9 R	9253280	450	82	323.9	405	850	610	2,025

reflex 'extwin'

Steel with flanged connection, 110 °C, 10 bar, inspection flange



Type	Item no.	Weight kg	Product group	Connection	$\dot{V}_{\max}$ m³/h	L mm	Ø mm	H mm
TW 50 R	9253400	34	82	DN50/PN16	12.5	350	159	630
TW 65 R	9253410	35	82	DN65/PN16	20	350	159	630
TW 80 R	9253420	54	82	DN80/PN16	27	470	219	785
TW 100 R	9253430	55	82	DN100/PN16	47	470	219	785
TW 125 R	9253440	114	82	DN125/PN16	72	635	324	1045
TW 150 R	9253450	117	82	DN150/PN16	108	635	324	1045
TW 200 R	9253460	204	82	DN200/PN16	180	775	406	1315
TW 250 R	9253470	340	82	DN250/PN16	288	890	508	1715
TW 300 R	9253480	480	82	DN300/PN16	405	1,005	610	2025

reflex 'exiso': Thermal insulation

Information in brief:

- for reflex 'exair' brass type A 22 - 1½ microbubble or reflex 'exdirt' steel type D 22 - 1½ dirt and sludge separators
- suitable for horizontal as well as vertical brass models
- inclusive snap closure or tightening strap
- EPP foam insulation
- consisting of two firmly shaped hulls which are easily individually adaptable using the cut-off marks

reflex 'exiso' for 'exair' type A 22 - A 1 1/2 (brass), 110 °C



Type	Item no.	Weight kg	Product group	Thickness mm	Ø mm	H mm
A 22 - 1 1/2	9254810	0.15	82	15	125	215 - 275

reflex 'exiso' for 'exdirt' type D 22 - D 1 1/2 (brass), 110 °C



Type	Item no.	Weight kg	Product group	Thickness mm	Ø mm	H mm
D 22 - 1 1/2	9254820	0.15	82	15	140	140 - 180

reflex 'exiso' for 'exair' and 'exdirt' (steel), 110 °C, incl. flanged or welding connection*



Type	Item no.	Weight kg	Product group	Thickness mm	Ø mm	H mm
50 - 76.1	9254830	0.4	82	30.5	228	447
80 - 114.3	9254840	1.0	82	30.5	290	567
125 - 168.3	9254850	1.2	82	30.5	395	742

* suitable for models with or without connection flange from DN 50 - DN 150 or 160.3 - 168.3

Reflex sizing



Sizing for reflex 'exair', 'exdirt' and 'extwin'

The systematic design of the reflex air and sludge separators also makes sizing very easy. The size depends on the speed of the liquid flow, regardless of the variant you choose. See the graph or table for the maximum volumetric flow rate possible for a size.

Pressure loss graph:

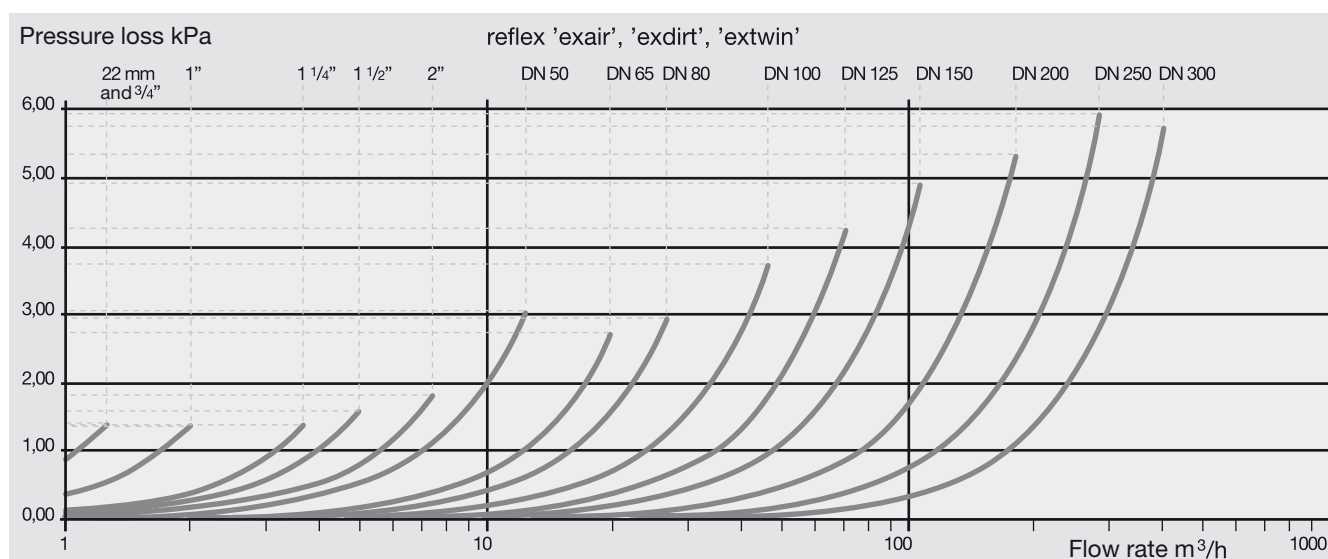


Table of c_{VFR} values:

Size	c_{VFR} in m³/h	$\dot{V}_{max}$ m³/h	Size	c_{VFR} in m³/h	$\dot{V}_{max}$ m³/h
Rp 3/4	10.7	1.25	DN 80	158.5	27.00
Rp 1	17.2	2.00	DN 100	244.3	47.00
Rp 1 1/4	31.8	3.70	DN 125	351.3	72.00
Rp 1 1/2	40.0	5.00	DN 150	487.9	108.00
Rp 2	56.1	7.50	DN 200	780.6	180.00
DN 50	72.2	12.50	DN 250	1,185.7	288.00
DN 65	121.7	20.00	DN 300	1,696.4	405.00

Pressure loss calculation for all volumetric flow rates:

$$\Delta p = \left(\frac{\dot{V}}{K_{VS}} \right)^2 \cdot 100 \text{ kPa}$$

for

$$\dot{V} \leq \dot{V}_{max}$$

Example:

Heating circuit 70/55 °C – heat generation output 40 kW

$$\dot{V} = \frac{40 \text{ kW}}{4,2 \text{ kJ} / (\text{kg K}) (70-55) \text{ K}} \cdot 3600 \frac{\text{s}}{\text{h}} \cdot \frac{1 \text{ m}^3}{1000 \text{ kg}}$$

$$= 2,3 \frac{\text{m}^3}{\text{h}} \rightarrow \text{option Rp } 1\frac{1}{4}$$

$$\Delta p = \left(\frac{2,3 \text{ m}^3 / \text{h}}{31,8 \text{ m}^3 / \text{h}} \right)^2 \cdot 100 \text{ kPa}$$

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