reflex

Thinking solutions.

2025

Product Guide **International**

Reflex

A strong brand for decades

Reflex stands for comprehensive solution expertise in water-bearing building and supply technology. Guided by the proven and forward-looking "Thinking Solutions" model, we focus on integrated solutions that emphasise the synergies of the Reflex and SINUS product lines. We see ourselves as a driving force in the development of world-class products, intelligent concepts and highly efficient solutions for systems of every size and level of complexity. Working together as equals, systematic customer-centricity and comprehensive services round off our range.

General Terms and Conditions of Contracts, Delivery and Services

Our General Terms and Conditions of Contracts, Delivery and Services apply.

Due to regular updates, please note the amended General Terms and Conditions of Contracts, Delivery and Services on our website

www.reflex-winkelmann.com/en/gbc

Privacy Policy

Information on data protection and the Reflex Privacy Policy can be found at

www.reflex-winkelmann.com/en/privacy-policy

Product Guide International, valid from 01/01/2025

SINUS

Our SINUS products can be found in the area of manifolds & Hydraulic Separators.

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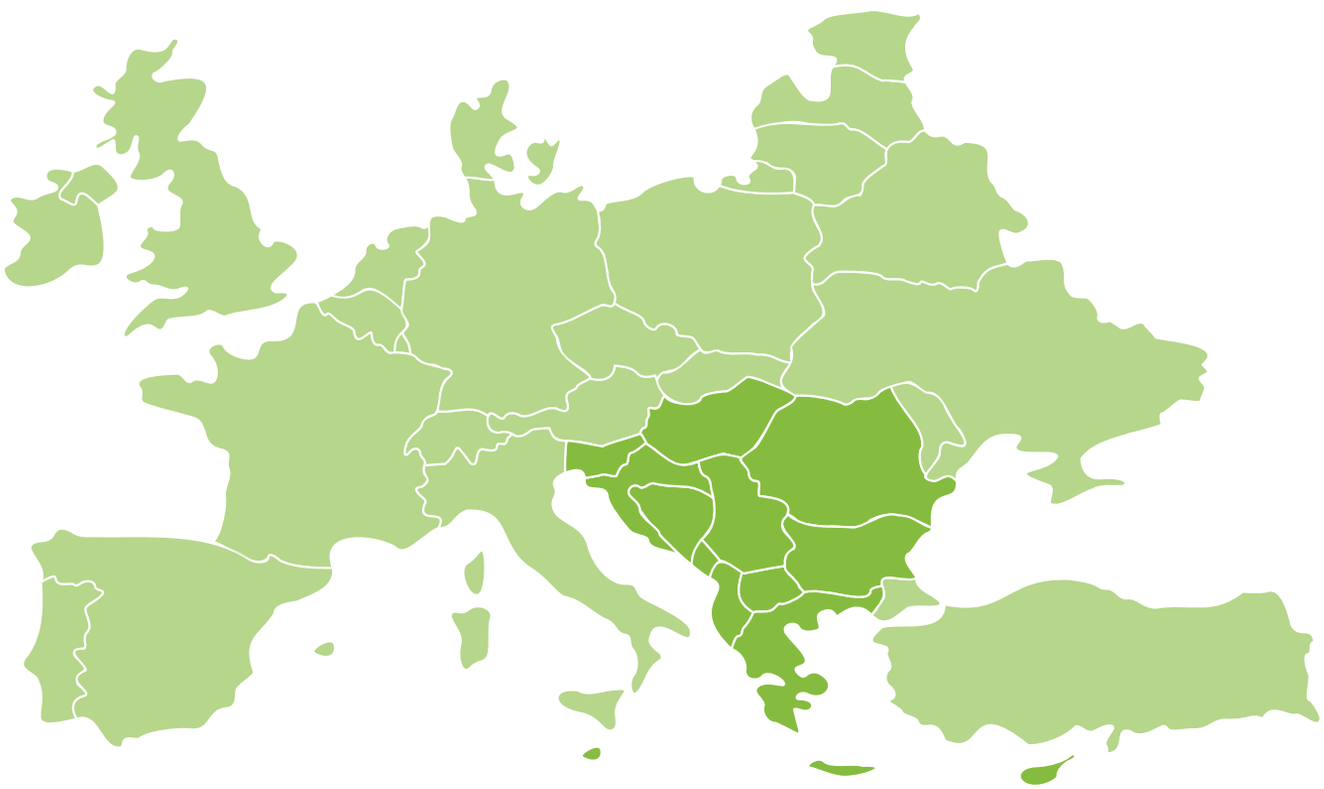
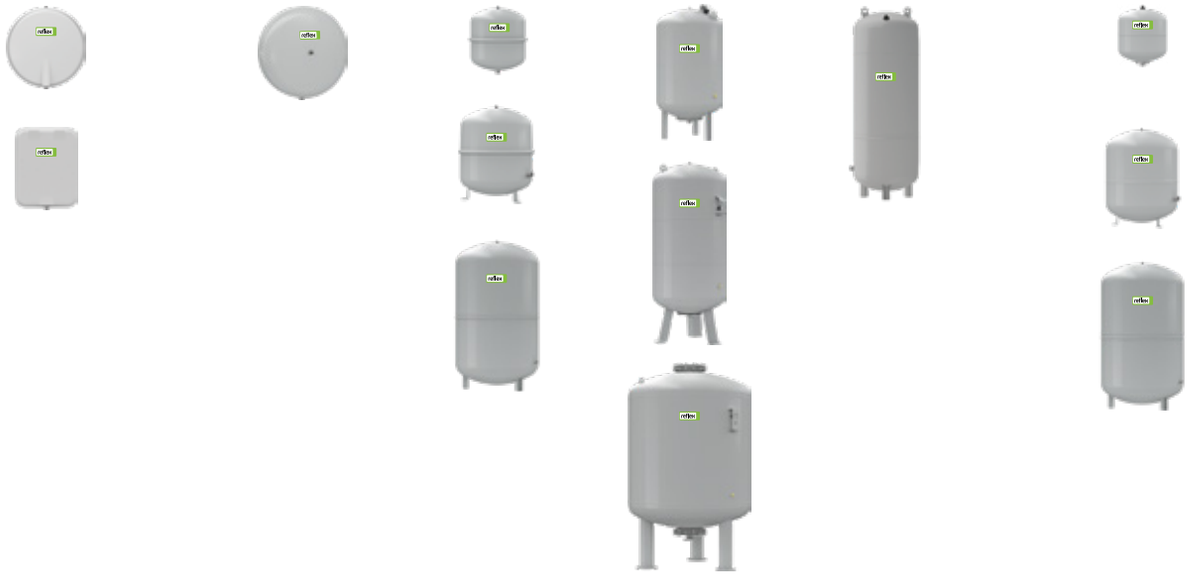


Expansion vessels

for heating, solar and cold water systems

Reflex

especially designed for installing in boilers	for heating and cooling systems				for solar systems
Flat vessel	Disc-shaped vessel	Vessel		Slim vessel	Solar vessel
Diaphragm	Bladder	Diaphragm	Bladder	Diaphragm	Diaphragm/Bladder
3 bar	3 bar	4 & 6 bar	6, 10 & 16 bar	6 bar	10 bar
F	C	N	G	SL	S
F 8 – 24 l	C 8 – 80 l	N 8 – 1.000 l	G 100 – 5.000 l	SL 180 – 320 l	S 2 – 600 l



V Auxiliary vessels

Without membrane

V 500 – 5.000 → 6 bar / 110 °C
V 6 – 5.000 → 10 bar / 110 °C

Other pressure ratings available on request

for potable and non-potable systems

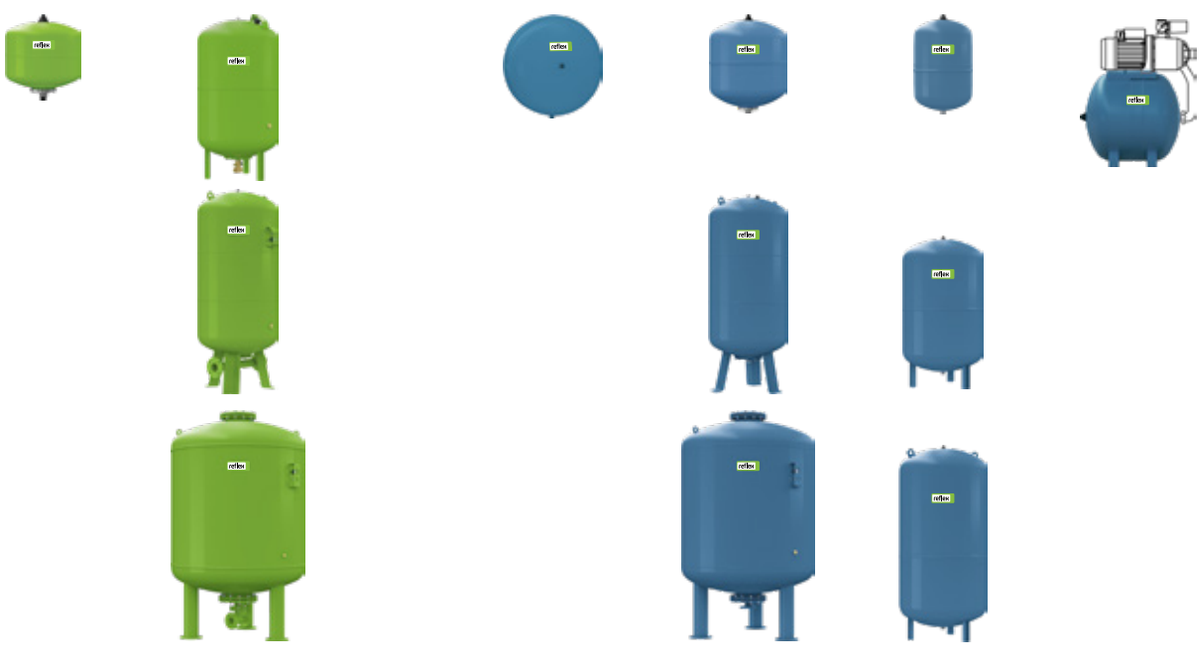
Refix

for potable water, pressure-boosting and water heating systems according to DIN 1988 norm

- Small vessel → **Bladder** → 10, 16 & 25 bar → **DD** → DD 2 – 33 l
- Large vessel → **Bladder** → 10 & 16 bar → **DT** → DT 60 – 3.000 l

only for systems not subject to the requirements of the DIN 1988 norm*

- Disc-shaped vessel → **Bladder** → 10 bar → **C-DE** → C-DE 8 – 80 l
- Vessel → **Bladder** → 10, 16 & 25 bar → **DE** → DE 2 – 5.000 l
- Vessel → **Diaphragm** → 10 bar → **DC** → DC 25 – 600 l
- Vessel for domestic water systems → **Bladder** → 10 bar → **HW** → HW 25 – 100 l



Water shock arrestor | Diaphragm | WD**

0.165 l / 10 bar**

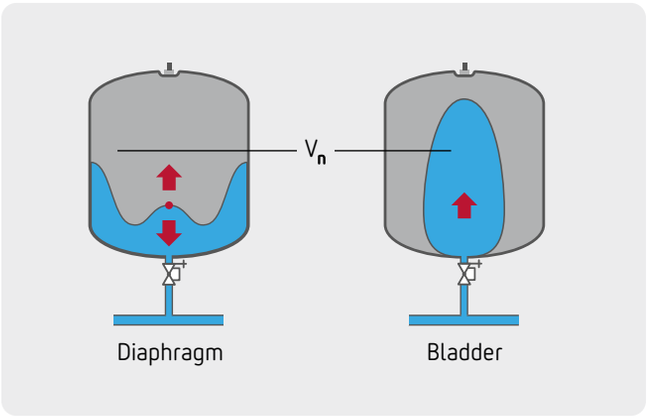
For example, installation directly at the draw-off point

* For example, fire extinguishing and non-potable water systems, underfloor heating, geothermal energy...

** Not approved for potable water.

Theoretical principles

Construction: Reflex & Refix



Membrane expansion vessels (MAG) with gas cushioning are functional without auxiliary energy and therefore also assigned to static pressurisation systems. The pressure is generated by a gas cushion in the vessel.

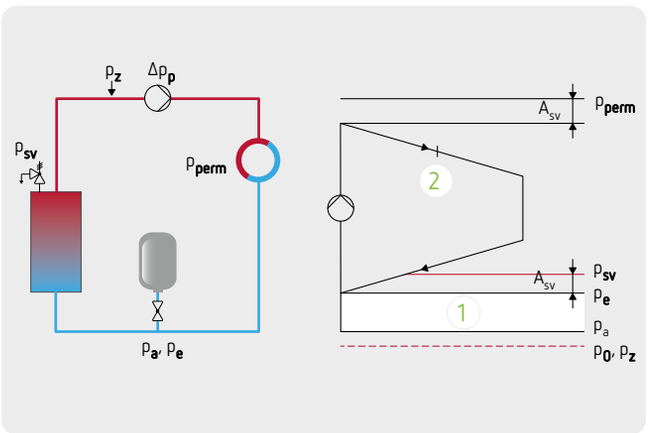
The water level and the pressure in the gas chamber are linked ($p \times V$ = constant). This means that it is not possible to use the 100 % of the nominal volume V_n for water intake.

The nominal volume is greater than the required water intake volume $V_e + V_v$ by the factor $\frac{p_e + 1}{p_e - p_0}$.

This is one reason why dynamic pressure maintenance systems are more favourable for larger systems and narrow pressure ratios ($p_e - p_0$).

Calculating the nominal volume: $V_n = (V_e + V_v) \frac{p_e + 1}{p_e - p_0}$

Supply pressure maintenance (suction pressure maintenance)

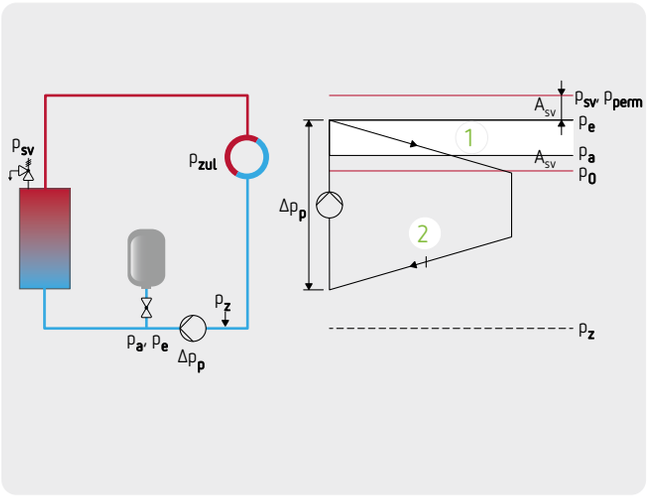


Pressure maintenance is integrated **upstream** of the circulating pump, i.e. on the suction side. This type is most commonly used, as it requires the least technical effort.

- Advantages:
  - \+ low idle pressure level
  - \+ operating pressure → idle pressure, meaning there is no risk of a vacuum forming
- Disadvantages:
  - – bat high flow-through pump pressure (large systems) high operating pressure, observe network load p_{perm}

1. Idle pressure target value
2. Operating pressure

Follow-up pressure maintenance

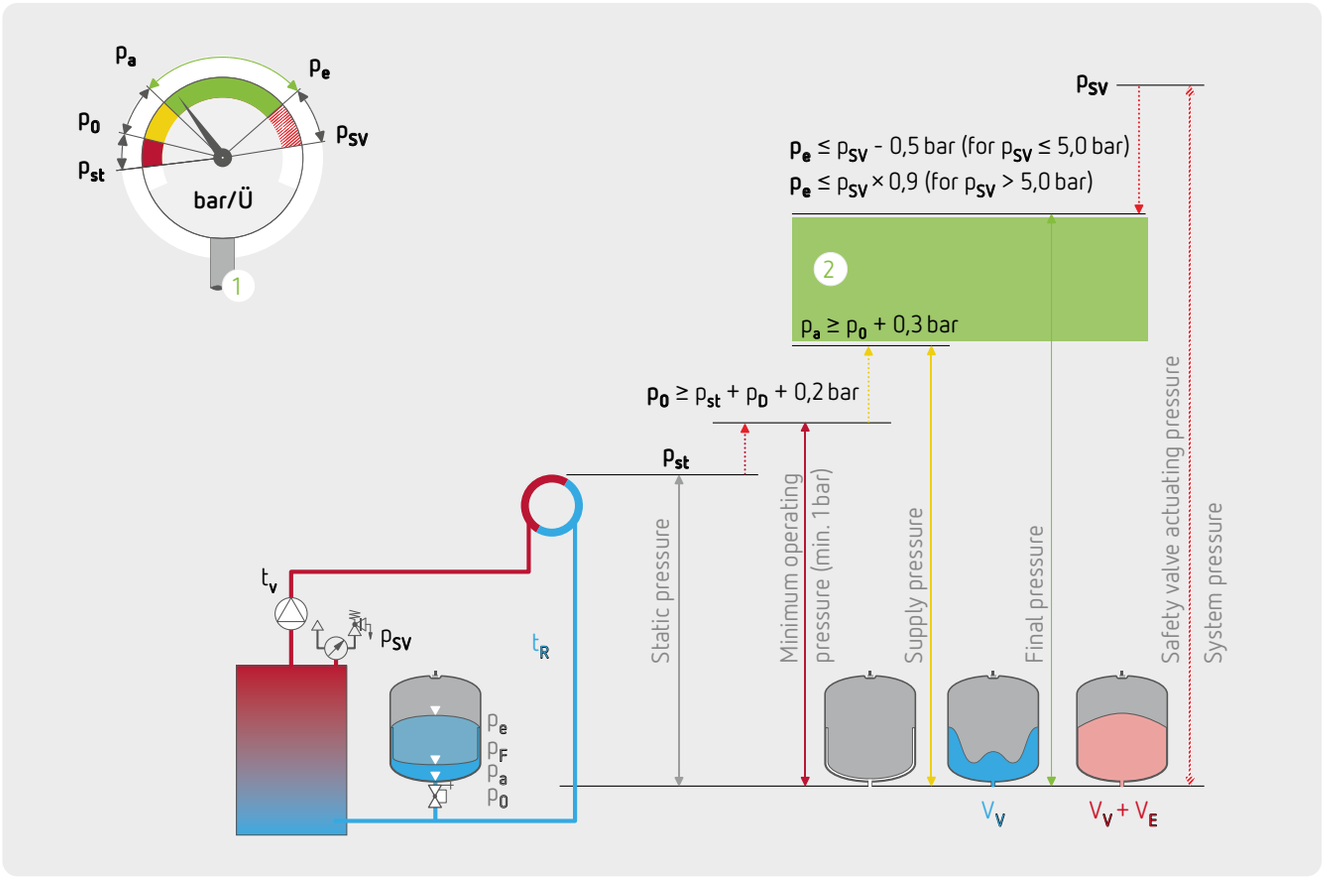


Pressure maintenance is integrated **downstream** of the circulating pump, i.e. on the pressure side. When determining the idle pressure, a system-specific differential pressure component of the circulating pump (50 ... 100 %) must be allowed for. The application is limited to a few individual cases → solar systems.

- Advantages:
  - \+ low idle pressure level if the entire pump pressure does not have to be loaded
- Disadvantages:
  - – high idle pressure level
  - – mainly for maintaining required inlet pressure p_z as per manufacturer's specifications

1. Idle pressure target value
2. Operating pressure

Calculation parameters



p_{st} Static pressure
p_0 Minimum operating pressure (min. 1 bar)
p_a Supply pressure
p_F Filling pressure
p_e Final pressure
p_{SV} Safety valve actuating pressure/system pressure

1. System pressure changes
2. Idle pressure range = pressure maintenance target value

Tasks of pressurisation systems

Pressurisation systems play a key role in heating and cooling circuits, where they essentially have to carry out three fundamental functions:

1. To keep pressure within permissible limits at every point of the system, i.e. so that the maximum gauge operating pressure is not exceeded but also that a minimum pressure is ensured so as to prevent vacuums, cavitation and evaporation.
2. To compensate volume fluctuations in the heating or cooling water due to temperature fluctuations.
3. To avert system-related water losses in the form of a hydraulic seal.

Careful calculation, commissioning and maintenance is a basic requirement for the proper functioning of the overall system.

New transport guidelines for expansion vessels

Product adjustments according to ADR* and IMDG**

Due to new legal requirements according to the ADR (*Accord européen relatif au transport international des marchandises dangereuses par route = Agreement concerning the International Carriage of Dangerous Goods by Road) and IMDG (**International Maritime Dangerous Goods Code), Reflex Winkelmann GmbH has taken appropriate measures to satisfy these regulations. This involves changing the packaging and the factory prepressure (p_0) of various vessels.

Allowed (✓) or not allowed (×) according to the new transport guidelines

Overview of measures for satisfying the legal requirements

Vessel (litres)	Measures for satisfying the legal requirements
Reflex (vessels for heating, solar and cold water systems)	
All types Reflex N, C, F, SL, V	No measures necessary, packaging and prepressure remain as before
Reflex G 100 – 600	Additional item numbers are available for sea transport for the following countries/regions for vessels with reduced prepressure (2 bar): Sweden, Norway, Finland, Region IMEA/Asia Pacific
Reflex G 300 – 600	New packaging
Reflex G from 800	Prepressure reduced to 2 bar
Reflex S to 33	No measures necessary, packaging and prepressure remain as before
Reflex S 50 – 600	Additional item numbers are available for sea transport for the following countries/regions for vessels with reduced prepressure (2 bar): Sweden, Norway, Finland, Region IMEA/Asia Pacific
Reflex S 300 – 600	New packaging

Vessel (litres)	Measures for satisfying the legal requirements
Refix (vessels for potable and non-potable systems)	
All types Refix HW	No measures necessary, packaging and prepressure remain as before
Refix DT 60 – 600 + DE 2 – 600	Additional item numbers are available for sea transport for the following countries/regions for vessels with reduced prepressure (2 bar): Sweden, Norway, Finland, Region IMEA/Asia Pacific
Refix DT + DE 300 – 600	New packaging
Refix DT + DE from 800	Prepressure reduced to 2 bar
All types Refix DD + C-DE	Additional item numbers are available for sea transport for the following countries/regions for vessels with reduced prepressure (2 bar): Sweden, Norway, Finland, Region IMEA/Asia Pacific
Refix DC 25	No measures necessary, packaging and prepressure remain as before
Refix DC 300 – 600	New packaging
Refix DC 50 – 600	Additional item numbers are available for sea transport for the following countries/regions for vessels with reduced prepressure (2 bar): Sweden, Norway, Finland, Region IMEA/Asia Pacific

Additional item numbers are added for the named countries that are automatically changed upon order confirmation.

Benefits of the measures

- ✓ **All transport capacities can still be flexibly and fully exhausted**
- ✓ **Simplification of transport processing thanks to secured standards**
- ✓ **Complex processes with respect to storing and handling dangerous goods are avoided**

Overview of affected items

Art. No.	Art. No. Description [colour, maximum pressure / prepressure, connection]	New Art. No.	New Art. No. Description [colour, maximum pressure / prepressure, connection]
8519000	G 100 grey 6/3,5 bar	8519001	G 100 grey 6/2 bar
8518000	G 100 grey 10/3,5 bar	8518001	G 100 grey 10/2 bar
8518400	G 100 grey 16/3,5 bar	8518401	G 100 grey 16/2 bar
8519100	G 200 grey 6/3,5 bar	8519101	G 200 grey 6/2 bar
8518100	G 200 grey 10/3,5 bar	8518101	G 200 grey 10/2 bar
8518500	G 200 grey 16/3,5 bar	8518502	G 200 grey 16/2 bar
8519200	G 300 grey 6/3,5 bar	8519201	G 300 grey 6/2 bar
8518200	G 300 grey 10/3,5 bar	8518201	G 300 grey 10/2 bar
8518600	G 300 grey 16/3,5 bar	8518602	G 300 grey 16/2 bar
8521605	G 400 grey 6/3,5 bar	8521606	G 400 grey 6/2 bar
8521005	G 400 grey 10/3,5 bar	8521001	G 400 grey 10/2 bar
8510206	G 400 grey 16/3,5 bar	8510203	G 400 grey 16/2 bar
8521705	G 500 grey 6/3,5 bar	8521700	G 500 grey 6/2 bar
8521006	G 500 grey 10/3,5 bar	8521004	G 500 grey 10/2 bar
8518700	G 500 grey 16/3,5 bar	8518702	G 500 grey 16/2 bar
8522605	G 600 grey 6/3,5 bar	8522606	G 600 grey 6/2 bar
8522006	G 600 grey 10/3,5 bar	8522001	G 600 grey 10/2 bar
8522007	G 600 grey 16/3,5 bar	8522002	G 600 grey 16/2 bar
8209500	S 50 grey 10/3 bar	8209503	S 50 grey 10/2 bar
8210300	S 80 grey 10/3 bar	8210301	S 80 grey 10/2 bar
8210500	S 100 grey 10/3 bar	8210501	S 100 grey 10/2 bar
8211500	S 140 grey 10/3 bar	8211501	S 140 grey 10/2 bar
8213400	S 200 grey 10/3 bar	8213401	S 200 grey 10/2 bar
8214400	S 250 grey 10/3 bar	8214401	S 250 grey 10/2 bar
8215400	S 300 grey 10/3 bar	8215401	S 300 grey 10/2 bar
8219000	S 400 grey 10/3 bar	8219001	S 400 grey 10/2 bar
8219200	S 600 grey 10/3 bar	8219202	S 600 grey 10/2 bar
7307700	DD 8 white 10/4 bar	7307701	DD 8 white 10/2 bar
7308000	DD 8 green 10/4 bar	7308001	DD 8 green 10/2 bar
7290200	DD 8 green 25/4 bar	7290202	DD 8 green 25/2 bar
7308200	DD 12 green 10/4 bar	7308201	DD 12 green 10/2 bar
7303805	DD 12 green 16/4 bar	7303806	DD 12 green 16/2 bar
7308300	DD 18 green 10/4 bar	7308301	DD 18 green 10/2 bar
7308400	DD 25 green 10/4 bar	7308401	DD 25 green 10/2 bar
7380700	DD 33 green 10/4 bar	7380701	DD 33 green 10/2 bar
7309000	DT 60 green 10/4 bar Rp 1¼"	7309003	DT 60 green 10/2 bar Rp1¼"
7365400	DT 100 green 10/4 bar DN 50/16	7365402	DT 100 green 10/2 bar DN 50/16
7365405	DT 100 green 10/4 bar DN 65/16	7365410	DT 100 green 10/2 bar DN 65/16
7309200	DT 100 green 10/4 bar Rp 1¼"	7309202	DT 100 green 10/2 bar Rp1¼"
7309300	DT 200 green 10/4 bar Rp 1¼"	7309301	DT 200 green 10/2 bar Rp 1¼"
7370200	DT 200 green 16/4 bar DN 50/16	7370201	DT 200 green 10/2 bar DN 50/16
7314206	DT 300 green 16/4 bar DN 80/16	7314208	DT 300 green 16/2 bar DN 80/16
7365500	DT 400 green 10/4 bar DN 50/16	7365501	DT 400 green 10/2 bar DN 50/16
7336505	DT 400 green 10/4 bar DN 65/16	7336506	DT 400 green 10/2 bar DN 65/16
7339005	DT 400 green 16/4 bar DN 80/16	7339007	DT 400 green 16/2 bar DN 80/16
7370500	DT 500 green 16/4 bar DN 50/16	7370501	DT 500 green 16/2 bar DN 50/16
7370507	DT 500 green 16/4 bar DN 65/16	7370502	DT 500 green 16/2 bar DN 65/16
7365600	DT 600 green 10/4 bar DN 50/16	7365602	DT 600 green 10/2 bar DN 50/16
7336806	DT 600 green 10/4 bar DN 80/16	7336808	DT 600 green 10/2 bar DN 80/16
7270900	C-DE 8 blue 10/4 bar	7270901	C-DE 8 blue 10/2 bar
7270910	C-DE 12 blue 10/4 bar	7270911	C-DE 12 blue 10/2 bar
7270920	C-DE 18 blue 10/4 bar	7270921	C-DE 18 blue 10/2 bar
7270930	C-DE 25 blue 10/4 bar	7270931	C-DE 25 blue 10/2 bar
7270940	C-DE 35 blue 10/4 bar	7270941	C-DE 35 blue 10/2 bar
7270950	C-DE 50 blue 10/4 bar	7270952	C-DE 50 blue 10/2 bar
7270960	C-DE 80 blue 10/4 bar	7270961	C-DE 80 blue 10/2 bar

Art. No.	Art. No. Description [colour, maximum pressure / prepressure, connection]	New Art. No.	New Art. No. Description [colour, maximum pressure / prepressure, connection]
7200300	DE 2 blue 10/4 bar	7200301	DE 2 blue 10/2 bar
7301000	DE 8 blue 10/4 bar	7301001	DE 8 blue 10/2 bar
7301008	DE 8 blue 10/4 bar sswc [2]	7300999	DE 8 blue 10/2 bar sswc [2]
7301006	DE 8 blue 16/4 bar	7301004	DE 8 blue 16/2 bar
7290100	DE 8 blue 25/4 bar	7290101	DE 8 blue 25/2 bar
7302000	DE 12 blue 10/4 bar	7302001	DE 12 blue 10/2 bar
7302008	DE 12 blue 10/4 bar sswc [2]	7302006	DE 12 blue 10/2 bar sswc [2]
7302105	DE 12 blue 16/4 bar sswc [2]	7302108	DE 12 blue 16/2 bar sswc [2]
7303000	DE 18 blue 10/4 bar	7303001	DE 18 blue 10/2 bar
7303008	DE 18 blue 10/4 bar sswc [2]	7303004	DE 18 blue 10/2 bar sswc [2]
7304000	DE 25 blue 10/4 bar	7303998	DE 25 blue 10/2 bar
7304009	DE 25 blue 10/4 bar sswc [2]	7303999	DE 25 blue 10/2 bar sswc [2]
7304015	DE 25 blue 16/4 bar	7304017	DE 25 blue 16/2 bar
7303900	DE 33 blue 10/4 bar	7303901	DE 33 blue 10/2 bar
7305508	DE 33 blue 10/4 bar sswc [1] [2]	7305509	DE 33 blue 10/2 bar sswc [1] [2]
7305500	DE 33 blue 10/4 bar [1]	7305501	DE 33 blue 10/2 bar [1]
7306005	DE 50 blue 10/4 bar	7306006	DE 50 blue 10/2 bar
7306400	DE 60 blue 10/4 bar	7306402	DE 60 blue 10/2 bar
7306500	DE 80 blue 10/4 bar	7306499	DE 80 blue 10/2 bar
7306505	DE 80 blue 10/4 bar sswc [2]	7306498	DE 80 blue 10/2 bar sswc [2]
7348600	DE 80 blue 16/4 bar	7348604	DE 80 blue 16/2 bar
7306600	DE 100 blue 10/4 bar	7306601	DE 100 blue 10/2 bar
7306605	DE 100 blue 10/4 bar sswc [2]	7306599	DE 100 blue 10/2 bar sswc [2]
7348610	DE 100 blue 16/4 bar	7348612	DE 100 blue 16/2 bar
7313700	DE 120 blue 25/4 bar	7313702	DE 120 blue 25/2 bar
7313500	DE 180 blue 25/4 bar	7313501	DE 180 blue 25/2 bar
7306700	DE 200 blue 10/4 bar	7306699	DE 200 blue 10/2 bar
7306705	DE 200 blue 10/4 bar sswc [2]	7306698	DE 200 blue 10/2 bar sswc [2]
7348620	DE 200 blue 16/4 bar	7348621	DE 200 blue 16/2 bar
7306800	DE 300 blue 10/4 bar	7306801	DE 300 blue 10/2 bar
7306805	DE 300 blue 10/4 bar sswc [2]	7306802	DE 300 blue 10/2 bar sswc [2]
7348630	DE 300 blue 16/4 bar	7348634	DE 300 blue 16/2 bar
7313800	DE 300 blue 25/4 bar	7313801	DE 300 blue 25/2 bar
7306850	DE 400 blue 10/4 bar	7306851	DE 400 blue 10/2 bar
7348640	DE 400 blue 16/4 bar	7348643	DE 400 blue 16/2 bar
7313300	DE 400 blue 25/4 bar	7313306	DE 400 blue 25/2 bar
7306900	DE 500 blue 10/4 bar	7306899	DE 500 blue 10/2 bar
7306905	DE 500 blue 10/4 bar sswc [2]	7306898	DE 500 blue 10/2 bar sswc [2]
7348650	DE 500 blue 16/4 bar	7348649	DE 500 blue 16/2 bar
7348660	DE 600 blue 16/4 bar	7348668	DE 600 blue 16/2 bar
7306950	DE 600 blue 10/4 bar	7306951	DE 600 blue 10/2 bar
7321500	DE 600 blue 25/4 bar	7321504	DE 600 blue 25/2 bar
7309600	DC 50 blue 10/4 bar	7309601	DC 50 blue 10/2 bar
7309700	DC 80 blue 10/4 bar	7309701	DC 80 blue 10/2 bar
7309800	DC 100 blue 10/4 bar	7309801	DC 100 blue 10/2 bar
7363500	DC 200 blue 10/4 bar	7363501	DC 200 blue 10/2 bar
7363600	DC 300 blue 10/4 bar	7363601	DC 300 blue 10/2 bar
7363800	DC 500 blue 10/4 bar	7363801	DC 500 blue 10/2 bar
7351000	WD white 10/3,5 bar	7351003	WD white 10/2 bar

[1] with feet
[2] version with stainless steel water connection

Reflex

Reflex — quick selection table

Heating Systems: 70/50 °C

	Safety Valve p_{SV} [bar]	2,5			3,0				4,0			
	Inlet Pressure p_0 [bar]	0,5	1,0	1,5	0,5	1,0	1,5	1,8	1,5	2,0	2,5	3,0
	V_n [litres]	Contents V_A [litres]										
Reflex	8	107	48	–	133	82	31	–	87	48	8	–
	12	161	71	–	199	122	46	–	131	71	12	–
	18	268	134	–	325	210	96	27	223	134	45	–
	25	424	238	52	504	344	185	89	362	238	114	–
	35	639	387	126	730	536	313	179	561	387	213	–
	50	912	608	238	1.043	782	504	313	811	608	362	114
	80	1.460	973	461	1.668	1.251	834	580	1.298	973	649	263
	100	1.825	1.217	608	2.086	1.564	1.043	730	1.622	1.217	811	362
	140	2.555	1.703	852	2.920	2.190	1.460	1.022	2.271	1.703	1.135	561
	200	3.650	2.433	1.217	4.171	3.128	2.086	1.460	3.244	2.433	1.622	811
	250	4.562	3.041	1.521	5.214	3.910	2.607	1.825	4.055	3.041	2.028	1.014
	300	5.474	3.650	1.825	6.257	4.692	3.128	2.190	4.866	3.650	2.433	1.217
	400	7.299	4.866	2.433	8.342	6.257	4.171	2.920	6.488	4.866	3.244	1.622
	500	9.124	6.083	3.041	10.428	7.821	5.214	3.650	8.110	6.083	4.055	2.028
	600	10.949	7.299	3.650	12.513	9.385	6.257	4.380	9.732	7.299	4.866	2.433
	800	14.599	9.732	4.866	16.684	12.513	8.342	5.839	12.976	9.732	6.488	3.244
	1.000	18.248	12.165	6.083	20.855	15.641	10.428	7.299	16.221	12.165	8.110	4.055

Key data

Safety valve	p_{SV} = 3 bar
Static height	H_{st} = 13 m
Heat generator capacity	$\dot{Q}$ = 40 kW
Panel radiators rated temperature	T = 70/50 °C
Volume buffer storage tank	V_{PH} = 1.000 l

Calculation

Water content (approximately)

Radiators:
$V_A = \dot{Q}\,[kW] \times 13{,}5\,l/kW$

Panel radiators:
$V_A = \dot{Q}\,[kW] \times 8{,}5\,l/kW$

$V_A = 40\,kW \times 8{,}5\,l/kW + 1.000\,l = 1.340\,l$

$$p_0 \geq \frac{H_{st}\,[m]}{10}\,bar + 0{,}2\,bar$$

$$p_0 \geq \frac{13}{10}\,bar + 0{,}2\,bar \qquad = 1{,}5\,bar$$

Result

From the table

with p_{SV} = 3 bar
and p_0 = 1,5 bar
V_A = 1.340 l

→ V_n = **140 l** (for V_A max. 1.460 l)

selected

1 × **Reflex N 140,** 6 bar, → page 14

1 × **cap ball valve,** → page 15

Example calculation
Reflex N

Reflex recommendations

- Set the safety valve operating pressure sufficiently high: **$p_{SV} \geq p_0 + 1{,}5$ bar**
- If possible, select an additional 0,2 bar when calculating the gas inlet pressure:

$$p_0 \geq \frac{H_{st}\,[m]}{10} + 0{,}2\,bar$$

- Due to the feed pressure required for the circulating pumps, at least 1 bar inlet pressure should be selected for roof-mounted systems, too: **$p_0 \geq 1$ bar**
- Set the water-side filling or supply pressure at least 0,3 bar above the inlet pressure when the system is vented in a cold condition: **$p_F \geq p_0 + 0{,}3$ bar**

Reflex — quick selection table

Heating Systems: 70/50 °C

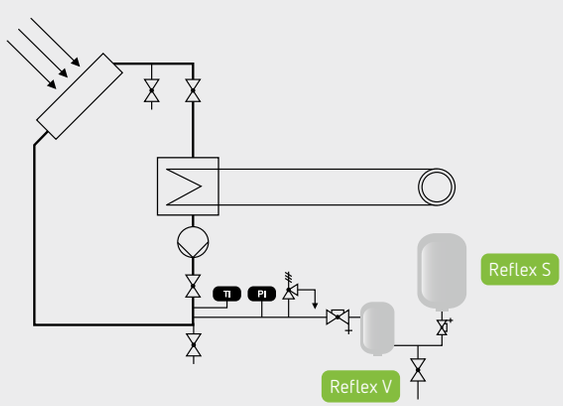
	Safety Valve p_{SV} [bar]	5,0					6,0					
	Inlet Pressure p_0 [bar]	2,0	2,5	3,0	3,5	4,0	2,0	2,5	3,0	3,5	4,0	5,0
	V_n [litres]	Contents V_A [litres]										
Reflex	8	91	58	26	–	–	118	90	63	35	7	–
	12	136	88	39	–	–	177	136	94	52	10	–
	18	231	158	85	12	–	293	230	167	105	42	–
	25	373	272	170	69	–	459	372	285	197	110	–
	35	576	434	292	150	8	679	574	452	330	208	–
	50	829	664	475	272	69	969	827	684	529	354	6
	80	1.327	1.062	796	515	191	1.551	1.323	1.095	867	639	89
	100	1.659	1.327	995	664	272	1.939	1.654	1.369	1.083	798	145
	140	2.322	1.858	1.393	929	434	2.714	2.315	1.916	1.517	1.118	257
	200	3.318	2.654	1.991	1.327	664	3.878	3.307	2.737	2.167	1.597	424
	250	4.147	3.318	2.488	1.659	829	4.847	4.134	3.422	2.709	1.996	564
	300	4.977	3.981	2.986	1.991	995	5.817	4.961	4.106	3.250	2.395	684
	400	6.636	5.309	3.981	2.654	1.327	7.755	6.615	5.474	4.334	3.193	912
	500	8.295	6.636	4.977	3.318	1.659	9.694	8.269	6.843	5.417	3.992	1.141
	600	9.954	7.963	5.972	3.981	1.991	11.633	9.922	8.212	6.501	4.790	1.369
	800	13.271	10.617	7.963	5.309	2.654	15.511	13.230	10.949	8.668	6.387	1.825
	1.000	16.589	13.271	9.954	6.636	3.318	19.389	16.537	13.686	10.835	7.984	2.281

Special configurations on request: Special tank > 5.000 litres; special tank > 10 bar

Customised planning with our configuration software

Reflex Solutions **Pro**
rsp.reflex.de/en

Reflex S in a solar heating system

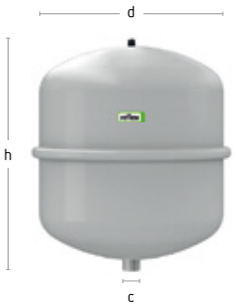


Note for the installer

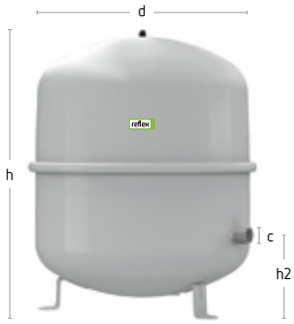
- The circulating pump and Reflex S are positioned in the collector return because of the low temperature load. This inevitably results in the installation of the expansion vessel on the discharge side of the circulating pump. Accordingly, the circulating pump pressure must be allowed for when calculating the inlet pressure p_0.
- The evaporation in the collector must be allowed for when calculating the nominal volume.
- The Reflex auxiliary vessel need not be installed if the temperature load at the expansion vessel cannot exceed 70 °C.

Reflex

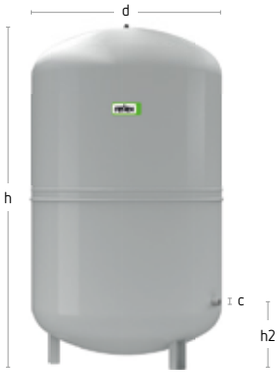
Reflex N



N 8 – 25 l



N 35 – 140 l



N 200 – 1.000 l

Technical **Features**

- for closed heating and cooling systems
- with threaded connections
- vertical from 35 litres, wall mounting up to size N 80
- non-replaceable diaphragm according to DIN EN 13831
- max. permissible operating temperature 70 °C
- for antifreeze additive of at least 25 – 50 %
- approval according to Pressure Equipment Directive 2014/68/EU
- durable epoxy resin coating
- with factory-pressurised gas chamber
- max. permissible system temperature 120 °C

	Type	Art. No.		DG	PQ	Inlet pressure	Connection c	Ø d	Height h	Height h2	Weight
		grey	white		[pce]	[bar]		[mm]	[mm]	[mm]	[kg]
4 bar 70 °C	N 8	8202501	7202801	0012	84	1,50	R ¾"	272	236	–	2,35
	N 12	8203301	7203501	0012	60	1,50	R ¾"	272	317	–	2,75
	N 18	8204301	7204401	0012	60	1,50	R ¾"	308	360	–	3,60
	N 25	8206301	7206401	0012	48	1,50	R ¾"	308	477	–	4,35
	N 35	8208401	7208501	0012	24	1,50	R ¾"	376	466	130	5,60
6 bar 70 °C	N 50	8209300	7209400	0013	24	1,50	R ¾"	441	487	175	9,60
	N 80	8210200	7210600	0013	12	1,50	R 1"	512	558	172	13,28
	N 100	8216300	–	0013	10	1,50	R 1"	512	669	172	15,84
	N 140	8211400	–	0013	6	1,50	R 1"	512	890	172	19,90
	N 200	8213300	–	0018	4	1,50	R 1"	634	767	205	23,80
	N 250	8214300	–	0018	4	1,50	R 1"	634	896	205	24,70
	N 300	8215300	–	0018	1	1,50	R 1"	634	1.101	238	30,00
	N 400	8218000	–	0018	1	1,50	R 1"	740	1.093	245	47,00
	N 500	8218300	–	0018	1	1,50	R 1"	740	1.313	245	52,00
	N 600	8218400	–	0018	1	1,50	R 1"	740	1.538	245	66,00
	N 800	8218500	–	0018	1	1,50	R 1"	740	2.003	245	96,00
	N 1000	8218600	–	0018	1	1,50	R 1"	740	2.413	245	118,00

Reflex N Accessories

CE

AG connection set

- for rapid assembly and maintenance of membrane expansion vessels
- incl. secured shut-off and connecting bend with screw connection
- with drainage cock (G ½") and hose nozzle
- according to DIN EN 12828
- 10 bar / 100 °C

Cap valve

- secured shut-off for maintenance and disassembly of expansion vessels
- with drainage
- according to DIN EN 12828
- 10 bar / 120 °C

Digital pressure gauge

- inlet pressure tester up to about 9 bar

Wall-hung console with multi-connections

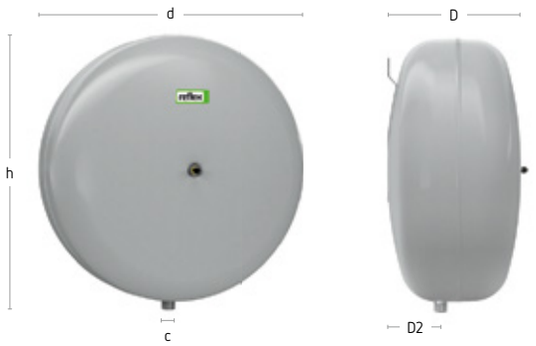
- console with multi-connections for Reflex 8 – 25 litres
- With vessel connection

Wall mounting bracket with clamping strap

- console with clamping strap for Reflex 6 – 25 litres
- upright assembly

Type	Art. No.	DG	Weight [kg]
AG connection set AG 1"	9119204	0080	0,85
Cap valve SU R ¾" × ¾"	7613000	0084	0,26
Cap valve SU R 1" × 1"	7613100	0084	0,57
Digital pressure gauge	9119198	0086	0,06
Wall-hung console with multi-connections	7612000	0075	0,90
Wall mounting bracket with clamping strap	7611000	0075	0,22

Reflex C



C 8 – 80 l

Technical Features

- for closed heating and cooling systems
- with threaded connections
- including brackets for easy installation
- non-replaceable bladder according to DIN EN 13831
- max. permissible operating temperature 70 °C
- for antifreeze additive of at least 25 – 50 %
- approval according to Pressure Equipment Directive 2014/68/EU
- durable epoxy resin coating
- with factory-pressurised gas chamber
- max. permissible system temperature 120 °C

	Type	Art. No. grey	DG	PQ [pce]	Inlet pressure [bar]	Connection c	Ø d [mm]	Height h [mm]	Depth D [mm]	Depth D2 [mm]	Weight [kg]
3 bar 70 °C	C 8	8280000	0017	96	1,00	G ½"	280	296	176	52	2,71
	C 12	8280100	0017	60	1,00	G ½"	354	370	182	64	3,65
	C 18	8280200	0017	42	1,00	G ¾"	356	370	236	76	4,38
	C 25	8280300	0017	42	1,00	G ¾"	409	427	253	93	5,10
	C 35	8280400	0017	24	1,00	G ¾"	480	465	256	97	6,55
	C 50	8280500	0017	20	1,50	G ¾"	480	465	332	125	8,00
	C 80	8280600	0017	8	1,50	G ¾"	634	621	338	135	15,70

Cap valve

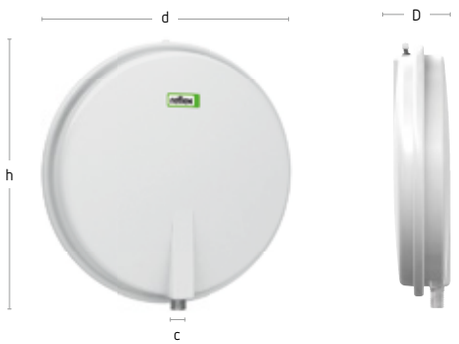
- secured shut-off for maintenance and disassembly of expansion vessels
- with drainage
- according to DIN EN 12828
- 10 bar / 120 °C

Digital pressure gauge

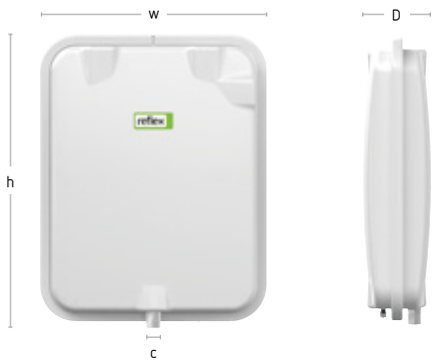
- inlet pressure tester up to about 9 bar

Type	Art. No.	DG	Weight [kg]
Cap valve SU R ¾" × ¾"	7613000	0084	0,26
Digital pressure gauge	9119198	0086	0,06

Reflex F



F 8 l



F 12 – 24 l

Technical Features

- flat vessel for closed heating and cooling systems, especially for installation in boilers
- with threaded connections
- from 18 litres, with mounting lug
- non-replaceable diaphragm according to DIN EN 13831
- max. permissible operating temperature 70 °C
- for antifreeze additive of at least 25 – 50 %
- approval according to Pressure Equipment Directive 2014/68/EU
- durable epoxy resin coating
- with factory-pressurised gas chamber
- max. permissible system temperature 120 °C
- Reflex F 8 vessel recognised with the Plus X-Award

	Type	Art. No. white	DG	PQ [pce]	Inlet pressure [bar]	Connection c	Ø d [mm]	Height h [mm]	Width w [mm]	Depth D [mm]	Depth D2 [mm]	Weight [kg]
3 bar 70 °C	F 8	2407000	0015	54	0,75	G ⅜"	389	389	350	88	72	4,15
	F 12	2211900	0015	36	1,00	G ½"	–	444	350	108	81	6,60
	F 15	2215500	0015	36	1,00	G ¾"	–	444	350	134	97	7,12
	F 18	2218300	0015	28	1,00	G ¾"	–	444	350	158	109	7,70
	F 24	2219000	0015	25	1,00	G ¾"	–	444	350	180	120	9,10

Cap valve

- secured shut-off for maintenance and disassembly of expansion vessels
- with drainage
- according to DIN EN 12828
- 10 bar / 120 °C

Digital pressure gauge

- inlet pressure tester up to about 9 bar

Type	Art. No.	DG	Weight [kg]
Cap valve SU R ¾" × ¾"	7613000	0084	0,26
Digital pressure gauge	9119198	0086	0,06

This product follows **new transport guidelines for expansion vessels.**
→ For the according article number see page 10

Reflex G

G 100 – 500 l

G 600 – 1.000 l

G 1.000 (Ø1,000) – 2.000 l

G 3.000 – 5.000 l

Technical Features

- for closed heating and cooling systems
- upright configuration
- connections:
  → up to 1.000 l / Ø 740 mm with threaded connections
  → from 1.000 l / Ø 1.000 mm with flange connections DN 65 / PN 6 or DN 65 / PN 16
- replaceable bladder according to DIN EN 13831
- max. permissible operating temperature 70 °C
- for antifreeze additive of at least 25 – 50 %
- approval according to Pressure Equipment Directive 2014 / 68 / EU
- the following types are equipped with a diaphragm break detector coupling:
  → 6 bar
  → 10 bar
  → 16 bar
- with inspection opening (from 1.000 litres with Ø 1.000 mm)
- pressure gauge and supply pressure valve protected by clip
- durable epoxy resin coating
- with factory-pressurised gas chamber
- max. permissible system temperature 120 °C

This product follows **new transport guidelines for expansion vessels.**
→ For the according article number see page 10

Reflex G

CE

	Type	Art. No. grey	DG	PQ [pce]	Inlet pressure [bar]	Connection c	Ø d [mm]	Height h [mm]	Height h2 [mm]	Weight [kg]
6 bar 70 °C	G 100	8519000	0021	4	3,50	G1"	480	850	145	14,80
	G 200	8519100	0021	4	3,50	G 1¼"	634	967	144	36,00
	G 300	8519200	0021	1	3,50	G 1¼"	634	1.267	144	45,00
	G 400	8521605	0021	1	3,50	G1"	740	1.276	146	53,00
	G 500	8521705	0021	1	3,50	G1"	740	1.494	146	56,00
	G 600	8522605	0021	1	3,50	G1"	740	1.739	146	74,00
	G 800	8523610	0021	1	2,00	G1"	740	2.186	149	98,00
	G 1000/740	8546605	0021	1	2,00	G1"	740	2.593	146	150,00
	G 1000/1000	8524605	0022	1	2,00	DN 65/PN 6	1.000	1.973	307	228,00
	G 1500	8526605	0022	1	2,00	DN 65/PN 6	1.200	1.971	305	280,00
	G 2000	8527605	0022	1	2,00	DN 65/PN 6	1.200	2.451	291	300,00
	G 3000	8544605	0022	1	2,00	DN 65/PN 6	1.500	2.490	334	620,00
	G 4000	8529605	0022	1	2,00	DN 65/PN 6	1.500	3.065	334	770,00
	G 5000	8530605	0022	1	2,00	DN 65/PN 6	1.500	3.598	334	849,00
10 bar 70 °C	G 100	8518000	0021	4	3,50	G1"	480	850	146	14,80
	G 200	8518100	0021	4	3,50	G 1¼"	634	966	144	36,00
	G 300	8518200	0021	1	3,50	G 1¼"	634	1.267	144	45,00
	G 400	8521005	0021	1	3,50	G 1¼"	740	1.275	133	59,00
	G 500	8521006	0021	1	3,50	G 1¼"	740	1.494	133	68,00
	G 600	8522006	0021	1	3,50	G 1½"	740	1.859	263	143,00
	G 800	8523005	0021	1	2,00	G 1½"	740	2.324	263	166,00
	G 1000/740	8546005	0021	1	2,00	G 1½"	740	2.804	263	190,00
	G 1000/1000	8524005	0022	1	2,00	DN 65/PN 16	1.000	2.001	286	335,00
	G 1500	8526005	0022	1	2,00	DN 65/PN 16	1.200	1.991	291	390,00
	G 2000	8527005	0022	1	2,00	DN 65/PN 16	1.200	2.451	291	528,50
	G 3000	8544005	0022	1	2,00	DN 65/PN 16	1.500	2.542	320	830,00
	G 4000	8529005	0022	1	2,00	DN 65/PN 16	1.500	3.117	320	1.120,00
	G 5000	8530005	0022	1	2,00	DN 65/PN 16	1.500	3.652	320	1.274,00
16 bar 70 °C	G 100	8518400	0021	1	3,50	DN 25/PN 16	480	992	231	31,00
	G 200	8518500	0021	1	3,50	DN 25/PN 16	634	1.088	221	57,00
	G 300	8518600	0021	1	3,50	DN 25/PN 16	634	1.392	221	67,00
	G 400	8510206	0021	1	3,50	DN 40/PN 16	740	1.373	198	110,00
	G 500	8518700	0021	1	3,50	DN 40/PN 16	740	1.618	197	130,00
	G 600	8522007	0021	1	3,50	DN 40/PN 16	740	1.871	198	158,00
	G 800	8523906	0021	1	2,00	DN 40/PN 16	740	2.336	198	221,00
	G 1000/740	8546906	0021	1	2,00	DN 40/PN 16	740	2.804	201	260,00
	G 1000/1000	8524205	0022	1	2,00	DN 65/PN 16	1.000	2.031	276	468,00
	G 1500	8526305	0022	1	2,00	DN 65/PN 16	1.200	2.021	281	650,00
	G 2000	8527100	0022	1	2,00	DN 65/PN 16	1.200	2.481	281	731,00
	G 3000	8544705	0022	1	2,00	DN 65/PN 16	1.500	2.550	310	960,00
	G 4000	8529405	0022	1	2,00	DN 65/PN 16	1.500	3.110	310	1.450,00
	G 5000	8529705	0022	1	2,00	DN 65/PN 16	1.500	3.645	310	1.636,00

Reflex G Accessories

AG connection set

- for rapid assembly and maintenance of membrane expansion vessels
- incl. secured shut-off and connecting bend with screw connection
- with drainage cock (G ½") and hose nozzle
- according to DIN EN 12828
- 10 bar / 100 °C

Digital pressure gauge

- inlet pressure tester up to about 9 bar

Bladder rupture detector

- membrane rupture detector in vessels
- consisting of an electrode relay and an electrode (factory fitted)
- power supply 230 V / 50 Hz
- floating output (changeover contact)

Type	Art. No.	DG	Weight [kg]
AG connection set AG 1"	9119204	0080	0,85
AG connection set AG 1¼"	9119205	0080	1,00
AG connection set AG 1½"	9119206	0080	1,15
Bladder rupture detector MBM II	7857700	0086	0,62
Digital pressure gauge	9119198	0086	0,06

Reflex SL

CE

SL 180 l

SL 220 l

SL 280 l

SL 320 l

Technical Features

- the footprint of Reflex SL vessels corresponds to the footprint and usable capacity of the OTTO Expansomats, making a direct exchange possible
- for closed heating and cooling systems
- slim, space-saving vessel
- non-replaceable diaphragm according to DIN EN 13831
- with factory-pressurised gas chamber
- durable epoxy resin coating
- with threaded connections
- for antifreeze additive of at least 25 – 50 %
- max. permissible operating overpressure 6 bar
- max. permissible operating temperature 70 °C
- max. permissible system temperature 120 °C

	Type	Art. No. grey	DG	PQ [pce]	Inlet pressure [bar]	Connection c	Ø d [mm]	Height h [mm]	Height h2 [mm]	Weight [kg]
6 bar 70 °C	SL 180	8200200	0020	1	1,50	G1"	480	1.156	214	27,38
	SL 220	8200250	0020	1	1,50	G1"	480	1.386	214	33,34
	SL 280	8200300	0020	1	1,50	G1"	480	1.716	214	41,82
	SL 320	8200350	0020	1	1,50	G1"	480	1.946	214	47,78

Cap valve

- secured shut-off for maintenance and disassembly of expansion vessels
- with drainage
- according to DIN EN 12828
- 10 bar / 120 °C

Digital pressure gauge

- inlet pressure tester up to about 9 bar

Type	Art. No.	DG	Weight [kg]
Cap valve SU R 1" × 1"	7613100	0084	0,57
Digital pressure gauge	9119198	0086	0,06

This product follows **new transport guidelines for expansion vessels.**
→ For the according article number see page 10

Reflex S

S 2 – 33 l

S 50 – 250 l

S 300 – 600 l

Technical Features

- for solar, heating and cooling systems
- with threaded connections
- 33 litres with brackets, from 50 litres with adjustable feets
- for antifreeze additive of at least 25 – 50 %
- up to 33 litres non-replaceable bladder, non-replaceable diaphragm for 50 – 600 litres
- max. permissible operating temperature 70 °C
- approval according to Pressure Equipment Directive 2014/68/EU
- durable epoxy resin coating
- with factory-pressurised gas chamber
- max. permissible system temperature 120 °C

	Type	Art. No.		DG	PQ	Inlet pressure	Connection c	Ø d	Height h	Height h2	Weight
		grey	white		[pce]	[bar]		[mm]	[mm]	[mm]	[kg]
10 bar 70 °C	S 2	8707700	–	0014	200	0,50	G ¾"	132	260	–	0,98
	S 8	8703900	9702600	0014	96	1,50	G ¾"	206	332	–	1,80
	S 12	8704000	9702700	0014	60	1,50	G ¾"	280	300	–	2,16
	S 18	8704100	9702800	0014	56	1,50	G ¾"	280	409	–	2,95
	S 25	8704200	9702900	0014	42	1,50	G ¾"	280	518	–	3,68
	S 33	8706200	9706300	0014	24	1,50	G ¾"	354	455	–	4,80
	S 50	8209500	–	0019	20	3,00	R ¾"	415	468	158	8,02
	S 80	8210300	–	0019	12	3,00	R 1"	486	565	170	11,30
	S 100	8210500	–	0019	10	3,00	R 1"	486	667	165	12,90
	S 140	8211500	–	0019	10	3,00	R 1"	486	886	172	19,20
	S 200	8213400	–	0019	4	3,00	R 1"	640	758	205	28,00
	S 250	8214400	–	0019	4	3,00	R 1"	640	888	205	32,00
	S 300	8215400	–	0019	1	3,00	R 1"	640	1.092	235	38,00
	S 400	8219000	–	0019	1	3,00	R 1"	746	1.102	245	55,00
	S 500	8219100	–	0019	1	3,00	R 1"	746	1.321	245	72,00
	S 600	8219200	–	0019	1	3,00	R 1"	746	1.559	245	80,00

Reflex S Accessories

CE

Cap valve

- secured shut-off for maintenance and disassembly of expansion vessels
- with drainage
- according to DIN EN 12828
- 10 bar / 120 °C

Digital pressure gauge

- inlet pressure tester up to about 9 bar

Wall-hung console with multi-connections

- console with multi-connections for Reflex 8 – 25 litres
- With vessel connection

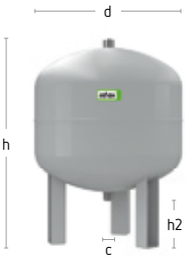
Wall mounting bracket with clamping strap

- console with clamping strap for Reflex 6 – 25 litres
- upright assembly

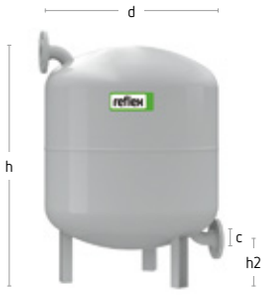
Type	Art. No.	DG	Weight [kg]
Cap valve SU R ¾" × ¾"	7613000	0084	0,26
Cap valve SU R 1" × 1"	7613100	0084	0,57
Digital pressure gauge	9119198	0086	0,06
Wall-hung console with multi-connections	7612000	0075	0,90
Wall mounting bracket with clamping strap	7611000	0075	0,22

Reflex V

V 6 – 20



V 40 – 60



V 200 – 350

V 500 – 750

V 1.000 – 2.000

V 3.000 – 5.000

Technical Features

- auxiliary vessel without membrane
- approval according to Pressure Equipment Directive 2014/68/EU
- from V 40 with feet
- required for systems with return temperatures greater than the maximum permissible operating temperature of the diaphragm expansion vessel or in cooling systems with temperatures less than the maximum permissible operating temperature of the diaphragm expansion vessel
- can also be used as a buffer storage tank
- special vessel >10 bar / > 110 °C available upon request
- durable epoxy resin coating

Reflex V

CE

	Type	Art. No. grey	DG	PQ [pce]	Connection c	Ø d [mm]	Height h [mm]	Height h2 [mm]	Weight [kg]
6 bar 110 °C	V 500	8852803	0024	1	DN 40/PN 6	750	1.652	208	160,00
	V 750	8851801	0024	1	DN 40/PN 6	750	2.273	208	205,00
	V 1000	8851908	0024	1	DN 65/PN 6	1.000	2.020	305	310,00
	V 1500	8852306	0024	1	DN 65/PN 6	1.200	2.020	305	405,10
	V 2000	8852408	0024	1	DN 65/PN 6	1.200	2.478	305	545,00
	V 3000	8852506	0024	1	DN 65/PN 6	1.500	2.537	337	775,00
	V 4000	8853406	0024	1	DN 65/PN 6	1.500	3.112	337	1.060,00
	V 5000	8854806	0024	1	DN 65/PN 6	1.500	3.648	337	1.095,00
10 bar 110 °C	V 6	8303100	0024	96	R ¾"	206	244	–	1,60
	V 12	8303200	0024	56	R ¾"	280	244	–	2,56
	V 20	8303300	0024	56	R ¾"	280	360	–	3,28
	V 40	8303400	0024	20	R 1"	409	562	113	9,75
	V 60	8303500	0024	12	R 1"	409	732	172	12,40
	V 200	8303600	0024	4	DN 40/PN 16	634	901	142	35,25
	V 300	8303700	0024	1	DN 40/PN 16	634	1.201	142	48,00
	V 350	8303800	0024	1	DN 40/PN 16	634	1.341	142	46,00
	V 500	8854807	0024	1	DN 40/PN 16	750	1.652	208	290,00
	V 750	8854808	0024	1	DN 40/PN 16	750	2.283	197	420,00
	V 1000	8854809	0024	1	DN 65/PN 16	1.000	2.055	286	560,00
	V 1500	8854810	0024	1	DN 65/PN 16	1.200	2.045	284	636,10
	V 2000	8854811	0024	1	DN 65/PN 16	1.200	2.505	284	940,00
	V 3000	8854812	0024	1	DN 65/PN 16	1.500	2.563	313	1.405,00
	V 4000	8854813	0024	1	DN 65/PN 16	1.500	3.138	313	1.930,00
	V 5000	8854814	0024	1	DN 65/PN 16	1.500	3.674	313	2.015,00

Cap valve

- secured shut-off for maintenance and disassembly of expansion vessels
- with drainage
- according to DIN EN 12828
- 10 bar / 120 °C

Wall mounting bracket with clamping strap

- console with clamping strap for Reflex 6 – 25 litres
- upright assembly

Type	Art. No.	DG	Weight [kg]
Cap valve SU R ¾" × ¾"	7613000	0084	0,26
Cap valve SU R 1" × 1"	7613100	0084	0,57
Wall mounting bracket with clamping strap	7611000	0075	0,22

Refix

Quick selection table for Refix — according to the nominal volume V_n

Cold water inlet temperature: 10 °C / Storage temperature: 60 °C

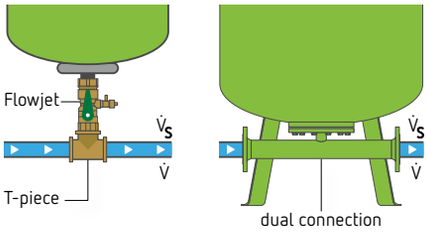
	Gas inlet pressure p_0 [bar]	3,0				4,0 = standard			
	Pressure reducer set-point pressure p_a [bar]	≥ 3,2				≥ 4,2			
	Safety Valve p_{SV} [bar]	6	7	8	10	6	7	8	10
	V_{sp} [litres]	V_n [litres]							
Refix	90	8	8	8	8	8	8	8	8
	100	8	8	8	8	12	8	8	8
	120	8	8	8	8	12	8	8	8
	130	8	8	8	8	12	8	8	8
	150	8	8	8	8	18	12	8	8
	180	12	8	8	8	18	12	8	8
	200	12	12	8	8	18	12	12	8
	250	12	12	12	8	25	18	12	12
	300	18	18	12	12	25	18	18	12
	400	25	18	18	18	33	33	15	25
	500	25	25	18	18	60	33	25	25
	600	33	25	25	18	60	60	33	25
	700	33	33	25	25	60	60	33	25
	800	60	33	33	25	80	80	60	25
	900	60	60	33	25	80	60	60	33
	1.000	60	60	33	33	100	60	60	60
	1.500	80	80	60	60	200	100	80	60
	2.000	100	100	80	80	200	200	100	80
	3.000	100	100	100	100	300	200	200	100

Quick selection table for Refix — according to peak volumetric flow $\dot{V}_S$

Cold water inlet temperature: 10 °C / Storage temperature: 60 °C

	available connections		recommended max. peak volume flow $\dot{V}_S$*	actual pressure loss at volume flow $\dot{V}$
Refix DD 8 – 33 l	with or without Flowjet	Rp ¾" = standard	≤ 2,5 m³/h	$\Delta p = 0{,}03\,\text{bar} \times \left(\frac{\dot{V}\,\text{m}^3/\text{h}}{2{,}5\,\text{m}^3/\text{h}}\right)^2$
	passing T-piece	Rp 1" (on-site)	≤ 4,2 m³/h	negligible
Refix DT 60 – 500 l	with Flowjet Rp 1 ¼"		≤ 7,2 m³/h	$\Delta p = 0{,}04\,\text{bar} \times \left(\frac{\dot{V}\,\text{m}^3/\text{h}}{2{,}5\,\text{m}^3/\text{h}}\right)^2$
Refix DT 80 – 3.000 l	dual connection DN 50		≤ 15 m³/h	$\Delta p = 0{,}14\,\text{bar} \times \left(\frac{\dot{V}\,\text{m}^3/\text{h}}{2{,}5\,\text{m}^3/\text{h}}\right)^2$
	dual connection DN 65		≤ 27 m³/h	$\Delta p = 0{,}11\,\text{bar} \times \left(\frac{\dot{V}\,\text{m}^3/\text{h}}{2{,}5\,\text{m}^3/\text{h}}\right)^2$
	dual connection DN 80		≤ 36 m³/h	negligible
	dual connection DN 100		≤ 56 m³/h	negligible
Refix DE, Refix DC	(no medium circulating)		unlimited	Δp = 0

* determined for a speed of 2 m/s



After the nominal volume of the Refix has been selected, a check as to whether the peak volumetric flow $\dot{V}_S$ (resulting from a tube network analysis according to DIN 1988 norm) can be realised at the Refix must be made with the medium circulating in the vessels.

If this is the case, then a 60 litre Refix DT must be used at the Refix DD instead of a 8–33 litre vessel to ensure a greater flow.

This product follows **new transport guidelines for expansion vessels.**
→ For the according article number see page 10

Refix DD

DD 2 – 25 l

Flowjet–flow through valve
Includes Rp ¾ T-piece (for DD 8–33 l)

DD 33 l with brackets (rear view)

Technical Features

- for potable water, pressure-rising and water-heating systems according to DIN 1988
- with stainless steel thread connection
- 33 litres with brackets
- circulation with high-flow circulation star
- non-replaceable bladder according to DIN EN 13831, DIN 4807 T5, KTW-C and W270
- built and tested to DIN 4807 T5, DIN DVGW Reg. No. NW-0411AT2534 (applicable for 8 – 33 litres and 10 / 16 bar in combination with Flowjet flow through valve)
- approval according to Pressure Equipment Directive 2014 / 68 / EU
- interior and exterior coating in compliance with KTW-A
- may be combined with the Flowjet — flow through valve
- with factory-pressurised gas chamber
- vessels certified to WRAS and ACS upon request
- **only for use in cold water pipes** (consider installation and operating instructions)

	Type	Art. No. green	Art. No. white	DG	PQ [pce]	Inlet pressure [bar]	Connection c	Ø d [mm]	Height h [mm]	Weight [kg]
10 bar 70 °C	DD 2	7381500	–	0048	288	4,00	G ¾"	132	269	1,00
	DD 8	7308000	7307700	0048	96	4,00	G ¾"	206	352	2,00
	DD 12	7308200	7307800	0048	60	4,00	G ¾"	280	319	2,20
	DD 18	7308300	7307900	0048	56	4,00	G ¾"	280	426	3,04
	DD 25	7308400	7380400	0048	42	4,00	G ¾"	280	528	4,18
	DD 33	7380700	7380800	0048	24	4,00	G ¾"	354	468	5,10
16 bar 70 °C	DD 8	7301905	–	0048	96	4,00	G ¾"	206	345	2,40
	DD 12	7303805	–	0048	60	4,00	G ¾"	280	318	2,96
25 bar 70 °C	DD 8	7290200	7290300	0048	60	4,00	G ¾"	206	344	3,50

Refix DD Accessories

Flowjet

- secured shut-off fitting with drain for Refix DD to DIN 4807 T5
- max. permissible operating overpressure 16 bar
- max. permissible operating temperature 70 °C
- connections both sides ¾", internal/ external threads
- may be combined with user-provided T-pieces
- nominal passage width: 1"

Digital pressure gauge

- inlet pressure tester up to about 9 bar

Wall mounting bracket with clamping strap

- console with clamping strap for Reflex 6 – 25 litres
- upright assembly

Type	Art. No.	DG	Weight [kg]
Flowjet G ¾"	9116799	0085	0,24
Digital pressure gauge	9119198	0086	0,06
Wall mounting bracket with clamping strap	7611000	0075	0,22

This product follows **new transport guidelines for expansion vessels.**
→ For the according article number see page 10

Refix DT

DT 60 – 500 l (with Flowjet)

DT 600 – 1.000 l (Ø740)

DT 1.000 (Ø1000) – 2.000 l

DT 3.000 l

Technical Features

- for potable water, pressure-rising and water-heating systems according to DIN 1988
- Flowjet incl. shut-off and draining or dual connection
- replaceable bladder according to DIN EN 13831, DIN 4807 T5, KTW-C and W270, built and tested to DIN 4807 T5, DIN DVGW Reg. No. NW-0411BR0350
- approval according to Pressure Equipment Directive 2014/68/EU
- interior and exterior coating in compliance with KTW-A
- the following types are equipped with a diaphragm break detector coupling:
  → 10 bar
  → 16 bar
- pressure gauge and supply pressure valve protected by clip
- with factory-pressurised gas chamber
- vessels certified to WRAS and ACS upon request
- **only for use in cold water pipes** (consider installation and operating instructions)

This product follows **new transport guidelines for expansion vessels.**
→ For the according article number see page 10

Refix DT

CE

	Type	Art. No. green	DG	PQ [pce]	Inlet pressure [bar]	Connection c	Ø d [mm]	Height h [mm]	Height h2 [mm]	Weight [kg]
10 bar 70 °C	DT 60	7309000	0047	12	4,00	Rp 1¼"	409	766	80	13,10
	DT 80	7309100	0047	8	4,00	Rp 1¼"	480	750	56	17,00
	DT 80	7365000	0047	8	4,00	DN 50/PN 16	480	750	97	22,20
	DT 80	7335705	0047	4	4,00	DN 65/PN 16	480	750	107	24,70
	DT 80	7335805	0047	4	4,00	DN 80/PN 16	480	750	115	26,80
	DT 100	7309200	0047	8	4,00	Rp 1¼"	480	834	56	17,00
	DT 100	7365400	0047	8	4,00	DN 50/PN 16	480	834	97	22,90
	DT 100	7365405	0047	4	4,00	DN 65/PN 16	480	834	107	23,90
	DT 100	7365406	0047	4	4,00	DN 80/PN 16	480	834	114	26,70
	DT 200	7309300	0047	4	4,00	Rp 1¼"	634	973	80	37,00
	DT 200	7365100	0047	4	4,00	DN 50/PN 16	634	973	105	53,00
	DT 200	7365105	0047	4	4,00	DN 65/PN 16	634	973	115	54,00
	DT 200	7365106	0047	4	4,00	DN 80/PN 16	634	973	120	57,00
	DT 300	7309400	0047	1	4,00	Rp 1¼"	634	1.273	80	51,00
	DT 300	7365200	0047	1	4,00	DN 50/PN 16	634	1.273	105	59,00
	DT 300	7336305	0047	1	4,00	DN 65/PN 16	634	1.273	115	60,00
	DT 300	7336405	0047	1	4,00	DN 80/PN 16	634	1.273	120	63,00
	DT 400	7319305	0047	1	4,00	Rp 1¼"	740	1.245	69	61,00
	DT 400	7365500	0047	1	4,00	DN 50/PN 16	740	1.245	95	68,00
	DT 400	7336505	0047	1	4,00	DN 65/PN 16	740	1.245	105	68,00
	DT 400	7336605	0047	1	4,00	DN 80/PN 16	740	1.245	110	83,00
	DT 500	7309500	0047	1	4,00	Rp 1¼"	740	1.475	69	69,00
	DT 500	7365300	0047	1	4,00	DN 50/PN 16	740	1.475	90	77,00
	DT 500	7365307	0047	1	4,00	DN 65/PN 16	740	1.475	100	89,00
	DT 500	7365305	0047	1	4,00	DN 80/PN 16	740	1.475	110	92,00
	DT 600	7365600	0047	1	4,00	DN 50/PN 16	740	1.859	233	150,00
	DT 600	7336705	0047	1	4,00	DN 65/PN 16	740	1.859	233	165,00
	DT 600	7336806	0047	1	4,00	DN 80/PN 16	740	1.859	235	153,00
	DT 800	7365700	0047	1	2,00	DN 50/PN 16	740	2.324	233	204,00
	DT 800	7336905	0047	1	2,00	DN 65/PN 16	740	2.324	233	205,00
	DT 800	7337006	0047	1	2,00	DN 80/PN 16	740	2.324	233	208,00
	DT 1000/740	7365800	0047	1	2,00	DN 50/PN 16	740	2.804	233	260,00
	DT 1000/740	7337105	0047	1	2,00	DN 65/PN 16	740	2.804	233	261,00
	DT 1000/740	7337205	0047	1	2,00	DN 80/PN 16	740	2.804	233	264,00
	DT 1000/1000	7320105	0046	1	2,00	DN 65/PN 16	1.000	2.001	160	386,20
	DT 1000/1000	7337305	0046	1	2,00	DN 80/PN 16	1.000	2.001	150	386,20
	DT 1000/1000	7337405	0046	1	2,00	DN 100/PN 16	1.000	2.001	140	386,20
	DT 1500	7320305	0046	1	2,00	DN 65/PN 16	1.200	2.001	158	502,40
	DT 1500	7337505	0046	1	2,00	DN 80/PN 16	1.200	2.001	150	444,30
	DT 1500	7337605	0046	1	2,00	DN 100/PN 16	1.200	2.001	140	502,40
	DT 2000	7320505	0046	1	2,00	DN 65/PN 16	1.200	2.461	158	686,50
	DT 2000	7337705	0046	1	2,00	DN 80/PN 16	1.200	2.461	150	686,50
	DT 2000	7337805	0046	1	2,00	DN 100/PN 16	1.200	2.461	140	686,50
	DT 3000	7320705	0046	1	2,00	DN 65/PN 16	1.500	2.580	187	1.054,00
	DT 3000	7337905	0046	1	2,00	DN 80/PN 16	1.500	2.530	180	1.057,00
	DT 3000	7338005	0046	1	2,00	DN 100/PN 16	1.500	2.530	170	1.057,00

This product follows **new transport guidelines for expansion vessels.**
→ For the according article number see page 10

Refix DT

CE

	Type	Art. No. green	DG	PQ [pce]	Inlet pressure [bar]	Connection c	Ø d [mm]	Height h [mm]	Height h2 [mm]	Weight [kg]
16 bar 70 °C	DT 80	7316005	0047	8	4,00	Rp 1¼"	480	750	56	27,80
	DT 80	7370000	0047	8	4,00	DN 50/PN 16	480	750	97	33,00
	DT 80	7310306	0047	4	4,00	DN 65/PN 16	480	750	107	29,10
	DT 80	7310307	0047	4	4,00	DN 80/PN 16	480	750	114	36,00
	DT 100	7365408	0047	2	4,00	Rp 1¼"	480	834	56	29,90
	DT 100	7370100	0047	4	4,00	DN 50/PN 16	480	834	97	35,00
	DT 100	7370101	0047	4	4,00	DN 65/PN 16	480	834	107	36,00
	DT 100	7370102	0047	4	4,00	DN 80/PN 16	480	834	114	38,00
	DT 200	7365108	0047	1	4,00	Rp 1¼"	634	973	80	55,00
	DT 200	7370200	0047	1	4,00	DN 50/PN 16	634	973	105	55,00
	DT 200	7370205	0047	1	4,00	DN 65/PN 16	634	973	115	56,00
	DT 200	7370206	0047	1	4,00	DN 80/PN 16	634	973	120	59,00
	DT 300	7319205	0047	1	4,00	Rp 1¼"	634	1.273	115	64,00
	DT 300	7370300	0047	1	4,00	DN 50/PN 16	634	1.273	105	70,00
	DT 300	7314205	0047	1	4,00	DN 65/PN 16	634	1.273	80	71,00
	DT 300	7314206	0047	1	4,00	DN 80/PN 16	634	1.273	120	71,00
	DT 400	7370400	0047	1	4,00	DN 50/PN 16	740	1.394	235	115,00
	DT 400	7339006	0047	1	4,00	DN 65/PN 16	740	1.394	235	117,00
	DT 400	7339005	0047	1	4,00	DN 80/PN 16	740	1.394	235	124,00
	DT 500	7370500	0047	1	4,00	DN 50/PN 16	740	1.615	235	136,00
	DT 500	7370507	0047	1	4,00	DN 65/PN 16	740	1.615	235	137,00
	DT 500	7370505	0047	1	4,00	DN 80/PN 16	740	1.615	235	140,00
	DT 600	7370600	0047	1	4,00	DN 50/PN 16	740	1.859	235	174,00
	DT 600	7339105	0047	1	4,00	DN 65/PN 16	740	1.859	235	175,00
	DT 600	7339205	0047	1	4,00	DN 80/PN 16	740	1.859	235	178,00
	DT 800	7370700	0047	1	2,00	DN 50/PN 16	740	2.324	235	224,00
	DT 800	7339305	0047	1	2,00	DN 65/PN 16	740	2.324	235	208,00
	DT 800	7339406	0047	1	2,00	DN 80/PN 16	740	2.324	235	228,00
	DT 1000/740	7370800	0047	1	2,00	DN 50/PN 16	740	2.804	235	275,00
	DT 1000/740	7339505	0047	1	2,00	DN 65/PN 16	740	2.804	235	276,00
	DT 1000/740	7339605	0047	1	2,00	DN 80/PN 16	740	2.804	235	248,00
	DT 1000/1000	7320205	0046	1	2,00	DN 65/PN 16	1.000	2.001	160	488,00
	DT 1000/1000	7339705	0046	1	2,00	DN 80/PN 16	1.000	2.001	150	488,00
	DT 1000/1000	7339805	0046	1	2,00	DN 100/PN 16	1.000	2.001	140	488,00
	DT 1500	7320405	0046	1	2,00	DN 65/PN 16	1.200	2.220	158	630,00
	DT 1500	7339905	0046	1	2,00	DN 80/PN 16	1.200	2.220	150	630,00
	DT 1500	7340005	0046	1	2,00	DN 100/PN 16	1.200	2.220	140	630,00
	DT 2000	7320605	0046	1	2,00	DN 65/PN 16	1.200	2.480	158	850,50
	DT 2000	7340105	0046	1	2,00	DN 80/PN 16	1.200	2.480	150	850,50
	DT 2000	7340205	0046	1	2,00	DN 100/PN 16	1.200	2.480	140	850,50
	DT 3000	7320805	0046	1	2,00	DN 65/PN 16	1.500	2.580	187	1.240,00
	DT 3000	7340305	0046	1	2,00	DN 80/PN 16	1.500	2.580	180	1.240,00
	DT 3000	7340405	0046	1	2,00	DN 100/PN 16	1.500	2.580	170	1.200,00

Refix DT Accessories CE

Bladder rupture detector

- membrane rupture detector in vessels
- consisting of an electrode relay and an electrode (factory fitted)
- power supply 230 V / 50 Hz
- floating output (changeover contact)

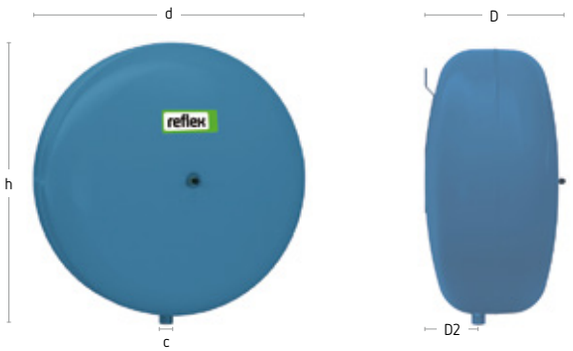
Digital pressure gauge

- inlet pressure tester up to about 9 bar

Type	Art. No.	DG	Weight [kg]
Bladder rupture detector MBM II	7857700	0086	0,62
Digital pressure gauge	9119198	0086	0,06

This product follows **new transport guidelines for expansion vessels.**
→ For the according article number see page 10

Refix C-DE



C-DE 8 – 80 l

Technical Features

- vertical flat disc-shaped shallow vessels for heating, heat pump, cooling and solar applications as well as service water applications **not** required to meet the DIN 1988 requirements
- with stainless steel thread connection
- non-replaceable bladder according to DIN EN 13831
- no medium circulating, without shut-off
- parts in contact with water are corrosion-protected
- approval according to Pressure Equipment Directive 2014/68/EU
- for antifreeze additive of at least 25 – 50 %
- durable epoxy resin coating
- with factory-pressurised gas chamber

	Type	Art. No. blue	DG	PQ [pce]	Inlet pressure [bar]	Connection c	Ø d [mm]	Height h [mm]	Depth D [mm]	Depth D2 [mm]	Weight [kg]
10 bar 70 °C	C-DE 8	7270900	0017	96	4,00	G ½"	280	296	176	52	3,84
	C-DE 12	7270910	0017	60	4,00	G ½"	354	370	182	64	4,92
	C-DE 18	7270920	0017	42	4,00	G ¾"	356	370	236	76	5,82
	C-DE 25	7270930	0017	42	4,00	G ¾"	409	427	253	93	8,78
	C-DE 35	7270940	0017	24	4,00	G ¾"	480	465	256	97	12,90
	C-DE 50	7270950	0017	20	4,00	G ¾"	480	465	332	125	16,24
	C-DE 80	7270960	0017	8	4,00	G ¾"	634	621	338	135	23,36

Cap valve

- secured shut-off for maintenance and disassembly of expansion vessels
- with drainage
- according to DIN EN 12828
- 10 bar / 120 °C

Digital pressure gauge

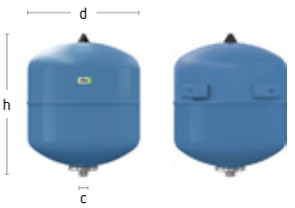
- inlet pressure tester up to about 9 bar

Type	Art. No.	DG	Weight [kg]
Cap valve SU R ¾" × ¾"	7613000	0084	0,26
Digital pressure gauge	9119198	0086	0,06

This product follows **new transport guidelines for expansion vessels.**
→ For the according article number see page 10

Refix DE

DE 2 – 25 l



DE 33 l

DE 33 – 500 l

DE 600 – 1.000 l (Ø740)

DE 1.000 – 2.000 l (Ø1000)

DE 3.000 – 5.000 l

Technical **Features**

- only for systems **not** required to meet DIN 1988, such as fire-fighting and service water systems, underfloor heating and geothermal installations
- parts in contact with water are corrosion-protected
- bladder according to DIN EN 13831/ replaceable from 50 litres
- for antifreeze additive of at least 25 – 50 %
- no medium circulating, without shut-off and without draining
- the following types incl. pressure gauge:
  → 10/16 bar: from Ø 1.000 mm
  → 25 bar: from Ø 450 mm
- pressure gauge and supply pressure valve protected by clip
- approval according to Pressure Equipment Directive 2014/68/EU
- durable epoxy resin coating
- with factory-pressurised gas chamber
- vessels certified to WRAS and ACS upon request
- the following types are equipped with a diaphragm break detector coupling:
  → 10/16 bar: ≥ 1.000 l/Ø 1.000 mm
  → 25 bar: ≥ 80 l

This product follows **new transport guidelines for expansion vessels.**
→ For the according article number see page 10

Refix DE

CE

	Type	Art. No. blue	DG	PQ [pce]	Inlet pressure [bar]	Connection c	Ø d [mm]	Height h [mm]	Height h2 [mm]	Weight [kg]
10 bar 70 °C	DE 2	7200300	0040	200	4,00	G ¾"	132	260	–	1,02
	DE 8	7301000	0040	96	4,00	G ¾"	206	332	–	1,96
	DE 12	7302000	0040	60	4,00	G ¾"	280	310	–	2,42
	DE 18	7303000	0040	56	4,00	G ¾"	280	407	–	3,30
	DE 25	7304000	0040	42	4,00	G ¾"	280	518	–	4,12
	DE 33	7303900	0040	24	4,00	G ¾"	354	457	–	4,92
	DE 33 st*	7305500	0040	24	4,00	G ¾"	354	520	66	5,76
	DE 50	7306005	0042	20	4,00	G1"	409	604	102	8,92
	DE 60	7306400	0042	12	4,00	G1"	409	734	161	10,48
	DE 80	7306500	0042	10	4,00	G1"	480	737	143	12,96
	DE 100	7306600	0042	10	4,00	G1"	480	852	143	14,70
	DE 200	7306700	0042	4	4,00	G 1¼"	634	967	150	35,00
	DE 300	7306800	0042	1	4,00	G 1¼"	634	1.267	150	44,00
	DE 400	7306850	0042	1	4,00	G 1¼"	740	1.245	139	58,00
	DE 500	7306900	0042	1	4,00	G 1¼"	740	1.475	133	68,00
	DE 600	7306950	0042	1	4,00	G 1½"	740	1.859	263	139,00
	DE 800	7306960	0042	1	2,00	G 1½"	750	2.324	263	171,00
	DE 1000	7306970	0042	1	2,00	G 1½"	740	2.804	261	210,00
	DE 1000	7311405	0044	1	2,00	DN 65/PN 16	1.000	2.001	286	308,00
	DE 1500	7311605	0044	1	2,00	DN 65/PN 16	1.200	1.991	291	426,00
	DE 2000	7311705	0044	1	2,00	DN 65/PN 16	1.200	2.451	291	693,50
	DE 3000	7311805	0044	1	2,00	DN 65/PN 16	1.500	2.531	320	962,00
	DE 4000	7354000	0044	1	2,00	DN 65/PN 16	1.500	3.080	320	1.132,00
	DE 5000	7354200	0044	1	2,00	DN 65/PN 16	1.500	3.645	320	1.292,00
16 bar 70 °C	DE 8	7301006	0040	96	4,00	G ¾"	206	337	–	2,44
	DE 12	7302105	0040	60	4,00	G ¾"	280	310	–	2,90
	DE 25	7304015	0040	42	4,00	G ¾"	280	518	–	5,00
	DE 80	7348600	0042	4	4,00	G1"	480	744	138	20,50
	DE 100	7348610	0042	4	4,00	G1"	480	849	132	23,50
	DE 200	7348620	0042	1	4,00	G 1¼"	634	967	150	48,00
	DE 300	7348630	0042	1	4,00	G 1¼"	634	1.267	150	60,00
	DE 400	7348640	0042	1	4,00	G 1½"	740	1.394	263	118,00
	DE 500	7348650	0042	1	4,00	G 1½"	740	1.614	263	127,00
	DE 600	7348660	0042	1	4,00	G 1½"	740	1.859	263	151,00
	DE 800	7348670	0042	1	2,00	G 1½"	740	2.324	263	195,00
	DE 1000	7348680	0042	1	2,00	G 1½"	740	2.804	263	240,00
	DE 1000	7312805	0044	1	2,00	DN 65/PN 16	1.000	2.001	286	530,00
	DE 1500	7312905	0044	1	2,00	DN 65/PN 16	1.200	1.991	291	685,00
	DE 2000	7313005	0044	1	2,00	DN 65/PN 16	1.200	2.451	291	895,00
	DE 3000	7313105	0044	1	2,00	DN 65/PN 16	1.500	2.531	320	1.240,00
	DE 4000	7354100	0044	1	2,00	DN 65/PN 16	1.500	3.120	320	1.442,00
	DE 5000	7354300	0044	1	2,00	DN 65/PN 16	1.500	3.655	320	1.844,00

* oB = without feet
st = vertical design with feet

This product follows **new transport guidelines for expansion vessels.**
→ For the according article number see page 10

Refix DE

CE

	Type	Art. No. blue	DG	PQ [pce]	Inlet pressure [bar]	Connection c	Ø d [mm]	Height h [mm]	Height h2 [mm]	Weight [kg]
25 bar 70 °C	DE 8	7290100	0040	60	4,00	G ¾"	206	338	–	3,52
	DE 80	7317600	0044	1	4,00	DN 50/PN 40	450	942	159	70,00
	DE 120	7313700	0044	1	4,00	DN 50/PN 40	450	1.253	159	108,00
	DE 180	7313500	0044	1	4,00	DN 50/PN 40	450	1.528	159	124,00
	DE 300	7313800	0044	1	4,00	DN 50/PN 40	750	1.318	160	243,00
	DE 400	7313300	0044	1	4,00	DN 50/PN 40	750	1.423	160	258,00
	DE 600	7321500	0044	1	4,00	DN 50/PN 40	750	1.868	159	290,00
	DE 800	7321200	0044	1	2,00	DN 50/PN 40	750	2.268	159	355,00
	DE 1000	7321000	0044	1	2,00	DN 50/PN 40	750	2.768	159	245,00
	DE 1000	7322200	0044	1	2,00	DN 65/PN 40	1.000	2.051	242	800,00
	DE 1500	7322100	0044	1	2,00	DN 65/PN 40	1.200	2.071	291	850,00
	DE 2000	7313400	0044	1	2,00	DN 65/PN 40	1.200	2.531	240	960,00
	DE 3000	7345700	0044	1	2,00	DN 65/PN 40	1.500	2.619	269	1.550,00

Refix DE Accessories

AG connection set

- for rapid assembly and maintenance of membrane expansion vessels
- incl. secured shut-off and connecting bend with screw connection
- with drainage cock (G ½") and hose nozzle
- according to DIN EN 12828
- 10 bar / 100 °C

Cap valve

- secured shut-off for maintenance and disassembly of expansion vessels
- with drainage
- according to DIN EN 12828
- 10 bar / 120 °C

Bladder rupture detector

- membrane rupture detector in vessels
- consisting of an electrode relay and an electrode (factory fitted)
- power supply 230 V / 50 Hz
- floating output (changeover contact)

Digital pressure gauge

- inlet pressure tester up to about 9 bar

Wall mounting bracket with clamping strap

- console with clamping strap for Reflex 6 – 25 litres
- upright assembly

Type	Art. No.	DG	Weight [kg]
AG connection set AG 1"	9119204	0080	0,85
AG connection set AG 1 ¼"	9119205	0080	1,00
AG connection set AG 1 ½"	9119206	0080	1,15
Cap valve SU R ¾" × ¾"	7613000	0084	0,26
Cap valve SU R 1" × 1"	7613100	0084	0,57
Bladder rupture detector MBM II	7857700	0086	0,62
Digital pressure gauge	9119198	0086	0,06
Wall mounting bracket with clamping strap	7611000	0075	0,22

This product follows **new transport guidelines for expansion vessels.**
→ For the according article number see page 10

Refix DC

DC 25 l

DC 50 – 400 l

DC 500 – 600 l

Technical Features

- only for systems **not** required to meet DIN 1988, such as fire-fighting and service water systems, underfloor heating and geothermal installations
- parts in contact with water are corrosion-protected
- for antifreeze additive of at least 25 – 50 %
- non-replaceable diaphragm according to DIN EN 13831
- no medium circulating, without shut-off & without draining
- approval according to Pressure Equipment Directive 2014/68/EU
- durable epoxy resin coating
- with factory-pressurised gas chamber
- vessels certified to WRAS and ACS upon request

	Type	Art. No. blue	DG	PQ [pce]	Inlet pressure [bar]	Connection c	Ø d [mm]	Height h [mm]	Height h2 [mm]	Weight [kg]
10 bar 70 °C	DC 25	7200400	0054	42	2,00	G1"	289	510	–	3,34
	DC 50	7309600	0054	20	4,00	R 1"	418	588	115	9,20
	DC 80	7309700	0054	12	4,00	R 1"	489	676	103	12,82
	DC 100	7309800	0054	10	4,00	R 1"	489	782	103	14,28
	DC 140	7309900	0054	8	4,00	R 1"	489	997	104	20,30
	DC 200	7363500	0054	4	4,00	R 1"	643	883	91	29,30
	DC 300	7363600	0054	1	4,00	R 1"	643	1.184	93	38,00
	DC 400	7363700	0054	1	4,00	R 1"	749	1.173	81	54,00
	DC 500	7363800	0054	1	4,00	R 1"	749	1.392	82	63,00
	DC 600	7363900	0054	1	4,00	R 1"	749	1.629	75	80,00

Refix DC Accessories

CE

AG connection set

- for rapid assembly and maintenance of membrane expansion vessels
- incl. secured shut-off and connecting bend with screw connection
- with drainage cock (G ½") and hose nozzle
- according to DIN EN 12828
- 10 bar / 100 °C

Cap valve

- secured shut-off for maintenance and disassembly of expansion vessels
- with drainage
- according to DIN EN 12828
- 10 bar / 120 °C

Digital pressure gauge

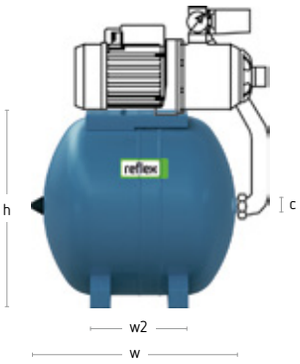
- inlet pressure tester up to about 9 bar

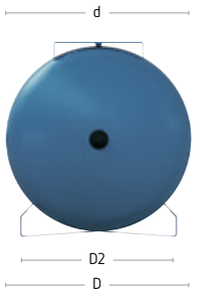
Wall mounting bracket with clamping strap

- console with clamping strap for Reflex 6 – 25 litres
- upright assembly

Type	Art. No.	DG	Weight [kg]
AG connection set AG 1"	9119204	0080	0,85
Cap valve SU R 1" × 1"	7613100	0084	0,57
Digital pressure gauge	9119198	0086	0,06
Wall mounting bracket with clamping strap	7611000	0075	0,22

Refix HW





HW 25 – 100 l

Technical Features

- as a buffer vessel for domestic water systems not subject to the DIN 1988 requirements
- parts in contact with water are corrosion-protected
- bladder according to DIN EN 13831/replaceable from 50 litres
- max. permissible operating temperature 70 °C
- approval according to Pressure Equipment Directive 2014/68/EU
- durable epoxy resin coating
- with factory-pressurised gas chamber
- vessels certified to WRAS and ACS upon request

	Type	Art. No. blue	DG	PQ [pce]	Inlet pressure [bar]	Connection c	Ø d [mm]	Height h [mm]	Width w [mm]	Wide w2 [mm]	Depth D [mm]	Depth D2 [mm]	Weight [kg]
10 bar 70 °C	HW 25	7200310	0049	36	1,50	G ¾"	280	301	518	227	270	214	5,05
	HW 50	7200320	0049	16	2,00	G1"	409	432	503	175	350	285	9,00
	HW 60	7200330	0049	16	2,00	G1"	409	432	577	175	350	285	10,00
	HW 80	7200340	0049	16	2,00	G1"	480	504	593	185	350	285	12,50
	HW 100	7200350	0049	16	2,00	G1"	480	504	706	305	350	285	14,06

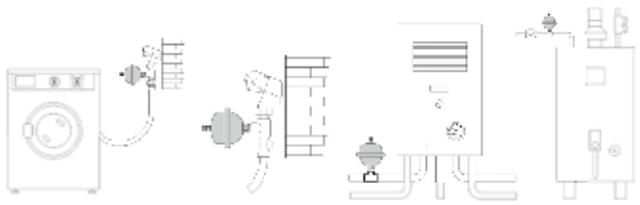
Digital pressure gauge

- inlet pressure tester up to about 9 bar

Type	Art. No.	DG	Weight [kg]
Digital pressure gauge	9119198	0086	0,06

This product follows **new transport guidelines for expansion vessels.**
→ For the according article number see page 10

Refix WD



WD 0,165 l

Technical **Features**

- for appliances with quick-closing fittings such as washers and dishwashers
- parts in contact with water are corrosion-protected
- approval according to Pressure Equipment Directive 2014/68/EU
- total volume 165 cm^3
- non-replaceable diaphragm according to DIN EN 13831
- max. permissible operating temperature 70 °C
- vessels certified to WRAS and ACS upon request

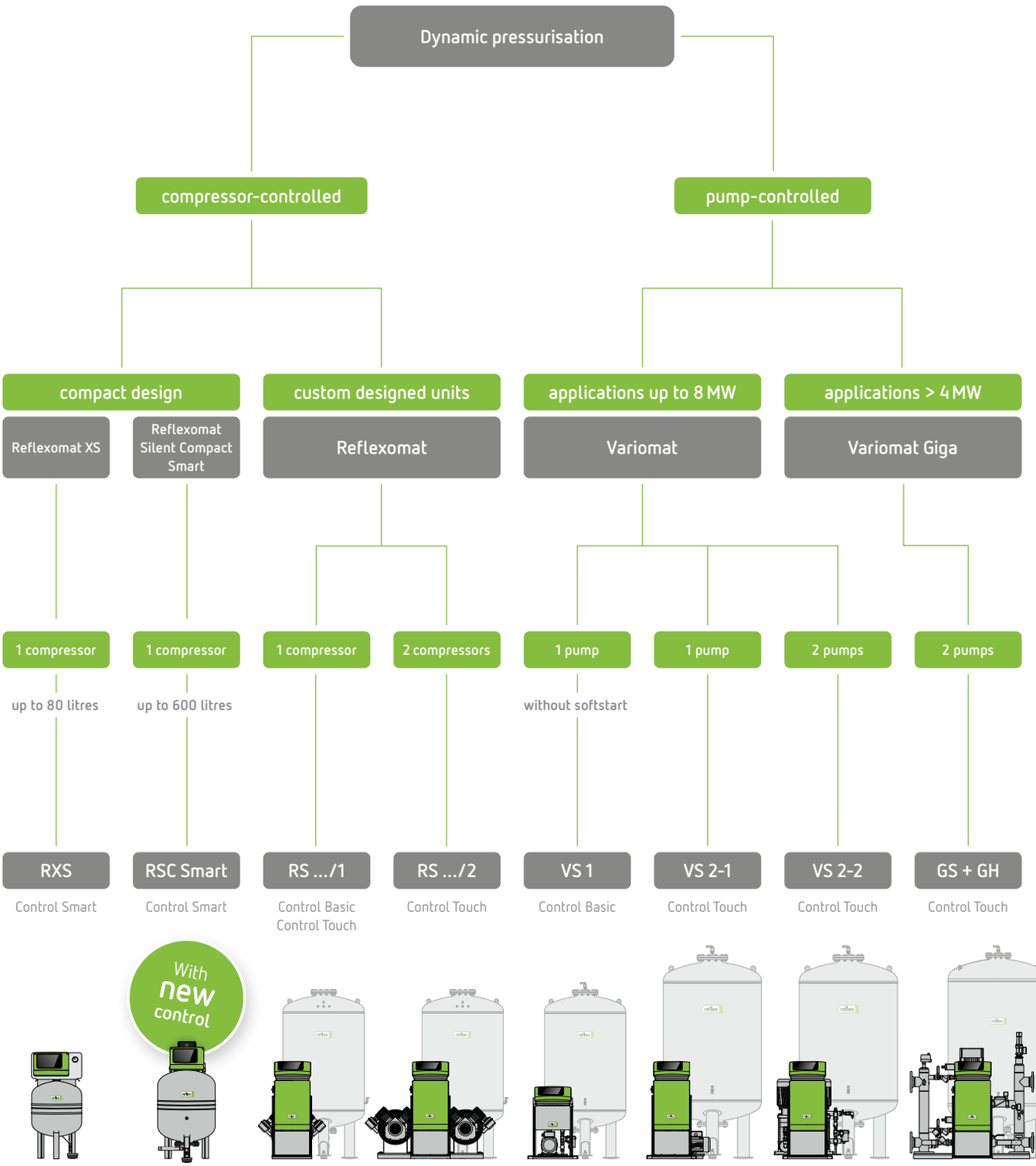
	Type	Art. No. white	DG	PQ [pce]	Inlet pressure [bar]	Connection c	Ø d [mm]	Height h [mm]	Weight [kg]
10 bar 70 °C	WD	7351000	0074	576	3,50	G ½"	83	111	0,28

Digital pressure gauge

- inlet pressure tester up to about 9 bar

Type	Art. No.	DG	Weight [kg]
Digital pressure gauge	9119198	0086	0,06

Pressurisation systems



Reflex Control systems

Control Basic

- 2-line LCD display
- 8 operating keys
- 2 status displays
- integrated control of system pressure, degassing and water make-up
- manual and automatic operation
- floating-contact external group fault signal
- counting pulse inlet for contact water meter
- RS-485 interface for BMS connection via Busmodules

Control Touch

- 4,3" touch screen colour display
- graphical user interface
- simply structured plain text menus, incl. operating instructions and help documentation
- integrated control of system pressure, degassing and water make-up
- manual and automatic operation
- permanent display of key operating parameters on system diagram
- intelligent plug-and-play function management
- key operating data can be analysed and stored
- wide array of interfaces:
  - → 1 × meter pulse inlet for contact water meter
  - → 2 × floating outputs for fault messages
  - → 2 × analogue parametrisable outputs for pressure & level
  - → 2 × RS-485 interfaces for connection to building management system and other networks
  - → slots for HMS Networks and SD memory card

Control Smart

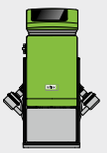
- access via Bluetooth interface
- quick and easy commissioning
- parameterisation of the degassing mode (continuous or intermittent operation, number of cycles) including days of the week and time
- fault message display
- system pressure checking
- software updates for the system control
- maintenance and troubleshooting wizard
- currently available for **Reflexomat XS, Reflexomat Silent Compact Smart, Fillcontrol Smart, Servitec Mini, Servitec S** and **Reflex Greenbox**

Now available
for Android and iOS

Theoretical principles

Reflexomat — combination matrix

Reflexomat

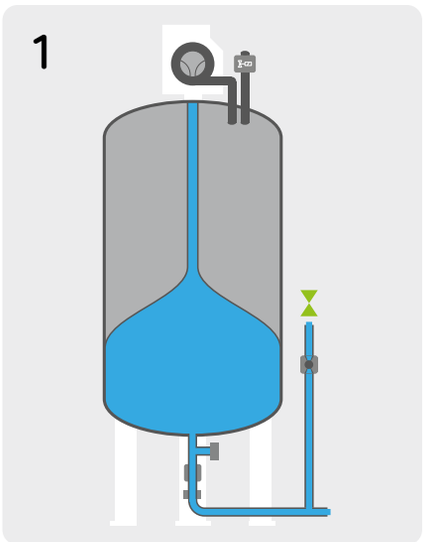
RS control unit	RG primary vessel
	

+ Accessories

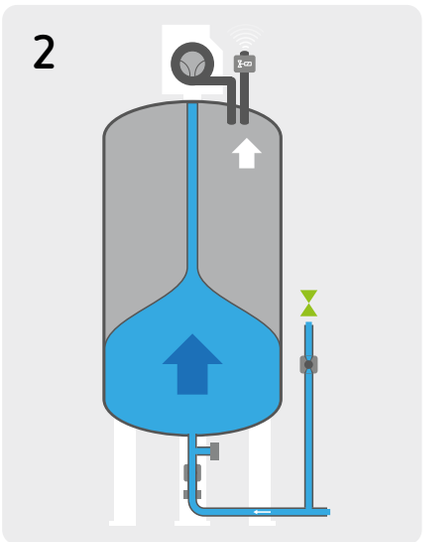
Reflexomat design

1. Control unit
   The state-of-the-art functioning and design of the controller ensure optimal operating convenience. All Reflex controllers (Variomat, Reflexomat, Servitec) are designed to meet uniform design guidelines.
2. Vessel
   Available in 6 and 10 bar versions. Higher pressure ratings available upon request.
3. Membrane
   Replaceable bladder from high-quality material reliably protects the expansion water against air ingress.
4. Air safety valve
   Protects the vessel against impermissible over pressure and prevents exceeding of the highest permissible operating pressure.
5. Lifting eyes
   Transport aid (from 1.000 l)
6. Corrosion protection
   Inner coating as long-term corrosion protection.
7. MBM II membrane rupture detector
   Reliable monitoring of the membrane state.
8. Flexible connection set
   Ensures optimal working of the pressure load cell (level measurement).
9. Pressure load cell (level measurement)
   for determining the filling level

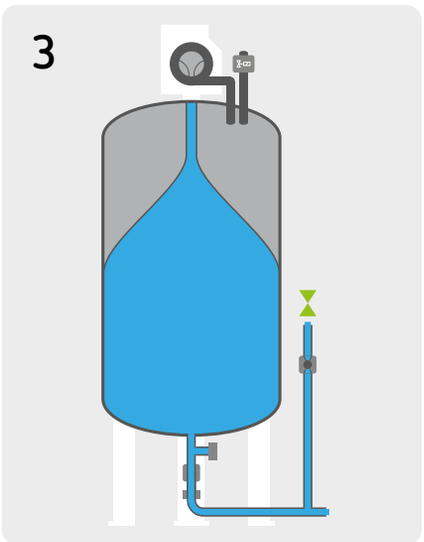
Reflexomat — operating principle in heating



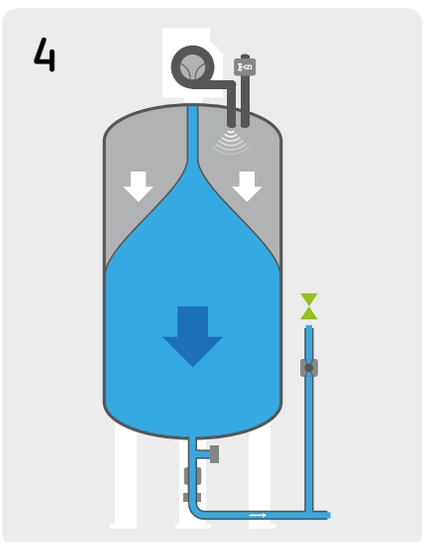
1. Low temperature
   The Reflexomat is fed the minimum amount of water at the lowest system temperature.



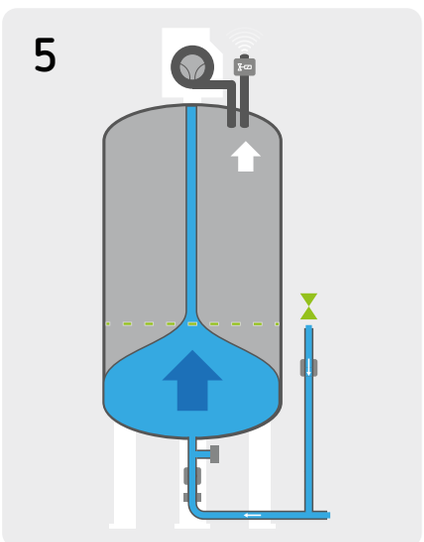
2. Temperature increase
   If the system temperature and thus also the pressure rises, then the controller responds immediately and opens the discharge solenoid valve. The expansion water can then be taken up by the vessel.



3. Full capacity
   At maximum system temperature the Reflexomat stores all the expansion water and reaches the maximum filling level in normal operation.



4. Cool down
   If the system cools down, then the system pressure drops and the Reflexomat uses the compressor to feed the expansion water back into the system. Maximum pressure fluctuation is ±0,1 bar.



5. Water make-up
   If the water content in the vessel falls below the defined target value, then the Reflexomat opens the water make-up valve (optional accessory) automatically to compensate for the loss of water in the system.

Video clips demonstrating the function of this and other products are available under

www.youtube.com/@ReflexWinkelmann UnitedKingdom

Reflexomat

Reflexomat XS

Reflexomat XS

Reflexomat XS – with a wide range of pre-installed digital functions

Technical Features

- compressor-controlled pressurisation system with a compact design for heating- and cold water systems according to EN 12828
- approval according to Pressure Equipment Directive 2014/68/EU
- diaphragm according to DIN EN 13831 norm
- ingress protection rating IP 54
- max. permissible operating overpressure
- power supply 230 V/50 Hz
- max. permissible operating temperature (at the membrane) 70 °C
- permissible ambient temperature 0 – 45 °C
- sound pressure level ~ 57 dB(A)
- automatic water make-up via Fillvalve possible
- max. perm. safety temperature in the system 110 °C
- **Control Smart controller** via Bluetooth with numerous digital functions:
  → Integrated p_0 wizard for ideal commissioning
  → RS-485 interface and factory-fitted Modbus RTU
  → Operating assistant for fault diagnosis, commissioning, service and maintenance

	Type	Art. No. grey	DG	Connection c	Electric power [kW]	Ø d [mm]	Height h [mm]	Height h2 [mm]	Weight [kg]
6 bar 70 °C	XS	8800100	0031	G1"	0,25	480	1.016	153	28,00

Reflexomat XS accessories

Commissioning

- **7945725**: Reflex commissioning Cat. 3 for Reflexomat Silent Compact/Reflexomat XS/Servitec Mini/Servitec S with one compressor/one pump or Reflex Hydroflow freshwater station and Reflex Greenbox
- **7945726**: Reflex commissioning add. Cat. 3 for each additional system at the same location and on the same day – one compressor/one pump

Cap valve

- secured shut-off for maintenance and disassembly of expansion vessels
- with drainage
- according to DIN EN 12828
- 10 bar/120 °C

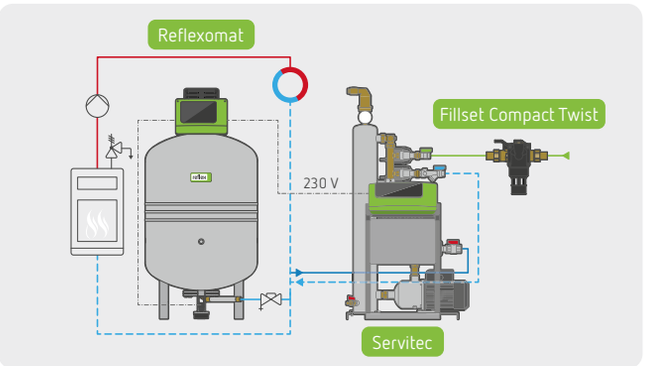
Solenoid valve

- solenoid and ball valve
- for automatic water make-up with Reflexomat

Type	Art. No.	DG	Weight [kg]
Commissioning Cat. 3	7945725	0095	–
Commissioning add. Cat. 3	7945726	0095	–
Cap valve SU R 1" × 1"	7613100	0084	0,57
Solenoid valve Fillvalve	7858300	0035	0,95

Reflexomat Silent Compact Smart

Reflexomat Silent Compact Smart



Reflexomat in combination with Servitec degassing and Fillset make-up

Technical Features

- compressor-controlled pressurisation system with a compact design for heating- and cold water systems according to EN 12828
- approval according to Pressure Equipment Directive 2014/68/EU
- bladder (Butyl) according to requirement VDI/BTGA 6044
- sleeve for optional membrane rupture detector
- ingress protection rating IP 54
- max. permissible operating overpressure 6 bar
- power supply 230 V/50 Hz
- max. permissible operating temperature (at the membrane) 70 °C
- permissible ambient temperature 0 – 40 °C
- sound pressure level ~ 59 dB(A)
- **Control Smart controller** via Bluetooth with numerous digital functions:
  → Integrated p_0 wizard for ideal commissioning
  → RS-485 interface and factory-fitted Modbus RTU
  → Operating assistant for fault diagnosis, commissioning, service and maintenance
- automatic water make-up via Fillvalve possible
- max. perm. safety temperature in the system 110 °C

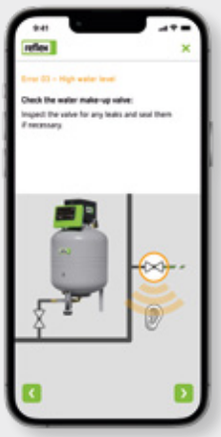
	Type	Art. No. grey	DG	Connection c	Electric power [kW]	Ø d [mm]	Height h [mm]	Height h2 [mm]	Weight [kg]
6 bar 70 °C	RSC Smart 200	8810200	0031	G1"	0,80	634	1.223	118	52,40
	RSC Smart 300	8810300	0031	G1"	0,80	634	1.523	118	60,40
	RSC Smart 400	8810400	0031	G1"	0,80	740	1.509	103	74,00
	RSC Smart 500	8810500	0031	G1"	0,80	740	1.729	103	84,40
	RSC Smart 600	8810600	0031	G1"	0,80	740	2.130	103	96,00

Smart Controller with many digital wizards

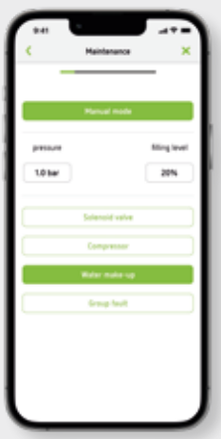
Digital Display
Displays the volume level, the operating pressure and possible error codes, thus ensuring a rapid overview of the most important system parameters.

Commissioning Wizard
Guides you through commissioning step-by-step, including initial filling instructions and parameter checks.

Troubleshooting Wizard
Shows possible sources of errors in detail with images and guides you through troubleshooting with explanations.



Maintenance Wizard
Makes maintenance easier because the technician is guided step-by-step through the maintenance measures.



Reflex Control Smart App
Now available
for Android and iOS

Reflexomat Silent Compact Smart accessories

Commissioning

- **7945725**: Reflex commissioning Cat. 3 for Reflexomat Silent Compact / Reflexomat XS / Servitec Mini / Servitec S with one compressor / one pump or Reflex Hydroflow freshwater station and Reflex Greenbox
- **7945726**: Reflex commissioning add. Cat. 3 for each additional system at the same location and on the same day – one compressor / one pump

Cap valve

- secured shut-off for maintenance and disassembly of expansion vessels
- with drainage
- according to DIN EN 12828
- 10 bar / 120 °C

Solenoid valve

- solenoid and ball valve
- for automatic water make-up with Reflexomat

Bladder rupture detector

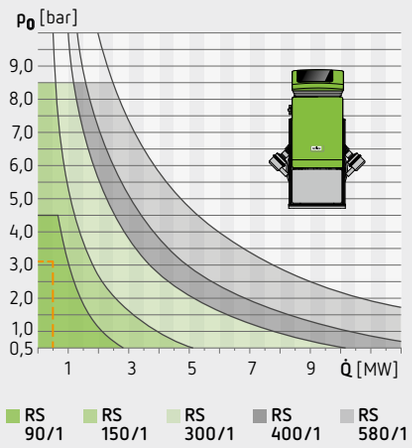
- membrane rupture detector in vessels
- consisting of an electrode relay and an electrode (factory fitted)
- power supply 230 V / 50 Hz
- floating output (changeover contact)

Type	Art. No.	DG	Weight [kg]
Commissioning Cat. 3	7945725	0095	–
Commissioning add. Cat. 3	7945726	0095	–
Cap valve SU R 1" × 1"	7613100	0084	0,57
Solenoid valve Fillvalve	7858300	0035	0,95
Bladder rupture detector MBM II	7857700	0086	0,62

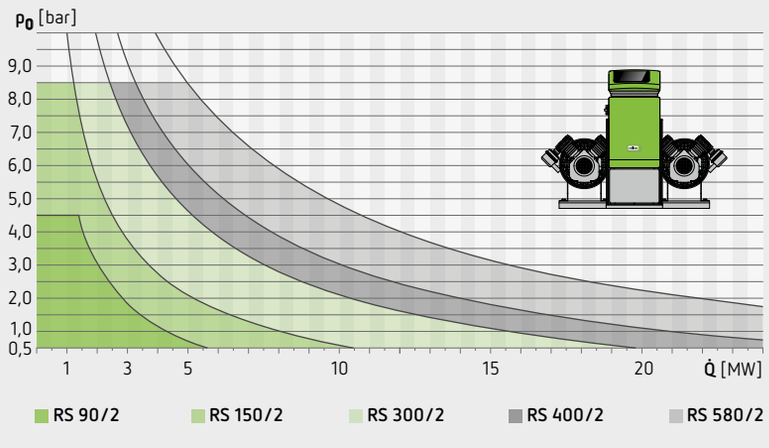
Reflexomat

Reflexomat control unit — quick selection

Minimum operating pressure p_0 dependent on the total heat output of the heat generator $\dot{Q}$ [MW]



Reflexomat with one compressor



Reflexomat with two compressors

Key data

Heat generator capacity	$\dot{Q}$	=	500 kW
Water content	V_A	=	5.000 l
Rated temperature	T	=	70/50 °C
Static height	H_{st}	=	30 m
Expansion coefficient	n	=	0.0228

Calculation

$$p_0 \geq \frac{H_{st}\,[m]}{10}\ \text{bar} + 0{,}2\ \text{bar}$$

$$p_0 \geq \frac{30}{10}\ \text{bar} + 0{,}2\ \text{bar} = 3{,}2\ \text{bar}$$

$$V_n \geq V_A \times 0.031\ (70\,°C)$$

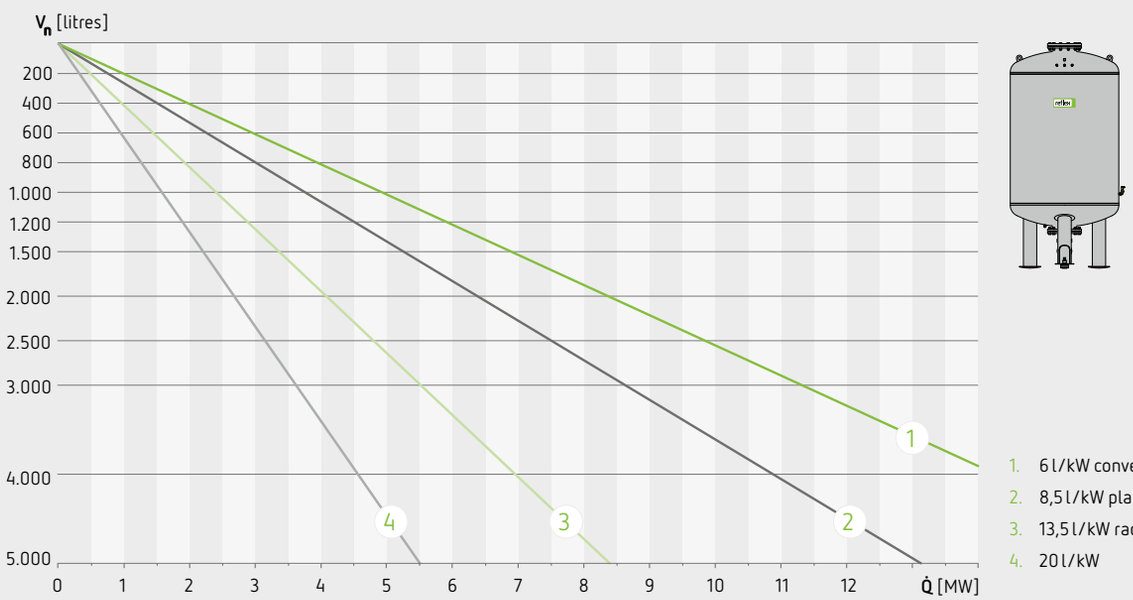
$$V_n \geq 5.000 \times 0.031\ (70\,°C) = 155\ \text{l}$$

Result

Control unit	**RS 90/1**
Expansion vessel 200 l	**RG 200**
SU operating valve	**R 1 × 1**

Example calculation

Reflexomat vessels — quick selection



1. 6 l/kW convectors
2. 8,5 l/kW plates/ventilation
3. 13,5 l/kW radiators
4. 20 l/kW

Reflexomat control units

Reflexomat Control Basic

Reflexomat Control Touch

Technical Features

- compressor-controlled pressurisation system for heating and cold water systems in accordance with EN 12828
- max. perm. safety temperature in the system 110 °C
- max. permissible operating temperature 90 °C
- permissible ambient temperature 0 – 45 °C
- ingress protection rating IP 54
- power supply 230 V / 400 V
- sound pressure level ~ 72 dB(A)
- group fault signal and RS 485 interface for internal communication
- Control Touch with graphical user interface, permanent display of operating parameters, wide array of interfaces, e.g. for control station connection, remote monitoring and system additions

Type	Art. No.			DG	Electric connection	Electric power [kW]	Height h [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
		6 bar	10 bar							
RS control unit with 1 compressor										
Control Basic										
RS 90/1 besides*	–	8882800	–	0033	230V/50Hz	0,75	683	470	550	25,00
Control Touch										
RS 90/1 T	–	8882900	–	0033	230V/50Hz	0,75	921	480	491	32,00
RS 150/1 T	–	8880311	8881311	0033	400V/50Hz	1,10	921	480	491	45,00
RS 300/1 T	–	8880411	8881411	0033	400V/50Hz	2,20	921	370	630	48,00
RS 400/1 T	–	8880511	8881511	0033	400V/50Hz	2,40	921	565	670	62,00
RS 580/1 T	–	8880611	8881611	0033	400V/50Hz	3,00	921	636	803	84,00
RS control unit with 2 compressors										
Control Touch										
RS 90/2 T	–	8883000	–	0033	230V/50Hz	1,50	921	498	550	45,00
RS 150/2 T	–	8883100	8883150	0033	400V/50Hz	2,20	921	580	510	60,00
RS 300/2 T	–	8884100	8884150	0033	400V/50Hz	4,40	921	1.000	752	90,00
RS 400/2 T	–	8885100	8885150	0033	400V/50Hz	4,80	921	1.230	792	131,00
RS 580/2 T	–	8886100	8886150	0033	400V/50Hz	6,00	921	1.301	874	196,10
RS control unit without compressor for compressed air supplied on-site [1]										
Control Basic										
RS mounted*	8881100	–	–	0033	230V/50Hz	–	415	395	520	15,00
RS besides*	8881105	–	–	0033	230V/50Hz	–	690	395	345	15,00
Control Touch										
RS external air T*	8881400	–	–	0033	230V/50Hz	–	683	470	600	23,00

[1] Includes solenoid valve for the supply of user-provided compressed air (article no.: 7913000)
User-supplied compressed air, filtered and oil-free max. 10 bar
* mounted = attached controller up to RG 600,besides = adjoining controller from RG 800, external air = site provided compressed air

Reflexomat vessels

RG 500 l

RG 1.000 l

Technical Features

- replaceable bladder according to DIN EN 13831
- approval according to Pressure Equipment Directive 2014/68/EU
- max. permissible operating temperature (at the membrane) 70 °C
- max. perm. safety temperature in the system 110 °C

	Primary vessel				Secondary vessel							
	Type	Art. No.	DG	Height h2 [mm]	Type	Art. No.	DG	Height h2 [mm]	Connection c	Ø d [mm]	Height h [mm]	Weight [kg]
6 bar 70 °C	RG 200	8799100	0030	191	RF 200	8789100	0030	191	G1"	634	989	40,00
	RG 300	8799200	0030	191	RF 300	8789200	0030	191	G1"	634	1.289	60,70
	RG 400	8799300	0030	177	RF 400	8789300	0030	177	G1"	740	1.277	69,40
	RG 500	8799400	0030	177	RF 500	8789400	0030	177	G1"	740	1.497	78,70
	RG 600	8799500	0030	177	RF 600	8789500	0030	177	G1"	740	1.807	90,10
	RG 800	8799600	0030	177	RF 800	8789600	0030	177	G1"	740	2.272	110,30
	RG 1000	8650105	0032	190	RF 1000	8652005	0032	460	DN 65/PN 6	1.000	2.025	308,60
	RG 1500	8650305	0032	190	RF 1500	8652205	0032	460	DN 65/PN 6	1.200	2.020	328,00
	RG 2000	8650405	0032	190	RF 2000	8652305	0032	460	DN 65/PN 6	1.200	2.480	380,00
	RG 3000	8650605	0032	220	RF 3000	8652505	0032	490	DN 65/PN 6	1.500	2.480	795,00
	RG 4000	8650705	0032	220	RF 4000	8652605	0032	490	DN 65/PN 6	1.500	3.053	1.100,00
	RG 5000	8650805	0032	220	RF 5000	8652705	0032	490	DN 65/PN 6	1.500	3.588	1.115,00
10 bar 70 °C	RG 350	8654000	0030	196	RF 350	8654300	0030	196	DN 40/PN 16	750	1.340	230,00
	RG 500	8654100	0030	196	RF 500	8654400	0030	196	DN 40/PN 16	750	1.600	275,00
	RG 750	8654200	0030	182	RF 750	8654500	0030	182	DN 50/PN 16	750	2.179	345,00
	RG 1000	8651005	0032	168	RF 1000	8653005	0032	460	DN 65/PN 16	1.000	2.062	580,00
	RG 1500	8651205	0032	166	RF 1500	8653205	0032	460	DN 65/PN 16	1.200	2.054	492,10
	RG 2000	8651305	0032	166	RF 2000	8653305	0032	460	DN 65/PN 16	1.200	2.514	583,50
	RG 3000	8651505	0032	195	RF 3000	8653505	0032	490	DN 65/PN 16	1.500	2.532	987,00
	RG 4000	8651605	0032	195	RF 4000	8653605	0032	490	DN 65/PN 16	1.500	3.107	1.192,00
	RG 5000	8651705	0032	195	RF 5000	8653705	0032	490	DN 65/PN 16	1.500	3.642	1.286,00

Reflexomat accessories

Busmodule

- for exchanging data between controller and central building management system
- only bus modules type Ethernet and Profibus DP are suitable for a Control Basic controller

Bracket

- Reflex wall bracket for Control Basic controller and modules
- design in 90 ° and 115 ° inclination for optimum readability

I/O module

- two additional analogue outputs for pressure and level control
- six freely programmable digital inlets
- six freely programmable floating outputs

Commissioning

- **7945600**: Reflex commissioning Cat. 1 for Reflexomat, Variomat, Servitec with one compressor / one pump
- **7945704**: Reflex commissioning add. Cat. 1 for each additional system at the same location and on the same day – one compressor / pump
- **7945630**: Reflex commissioning Cat. 2 for Reflexomat and Variomat with two compressors / pumps
- **7945721**: Reflex commissioning add. Cat. 2 for each additional system at the same location and on the same day – two compressors / pumps

Cap valve

- secured shut-off for maintenance and disassembly of expansion vessels
- with drainage
- according to DIN EN 12828
- 10 bar / 120 °C

Mounting bracket

- wall console for compressor and Basic controller

Master-Slave

- software tool
- for the operation of up to 10 Reflexomat units in a hydraulic network at up to 1.000 m distance

Solenoid valve

- solenoid and ball valve
- for automatic water make-up with Reflexomat

Bladder rupture detector

- membrane rupture detector in vessels
- consisting of an electrode relay and an electrode (factory fitted)
- power supply 230 V / 50 Hz
- floating output (changeover contact)

Reflexomat accessories CE

Type	Art. No.	DG	Weight [kg]
Busmodule			
Busmodule BACnet MS/TP Touch	8860600	0086	0,10
Busmodule BACnet-IP Touch	8860500	0086	0,40
Busmodule Ethernet	8860300	0086	1,90
Busmodule Modbus RTU Touch	9125592	0086	0,20
Busmodule Profibus DP	8860200	0086	3,00
Busmodule Profibus DP Touch	9118042	0086	0,10
Bracket			
Bracket 115°	8894510	0086	0,10
Bracket 90°	8894500	0086	0,10
I/O module			
I/O module RS	8858405	0035	1,00
Commissioning			
Commissioning Cat. 1	7945600	0095	–
Commissioning Cat. 2	7945630	0095	–
Commissioning add. Cat. 1	7945704	0095	–
Commissioning add. Cat. 2	7945721	0095	–
Cap valve			
Cap valve SU R 1" × 1"	7613100	0084	0,57
Mounting bracket			
Mounting bracket 90°	7881900	0035	4,50
Solenoid valve			
Solenoid valve Fillvalve	7858300	0035	0,95
Master-Slave			
Master-Slave	7859000	0035	0,10
Bladder rupture detector			
Bladder rupture detector MBM II	7857700	0086	0,62

Theoretical principles

Variomat — combination matrix

Variomat

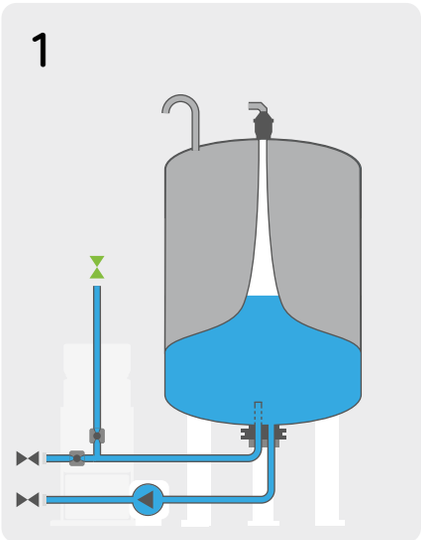
VS control unit	Connection set	VG primary vessel
		

+ Accessories

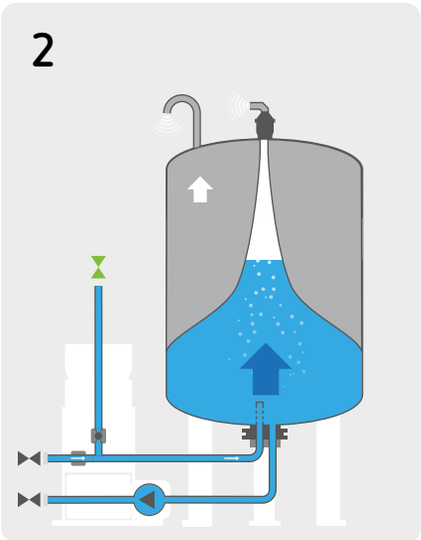
Variomat design

1. Control unit
   The state-of-the-art functioning and design of the controller ensure optimal operating convenience. All Reflex controllers (Variomat, Reflexomat, Servitec) are designed to meet uniform design guidelines.
2. Vessel
   Depressurised vessel
3. Membrane
   Replaceable bladder from high-quality material reliably protects the expansion water against air ingress.
4. Equalising bend
   Pressure equalisation between vessel and atmosphere.
5. Atmospheric degassing unit
   Expansion to atmospheric pressure causes the expansion water to be degassed.
6. Exvoid T
   Air separator with check valve
7. MBM II membrane rupture detector
   Reliable monitoring of the membrane state.
8. Flexible connection set
   Ensures optimal working of the pressure load cell (level measurement).
9. Pressure load cell (level measurement)
   for determining the filling level

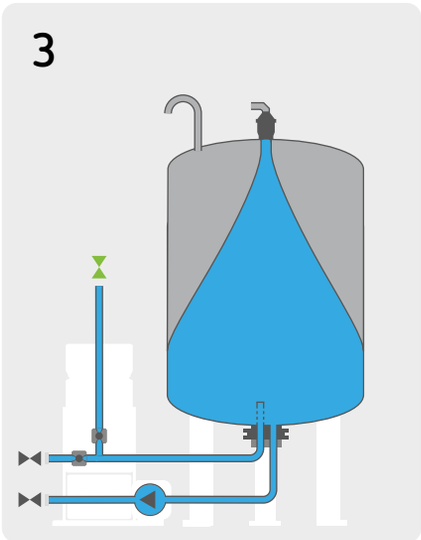
Variomat — operating principle in heating



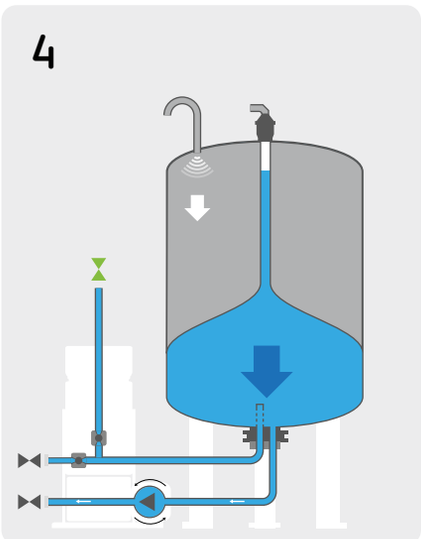
1. Low temperature
   The Variomat is fed the minimum amount of water at the lowest system temperature.



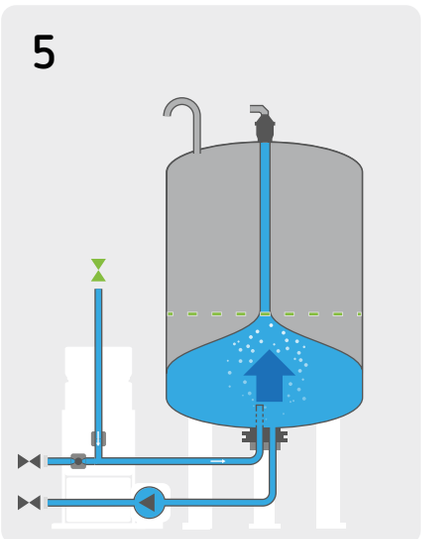
2. Temperature increase
   If the system temperature and thus also the pressure rises, then the controller responds immediately and opens the overflow. Expansion water flows into the de-pressurised vessel and is degassed due to the drop in pressure.



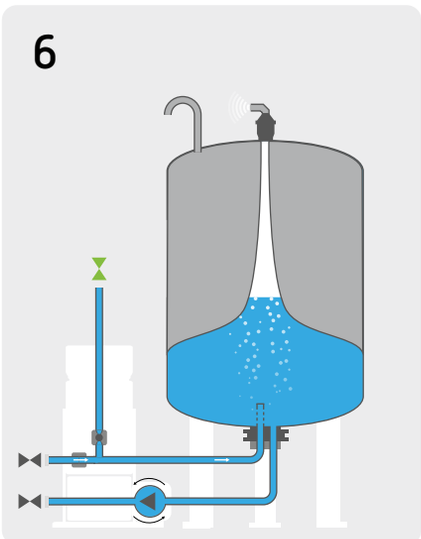
3. Full capacity
   At maximum system temperature the Variomat stores all the expansion water and reaches the maximum filling level in normal operation.



4. Cool down
   If the system cools down, then the system pressure drops and the Variomat uses the pump to feed the expansion water back into the system. Maximum pressure fluctuation is ±0,2 bar.



5. Water make-up
   If the water content in the vessel falls below the defined target value, then the Variomat opens the water make-up valve automatically to compensate for the loss of water in the system.

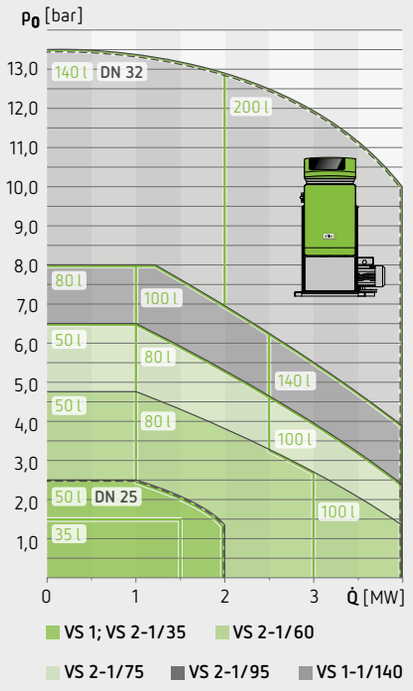


6. Continuous/interval degassing
   Pump and overflow ball valve are in operation simultaneously. System pressure remains stable within the range of target value. System water is directed via the primary vessel and degassed due to the drop in pressure.

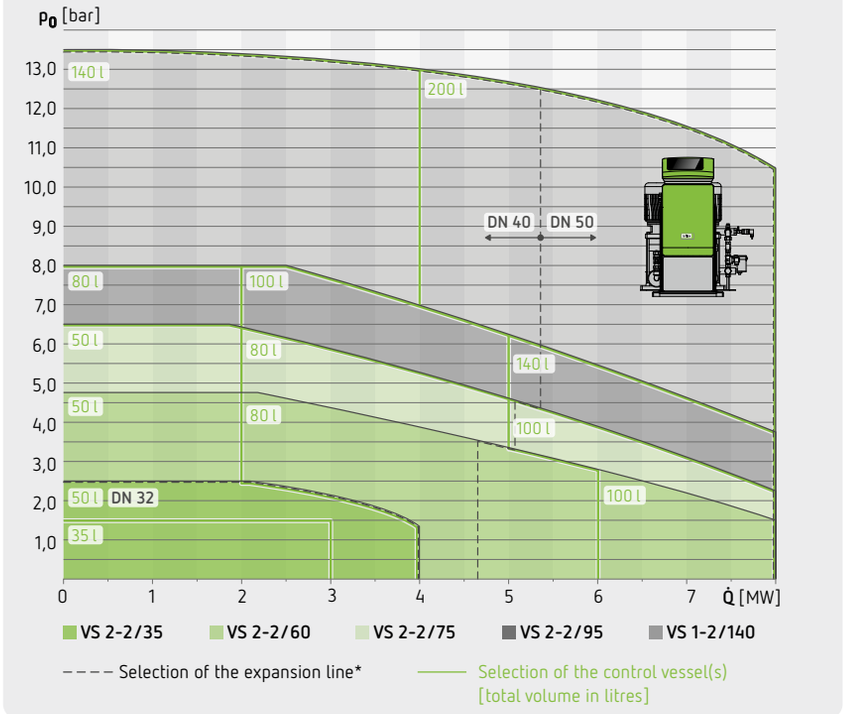
Variomat

Variomat control unit — quick selection

Minimum operating pressure p_0 dependent on the total heat output of the heat generator $\dot{Q}$ [MW]



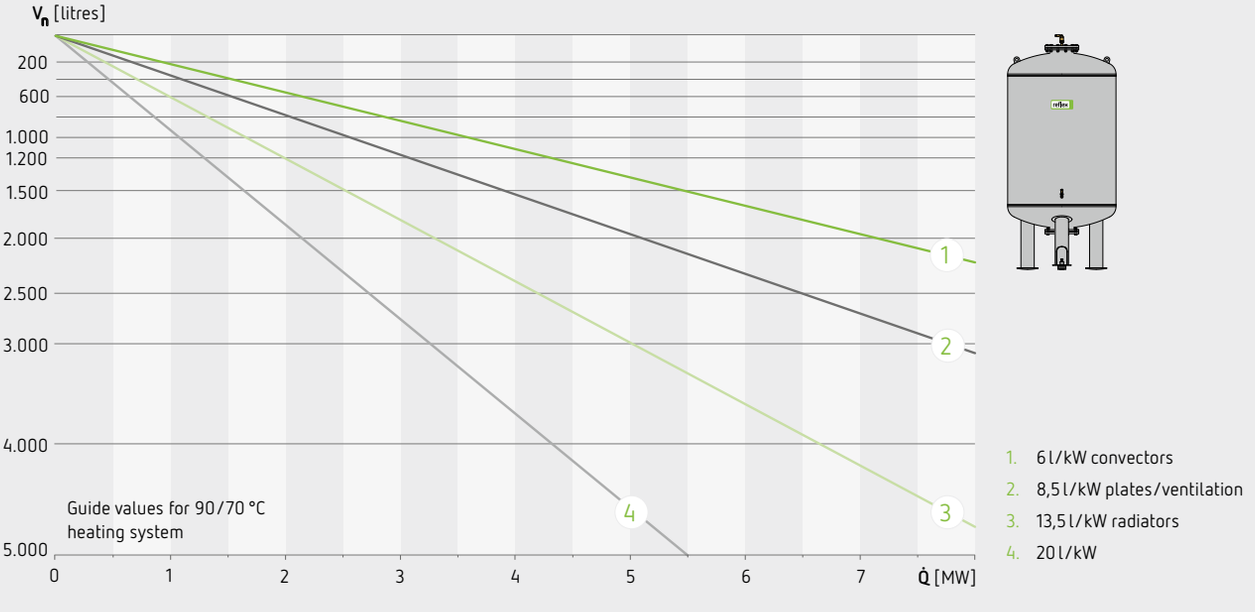
Variomat with one pump



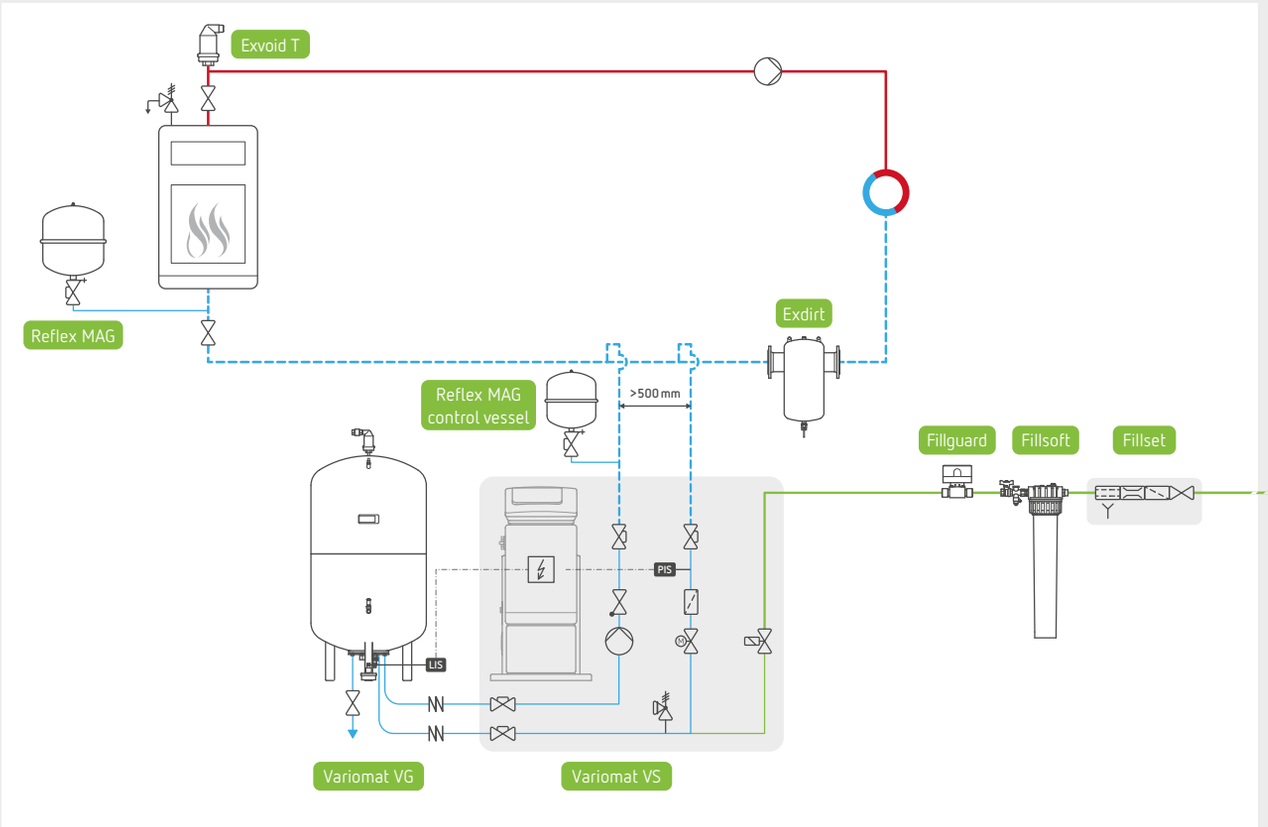
Variomat with two pumps

* It is advisable to choose a size larger if the **expansion line is longer than > 10 m**

Variomat vessels — quick selection



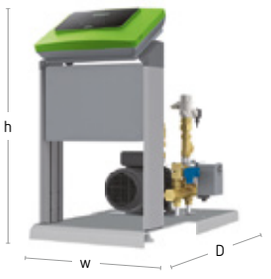
Installation example Variomat



Note: An expansion vessel must be integrated as a control vessel
(e.g. similar to here as individual boiler protection)

Variomat

Variomat control units



Variomat VS 1

Variomat VS 2-1/60

Variomat VS 2-2/95

Technical Features

- pump-controlled pressurisation system with integral water make-up and degassing for heating and cold water systems in accordance with EN 12828
- Variomat controller VS 1 with Control Basic control unit
- from Variomat controller VS 2 with Control Touch controller and softstart
- max. perm. safety temperature in the system 110 °C
- permissible ambient temperature 0 – 45 °C
- sound pressure level ~ 55 dB(A)
- ingress protection rating IP 54
- connection water make-up Rp ½"
- group fault signal and RS 485 interface for internal communication

	Type	Art. No.	DG	Max. p_0 setting [bar]	Electric connection	Connection c	Electric power [kW]	Height h [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
Control unit VS with 1 pump											
Control Basic controller											
6 bar 90 °C	VS 1	8910100	0038	2,5	230V/50Hz	Rp 1"	0,70	681	495	535	25,00
Control Touch control unit											
10 bar 90 °C	VS 2-1/35	8910110	0038	2,5	230V/50Hz	Rp 1"	0,80	921	495	536	30,00
	VS 2-1/60	8910200	0038	4,8	230V/50Hz	Rp 1"	1,10	921	561	536	36,90
	VS 2-1/75	8910300	0038	6,5	230V/50Hz	Rp 1"	1,10	921	480	561	49,90
	VS 2-1/95	8910400	0038	8,0	230V/50Hz	Rp 1"	1,10	921	480	561	51,40
16 bar 90 °C	VS 1-1/140	8910500	0038	13,0	400V/50Hz	Rp 1"	1,10	964	470	557	47,00
Control unit VS with 2 pumps											
Control Touch control unit											
10 bar 90 °C	VS 2-2/35	8911100	0038	2,5	230V/50Hz	G 1¼"	1,50	921	630	735	63,00
	VS 2-2/60	8911200	0038	4,8	230V/50Hz	G 1¼"	2,20	921	704	825	61,10
	VS 2-2/75	8911300	0038	6,5	230V/50Hz	G 1¼"	2,20	921	704	706	89,00
	VS 2-2/95	8911400	0038	8,0	230V/50Hz	G 1¼"	2,20	921	704	706	92,00
16 bar 90 °C	VS 1-2/140	8911500	0038	13,0	400V/50Hz	Rp 1¼"	2,20	964	750	698	138,00

Variomat vessels

VG 500 l

VG 1.000 l

Technical Features

- replaceable bladder according to DIN EN 13831
- approval according to Pressure Equipment Directive 2014/68/EU
- max. permissible operating temperature (at the membrane) 70 °C
- max. perm. safety temperature in the system 110 °C

	Primary vessel				Secondary vessel							
	Type	Art. No.	DG	Height h2 [mm]	Type	Art. No.	DG	Height h2 [mm]	Connection c	Ø d [mm]	Height h [mm]	Weight [kg]
6 bar 70 °C	VG 200	8600011	0036	191	VF 200	8610000	0036	191	G1"	634	1.057	33,50
	VG 300	8600111	0036	191	VF 300	8610100	0036	191	G1"	634	1.357	55,20
	VG 400	8600211	0036	178	VF 400	8610200	0036	178	G1"	740	1.344	72,20
	VG 500	8600311	0036	178	VF 500	8610300	0036	178	G1"	740	1.564	81,10
	VG 600	8600411	0036	177	VF 600	8610400	0036	177	G1"	740	1.807	96,80
	VG 800	8600511	0036	177	VF 800	8610500	0036	177	G1"	740	2.272	109,90
	VG 1000/740	8600611	0036	178	VF 1000/740	8610600	0036	178	G1"	740	2.737	127,00
	VG 1000/1000	8600705	0037	460	VF 1000/1000	8610705	0037	460	G1"	1.000	2.127	270,00
	VG 1500	8600905	0037	460	VF 1500	8610905	0037	460	G1"	1.200	2.127	300,00
	VG 2000	8601005	0037	460	VF 2000	8611005	0037	460	G1"	1.200	2.587	400,00
	VG 3000	8601205	0037	490	VF 3000	8611205	0037	490	G1"	1.500	2.588	740,00
	VG 4000	8601305	0037	490	VF 4000	8611305	0037	490	G1"	1.500	3.160	820,00
	VG 5000	8601405	0037	490	VF 5000	8611405	0037	490	G1"	1.500	3.695	980,00

Variomat vessels accessories

Variomat VW

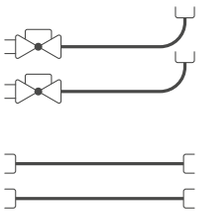
- thermal insulation for Variomat vessels
- consisting of thick flexible foam
- insulation thickness for all use cases: 50 mm

Type	Art. No.	DG	Weight [kg]
VW 200	5990100	0039	3,00
VW 300	5990200	0039	3,50
VW 400	5991300	0039	4,50
VW 500	5990000	0039	5,50
VW 600	5990500	0039	6,00
VW 800	5990300	0039	8,00
VW 1000/740	5990400	0039	8,00
VW 1000/1000	5991400	0039	9,00
VW 1500	5991000	0039	10,60
VW 2000	5989700	0039	13,00
VW 3000	5108700	0039	15,00
VW 4000	5989800	0039	17,00
VW 5000	5991100	0039	21,80

Variomat accessories

CE

Connection set



- Variomat connection set for single-pump systems: 2 connection hoses 1" × 1" male thread with secured shut-off
- Variomat connection set for two-pump systems: 2 connection hoses 1¼" × 1" male thread

Busmodule

- for exchanging data between controller and central building management system
- only bus modules type Ethernet and Profibus DP are suitable for a Control Basic controller

I/O module

- two additional analogue outputs for pressure and level control
- six freely programmable digital inlets
- six freely programmable floating outputs

Commissioning

- **7945600**: Reflex commissioning Cat. 1 for Reflexomat, Variomat, Servitec with one compressor / one pump
- **7945704**: Reflex commissioning add. Cat. 1 for each additional system at the same location and on the same day – one compressor / pump
- **7945630**: Reflex commissioning Cat. 2 for Reflexomat and Variomat with two compressors / pumps
- **7945721**: Reflex commissioning add. Cat. 2 for each additional system at the same location and on the same day – two compressors / pumps

Master-Slave

- software tool
- for the operation of up to 10 Reflexomat / - Giga in one hydraulic network at up to 1000 m distance

Bladder rupture detector

- membrane rupture detector in vessels
- consisting of an electrode relay and an electrode (factory fitted)
- power supply 230 V / 50 Hz
- floating output (changeover contact)

Valve

- reliable make-up for special applications
- part number available with pre-assembled Safecontrol on request
- Rp ½"

Variomat accessories

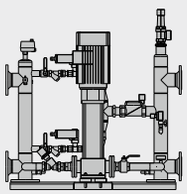
CE

Type	Art. No.	DG	Weight [kg]
Connection set			
Connection set VS 1/VS 2-1 Ø 480 – 740 mm	6940100	0039	1,55
Connection set VS 1/VS 2-1 Ø 1.000 – 1.500 mm	6940200	0039	1,90
Connection set VS 2-2 Ø 480 – 740 mm	6940300	0039	1,85
Connection set VS 2-2 Ø 1.000 – 1.500 mm	6940400	0039	2,10
Busmodule			
Busmodule BACnet MS/TP Touch	8860600	0086	0,10
Busmodule BACnet-IP Touch	8860500	0086	0,40
Busmodule Ethernet	8860300	0086	1,90
Busmodule Modbus RTU Touch	9125592	0086	0,20
Busmodule Profibus DP	8860200	0086	3,00
Busmodule Profibus DP Touch	9118042	0086	0,10
I/O module			
I/O module VS	8997705	0039	1,00
Commissioning			
Commissioning Cat. 1	7945600	0095	–
Commissioning Cat. 2	7945630	0095	–
Commissioning add. Cat. 1	7945704	0095	–
Commissioning add. Cat. 2	7945721	0095	–
Master-Slave			
Master-Slave	7859100	0039	0,10
Bladder rupture detector			
Bladder rupture detector MBM II	7857700	0086	0,62
Valve			
Valve Safecontrol	9119352	0086	0,97

Variomat Giga

Variomat Giga — combination matrix

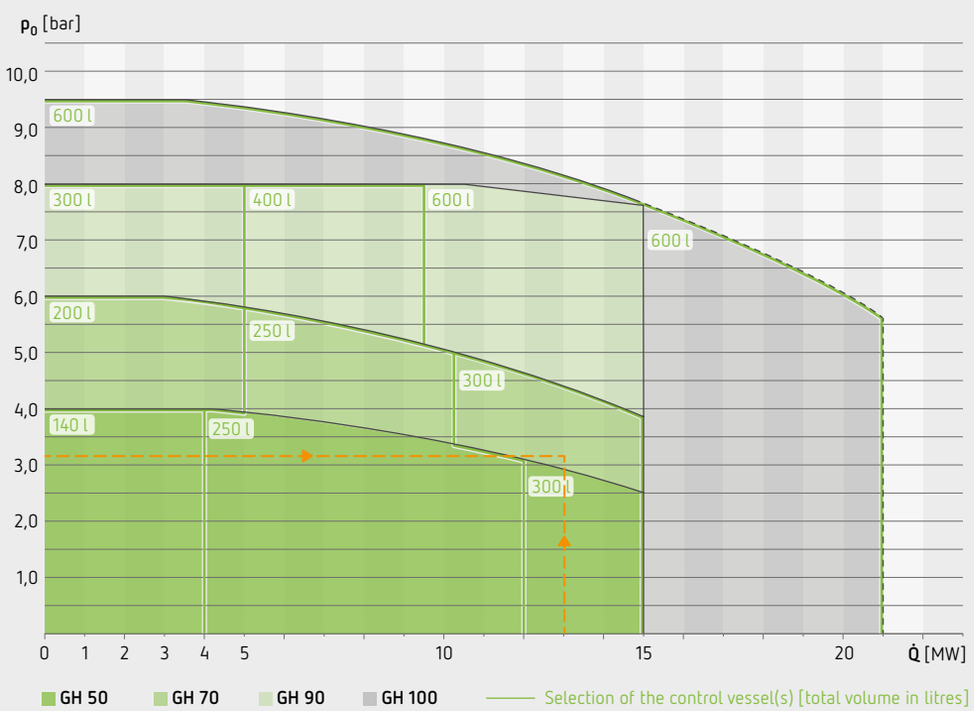
Variomat Giga

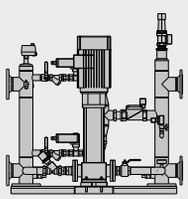
GS control unit	GH hydraulic module	GG primary vessel
		

+ Accessories

Variomat Giga hydraulic unit — quick selection

Minimum operating pressure p_0 dependent on the total heat output of the heat generator $\dot{Q}$ [MW]





Key data

Heat generator capacity	$\dot{Q}$	=	13 MW
Water content	V_A	=	50,000 l
Rated temperature	T	=	70/50 °C
Static height	H_{st}	=	30 m
Expansion coefficient	n	=	0.0228

Calculation

$$p_0 \geq \frac{H_{st}\,[m]}{10}\ \text{bar} + 0{,}2\ \text{bar}$$

$$p_0 \geq \frac{30}{10}\ \text{bar} + 0{,}2\ \text{bar} = 3{,}2\ \text{bar}$$

Result

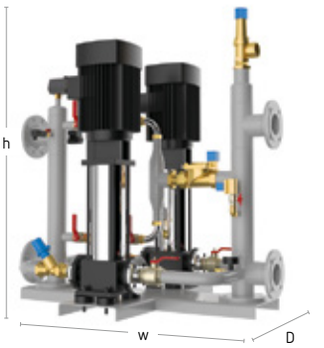
Control unit **GS 1.1**
Hydraulic module **GH 70**

Only 50 % of the nominal thermal output should be taken into account when selecting the control unit for cold water systems up to 30 °C.

Example calculation

Variomat Giga control units

Variomat Giga Control Unit GS



Variomat Giga Hydraulic GH

Technical Features

- pump-controlled pressurisation system with integral water make-up and degassing for heating and cold water systems in accordance with EN 12828
- control module for hydraulic module:
  → GS 1.1 for GH 50/GH 70
  → GS 3 for GH 90/GH 100
- maximum operating safety due to 100 % redundant operation with two pumps and two overflow valves
- max. permissible operating overpressure 16 bar
- max. perm. safety temperature in the system 110 °C
- max. permissible operating temperature 90 °C
- sound pressure level ~ 55 dB(A)
- connection pump DN 80/PN 16
- connection Primary vessel DN 80/PN 6
- connection water make-up Rp ½"
- Control Touch control unit

	Type	Art. No.	DG	Max. p_0 setting [bar]	Electric connection	Connection c	Electric power [kW]	Height h [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
Control Units											
	GS 1.1	8912500	0038	–	230V/50Hz	–	2,20	921	380	477	7,60
	GS 3	8912600	0038	–	400V/50Hz	–	6,00	921	380	477	7,10
Hydraulic modules											
16 bar 90 °C	GH 50	8931000	0038	4,0	230V/50Hz	DN80/PN16	2,20	1.194	1.168	830	195,00
	GH 70	8932000	0038	6,0	230V/50Hz	DN80/PN16	2,20	1.194	1.168	830	161,00
	GH 90	8931400	0038	8,0	400V/50Hz	DN80/PN16	6,00	1.194	1.168	830	220,00
	GH 100	8931200	0038	9,5	400V/50Hz	DN80/PN16	6,00	1.194	1.168	830	214,50
Control & hydraulic module											
16 bar 90 °C	GS 1.1 + GH 50	8931025	0038	4,0	230V/50Hz	DN80/PN16	2,20	1.194	1.548	1.307	211,00
	GS 1.1 + GH 70	8931026	0038	6,0	230V/50Hz	DN80/PN16	2,20	1.194	1.548	1.307	214,00
	GS 3 + GH 90	8931027	0038	8,0	400V/50Hz	DN80/PN16	6,00	1.194	1.548	1.307	240,00
	GS 3 + GH 100	8931028	0038	9,5	400V/50Hz	DN80/PN16	6,00	1.194	1.548	1.307	283,00

Variomat Giga vessels

GG 1.000 l

GF 1.000 l

Technical Features

- replaceable bladder according to DIN EN 13831
- approval according to Pressure Equipment Directive 2014/68/EU
- max. permissible operating temperature (at the membrane) 70 °C
- max. perm. safety temperature in the system 110 °C

	Primary vessel				Secondary vessel							
	Type	Art. No.	DG	Height h2 [mm]	Type	Art. No.	DG	Height h2 [mm]	Connection c	Ø d [mm]	Height h [mm]	Weight [kg]
6 bar 70 °C	GG 1000	8920105	0037	252	GF 1000	8930105	0037	195	DN 65/PN 6	1.000	2.158	270,00
	GG 1500	8920305	0037	245	GF 1500	8930305	0037	195	DN 65/PN 6	1.200	2.158	340,00
	GG 2000	8920405	0037	245	GF 2000	8930405	0037	195	DN 65/PN 6	1.200	2.618	430,00
	GG 3000	8920605	0037	275	GF 3000	8930605	0037	225	DN 65/PN 6	1.500	2.606	651,00
	GG 4000	8920705	0037	275	GF 4000	8930705	0037	225	DN 65/PN 6	1.500	3.181	890,00
	GG 5000	8920805	0037	275	GF 5000	8930805	0037	225	DN 65/PN 6	1.500	3.716	980,00

Variomat Giga accessories

Busmodule

- for exchanging data between controller and central building management system
- only bus modules type Ethernet and Profibus DP are suitable for a Control Basic controller

I/O module

- two additional analogue outputs for pressure and level control
- six freely programmable digital inlets
- six freely programmable floating outputs

Commissioning

- **7945724**: Reflex commissioning for Variomat Giga with two pumps

Master-Slave

- software tool
- for the operation of up to 10 Reflexomat / - Giga in one hydraulic network at up to 1000 m distance

Bladder rupture detector

- membrane rupture detector in vessels
- consisting of an electrode relay and an electrode (factory fitted)
- power supply 230 V / 50 Hz
- floating output (changeover contact)

Safety valve

- safety valve SV1 for additional protection of GG and GF vessels at nominal heat capacities > 10,5 MV

Valve

- reliable make-up for special applications
- part number available with pre-assembled Safecontrol on request
- Rp ½"

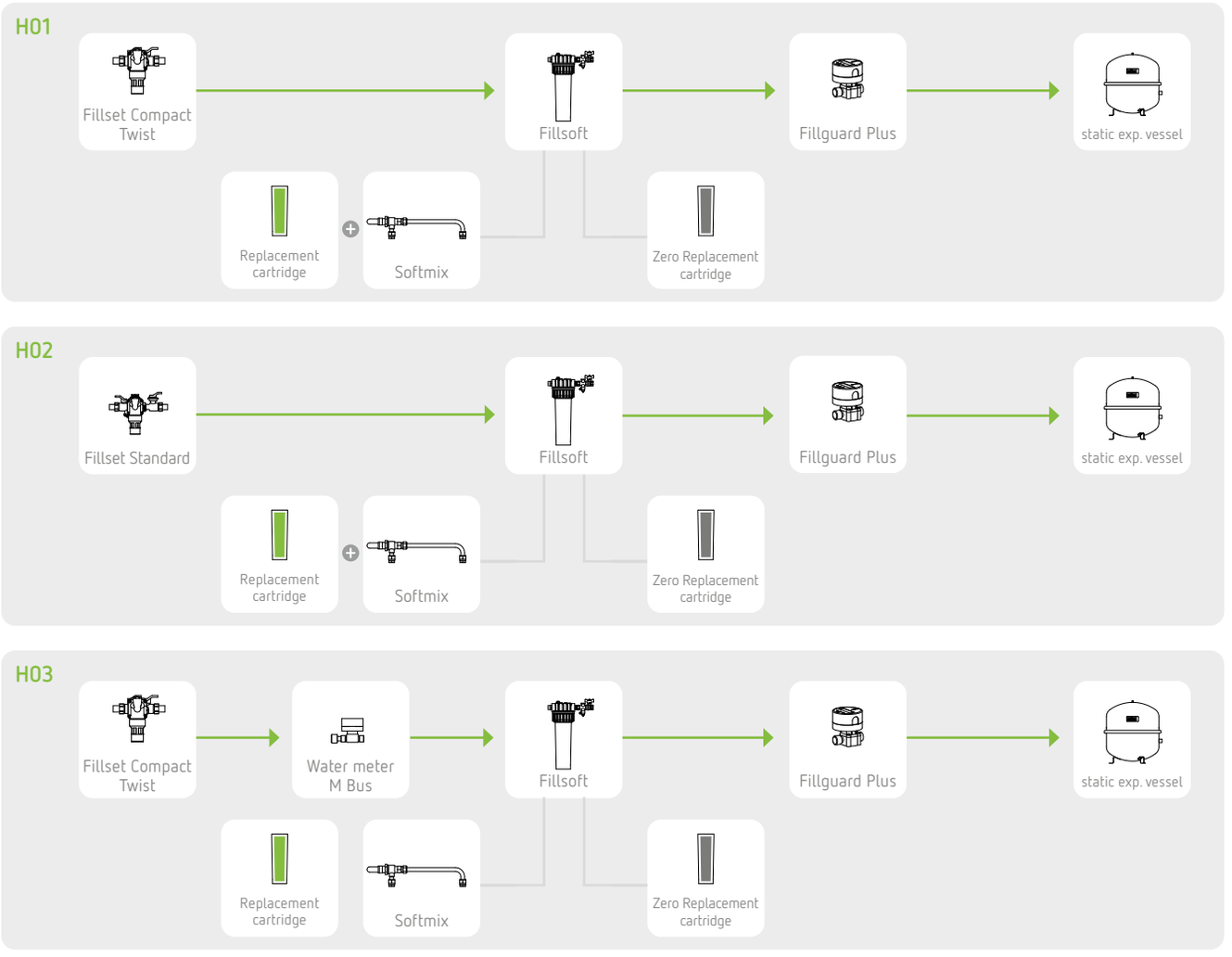
Variomat Giga accessories

CE

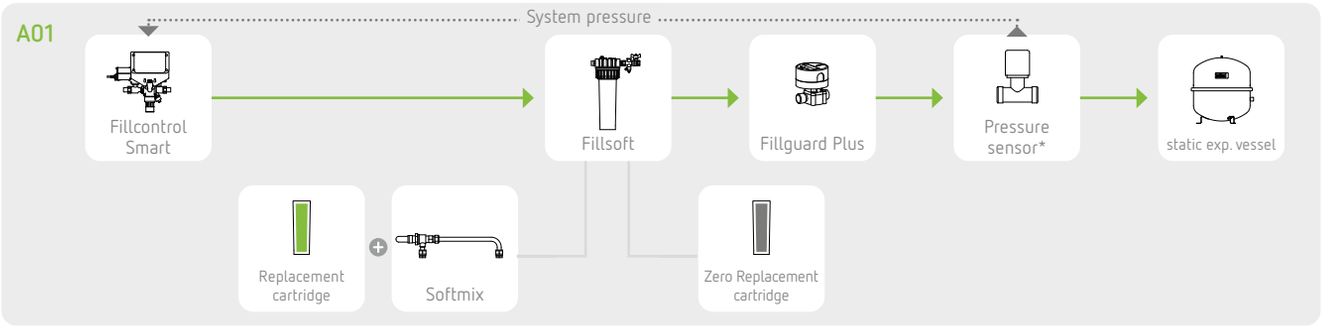
Type	Art. No.	DG	Weight [kg]
Busmodule			
Busmodule BACnet MS/TP Touch	8860600	0086	0,10
Busmodule BACnet-IP Touch	8860500	0086	0,40
Busmodule Ethernet	8860300	0086	1,90
Busmodule Modbus RTU Touch	9125592	0086	0,20
Busmodule Profibus DP	8860200	0086	3,00
Busmodule Profibus DP Touch	9118042	0086	0,10
I/O module			
I/O module GS	8997700	0039	1,00
Commissioning			
Commissioning Variomat Giga	7945724	0095	–
Master-Slave			
Master-Slave	7859100	0039	0,10
Bladder rupture detector			
Bladder rupture detector MBM II	7857700	0086	0,62
Safety valve			
Safety valve SV 1	6942100	0081	0,55
Valve			
Valve Safecontrol	9119352	0086	0,97

Water make-up systems & water treatment

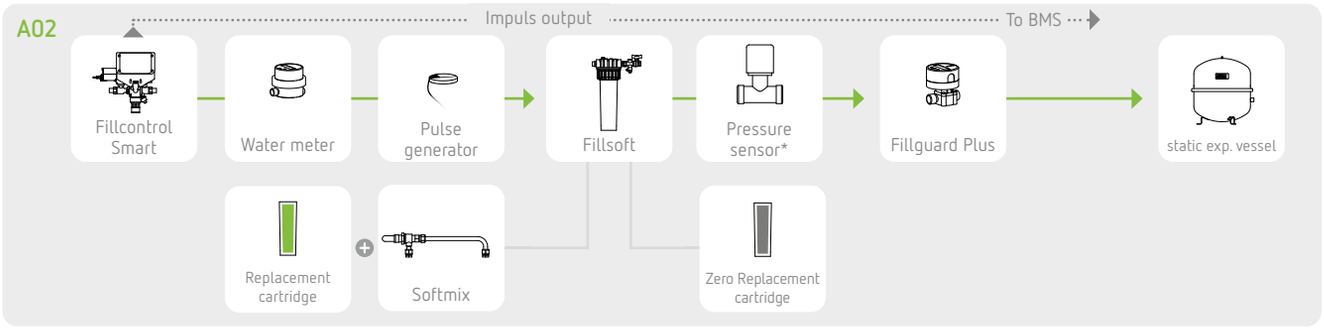
Manual water make-up

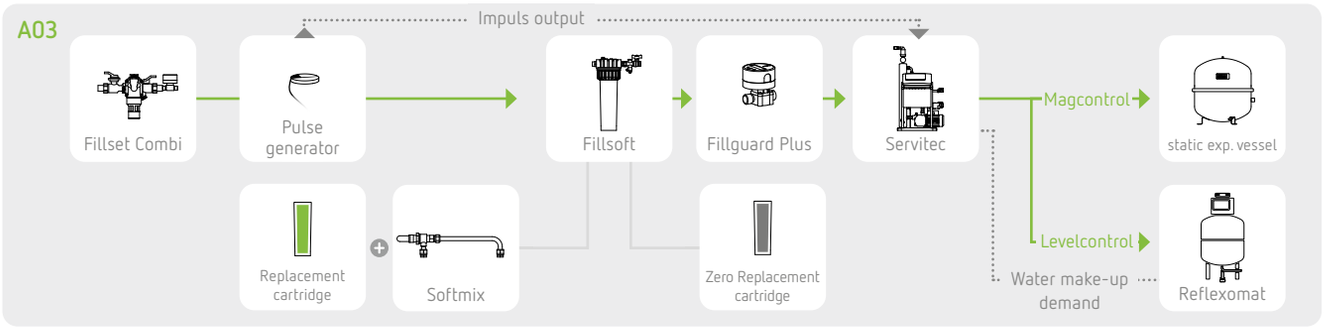


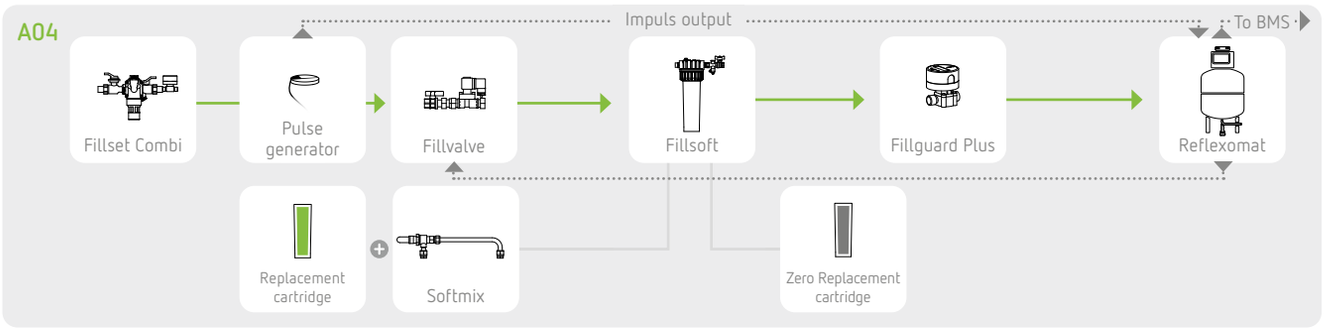
Automatic water make-up

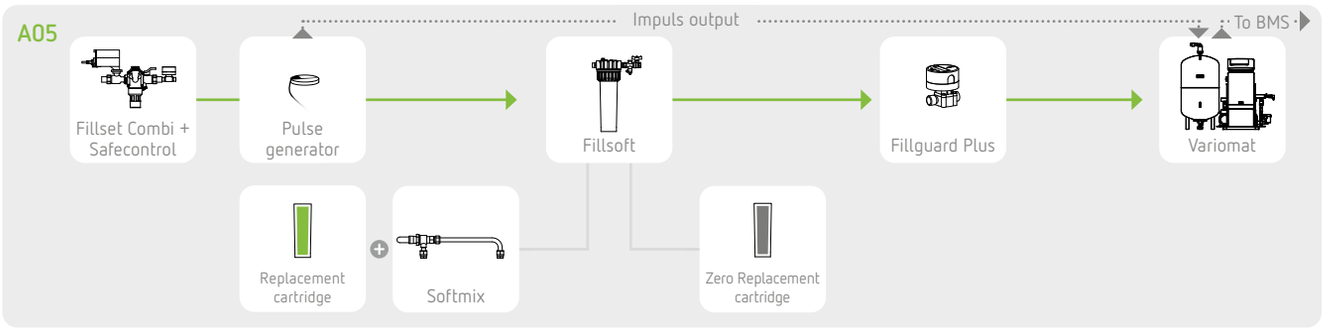


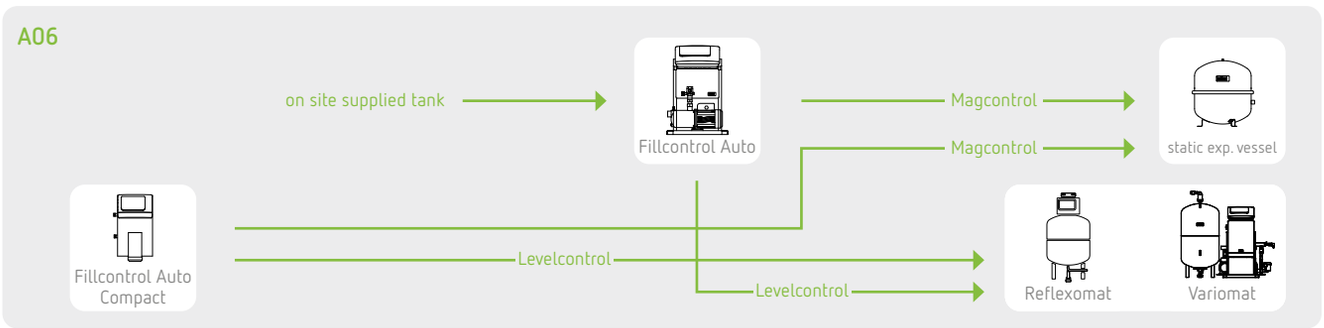
* Pressure sensor included in the scope of delivery of Fillcontrol Smart







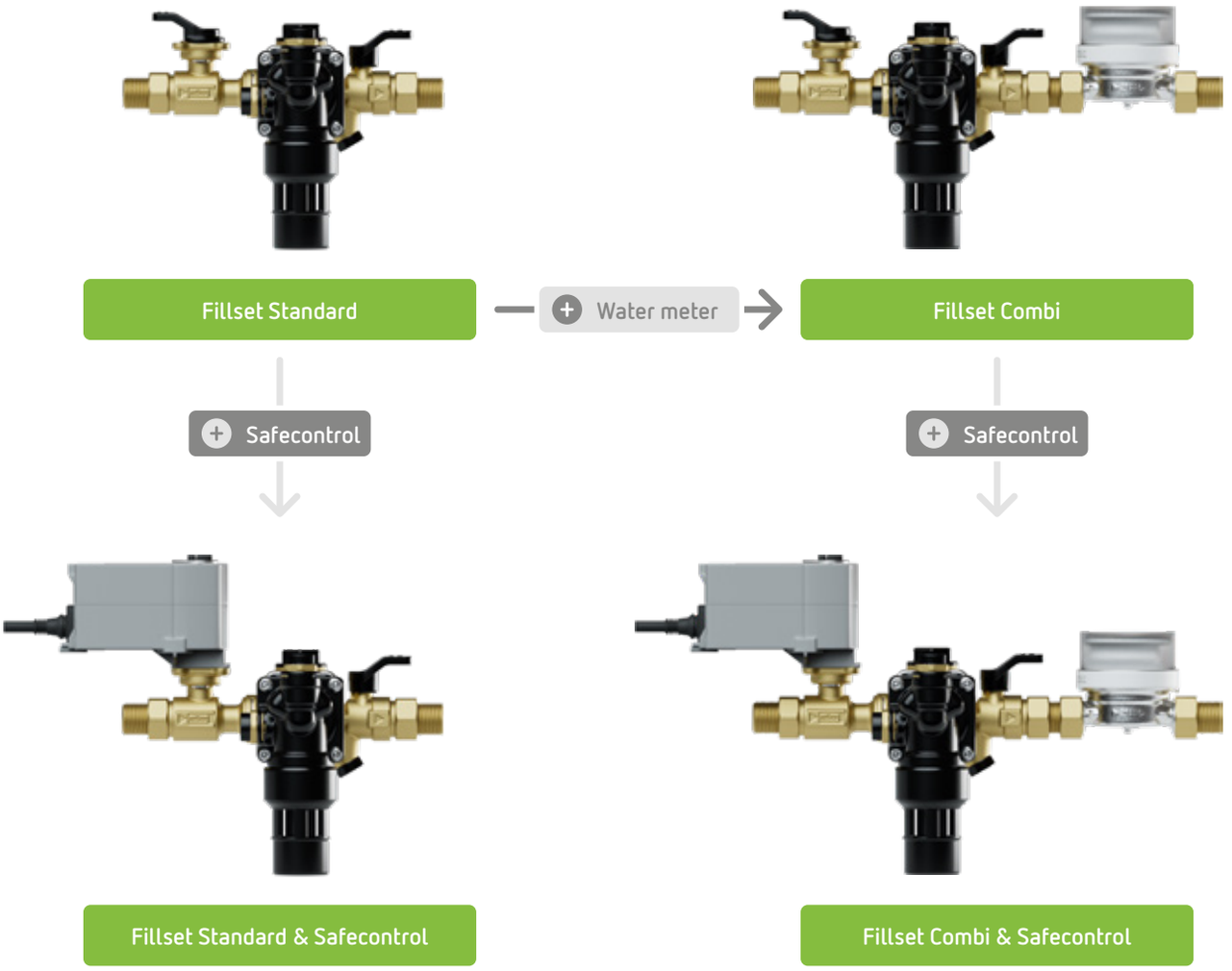




* Pressure sensor included in the scope of delivery of Fillcontrol Smart

Theoretical principles

Combination options for Fillsets



Fillset

Fillset Standard CE

Fillset Standard

Technical Features

- connection assembly for water make-up systems according to EN 806 and EN 1717
- for direct connection to potable water systems
- with multi-national certified system separator of Type BA
- isolating fixtures at inlet and outlet
- expandable using Fillset Safecontrol for automatic make-up
- water make-up capacity approx. 1,6 m^3/h at Δp = 1,2 bar
- minimal flow pressure p_0 + 1,5 bar (deviations possible in combination with Variomat and Servitec)
- max. permissible operating overpressure 10 bar
- max. permissible operating temperature 65 °C

	Type	Art. No.	DG	Connection inlet/outlet	Height h [mm]	Height including pressure reducer [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
10 bar 65 °C	Standard	6813100	0070	R ½"/R ½"	170	204	236	128	1,70

Fillset Standard accessories

Pressure reducer

- reduces and stabilises the pressure of water flowing through the system
- ensures a constant pressure discharge, independent of any input pressure fluctuations
- protects the system against damage caused by overpressure and contributes to system efficiency and safety by preventing water hammer

Pulse generator

- the generated pulses are transmitted to an external reading device or a data acquisition system (e.g. BMS), thus enabling accurate monitoring and remote reading of water consumption without any need for direct access to the meter
- to increase the range of use of the water meter

Pressure gauge

- black casing
- not neccessary
- diameter: 63 mm
- connection: R ¼"

Safecontrol

- the actuator motor can be connected to the existing motor mount of the Fillset Standard, Combi or Fillcontrol Smart
- the dirt-resistant motor-controlled ball valve is closed by a spring without any need for an electrical supply
- hydraulic and electrical connections must be made on-site
- actuation can be performed via the Fillcontrol Smart or a separate Reflex control unit

Wall mounts

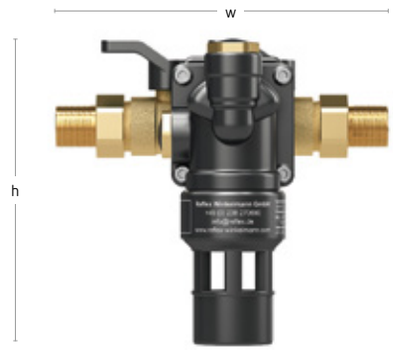
- suitable for wall-mounted installation of the Fillset Standard, Combi or the FillControl Smart
- depending on the site conditions, a wall-mounted installation can optionally ensure that the overall aesthetic of the entire system is ordered and tidy

Water meter

- the water meter displays the measured water consumption on an analogue dial
- enables monitoring of the made up water volume

Type	Art. No.	DG	Weight [kg]
Pressure gauge	7111539	0086	0,09
Pressure reducer	9131440	0086	0,13
Pulse generator	9131441	0086	0,06
Safecontrol	7131422	0086	0,60
Wall mounts	9131442	0086	0,33
Water meter	7131225	0086	0,39

Fillset Compact Twist



Fillset Compact Twist

Technical Features

- connection assembly for water make-up systems according to EN 806 and EN 1717
- for direct connection to potable water systems
- with multi-national certified system separator of Type BA
- isolating fixtures at inlet and outlet
- without water meter or with M-Bus water meter
- variable rotation (non-ratcheting) by hand
- minimal flow pressure p_0 + 1,5 bar
- max. permissible operating overpressure 10 bar
- max. permissible operating temperature 65 °C

	Type	Art. No.	DG	Connection inlet/outlet	Height h [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
10 bar 65 °C	Compact Twist	6811805	0070	R ½"/R ½"	157	175	117	2,42
	Compact Twist M-Bus	6811855	0070	R ½"/R ½"	157	175	117	2,42

Fillset Combi

Fillset Combi

Technical Features

- connection assembly for water make-up systems according to EN 806 and EN 1717
- for direct connection to potable water systems
- with multi-national certified system separator of Type BA
- isolating fixtures at inlet and outlet
- expandable using Fillset Safecontrol for automatic make-up
- including water meter
- water make-up capacity approx. 1,2 m^3/h at Δp = 1,35 bar
- minimal flow pressure p_0 + 1,5 bar (deviations possible in combination with Variomat and Servitec)
- max. permissible operating overpressure 10 bar
- max. permissible operating temperature 65 °C

	Type	Art. No.	DG	Connection inlet/outlet	Height h [mm]	Height including pressure reducer [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
10 bar 65 °C	Combi	6813105	0070	R ½"/R ½"	170	204	314	150	2,26

Fillset Combi accessories

CE

Pressure reducer

- reduces and stabilises the pressure of water flowing through the system
- ensures a constant pressure discharge, independent of any input pressure fluctuations
- protects the system against damage caused by overpressure and contributes to system efficiency and safety by preventing water hammer

Pulse generator

- the generated pulses are transmitted to an external reading device or a data acquisition system (e.g. BMS), thus enabling accurate monitoring and remote reading of water consumption without any need for direct access to the meter
- to increase the range of use of the water meter

Pressure gauge

- black casing
- not neccessary
- diameter: 63 mm
- connection: R ¼"

Safecontrol

- the actuator motor can be connected to the existing motor mount of the Fillset Standard, Combi or Fillcontrol Smart
- the dirt-resistant motor-controlled ball valve is closed by a spring without any need for an electrical supply
- hydraulic and electrical connections must be made on-site
- actuation can be performed via the Fillcontrol Smart or a separate Reflex control unit

Wall mounts

- suitable for wall-mounted installation of the Fillset Standard, Combi or the FillControl Smart
- depending on the site conditions, a wall-mounted installation can optionally ensure that the overall aesthetic of the entire system is ordered and tidy

Type	Art. No.	DG	Weight [kg]
Pressure gauge	7111539	0086	0,09
Pressure reducer	9131440	0086	0,13
Pulse generator	9131441	0086	0,06
Safecontrol	7131422	0086	0,60
Wall mounts	9131442	0086	0,33

Theoretical principles

Fillcontrol Smart Construction

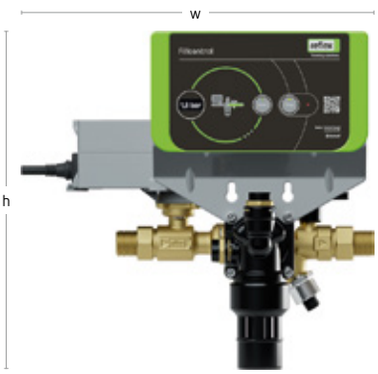
1. Fillset Safecontrol
   The motor for controlled actuation of the dirt-resistant water make-up valve for safe water make-up without pressure surges is closed without power by spring force.
2. Fillset Standard
   The connection set for water make-up systems when directly connected to potable water system ensures that the potable water system is protected from possible impurity by reliably preventing the backflow of system water.
3. Pressure Sensor
   The pressure sensor continuously measures the pressure in the system. If the pressure falls below a certain value, the sensor signals this to the control unit. This allows the sensor to provide information about the condition of the system, e.g., about possible leakages or faults, and to protect the system.
4. Controller
   The controlled, pressure-dependent water make-up is carried out with automatic interruption and fault message if the runtime is exceeded.

   The initial and subsequent filling of the system is

   facilitated by an adjustable operating mode. Function control and monitoring of the unit are carried out via a fully automatic, freely parametrisable microprocessor controller with LCD display for all relevant operating and fault messages and pressure display, RS-485 interface, as well as potential free output for group fault message.

Fillcontrol

Fillcontrol Smart



Fillcontrol Smart

Technical Features

- compact automatic water make-up station, suitable for systems with a membrane expansion vessel according to EN 806 and EN 1717
- with multi-national certified system separator of Type BA
- Control Smart controller
- RS-485 interface, optional connection of bus and expansion modules
- capacity monitoring of a Fillsoft water treatment system possible
- controlled make-up using the Fillset Safecontrol motor ball valve
- connection voltage 230 V / 50 Hz
- water make-up capacity approx. 1,6 m^3 / h at Δp = 1,2 bar
- minimal flow pressure p_0 + 1,5 bar
- permissible maximum inlet pressure 10 bar

	Type	Art. No.	DG	Connection inlet / outlet	Height h [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
10 bar 65 °C	Smart	6813500	0079	R ½" / R ½"	299	320	194	3,20

Fillcontrol Smart accessories

Pressure reducer

- reduces and stabilises the pressure of water flowing through the system
- ensures a constant pressure discharge, independent of any input pressure fluctuations
- protects the system against damage caused by overpressure and contributes to system efficiency and safety by preventing water hammer

Pulse generator

- the generated pulses are transmitted to an external reading device or a data acquisition system (e.g. BMS), thus enabling accurate monitoring and remote reading of water consumption without any need for direct access to the meter
- to increase the range of use of the water meter

Pressure gauge

- black casing
- not neccessary
- diameter: 63 mm
- connection: R ¼"

Wall mounts

- suitable for wall-mounted installation of the Fillset Standard, Combi or the FillControl Smart
- depending on the site conditions, a wall-mounted installation can optionally ensure that the overall aesthetic of the entire system is ordered and tidy

Water meter

- the water meter displays the measured water consumption on an analogue dial
- enables monitoring of the made up water volume

Type	Art. No.	DG	Weight [kg]
Pressure gauge	7111539	0086	0,09
Pressure reducer	9131440	0086	0,13
Pulse generator	9131441	0086	0,06
Wall mounts	9131442	0086	0,33
Water meter	7131225	0086	0,39

Fillcontrol Auto

Fillcontrol Auto

Technical Features

- automatic make-up system with integrated pump
- Fillcontrol Auto for water make-up, e.g. from containers or conditioning systems
- systems equipped with Control Basic for easy operation
- RS-485 interface, optional connection of bus and expansion modules
- Fillcontrol Auto suitable for applications with max. 50 % anti-freeze
- permissible maximum inlet pressure 10 bar
- max. permissible operating overpressure 10 bar
- maximum delivery pressure 5,5 bar
- minimal supply rate 360 l/h
- max. permissible operating temperature 70 °C

	Type	Art. No.	DG	Connection inlet/outlet	Delivery rate [m³/h]	Height h [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
10 bar 70 °C	Auto 5,5	8812300	0070	G 1¼"/G1"	4,2	683	556	481	18,60
commissioning									
	Fillcontrol Auto/Auto Compact	7945723	0095	–	–	–	–	–	–

Fillcontrol Auto Compact

Fillcontrol Auto Compact

Technical Features

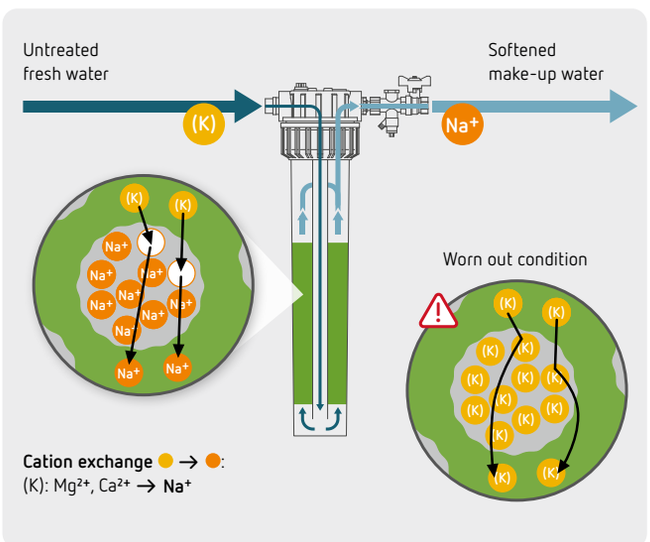
- automatic make-up system with integrated pump
- Fillcontrol Auto for water make-up, e.g. from containers or conditioning systems
- systems equipped with Control Basic for easy operation
- RS-485 interface, optional connection of bus and expansion modules
- including system separation to EN 806 and EN 1717
- permissible maximum inlet pressure 10 bar
- max. permissible operating overpressure 10 bar
- maximum delivery pressure 8,5 bar
- maximum inlet pressure 5,5 bar
- minimal supply rate 360 l/h
- max. permissible operating temperature 30 °C

	Type	Art. No.	DG	Connection inlet/outlet	Overflow connection	Delivery rate [m³/h]	Height h [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
10 bar 30 °C	Auto Compact 8,5	8688500	0070	G ⅜"/G ⅜"	DN 32/PN 16	0,12–0,18	619	579	287	19,10
commissioning										
	Fillcontrol Auto/Auto Compact	7945723	0095	–	–	–	–	–	–	–

Theoretical principles

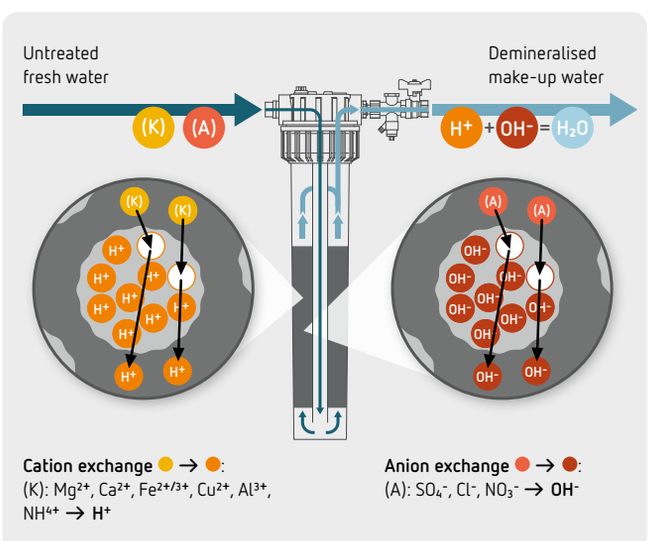
Fillsoft — construction

1. Fillsoft I casing
2. Fillsoft II casing
3. Softening with Fillsoft cartridge
   Prevents scale formation up to a total hardness of ≈ 0 °dH
4. Deionisation with Fillsoft Zero cartridge
   Prevents scale formation and corrosion up to an electrical conductivity of 10 µS/cm



Softening

Softening is based on the principle of cation replacement. Hard fresh water is fed over an exchanger pillar. Hardness-forming magnesium and calcium ions are replaced by sodium ions from resin beads and the water becomes soft. When the sodium ions are depleted, the cartridge requires replacement.



Demineralising

Demineralising is based on the principle of ion exchange (of the cations and anions). Fillsoft Zero enables the demineralisation of filling and top-up water. The cartridge absorbs all minerals. If conductivity, and thus the number of ions, increases, then the cartridge's capacity decreases and the cartridge requires replacement.

Fillsoft — application

When is **softening** necessary?

Problem

- scale formation

Objective

- prevention of scale formation in heat generation systems (boilers and heat exchangers) to protect against limescale deposits

Area of application

- in small and medium-sized heating and cooling water systems

Basis for assessment

- overall regional water hardness
- thresholds based on system size and according to VDI 2035 norm
- information from heat generator manufacturers and system operators who may have their own requirements for filling and top-up water

VDI 2035 guidelines

Overall water hardness (according to table)

- recommended thresholds for overall water hardness according to VDI 2035 (Part 1)

Group	Total heating capacity in kW	Sum of alkaline earth metals in mol/m³ (Total hardness in °dH) Specif. system volume (in l/kW heating capacity)		
		≤ 20	> 20 – ≤ 40	> 40
1	≤ 50	–	≤ 3,0 (16,8)	≤ 0,05 (0,3)
2	≤ 50*	≤ 3,0 (16,8)	≤ 1,5 (8,4)	
3	> 50 – ≤ 200	≤ 2,0 (11,2)	≤ 1,0 (5,6)	
4	> 200 – ≤ 600	≤ 1,5 (8,4)	< 0,05 (0,3)	
5	> 600	< 0,05 (0,3)		

* spec. system volume V_A [l/kW] = system vol./smallest individual heating capacity
** for circulating water heaters and systems with electric heating elements

Determining water status

- The water hardness can be obtained from the local supply companies or can be determined precisely with the Reflex hardness test kit (prod. no.: 6811900).

When is it necessary to **demineralise**?

Problem

- scale formation and water-side corrosion

Objective

- prevention of scale formation and corrosion to reduce the interaction of different materials, such as limescale deposits and siltation of tubelines, pumps and fittings

Area of application

- in small and medium-sized heating and cooling water systems
- when aluminium materials are used in heat generators or in systems with special water requirements softened water is usually insufficient and low-salt operation is required, instead

Basis for assessment

- water conductivity (through correlation iteratively also water hardness; exact values only via conductivity measurement)
- low- or high-salt operation according to VDI 2035 norm
- information from heat generator manufacturers and system operators who may have their own requirements for filling and top-up water

VDI 2035 guidelines

Conductivity

- conductivity of < 100 µS/cm is required
- some manufacturers require that make-up water be demineralised to < 10 µS/cm

Conductivity values for heating water

	low salinity	saline
Electrical conductivity in µS/cm	> 10 – ≤ 100	> 100 – ≤ 1.500
Appearance	clear, free of sedimenting substances	
	non-aluminium alloyed	aluminium alloyed
pH value	8,2 – 10,0	8,2 – 9,0

Determining water status

- Conductivity defines the total salt content (or the total amount of minerals in the water) and is easy to measure using a conductivity sensor or Reflex Fillguard.

Fillsoft

Fillsoft

Fillsoft I housing

Fillsoft II Housing

Fillsoft cartridge

Fillsoft Zero cartridge

Technical Features

- water treatment fitting for heating water make-up according to VDI 2035
- Fillsoft softening (green) cartridge capacity 6.000 l × °dH
- Fillsoft desalination (grey) cartridge capacity 3.000 l × °dH
- including mounting materials
- max. permissible operating overpressure 8 bar
- max. permissible operating temperature 40 °C

	Type	Art. No.	DG	PQ [pce]	Colour	Capacity* [l <OOD7> °dH]	Cartridge slots [pce]	Max. continuous flow rate [l/h]	Connection inlet/outlet	Height h [mm]	Width w [mm]	Weight [kg]
Fillsoft housing												
8 bar 40 °C	FG I	9125660	0178	80	–	–	1	360	Rp ½"/Rp ½"	600	260	1,90
	FG II	9125661	0178	32	–	–	2	360	Rp ½"/Rp ½"	600	380	3,60
Fillsoft cartridges												
8 bar 40 °C	FSP 6000	6811800	0078	100	green	6.000	–	–	–	513	–	1,50
	FZP 3000	9125662	0078	100	grey	3.000	–	–	–	513	–	1,50

* Use of two cartridges doubles the capacity

Fillsoft accessories

Commissioning

- **7945722**: Reflex commissioning for Fillsoft in combination with Fillguard and Fillcontrol Plus Compact

Softmix

- mixing mechanism for Fillsoft softening

Fillguard Mini

- is delivered as a fully functional device and is immediately ready for use
- continuously measures the conductivity of the make-up water
- a display with three LEDs indicates the conductivity range and, depending on the required conductivity, the threshold value can be read off
- according to VDI 2035, any conductivity less than 100 µS/cm is considered as low-salt operation
- cartridges should be replaced once the conductivity has reached 100 µS/cm but in any event, no later than after 18 months
- the battery is designed for 10 years' operation

Fillguard Plus

- all in one combination of water meter and electrical conductivity measurement for monitoring softening or desalination via Fillsoft or Fillsoft Zero
- continuous capacitance and/or conductivity measurement
- programmable potential-free fault contact and switchable beeper
- simple and flexible installation
- rotatable display
- simple connection option with Servitec S and Servitec Touch control unit using Fillguard Connect cable

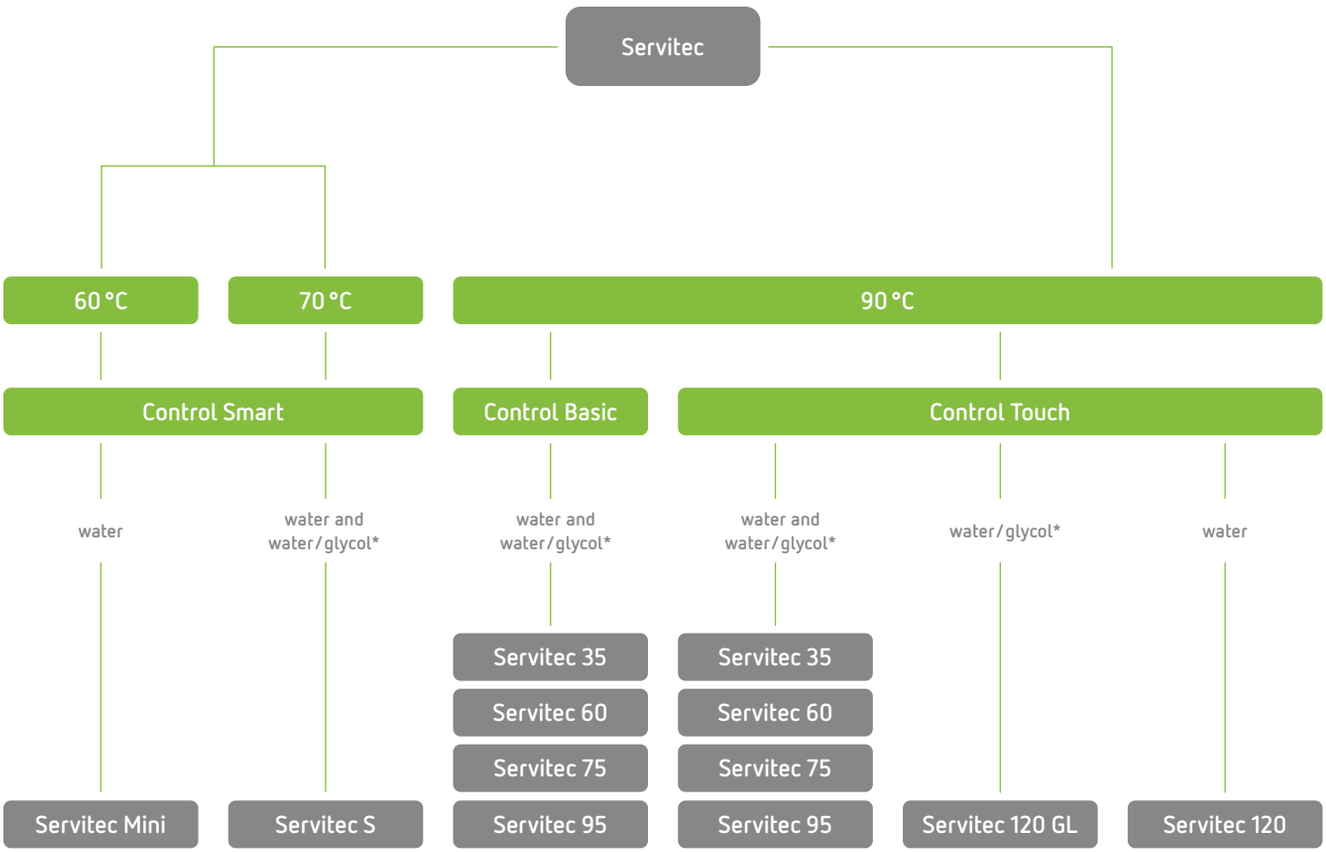
Fillsoft Tool

- assembly key for safe opening and closing of Fillsoft filter head

Fillsoft accessories CE

Type	Art. No.	DG	Weight [kg]
Fillsoft Accessories (Softening)			
Fillsoft °dH-Set	6811900	0086	0,10
Fillsoft Softmix	9119219	0178	0,20
Fillsoft accessories (Desalination)			
Fillsoft Fillguard Mini	9125762	0178	0,06
accessories for Fillsoft (softening) and Fillsoft Zero (desalination)			
Fillsoft Fillguard Connect	9131033	0178	0,37
Fillsoft Fillguard Plus	9131058	0178	0,40
Fillsoft Tool	9200276	0086	0,40
commissioning			
Commissioning Cat. 4	7945722	0095	–

Degassing systems & separation technology

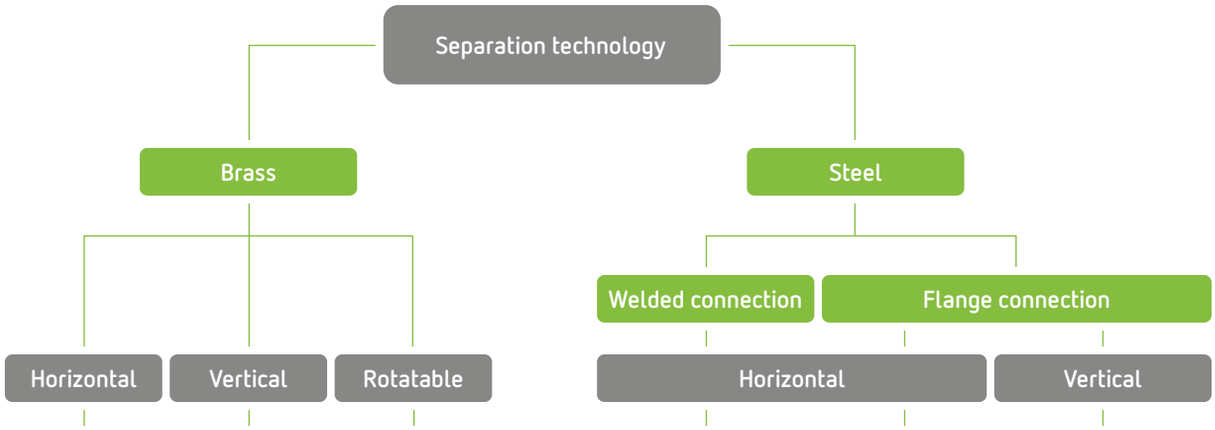


All Servitec units now with a new, wider range of applications:

→ all in one: Servitec S to 95 immediately suitable for water-glycol applications

→ operating temperature now permitted up to 90 °C (Servitec 35– 120)

* Max. glycol content: 50 %



Exvoid

Automatic vent

T ½" / ⅜"
110 °C/180 °C

Micro-bubble trap

A 22 mm – 2"
110 °C/180 °C

A 22 mm – 1" V
110 °C/180 °C

AT 22 mm – 1 ½" V
110 °C

A 60.3 – A 323.9

A 50 – A 600

Exdirt

Dirt and sludge separator

D 22 mm – 2"
110 °C

D 22 mm – 1" V
110 °C

D 60.3 – D 323.9

D 50 – D 600

D 50 V – D 150 V

With **Exferro Easy Clip** high-performance magnet

D 22 mm – 2"
110 °C

D 22 mm – 1" V
110 °C

DT 22 mm – 1 ½" V
110 °C

Exferro magnetic insert (optional)

D 60.3 R – D 323.9 R

D 50 R – D 600 R

Extwin

Combined micro-bubble, dirt and sludge separator

TW 22 mm – 1"
110 °C

TW 22 mm V
110 °C

TW 60.3 – TW 323.9

TW 50 – TW 600

With **Exferro Easy Clip** high-performance magnet

TW 22 mm – 1"
110 °C

TW 22 mm V
110 °C

TWT 22 mm – 1 ½" V
110 °C

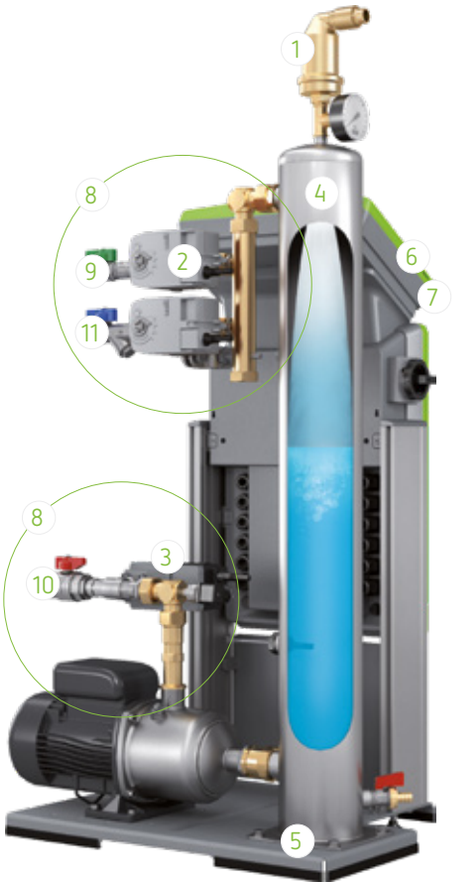
Exferro magnetic insert (optional)

TW 60.3 R – TW 323.9 R

TW 50 R – TW 600 R

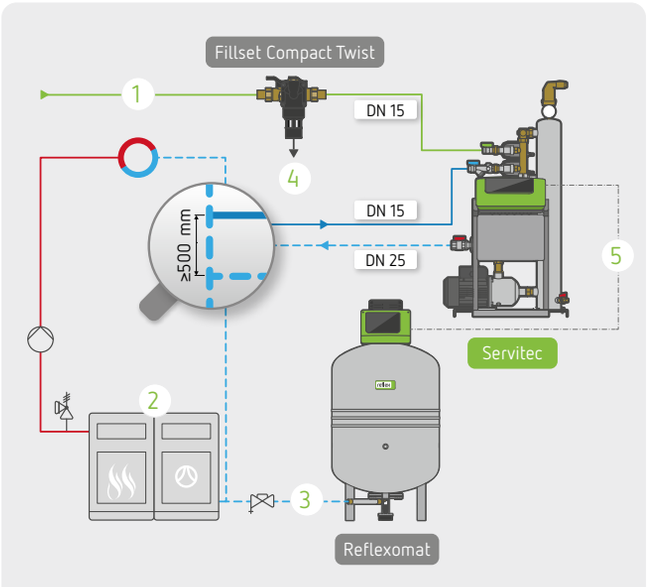
Theoretical principles

Servitec — construction



1. Level tube degassing
   allows gases to escape and is vacuum-tight
2. Fully independent protection of water make-up with own 2-way motor ball valve for maximum operating safety
3. Patented valve switch
   for fully automated hydraulic balancing
4. The vacuum spray tube
   Height and diameter are coordinated to guarantee atomisation of the water in a large free vacuum as soon as the degassing cycle starts
5. Spray tube with 4-point-fastening – robust, according to industry standard
6. Controller
   The degassing cycles are performed at optimised intervals
7. Hydraulics
   Integrated plug-and-play management by the controller adjusts the control ball valves to align the hydraulics automatically to the pressure conditions in the system
8. Simple installation, maintenance and accessibility
   thanks to new arrangement of connections
9. Make-up water G ½"
10. Low-gas circuit water G 1"
11. High-gas circuit water G ½"

Servitec — integration

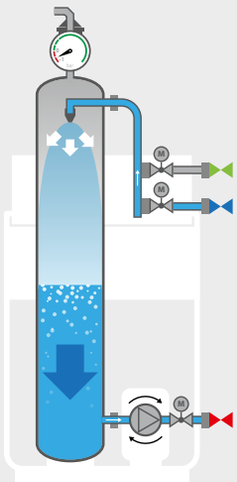


Servitec products actively degas even dissolved gases.
To achieve this a partial flow of water in the system is extracted, then degassed in the Servitec under vacuum and fed back into the system virtually gas-free. Automatically controlled ball valves guarantee a constant partial flow, regardless of the pressure ratios in the system.

1. Make-up water
2. Heating or cooling source
3. Expansion line
4. Drainage on-site
5. Control signal

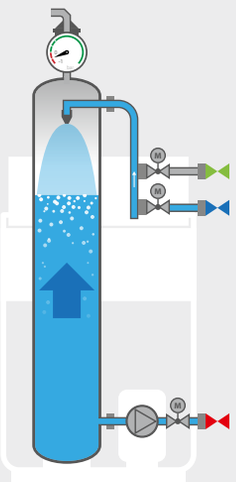
Servitec — operating principle

1



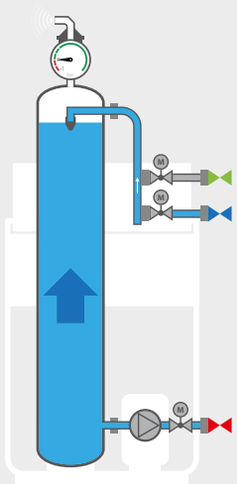
1. Vacuum generation (create vacuum)
The pump switches on, the water level drops and a vacuum is produced in the vacuum spray-tube. The circuit water (optionally make-up water) is sprayed as a fine mist into the resulting vacuum and the dissolved gases are released due to the vacuum and large contact surface.

2



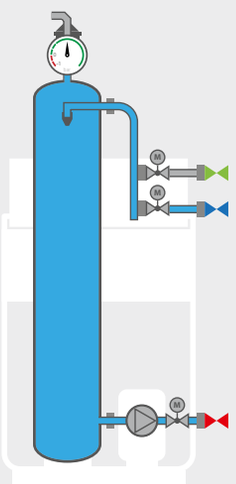
2. Degassing start
The pump switches off. Water continues to be sprayed until the vacuum spray-tube is completely full again. In the event of an active request for make-up water, a switch-over enables the degassing of gas-rich make-up water in the vacuum spray-tube.

3



3. Discharge
All released gases are discharged safely by the automatic fan.

4



4. Idling time
System pressure prevails again in the spray tube.
The system water located in the tube contains virtually no gas and is pumped back into the network in the next cycle.

Video clips demonstrating the function of this and other products are available under
www.youtube.com/@ReflexWinkelmannUnitedKingdom

Servitec

Servitec Mini

Servitec Mini

Servitec Mini – with Control Smart controller

Technical Features

- max. permissible operating overpressure 4 bar
- operating pressure 0,5 – 2,5 bar
- max. permissible operating temperature 60 °C
- permissible ambient temperature 0 – 45 °C
- power supply 230 V / 50 Hz
- electric power consumption 60 W
- electric rated current ≤ 3 A
- connection pressure side G ½"
- connection downstream side G ½"
- dissolved gas separation efficiency of up to 90 %
- max. system volume 1 m³ (applies only to the water content of heating surfaces and distribution lines, can be supplemented by a buffer tank of up to 1 m³)
- **Control Smart controller** via Bluetooth with lots of digital functions:
  → operating assistant for fault diagnosis, commissioning, service and maintenance

	Type	Art. No.	DG	System volume V_A up to* [m³]	Operating pressure [bar]	Electric power [kW]	Height h [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
60 °C W, GL	Mini	8835800	0028	1	0,5 – 2,5	0,06	420	295	220	5,60

* Max. system volumes for system degassing / max. make-up quantities must be taken into account for the specific system.

Commissioning

- **7945725**: Reflex commissioning Cat. 3 for Reflexomat Silent Compact / Reflexomat XS / Servitec Mini / Servitec S with one compressor / one pump or Reflex Hydroflow freshwater station and Reflex Greenbox
- **7945726**: Reflex commissioning add. Cat. 3 for each additional system at the same location and on the same day – one compressor / one pump

Type	Art. No.	DG	Weight [kg]
Commissioning Cat. 3	7945725	0095	–
Commissioning add. Cat. 3	7945726	0095	–

Servitec S

Servitec S

Servitec S – with a multiplicity of pre-installed digital functions

Technical Features

- max. permissible operating temperature 70 °C
- max. make-up output 0,080 m³/h
- power supply 230 V/50 Hz
- connections for the make-up, pressure, outflow side G ½"
- dissolved gas separation efficiency of up to 90 %
- max. partial volume flow network 0,050 m³/h
- minimum inlet pressure makeup 0,10 bar
- sound pressure level 55 dB(A)
- **Control Smart controller** via Bluetooth with numerous digital functions:
  - → Integrated p_0 wizard for fault-free commissioning
  - → RS-485 interface and factory-fitted Modbus RTU
  - → Operating assistant for fault diagnosis, commissioning, service and maintenance

	Type	Art. No.	DG	System volume V_A up to* [m³]	System volume V_A GL up to* [m³]	Operating pressure [bar]	Electric power [kW]	Height h [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
Control Smart controller, suitable for water and water-glycol mixtures											
70 °C GL, W	S	8832000	0028	6	4	0,5–4,5	0,20	572	340	211	13,80

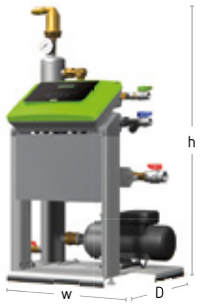
* Max. system volumes for system degassing / max. make-up quantities must be taken into account for the specific system.

Commissioning

- **7945725**: Reflex commissioning Cat. 3 for Reflexomat Silent Compact/Reflexomat XS/Servitec Mini/Servitec S with one compressor/one pump or Reflex Hydroflow freshwater station and Reflex Greenbox
- **7945726**: Reflex commissioning add. Cat. 3 for each additional system at the same location and on the same day – one compressor/one pump

Type	Art. No.	DG	Weight [kg]
Commissioning Cat. 3	7945725	0095	–
Commissioning add. Cat. 3	7945726	0095	–

Servitec



Servitec 35 Control Basic

Servitec 60 Control Touch

Servitec 95 Control Basic

Technical Features

- vacuum spray tube degassing with integrated water make-up for systems with membrane expansion vessels or pressurisation systems
- max. permissible operating overpressure
  → type 35, 60: 8 bar
  → type 75, 95, 120: 10 bar
- max. make-up output
  → type 35: 0,350 m³/h
  → type 60, 75, 95, 120: 0,550 m³/h
- microprocessor controller with plain text display for pressure
- floating contact for group message
- easy commissioning thanks to Auto Setup
- Safe Control (make-up via motor ball valve, except Servitec 120)
- optional water make-up from a reservoir (user-supplied)
- flexible adjustment of the operating modes Servitec Magcontrol (for diaphragm expansion vessels) or Levelcontrol (for pressurisation units)
- centralised degassing of content and make-up water

	Type	Art. No.	DG	System volume V_A up to* [m³]	System volume V_A GL up to* [m³]	Operating pressure [bar]	Electric power [kW]	Height h [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
Control Basic controller, suitable for water and water-glycol mixtures											
90 °C GL, W	35	8831100	0053	220	50	0,5–2,5	0,75	965	569	486	31,40
	60	8831200	0053	220	50	0,5–4,5	1,10	1.150	653	486	35,80
	75	8831300	0053	220	50	1,3–5,4	1,10	1.150	573	672	50,60
	95	8831400	0053	220	50	1,3–7,2	1,10	1.150	573	672	51,40
Control Touch control unit, suitable for water and water-glycol mixtures											
90 °C GL, W	35/T	8832100	0053	220	50	0,5–2,5	0,85	965	569	486	34,40
	60/T	8832200	0053	220	50	0,5–4,5	1,10	1.150	653	486	38,80
	75/T	8832300	0053	220	50	1,3–5,4	1,10	1.150	556	669	53,60
	95/T	8832400	0053	220	50	1,3–7,2	1,10	1.150	556	672	54,40
Control Touch control unit, suitable for water-glycol mixtures											
90 °C GL	Mag. 120/T GL	8832550	0053	–	50	1,3–9,0	1,50	1.150	578	598	53,00
Control Touch control unit, suitable for water											
90 °C W	Mag. 120/T	8832500	0053	220	–	1,3–9,0	1,50	1.150	578	598	53,00

Custom designs upon request: System volume > 220 m³ and working pressure > 9,0 bar

* Max. system volumes for system degassing / max. make-up quantities must be taken into account for the specific system.

Servitec Accessories

Busmodule

- for exchanging data between controller and central building management system
- only bus modules type Ethernet and Profibus DP are suitable for a Control Basic controller

I/O module

- two additional analogue outputs for pressure and level control
- six freely programmable digital inlets
- six freely programmable floating outputs

Commissioning

- **7945600**: Reflex commissioning Cat. 1 for Reflexomat, Variomat, Servitec with one compressor / one pump
- **7945704**: Reflex commissioning add. Cat. 1 for each additional system at the same location and on the same day – one compressor / pump

Type	Art. No.	DG	Weight [kg]
Busmodule BACnet MS/TP Touch*	8860600	0086	0,10
Busmodule BACnet-IP Touch*	8860500	0086	0,40
Busmodule Ethernet*	8860300	0086	1,90
Busmodule Modbus RTU Touch*	9125592	0086	0,20
Busmodule Profibus DP*	8860200	0086	3,00
Busmodule Profibus DP Touch*	9118042	0086	0,10
Commissioning Cat. 1	7945600	0095	–
Commissioning add. Cat. 1	7945704	0095	–
I/O module SE*	8860400	0071	1,00

* Cannot be used with a Servitec Mini and Servitec S

Theoretical principles

Brass separators — pressure loss diagram

Pressure loss calculation for all flow rates: $\Delta p = \left(\frac{\dot{V}}{K_{VS}}\right)^2 \times 1\,\text{bar};\ \dot{V} \le \dot{V}_{max}$

Connection	K_{VS} [m³/h]	$\dot{V}_{max}$ [m³/h]
IG 22 mm & ¾"	10,7	1,25
IG 1"	17,2	2,00
IG 1 ¼"	31,8	3,70
IG 1 ½"	40,0	5,00
IG 2"	56,1	7,50

Example: Heating circuit 70/55 °C; Heat generator output 40 kW

1. Volumetric flow calculation

$$\dot{V} = \frac{40\,\text{kW}}{4{,}2\,\text{kJ}/(\text{kg}\times\text{K})\times(70-55)\,\text{K}} \times 3.600\,\frac{\text{s}}{\text{h}} \times \frac{1\,\text{m}^3}{1.000\,\text{kg}}$$

$= 2{,}3\,\text{m}^3/\text{h}$

→ Range presented in a table: **IG 1 ¼" with K_{VS} = 31,8 m³/h** e.g. Exvoid A 1 ¼

$$\Delta p = \left(\frac{2{,}3\,\text{m}^3/\text{h}}{31{,}8\,\text{m}^3/\text{h}}\right)^2 \times 1\,\text{bar} = 5{,}23\times10^{-3}\,\text{bar} \quad | \times 100\,\text{kPa/bar}$$

$= 0{,}52\,\text{kPa}$

Connection	K_{VS} [m³/h]	$\dot{V}_{max}$ [m³/h]
Twist separators		
Twist 22 mm & ¾"	10,5	1,25
Twist 28 mm & 1"	12,2	2,00
Twist 1 ¼"	18,8	3,70
Twist 1 ½"	22,6	5,00

Example: Heating circuit 40/30 °C; Heat generator output 50 kW

1. Volumetric flow calculation

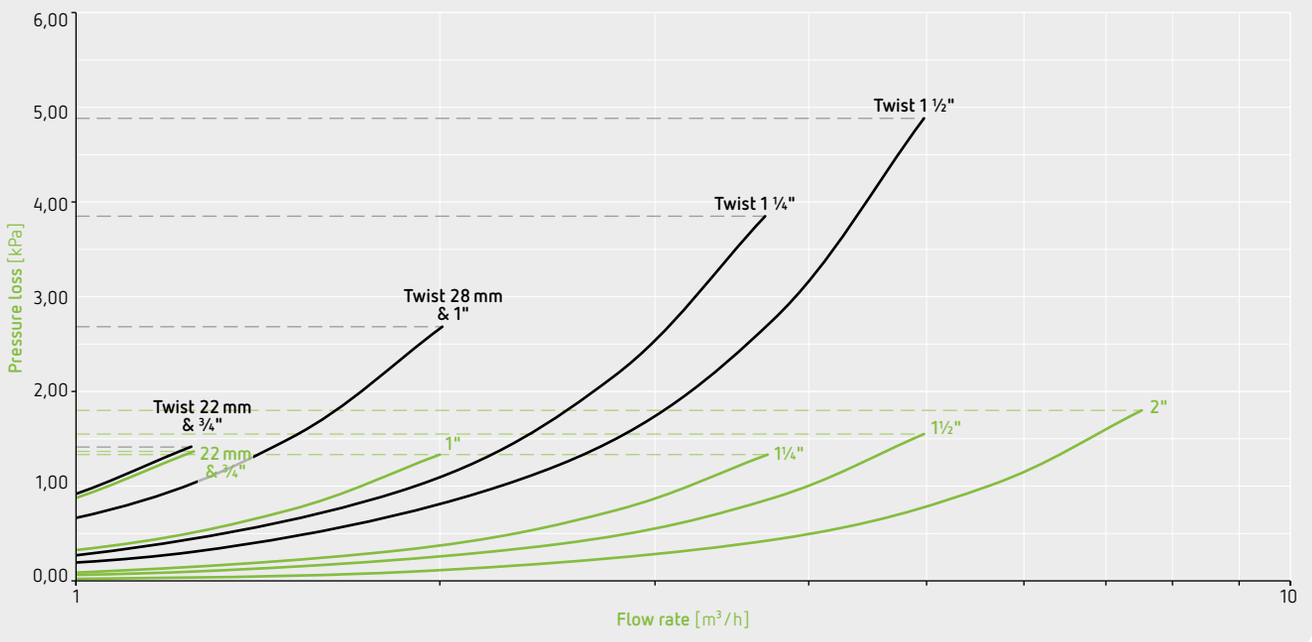
$$\dot{V} = \frac{50\,\text{kW}}{4{,}2\,\text{kJ}/(\text{kg}\times\text{K})\times(40-30)\,\text{K}} \times 3.600\,\frac{\text{s}}{\text{h}} \times \frac{1\,\text{m}^3}{1.000\,\text{kg}}$$

$= 4{,}3\,\text{m}^3/\text{h}$

→ Range presented in a table: **Twist 1 ½" with K_{VS} = 22,6 m³/h** e.g. Extwin TWT 1 ½

$$\Delta p = \left(\frac{4{,}3\,\text{m}^3/\text{h}}{22{,}6\,\text{m}^3/\text{h}}\right)^2 \times 1\,\text{bar} = 36{,}2\times10^{-3}\,\text{bar} \quad | \times 100\,\text{kPa/bar}$$

$= 3{,}62\,\text{kPa}$



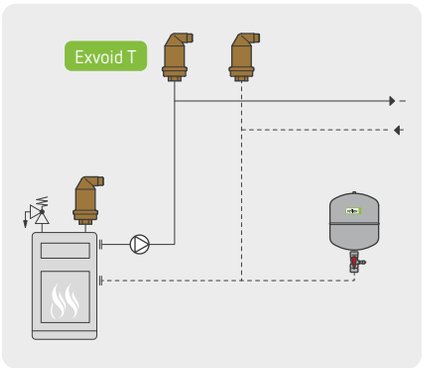
Brass separators

Exvoid T large and quick vent valves

CE

Exvoid T

Exvoid T function diagram



Exvoid T system – diagram

Technical Features

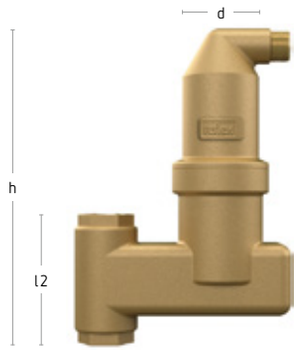
- brass casing
- venting valve tested four times for high operational safety
- for vertical assembly
- with ½" female thread and ⅜" male thread system connection, including a ½" male thread connection vent valve
- area of application: 110 / 180 °C & 10 bar
- water / glycol mixture up to a mixing ratio of 50 / 50 (min. 25 %)

	Type	Art. No.	DG	PQ [pce]	Connection c	Ø d [mm]	Height h [mm]	Length l3 [mm]	Weight [kg]
Brass, vertical									
10 bar 110 °C	T ½	9250000	0082	12	IG ½"	63	122	46	0,63
	T ⅜	9250038	0082	12	AG ⅜"	63	132	46	0,73
solar, brass, vertical									
10 bar 180 °C	T ½ S	9250600	0082	12	IG ½"	63	122	46	0,64
	T ⅜ S	9250638*	0082	12	AG ⅜"	63	132	46	0,70

* on request

Exvoid air and microbubble separator

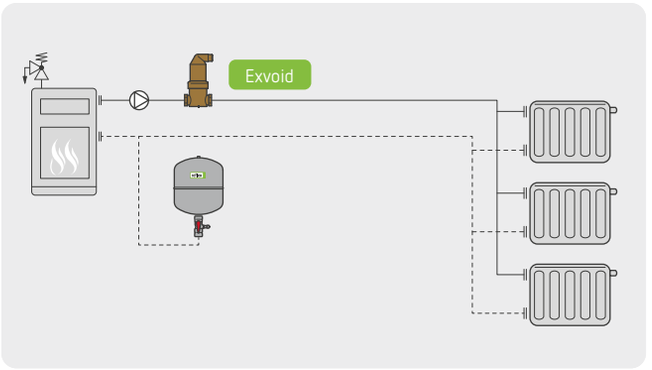
Exvoid horizontal



Exvoid vertical

Exvoid Twist

Exvoid Brass cutaway model



Exvoid brass system – schematic diagram

Technical Features

- connection diameter: A 22 mm – 2" (DN 20 – DN 50)
- volume flow: 1,25 – 8,0 m^3/h (v ~ 1,0 m/s)
- Exiso heat insulation 22 mm – 2" (DN 20 – DN 50)
- brass casing
- area of application: 110/180 °C/10 bar (solar up to 180 °C)
- installation position:
  → horizontal/vertical
  → 360 ° variable rotation (non-ratcheting) by hand
- water/glycol mixture up to a mixing ratio of 50/50 (min. 25 %)

Exvoid air and microbubble separator

CE

	Type	Art. No.	DG	PQ [pce]	Connection c	V_{max} [m³/h]	Ø d [mm]	Height h [mm]	Installation length l2 [mm]	Weight [kg]
Brass, horizontal										
10 bar 110 °C	A 22	9251000	0082	12	22 mm	1,2	63	165	99	1,08
	A ¾	9251010	0082	12	IG ¾"	1,2	63	165	85	1,03
	A 1	9251020	0082	8	IG 1"	2,0	63	182	88	1,12
	A 1¼	9251030	0082	8	IG 1¼"	3,8	63	202	88	1,23
	A 1½	9251040	0082	8	IG 1½"	5,0	63	236	88	1,44
	A 2	9251050	0082	1	IG 2"	7,5	100	277	112	3,18
Brass, vertical										
10 bar 110 °C	A ¾ V	9251510	0082	8	IG ¾"	1,2	63	206	84	1,60
	A 1 V	9251520	0082	8	IG 1"	2,0	63	206	84	1,57
solar, brass, horizontal										
10 bar 180 °C	A 22 S	9251600*	0082	12	22 mm	1,2	63	165	99	1,14
	A ¾ S	9251610	0082	12	IG ¾"	1,2	63	165	85	0,94
	A 1 S	9251620*	0082	8	IG 1"	2,0	63	182	88	1,10
	A 1¼ S	9251630	0082	8	IG 1¼"	3,7	63	202	88	1,40
	A 1½ S	9251640	0082	8	IG 1½"	5,0	63	236	88	1,43
solar, brass, vertical										
10 bar 180 °C	A 22 S V	9251700	0082	8	22 mm	1,2	63	216	104	1,67
	A ¾ S V	9251710	0082	8	IG ¾"	1,2	63	206	84	1,90
	A 1 S V	9251720	0082	8	IG 1"	2,0	63	206	84	1,90
Twist, brass, rotatable										
10 bar 110 °C	AT 22	9257200*	0092	6	22 mm	1,2	63	218	109	1,88
	AT 28	9257210	0092	6	28 mm	2,0	63	219	111	2,20
	AT ¾	9257220*	0092	6	IG ¾"	1,2	63	207	85	1,90
	AT 1	9257230*	0092	6	IG 1"	2,0	63	214	100	1,88
	AT 1¼	9257240*	0092	4	IG 1¼"	3,8	63	264	100	2,60
	AT 1½	9257250*	0092	4	IG 1½"	5,0	63	264	100	2,48

* on request

Exvoid Accessories

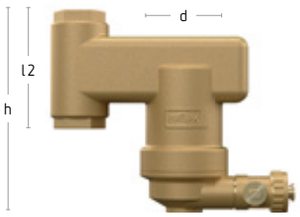
Exiso

- Exiso thermal insulation for brass separators
- comprising two shape-stable and temperature-stable, adaptable, form-fitting rigid foam semi-shells, with a snap closure

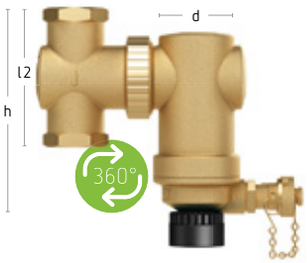
Type	Art. No.	DG	Weight [kg]
Exiso for horizontal/vertical separators			
Exiso A/D 22–1½	9254811	0082	0,07
Exiso A/D 2	9254801	0082	0,14
Exiso for turnable separators Ex-Twist			
Exiso AT/DT/TWT 22–1	9583510	0082	0,17
Exiso AT/DT 1¼–1½	9583530	0082	0,25

Exdirt dirt and sludge separator

Exdirt M horizontal with EasyClip

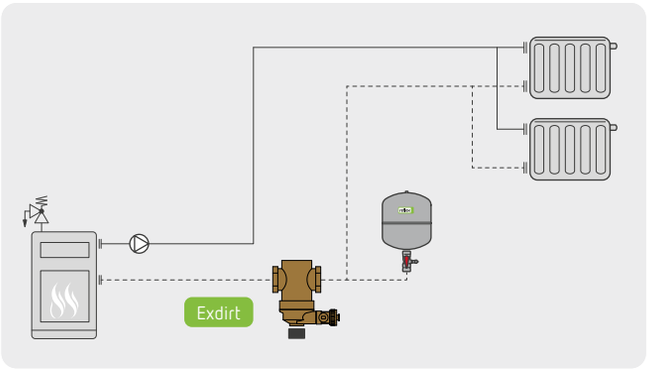


Exdirt vertical

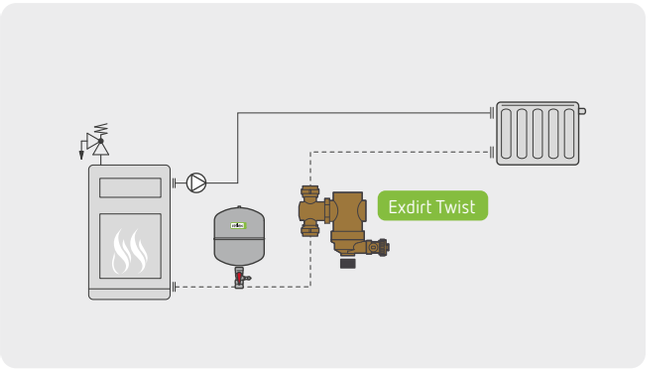


Exdirt Twist M with EasyClip

Exdirt Brass with EasyClip cutaway model



Exdirt brass system – schematic diagram



Exdirt Twist brass system – schematic diagram

Technical Features

- connection diameter: 22 mm – 2" (DN 20 – DN 50)
- volume flow: 1,25 – 8,0 m^3/h (v ~ 1,0 m/s)
- Exiso heat insulation: 22 mm – 2" (DN 20 – DN 50)
- brass casing
- area of application: 110 °C/10 bar
- installation position:
  → horizontal/vertical
  → 360 °, variable rotation (non-ratcheting) by hand
- water/glycol mixture up to a mixing ratio of 50/50 (min. 25 %)
- removes circulating free dirt and sludge particles down to 5 µm
- **Exferro Easy Clip high-performance magnet:** the strength of the magnetic field exerts maximum impact on the fluid in the separator, enabling the optimum separation of ferromagnetic dirt particles, such as magnetite

Exdirt dirt and sludge separator

CE

	Type	Art. No.	DG	PQ [pce]	Connection c	V_{max} [m^3/h]	Ø d [mm]	Height h [mm]	Installation length l2 [mm]	Weight [kg]
Plug-in magnet, brass, horizontal										
10 bar 110 °C	D 22 M	9256600*	0082	12	22 mm	1,2	63	122	106	0,90
	D ¾ M	9256610	0082	12	IG ¾"	1,2	63	122	85	1,00
	D 1 M	9256620	0082	12	IG 1"	2,0	63	139	88	1,20
	D 1¼ M	9256630	0082	8	IG 1¼"	3,7	63	159	88	1,30
	D 1½ M	9256640	0082	8	IG 1½"	5,0	63	193	88	1,50
	D 2 M	9256650	0082	1	IG 2"	7,5	100	234	132	3,02
Plug-in magnet, brass, vertical										
10 bar 110 °C	D ¾ VM	9256710	0082	8	IG ¾"	1,2	63	163	84	1,80
	D 1 VM	9256720	0082	8	IG 1"	2,0	63	163	84	1,80
Brass, horizontal										
10 bar 110 °C	D 22	9252000	0082	12	22 mm	1,2	63	103	106	0,92
	D ¾	9252010	0082	12	IG ¾"	1,2	63	103	85	1,00
	D 1	9252020	0082	12	IG 1"	2,0	63	120	88	1,20
	D 1¼	9252030	0082	8	IG 1¼"	3,7	63	140	88	1,12
	D 1½	9252040	0082	8	IG 1½"	5,0	63	174	88	1,32
	D 2	9252050	0082	1	IG 2"	7,5	100	215	132	3,10
Brass, vertical										
10 bar 110 °C	D 22 V	9252500*	0082	8	22 mm	1,2	63	154	104	1,58
	D ¾ V	9252510	0082	8	IG ¾"	1,2	63	144	84	1,80
	D 1 V	9252520	0082	8	IG 1"	2,0	63	144	84	1,61
Twist, plug-in magnet, brass, rotatable										
10 bar 110 °C	DT 22 M	9257300*	0092	8	22 mm	1,2	63	176	109	1,98
	DT 28 M	9257310	0092	8	28 mm	2,0	63	177	111	2,10
	DT ¾ M	9257320	0092	8	IG ¾"	1,2	63	164	85	1,83
	DT 1 M	9257330	0092	8	IG 1"	2,0	63	171	100	1,97
	DT 1¼ M	9257340	0092	6	IG 1¼"	3,8	63	221	100	2,32
	DT 1½ M	9257350	0092	6	IG 1½"	5,0	63	221	100	2,48

* on request

Exdirt Accessories

CE

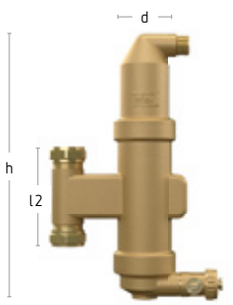
Exiso

- Exiso thermal insulation for brass separators
- comprising two shape-stable and temperature-stable, adaptable, form-fitting rigid foam semi-shells, with a snap closure

Type	Art. No.	DG	Weight [kg]
Exiso for horizontal/vertical separators			
Exiso A/D 22 – 1½	9254811	0082	0,07
Exiso A/D 2	9254801	0082	0,14
Exiso for turnable separators Ex-Twist			
Exiso AT/DT/TWT 22 – 1	9583510	0082	0,17
Exiso AT/DT 1¼ – 1½	9583530	0082	0,25

Extwin combined microbubble, dirt and sludge separator

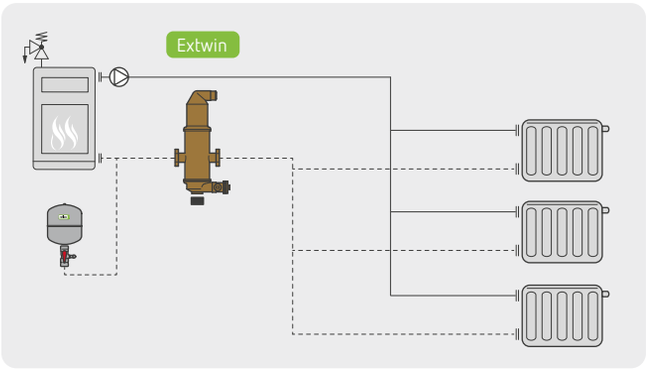
Extwin M horizontal with EasyClip



Extwin vertical

Extwin Twist M with EasyClip

Extwin Brass with EasyClip cutaway model



Extwin brass system – schematic diagram

Technical Features

- connection variants: thread/clamping ring
- connection diameter: 22 mm – 1" (DN 20 – DN 25)
- volume flow: 1,25 – 2,0 m^3/h (v ~ 1,0 m/s)
- brass casing
- installation position:
  → horizontal/vertical
- area of application: 110 °C/10 bar
- water/glycol mixture up to a mixing ratio of 50/50 (min. 25 %)
- **Exferro Easy Clip high-performance magnet:** the strength of the magnetic field exerts maximum impact on the fluid in the separator, enabling the optimum separation of ferromagnetic dirt particles, such as magnetite

Extwin combined microbubble, dirt and sludge separator

CE

	Type	Art. No.	DG	PQ [pce]	Connection c	V_{max} [m³/h]	Ø d [mm]	Height h [mm]	Installation length l2 [mm]	Weight [kg]
Plug-in magnet, brass, horizontal										
10 bar 110 °C	TW 22 M	9257600	0082	6	22 mm	1,2	63	275	106	1,80
	TW 1 M	9257610	0082	6	IG 1"	2,0	63	275	88	1,70
Plug-in magnet, brass, vertical										
10 bar 110 °C	TW 22V-M	9257700	0082	6	22 mm	1,2	63	285	98	1,90
Brass, horizontal										
10 bar 110 °C	TW 22	9253000	0082	6	22 mm	1,2	63	256	106	1,80
	TW 1	9253010	0082	6	IG 1"	2,0	63	259	88	1,63
Brass, vertical										
10 bar 110 °C	TW 22V	9253500	0082	6	22 mm	1,2	65	266	98	2,10
Twist, plug-in magnet, rotatable										
10 bar 110 °C	TWT 22 M	9257100*	0092	4	22 mm	1,2	63	285	109	2,54
	TWT 28 M	9257110*	0092	4	28 mm	2,0	63	285	111	2,67
	TWT ¾ M	9257120	0092	4	IG ¾"	1,2	63	285	85	2,40
	TWT 1 M	9257130	0092	4	IG 1"	2,0	63	285	100	2,50
	TWT 1¼ M	9257140	0092	4	IG 1¼"	3,8	63	285	100	2,87
	TWT 1½ M	9257150	0092	4	IG 1½"	5,0	63	285	100	3,03

* on request

Exiso

- Exiso thermal insulation for brass separators
- comprising two shape-stable and temperature-stable, adaptable, form-fitting rigid foam semi-shells, with a snap closure

Type	Art. No.	DG	Weight [kg]
Exiso for turnable separators Ex-Twist			
Exiso AT / DT / TWT 22 – 1	9583510	0082	0,17
Exiso TWT 1¼ – 1½	9583520	0082	0,16

Theoretical principles

Steel separators — pressure loss diagram

Connection	K_{VS} [m³/h]	V_{max} [m³/h]
DN 50	72,2	12,50
DN 65	121,7	20,00
DN 80	158,5	27,00
DN 100	244,3	47,00
DN 125	351,3	72,00
DN 150	487,9	108,00
DN 200	780,6	180,00
DN 250	1.096,4	288,00
DN 300	1.459,5	405,00
DN 350	1.790,3	500,00
DN 400	2.242,7	650,00
DN 450	2.687,9	850,00
DN 500	3.196,0	1.060,00
DN 600	4.416,7	1.530,00

Example: Heating circuit 70/55 °C; Heat generator output 600 kW

1. Volumetric flow calculation

$$\dot{V} = \frac{600\ \text{kW}}{4{,}2\ \text{kJ}/(\text{kg}\times\text{K})\times(70-55)\ \text{K}} \times 3.600\,\frac{\text{s}}{\text{h}} \times \frac{1\ \text{m}^3}{1.000\ \text{kg}}$$

$= 34{,}3\ \text{m}^3/\text{h}$

→ Range presented in a table: **DN 100 with K_{VS} = 244,3 m³/h** e.g. Exdirt D 100

$$\Delta p = \left(\frac{34{,}3\ \text{m}^3/\text{h}}{244{,}3\ \text{m}^3/\text{h}}\right)^2 \times 1\ \text{bar} = 19{,}7\times10^{-3}\ \text{bar} \qquad | \times 100\ \text{kPa/bar}$$

$= 1{,}97\ \text{kPa}$

Connection	K_{VS} [m³/h]	V_{max} [m³/h]
Exdirt V		
DN 50 V	64,5	12,50
DN 65 V	109,5	20,00
DN 80 V	142,7	27,00
DN 100 V	219,8	47,00
DN 125 V	316,2	72,00
DN 150 V	439,1	108,00

Example: Heating circuit 70/55 °C; Heat generator output 80 kW

1. Volumetric flow calculation

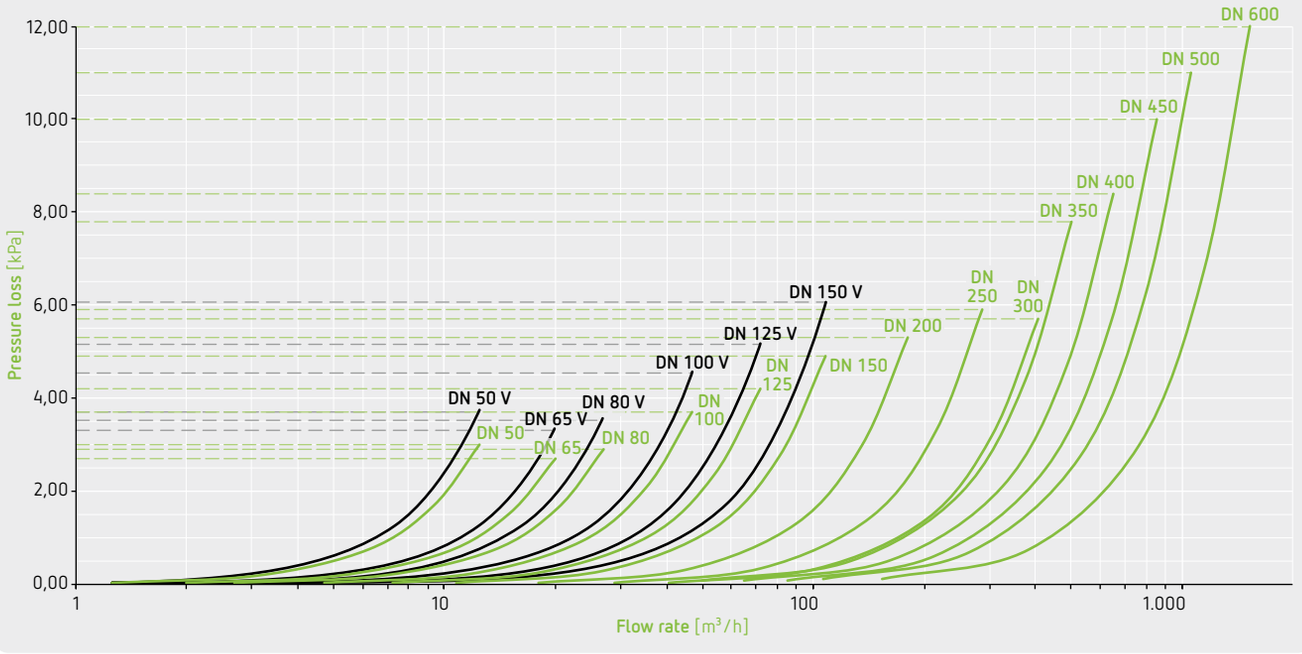
$$\dot{V} = \frac{80\ \text{kW}}{4{,}2\ \text{kJ}/(\text{kg}\times\text{K})\times(70-55)\ \text{K}} \times 3.600\,\frac{\text{s}}{\text{h}} \times \frac{1\ \text{m}^3}{1.000\ \text{kg}}$$

$= 4{,}6\ \text{m}^3/\text{h}$

→ Range presented in a table: **DN 50 V with K_{VS} = 64,5 m³/h** e.g. Exdirt D 100

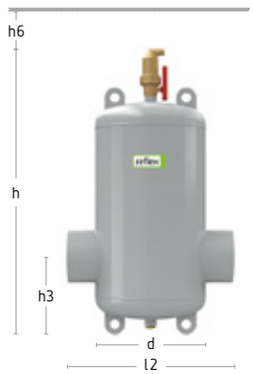
$$\Delta p = \left(\frac{4{,}6\ \text{m}^3/\text{h}}{64{,}5\ \text{m}^3/\text{h}}\right)^2 \times 1\ \text{bar} = 5{,}09\times10^{-3}\ \text{bar} \qquad | \times 100\ \text{kPa/bar}$$

$= 0{,}509\ \text{kPa}$



Steel separators

Exvoid air and microbubble separator CE

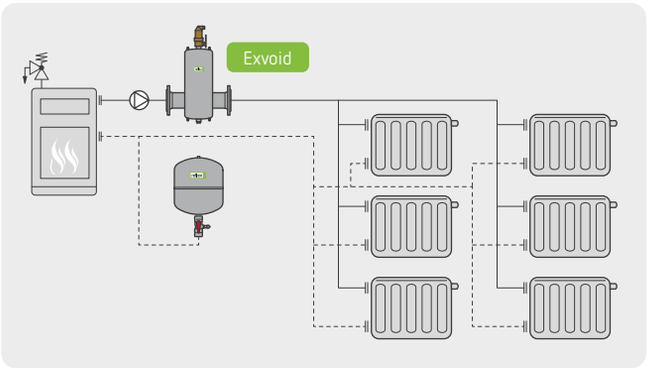


Exvoid Steel welded connection

Exvoid Steel flange connection

Exvoid Steel cutaway model

Exvoid Steel cutaway model



Exvoid steel system – schematic diagram

Technical Features

- connection DN 50 – DN 300
- volume flow: 12,5 – 405 m³/h
- Exiso heat insulation DN 50 – DN 150
- steel casing
- automatic venting with Exvoid T large and quick vent valve with integrated 3-way bottom part
- area of application: 110 °C/10 bar, other sizes upon request
- water/glycol mixture up to a mixing ratio of 50/50 (min. 25 %)

Exvoid air and microbubble separator

CE

	Type	Art. No.	DG	Connection c	V_{max} [m³/h]	Ø d [mm]	Height h [mm]	Height h3 [mm]	Height h6 [mm]	Installation length l2 [mm]	Weight [kg]
Steel, flange											
10 bar 110 °C	A 50	8251300	0083	DN 50/PN 16	12,5	132	625	153	50	350	9,00
	A 65×	8251310	0083	DN 65/PN 16	20,0	132	625	163	50	350	10,00
	A 65	8251348	0083	DN 65/PN 16	20,0	132	625	163	50	350	10,00
	A 80	8251320	0083	DN 80/PN 16	27,0	206	740	159	50	470	16,00
	A 100	8251330	0083	DN 100/PN 16	47,0	206	740	169	50	470	19,00
	A 125	8251340	0083	DN 125/PN 16	72,0	354	915	214	50	635	35,00
	A 150	8251350	0083	DN 150/PN 16	108,0	409	915	229	50	635	39,00
	A 200	8251360	0083	DN 200/PN 16	180,0	409	1.125	284	50	775	65,00
	A 250	8251370	0083	DN 250/PN 16	288,0	480	1.402	351	50	890	108,00
	A 300	8251380	0083	DN 300/PN 16	405,0	634	1.612	406	50	1.005	158,00
Steel, welded connector											
10 bar 110 °C	A 60.3	8251100	0083	60,3	12,5	132	625	153	50	260	3,00
	A 76.1	8251110	0083	76,1	20,0	132	625	163	50	260	3,00
	A 88.9	8251120	0083	88,9	27,0	206	740	159	50	370	9,00
	A 114.3	8251130	0083	114,3	47,0	206	740	169	50	370	9,00
	A 139.7	8251140	0083	139,7	72,0	354	915	214	50	525	22,00
	A 168.3	8251150	0083	168,3	108,0	354	915	229	50	525	24,00
	A 219.1	8251160	0083	219,1	180,0	409	1.125	284	50	650	44,00
	A 237.0	8251170	0083	273,0	288,0	480	1.402	351	50	750	70,00
	A 323.9	8251180	0083	323,9	405,0	634	1.612	406	50	850	112,00

other designs (higher operating temperatures, higher operating pressures) are available upon request.
* 4-hole flange connection

Exvoid Accessories

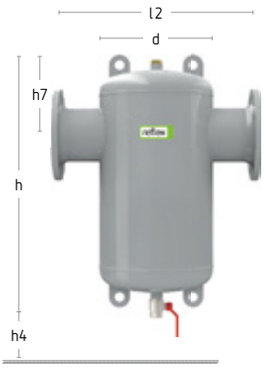
CE

Exiso

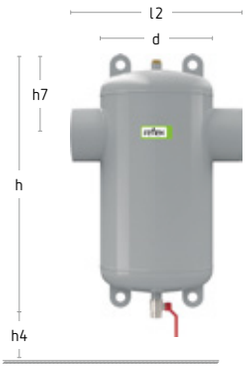
- thermal insulation for Exvoid and Exdirt steel models
- comprising two shape-stable and temperature-stable, adaptable, form-fitting rigid foam semi-shells, with a snap closure
- not suitable for vertical separators, separators with a service flange and Extwin units

Type	Art. No.	DG	Weight [kg]
thermal insulation for Exvoid and Exdirt steel models			
Exiso DN 50 – 65 (60.3 – 76.1)	9254831	0083	0,40
Exiso DN 80 – 100 (88.9 – 114.3)	9254841	0083	0,55
Exiso DN 125 – 150 (139.7 – 168.3)	9254851	0083	2,20

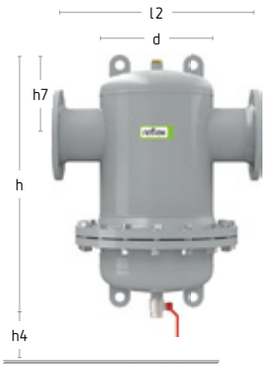
Exdirt dirt and sludge separator



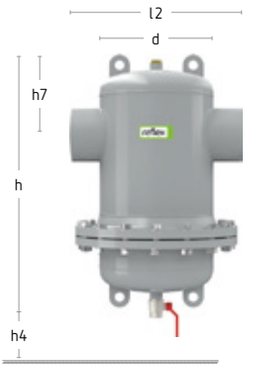
Exdirt Steel flange connection



Exdirt Steel welded connection



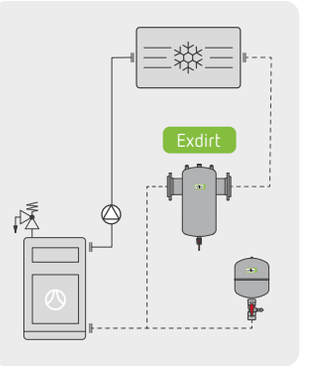
Exdirt R Steel flange connection with service flange



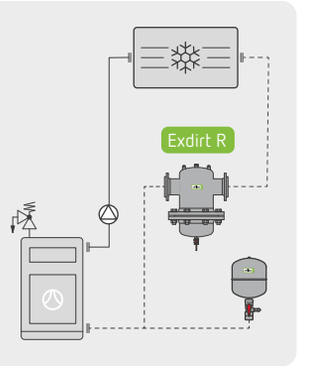
Exdirt R Steel welded connection with service flange

Exdirt Steel cutaway model

Exdirt Steel function diagram



Exdirt steel system – schematic diagram



Exdirt R steel system – schematic diagram

Technical Features

- connection: DN 50 – DN 300
- volume flow: 12,5 – 405 m^3/h
- Exiso heat insulation DN 50 – DN 150, for models without service flange
- steel casing
- optional: Exferro high-power magnet for optimum separation of ferromagnetic dirt particles such as magnetite
- area of application: 110 °C/10 bar, other sizes upon request
- water/glycol mixture up to a mixing ratio of 50/50 (min. 25 %)

Exdirt dirt and sludge separator

CE

	Type	Art. No.	DG	Connection c	V_{max} [m³/h]	Ø d [mm]	Height h [mm]	Height h7 [mm]	Height h4 [mm]	Installation length l2 [mm]	Weight [kg]
Steel, flange											
10 bar 110 °C	D 50	8252300	0083	DN 50/PN 16	12,5	132	521	165	370	350	9,10
	D 65 ×	8252310	0083	DN 65/PN 16	20,0	132	521	175	370	350	10,30
	D 65	8252318	0083	DN 65/PN 16	20,0	132	521	175	370	350	10,30
	D 80	8252320	0083	DN 80/PN 16	27,0	206	636	170	370	470	17,60
	D 100	8252330	0083	DN 100/PN 16	47,0	206	636	180	370	470	19,00
	D 125	8252340	0083	DN 125/PN 16	72,0	354	811	225	430	635	35,00
	D 150	8252350	0083	DN 150/PN 16	108,0	354	811	240	430	635	39,00
	D 200	8252360	0083	DN 200/PN 16	180,0	409	1.021	295	430	775	65,00
	D 250	8252370	0083	DN 250/PN 16	288,0	480	1.324	385	500	890	108,00
	D 300	8252380	0083	DN 300/PN 16	405,0	634	1.535	413	500	1.005	156,00
Steel, flange, service flange											
10 bar 110 °C	D 50 R	8252400	0083	DN 50/PN 16	12,5	132	521	165	370	350	18,00
	D 65 R ×	8252410	0083	DN 65/PN 16	20,0	132	521	175	370	350	19,00
	D 65 R	8252418	0083	DN 65/PN 16	20,0	132	521	175	370	350	19,00
	D 80 R	8252420	0083	DN 80/PN 16	27,0	206	636	170	430	470	43,00
	D 100 R	8252430	0083	DN 100/PN 16	47,0	206	636	180	430	470	51,00
	D 125 R	8252440	0083	DN 125/PN 16	72,0	354	811	225	550	635	89,00
	D 150 R	8252450	0083	DN 150/PN 16	108,0	354	811	240	550	635	94,00
	D 200 R	8252460	0083	DN 200/PN 16	180,0	409	1.021	295	650	775	121,00
	D 250 R	8252470	0083	DN 250/PN 16	288,0	480	1.324	358	850	890	255,00
	D 300 R	8252480	0083	DN 300/PN 16	405,0	634	1.535	413	1.000	1.005	390,00
Steel, welded connector											
10 bar 110 °C	D 60.3	8252100	0083	60,3	12,5	132	521	165	370	260	4,10
	D 76.1	8252110	0083	76,1	20,0	132	521	175	370	260	4,30
	D 88.9	8252120	0083	88,9	27,0	206	636	170	370	370	9,70
	D 114.3	8252130	0083	114,3	47,0	206	636	180	370	370	10,20
	D 139.7	8252140	0083	139,7	72,0	354	811	225	430	525	25,50
	D 168.3	8252150	0083	168,3	108,0	354	811	240	430	525	26,80
	D 219.1	8252160	0083	219,1	180,0	409	1.021	295	430	650	44,00
	D 273.0	8252170	0083	273,0	288,0	480	1.324	358	500	750	70,00
	D 323.9	8252180	0083	323,9	405,0	634	1.535	413	500	850	112,00
Steel, welded connector, service flange											
10 bar 110 °C	D 60.3 R	8252200	0083	60,3	12,5	132	521	165	370	260	16,00
	D 76.1 R	8252210	0083	76,1	20,0	132	521	175	370	260	23,00
	D 88.9 R	8252220	0083	88,9	27,0	206	636	170	430	370	32,00
	D 114.3 R	8252230	0083	114,3	47,0	206	636	180	430	370	37,00
	D 139.7 R	8252240	0083	139,7	72,0	354	811	225	550	525	85,00
	D 168.3 R	8252250	0083	168,3	108,0	354	811	240	550	525	78,00
	D 219.1 R	8252260	0083	219,1	180,0	409	1.021	295	650	650	111,00
	D 273.0 R	8252270	0083	273,0	288,0	480	1.324	358	850	750	158,00
	D 323.9 R	8252280	0083	323,9	405,0	634	1.535	413	1.000	850	330,00

other designs (higher operating temperatures, higher operating pressures) are available upon request.
* 4-hole flange connection

Exdirt Accessories

Exferro

- magnetic insert for Exdirt and Extwin made of steel for collecting ferromagnetic particles during sludge and dirt separation
- magnetic rod screwed into immersion coupling/T-piece

Exiso

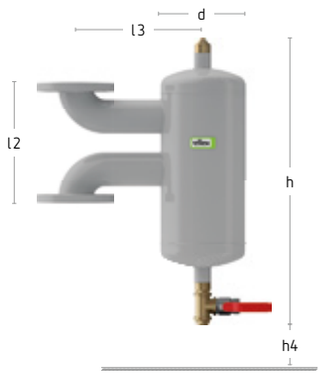
- thermal insulation for Exvoid and Exdirt steel models
- comprising two shape-stable and temperature-stable, adaptable, form-fitting rigid foam semi-shells, with a snap closure
- not suitable for vertical separators, separators with a service flange and Extwin units

Exvoid

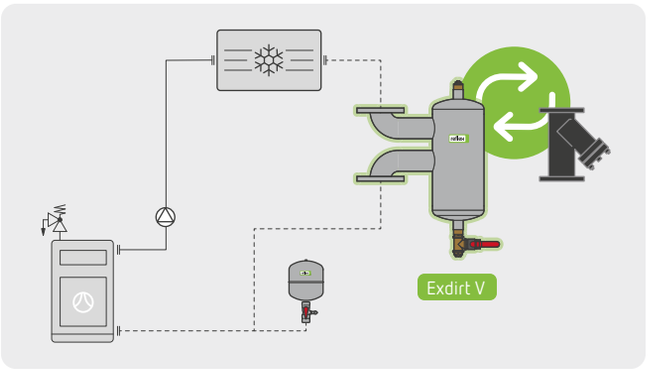
- for Exvoid air and microbubble separator made from steel with 3-way valve bottom part
- can be shut off for easy replacement without having to interrupt operation; optional supplementary kit for dirt and sludge separators
- bypass can be used to flush the separator or as a filling and emptying connection

Type	Art. No.	DG	Weight [kg]
Exvoid T			
Exvoid T 1	9255805	0082	1,40
Exferro magnetic insert for steel Exdirt and Extwin			
Exferro D/TW 50–65 (60.3–76.1)	9258340	0083	0,93
Exferro D/TW 80–100 (88.9–114.3)	9258350	0083	1,40
Exferro D/TW 125–150 (139.7–168.3)	9258360	0083	0,74
Exferro D/TW 200 (219.1)	9258370	0083	0,80
Exferro D/TW 250–300 (273.0–323.9)	9258380	0083	4,70
thermal insulation for Exvoid and Exdirt steel models			
Exiso DN 50–65 (60.3–76.1)	9254831	0083	0,40
Exiso DN 80–100 (88.9–114.3)	9254841	0083	0,55
Exiso DN 125–150 (139.7–168.3)	9254851	0083	2,20

Exdirt V dirt and sludge separator for vertical installation



Exdirt V



Exdirt V as replacement for a dirt trap thanks to standard installation length – schematic diagram

Technical Features

- connection: DN 50 – DN 150 PN 6 / PN 16
- standard installation length F1 according to DIN EN 558:2017-05
  → an existing dirt trap can be replaced on a one-to-one basis (before replacement, all the installed devices must be checked for the technology to be used)
- drain connection/venting connection: G 1"
- max. permissible operating overpressure: 10 bar
- max. permissible operating temperature: 110 °C
- other sizes upon request
- volume flow: 12,5 – 108 m^3/h
- water/glycol mixture up to a mixing ratio of 50/50 (min. 25 %)
- removal of particles up to 5 micrometres in size
- works without filter elements
- no clogging, rather permanently free flow opening for the system water
- cleaning without interruption of operation
- optional: Exferro high-power magnet for optimum separation of ferromagnetic dirt particles such as magnetite

	Type	Art. No.	DG	Connection c	V_{max} [m^3/h]	Ø d [mm]	Height h [mm]	Height h4 [mm]	Installation length l2 [mm]	Length l3 [mm]	Weight [kg]
Steel, flange											
6 bar 110 °C	D 50 V F1	8259501	0083	DN 50/PN 6	12,5	206	569	370	230	296	12,20
	D 65 V F1	8259511	0083	DN 65/PN 6	20,0	206	617	370	290	306	15,80
	D 80 V F1	8259521	0083	DN 80/PN 6	27,0	206	667	370	310	313	19,70
	D 100 V F1	8259531	0083	DN 100/PN 6	47,0	206	717	370	350	323	24,40
	D 125 V F1	8259541	0083	DN 125/PN 6	72,0	354	968	430	400	412	59,10
	D 150 V F1	8259551	0083	DN 150/PN 6	108,0	354	1.018	430	480	430	67,20
10 bar 110 °C	D 50 V F1	8259500	0083	DN 50/PN 16	12,5	206	569	370	230	296	16,10
	D 65 V F1	8259510	0083	DN 65/PN 16	20,0	206	617	370	290	306	16,90
	D 80 V F1	8259520	0083	DN 80/PN 16	27,0	206	667	370	310	313	21,70
	D 100 V F1	8259530	0083	DN 100/PN 16	47,0	206	717	370	350	323	26,60
	D 125 V F1	8259540	0083	DN 125/PN 16	72,0	354	968	430	400	412	62,20
	D 150 V F1	8259550	0083	DN 150/PN 16	108,0	354	1.018	430	480	430	71,80

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

Exdirt V Accessories

Exferro

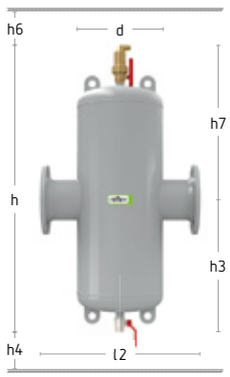
- magnetic insert for Exdirt and Extwin made of steel for collecting ferromagnetic particles during sludge and dirt separation
- magnetic rod screwed into immersion coupling/T-piece

Exvoid

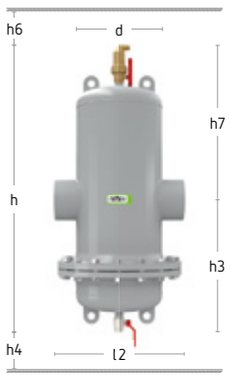
- for Exvoid air and microbubble separator made from steel with 3-way valve bottom part
- can be shut off for easy replacement without having to interrupt operation; optional supplementary kit for dirt and sludge separators
- bypass can be used to flush the separator or as a filling and emptying connection

Type	Art. No.	DG	Weight [kg]
Exvoid T			
Exvoid T 1	9255805	0082	1,40
Exferro magnetic insert for steel Exdirt and Extwin			
Exferro D/TW 50–65 (60.3–76.1)	9258340	0083	0,93
Exferro D/TW 80–100 (88.9–114.3)	9258350	0083	1,40
Exferro D/TW 125–150 (139.7–168.3)	9258360	0083	0,74

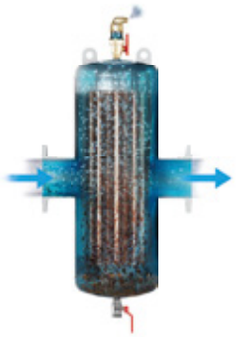
Extwin combined microbubble, dirt and sludge separator



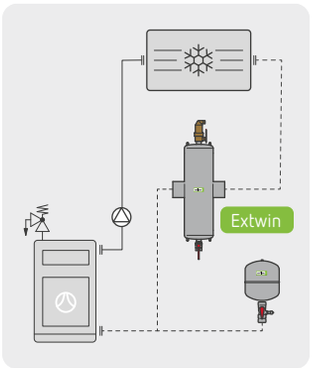
Extwin Steel flange connection



Extwin Steel welded connection with service flange



Extwin function diagram



Extwin R steel system – schematic diagram

Technical Features

- models with service flange have a removable bottom part for easier maintenance
- connection: DN 50 – DN 300
- volume flow: 12,5 – 405 m^3/h
- area of application: 110 °C / 10 bar
- automatic venting with Exvoid T large and quick vent valve with integrated 3-way bottom part
- optional: Exferro high-power magnet for optimum separation of ferromagnetic dirt particles such as magnetite
- water / glycol mixture up to a mixing ratio of 50 / 50 (min. 25 %)

	Type	Art. No.	DG	Connection c	V_{max} [m^3/h]	Ø d [mm]	Height h [mm]	Height h3 [mm]	Height h7 [mm]	Height h6 [mm]	Height h4 [mm]	Installation length l2 [mm]	Weight [kg]
Steel, flange													
10 bar 110 °C	TW 50	8253300	0083	DN 50/PN 16	12,5	132	785	450	335	50	370	350	10,00
	TW 65×	8253310	0083	DN 65/PN 16	20,0	132	785	450	335	50	370	350	10,00
	TW 65	8253319	0083	DN 65/PN 16	20,0	132	785	450	335	50	370	350	10,00
	TW 80	8253320	0083	DN 80/PN 16	27,0	206	940	527	413	50	370	470	19,50
	TW 100	8253330	0083	DN 100/PN 16	47,0	206	940	527	413	50	370	470	32,50
	TW 125	8253340	0083	DN 125/PN 16	72,0	354	1.200	658	542	50	430	635	41,00
	TW 150	8253350	0083	DN 150/PN 16	108,0	354	1.200	658	542	50	430	635	47,40
	TW 200	8253360	0083	DN 200/PN 16	180,0	409	1.470	792	678	50	430	775	79,00
	TW 250	8253370	0083	DN 250/PN 16	288,0	480	1.916	1.001	915	50	500	890	156,00
	TW 300	8253380	0083	DN 300/PN 16	405,0	634	2.237	1.161	1.076	50	500	1.005	229,00

Extwin combined microbubble, dirt and sludge separator CE

	Type	Art. No.	DG	Connection c	V_{max} [m^3/h]	Ø d [mm]	Height h [mm]	Height h3 [mm]	Height h7 [mm]	Height h6 [mm]	Height h4 [mm]	Installation length l2 [mm]	Weight [kg]
Steel, flange, service flange													
10 bar 110 °C	TW 50 R	8253400	0083	DN 50/PN 16	12,5	132	785	450	335	50	370	350	18,00
	TW 65 R×	8253410	0083	DN 65/PN 16	20,0	132	785	450	335	50	370	350	19,00
	TW 65 R	8253418	0083	DN 65/PN 16	20,0	132	785	450	335	50	370	350	19,00
	TW 80 R	8253420	0083	DN 80/PN 16	27,0	206	940	527	413	50	550	470	43,00
	TW 100 R	8253430	0083	DN 100/PN 16	47,0	206	940	527	413	50	550	470	51,00
	TW 125 R	8253440	0083	DN 125/PN 16	72,0	354	1.200	658	542	50	750	635	89,00
	TW 150 R	8253450	0083	DN 150/PN 16	108,0	354	1.200	658	542	50	750	635	94,00
	TW 200 R	8253460	0083	DN 200/PN 16	180,0	409	1.470	792	678	50	1.000	775	138,00
	TW 250 R	8253470	0083	DN 250/PN 16	288,0	480	1.916	1.001	915	50	1.350	890	355,00
	TW 300 R	8253480	0083	DN 300/PN 16	405,0	634	2.237	1.161	1.076	50	1.850	1.005	500,00
Steel, welded connector													
10 bar 110 °C	TW 60.3	8253100	0083	60,3	12,5	132	785	450	335	50	370	260	4,00
	TW 76.1	8253110	0083	76,1	20,0	132	785	450	335	50	370	260	5,00
	TW 88.9	8253120	0083	88,9	27,0	206	940	527	413	50	370	370	12,00
	TW 114.3	8253130	0083	114,3	47,0	206	940	527	413	50	370	370	14,00
	TW 139.7	8253140	0083	139,7	72,0	354	1.200	658	542	50	430	525	34,00
	TW 168.3	8253150	0083	168,3	108,0	354	1.200	658	542	50	430	525	31,00
	TW 219.1	8253160	0083	219,1	180,0	409	1.470	792	678	50	430	650	113,00
	TW 273.0	8253170	0083	273,0	288,0	480	1.916	1.001	915	50	500	750	215,00
	TW 323.9	8253180	0083	323,9	405,0	634	2.237	1.161	1.076	50	500	850	265,00
Steel, welded connector, service flange													
10 bar 110 °C	TW 60.3 R	8253200	0083	60,3	12,5	132	785	450	335	50	370	260	13,00
	TW 76.1 R	8253210	0083	76,1	20,0	132	785	450	335	50	370	260	13,00
	TW 88.9 R	8253220	0083	88,9	27,0	206	940	527	413	50	550	370	34,00
	TW 114.3 R	8253230	0083	114,3	47,0	206	940	527	413	50	550	370	38,00
	TW 139.7 R	8253240	0083	139,7	72,0	354	1.200	658	542	50	750	525	102,00
	TW 168.3 R	8253250	0083	168,3	108,0	354	1.200	658	542	50	750	525	78,00
	TW 219.1 R	8253260	0083	219,1	180,0	409	1.470	792	678	50	1.000	650	182,00
	TW 273.0 R	8253270	0083	273,0	288,0	480	1.916	1.001	915	50	1.350	750	180,00
	TW 323.9 R	8253280	0083	323,9	405,0	634	2.237	1.161	1.076	50	1.850	850	450,00

other designs (higher operating temperatures, higher operating pressures) are available upon request.
* 4-hole flange connection

Extwin Accessories

Exferro

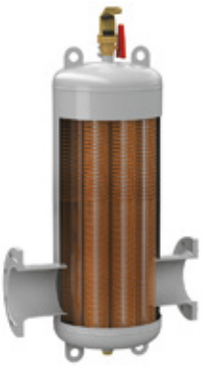
- magnetic insert for Exdirt and Extwin made of steel for collecting ferromagnetic particles during sludge and dirt separation
- magnetic rod screwed into immersion coupling/T-piece

Exvoid

- for Exvoid air and microbubble separator made from steel with 3-way valve bottom part
- can be shut off for easy replacement without having to interrupt operation; optional supplementary kit for dirt and sludge separators
- bypass can be used to flush the separator or as a filling and emptying connection

Type	Art. No.	DG	Weight [kg]
Exvoid T			
Exvoid T 1	9255805	0082	1,40
Exferro magnetic insert for steel Exdirt and Extwin			
Exferro D/TW 50–65 (60.3–76.1)	9258340	0083	0,93
Exferro D/TW 80–100 (88.9–114.3)	9258350	0083	1,40
Exferro D/TW 125–150 (139.7–168.3)	9258360	0083	0,74
Exferro D/TW 200 (219.1)	9258370	0083	0,80
Exferro D/TW 250–300 (273.0–323.9)	9258380	0083	4,70

Exvoid HC, Exdirt HC and Extwin HC CE



Exvoid HC flange connection cutaway model

Exvoid HC welded connection

Exdirt HC flange connection cutaway model

Exdirt HC welded connection with service flange

Extwin HC flange connection cutaway model

Extwin HC welded connection with service flange

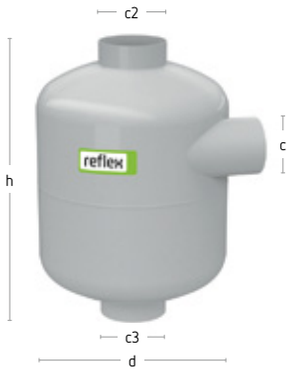
Technical Features

- all Reflex steel separators are available as a Hi-Cap version in addition to the standard configuration
- the Hi-Cap configuration delivers high volumetric flows and is used for flow speeds of 1,5 m/s to 3,0 m/s
- higher flow speeds and thus higher flow rates cause the flow characteristics to change on entry into the body. The flow and idle zones shift. Enlarging the body enables the best possible consideration of this change in flow behaviour to ensure that continued maximum separation performance is still guaranteed in the high flows
- prices and delivery times available on request

Separation technology accessories CE

Expansion trap

- expansion traps are installed in the discharge pipe of safety valves and are used to separate the steam and water phases. A water drain pipe must be connected at the low point of the expansion trap that can safely and easily remove escaping heating water. The steam discharge pipe must be routed from the high point of the expansion trap to the outside.
- for the connection to the safety valves of heat generators to separate water/vapour mixtures according to DIN EN 12828
- area of application: 110 °C/10 bar
- for installation in the blow-off line directly alongside the safety valve



	Type	Art. No. grey	DG	Volume [l]	Connection c/c2/c3	Ø d [mm]	Height h [mm]	Weight [kg]
10 bar 110 °C	T 170	8680000	0073	8	DN 50/65/65	206	328	3,15
	T 270	8681000	0073	17	DN 65/80/80	280	400	5,00
	T 380	8682000	0073	42	DN 80/100/100	409	528	11,00
	T 480	8683000	0073	93	DN 125/150/150	480	710	19,45
	T 550	8684000	0073	199	DN 150/200/200	634	896	32,30

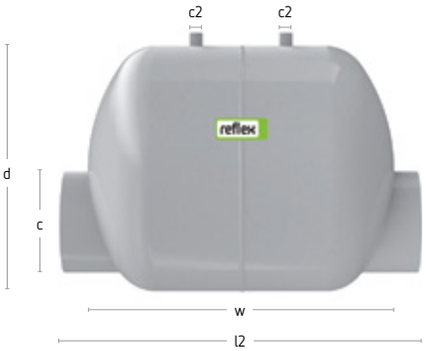
other sizes upon request

Separation technology accessories

CE

Air separator

- for the separation of gas bubbles in fluid circuits
- for low static pressures in particular
- with welded connection
- grey-coated
- max. permissible operating temperature: 110 °C
- max. permissible operating overpressure: 10 bar
- number of sleeves:
  → LA 32 – 50: 1 sleeve
  → LA 65 – 200: 2 sleeves



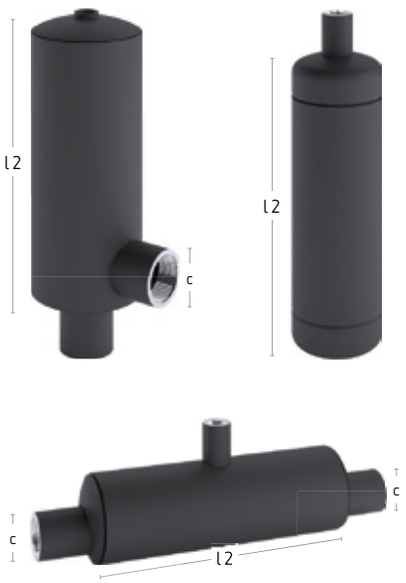
	Type	Art. No. grey	DG	Number of couplings [pce]	Connection c	Connection c2	Ø d [mm]	Width w [mm]	Installation length l2 [mm]	Weight [kg]
10 bar 110 °C	LA 32	8671000	0072	1	DN 32/PN 16	Rp ⅜"	206	278	300	2,40
	LA 40	8672000	0072	1	DN 40/PN 16	Rp ⅜"	206	278	300	2,50
	LA 50	8673000	0072	1	DN 50/PN 16	Rp ⅜"	206	278	300	2,60
	LA 65	8674000	0072	2	DN 65/PN 16	Rp ⅜"	280	355	395	4,40
	LA 80	8675000	0072	2	DN 80/PN 16	Rp ⅜"	280	355	395	4,50
	LA 100	8676000	0072	2	DN 100/PN 16	Rp ⅜"	280	355	395	5,00
	LA 125	8677000	0072	2	DN 125/PN 16	Rp ⅜"	280	355	395	5,30
	LA 150	8678000	0072	2	DN 150/PN 16	Rp ⅜"	409	550	590	12,90
	LA 200	8679000	0072	2	DN 200/PN 16	Rp ⅜"	409	550	590	13,80

Separation technology accessories

CE

Air separator

- air pots in different versions
  - → with connections
  - → without connections for on-site adaptation by welding
- optionally for vertical or horizontal installation
- 100 % factory-checked for leak tightness and primed



	Type	Art. No.	DG	Volume [l]	Connection c	Chamber size	Installation length l2 [mm]
Air separator with connections for vertical installation							
6 bar 110 °C	LT DN 50	4204721	0001	0,5	Rp 1"	DN 50	200
	LT DN 65	4203514	0001	0,8	Rp 1"	DN 65	250
	LT DN 80	4203515	0001	1,3	Rp 1¼"	DN 80	250
	LT DN 100	4203516	0001	2,5	Rp 1½"	DN 100	300
	LT DN 125	4203490	0001	3,8	Rp 2"	DN 125	300
	LT DN 150	6316055	0001	6,2	Rp 2½"	DN 150	350
	LT DN 200	6316065	0001	15,7	Rp 3"	DN 200	500
	LA DN 250	6315075	0001	24,5	114,3	DN 250	500
	LA DN 300	6315085	0001	34,4	139,7	DN 300	500
	LA DN 350	6315095	0001	50,6	168,3	DN 350	600
	LA DN 400	4202386	0001	77,7	219,1	DN 400	700

Separation technology accessories CE

	Type	Art. No.	DG	Volume [l]	Connection c	Chamber size	Installation length l2 [mm]
Air separator with connections for horizontal installation							
6 bar 110 °C	LT DN 50	4205369	0001	0,5	Rp 1"	DN 50	200
	LT DN 65	4203491	0001	0,8	Rp 1"	DN 65	250
	LT DN 80	4203493	0001	1,3	Rp 1¼"	DN 80	250
	LT DN 100	4203494	0001	2,5	Rp 1½"	DN 100	300
	LT DN 125	4203495	0001	3,8	Rp 2"	DN 125	300
	LT DN 150	6316050	0001	6,2	Rp 2½"	DN 150	350
	LT DN 200	6316060	0001	15,7	Rp 3"	DN 200	500
	LA DN 250	6315070	0001	24,5	114,3	DN 250	500
	LA DN 300	6315105	0001	34,4	139,7	DN 300	500
	LA DN 350	6315090	0001	50,6	168,3	DN 350	600
	LA DN 400	6315100	0001	77,7	219,1	DN 400	700
Air separator for on-site connections							
6 bar 110 °C	LT DN 40	4202875	0001	0,2	–	DN 40	200
	LT DN 50	4200981	0001	0,5	–	DN 50	200
	LT DN 65	4200891	0001	0,8	–	DN 65	250
	LT DN 80	4202391	0001	1,3	–	DN 80	250
	LT DN 100	4200838	0001	2,5	–	DN 100	300
	LT DN 125	4200839	0001	3,8	–	DN 125	300
	LT DN 150	4200840	0001	6,2	–	DN 150	350
	LT DN 200	4202269	0001	15,7	–	DN 200	500
	LT DN 250	4200841	0001	24,5	–	DN 250	500
	LT DN 300	6316072	0001	35,3	–	DN 300	500
	LT DN 350	6316073	0001	57,5	–	DN 350	600
	LT DN 400	6316074	0001	83	–	DN 400	700
16 bar 110 °C	LT DN 50	4202806	0001	0,5	–	DN 50	200
	LT DN 65	4202807	0001	0,8	–	DN 65	250
	LT DN 80	4202808	0001	1,3	–	DN 80	250
	LT DN 100	4202810	0001	2,5	–	DN 100	300
	LT DN 125	4202811	0001	3,8	–	DN 125	300
	LT DN 150	4202809	0001	5,5	–	DN 150	350
	LT DN 200	4202795	0001	15,7	–	DN 200	500
	LT DN 250	4202796	0001	24,5	–	DN 250	500

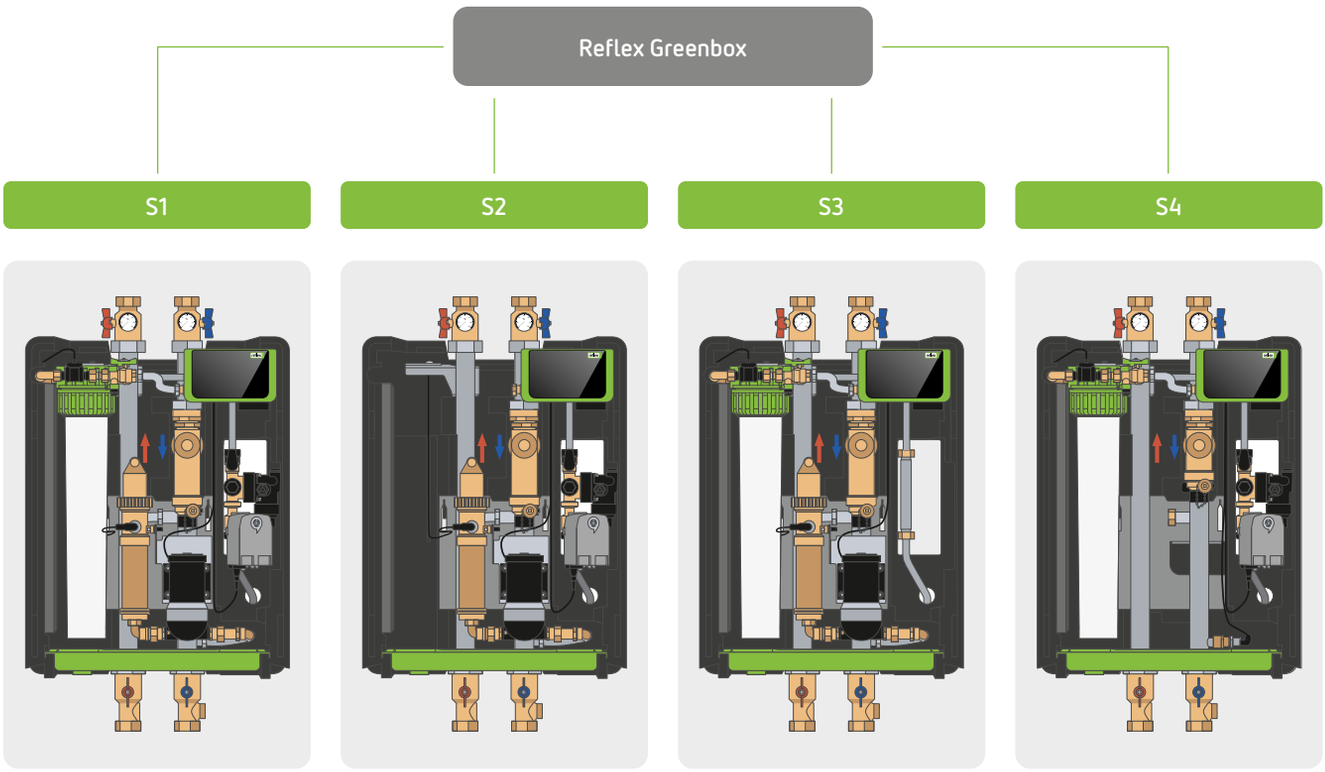
Separation technology accessories CE

Desludging vessels & magnetite desludging vessel

- for the installation in fluid circuits
- to precipitate oozes and suspended solids
- 100 % factory-checked for leak tightness and primed
- material S235JR
- max. permissible operating temperature -10 °C – 110 °C
- max. permissible operating overpressure 0 bar – 6 bar
- optionally with magnetite separation module

Type	Art. No.	DG	Volume [l]	Connection c	Height h [mm]
Desludging vessels					
EB DN 400	6505350	0001	60	DN 50	870
EB DN 500	6540000	0001	90	DN 65	870
EB DN 500	6540001	0001	120	DN 80	1.020
EB DN 600	6540100	0025	180	DN 100	1.060
EB DN 600	6540101	0025	300	DN 125	1.490
EB DN 800	6540200	0025	400	DN 150	1.240
EB DN 800	6540201	0025	750	DN 200	1.930
Magnetite desludging vessel					
M-EB DN 400	4206071	0001	60	DN 50	870
M-EB DN 500	4206072	0001	90	DN 65	870
M-EB DN 500	4206073	0001	120	DN 80	1.020
M-EB DN 600	4206074	0001	180	DN 100	1.060
M-EB DN 600	4206075	0001	300	DN 125	1.490
M-EB DN 800	4206076	0001	400	DN 150	1.240
M-EB DN 800	4206077	0001	750	DN 200	1.930

Reflex Greenbox



An overview of the standard components:

- Greenbox casing
- Pressure measurement
- Connection for static pressure maintenance (MAG)
- Analogue temperature display
- Sludge & magnetite separation
- Connection for a pump group

Our configuration software

Reflex Solutions **Pro**

rsp.reflex.de/en

Areas of Application

One box for different needs

Whether a one-family house, a kindergarden or a café at the next corner: the Reflex Greenbox is broadly applicable.

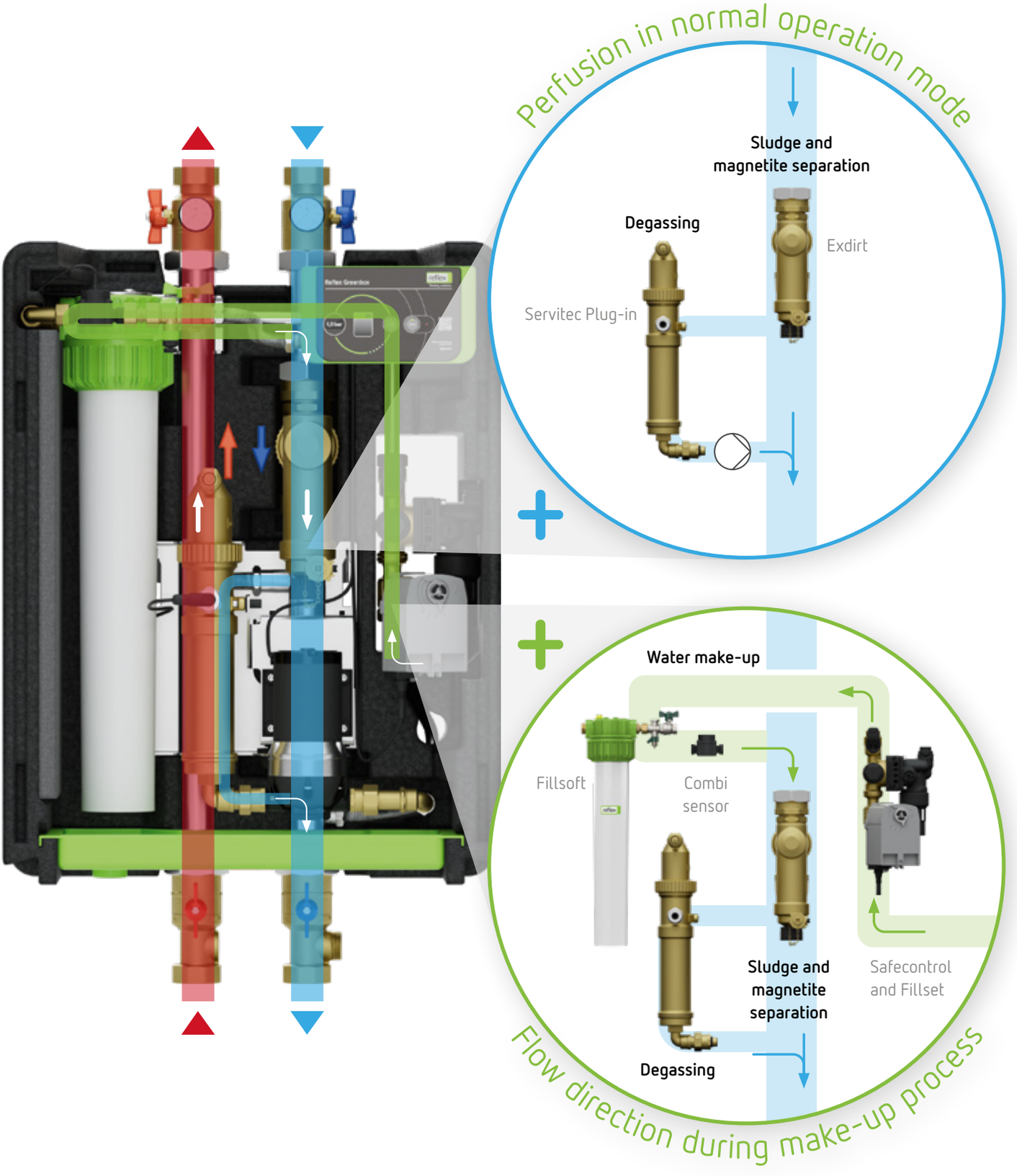
It can be combined with up to four heating circuits and thus ensures the best living comfort.

The four variants reflect specific requirements, and the modular design allows a customised application.

The following table gives orientation about the four versions.

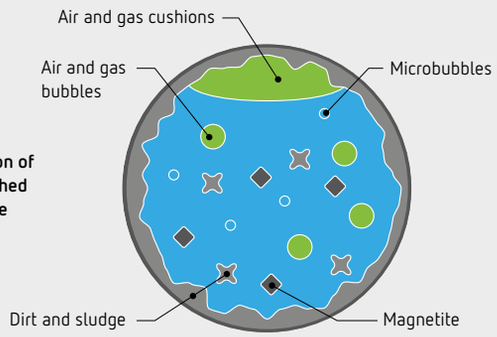
		S1	S2	S3	S4
Variable components depending on requirements	**Automatic water make-up and system separation** Fillset (system separator according to fluid category 4 of DIN EN 1717, controlled water make-up in accordance with DIN 1988)	✓	✓	×	✓
	Water treatment Fillsoft / Fillsoft Zero – including conductivity measurement & water metering function (in accordance with VDI 2035)	✓	×	✓	✓
	Vacuum spray tube degassing system Servitec Plug-in (contributes to oxygen reduction, as recommended in VDI 2035)	✓	✓	✓	×
	Venting Microbubble separator in the variant without degassing (contributes to oxygen reduction, as recommended in VDI 2035)	×	×	×	✓
Reflex Greenbox Basic unit	**Greenbox casing** **Pressure measurement** **Connection for static pressure maintenance** (secured against unintended closing according to DIN EN 12828) **Analogue temperature display** **Sludge & magnetite separation** (in accordance with VDI 2035) **Connection for a pump group**	✓	✓	✓	✓

Theoretical principles



Separation

Through separation, gas bubbles (with installed Extwin), dirt, sludge, and magnetite particles are reliably removed from the system, significantly improving water quality. This results in greater operating safety, a longer service life, less amount of maintenance and more efficient energy transfer.



Cross section of a gas-enriched heating pipe

Degassing

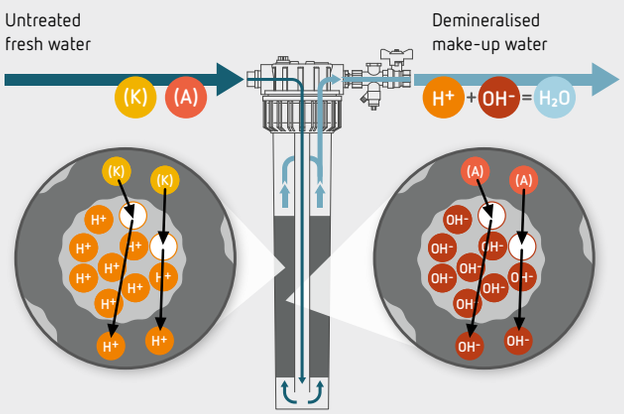
Degassing systems like the vacuum spray tube degassing system (Servitec) offer a centralised means of removing virtually all gas bubbles as well as undissolved and dissolved gases from the system water. To achieve this a partial flow of water in the system is extracted, then degassed in the Servitec under vacuum, and fed back into the system virtually gas-free.

This results in optimised system hydraulics with a gas-free heat transfer medium for more efficient heat transfer and a longer service life of heating and cooling systems.

Water make-up

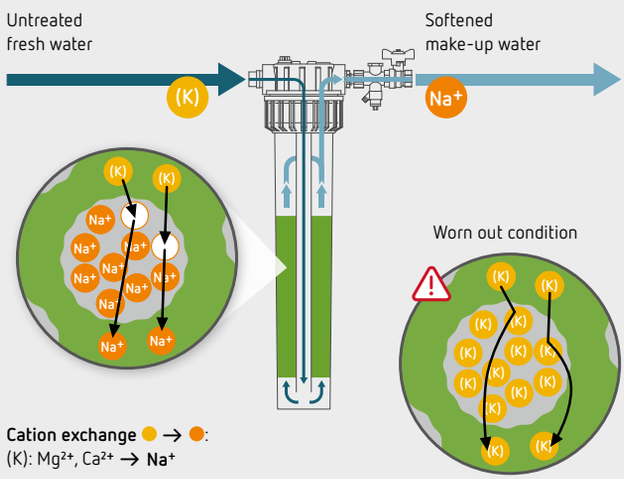
Demineralisation through Fillsoft Zero
Demineralisation is based on the principle of ion exchange of cations and anions. Fillsoft Zero enables demineralisation of filling and make-up water. All minerals are absorbed by the cartridge. If conductivity and thus the number of ions, increases, then the cartridge's capacity decreases and the cartridge needs to be replaced. The current conductivity of the water make-up water is detected by the combination sensor and can be accessed via the controller.

Softening with Fillsoft
Softening (reduction of water hardness °dH) takes place according to the cation exchange principle. Hard fresh water is fed over an exchanger column. Hardness-forming magnesium and calcium ions are replaced by sodium ions from resin beads and the water becomes soft. When the sodium ions are depleted, the cartridge needs to be replaced. The pH values and conductivity are not affected by the process.



Cation exchange ● → ●:
(K): Mg^{2+}, Ca^{2+}, $Fe^{2+/3+}$, Cu^{2+}, Al^{3+}, NH^{4+} → **H^+**

Anion exchange ● → ●:
(A): SO_4^-, Cl^-, NO_3^- → **OH^-**



Cation exchange ● → ●:
(K): Mg^{2+}, Ca^{2+} → **Na^+**

Reflex Greenbox

Reflex Greenbox

Reflex Greenbox S1

Technical Features

- for closed heating and cooling systems
- max. volume flow 4,3 m³/h
- permissible flow/return temperature 90/70 °C
- Max. working pressure 4,5 bar
- pipe diameter 39 mm
- type of protection IP X4
- power supply 230 V
- sound pressure level at max. loads ≤52 dB(A)
- thermal insulation according to EnEV
- 100 % factory-checked for leak tightness
- expansion vessel connection male thread 1"
- controlled water make-up
- optional softening or demineralization of the make-up water
- standardised 125 mm connection to manifold and pump groups with 1½" union nuts, flow on the left
- **Control Smart controller**:
  - → simplified commissioning via commissioning wizard
  - → integrated p_0 wizard for fault-free commissioning
  - → RS-485 interface and factory-fitted Modbus RTU
  - → operating wizard for troubleshooting, commissioning, service and maintenance
- stopcock connections:
  - → top 1½" union nut
  - → bottom 1½" female thread

Type	Art. No.	DG	System volume V_A up to [m³]	Electric connection	Height h [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
S1	8311100	0016	3,5	230 V/50 Hz	890	550	318	25,00
S2	8311200	0016	3,5	230 V/50 Hz	890	550	318	24,00
S3	8311300	0016	3,5	230 V/50 Hz	890	550	318	23,00
S4	8311400	0016	–	230 V/50 Hz	890	550	318	22,00

The Fillsoft Cartridge 6811800 for softening or Fillsoft Zero cartridge 9125662 for demineralisation must be ordered separately.

You can find the enquiry form at **www.reflex-winkelmann.com/en**

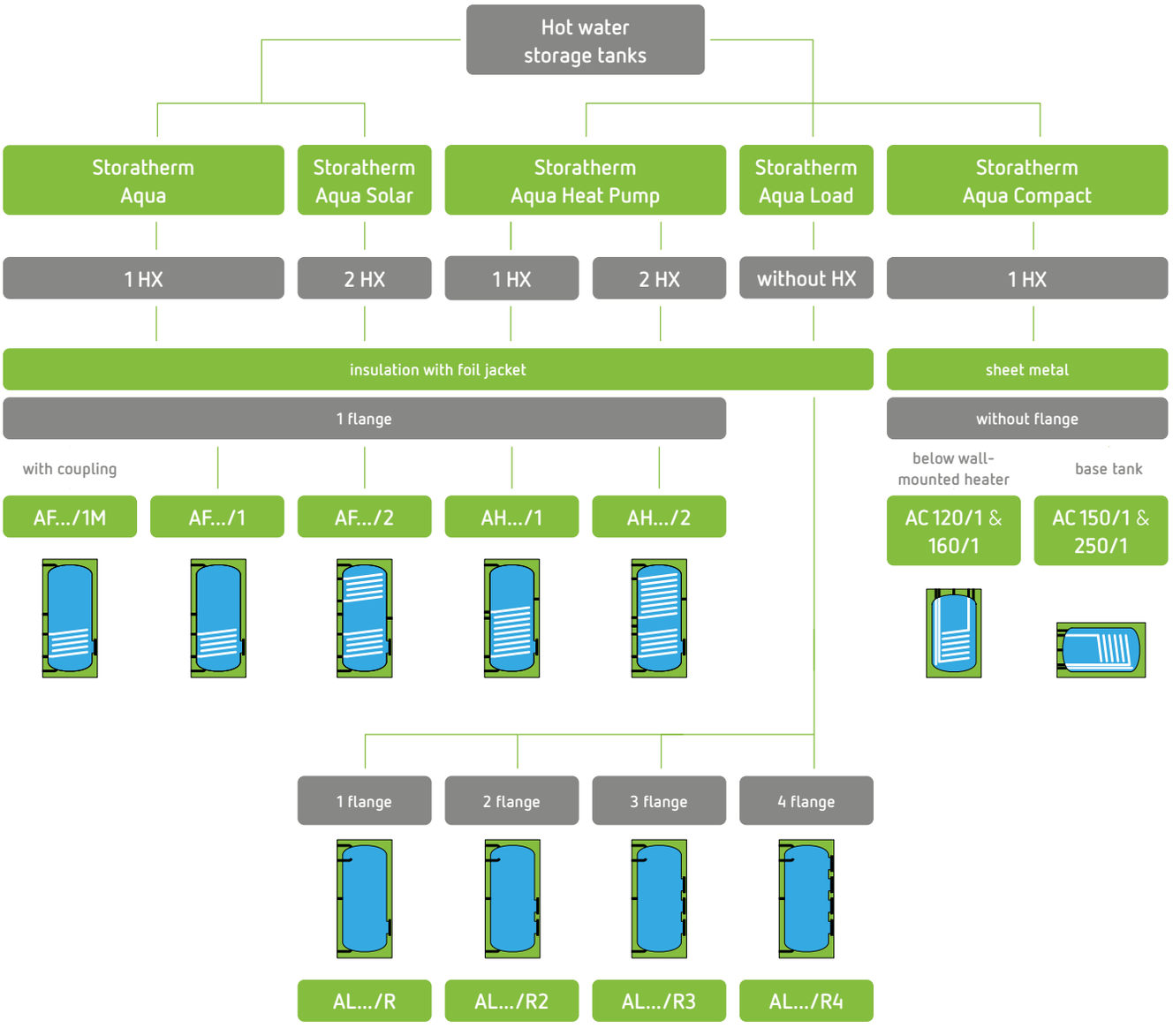
Reflex Greenbox Accessories

Commissioning

- **7945725**: Reflex commissioning Cat. 3 for Reflexomat Silent Compact / Reflexomat XS / Servitec Mini / Servitec S with one compressor / one pump or Reflex Hydroflow freshwater station and Reflex Greenbox
- **7945726**: Reflex commissioning add. Cat. 3 for each additional system at the same location and on the same day – one compressor / one pump

Type	Art. No.	DG	Weight [kg]
Commissioning Cat. 3	7945725	0095	–
Commissioning add. Cat. 3	7945726	0095	–

Hot water storage tanks & heat exchangers



The type designation comprises the following
/1 Number of HX (heat exchanger(s))
/2 Number of HX
/R One service flange
/R2 Two service flanges
-M With coupling

Customised planning with our configuration software

Reflex Solutions **Pro**
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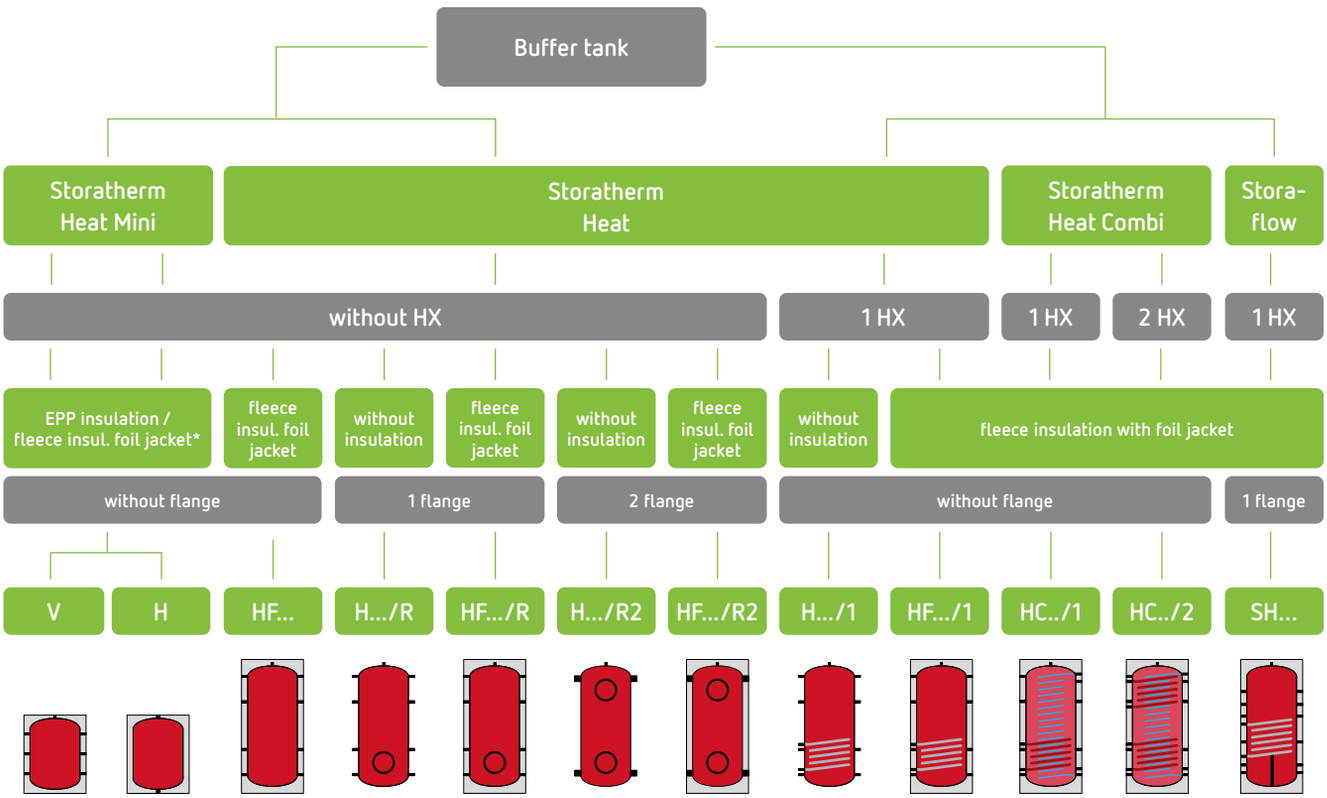
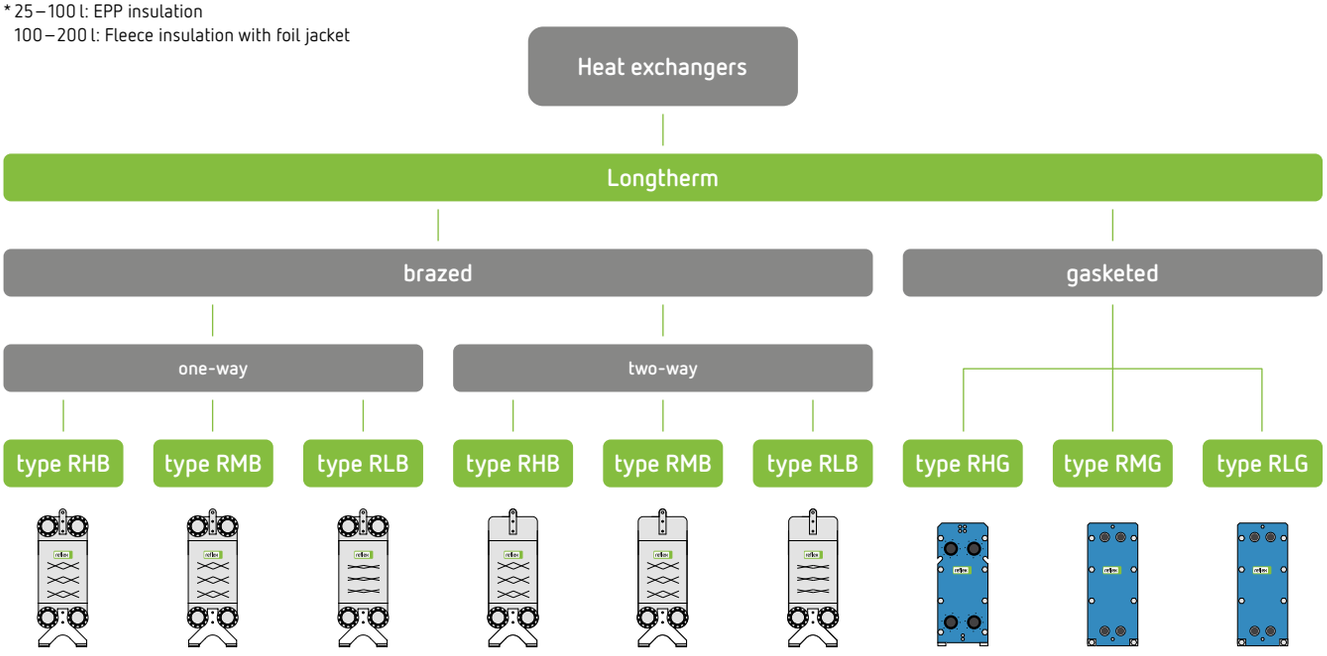


* 25 – 100 l: EPP insulation
100 – 200 l: Fleece insulation with foil jacket



RH...-channel: h = high
→ high pressure loss
→ high thermally active length

RM...-channel: m = middle
→ middle pressure loss
→ middle thermally active length

RL...-channel: l = low
→ low pressure loss
→ low thermally active length

Hot water storage tanks

Storatherm Aqua hot water storage tank with one heating coil CE

AF 150/1M_A – 500/1M_A

AF 100/1 – 3.000/1

Technical Features

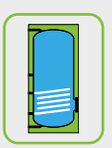
- upright tank for all heating systems
- enamelling according to DIN 4753 – 3 T3, with magnesium anode, thermometer and mounts, maintenance opening
- storage tank up to 500 litres (AF.../1M) with additional RP 1½" coupling for electric heater ≤ 2.000 l insulation preinstalled
- max. permissible operating overpressure:
  → heating water 16 bar
  → potable water 10 bar
- max. permissible operating temperature:
  → heating water 110 °C
  → potable water 95 °C

Type overview

AF.../1M (≤ 500 litres)
hot water storage tank with one heating coil and additional coupling for electric heating

insulation
rECOflex® insulation with foil jacket, not removable

rECOflex®



AF.../1 (> 500 litres)
hot water storage tank with one heating coil

insulation
up to 1.000 l: 100 mm fleece insulation with foil jacket, removable
from 1.500 l: 120 mm fleece insulation with foil jacket, removable

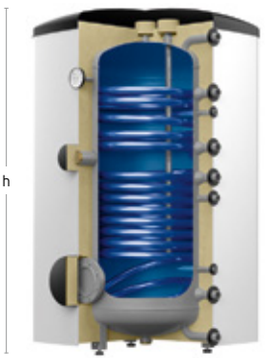
Storatherm Aqua hot water storage tank with one heating coil

Type	Art. No. white	DG	EEC[1]	Volume [l]	NL number top | solar	Heating surface top | solar [m²]	Ø d without | with insulation [mm]	Height h [mm]	Width w [mm]	Weight [kg]
Storatherm Aqua AF .../1M_A rECOflex® insulation with foil jacket, not removable										
AF 150/1M_A	7355100	0060	A	159	2,4 | –	0,83 | –	–	1.141	650	56,00
AF 200/1M_A	7355200	0060	A	197	4,2 | –	0,95 | –	–	1.333	650	62,00
AF 300/1M_A	7355300	0060	A	302	8,4 | –	1,28 | –	–	1.377	750	89,00
AF 400/1M_A	7355400	0060	A	382	15,2 | –	1,75 | –	–	1.678	790	112,00
AF 500/1M_A	7355500	0060	A	473	19,1 | –	1,88 | –	–	2.001	790	129,00
Storatherm Aqua AF .../1M rECOflex® insulation with foil jacket, not removable										
AF 150/1M_B	7861600	0060	B	156	3,0 | –	0,75 | –	– | 540	1.172	–	47,20
AF 200/1M_B	7861700	0060	B	197	4,8 | –	0,95 | –	– | 600	1.475	–	79,00
AF 200/1M_C	7847600	0060	C	197	4,8 | –	0,95 | –	– | 540	1.475	–	56,10
AF 300/1M_B	7861800	0060	B	303	11,1 | –	1,40 | –	– | 700	1.334	–	82,80
AF 400/1M_C	7847800	0060	C	372	14,0 | –	1,80 | –	– | 700	1.631	–	105,00
AF 400/1M_B	7861900	0060	B	384	14,0 | –	1,80 | –	– | 750	1.631	–	137,00
AF 500/1M_B	7862000	0060	B	476	18,0 | –	1,90 | –	– | 750	1.961	–	189,00
AF 500/1M_C	7847900	0060	C	476	18,0 | –	1,90 | –	– | 700	1.961	–	116,50
Storatherm Aqua AF .../1 fleece insulation with foil jacket										
AF 750/1_C	7848000	0060	C	712	30,5 | –	3,70 | –	750 | 960	2.037	–	229,50
AF 1000/1_C	7848100	0060	C	931	38,8 | –	4,50 | –	850 | 1.065	2.058	–	288,10
AF 1500/1_C	7848200	0052	C	1.500	48,0 | –	6,00 | –	1.000 | 1.230	2.230	–	480,00
AF 2000/1_C	7848300	0052	C	2.000	57,0 | –	7,00 | –	1.200 | 1.440	2.140	–	650,00
AF 3000/1*	7848400	0052	–	2.800	66,0 | –	9,50 | –	1.200 | 1.440	2.903	–	790,00

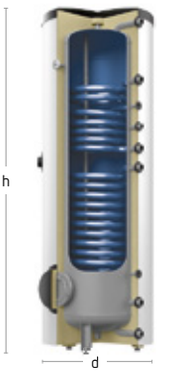
[1] Energy efficiency class

* the thermal insulation for these Storatherm hot water storage tanks is shown under accessories.

Storatherm Aqua Solar hot water storage tank with two heating coils



AF 200/2_A – 500/2_A



AF 200/2 – 3.000/2

Technical Features

- upright storage tank with additional heating coils to make use of solar energy
- enamelling according to DIN 4753 – 3 T3, with magnesium anode, thermometer and mounts, maintenance opening ≤ 2.000 L insulation preinstalled
- max. permissible operating overpressure:
  → heating water 16 bar
  → potable water 10 bar
- max. permissible operating temperature:
  → heating water 110 °C
  → potable water 95 °C

Type overview

AF.../2 (≤ 500 litres)
hot water storage tank with two heating coils

insulation
rECOflex® insulation with foil jacket, not removable

rECOflex®

AF.../2 (> 500 litres)
hot water storage tank with two heating coils

insulation
up to 1.000 l: 100 mm fleece insulation with foil jacket, removable
from 1.500 l: 120 mm fleece insulation with foil jacket, removable

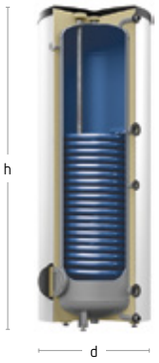
Storatherm Aqua Solar hot water storage tank with two heating coils

Type	Art. No. white	DG	EEC[1]	Volume [l]	NL number top | solar	Heating surface top | solar [m²]	Ø d without | with insulation [mm]	Height h [mm]	Width w [mm]	Weight [kg]
Storatherm Aqua Solar AF .../2_A rECOflex® insulation with foil jacket, not removable										
AF 200/2_A	7355600	0061	A	196	1,1 | 4,2	0,95 | 0,67	–	1.329	650	70,00
AF 300/2_A	7355700	0061	A	300	2,2 | 8,4	0,84 | 1,42	–	1.374	750	100,00
AF 400/2_A	7355800	0061	A	380	3,4 | 15,2	1,00 | 1,75	–	1.671	790	124,00
AF 500/2_A	7355900	0061	A	470	5,9 | 19,1	1,28 | 1,88	–	2.001	790	146,00
Storatherm Aqua Solar AF .../2 rECOflex® insulation with foil jacket, not removable										
AF 200/2_C	7848800	0061	C	185	1,1 | 4,2	0,70 | 0,95	– | 540	1.435	–	66,90
AF 200/2_B	7862100	0061	B	196	1,4 | 5,4	0,70 | 0,95	– | 600	1.435	–	84,00
AF 300/2S_C	7849000	0061	C	282	2,2 | 8,4	0,80 | 1,55	– | 600	1.794	–	98,50
AF 300/2S_B	7862200	0061	B	299	2,1 | 10,9	0,80 | 1,55	– | 650	1.794	–	123,00
AF 300/2_B	7849800	0061	B	303	2,7 | 11,8	0,85 | 1,45	– | 700	1.294	–	116,70
AF 400/2_C	7849100	0061	C	362	3,4 | 15,2	1,05 | 1,80	– | 700	1.591	–	117,00
AF 400/2_B	7862300	0061	B	382	2,9 | 16,4	1,05 | 1,80	– | 750	1.591	–	149,00
AF 500/2_C	7849200	0061	C	452	5,9 | 19,1	1,30 | 1,90	– | 700	1.921	–	134,20
AF 500/2_B	7862400	0061	B	482	5,5 | 19,7	1,30 | 1,90	– | 750	1.921	–	179,00
Storatherm Aqua Solar AF .../2 fleece insulation with foil jacket										
AF 750/2_C	7849300	0061	C	729	6,2 | 21,0	1,20 | 1,90	750 | 960	2.036	–	222,00
AF 1000/2_C	7849400	0061	C	947	7,1 | 26,0	1,12 | 2,45	850 | 1.050	2.063	–	283,00
AF 1500/2_C	7849500	0052	C	1.453	18,0 | 36,0	1,90 | 3,90	1.000 | 1.240	2.216	–	495,00
AF 2000/2_C	7849600	0052	C	1.947	21,0 | 39,0	2,30 | 4,20	1.200 | 1.440	2.146	–	670,00
AF 3000/2*	7849700	0052	–	2.717	32,0 | 65,0	3,40 | 6,80	1.200 | –	2.875	–	820,00

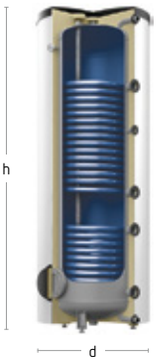
[1] Energy efficiency class

* the thermal insulation for these Storatherm hot water storage tanks is shown under accessories.

Storatherm Aqua Heat Pump hot water storage tank for heat pumps



AH 300/1 – 1.000/1



AH 400/2 – 1.000/2

Technical Features

- high-efficiency tank with enlarged heating surface, for use in heat pump systems in particular
- enamelling according to DIN 4753 – 3 T3
- with magnesium anode, thermometer and mounts, maintenance opening
- with additional Rp 1½" coupling for E-heater
- max. permissible operating overpressure:
  → heating water 16 bar
  → potable water 10 bar
- max. permissible operating temperature:
  → heating water 110 °C
  → potable water 95 °C

Type overview

AH.../1
hot water storage tank with one heating coil

insulation
up to 500 l: rECOflex® insulation
with foil jacket, removable
from 750 l: 100 mm fleece insulation
with foil jacket, removable

rECOflex®

AH.../2
hot water storage tank with two heating coils

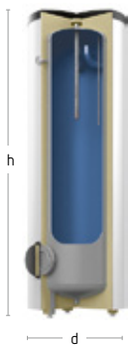
insulation
up to 500 l: rECOflex® insulation
with foil jacket, removable
from 750 l: 100 mm fleece insulation
with foil jacket, removable

rECOflex®

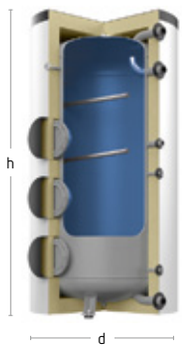
Type	Art. No. white	DG	EEC[1]	Volume [l]	NL number top | solar	Heating surface top | solar [m²]	Ø d without | with insulation [mm]	Height h [mm]	Weight [kg]
Storatherm Aqua Heat Pump AH .../1 hot water storage tank with one heating coil									
AH 150/1_B	7864600	0060	B	154	5,3 | –	1,60 | –	450 | 600	1.220	57,00
AH 200/1_B	7864700	0060	B	192	5,6 | –	2,15 | –	450 | 600	1.480	67,00
AH 300/1_B	7864000	0060	B	302	13,3 | –	3,20 | –	– | 700	1.334	139,00
AH 400/1_B	7864100	0060	B	376	15,1 | –	5,00 | –	598 | 750	1.631	170,00
AH 500/1_B	7864200	0060	B	469	22,1 | –	6,20 | –	– | 750	1.961	222,00
AH 750/1_C	7845800	0060	C	729	40,0 | –	7,00 | –	750 | 960	2.053	263,00
AH 1000/1_C	7845900	0060	C	965	59,0 | –	9,00 | –	850 | 1.065	2.087	335,00
Storatherm Aqua Heat Pump AH .../2 hot water storage tank with two heating coils									
AH 400/2_B	7864300	0060	B	374	9,1 | 15,0	3,20 | 1,40	– | 750	1.591	171,00
AH 500/2_B	7864400	0060	B	469	11,2 | 25,0	4,30 | 1,60	– | 750	1.921	204,00
AH 750/2_C	7846200	0060	C	679	17,0 | 34,0	5,20 | 2,20	750 | 960	2.052	277,00
AH 1000/2_C	7846300	0060	C	901	24,9 | 43,0	6,10 | 3,10	850 | 1.065	2.087	354,00

[1] Energy efficiency class

Storatherm Aqua Load charge water tank



AL 300/R – 500/R

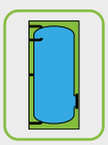


AL 1.500/R3 – 3.000/R3

Technical Features

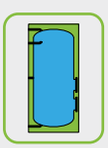
- upright tank for hot water preparation in storage charging system
- enamelling according to DIN 4753 – 3 T3
- with magnesium anode, thermometer and mounts
- up to 4 maintenance openings ≤ 2.000 l insulation preinstalled
- max. permissible operating overpressure: → potable water 10 bar
- max. permissible operating temperature: → potable water 95 °C

Type overview



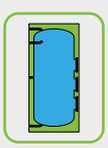
AL.../R
hot water storage tank with one service flange

insulation
up to 500 l: rECOflex® insulation
with foil jacket, removable
from 750 l: 100 mm fleece insulation
with foil jacket, removable



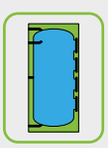
AL.../R2
hot water storage tank with two service flanges

insulation
120 mm fleece insulation
with foil jacket, removable



AL.../R3
hot water storage tank with three service flanges

insulation
120 mm fleece insulation
with foil jacket, removable



AL.../R4
hot water storage tank with four service flanges

insulation
120 mm fleece insulation
with foil jacket, removable

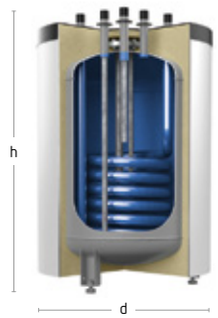
Storatherm Aqua Load charge water tank

Type	Art. No. white	DG	EEC[1]	Volume [l]	Ø d without | with insulation [mm]	Height h [mm]	Weight [kg]
Storatherm Aqua Load AL .../R hot water storage tank with one service flange							
AL 300/R_C	7844400	0051	C	301	– | 590	1.834	90,00
AL 500/R_C	7844500	0051	C	477	– | 700	1.958	155,00
AL 750/R_C	7844600	0051	C	751	750 | 950	2.035	214,00
AL 1000/R_C	7844700	0051	C	972	850 | 1.050	2.050	242,00
Storatherm Aqua Load AL .../R2 hot water storage tank with two service flanges							
AL 300/R2_C	7353100	0051	C	301	– | 590	1.834	90,00
AL 500/R2_C	7353200	0051	C	477	– | 700	1.958	155,00
AL 750/R2_C	7353300	0051	C	751	750 | 950	2.035	214,00
AL 1000/R2_C	7353400	0051	C	972	850 | 1.050	2.050	267,00
Storatherm Aqua Load AL .../R3 hot water storage tank with three service flanges							
AL 1500/R3_C	7845100	0052	C	1.459	1.000 | 1.240	2.236	410,50
AL 2000/R3_C	7845200	0052	C	1.986	1.200 | 1.440	2.146	555,00
Storatherm Aqua Load AL .../R4 hot water storage tank with four service flanges							
AL 3000/R4*	7845400	0052	–	2.780	1.200 | 1.440	2.876	642,00
AL 4000/R4*	7845480	0052	–	4.040	1.500 | 1.740	2.721	939,00
AL 5000/R4*	7845490	0052	–	4.914	1.500 | 1.740	3.230	1.070,00

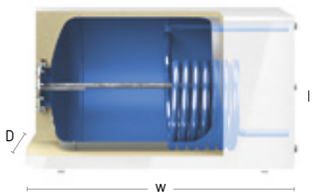
[1] Energy efficiency class

* the thermal insulation for these Storatherm hot water storage tanks is shown under accessories.

Storatherm Aqua Compact storage water heater for hot water preparation



AC 120/1 & 160/1



AC 150/1 & 250/1

Technical Features

- tank in compact design for all heating installations
- enamelling according to DIN 4753 – 3 T3, with magnesium anode, thermometer and mounts
- insulation preinstalled
- max. permissible operating overpressure:
  → heating water 16 bar
  → potable water 10 bar
- max. permissible operating temperature:
  → heating water 110 °C
  → potable water 95 °C

Type overview

AC 120/1 & 160/1
compact storage tank with connections at the top for assembly directly below a wall-hung heater

insulation
rECOflex® insulation with foil jacket, not removable

rECOflex®

AC 150/1 & 250/1
base tank for space-saving boiler/tank combinations with one heating coil, up to 300 kg load bearing capacity

insulation
rECOflex® insulation with steel casing, not removable

rECOflex®

Type	Art. No. silver	Art. No. white	DG	EEC[1]	Volume [l]	NL number top|solar	Heating surface top|solar [m²]	Ø d without|with insulation [mm]	Height h [mm]	Width w [mm]	Weight [kg]
Storatherm Aqua Compact AC .../1 compact tank with connections at the top											
AC 120/1_B	–	7850100	0060	B	120	1,4 | –	0,73 | –	500 | 560	839	–	56,00
AC 160/1_C	–	7862850	0060	C	153	2,2 | –	0,71 | –	– | 560	1.036	–	60,00
Storatherm Aqua Compact AC .../1 horizontal base tank											
AC 150/1_B	7863100	7862800	0062	B	153	3,6 | –	0,90 | –	–	590	620	85,00
AC 250/1_B	7863200	7862900	0062	B	246	7,6 | –	0,95 | –	–	644	653	114,00

[1] Energy efficiency class

Theoretical principles

Storatherm Heat Mini

Heat pumps need a constant volume flow to be efficient.
When the consumer circuits' requirements have been met, the temperature of the return rises and the heat pump is switched off. As a consequence, rooms and radiators cool down again, and as a result the return temperature falls and the heat pump starts up again. This cycling puts a great deal of stress on the heat pump and reduces the service life.

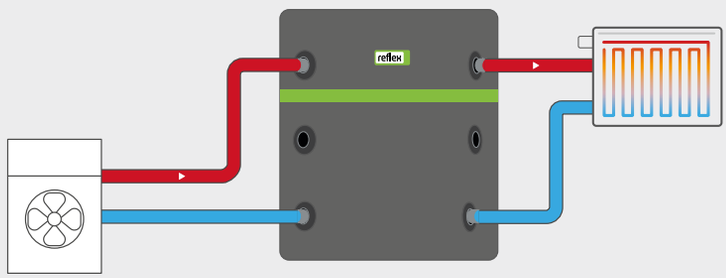
This is where the buffer tank from Reflex comes in:
The heat pump heats up the buffer tank while working and switches off later, in addition, it is not immediately switched on again as required, but rather the buffered heat is used. This increases the system volume and makes the sysytem more stable. As a result, cycles are significantly reduced, extending the service life of the heat pump.

The Storatherm Heat Mini H is connected in parallel and is mainly used to incorporate heat pumps for hydraulic decoupling, whereas the Storatherm Heat Mini V is connected in series in the return and ensures the defrost function.

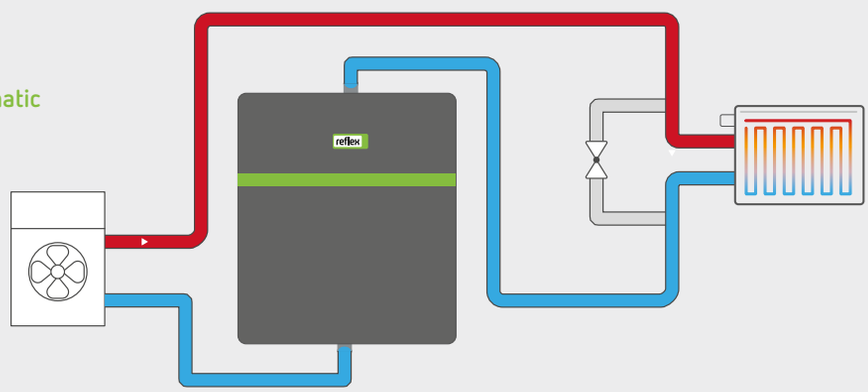
Area of Application

The new Storatherm Heat Mini H and Storatherm Heat Mini V buffer tanks show their strengths in high-performance systems with heat pumps up to 20 kW heating capacity.

Storatherm Heat Mini H with heat pump sample schematic

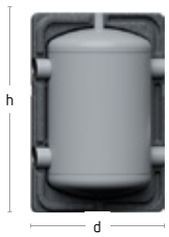


Storatherm Heat Mini H with heat pump sample schematic

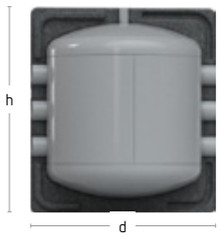


Buffer tanks

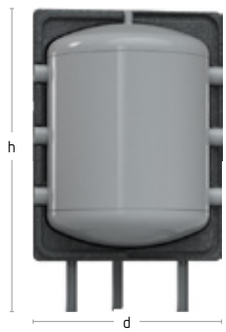
Storatherm Heat Mini buffer storage tank for heating and cooling systems with high volume flows CE



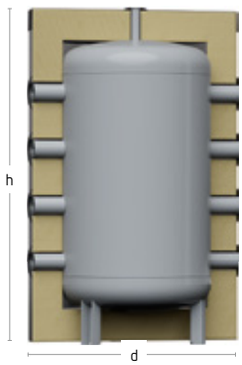
H 25



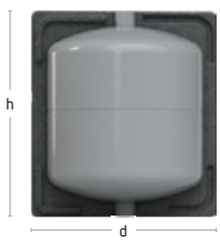
H 50



H 100



H 150 – 200



V 25 – 50

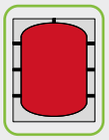
V 75 – 100

Technical Features

- storage tank made of quality steel for heating and limited cooling applications
- tank interior untreated, exterior painted
- EPP insulation for 25 – 100 litre types, not diffusion-tight
- fleece insulation for 150 – 200 litre types, not diffusion-tight
- max. permissible operating overpressure: → 3 bar
- max. permissible operating temperature: → 15 – 95 °C

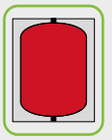
Storatherm Heat Mini buffer storage tank for heating and cooling systems with high volume flows CE

Type overview



H Mini H...
buffer tank with a 1½" connection at the top plus side connections

insulation
up to 100 l: removable EPP insulation, not diffusion-tight
from 150 l: removable fleece insulation



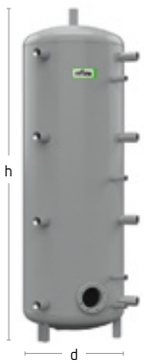
H Mini V...
buffer tank with a 1½" connection at the top and bottom

insulation
removable EPP insulation, not diffusion-tight

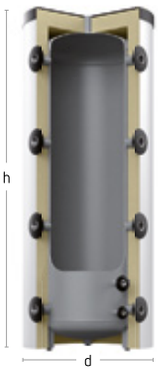
Type	Art. No. silver	DG	EEC[1]	Volume [l]	Number of couplings [pce]	Heat content loss [W]	Ø d without | with insulation [mm]	Height h [mm]	Tilted dimension [mm]	Weight [kg]
Storatherm Heat Mini H buffer tank with horizontal connections										
H 25	7352520	0063	B	25	4	24	280 | 360	534	634	7,20
H 50	7352530	0063	B	50	6	33	410 | 490	547	713	13,20
H 100*	7352550	0063	B	104	6	49	480 | 560	893	1.033	22,35
H 150	7352560	0063	B	150	8	47	480 | 680	1.073	1.094	21,30
H 200	7352570	0063	B	200	8	59	480 | 680	1.358	1.375	25,50
Storatherm Heat Mini V buffer tank with vertical connections										
V 25	7352420	0063	B	25	2	23	280 | 360	534	634	7,10
V 50	7352430	0063	B	50	2	31	410 | 490	547	713	13,00
V 75	7352440	0063	B	78	2	40	480 | 560	746	915	20,30
V 100	7352450	0063	B	104	2	49	480 | 560	893	1.033	22,10

[1] Energy efficiency class
* Available from spring 2025; your sales contact will be happy to inform you about alternatives.

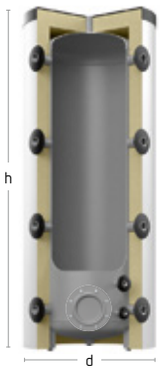
Storatherm Heat buffer storage tank for heating and cooling systems



H .../R – 500/R



HF 300 – 2.000

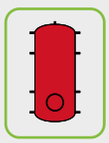


HF 300/R – 2.000/R

Technical Features

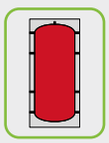
- high-grade S235JRG2 (St 37 – 2) for heating and cooling applications
- tank not treated inside, plastic-coated outside
- insulation preinstalled
- fleece insulation with foil jacket, not diffusion-tight
- max. permissible operating overpressure:
  → tank 3 bar (1.500 l 6 bar)
- max. permissible operating temperature:
  → tank 95 °C

Type overview



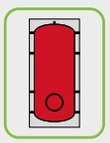
H.../R
buffer tank with cleaning opening without insulation for cooling applications.
suitable diffusion-tight thermal insulation must be provided by the user.

without insulation



HF...
buffer tank with insulation, without service flange

insulation
up to 1.000 l: 100 mm
fleece insulation
with foil jacket, removable
from 1.500 l: 120 mm
fleece insulation
with foil jacket, removable



HF.../R
buffer tank with cleaning opening and insulation

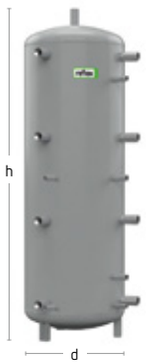
insulation
up to 1.000 l: 100 mm
fleece insulation
with foil jacket, removable
from 1.500 l: 120 mm
fleece insulation
with foil jacket, removable

Storatherm Heat buffer storage tank for heating and cooling systems CE

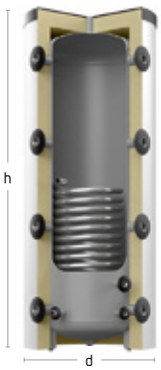
Type	Art. No. silver	Art. No. white	DG	EEC[1]	Volume [l]	Couplings connection 9×	Heating surface top | solar [m²]	Ø d without | with insulation [mm]	Height h [mm]	Weight [kg]
Storatherm Heat H .../R buffer tank with cleaning opening without insulation										
H.../R	7783600	–	0063	–	300	Rp 1½"	–	597 | –	1.320	58,00
H.../R	7783800	–	0063	–	500	Rp 1½"	–	597 | –	1.950	71,00
H.../R	7784005	–	0063	–	800	Rp 1½"	–	790 | –	1.825	121,00
H 1000/R	7784205	–	0063	–	921	Rp 1½"	–	790 | –	2.115	135,00
H 1500/R	7784400	–	0063	–	1.500	Rp 1½"	–	1.000 | –	2.120	181,00
H 2000/R	7784600	–	0063	–	2.000	Rp 1½"	–	1.200 | –	2.122	257,00
H 3000/R*	7788200	–	0063	–	3.000	Rp 2"	–	1.500 | –	2.101	570,00
H 4000/R*	7788500	–	0063	–	4.000	Rp 2"	–	1.500 | –	2.676	677,00
H 5000/R*	7788800	–	0063	–	5.000	Rp 2"	–	1.500 | –	3.211	814,00
Storatherm Heat HF ... buffer tank with insulation, without service flange										
HF 300_C	7839100	–	0063	C	300	Rp 1½"	–	597 | 797	1.320	59,00
HF 500_C	7839200	–	0063	C	500	Rp 1½"	–	597 | 797	1.950	72,00
HF 800_C	7839300	–	0063	C	800	Rp 1½"	–	790 | 990	1.825	124,00
HF 1000_C	7839400	–	0063	C	921	Rp 1½"	–	790 | 990	2.115	139,00
HF 1500_C	7839500	–	0063	C	1.500	Rp 1½"	–	1.000 | 1.240	2.120	186,00
HF 2000_C	7839600	–	0063	C	2.000	Rp 1½"	–	1.200 | 1.440	2.122	266,00
Storatherm Heat HF .../R buffer tank with cleaning opening and insulation										
HF 300/R_C	7842000	7842600	0063	C	300	Rp 1½"	–	597 | 797	1.320	60,30
HF 500/R_C	7842100	7842700	0063	C	500	Rp 1½"	–	597 | 797	1.950	79,10
HF 800/R_C	7842200	7842800	0063	C	800	Rp 1½"	–	790 | 990	1.825	104,10
HF 1000/R_C	7842300	7842900	0063	C	921	Rp 1½"	–	790 | 990	2.115	113,30
HF 1500/R_C	7842400	7843000	0063	C	1.500	Rp 1½"	–	1.000 | 1.240	2.120	189,00
HF 2000/R_C	7842500	7843100	0063	C	2.000	Rp 1½"	–	1.200 | 1.440	2.122	269,00

[1] Energy efficiency class
* the thermal insulation for these Storatherm hot water storage tanks is shown under accessories.

Storatherm Heat buffer storage tank for heating and cooling systems



H 300/1 – 5.000/1

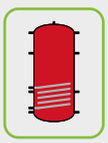


HF 300/1 – 2.000/1

Technical Features

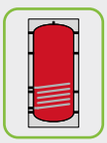
- high-grade S235JRG2 (St 37 – 2) for heating and cooling applications
- with heating coil for the connection of an additional heating source such as a solar system
- tank not treated inside, plastic-coated outside
- max. permissible operating overpressure:
  → tank 3 bar (1.500 l 6 bar)
  → heating water 10 bar
- max. permissible operating temperature:
  → tank 95 °C

Type overview



H.../1
buffer tank with one bare-tube heat exchanger without insulation for cooling applications. Suitable diffusion-tight thermal insulation must be provided on-site. For sizes 3.000 – 5.000 litres, the insulation for heating water applications may be ordered separately.

without insulation



HF.../1
buffer tank with one heating coil and insulation

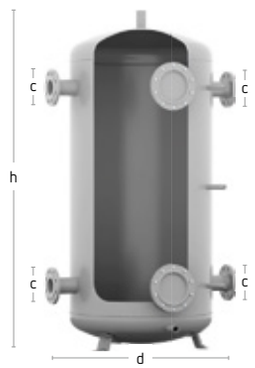
insulation
up to 1.000 l: 100 mm fleece insulation with foil jacket, removable
from 1.500 l: 120 mm fleece insulation with foil jacket, removable

Storatherm Heat buffer storage tank for heating and cooling systems CE

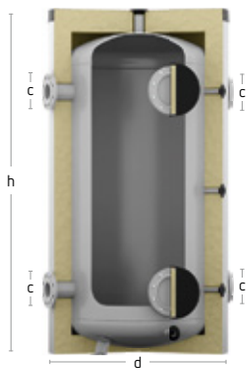
Type	Art. No. silver	Art. No. white	DG	EEC[1]	Volume [l]	Couplings connection 9×	Heating surface top|solar [m²]	Ø d without|with insulation [mm]	Height h [mm]	Weight [kg]
Storatherm Heat H .../R buffer tank with one heating coil without insulation										
H 300/1	7783700	–	0063	–	300	Rp 1½"	1,34 | –	597 | –	1.320	74,00
H 500/1	7783900	–	0063	–	500	Rp 1½"	1,88 | –	597 | –	1.950	95,00
H 800/1	7784115	–	0063	–	800	Rp 1½"	3,76 | –	790 | –	1.825	190,00
H 1000/1	7784315	–	0063	–	1.000	Rp 1½"	4,48 | –	790 | –	2.115	216,00
H 1500/1	7784500	–	0063	–	1.500	Rp 1½"	4,48 | –	1.000 | –	2.120	265,00
H 2000/1	7784700	–	0063	–	2.000	Rp 1½"	4,48 | –	1.200 | –	2.122	351,00
H 3000/1*	7788300	–	0063	–	3.000	Rp 2"	5,00 | –	1.500 | –	2.101	637,00
H 4000/1*	7788600	–	0063	–	4.000	Rp 2"	6,00 | –	1.500 | –	2.676	754,00
H 5000/1*	7788900	–	0063	–	5.000	Rp 2"	7,00 | –	1.500 | –	3.211	871,00
Storatherm Heat HF .../1 buffer tank with one heating coil and insulation										
HF 300/1_C	7843200	7843800	0063	C	300	Rp 1½"	1,34 | –	597 | 797	1.320	82,00
HF 500/1_C	7843300	7843900	0063	C	500	Rp 1½"	1,88 | –	597 | 797	1.950	100,00
HF 800/1_C	7843400	7844000	0063	C	800	Rp 1½"	3,76 | –	790 | 990	1.825	197,00
HF 1000/1_C	7843500	7844100	0063	C	1.000	Rp 1½"	4,48 | –	790 | 990	2.115	225,00
HF 1500/1_C	7843600	7844200	0063	C	1.500	Rp 1½"	4,48 | –	1.000 | 1.240	2.120	272,00
HF 2000/1_C	7843700	7844300	0063	C	2.000	Rp 1½"	4,48 | –	1.200 | 1.440	2.122	352,00

[1] Energy efficiency class
* the thermal insulation for these Storatherm hot water storage tanks is shown under accessories.

Storatherm Heat buffer storage tank for heating and cooling systems with high volume flows CE



H.../R2

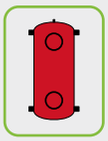


HF.../R2

Technical Features

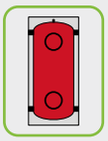
- equipped with 4 opposite flange connections (DIN EN 1092-1) and 2 inspection openings (DN 180) as well as 3 sensor connections and drainage
- high-grade S235JRG2 (St 37 – 2) for heating and cooling applications
- tank not treated inside, plastic-coated outside
- max. permissible operating overpressure:
  → tank 10 bar (1.500 l 6 bar)
- max. permissible operating temperature:
  → tank 95 °C

Type overview



H.../R2
buffer tank with cleaning opening without insulation for cooling applications.
suitable diffusion-tight thermal insulation must be provided by the user.

without insulation



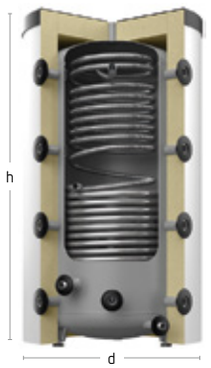
HF.../R2
buffer tank with cleaning opening and insulation

insulation
up to 1.000 l: 100 mm fleece insulation with foil jacket, removable
from 1.500 l: 120 mm fleece insulation with foil jacket, removable

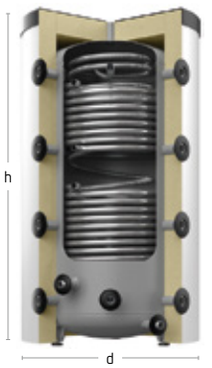
Type	Art. No. silver	DG	EEC[1]	Volume [l]	Connection c	Ø d without | with insulation [mm]	Height h [mm]	Weight [kg]
Storatherm Heat H .../R2 buffer tank without insulation								
H.../R2	7351700	0063	–	475	DN 80/PN 16	597 | –	1.951	110,70
H.../R2	7351800	0063	–	778	DN 80/PN 16	790 | –	1.854	187,80
H 1000/R2	7351900	0063	–	921	DN 125/PN 16	790 | –	2.117	201,90
H 1500/R2	7352700	0063	–	1.413	DN 125/PN 16	1.000 | –	2.119	205,50
Storatherm Heat HF .../R2 buffer tank with insulation								
HF 500/R2_C	7353500	0063	C	475	DN 80/PN 16	597 | 797	1.951	115,30
HF 800/R2_C	7353600	0063	C	778	DN 80/PN 16	790 | 990	1.854	197,00
HF 1000/R2_C	7353700	0063	C	921	DN 125/PN 16	790 | 990	2.117	221,00
HF 1500/R2_C	7353800	0063	C	1.413	DN 125/PN 16	1.000 | 1.240	2.119	212,27

[1] Energy efficiency class

Storatherm Heat Combi combination storage tank for heating and hot water preparation CE



HC 500/1 – 1.500/1

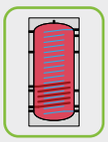


HC 500/2 – 1.500/2

Technical Features

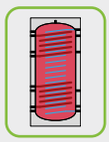
- combination hygienic storage tank for hot water preparation and backup heating
- potable water heating in continuous flow principle (stainless steel corrugated pipe)
- tank not treated inside, plastic-coated outside
- insulation preinstalled
- fleece insulation with foil jacket
- max. permissible operating overpressure:
  - → tank 3 bar
  - → heating water 10 bar
  - → potable water 6 bar
- max. permissible operating temperature:
  - → tank 95 °C
  - → heating water 110 °C
  - → potable water 95 °C

Type overview



HC.../1
combination storage tank with one heating coil and a corrugated stainless steel tube for heating potable water according to the continous flow principle

insulation
120 mm fleece insulation with foil jacket, removable



HC.../2
combination storage tank with two heating coils and a corrugated stainless steel tube for heating potable water according to the continous flow principle

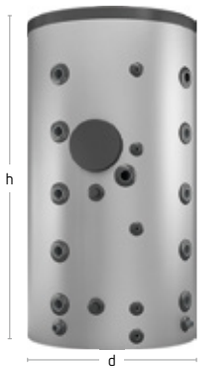
insulation
120 mm fleece insulation with foil jacket, removable

Storatherm Heat Combi CE

Type	Art. No. silver	DG	EEC[1]	Volume [l]	Couplings connection 9×	Heating surface top | solar [m²]	Ø d without | with insulation [mm]	Height h [mm]	Weight [kg]
Storatherm Heat Combi HC .../1 combination tank with one additional heating coil									
HC 500/1_C	7859200	0063	C	428	Rp 1½"	1,60 | –	600 | 840	1.970	92,00
HC 800/1_C	7859300	0063	C	722	Rp 1½"	2,60 | –	790 | 1.030	1.850	131,00
HC 1000/1_C	7859400	0063	C	852	Rp 1½"	2,60 | –	790 | 1.030	2.140	152,00
HC 1500/1_C	7859500	0063	C	1.332	Rp 1½"	2,15 | –	1.000 | 1.240	2.130	219,00
Storatherm Heat Combi HC .../2 combination tank with two additional heating coils									
HC 500/2_C	7859600	0063	C	418	Rp 1½"	1,14 | 1,60	600 | 840	1.970	106,00
HC 800/2_C	7859700	0063	C	706	Rp 1½"	1,75 | 2,60	790 | 1.030	1.850	152,00
HC 1000/2_C	7859800	0063	C	833	Rp 1½"	2,20 | 2,60	790 | 1.030	2.140	179,00

[1] Energy efficiency class

Storaflow Buffer tank for Reflex Hydroflow



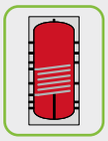
SH 500 H/F/1_C – SH 2000 H/F/1_C

SH 500 H/F/1_C – SH 2000 H/F/1_C
cut-away model

Technical Features

- Storaflow hot water storage tank for storing heating water and central heating backup
- potable water heating using the continuous flow principle with a Reflex Hydroflow mains water station
- tank not treated inside, plastic-coated outside
- insulation preinstalled
- fleece insulation with foil jacket
- max. permissible operating overpressure:
  → 500 – 1.000 l 3 bar
  → 1.500 – 2.000 l 7 bar
  → solar or solid fuel support by means of internal heat exchanger 10 bar
- max. permissible operating temperature:
  → tank 95 °C
  → internal heat exchanger 110 °C

Type overview



SH...H/F/1
buffer tank with one bare-tube heat exchanger and a flange for the installation of an electric heater

insulation
up to 800 l: 120 mm fleece insulation with foil jacket, removable
from 1000 l: 150 mm fleece insulation with foil jacket, removable

Type	Art. No. silver	DG	EEC[1]	Volume [l]	Connection c	Heating surface top|solar [m²]	Ø d without|with insulation [mm]	Height h [mm]	Weight [kg]
SH 500 H/F/1_C	7938000	0066	C	500	Rp 2"	– | 1,90	597 | 840	1.986	136,00
SH 800 H/F/1_C	7938100	0066	C	800	Rp 2"	– | 2,60	790 | 1.010	1.859	168,00
SH 1000 H/F/1_C	7938200	0066	C	1.000	Rp 2"	– | 3,20	790 | 1.090	2.149	190,00
SH 1500 H/F/1_C	7938300	0066	C	1.500	Rp 2"	– | 3,80	1.000 | 1.300	2.140	276,00
SH 2000 H/F/1_C	7938400	0066	C	2.000	Rp 2"	– | 4,40	1.200 | 1.500	2.161	394,00

[1] Energy efficiency class

Storatherm accessories CE

EEHR electro screw-in heater

- electrical auxiliary heating
- suitable for these types:
  - → Storatherm Aqua
  - → Storatherm Aqua Solar
  - → Storatherm Aqua Heat Pump
  - → Storatherm Heat
  - → Storatherm Heat Combi
- control light to indicate operation mode
- safety temperature limiter 95 °C
- max. permissible operating temperature 79 °C
- ingress protection rating IP 54
- electrical connection (on-site)
- not approved for continuous operation
- water hardness max. 14 °dH

Type	Art. No.	DG	Tank size	Electric connection	Min. electrical power [kW]	Electric power [kW]	Installation length l2 [mm]	Weight [kg]
EEHR 2,00	9126474	0068	> 100	230V/50Hz	2,00	2,00	320	1,36
EEHR 2,50	9126475	0068	> 100	230V/50Hz	2,50	2,50	390	1,50
EEHR 3,00	9126476	0068	> 100	230V/50Hz	3,00	3,00	390	1,50
EEHR 3,80	9126477	0068	> 100	400V/50Hz	3,80	3,80	430	1,60
EEHR 4,50	9126478	0068	> 300	400V/50Hz	4,50	4,50	470	1,62
EEHR 6,00	9126479	0068	> 300	400V/50Hz	6,00	6,00	500	1,83
EEHR 7,50	9126480	0068	> 750	400V/50Hz	7,50	7,50	720	2,00
EEHR 9,00	9126481	0068	> 1.000	400V/50Hz	9,00	9,00	780	2,10

the Storatherm HF .../R version can be installed using a service flange with flange cover and seal.
Storatherm Aqua Solar AF 300/2S type only possible up to 3 kW.
observe the maximum installation depth of the tank.

EEHR Accessories

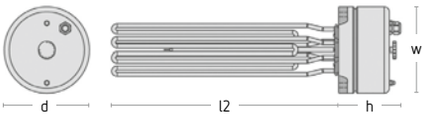
Type	Art. No.	DG	Weight [kg]
Flange cover 1½" DN110	5418300*	0068	0,80
Flange cover 1½" DN180	5418400*	0068	2,23
Flange seal DN180	5416000	0068	0,20
Flange seal DN110	5410200	0068	0,10
flat gasket 1½"	9119368	0091	0,01

* not suitable for Storatherm Aqua Inox.

Storatherm accessories

EFHR flange-type electric heating element

- electrical auxiliary heating
- approved for continuous operation
- suitable for these types:
  - → Storatherm Aqua
  - → Storatherm Aqua Solar
  - → Storatherm Aqua Load
  - → Storatherm Aqua Heat Pump
  - → Storatherm Heat HF .../R
  - → Storaflow
- easy integration via the tank's maintenance opening
- up to 10,0 kW LK 150 mm
  - → ≤ 500 litres storage volume for potable water
  - → buffer tank of type HF .../R and H .../R
- from 16,0 kW LK 225 mm
  - → > 500 litres tank volume for potable water
- 3 power levels, reversible connections
- with temperature controller – 85 °C
- safety temperature limiter 110 °C
- on-site electrical connection
  - → 2,5 kW 230 V
  - → from 4,0 kW 400 V
- incl. flange and seal



Type	Art. No.	DG	Potable water storage tank size [l]	Buffer tank storage size [l]	Output [kW]	Ø d [mm]	Height h [mm]	Installation length l2 [mm]	Hole circle w [mm]	Weight [kg]
EFHR flange-type electric heating element										
EFHR 2,5	9118710	0068	150	300–5.000	2,5	185	110	295	150	2,94
EFHR 4,0	9116314	0068	150	300–5.000	4,0/2,7/2,0	185	110	295	150	3,54
EFHR 6,0*	9116315	0068	300–500	300–5.000	6,0/4,0/3,0	185	110	395	150	4,80
EFHR 8,0	9116316	0068	300–500	300–5.000	8,0/5,5/4,0	185	110	495	150	5,00
EFHR 10,0	9116317	0068	300–500	300–5.000	10,0/6,7/5,0	185	110	495	150	5,00
EFHR 16,0	9116501	0068	> 750	not suitable	16,0/11,0/8,0	280	140	610	225	10,50
EFHR 19,0	9116502	0068	> 1.000	not suitable	19,0/12,7/9,0	280	140	740	225	11,00
EFHR 25,0	9115569	0068	> 1.000	not suitable	25,0/18,8/12,5	280	140	740	225	11,00
EFHR 35,0	9126720	0068	> 1.500	not suitable	35,0/26,4/17,5	280	140	900	225	13,44

observe the maximum installation depth of the tank.
* not suitable for Storatherm Aqua Solar AF 300/2S.

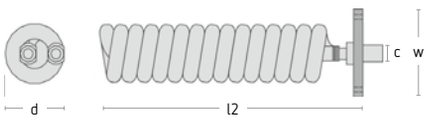
EFHR Accessories

Type	Art. No.	DG	Weight [kg]
flange adapter DN 110/DN 180	5402400	SXXX	4,00

Storatherm accessories CE

RWT ribbed-pipe heat exchanger

- for integration of an additional heat generator, e.g. solar system
- suitable for these types:
  - → Storatherm Aqua Heat Pump
  - → Storatherm Aqua Solar
  - → Storatherm Aqua
  - → Storatherm Aqua Load
  - → Storatherm Heat
- incl. counterflange and seal
- RWT 1: LK 150 mm = hot water storage tank ≤ 500 litres and all buffer storage tanks
- RWT 2: LK 225 mm = hot water storage tank ≥ 750 litres
- approved for heating water, solar fluid
- made from copper finned tube
- electrically insulated connections for galvanic isolation
- max. permissible operating overpressure 10 bar
- max. permissible operating temperature 90 °C



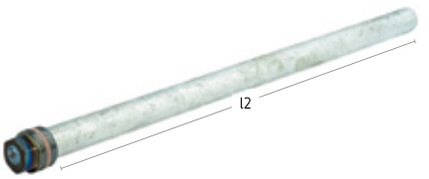
Type	Art. No.	DG	Connection c	Continuous output* [kW]	Ø d [mm]	Width w [mm]	Installation length l2 [mm]	Weight [kg]
RWT 1	5418600	0068	G ¾"	40	110	150	420	7,50
RWT 2	5418900	0068	G ¾"	75	170	225	540	8,10

* Continuous output according to DIN 4708; at 2 m^3/h

Storatherm accessories

Magnesium protective anodes

- for cathodic corrosion protection
- all Reflex tank water heaters are factory-fitted with magnesium rod anodes
- from type AF 750/1; AF 750/2; AL 1500/R2; AH 750/1; and AH 750/2 with two anodes



Art. No.	DG	Dimensions	Weight [kg]	Suitable for tank type	Not suitable for tank type
Chain anodes					
7751600	0068	G1" × Ø 22 × l_2 1600	2,00	–	→ AC 120/1; AC 150/1; AC 250/1 → AF 750/1 – AF 3000/1 → AL 750/R – AL 3000 → AH 750/1; AH 1000/1; AH 750/2; AH 1000/2
Magnesium protective anodes					
5415100	0068	G ¾" × Ø 26 × l_2 420	0,50	→ AC 160/1	–
5415300	0068	G 1¼" × Ø 33 × l_2 625	0,50	→ AH 300/1; AH 300/2 → AF 1000/1 2 units required	–
5415500	0068	G 1¼" × Ø 22 × l_2 1250	0,50	→ AF 1000/2 → AH 500/1; AH 500/2; AH 1000/1; AH 1000/2	–
5415700	0068	G 1¼" × Ø 33 × l_2 690	0,50	→ AL 1000	–
5452200	0068	G1" × Ø 26 × l_2 480	0,50	→ AC 150/1 → AF 150/1	–
5415200	0068	G1" × Ø 26 × l_2 550	0,75	→ AF 200/1; AF 200/2	–
5415600	0068	G 1¼" × Ø 33 × l_2 625	1,00	→ AL 750/R → AH 750/1; AH 750/2; AH 1000/1; AH 1000/2	–
5452500	0068	G1" × Ø 26 × l_2 1100	1,00	→ AL 500/R → AF 500/1; AF 500/2	–
5453300	0068	G1" × Ø 26 × l_2 900	1,00	→ AL 300/R – AL 500/R → AF 400/1; AF 300/1 Ø600; AF 400/2	–
5453400	0068	G1" × Ø 26 × l_2 800	1,00	→ AL 300/R → AF 300/1; AF 300/2 Ø700	–
5455500	0068	G 1¼" × Ø 33 × l_2 530	1,00	→ AF 750/1 → AL 1500 – AL 3000 2 units required	–
5460100	0068	G ¾" × Ø 33 × l_2 790	1,00	→ AC 250/1	–
5415400	0068	G 1¼" × Ø 33 × l_2 1060	1,84	→ AH 400/1; AH 400/2 → AF 750/2 → AH 750/1; AH 750/2	–

Storatherm accessories CE

Impressed-current anodes

- maintenance-free continuous protection to DIN 4753 T3 and T6
- voltage-controlled power supply 230 V; 50 / 60 Hz
- wear-free titanium electrode
- protection class II (operation in closed rooms)
- reducer 1" – ¾" thread, provided on-site

Art. No.	DG	Dimensions	Weight [kg]
Impressed-current anodes			
7751300	0068	G ¾" × l_2 400	0,75
9119365	0068	G 1¼" × l_2 800	0,64

Insulations CE

Type	Art. No.	DG	Weight [kg]
fleece insulation with foil jacket for heating applications, installation by the user			
insulation AF 3000/1	5914300	0064	35,00
insulation AF 3000/2	5914600	0064	55,00
insulation H 3000/1	5916600	0064	28,40
insulation H 3000/R	5870700	0064	28,40
insulation H 4000/1	5916700	0064	35,50
insulation H 4000/R	5870800	0064	35,50
insulation H 5000/1	5916800	0064	42,70
insulation H 5000/R	5870900	0064	42,70

SINUS Buffer tanks

SINUS buffer tanks — customised CE

You can find the enquiry form at
www.reflex-winkelmann.com/en

buffer tanks — customised

Technical Features

- pressurised water vessel as a cylindrical upright version with dished boiler ends, standing on the pedestal feet
- interior unfinished, exterior primed with anti-rust coating (suitable for cold insulation according to DIN)
- designed according to SINUS factory standard or optionally according to AD 2000 rules and approved according to the PED
- equipped as standard with a 1" sleeve for venting and a 1½" sleeve for draining
- connections for thermometers, pressure gauges and flow and return connections in threaded or flange PN 6/PN 16 design as specified (possibly with disk reinforcement on the connections dependent on static requirements)
- if required including necessary fittings (e.g. nozzle tubes, pipe elbows, etc.)
- revision opening (depending on size), hand hole closure 100 × 150 mm or manhole closure 320 × 420 mm
- max. permissible operating overpressure: 0 – 6/10 bar
- max. permissible operating temperature: -10 – 110 °C
- installation and attachment elements:
  - → flange connections
  - → diffuser pipe elbows
  - → pipe elbows
  - → sleeves
  - → hand holes
  - → threaded connections
  - → manholes
  - → nozzle tubes
  - → perforated/stratification plates
- insulation for heating systems:
  - → in foil jacket
  - → 100 mm polyester-fibre fleece 12 kg/m³ (WLG 0.043) fire class B1
  - → clamping strip closure
  - → PVC cap incl. 100 mm insulation cover fleece
  - → incl. floor insulation
  - → not diffusion-tight

NEW: Buffer tank up to 200,000 litres.
Also suitable for outdoor installation including insulation and all necessary calculations.
anfragen@sinusverteiler.com

Theoretical principles

Longtherm heat exchangers

Reflex Longtherm heat exchangers are available in copper brazed and screwed configurations. The existing type diversity means that a wide array of applications in heating and district heating technology, as well as in refrigeration and industrial plants are provided for. These all-rounders are ideal for applications of any size up to 230 °C/30 bar for the brazed and 110 °C/16 bar for the screwed heat exchangers. Different outputs, materials or pressure and temperature requirements can be implemented at the request of the customer. The following characteristics are required for dimensioning:

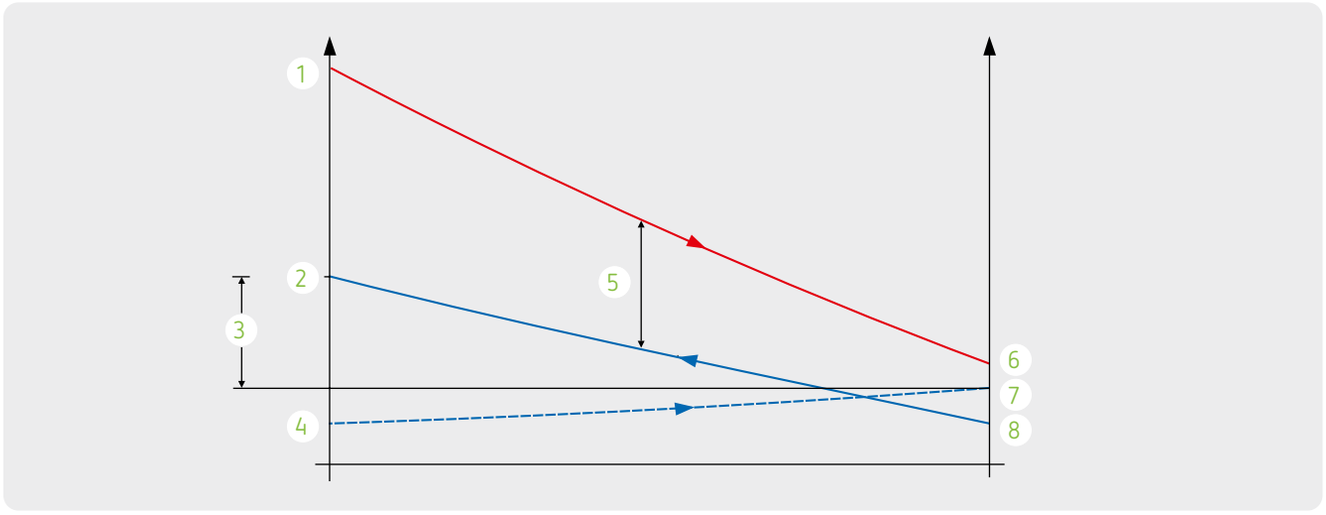
- transmission capacity
- inlet and outlet temperatures for primary and secondary side
- type of medium
- max. permissible pressure losses
- other requirements (connections, installation dimensions, etc.)

Customised planning with our configuration software

Reflex Solutions **Pro**
rsp.reflex.de/en

Longtherm — counter flow

Heat exchangers should always be connected according to the counter flow principle, as this is the only way to use their full capacity. When connected in the parallel flow, considerable losses in capacity must be expected in certain cases.



1. ϑ hot, inlet
2. ϑ cold, outlet – counter flow
3. Additional yield, counter flow compared to parallel flow
4. ϑ cold, on – counter flow
5. Δ ϑ in
6. ϑ hot, off
7. ϑ cold, off – parallel flow
8. ϑ cold, on – counter flow

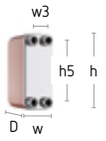
Longtherm brazed — quick selection

Output	System separation		Low-temperature		Underfloor heating		District heating		Cold water		Potable water / charge water tank / flow heater	
primary	70 °C	50 °C	50 °C	40 °C	55 °C	49 °C	110 °C	55 °C	14 °C	8 °C	70 °C	50 °C
secondary	40 °C	60 °C	35 °C	50 °C	40 °C	45 °C	50 °C	70 °C	6 °C	12 °C	10 °C	60 °C
log. temperature difference*	10 K		5 K		9,5 K		16,8 K		2 K		21,6 K	
water / glycol	water / water		water / water		water / water		water / water		water / 34 % glycol		water / 38 % glycol	
max. pressure loss	25 kPa		25 kPa		25 kPa		25 kPa		35 kPa		25 kPa	
Thermal output [kW]	Heat exchanger type (Art.- No.)											
3	**RMB-14-20** (8011200)		**RMB-14-20** (8011200)		**RMB-14-10** (8011100)		**RMB-14-10** (8011100)		**RMB-34-20** (8013600)		**RMB-14-10** (8011100)	
6	**RMB-14-20** (8011200)		**RMB-22-20** (8011500)		**RMB-14-10** (8011100)		**RMB-14-20** (8011200)		**RMB-34-30** (8013700)		**RMB-14-10** (8011100)	
10	**RMB-14-30** (8011300)		**RMB-22-20** (8011500)		**RMB-14-20** (8011200)		**RMB-14-20** (8011200)		**RMB-34-50** (8013900)		**RMB-14-20** (8011200)	
15	**RMB-22-20** (8011500)		**RMB-22-30** (8021300)		**RMB-14-30** (8011300)		**RMB-14-30** (8011300)		**RHB-60-30** (8025500)		**RMB-14-20** (8011200)	
20	**RMB-22-20** (8011500)		**RMB-22-40** (8011700)		**RMB-14-40** (8011400)		**RMB-14-30** (8011300)		**RHB-60-40** (8024100)		**RMB-14-30** (8011300)	
25	**RMB-22-30** (8021300)		**RHB-31-30** (8023700)		**RMB-31-30** (8023300)		**RMB-14-40** (8011400)		**RHB-60-50** (8024200)		**RMB-14-30** (8011300)	
30	**RMB-22-30** (8021300)		**RHB-31-30** (8023700)		**RMB-31-40** (8023400)		**RMB-22-20** (8011500)		**RHB-60-60** (8024300)		**RMB-22-20** (8011500)	
35	**RMB-22-30** (8021300)		**RHB-31-30** (8023700)		**RMB-31-40** (8023400)		**RMB-22-20** (8011500)		**RHB-60-70** (8024400)		**RMB-22-20** (8011500)	
40	**RMB-22-40** (8011700)		**RHB-31-30** (8023700)		**RMB-31-50** (8023500)		**RMB-22-20** (8011500)		**RHB-60-70** (8024400)		**RMB-22-30** (8021300)	
45	**RMB-22-40** (8011700)		**RHB-31-40** (8023800)		**RMB-31-50** (8023500)		**RMB-22-30** (8021300)		**RHB-60-80** (8024500)		**RMB-22-30** (8021300)	
50	**RMB-22-40** (8011700)		**RHB-31-40** (8023800)		**RMB-31-60** (8023600)		**RMB-22-30** (8021300)		**RHB-60-90** (8014600)		**RMB-22-40** (8011700)	
60	**RMB-22-50** (8011800)		**RHB-31-50** (8023900)		**RMB-31-90** (8013500)		**RMB-22-40** (8011700)		**RHB-60-110** (8014800)		**RMB-22-40** (8011700)	
70	**RHB-31-30** (8023700)		**RHB-31-60** (8024000)		**RLB-110-30** (8024600)		**RMB-22-50** (8011800)		**RHB-110-80** (8016500)		**RMB-22-50** (8011800)	
80	**RHB-31-30** (8023700)		**RHB-31-70** (8012300)		**RLB-110-30** (8024600)		**RHB-31-30** (8023700)		**RHB-110-80** (8016500)		**RHB-31-30** (8023700)	
90	**RHB-31-40** (8023800)		**RHB-31-80** (8012400)		**RLB-110-40** (8024700)		**RHB-31-40** (8023800)		**RHB-110-90** (8016600)		**RHB-31-40** (8023800)	
100	**RHB-31-40** (8023800)		**RHB-31-90** (8012500)		**RLB-110-40** (8024700)		**RHB-31-40** (8023800)		**RHB-110-100** (8016700)		**RHB-31-40** (8023800)	
110	**RHB-31-50** (8023900)		**RHB-31-100** (8012600)		**RLB-110-50** (8015100)		**RHB-31-40** (8023800)		**RHB-110-110** (8016800)		**RHB-31-40** (8023800)	
120	**RHB-31-50** (8023900)		**RHB-31-140** (8012800)		**RLB-110-50** (8015100)		**RHB-31-50** (8023900)		**RHB-110-120** (8016900)		**RHB-31-50** (8023900)	
130	**RHB-31-50** (8023900)		**RMB-110-40** (8024800)		**RLB-110-60** (8015200)		**RHB-31-50** (8023900)		**RHB-110-130** (8021400)		**RHB-31-50** (8023900)	
140	**RHB-31-60** (8024000)		**RMB-110-40** (8024800)		**RLB-110-60** (8015200)		**RHB-31-60** (8024000)		**RHB-110-150** (8017100)		**RHB-31-50** (8023900)	
150	**RHB-31-60** (8024000)		**RMB-110-50** (8024900)		**RLB-110-70** (8015300)		**RHB-31-60** (8024000)		**RHB-110-160** (8021100)		**RMB-31-60** (8023600)	
160	**RHB-31-70** (8012300)		**RMB-110-50** (8024900)		**RLB-110-70** (8015300)		**RHB-31-70** (8012300)		**RHB-110-170** (8017200)		**RMB-31-70** (8013300)	
170	**RHB-31-70** (8012300)		**RMB-110-50** (8024900)		**RLB-110-70** (8015300)		**RHB-31-70** (8012300)		**RHB-110-190** (8017300)		**RMB-31-70** (8013300)	
180	**RHB-31-80** (8012400)		**RMB-110-60** (8025000)		**RLB-110-90** (8019900)		**RHB-31-80** (8012400)		**RMB-235-90** (8018000)		**RMB-31-70** (8013300)	
190	**RHB-31-80** (8012400)		**RMB-110-60** (8025000)		**RLB-110-100** (8020000)		**RHB-31-90** (8012500)		**RMB-235-100** (8018100)		**RMB-31-80** (8013400)	
200	**RHB-31-90** (8012500)		**RMB-110-60** (8025000)		**RLB-110-110** (8020100)		**RHB-31-100** (8012600)		**RMB-235-100** (8018100)		**RMB-31-80** (8013400)	
225	**RHB-31-100** (8012600)		**RMB-110-70** (8025100)		**RLB-235-80** (8017500)		**RHB-31-110** (8012700)		**RMB-235-120** (8018300)		**RMB-31-90** (8013500)	
250	**RHB-31-140** (8012800)		**RMB-110-80** (8025200)		**RLB-235-90** (8017600)		**RHB-31-140** (8012800)		**RMB-235-130** (8018400)		**RMB-31-100** (8019400)	
275	**RMB-110-40** (8024800)		**RMB-110-90** (8025300)		**RLB-235-100** (8017700)		**RMB-110-40** (8024800)		**RMB-235-140** (8021600)		**RLB-110-40** (8024700)	
300	**RMB-110-50** (8024900)		**RMB-110-100** (8025400)		**RLB-235-110** (8017800)		**RMB-110-40** (8024800)		**RMB-235-160** (8018600)		**RLB-110-50** (8015100)	
325	**RMB-110-50** (8024900)		**RMB-110-120** (8016200)		**RLB-235-120** (8017900)		**RMB-110-50** (8024900)		**RMB-235-170** (8021700)		**RLB-110-50** (8015100)	
350	**RMB-110-60** (8025000)		**RMB-110-130** (8020800)		**RLB-235-140** (8022100)		**RMB-110-50** (8024900)		**RMB-235-190** (8021800)		**RLB-110-50** (8015100)	
375	**RMB-110-60** (8025000)		**RMB-110-150** (8020900)		**RLB-235-150** (8022200)		**RMB-110-60** (8025000)		**RMB-235-220** (8018900)		**RLB-110-60** (8015200)	
400	**RMB-110-70** (8025100)		**RLB-235-100** (8017700)		**RLB-235-170** (8022400)		**RMB-110-60** (8025000)		**RMB-235-240** (8019000)		**RLB-110-60** (8015200)	
425	**RMB-110-70** (8025100)		**RLB-235-100** (8017700)		**RLB-235-190** (8022600)		**RMB-110-70** (8025100)		**RMB-235-260** (8021900)		**RLB-110-60** (8015200)	
450	**RMB-110-80** (8025200)		**RLB-235-110** (8017800)		**RLB-235-220** (8022800)		**RMB-110-70** (8025100)		**RMB-235-270** (8019100)		**RLB-110-70** (8015300)	
475	**RMB-110-80** (8025200)		**RLB-235-110** (8017800)		**RLB-235-280** (8023200)		**RMB-110-80** (8025200)				**RLB-110-70** (8015300)	
500	**RMB-110-80** (8025200)		**RLB-235-120** (8017900)				**RMB-110-80** (8025200)				**RLB-110-70** (8015300)	
525	**RMB-110-80** (8025200)		**RLB-235-130** (8022000)				**RMB-110-90** (8025300)				**RLB-110-80** (8015400)	
550	**RMB-110-90** (8025300)		**RLB-235-130** (8022000)				**RMB-110-90** (8025300)				**RLB-110-80** (8015400)	
575	**RMB-110-90** (8025300)		**RLB-235-140** (8022100)				**RMB-110-100** (8025400)				**RLB-110-80** (8015400)	
600	**RMB-110-100** (8025400)		**RLB-235-140** (8022100)				**RMB-110-100** (8025400)				**RLB-110-90** (8019900)	
625	**RMB-110-110** (8016100)		**RLB-235-150** (8022200)				**RMB-110-110** (8016100)				**RLB-110-90** (8019900)	
650	**RMB-110-120** (8016200)		**RLB-235-150** (8022200)				**RMB-110-110** (8016100)				**RLB-110-90** (8019900)	
675	**RMB-110-120** (8016200)		**RLB-235-160** (8022300)				**RMB-110-120** (8016200)				**RLB-110-100** (8020000)	
700	**RMB-110-130** (8020800)		**RLB-235-160** (8022300)				**RMB-110-130** (8020800)				**RLB-110-100** (8020000)	
725	**RMB-110-140** (8016300)		**RLB-235-170** (8022400)				**RLB-110-140** (8020400)				**RLB-110-100** (8020000)	
750	**RMB-110-150** (8020900)		**RLB-235-180** (8022500)				**RLB-110-140** (8020400)				**RLB-110-110** (8020100)	
775	**RMB-110-150** (8020900)		**RLB-235-180** (8022500)				**RLB-110-140** (8020400)				**RLB-110-110** (8020100)	
800	**RLB-235-90** (8017600)		**RLB-235-190** (8022600)				**RLB-110-150** (8020500)				**RLB-110-120** (8020200)	
825	**RLB-235-90** (8017600)		**RLB-235-190** (8022600)				**RLB-110-150** (8020500)				**RLB-110-130** (8020300)	
850	**RLB-235-100** (8017700)		**RLB-235-200** (8022700)				**RLB-110-160** (8020600)				**RLB-110-140** (8020400)	
875	**RLB-235-100** (8017700)		**RLB-235-220** (8022800)				**RLB-235-70** (8017400)				**RLB-235-80** (8017500)	
900	**RLB-235-100** (8017700)		**RLB-235-220** (8022800)				**RLB-235-80** (8017500)				**RLB-235-80** (8017500)	
925	**RLB-235-110** (8017800)		**RLB-235-260** (8023000)				**RLB-235-80** (8017500)				**RLB-235-80** (8017500)	
950	**RLB-235-110** (8017800)		**RLB-235-280** (8023200)				**RLB-235-80** (8017500)				**RLB-235-80** (8017500)	
975	**RLB-235-110** (8017800)						**RLB-235-80** (8017500)				**RLB-235-90** (8017600)	
1000	**RLB-235-110** (8017800)						**RLB-130-90** (8017600)				**RLB-235-90** (8017600)	

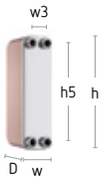
* If the logarithmic temperature differences and the medium remain identical, then the same heat exchanger can be selected even if the temperature profiles change. However, the maximum pressure loss can vary and must be checked accordingly.

Heat exchangers

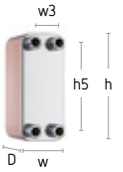
Longtherm brazed single-pass CE



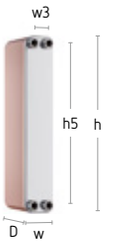
Longtherm R_B-14



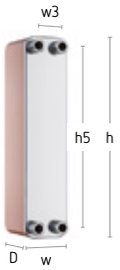
Longtherm R_B-22



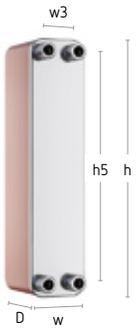
Longtherm R_B-31



Longtherm R_B-34

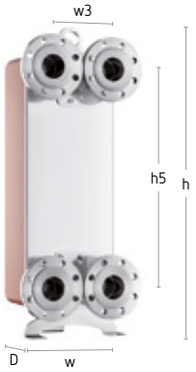


Longtherm R_B-34



Longtherm RHB-110

Longtherm R_B-110



Longtherm R_B-235

Technical Features

- stainless steel (1.4401) heat exchanger soldered with copper solder
- approval according to Pressure Equipment Directive 2014/68/EU
- max. permissible operating temperature 230 °C
- permissible gauge operating pressure for R_B-14 to -60: 30 bar
- permissible gauge operating pressure for R_B-14 to -60: 25 bar
- flange connections solely for R_B-235

Longtherm brazed single-pass

CE

	Type	Number of plates	Art. No.			DG	Overall water content	Connection c	Height h/h5	Width w/w3	Depth D	Weight
			RHB	RLB	RMB		[l]		[mm]	[mm]	[mm]	[kg]
30 bar 230 °C	R_B-14-10	10	–	–	8011100	0067	0,2	AG ¾"	203/164	81/42	32	1,10
	R_B-14-20	20	–	–	8011200	0067	0,4	AG ¾"	203/164	81/42	55	1,60
	R_B-14-30	30	–	–	8011300	0067	0,6	AG ¾"	203/164	81/42	78	2,10
	R_B-14-40	40	–	–	8011400	0067	0,8	AG ¾"	203/164	81/42	101	2,60
	R_B-14-50	50	–	–	8019300	0067	1,0	AG ¾"	203/164	81/42	124	3,10
	R_B-14-60	60	–	–	8031000	0067	1,2	AG ¾"	203/164	81/42	147	3,60
	R_B-22-10	10	–	–	8031700	0067	0,3	AG ¾"	299/260	81/42	32	1,60
	R_B-22-20	20	–	–	8011500	0067	0,6	AG ¾"	299/260	81/42	55	2,10
	R_B-22-30	30	–	–	8021300	0067	1,0	AG ¾"	299/260	81/42	78	2,80
	R_B-22-40	40	–	–	8011700	0067	1,4	AG ¾"	299/260	81/42	101	3,50
	R_B-22-50	50	–	–	8011800	0067	1,8	AG ¾"	299/260	81/42	124	4,20
	R_B-22-60	60	–	–	8031800	0067	2,2	AG ¾"	299/260	81/42	147	5,50
	R_B-31-10	10	8032500	–	8034600	0067	0,6	AG 1¼"	286/232	123/68	35	2,80
	R_B-31-15	15	8032600	–	8034700	0067	0,8	AG 1¼"	286/232	123/68	47	3,35
	R_B-31-20	20	8032700	–	8034800	0067	1,0	AG 1¼"	286/232	123/68	58	3,90
	R_B-31-30	30	8023700	–	8023300	0067	1,4	AG 1¼"	286/232	123/68	81	5,01
	R_B-31-40	40	8023800	–	8023400	0067	1,8	AG 1¼"	286/232	123/68	104	6,15
	R_B-31-50	50	8023900	–	8023500	0067	2,4	AG 1¼"	286/232	123/68	128	7,28
	R_B-31-60	60	8024000	–	8023600	0067	2,9	AG 1¼"	286/232	123/68	151	8,42
	R_B-31-70	70	8012300	–	8013300	0067	3,2	AG 1¼"	286/232	123/68	174	10,02
	R_B-31-80	80	8012400	–	8013400	0067	3,8	AG 1¼"	286/232	123/68	198	11,16
	R_B-31-90	90	8012500	–	8013500	0067	4,2	AG 1¼"	286/232	123/68	221	15,00
	R_B-31-100	100	8012600	–	8019400	0067	4,6	AG 1¼"	286/232	123/68	245	16,50
	R_B-31-110	110	8012700	–	8019500	0067	5,1	AG 1¼"	286/232	123/68	269	18,00
	R_B-31-120	120	8032800	–	8034900	0067	5,4	AG 1¼"	286/232	123/68	293	15,50
	R_B-31-130	130	8032900	–	8035000	0067	6,0	AG 1¼"	286/232	123/68	316	16,65
	R_B-31-140	140	8012800	–	8019600	0067	6,6	AG 1¼"	286/232	123/68	339	22,50
	R_B-31-150	150	8033000	–	8035100	0067	7,0	AG 1¼"	286/232	123/68	362	18,85
	R_B-34-10	10	–	–	8036700	0067	1,4	AG ¾"	471/432	81/42	32	2,40
	R_B-34-20	20	–	–	8013600	0067	0,6	AG ¾"	471/432	81/42	55	3,10
	R_B-34-30	30	–	–	8013700	0067	1,1	AG ¾"	471/432	81/42	78	4,20
	R_B-34-40	40	–	–	8013800	0067	1,6	AG ¾"	471/432	81/42	101	5,30
	R_B-34-50	50	–	–	8013900	0067	2,1	AG ¾"	471/432	81/42	124	6,40
	R_B-34-60	60	–	–	8014000	0067	2,6	AG ¾"	471/432	81/42	147	7,50
	R_B-60-10	10	8037400	8039300	8037800	0067	1,2	AG 1¼"	538/480	123/68	32	4,80
	R_B-60-20	20	8037500	8039400	8037900	0067	2,0	AG 1¼"	538/480	123/68	56	7,00
	R_B-60-30	30	8025500	8039500	8038000	0067	2,8	AG 1¼"	538/480	123/68	81	9,17
	R_B-60-40	40	8024100	8039600	8038100	0067	3,6	AG 1¼"	538/480	123/68	104	11,36
	R_B-60-50	50	8024200	8039700	8038200	0067	4,4	AG 1¼"	538/480	123/68	128	13,55
	R_B-60-60	60	8024300	8039800	8038300	0067	5,4	AG 1¼"	538/480	123/68	151	15,74
	R_B-60-70	70	8024400	8039900	8038400	0067	6,2	AG 1¼"	538/480	123/68	175	17,92
	R_B-60-80	80	8024500	8040000	8038500	0067	7,2	AG 1¼"	538/480	123/68	198	20,11
	R_B-60-90	90	8014600	8040100	8038600	0067	8,0	AG 1¼"	538/480	123/68	222	21,40
	R_B-60-100	100	8014700	8040200	8038700	0067	9,0	AG 1¼"	538/480	123/68	245	23,50
	R_B-60-110	110	8014800	8040300	8038800	0067	10,0	AG 1¼"	538/480	123/68	268	25,60
	R_B-60-120	120	8019700	8040400	8038900	0067	11,0	AG 1¼"	538/480	123/68	292	27,70
	R_B-60-130	130	8019800	8040500	8039000	0067	12,0	AG 1¼"	538/480	123/68	316	29,80
	R_B-60-140	140	8037600	8040600	8039100	0067	13,0	AG 1¼"	538/480	123/68	340	32,00
	R_B-60-150	150	8037700	8040700	8039200	0067	13,8	AG 1¼"	538/480	123/68	364	34,20

Longtherm brazed single-pass

CE

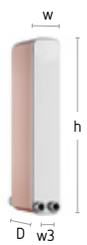
	Type	Number of plates	Art. No.			DG	Overall water content	Connection c	Height h/h5	Width w/w3	Depth D	Weight
			RHB	RLB	RMB		[l]		[mm]	[mm]	[mm]	[kg]
25 bar 230 °C	R_B-110-30	30	8045300	–	–	0067	7,2	AG 2"	620/520	191/91	90	20,90
	R_B-110-40	40	8045400	–	–	0067	9,6	AG 2"	620/520	191/91	116	25,00
	R_B-110-50	50	8045500	–	–	0067	12,0	AG 2"	620/520	191/91	142	29,10
	R_B-110-60	60	8045600	–	–	0067	15,6	AG 2"	620/520	191/91	166	33,20
	R_B-110-70	70	8021000	–	–	0067	16,8	AG 2"	620/520	191/91	192	37,30
	R_B-110-80	80	8016500	–	–	0067	19,2	AG 2"	620/520	191/91	218	41,90
	R_B-110-90	90	8016600	–	–	0067	21,6	AG 2"	620/520	191/91	244	46,50
	R_B-110-100	100	8016700	–	–	0067	24,0	AG 2"	620/520	191/91	270	51,10
	R_B-110-110	110	8016800	–	–	0067	26,4	AG 2"	620/520	191/91	296	55,70
	R_B-110-120	120	8016900	–	–	0067	28,8	AG 2"	620/520	191/91	322	60,30
	R_B-110-130	130	8021400	–	–	0067	31,2	AG 2"	620/520	191/91	348	61,49
	R_B-110-140	140	8017000	–	–	0067	33,6	AG 2"	620/520	191/91	374	69,50
	R_B-110-150	150	8017100	–	–	0067	34,0	AG 2"	620/520	191/91	400	74,10
	R_B-110-160	160	8021100	–	–	0067	36,4	AG 2"	620/520	191/91	426	78,70
	R_B-110-170	170	8017200	–	–	0067	38,8	AG 2"	620/520	191/91	452	85,77
	R_B-110-180	180	8021200	–	–	0067	41,2	AG 2"	620/520	191/91	478	89,86
	R_B-110-190	190	8017300	–	–	0067	43,6	AG 2"	620/520	191/91	504	93,94
	R_B-110-30	30	–	8024600	8119600	0067	4,6	AG 2½"	466/378	258/170	84	20,96
	R_B-110-40	40	–	8024700	8024800	0067	6,4	AG 2½"	466/378	258/170	108	25,04
	R_B-110-50	50	–	8015100	8024900	0067	8,0	AG 2½"	466/378	258/170	132	28,10
	R_B-110-60	60	–	8015200	8025000	0067	9,6	AG 2½"	466/378	258/170	156	35,60
	R_B-110-70	70	–	8015300	8025100	0067	11,2	AG 2½"	466/378	258/170	180	37,30
	R_B-110-80	80	–	8015400	8025200	0067	12,8	AG 2½"	466/378	258/170	204	41,90
	R_B-110-90	90	–	8019900	8025300	0067	14,4	AG 2½"	466/378	258/170	228	46,50
	R_B-110-100	100	–	8020000	8025400	0067	16,0	AG 2½"	466/378	258/170	252	51,10
	R_B-110-110	110	–	8020100	8016100	0067	17,6	AG 2½"	466/378	258/170	276	55,70
	R_B-110-120	120	–	8020200	8016200	0067	19,2	AG 2½"	466/378	258/170	300	60,30
	R_B-110-130	130	–	8020300	8020800	0067	20,8	AG 2½"	466/378	258/170	324	64,90
	R_B-110-140	140	–	8020400	8016300	0067	22,6	AG 2½"	466/378	258/170	348	69,50
	R_B-110-150	150	–	8020500	8020900	0067	24,2	AG 2½"	466/378	258/170	372	74,10
	R_B-110-160	160	–	8020600	8016400	0067	25,8	AG 2½"	466/378	258/170	396	78,70
	R_B-235-30	30	–	8050100	8050800	0067	11,4	DN 80/PN 40	788/682	310/170	85	65,30
	R_B-235-40	40	–	8050200	8050900	0067	15,4	DN 80/PN 40	788/682	310/170	110	73,60
	R_B-235-50	50	–	8050300	8051000	0067	19,4	DN 80/PN 40	788/682	310/170	134	81,90
	R_B-235-60	60	–	8050400	8051100	0067	23,4	DN 80/PN 40	788/682	310/170	159	90,20
	R_B-235-70	70	–	8017400	8119800	0067	27,4	DN 80/PN 40	788/682	310/204	183	98,50
	R_B-235-80	80	–	8017500	8119900	0067	31,4	DN 80/PN 40	788/682	310/204	208	107,00
	R_B-235-90	90	–	8017600	8018000	0067	35,4	DN 80/PN 40	788/682	310/204	232	115,50
	R_B-235-100	100	–	8017700	8018100	0067	39,4	DN 80/PN 40	788/682	310/204	257	124,00
	R_B-235-110	110	–	8017800	8018200	0067	43,4	DN 80/PN 40	788/682	310/204	281	132,50
	R_B-235-120	120	–	8017900	8018300	0067	47,4	DN 80/PN 40	788/682	310/204	306	141,00
	R_B-235-130	130	–	8022000	8018400	0067	51,4	DN 80/PN 40	788/682	310/204	330	149,50
	R_B-235-140	140	–	8022100	8021600	0067	55,4	DN 80/PN 16	788/682	310/204	355	155,67
	R_B-235-150	150	–	8022200	8018500	0067	59,4	DN 80/PN 40	788/682	310/204	379	166,50
	R_B-235-160	160	–	8022300	8018600	0067	63,4	DN 80/PN 40	788/682	310/204	404	175,00
	R_B-235-170	170	–	8022400	8021700	0067	67,4	DN 80/PN 40	788/682	310/204	428	180,79
	R_B-235-180	180	–	8022500	8018700	0067	71,4	DN 80/PN 40	788/682	310/204	453	192,00
	R_B-235-190	190	–	8022600	8021800	0067	75,4	DN 80/PN 40	788/682	310/204	477	197,35
	R_B-235-200	200	–	8022700	8018800	0067	79,2	DN 80/PN 40	788/682	310/204	502	209,00
	R_B-235-210	210	–	8050500	8051200	0067	83,2	DN 80/PN 40	788/682	310/170	526	213,90
	R_B-235-220	220	–	8022800	8018900	0067	87,2	DN 80/PN 40	788/682	310/204	551	226,00
	R_B-235-230	230	–	8050600	8051300	0067	91,2	DN 80/PN 40	788/682	310/170	575	230,50
	R_B-235-240	240	–	8022900	8019000	0067	95,2	DN 80/PN 40	788/682	310/204	600	243,00
	R_B-235-250	250	–	8050700	8051400	0067	99,2	DN 80/PN 40	788/682	310/170	624	247,20
	R_B-235-260	260	–	8023000	8021900	0067	103,2	DN 80/PN 40	788/682	310/204	649	255,50
	R_B-235-270	270	–	8023100	8019100	0067	107,2	DN 80/PN 40	788/682	310/204	673	268,50
	R_B-235-280	280	–	8023200	8019200	0067	111,2	DN 80/PN 40	788/682	310/204	698	277,00

Longtherm brazed two-way

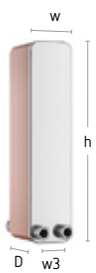
Longtherm R_B-14 – 2

Longtherm R_B-22 – 2

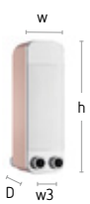
Longtherm R_B-31 – 2



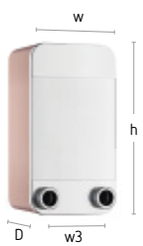
Longtherm R_B-34 – 2



Longtherm R_B-60 – 2



Longtherm RHB-110 – 2



Longtherm R_B-110 – 2

Longtherm R_B-235 – 2

Technical Features

- stainless steel (1.4401) heat exchanger soldered with copper solder
- approval according to Pressure Equipment Directive 2014/68/EU
- high thermal length for small expansion at low mass flows
- max. permissible operating temperature 230 °C
- permissible gauge operating pressure for R_B-14 to -60: 30 bar
- permissible gauge operating pressure for R_B-14 to -60: 25 bar
- flange connections solely for R_B-235

Longtherm brazed two-way

	Type	Number of plates	Art. No.			DG	Overall water content	Connection c	Height h/h5	Width w/w3	Depth D	Weight
			RHB	RLB	RMB		[l]		[mm]	[mm]	[mm]	[kg]
30 bar 230 °C	R_B-14-2-10	10	–	–	8031100	0067	0,2	AG ¾"	203	81/42	32	1,10
	R_B-14-2-20	20	–	–	8031200	0067	0,4	AG ¾"	203	81/42	55	1,60
	R_B-14-2-30	30	–	–	8031300	0067	0,6	AG ¾"	203	81/42	78	2,20
	R_B-14-2-40	40	–	–	8031400	0067	0,8	AG ¾"	203	81/42	101	2,60
	R_B-14-2-50	50	–	–	8031500	0067	1,0	AG ¾"	203	81/42	124	3,10
	R_B-14-2-60	60	–	–	8031600	0067	1,2	AG ¾"	203	81/42	147	3,60
	R_B-22-2-10	10	–	–	8031900	0067	0,3	AG ¾"	299	81/42	32	1,60
	R_B-22-2-20	20	–	–	8032000	0067	0,6	AG ¾"	299	81/42	55	2,28
	R_B-22-2-30	30	–	–	8032100	0067	1,0	AG ¾"	299	81/42	78	3,01
	R_B-22-2-40	40	–	–	8032200	0067	1,4	AG ¾"	299	81/42	101	3,74
	R_B-22-2-50	50	–	–	8032300	0067	1,8	AG ¾"	299	81/42	124	4,47
	R_B-22-2-60	60	–	–	8032400	0067	2,2	AG ¾"	299	81/42	147	5,50
	R_B-31-2-10	10	8033100	–	8035200	0067	0,6	AG 1¼"	286	123/68	35	2,80
	R_B-31-2-20	20	8033300	–	8035400	0067	1,0	AG 1¼"	286	123/68	58	3,90
	R_B-31-2-30	30	8033400	–	8035500	0067	1,4	AG 1¼"	286	123/68	81	5,01
	R_B-31-2-40	40	8033500	–	8035600	0067	1,8	AG 1¼"	286	123/68	104	6,15
	R_B-31-2-50	50	8033600	–	8035700	0067	2,2	AG 1¼"	286	123/68	128	7,28
	R_B-31-2-60	60	8033700	–	8035800	0067	2,6	AG 1¼"	286	123/68	151	8,42
	R_B-31-2-70	70	8033800	–	8035900	0067	3,0	AG 1¼"	286	123/68	174	9,80
	R_B-31-2-80	80	8033900	–	8036000	0067	3,4	AG 1¼"	286	123/68	198	10,94
	R_B-31-2-90	90	8034000	–	8036100	0067	3,8	AG 1¼"	286	123/68	221	12,08
	R_B-31-2-100	100	8034100	–	8036200	0067	4,2	AG 1¼"	286	123/68	245	13,21
	R_B-31-2-110	110	8034200	–	8036300	0067	4,6	AG 1¼"	286	123/68	269	14,35
	R_B-31-2-120	120	8034300	–	8036400	0067	5,0	AG 1¼"	286	123/68	293	15,50
	R_B-31-2-130	130	8034400	–	8036500	0067	5,4	AG 1¼"	286	123/68	316	16,65
	R_B-31-2-140	140	8034500	–	8036600	0067	5,8	AG 1¼"	286	123/68	339	17,77
	R_B-34-2-10	10	–	–	8036800	0067	0,3	AG ¾"	471	81/42	32	2,40
	R_B-34-2-20	20	–	–	8036900	0067	0,6	AG ¾"	471	81/42	55	3,51
	R_B-34-2-30	30	–	–	8037000	0067	1,1	AG ¾"	471	81/42	78	4,66
	R_B-34-2-40	40	–	–	8037100	0067	1,6	AG ¾"	471	81/42	101	5,82
	R_B-34-2-50	50	–	–	8037200	0067	2,1	AG ¾"	471	81/42	124	6,98
	R_B-34-2-60	60	–	–	8037300	0067	2,6	AG ¾"	471	81/42	147	8,14
	R_B-60-2-10	10	8040800	8043800	8042300	0067	1,2	AG 1¼"	538	123/68	32	4,80
	R_B-60-2-20	20	8040900	8043900	8042400	0067	2,0	AG 1¼"	538	123/68	56	7,00
	R_B-60-2-30	30	8041000	8044000	8042500	0067	2,8	AG 1¼"	538	123/68	80	9,20
	R_B-60-2-40	40	8041100	8044100	8042600	0067	3,6	AG 1¼"	538	123/68	104	11,36
	R_B-60-2-50	50	8041200	8044200	8042700	0067	4,4	AG 1¼"	538	123/68	128	13,55
	R_B-60-2-60	60	8041300	8044300	8042800	0067	5,4	AG 1¼"	538	123/68	151	15,74
	R_B-60-2-70	70	8041400	8044400	8042900	0067	6,2	AG 1¼"	538	123/68	175	17,92
	R_B-60-2-80	80	8041500	8044500	8043000	0067	7,2	AG 1¼"	538	123/68	198	20,11
	R_B-60-2-90	90	8041600	8044600	8043100	0067	8,0	AG 1¼"	538	123/68	222	22,29
	R_B-60-2-100	100	8041700	8044700	8043200	0067	9,0	AG 1¼"	538	123/68	245	24,48
	R_B-60-2-110	110	8041800	8044800	8043300	0067	10,0	AG 1¼"	538	123/68	268	26,66
	R_B-60-2-120	120	8041900	8044900	8043400	0067	11,0	AG 1¼"	538	123/68	292	27,60
	R_B-60-2-130	130	8042000	8045000	8043500	0067	12,0	AG 1¼"	538	123/68	316	29,80
	R_B-60-2-140	140	8042100	8045100	8043600	0067	13,0	AG 1¼"	538	123/68	340	32,00
	R_B-60-2-150	150	8042200	8045200	8043700	0067	13,8	AG 1¼"	538	123/68	364	34,20

Longtherm brazed two-way

CE

	Type	Number of plates	Art. No.			DG	Overall water content	Connection c	Height h/h5	Width w/w3	Depth D	Weight
			RHB	RLB	RMB		[l]		[mm]	[mm]	[mm]	[kg]
25 bar 230 °C	R_B-110-2-30	30	8045700	–	–	0067	7,2	AG 2"	620	191/91	90	20,90
	R_B-110-2-40	40	8045800	–	–	0067	9,6	AG 2"	620	191/91	116	25,00
	R_B-110-2-50	50	8045900	–	–	0067	12,0	AG 2"	620	191/91	142	29,10
	R_B-110-2-60	60	8046000	–	–	0067	14,4	AG 2"	620	191/91	166	33,20
	R_B-110-2-70	70	8046100	–	–	0067	16,8	AG 2"	620	191/91	192	37,30
	R_B-110-2-80	80	8046200	–	–	0067	19,2	AG 2"	620	191/91	218	41,07
	R_B-110-2-90	90	8046300	–	–	0067	21,6	AG 2"	620	191/91	244	45,16
	R_B-110-2-100	100	8046400	–	–	0067	24,0	AG 2"	620	191/91	270	49,24
	R_B-110-2-110	110	8046500	–	–	0067	26,4	AG 2"	620	191/91	296	53,32
	R_B-110-2-120	120	8046600	–	–	0067	28,8	AG 2"	620	191/91	322	57,41
	R_B-110-2-130	130	8046700	–	–	0067	31,2	AG 2"	620	191/91	348	61,49
	R_B-110-2-140	140	8046800	–	–	0067	33,6	AG 2"	620	191/91	374	65,57
	R_B-110-2-150	150	8056900	–	–	0067	73,6	AG 2"	620	191/91	400	69,65
	R_B-110-2-160	160	8046900	–	–	0067	38,4	AG 2"	620	191/91	426	73,63
	R_B-110-2-170	170	8047000	–	–	0067	40,8	AG 2"	620	191/91	452	77,77
	R_B-110-2-180	180	8047100	–	–	0067	43,6	AG 2"	620	191/91	478	81,86
	R_B-110-2-190	190	8047200	–	–	0067	46,0	AG 2"	620	191/91	504	85,94
	R_B-110-2-30	30	–	8048700	8047300	0067	4,8	AG 2½"	466	258/170	84	17,90
	R_B-110-2-40	40	–	8048800	8047400	0067	6,4	AG 2½"	466	258/170	108	23,50
	R_B-110-2-50	50	–	8048900	8047500	0067	8,0	AG 2½"	466	258/170	132	29,12
	R_B-110-2-60	60	–	8049000	8047600	0067	9,6	AG 2½"	466	258/170	156	33,19
	R_B-110-2-70	70	–	8049100	8047700	0067	11,2	AG 2½"	466	258/170	180	37,27
	R_B-110-2-80	80	–	8049200	8047800	0067	12,8	AG 2½"	466	258/170	204	41,35
	R_B-110-2-90	90	–	8049300	8047900	0067	14,4	AG 2½"	466	258/170	228	45,43
	R_B-110-2-100	100	–	8049400	8048000	0067	16,0	AG 2½"	466	258/170	252	49,51
	R_B-110-2-110	110	–	8049500	8048100	0067	17,6	AG 2½"	466	258/170	276	54,85
	R_B-110-2-120	120	–	8049600	8048200	0067	19,2	AG 2½"	466	258/170	300	58,93
	R_B-110-2-130	130	–	8049700	8048300	0067	20,8	AG 2½"	466	258/170	324	63,10
	R_B-110-2-140	140	–	8049800	8048400	0067	22,4	AG 2½"	466	258/170	348	67,09
	R_B-110-2-150	150	–	8049900	8048500	0067	24,0	AG 2½"	466	258/170	372	71,20
	R_B-110-2-160	160	–	8050000	8048600	0067	25,8	AG 2½"	466	258/170	396	75,25
	R_B-235-2-30	30	–	8054300	8051500	0067	11,4	DN 80/PN 40	788	310/170	85	65,30
	R_B-235-2-40	40	–	8054400	8051800	0067	15,4	DN 80/PN 40	788	310/170	110	73,60
	R_B-235-2-50	50	–	8054500	8051900	0067	19,4	DN 80/PN 40	788	310/170	134	81,90
	R_B-235-2-60	60	–	8054600	8052000	0067	23,4	DN 80/PN 40	788	310/170	159	90,20
	R_B-235-2-70	70	–	8054700	8052100	0067	27,4	DN 80/PN 40	788	310/170	183	98,50
	R_B-235-2-80	80	–	8054800	8052200	0067	31,4	DN 80/PN 40	788	310/170	208	107,00
	R_B-235-2-90	90	–	8054900	8052300	0067	35,4	DN 80/PN 40	788	310/170	232	114,55
	R_B-235-2-100	100	–	8055000	8052400	0067	39,4	DN 80/PN 40	788	310/170	263	122,83
	R_B-235-2-110	110	–	8055100	8052500	0067	43,4	DN 80/PN 40	788	310/170	281	131,11
	R_B-235-2-120	120	–	8055200	8052600	0067	47,4	DN 80/PN 40	788	310/170	306	139,39
	R_B-235-2-130	130	–	8055300	8052700	0067	51,4	DN 80/PN 40	788	310/170	330	147,67
	R_B-235-2-140	140	–	8055400	8052800	0067	55,4	DN 80/PN 40	788	310/170	355	155,67
	R_B-235-2-150	150	–	8055500	8052900	0067	59,2	DN 80/PN 40	788	310/170	379	164,23
	R_B-235-2-160	160	–	8055600	8053000	0067	63,2	DN 80/PN 40	788	310/170	404	172,51
	R_B-235-2-170	170	–	8055700	8053100	0067	67,2	DN 80/PN 40	788	310/170	428	180,79
	R_B-235-2-180	180	–	8055800	8053200	0067	71,2	DN 80/PN 40	788	310/170	453	189,07
	R_B-235-2-190	190	–	8055900	8053300	0067	75,2	DN 80/PN 40	788	310/170	477	197,35
	R_B-235-2-200	200	–	8056000	8053400	0067	79,2	DN 80/PN 40	788	310/170	502	205,63
	R_B-235-2-210	210	–	8056100	8053500	0067	83,2	DN 80/PN 40	788	310/170	526	213,90
	R_B-235-2-220	220	–	8056200	8053600	0067	87,2	DN 80/PN 40	788	310/170	551	222,19
	R_B-235-2-230	230	–	8056300	8053700	0067	91,2	DN 80/PN 40	788	310/170	575	230,50
	R_B-235-2-240	240	–	8056400	8053800	0067	95,2	DN 80/PN 40	788	310/170	600	238,75
	R_B-235-2-250	250	–	8056500	8053900	0067	99,2	DN 80/PN 40	788	310/170	624	247,20
	R_B-235-2-260	260	–	8056600	8054000	0067	103,2	DN 80/PN 40	788	310/170	649	255,50
	R_B-235-2-270	270	–	8056700	8054100	0067	107,2	DN 80/PN 40	788	310/170	673	263,59
	R_B-235-2-280	280	–	8056800	8054200	0067	111,2	DN 80/PN 40	788	310/170	698	271,87

Longterm gasketed — quick selection

Output	System separation		Process heating		District heating		Cold Water		Swimming pool	
primary	80 °C	60 °C	90 °C	80 °C	110 °C	55 °C	14 °C	8 °C	40 °C	25 °C
secondary	50 °C	70 °C	77 °C	87 °C	50 °C	70 °C	6 °C	12 °C	15 °C	25 °C
log. temperature difference*	10 K		3 K		16,8 K		2 K		12,3 K	
water / glycol	water / water		water / water		water / water		water / 34 % glycol		38 % glycol / water	
max. pressure loss	20 kPa		35 kPa		25 kPa		40 kPa		25 kPa	
Thermal output [kW]	Heat exchanger type (Art.- No.)									
15	**RHG-04-10** (8026400)		**RHG-08-10** (8027200)		**RHG-04-10** (8026400)		**RHG-08-30** (8027400)		**RHG-04-10** (8026400)	
25	**RHG-04-20** (8026500)		**RHG-08-20** (8027300)		**RHG-04-10** (8026400)		**RHG-08-50** (8027600)		**RHG-04-20** (8026500)	
50	**RHG-04-30** (8026600)		**RHG-08-30** (8027400)		**RHG-04-20** (8026500)		**RHG-14-55** (8111900)		**RHG-04-20** (8026500)	
75	**RHG-04-30** (8026600)		**RHG-08-40** (8027500)		**RHG-04-20** (8026500)		**RHG-14-75** (8112100)		**RHG-04-40** (8026700)	
100	**RHG-04-40** (8026700)		**RHG-08-60** (8027700)		**RHG-04-30** (8026600)		**RHG-20-55** (8112300)		**RHG-04-60** (8026900)	
125	**RHG-04-50** (8026800)		**RHG-14-35** (8111700)		**RHG-04-30** (8026600)		**RHG-20-75** (8112500)		**RHG-07-30** (8028200)	
150	**RHG-04-60** (8026900)		**RHG-14-45** (8111800)		**RHG-04-40** (8026700)		**RHG-20-85** (8112600)		**RHG-07-40** (8028300)	
175	**RHG-04-70** (8027000)		**RHG-14-45** (8111800)		**RHG-04-40** (8026700)		**RHG-19-90** (8113000)		**RHG-07-40** (8028300)	
200	**RMG-14-25** (8028800)		**RHG-14-55** (8111900)		**RHG-04-60** (8026900)		**RHG-19-110** (8113200)		**RHG-07-50** (8028400)	
225	**RMG-14-35** (8111100)		**RHG-14-55** (8111900)		**RHG-07-40** (8028300)		**RHG-19-120** (8113300)		**RHG-07-50** (8028400)	
250	**RMG-14-35** (8111100)		**RHG-14-65** (8112000)		**RHG-07-40** (8028300)		**RHG-19-130** (8113400)		**RHG-07-60** (8028500)	
275	**RMG-14-35** (8111100)		**RHG-14-75** (8112100)		**RHG-07-40** (8028300)		**RHG-19-140** (8113500)		**RHG-07-60** (8028500)	
300	**RMG-14-35** (8111100)		**RHG-14-75** (8112100)		**RHG-07-50** (8028400)		**RMG-51-65** (8115200)		**RHG-07-70** (8028600)	
325	**RMG-14-45** (8111200)		**RHG-14-85** (8112200)		**RHG-07-50** (8028400)		**RMG-51-70** (8115300)		**RHG-07-80** (8028700)	
350	**RMG-14-45** (8111200)		**RHG-21-50** (8116700)		**RHG-07-50** (8028400)		**RMG-51-75** (8115400)		**RMG-19-50** (8029500)	
375	**RMG-14-45** (8111200)		**RHG-21-50** (8116700)		**RHG-07-60** (8028500)		**RMG-51-80** (8115500)		**RMG-19-60** (8029600)	
400	**RMG-14-45** (8111200)		**RHG-21-55** (8116800)		**RHG-07-60** (8028500)		**RMG-51-85** (8115600)		**RMG-19-60** (8029600)	
425	**RMG-14-55** (8111300)		**RHG-21-55** (8116800)		**RHG-07-60** (8028500)		**RMG-51-90** (8115700)		**RMG-19-70** (8113600)	
450	**RMG-14-55** (8111300)		**RHG-21-60** (8116900)		**RHG-07-70** (8028600)		**RMG-51-100** (8115800)		**RMG-19-70** (8113600)	
475	**RMG-14-55** (8111300)		**RHG-21-65** (8117000)		**RHG-07-70** (8028600)		**RMG-51-100** (8115800)		**RMG-19-80** (8113700)	
500	**RMG-14-55** (8111300)		**RHG-21-65** (8117000)		**RHG-07-70** (8028600)		**RMG-51-110** (8115900)		**RMG-21-50** (8114400)	
550	**RMG-14-65** (8111400)		**RHG-21-70** (8117100)		**RHG-07-80** (8028700)		**RMG-51-120** (8116000)		**RMG-21-50** (8114400)	
600	**RMG-14-65** (8111400)		**RHG-21-80** (8117200)		**RMG-14-55** (8111300)		**RMG-51-140** (8116100)		**RMG-21-55** (8114500)	
650	**RMG-14-75** (8111500)		**RHG-21-90** (8117300)		**RMG-14-65** (8111400)		**RMG-51-150** (8116200)		**RMG-21-60** (8114600)	
700	**RMG-14-85** (8111600)		**RHG-21-90** (8117300)		**RMG-19-50** (8029500)		**RMG-51-180** (8116400)		**RMG-21-65** (8114700)	
750	**RMG-19-70** (8113600)		**RHG-21-100** (8025700)		**RMG-19-60** (8029600)		**RMG-51-180** (8116400)		**RMG-21-70** (8114800)	
800	**RMG-19-70** (8113600)		**RHG-21-110** (8025800)		**RMG-19-60** (8029600)		**RMG-51-200** (8116500)		**RMG-21-80** (8114900)	
850	**RMG-19-80** (8113700)		**RHG-21-110** (8025800)		**RMG-19-70** (8113600)				**RMG-21-80** (8114900)	
900	**RMG-19-90** (8113800)		**RHG-21-120** (8025900)		**RMG-19-70** (8113600)				**RMG-21-90** (8115000)	
950	**RMG-21-60** (8114600)		**RHG-21-120** (8025900)		**RMG-19-80** (8113700)				**RMG-21-90** (8115000)	
1000	**RMG-21-65** (8114700)		**RHG-21-130** (8026000)		**RMG-19-80** (8113700)				**RMG-21-100** (8120000)	
1100	**RMG-21-70** (8114800)		**RHG-21-150** (8026200)		**RMG-21-50** (8114400)				**RMG-21-110** (8120100)	
1200	**RMG-21-80** (8114900)		**RHG-21-160** (8026300)		**RMG-21-50** (8114400)				**RMG-21-130** (8120300)	
1300	**RMG-21-90** (8115000)		**RMG-51-160** (8116300)		**RMG-21-60** (8114600)				**RMG-21-150** (8120500)	
1400	**RMG-21-90** (8115000)		**RMG-51-180** (8116400)		**RMG-21-60** (8114600)				**RHB-31-100** (8012600)	
1500	**RMG-21-100** (8120000)		**RMG-51-200** (8116500)		**RMG-21-70** (8114800)				**RMB-14-20** (8011200)	
1600	**RMG-21-100** (8120000)				**RMG-21-70** (8114800)				**RMB-14-10** (8011100)	
1700	**RMG-21-110** (8120100)				**RMG-21-80** (8114900)				**RMB-14-20** (8011200)	
1800	**RMG-21-110** (8120100)				**RMG-21-80** (8114900)				**RHB-31-90** (8012500)	
1900	**RMG-21-120** (8120200)				**RMG-21-90** (8115000				**RHB-31-40** (8023800)	
2000	**RMG-21-130** (8120300)				**RMG-21-100** (8120000)					

* If the logarithmic temperature differences and the medium remain identical, then the same heat exchanger can be selected even if the temperature profiles change. However, the maximum pressure loss can vary and must be checked accordingly.

Our configuration software helps you choose and calculate your product solution

Reflex Solutions **Pro**
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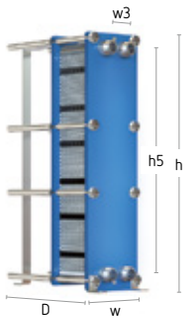
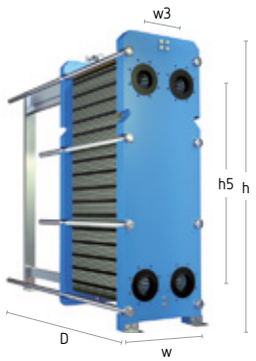
Longtherm gasketed



Longtherm R_G-04, -07, -08, -14, -20



Longtherm R_G-19, -21, -51

Technical Features

- heat exchanger made of 0,5 mm stainless-steel plates (AISI 316L) with NBR seals
- flange connections, only for R_G-19, -21 and -51
- carbon steel flange and frame
- permissible operating overpressure for R_G-04 to -19: 16 bar
- permissible operating overpressure for R_G-21 to -51: 10 bar
- further seals and plate materials on request

Longtherm gasketed

CE

	Type	Number of plates	Art. No.			DG	Overall water content	Connection c	Height h/h5	Width w/w3	Depth D	Weight
			RHG	RLG	RMG		[l]		[mm]	[mm]	[mm]	[kg]
16 bar 110 °C	R_G-04-10	10	8026400	–	–	0167	0,9	AG 1¼"	473/381	190/70	355	32,10
	R_G-04-20	20	8026500	–	–	0167	1,9	AG 1¼"	473/381	190/70	355	34,70
	R_G-04-30	30	8026600	–	–	0167	2,9	AG 1¼"	473/381	190/70	355	38,50
	R_G-04-40	40	8026700	–	–	0167	3,9	AG 1¼"	473/381	190/70	505	42,80
	R_G-04-50	50	8026800	–	–	0167	4,9	AG 1¼"	473/381	190/70	505	45,80
	R_G-04-60	60	8026900	–	–	0167	5,9	AG 1¼"	473/381	190/70	505	48,90
	R_G-04-70	70	8027000	–	–	0167	6,9	AG 1¼"	473/381	190/70	605	52,90
	R_G-04-80	80	8027100	–	–	0167	7,9	AG 1¼"	473/381	190/70	605	55,90
	R_G-07-10	10	8028000	8122400	8121600	0167	1,6	AG 2"	596/394	300/126	563	76,30
	R_G-07-20	20	8028100	8122500	8121700	0167	3,4	AG 2"	596/394	300/126	563	81,10
	R_G-07-30	30	8028200	8122600	8121800	0167	5,2	AG 2"	596/394	300/126	563	85,90
	R_G-07-40	40	8028300	8122700	8121900	0167	7,0	AG 2"	596/394	300/126	763	95,00
	R_G-07-50	50	8028400	8122800	8122000	0167	8,8	AG 2"	596/394	300/126	763	99,80
	R_G-07-60	60	8028500	8122900	8122100	0167	10,5	AG 2"	596/394	300/126	763	104,50
	R_G-07-70	70	8028600	8123000	8122200	0167	12,3	AG 2"	596/394	300/126	763	109,30
	R_G-07-80	80	8028700	8123100	8122300	0167	14,0	AG 2"	596/394	300/126	963	118,40
	R_G-08-10	10	8027200	–	–	0167	1,5	AG 1¼"	755/658	190/70	355	51,20
	R_G-08-20	20	8027300	–	–	0167	3,2	AG 1¼"	755/658	190/70	355	55,40
	R_G-08-30	30	8027400	–	–	0167	4,9	AG 1¼"	755/658	190/70	355	59,60
	R_G-08-40	40	8027500	–	–	0167	6,6	AG 1¼"	755/658	190/70	505	65,20
	R_G-08-50	50	8027600	–	–	0167	8,2	AG 1¼"	755/658	190/70	505	69,40
	R_G-08-60	60	8027700	–	–	0167	10,0	AG 1¼"	755/658	190/70	505	73,60
	R_G-08-70	70	8027800	–	–	0167	11,8	AG 1¼"	755/658	190/70	605	79,60
	R_G-08-80	80	8027900	–	–	0167	13,4	AG 1¼"	755/658	190/70	605	83,20
	R_G-14-25	25	8028900	8123200	8028800	0167	7,7	AG 2"	896/694	300/126	563	128,60
	R_G-14-35	35	8111700	8123300	8111100	0167	10,8	AG 2"	896/694	300/126	563	136,00
	R_G-14-45	45	8111800	8123400	8111200	0167	14,0	AG 2"	896/694	300/126	763	149,00
	R_G-14-55	55	8111900	8123500	8111300	0167	17,2	AG 2"	896/694	300/126	763	156,00
	R_G-14-65	65	8112000	8123600	8111400	0167	20,4	AG 2"	896/694	300/126	763	164,00
	R_G-14-75	75	8112100	8123700	8111500	0167	23,6	AG 2"	896/694	300/126	763	171,00
	R_G-14-85	85	8112200	8123800	8111600	0167	26,8	AG 2"	896/694	300/126	963	184,00
	R_G-19-40	40	8029000	8124800	8029400	0167	16,5	DN 65/PN 16	946/700	395/192	558	246,70
	R_G-19-50	50	8029100	8124900	8029500	0167	20,6	DN 65/PN 16	946/700	395/192	558	257,00
	R_G-19-60	60	8029200	8125000	8029600	0167	24,8	DN 65/PN 16	946/700	395/192	758	273,60
	R_G-19-70	70	8112800	8125100	8113600	0167	29,3	DN 65/PN 16	946/700	395/192	758	284,00
	R_G-19-80	80	8112900	8125200	8113700	0167	33,5	DN 65/PN 16	946/700	395/192	758	294,00
	R_G-19-90	90	8113000	8125300	8113800	0167	37,7	DN 65/PN 16	946/700	395/192	958	305,00
	R_G-19-100	100	8113100	8125400	8113900	0167	42,0	DN 65/PN 16	946/700	395/192	958	315,00
	R_G-19-110	110	8113200	8125500	8114000	0167	46,2	DN 65/PN 16	946/700	395/192	1.158	338,00
	R_G-19-120	120	8113300	8125600	8114100	0167	50,5	DN 65/PN 16	946/700	395/192	1.158	348,00
	R_G-19-130	130	8113400	8125700	8114200	0167	54,7	DN 65/PN 16	946/700	395/192	1.158	358,00
	R_G-19-140	140	8113500	8125800	8114300	0167	58,9	DN 65/PN 16	946/700	395/192	1.158	369,00
	R_G-19-150	150	8029300	8125900	8030000	0167	63,2	DN 65/PN 16	946/700	395/192	1.158	378,90
	R_G-19-160	160	8124300	8126000	8124700	0167	66,0	DN 65/PN 16	946/700	395/192	1.158	439,60
	R_G-20-55	55	8112300	–	–	0167	22,4	AG 2"	1096/894	300/126	763	193,00
	R_G-20-65	65	8112400	–	–	0167	26,5	AG 2"	1096/894	300/126	763	203,00
	R_G-20-75	75	8112500	–	–	0167	30,6	AG 2"	1096/894	300/126	763	212,00
	R_G-20-85	85	8112600	–	–	0167	34,8	AG 2"	1096/894	300/126	963	228,00
	R_G-20-95	95	8112700	–	–	0167	38,9	AG 2"	1096/894	300/126	963	238,00

Longtherm gasketed

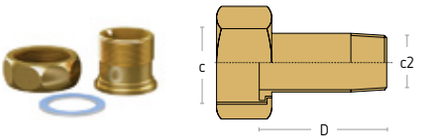
CE

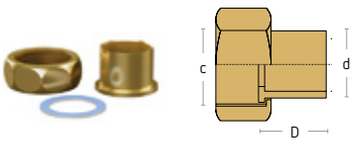
	Type	Number of plates	Art. No.			DG	Overall water content	Connection c	Height h/h5	Width w/w3	Depth D	Weight
			RHG	RLG	RMG		[l]		[mm]	[mm]	[mm]	[kg]
10 bar 110 °C	R_G-21-50	50	8116700	8126500	8114400	0167	31,5	DN 100/PN 10	1181/719	480/225	745	341,00
	R_G-21-55	55	8116800	8129300	8114500	0167	34,7	DN 100/PN 10	1181/719	480/225	745	348,00
	R_G-21-60	60	8116900	8126600	8114600	0167	37,9	DN 100/PN 10	1181/719	480/225	745	355,00
	R_G-21-65	65	8117000	8129400	8114700	0167	41,2	DN 100/PN 10	1181/719	480/225	745	362,00
	R_G-21-70	70	8117100	8126700	8114800	0167	44,4	DN 100/PN 10	1181/719	480/225	745	370,00
	R_G-21-80	80	8117200	8126800	8114900	0167	50,8	DN 100/PN 10	1181/719	480/225	1.145	405,00
	R_G-21-90	90	8117300	8126900	8115000	0167	57,2	DN 100/PN 10	1181/719	480/225	1.145	419,00
	R_G-21-100	100	8025700	8127000	8120000	0167	63,6	DN 100/PN 10	1181/719	480/225	1.145	472,50
	R_G-21-110	110	8025800	8127100	8120100	0167	70,1	DN 100/PN 10	1181/719	480/225	1.145	446,10
	R_G-21-120	120	8025900	8127200	8120200	0167	76,6	DN 100/PN 10	1181/719	480/225	1.145	459,70
	R_G-21-130	130	8026000	8127300	8120300	0167	83,0	DN 100/PN 10	1181/719	480/225	1.145	473,30
	R_G-21-140	140	8026100	8127400	8120400	0167	89,4	DN 100/PN 10	1181/719	480/225	1.145	486,90
	R_G-21-150	150	8026200	8127500	8120500	0167	95,8	DN 100/PN 10	1181/719	480/225	1.645	527,80
	R_G-21-160	160	8026300	8127600	8025600	0167	102,2	DN 100/PN 10	1181/719	480/225	1.645	541,40
	R_G-21-170	170	8126100	8127700	8126300	0167	108,3	DN 100/PN 10	1181/719	480/225	1.158	555,80
	R_G-21-180	180	8126200	8127800	8126400	0167	114,7	DN 100/PN 10	1181/719	480/225	1.158	570,20
	R_G-51-60	60	8117400	8128500	8115100	0167	72,9	DN 100/PN 10	1824/1365	480/225	745	570,00
	R_G-51-65	65	8117500	8128600	8115200	0167	79,0	DN 100/PN 10	1824/1365	480/225	745	582,00
	R_G-51-70	70	8117600	8128700	8115300	0167	85,2	DN 100/PN 10	1824/1365	480/225	745	594,00
	R_G-51-75	75	8117700	8128800	8115400	0167	91,4	DN 100/PN 10	1824/1365	480/225	1.145	632,00
	R_G-51-80	80	8117800	8128900	8115500	0167	97,6	DN 100/PN 10	1824/1365	480/225	1.145	644,00
	R_G-51-85	85	8117900	8129000	8115600	0167	103,7	DN 100/PN 10	1824/1365	480/225	1.145	656,00
	R_G-51-90	90	8118000	8129100	8115700	0167	109,9	DN 100/PN 10	1824/1365	480/225	1.145	668,00
	R_G-51-100	100	8118100	8129200	8115800	0167	122,3	DN 100/PN 10	1824/1365	480/225	1.145	691,00
	R_G-51-110	110	8118200	8129500	8115900	0167	134,6	DN 100/PN 10	1824/1365	480/225	1.145	715,00
	R_G-51-120	120	8118300	8129600	8116000	0167	147,0	DN 100/PN 10	1824/1365	480/225	1.145	738,00
	R_G-51-130	130	–	8129700	–	0167	159,4	DN 100/PN 10	1824/1365	480/225	1.145	762,00
	R_G-51-140	140	8118400	8129800	8116100	0167	171,7	DN 100/PN 10	1824/1365	480/225	1.145	785,00
	R_G-51-150	150	8118500	8129900	8116200	0167	184,0	DN 100/PN 10	1824/1365	480/225	1.645	839,00
	R_G-51-160	160	8118600	8130000	8116300	0167	196,4	DN 100/PN 10	1824/1365	480/225	1.645	863,00
	R_G-51-170	170	8127900	8130100	8128200	0167	207,9	DN 100/PN 10	1824/1365	480/225	1.645	917,00
	R_G-51-180	180	8118700	8130200	8116400	0167	221,1	DN 100/PN 10	1824/1365	480/225	1.645	910,00
	R_G-51-190	190	8128000	8130300	8128300	0167	232,4	DN 100/PN 10	1824/1365	480/225	1.645	1.025,00
	R_G-51-200	200	8118800	8130400	8116500	0167	245,6	DN 100/PN 10	1824/1365	480/225	1.645	957,00
	R_G-51-210	210	8128100	8130500	8128400	0167	256,8	DN 100/PN 10	1824/1365	480/225	1.645	1.133,00
	R_G-51-220	220	8118900	8130600	8116600	0167	270,5	DN 100/PN 10	1824/1365	480/225	1.645	1.004,00

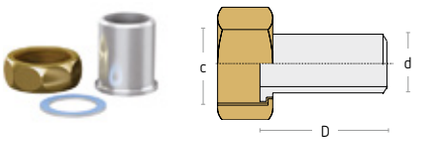
Longtherm accessories

Longtherm connection options

- flat-sealed threaded connections, including seal, system connection as male thread, soldered end, welded end
- from size RMB-235, the heat exchangers are fitted with special flanges
- consisting of 2 units, delivery only as complete set
- two sets are required per heat exchanger







Longtherm accessories CE

Type 1	Type 2	Type 3	Type 4	Art. No.	DG	Connection inlet	Connection outlet	Ø d [mm]	Depth D [mm]	Weight [kg]
With solder-on end – brass										
RMB-14	RMB-22	RMB-34	–	6761100	0069	G ¾"	–	18	16	0,10
R_B-31	R_B-60	R_G-04	R_G-08	6761300	0069	G 1¼"	–	28	22	0,25
With weld-on end, steel										
RMB-14	RMB-22	RMB-34	–	6760100	0069	G ¾"	–	21	30	0,10
R_B-31	R_B-60	R_G-04	R_G-08	6760300	0069	G 1¼"	–	34	40	0,30
RHB-110	R_G-07	R_G-14	R_G-20	6760400	0069	G 2"	–	48	40	0,50
RLB-110	RMB-110	–	–	6760500	0069	G 2½"	–	60	50	1,00
R_B-235	–	–	–	6770500	0069	DN 80/PN 40	–	200	21	5,18
With female thread – brass										
RMB-14	RMB-22	RMB-34	–	6762100	0069	G ¾"	R ½"	–	36	0,10
R_B-31	R_B-60	R_G-04	R_G-08	6762300	0069	G 1¼"	R 1"	–	35	0,30
RHB-110	R_G-07	R_G-14	R_G-20	6762400	0069	G 2"	R 1½"	–	55	0,50
RLB-110	RMB-110	–	–	6762500	0069	G 2½"	R 2"	–	66	1,00

Longtherm Accessories

CE

Longtherm Protect EPP

- compatible with one- and two-way heat exchangers
- insulation material: EPP
- colour: black
- insulation strength: 25 mm
- fire protection class: EN 13501-1 class E
- thermal conductivity at 40 °C: 0,035 W / m × K

Type	Art. No.	DG	RHB	RLB	RMB	Perm. operating temperature [°C]	Height h [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
R_B-14-10	8141000	0069	X	X	X	110	82	135	257	0,06
R_B-14-20	8141100	0069	X	X	X	110	105	135	257	0,07
R_B-14-30	8141200	0069	X	X	X	110	128	135	257	0,08
R_B-14-40	8141300	0069	X	X	X	110	151	135	257	0,10
R_B-14-50	8141400	0069	X	X	X	110	174	135	257	0,11
R_B-14-60	8141500	0069	X	X	X	110	197	135	257	0,12
R_B-22-10	8141600	0069	X	X	X	110	82	135	353	0,08
R_B-22-20	8141700	0069	X	X	X	110	105	135	353	0,10
R_B-22-30	8141800	0069	X	X	X	110	128	135	353	0,11
R_B-22-40	8141900	0069	X	X	X	110	151	135	353	0,13
R_B-22-50	8142000	0069	X	X	X	110	174	135	353	0,14
R_B-22-60	8142100	0069	X	X	X	110	197	135	353	0,16
R_B-31-10	8142200	0069	X	X	X	110	84	177	344	0,10
R_B-31-20	8142300	0069	X	X	X	110	107	177	344	0,11
R_B-31-30	8142400	0069	X	X	X	110	131	177	344	0,13
R_B-31-40	8142500	0069	X	X	X	110	154	177	344	0,15
R_B-31-50	8142600	0069	X	X	X	110	178	177	344	0,16
R_B-31-60	8142700	0069	X	X	X	110	201	177	344	0,18
R_B-31-70	8142800	0069	X	X	X	110	225	177	344	0,20
R_B-31-80	8142900	0069	X	X	X	110	248	177	344	0,21
R_B-31-90	8143000	0069	X	X	X	110	272	177	344	0,23
R_B-31-100	8143100	0069	X	X	X	110	295	177	344	0,25
R_B-31-110	8143200	0069	X	X	X	110	319	177	344	0,26
R_B-31-120	8143300	0069	X	X	X	110	342	177	344	0,28
R_B-31-130	8143400	0069	X	X	X	110	366	177	344	0,30
R_B-31-140	8143500	0069	X	X	X	110	389	177	344	0,31
R_B-31-150	8143600	0069	X	X	X	110	413	177	344	0,33
R_B-34-10	8143700	0069	X	X	X	110	82	135	525	0,13
R_B-34-20	8143800	0069	X	X	X	110	105	135	525	0,15
R_B-34-30	8143900	0069	X	X	X	110	128	135	525	0,17
R_B-34-40	8144000	0069	X	X	X	110	151	135	525	0,19
R_B-34-50	8144100	0069	X	X	X	110	174	135	525	0,21

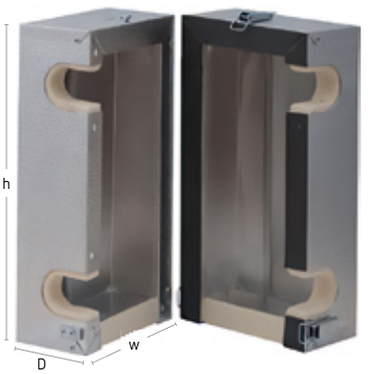
Longtherm Accessories CE

Type	Art. No.	DG	RHB	RLB	RMB	Perm. operating temperature [°C]	Height h [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
R_B-34-60	8144200	0069	X	X	X	110	197	135	525	0,23
R_B-60-10	8144300	0069	X	X	X	110	83	177	592	0,17
R_B-60-20	8144400	0069	X	X	X	110	107	177	592	0,20
R_B-60-30	8144500	0069	X	X	X	110	130	177	592	0,22
R_B-60-40	8144600	0069	X	X	X	110	154	177	592	0,25
R_B-60-50	8144700	0069	X	X	X	110	177	177	592	0,27
R_B-60-60	8144800	0069	X	X	X	110	201	177	592	0,30
R_B-60-70	8144900	0069	X	X	X	110	224	177	592	0,32
R_B-60-80	8145000	0069	X	X	X	110	248	177	592	0,35
R_B-60-90	8145100	0069	X	X	X	110	271	177	592	0,37
R_B-60-100	8145200	0069	X	X	X	110	295	177	592	0,40
R_B-60-110	8145300	0069	X	X	X	110	318	177	592	0,42
R_B-60-120	8145400	0069	X	X	X	110	342	177	592	0,45
R_B-60-130	8145500	0069	X	X	X	110	365	177	592	0,47
R_B-60-140	8145600	0069	X	X	X	110	389	177	592	0,50
R_B-60-150	8145700	0069	X	X	X	110	412	177	592	0,52
R_B-110-30	8145800	0069	–	X	X	110	184	322	530	0,40
R_B-110-40	8145900	0069	–	X	X	110	208	322	530	0,43
R_B-110-50	8146000	0069	–	X	X	110	232	322	530	0,46
R_B-110-60	8146100	0069	–	X	X	110	256	322	530	0,49
R_B-110-70	8146200	0069	–	X	X	110	280	322	530	0,52
R_B-110-80	8146300	0069	–	X	X	110	304	322	530	0,55
R_B-110-90	8146400	0069	–	X	X	110	328	322	530	0,58
R_B-110-100	8146500	0069	–	X	X	110	352	322	530	0,61
R_B-110-110	8146600	0069	–	X	X	110	376	322	530	0,64
R_B-110-120	8146700	0069	–	X	X	110	400	322	530	0,67
R_B-110-130	8146800	0069	–	X	X	110	424	322	530	0,70
R_B-110-140	8146900	0069	–	X	X	110	448	322	530	0,73
R_B-110-150	8147000	0069	–	X	X	110	472	322	530	0,76
R_B-110-160	8147100	0069	–	X	X	110	496	322	530	0,79
RHB-110-30	8147200	0069	X	–	–	110	178	244	673	0,40
RHB-110-40	8147300	0069	X	–	–	110	204	244	673	0,44
RHB-110-50	8147400	0069	X	–	–	110	230	244	673	0,47
RHB-110-60	8147500	0069	X	–	–	110	256	244	673	0,50
RHB-110-70	8147600	0069	X	–	–	110	282	244	673	0,54
RHB-110-80	8147700	0069	X	–	–	110	308	244	673	0,57
RHB-110-90	8147800	0069	X	–	–	110	334	244	673	0,61
RHB-110-100	8147900	0069	X	–	–	110	360	244	673	0,64
RHB-110-110	8148000	0069	X	–	–	110	386	244	673	0,67
RHB-110-120	8148100	0069	X	–	–	110	412	244	673	0,71
RHB-110-130	8148200	0069	X	–	–	110	438	244	673	0,74
RHB-110-140	8148300	0069	X	–	–	110	464	244	673	0,78
RHB-110-150	8148400	0069	X	–	–	110	490	244	673	0,81
RHB-110-160	8148500	0069	X	–	–	110	516	244	673	0,85
RHB-110-170	8148600	0069	X	–	–	110	542	244	673	0,88
RHB-110-180	8148700	0069	X	–	–	110	568	244	673	0,91
RHB-110-190	8148800	0069	X	–	–	110	594	244	673	0,95

Longtherm Accessories

Longtherm Protect Heating

- Longtherm heat insulation made of 25 mm rigid polyurethane foam for minimum heat loss up to 110 plates
- Longtherm heat insulation made of 32 mm rigid polyurethane foam for minimum heat loss above 110 plates
- made of two easily assembled semispheres for increased impact resistance, up to 110 plates, clad in 2 mm PS material
- insulation clad in aluminium above 110 plates
- max. operating temperature 110 °C up to 110 plates and above 135 °C
- diffusion-tight insulation on site

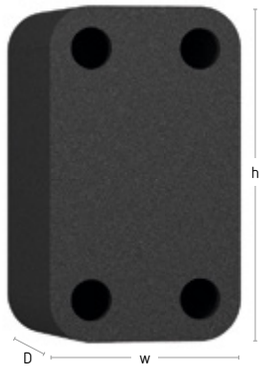


Type	Art. No.	DG	RHB	RLB	RMB	Perm. operating temperature [°C]	Height h [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
R_B-235-30	8309000	0069	–	X	X	110	864	376	208	4,65
R_B-235-40	8309100	0069	–	X	X	110	864	376	233	5,00
R_B-235-50	8309200	0069	–	X	X	110	864	376	258	5,40
R_B-235-60	8309300	0069	–	X	X	110	864	376	283	5,75
R_B-235-70	8301600	0069	–	X	X	110	864	376	308	6,15
R_B-235-80	8301700	0069	–	X	X	110	864	376	333	6,45
R_B-235-90	8301800	0069	–	X	X	110	864	376	358	6,80
R_B-235-100	8301900	0069	–	X	X	110	864	376	383	7,10
R_B-235-110	8302000	0069	–	X	X	110	864	376	408	7,50
R_B-235-120	8302100	0069	–	X	X	135	864	376	433	7,80
R_B-235-130	8302200	0069	–	X	X	135	864	376	458	8,10
R_B-235-140	8297800	0069	–	X	X	135	864	376	483	8,40
R_B-235-150	8302300	0069	–	X	X	135	864	376	508	8,80
R_B-235-160	8302400	0069	–	X	X	135	864	376	533	9,10
R_B-235-170	8297900	0069	–	X	X	135	864	376	558	9,40
R_B-235-180	8302500	0069	–	X	X	135	864	376	583	9,80
R_B-235-190	8298000	0069	–	X	X	135	864	376	608	10,10
R_B-235-200	8302600	0069	–	X	X	135	864	376	633	10,40
R_B-235-210	8309400	0069	–	X	X	135	864	376	658	10,80
R_B-235-220	8302700	0069	–	X	X	135	864	376	683	11,10
R_B-235-230	8309500	0069	–	X	X	135	864	376	708	11,40
R_B-235-240	8302800	0069	–	X	X	135	864	376	733	11,80
R_B-235-250	8309600	0069	–	X	X	135	864	376	758	12,10
R_B-235-260	8298100	0069	–	X	X	135	864	376	783	12,40
R_B-235-270	8302900	0069	–	X	X	135	864	376	808	12,80
R_B-235-280	8303000	0069	–	X	X	135	864	376	833	13,10

Longtherm Accessories CE

Longtherm Protect Cooling

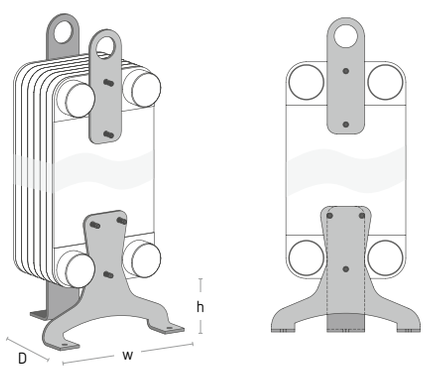
- self-adhesive diffusion resistant insulation
- with more than 100 plates, the insulation is required twice
- insulation material: elastomer foam
- colour: black
- insulation strength: 20 mm



Type	Art. No.	DG	RHB	RLB	RMB	Perm. operating temperature [°C]	Height h [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
R_B-14	8296000	0069	X	X	X	110	243	121	141	0,10
R_B-22	8296100	0069	X	X	X	110	339	121	164	0,20
R_B-31	8296200	0069	X	X	X	110	334	163	285	0,45
R_B-34	8296300	0069	X	X	X	110	511	121	187	0,30
R_B-60	8296400	0069	X	X	X	110	578	163	285	0,58
R_B-110	8296500	0069	–	X	X	110	621	298	294	1,00
RHB-110	8297000	0069	X	–	–	110	616	231	289	0,80

Longtherm bracket

- a stable foot construction and transport lugs for on-site assembly are available for sizes 110 and 235



Type	Art. No.	DG	Height h [mm]	Width w [mm]	Depth D [mm]	Weight [kg]
RHB-110	8290400	0069	70	240	320	2,96
R_B-110-235	8290500	0069	115	240	320	2,96

Freshwater stations

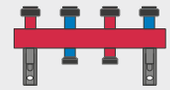
Reflex Hydroflow

Thermostatically controlled		Electronically controlled							
XS		S		M		L		XL	
CU	SST	CU	SST	CU	SST	CU	SST	CU	SST

CU = single-wall heat exchanger—copper-brazed
SST = single-wall heat exchanger—stainless steel-brazed

Combination matrix

Freshwater system

Reflex Hydroflow	Storaflow	Manifold
		

+ Accessories

Theoretical principles

Potable water hygiene

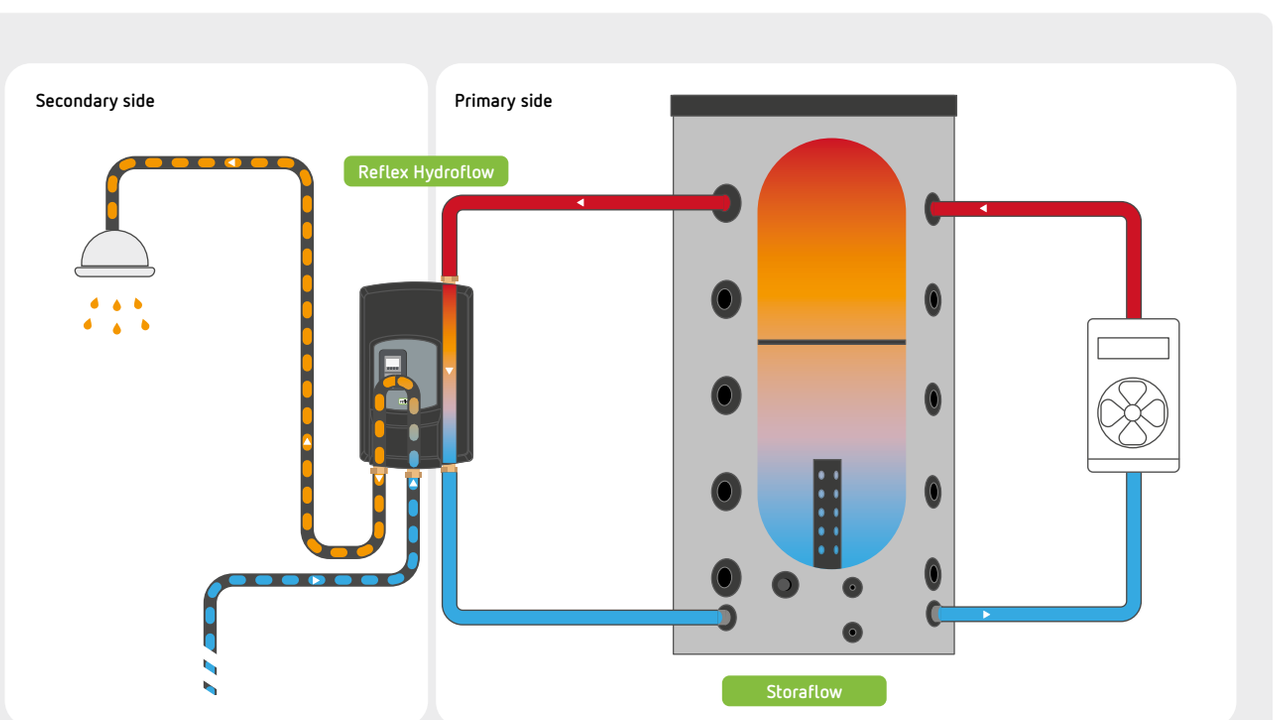
Hot potable water must be available quickly for everyday use, whether for showering, washing hands or preparing food. A potable water storage tank can be used to provide potable water but this is an energy-intensive solution.

Any standing water can lead to proliferation of bacteria, even if advanced heating technology is in use. This is the perfect application for freshwater stations as they offer ideal setup and conditions for the rapid and hygienic provision of potable water — without having to store it beforehand.

General information on freshwater stations

A freshwater station consists of a heat exchanger, a pump, temperature sensors, a regulator and the relevant hot water storage tank. The station provides hot potable water on demand by heating potable water to the required temperature in the heat exchanger using heating water flowing from the hot water storage tank in the opposite direction.

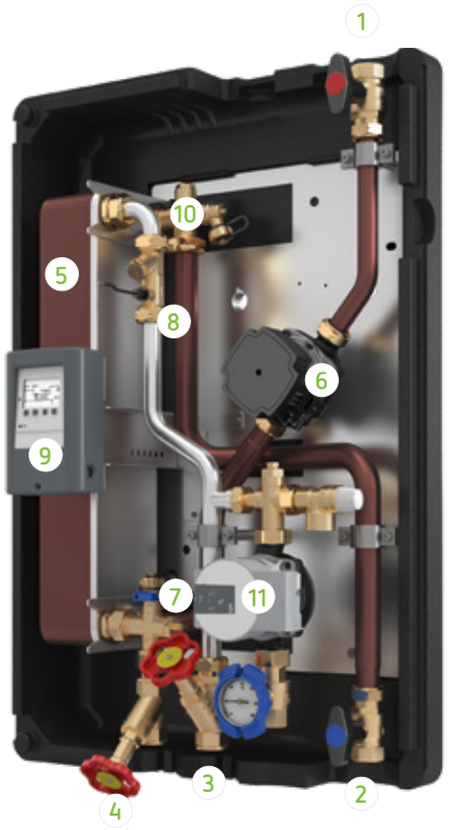
The physical separation of potable water and heating water ensures high hygiene standards are maintained against bacteria such as legionella. Depending on the size, freshwater stations can be used in residential properties as well as in larger public buildings where there are high hygiene demands, such as in hospitals or schools.



Theoretical principles

Reflex Hydroflow construction

Reflex Hydroflow S–M freshwater station models

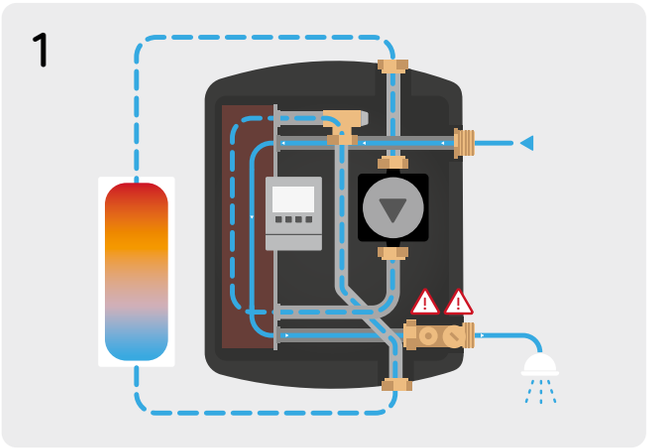


Reflex Hydroflow L–XL freshwater station models

1. Heating system flow
   The heated water is pumped out of the hot water storage tank into the freshwater station here.
2. Heating system return
   The heating water that has cooled down in the heat exchanger is stratified back into the Storaflow buffer cylinder via the pipework.
3. Cold water feed
   Potable water from the municipal supply is transported into the freshwater station by tapping.
4. Hot water outlet
   The hot water outlet pipework is connected here. The heated potable water is fed into the system from here.
5. Heat exchanger
   The high temperature of the heating water is transferred to the potable water using the counterflow principle.
6. Pump
   The pump circulates the heated water between the buffer tank and the heat exchanger. It is controlled by the regulator.
7. Temperature sensor
   The two temperature sensors measure the water temperature in the pipes—once at the heating system flow and once at the heating system outlet. This registers the transfer of the heating water temperature to the potable water.
8. Volume flow sensor
   The flow rate of the water is determined via the volume flow sensor and transferred to the regulator as information.
9. Regulator
   The regulator is the central control unit of the freshwater station. All the data from the temperature sensors are collated here. They indicate whether the water is being moved to the hot water outlet at the required temperature. The information from the volume flow sensor is also processed here and used to control the pump.
10. Vent
    The vent is used during maintenance work and commissioning. It eliminates air inclusions from the system.
11. Circulation set*
    This pre-assembled unit serves to maintain the temperature at every point in the hot water system.

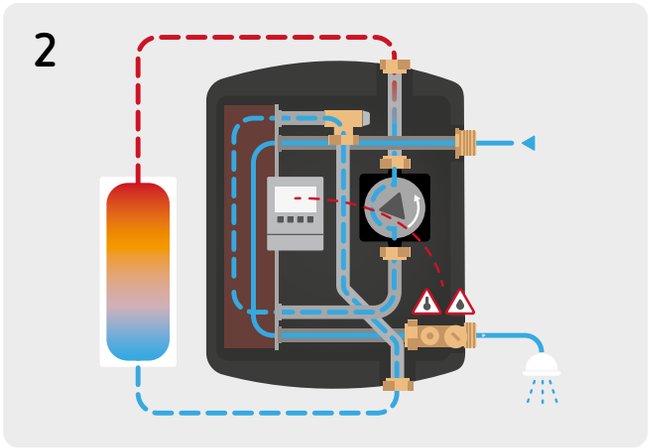
* Accessories such as the circulation set must be ordered separately.

How it works



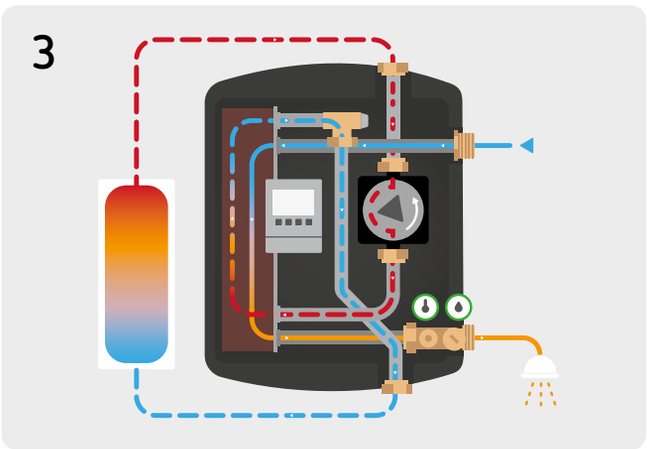
1. Tapping starts

The Reflex Hydroflow freshwater station only makes hot water available when hot water is tapped and avoids storing quantities of water. This tapping signal occurs when a user requests heated potable water. The integral volume flow sensor registers the flow of water while the connected temperature sensor indicates if the temperature is still too low.



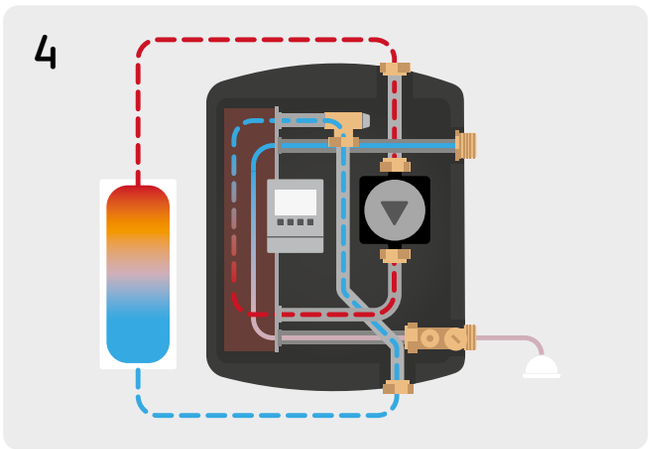
2. Pump is activated

This information is provided as a bundle to the regulator on the freshwater station which then activates the pump to direct hot water from the Storaflow buffer tank to the station. It flows through the Reflex Hydroflow freshwater station's heat exchanger in the opposite direction and transfers the heat to the potable water. The large surface area of the heat exchanger plates ensures maximum heat exchange to the potable water.



3. Potable water heating and regulation

The potable water at the appropriate temperature is supplied via the heat exchanger and passes through both the volume flow sensor and the temperature sensor. Both send the relevant data to the regulator which adjusts the volume flow steplessly by altering the pump speed.



4. Tapping ends

The cooled heating water is returned to the Storaflow buffer tank and stratified in the cold layer of the buffer tank. This water is heated again in the next iteration and is once again made available to the Reflex Hydroflow freshwater station for subsequent requirements.

Theoretische Grundlagen

Possible combinations

Reflex Hydroflow with Storaflow Heat Solar, manifold and accessories

		Storaflow Heat Solar				
		500 H/F 7938000	800 H/F 7938100	1.000 H/F 7938200	1.500 H/F 7938300	2.000 H/F 7938400
Reflex Hydroflow	XS—CU 9583531	✓	✓	✓	✓	✓
	XS—SST 9583532	✓	✓	✓	✓	✓
	S—CU 9583533	✓	✓	✓	✓	✓
	S—SST 9583534	✓	✓	✓	✓	✓
	M—CU 9583535	✓	✓	✓	✓	✓
	M—SST 9583536	✓	✓	✓	✓	✓
	L—CU 9583538	×	✓	✓	✓	✓
	L—SST 9583539	×	✓	✓	✓	✓
	XL—CU 9583541	×	✓	✓	✓	✓
	XL—SST 9583542	×	✓	✓	✓	✓
	Cascade					
	Single station					
80/60 small manifolds	2 heating circuits 4208563	✓	✓	✓	✓	✓
	3 heating circuits 4208565	×	✓	✓	✓	✓
	4 heating circuits 4208851	×	×	✓	✓	✓
	5 heating circuits 4208852	×	×	×	✓	✓

Accessories												
Circulation unit		Cascade pipework		Return stratification		Ball valve set		Cascade ball valve		Free-flow valve	Heating water mixer	BMS Module
S / M 9583553	L / XL 9583556	M 9583554	L 9583558	DN 32 M 9583555	DN 32 L 9583559	XS / S / M 9583551	Cascade pipework M 9583552	L 9583557	DN 32 5/4" XL 9583562	DN 32 5/4" XL 9583561	9583563	9583608
×	×	×	×	×	×	√	×	×	×	×	√	×
×	×	×	×	×	×	√	×	×	×	×	√	×
√	×	(√)	×	√	×	√	√	×	×	×	√	√
√	×	(√)	×	√	×	√	√	×	×	×	√	√
√	×	√	×	√	×	√	√	×	×	×	√	√
√	×	√	×	√	×	√	√	×	×	×	√	√
×	√	×	√	×	√	×	×	√	×	×	×	√
×	√	×	√	×	√	×	×	√	×	×	×	√
×	√	×	×	×	√	×	×	×	√	√	×	√
×	√	×	×	×	√	×	×	×	√	√	×	√
√	×	√	√	√	√	×	√	√	√	×	×	√
√	√	×	×	√	√	√	×	×	×	√	√	√

√	can be combined
×	cannot be combined
(√)	limited possible combinations

Freshwater system

Reflex Hydroflow

Reflex Hydroflow XS

Reflex Hydroflow S / M

Reflex Hydroflow L

Reflex Hydroflow XL

Technical Features

- electronically controlled mains water station with mains water regulator, can be cascaded several times for large tap capacities
- compact modular design
- hygiene programme and thermal disinfection for maximum protection
- completely pre-assembled for connection to the storage tank circuit and potable water system
- with built-in controller, prewired
- power supply 230 V / 50 Hz
- comfort function for keeping the pipework on the primary side warm
- floating target value, reduction of the hot water target temperature if the buffer temperature is insufficient
- circulation pump set for integration into the Reflex Hydroflow L or modularly expandable with Reflex Hydroflow S, M and XL
- control of time, temperature and demand possible
- max. permissible operating overpressure 10 bar
- max. permissible operating temperature 95 °C

Type	Art. No.	DG	Nominal width	Connection heating side	Connection potable water side	Nominal capacity 10-45 °C / 65 °C [kW]	Tap capacity 10-45 °C / 65 °C [l / min]	NL number	Weight [kg]
XS – CU	9583531	0066	DN 20	G1"	G1"	60,0	25	3,47	8,31
XS – SST	9583532	0066	DN 20	G1"	G1"	60,0	25	3,47	8,40
S – CU	9583533	0066	DN 20	G1"	G1"	70,0	29	4,76	7,89
S – SST	9583534	0066	DN 20	G1"	G1"	70,0	29	4,76	7,57
M – CU	9583535	0066	DN 20	G1"	G1"	110,0	41	9,59	9,18
M – SST	9583536	0066	DN 20	G1"	G1"	110,0	41	9,59	8,92
L – CU	9583538	0066	DN 25	G1"	Rp ¾"	132,0	52	15,04	23,23
L – SST	9583539	0066	DN 25	G1"	Rp ¾"	132,0	52	15,04	21,31
XL – CU	9583541	0066	DN 32	G 1½"	G 1¼"	190,0	80	32,11	27,11
XL – SST	9583542	0066	DN 32	G 1½"	G 1¼"	190,0	80	32,11	24,55

Reflex Hydroflow Accessories CE

Commissioning

- **7945725**: Reflex commissioning Cat. 3 for Reflexomat Silent Compact/Reflexomat XS/Servitec Mini/Servitec S with one compressor/ one pump or Reflex Hydroflow freshwater station and Reflex Greenbox
- **7945726**: Reflex commissioning add. Cat. 3 for each additional system at the same location and on the same day – one compressor/one pump

BMS module

- extension module for the controller to indicate a group fault to an external building management system

Cascade ball valve

- For switching individual stations off or on as required for parallel circuit arrangements
- including actuator

Ball valve set individual station

- enables ball valves to be fitted to shut off the system during maintenance work or replacement
- heating side VL/RL Rp ¾" – male thread 1"
- hot water Rp ¾" – ÜWM G 1"

Ball valve set cascade

- enables the ball valves to be fitted and connects the cascade pipework of the mains water station
- For switching individual stations off or on as required for parallel circuit arrangements
- including actuator

Free-flow valve

- minimises pressure surges on the potable water installation
- installation on the potable water inlet side

Heating water mixer

- regulates the temperature of the heating water at high temperatures, e.g. 90 °C in the flow to the mains water station, downwards to a lower level by adding cooler service water to the buffer flow – cold water is on the secondary side (potable water) to additionally increase hot water comfort
- **note**: the heating water mixer reduces the tap capacity or tap volume by up to approx. 25 %!
- suitable for Reflex Hydroflow XS, S, M

Cascade piping

- space-saving installation
- consisting of pipes for the heating-water and potable-water side
- factory-implemented insulation of the pipe elements

Installation set

- installation set for L & XL stations as single station on Storaflow hot water storage tank including screws and nuts
- enables direct installation on the Storaflow hot water storage tank via the 2" sleeves

Reflex Hydroflow Accessories

Return flow stratification M

- controls the energy-efficient stratification of the return water in the hot water storage tank
- for hot water storage tanks without stratified charging pipe
- 3-way DN 32 valve with two sensors

Return flow stratification L

- controls the energy-efficient stratification of the return water in the hot water storage tank
- for hot water storage tanks without stratified charging pipe

Connection cable set

- connection cable set for mains water cascade with matching plugs and terminating resistors

Circulation unit S / M

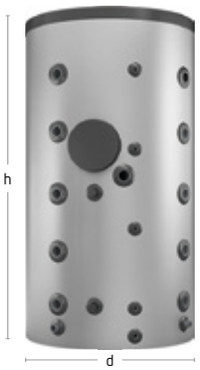
- ensures a continuous supply of hot water to the end consumer circuits
- contains circulation pump, gravity brake and temperature sensor
- circulation unit S/M with 2 shut-off ball valves

Circulation unit L / XL

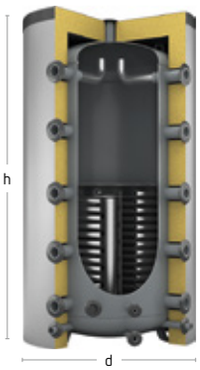
- ensures a continuous supply of hot water to the end consumer circuits
- contains circulation pump, gravity brake and temperature sensor
- circulation unit L/XL with one shut-off ball valve and thermometer

Type	Art. No.	DG	Weight [kg]
Commissioning Cat. 3	7945725	0095	–
Commissioning add. Cat. 3	7945726	0095	–
Free-flow valve XL	9583561	0085	0,75
BMS module	9583608	0091	0,10
Heating water mixer	9583563	0091	1,17
Cascade ball valve L	9583557	0085	1,01
Cascade ball valve XL	9583562	0085	2,08
Cascade piping M	9583554	0091	5,14
Cascade piping L	9583558	0091	13,43
Ball valve set individual station XS/S/M	9583551	0085	1,06
Ball valve set cascade M	9583552	0085	2,63
Installation set L/XL	7938480	0091	4,20
Return flow stratification M	9583555	0091	1,68
Return flow stratification L/XL	9583559	0091	2,61
Connection cable set	9583609	0091	0,03
Circulation unit S/M	9583553	0091	3,02
Circulation unit L/XL	9583556	0091	2,74

Storaflow Buffer tank for Reflex Hydroflow



SH 500 H/F/1_C – SH 2000 H/F/1_C

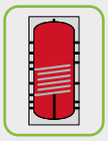


SH 500 H/F/1_C – SH 2000 H/F/1_C
cut-away model

Technical Features

- Storaflow hot water storage tank for storing heating water and central heating backup
- potable water heating using the continuous flow principle with a Reflex Hydroflow mains water station
- tank not treated inside, plastic-coated outside
- insulation preinstalled
- fleece insulation with foil jacket
- max. permissible operating overpressure:
  → 500 – 1.000 l 3 bar
  → 1.500 – 2.000 l 7 bar
  → solar or solid fuel support by means of internal heat exchanger 10 bar
- max. permissible operating temperature:
  → tank 95 °C
  → internal heat exchanger 110 °C

Type overview



SH...H/F/1
buffer tank with one bare-tube heat exchanger and a flange for the installation of an electric heater

insulation
up to 800 l: 120 mm fleece insulation with foil jacket, removable
from 1000 l: 150 mm fleece insulation with foil jacket, removable

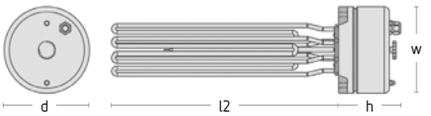
Type	Art. No. silver	DG	EEC[1]	Volume [l]	Connection c	Heating surface top|solar [m²]	Ø d without|with insulation [mm]	Height h [mm]	Weight [kg]
SH 500 H/F/1_C	7938000	0066	C	500	Rp 2"	– | 1,90	597 | 840	1.986	136,00
SH 800 H/F/1_C	7938100	0066	C	800	Rp 2"	– | 2,60	790 | 1.010	1.859	168,00
SH 1000 H/F/1_C	7938200	0066	C	1.000	Rp 2"	– | 3,20	790 | 1.090	2.149	190,00
SH 1500 H/F/1_C	7938300	0066	C	1.500	Rp 2"	– | 3,80	1.000 | 1.300	2.140	276,00
SH 2000 H/F/1_C	7938400	0066	C	2.000	Rp 2"	– | 4,40	1.200 | 1.500	2.161	394,00

[1] Energy efficiency class

Storaflow Accessories

EFHR

- electrical auxiliary heating
- approved for continuous operation
- suitable for these types:
  → Storatherm Aqua
  → Storatherm Aqua Solar
  → Storatherm Aqua Load
  → Storatherm Aqua Heat Pump
  → Storatherm Heat HF .../R
  → Storaflow
- easy integration via the tank's maintenance opening
- up to 10,0 kW LK 150 mm
  → ≤ 500 litres storage volume for potable water → buffer tank of type HF .../R and H.../R
- from 16,0 kW LK 225 mm
  → > 500 litres tank volume for potable water
- 3 power levels, reversible connections
- with temperature controller – 85 °C
- safety temperature limiter 110 °C
- on-site electrical connection
  → 2,5 kW 230 V
  → from 4,0 kW 400 V
- incl. flange and seal

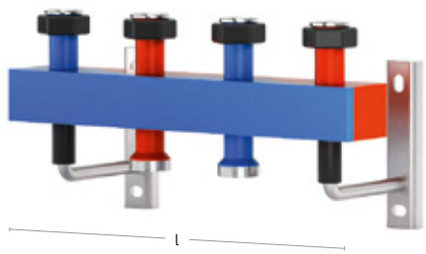


Pipe connection set

- Plug & Play installation of single Reflex Hydroflow stations on Storaflow hot water storage tank with pre-assembled pipe connection set
- incl. shut-off valves and drain valve
- incl. seals and insulation material

Type	Art. No.	DG	Weight [kg]
EFHR flange-type electric heating element			
EFHR 2,5	9118710	0068	2,94
EFHR 4,0	9116314	0068	3,54
EFHR 6,0	9116315	0068	4,80
EFHR 8,0	9116316	0068	5,00
EFHR 10,0	9116317	0068	5,00
EFHR 16,0	9116501	0068	10,50
EFHR 19,0	9116502	0068	11,00
EFHR 25,0	9115569	0068	11,00
EFHR 35,0	9126720	0068	13,44
Pipe connection set			
XS/S/M	9583602	0085	3,60
L	9583603	0085	2,50
flange adapter			
DN 110/DN 180	5402400	SXXX	4,00

Small manifolds



Small manifolds 80/60

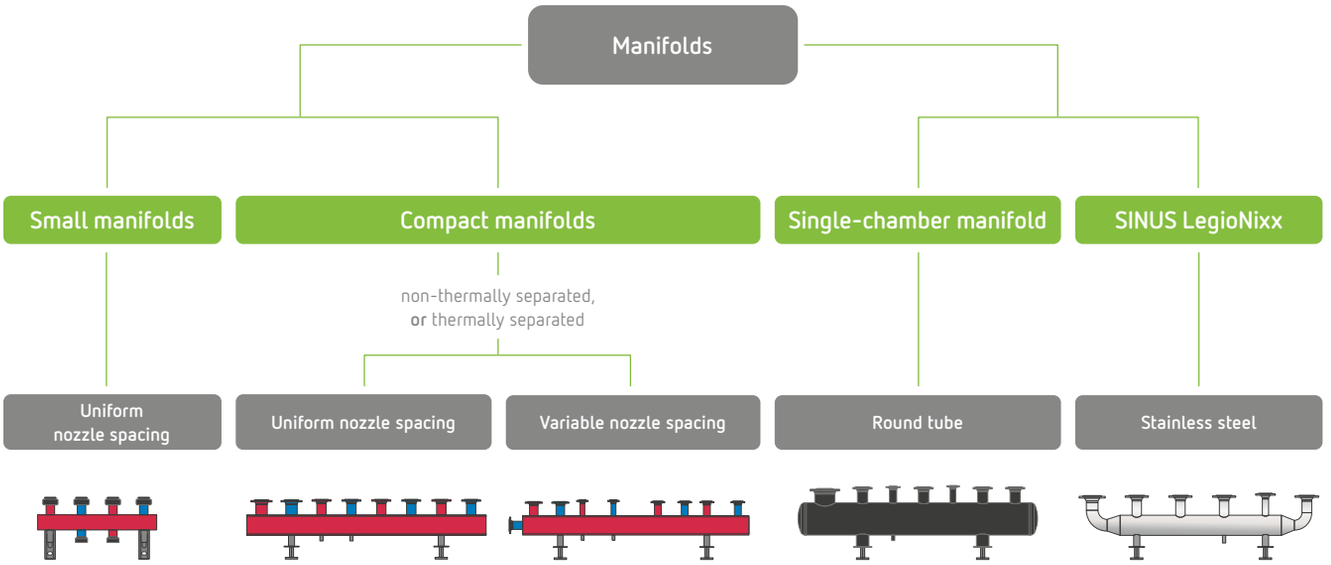
Technical Features

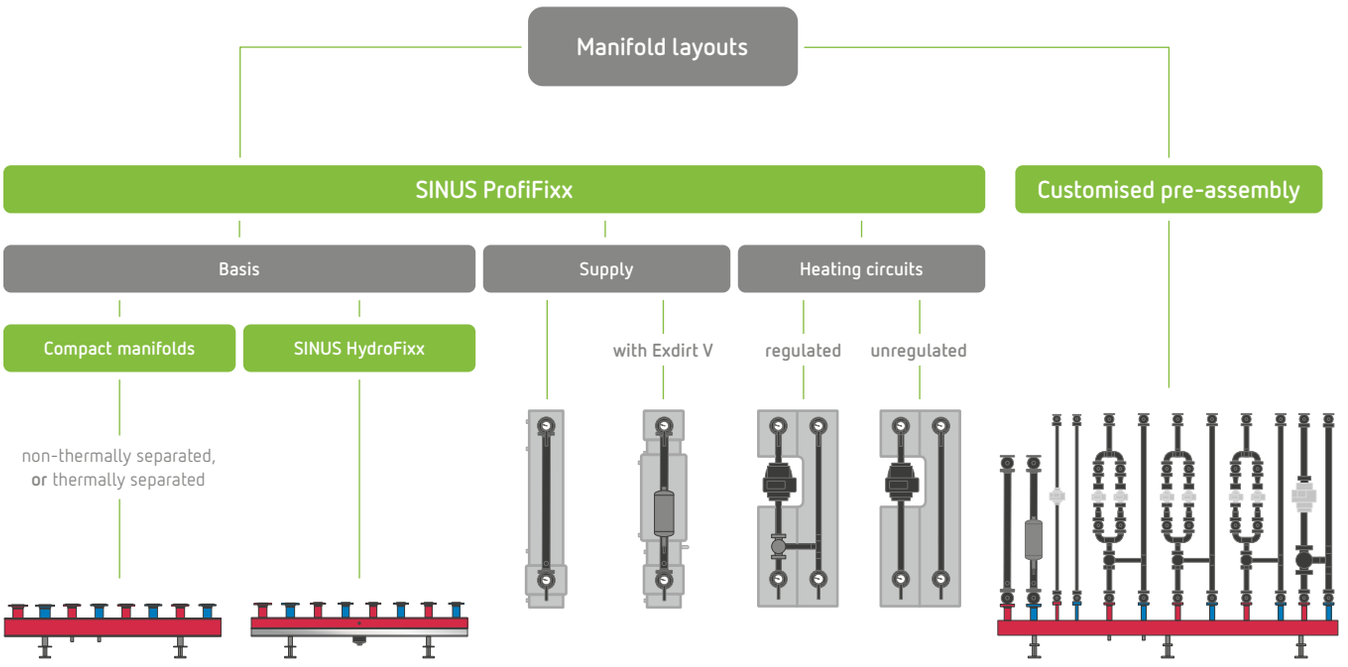
- combined flow and return manifold, consisting rectangular tube with adjoining chambers divided by sinusoidal dividing wall made from mild steel sheet S235
- 100 % factory-checked for leak tightness and primed
- with thread or union nuts
- packed as a set
- type 80/60: with EPP insulation and wall mount
- type 120/80: with EPP insulation
- max. permissible operating temperature -10 °C – 110 °C
- max. permissible operating overpressure 0 bar – 4 bar
- ideal for use with: maintenance box

Type	Art. No.	DG	Heating circuits [pcs.]	Connection generator	Connection heating circuit	V_{max} [m³/h]	Output at ΔT 20 °K [kW]	Length l [mm]
Nozzle spacing 125 mm								
80/60	4208563	0001	2	G 1½"	G 1½" coupling nut	3,0	70,00	475
80/60	4208565	0001	3	G 1½"	G 1½" coupling nut	3,0	70,00	725
80/60	4208851	0001	4	G 1½"	G 1½" coupling nut	3,0	70,00	975
80/60	4208852	0001	5	G 1½"	G 1½" coupling nut	3,0	70,00	1.225

The accessories for the small distributors can be found in the chapter Distributors & Hydraulic Separators

Manifolds & Hydraulic Separators

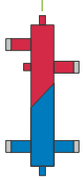




Hydraulic Separators

Small Hydraulic Separators

vertical



horizontal

SINUS MonoFixx

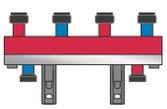
Compact design

Round design

Stainless steel

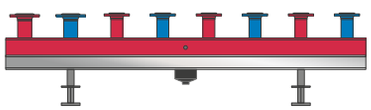
SINUS HydroFixx

SINUS HydroFixx Mini

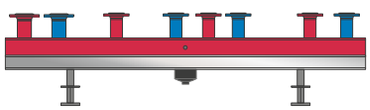


Individual SINUS HydroFixx

Uniform nozzle spacing

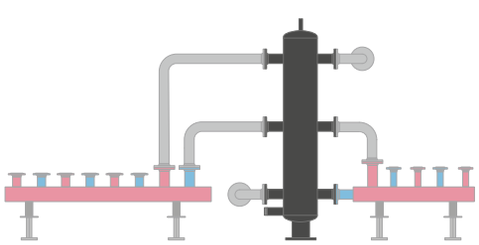


Variable nozzle spacing

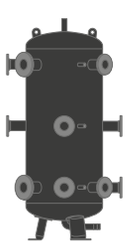


Multivalent solutions

SINUS MultiFlow Expert

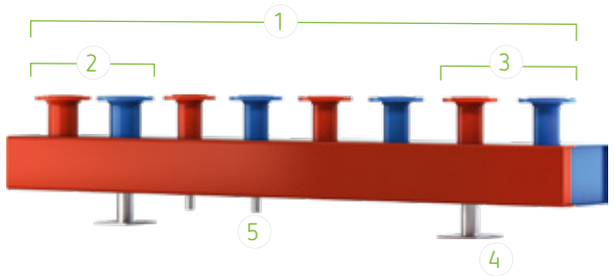


SINUS MultiFlow Center



Manifolds & Hydraulic Separators

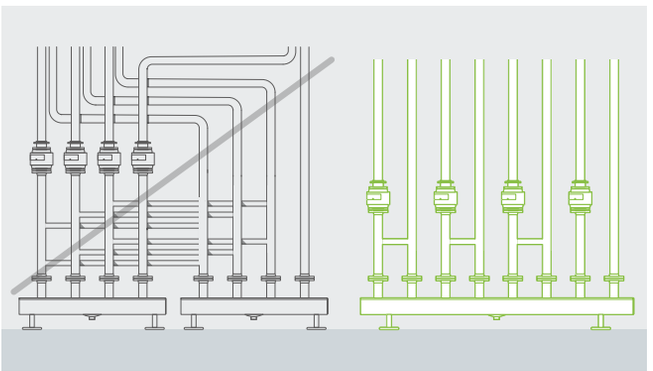
Manifold — construction



Hydraulic manifolds collect and distribute the media flows in heating and cooling systems.

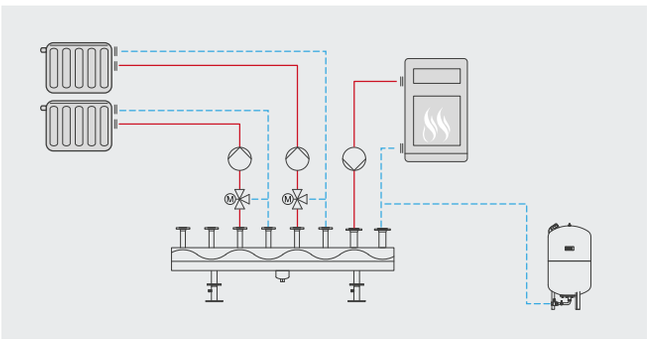
1. Connections
   optionally with flange, sleeve, threaded connection, pipe connection
2. Flow and return
   dimensions are variable
3. Heating circuit
   variable number
4. Console
   as upright console or wall bracket
5. Draining
   for repairs and maintenance work

The Sinus principle



A sinusoidal curve is the trademark of SINUS manifolds. Here, the flow and return chambers of the manifolds are arranged so that they aligned by the centrally-running sine curve in such a away that the manifold forms a space-saving unit suitable for today's ever smaller central heating systems. This unique construction also comes with the advantage that, with the correct dimensioning, the pressure losses and heat transfer are kept low. Due to the largely laminar flow and low flow velocities in normal heating systems, thermal isolation can normally be dispensed with.

Product variants

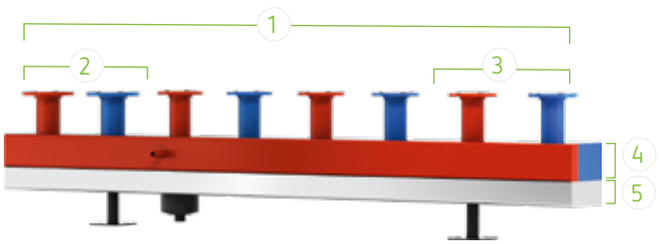


Installation situation of a compact manifold

SINUS manifolds are manufactured according to requirements:

- as space-saving compact manifolds for easy and quick installation, without any crossing pipelines
- with uniform or variable nozzle separations
- as thermally isolated or non-isolated manifolds
- as round tube manifolds for systems with high pressures and temperatures
- as individual manifolds and collectors for flow and return

SINUS HydroFixx — construction

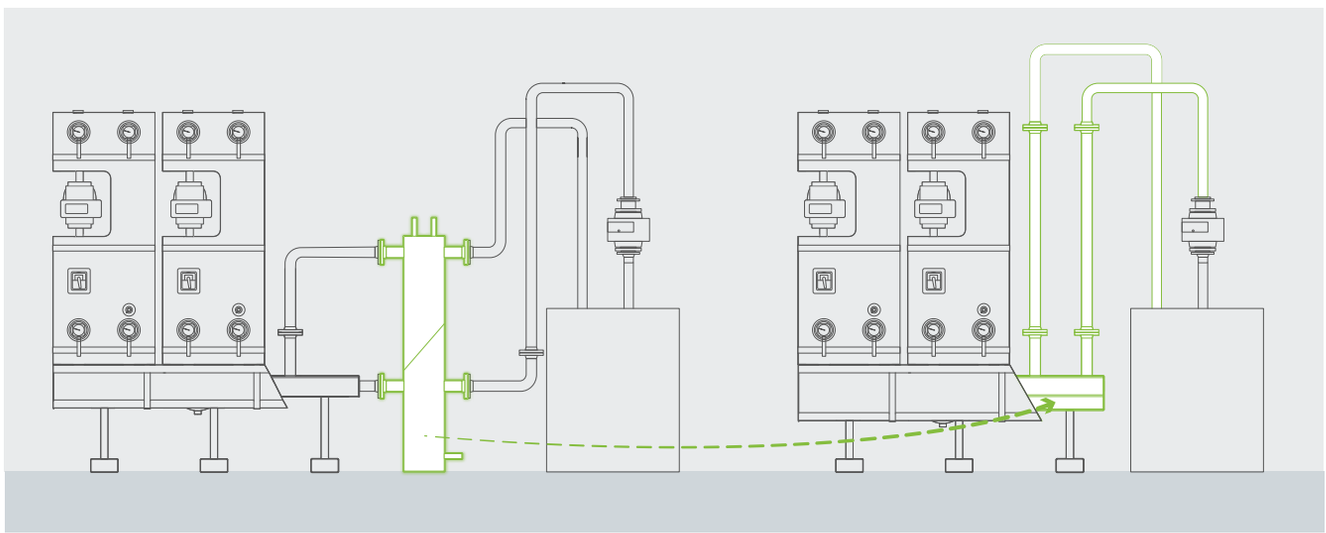


1. Connections
   optionally with flange, sleeve, threaded connection, pipe connection
2. Flow and return
   dimensions are variable
3. Heating circuit
   variable number
4. Manifold
5. Hydraulic separator

Video clips demonstrating the function of this and other products are available under

www.youtube.com/@ReflexWinkelmannUnitedKingdom

Manifold with integrated Hydraulic Separator



Manifold and separate Hydraulic Separator

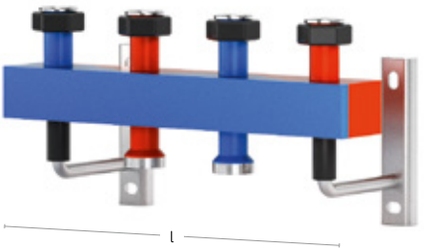
SINUS HydroFixx

A SINUS HydroFixx can be used to combine the characteristics of a manifold and a Hydraulic Separator. To do so, a manifold is supplemented by an underlying horizontal chamber, that assumes the function of the Hydraulic Separator. Accordingly, the chamber is connected with one penetration each for the supply and return chambers. The functioning is equivalent to that of a conventional Hydraulic Separator. The three operating statuses also behave in a similar manner.

Manifolds

SINUS

Small manifolds



Small manifolds 80/60

Technical Features

- combined flow and return manifold, consisting rectangular tube with adjoining chambers divided by sinusoidal dividing wall made from mild steel sheet S235
- 100 % factory-checked for leak tightness and primed
- with thread or union nuts
- packed as a set
- type 80/60: with EPP insulation and wall mount
- type 120/80: with EPP insulation
- max. permissible operating temperature -10 °C – 110 °C
- max. permissible operating overpressure 0 bar – 4 bar
- ideal for use with: maintenance box

SINUS

Small manifolds

Type	Art. No.	DG	Heating circuits [pcs.]	Connection generator	Connection heating circuit	V_{max} [m^3/h]	Output at ΔT 20 °K [kW]	Length l [mm]
Nozzle spacing 125 mm								
80/60	4208563	0001	2	G 1½"	G 1½" coupling nut	3,0	70,00	475
80/60	4211930	0001	2	R 1"	R 1"	3,0	70,00	475
80/60	4205962	0001	3	R 1"	R 1"	3,0	70,00	725
80/60	4208565	0001	3	G 1½"	G 1½" coupling nut	3,0	70,00	725
80/60	4206012	0001	4	R 1"	R 1"	3,0	70,00	975
80/60	4208851	0001	4	G 1½"	G 1½" coupling nut	3,0	70,00	975
80/60	4205899	0001	5	R 1"	R 1"	3,0	70,00	1.225
80/60	4208852	0001	5	G 1½"	G 1½" coupling nut	3,0	70,00	1.225
80/60	4205977	0001	6	R 1"	R 1"	3,0	70,00	1.475
120/80	4208504	0001	2	R 2"	G 1½" coupling nut	6,5	150,00	480
120/80	4208569	0001	3	R 2"	G 1½" coupling nut	6,5	150,00	735
120/80	4208777	0001	4	R 2"	G 1½" coupling nut	6,5	150,00	990
120/80	4208778	0001	5	R 2"	G 1½" coupling nut	6,5	150,00	1.245
120/80	4208781	0001	6	R 2"	G 1½" coupling nut	6,5	150,00	1.500
Nozzle spacing 200 mm								
80/60	4208572	0001	2	R 1¼"	R 1"	3,0	70,00	700
80/60	4208571	0001	3	R 1¼"	R 1"	3,0	70,00	1.100
80/60	4208773	0001	4	R 1¼"	R 1"	3,0	70,00	1.500
120/80	4208574	0001	2	R 2"	Rp 1½"	6,5	150,00	670
120/80	4208580	0001	3	R 2"	Rp 1½"	6,5	150,00	1.070
120/80	4208787	0001	4	R 2"	Rp 1½"	6,5	150,00	1.500
120/80	4208792	0001	5	R 2"	Rp 1½"	6,5	150,00	1.900
120/80	4208793	0001	6	R 2"	Rp 1½"	6,5	150,00	2.300

Small manifolds accessories

adapter piece

- to reduce 1½" union nuts to 1¼"

name plate

- for marking the heating circuits, made of galvanised steel sheet for three rows of lettering. The name plate is suitable for screwing to the finished insulation
- size: 100 × 50 mm
- colours: red (RD) for flow & blue (BU) for return

threaded flange

- compression stage flange PN 6
- for 120 / 80 manifold
- for implementation of the boiler feed and return nozzle as a flanged nozzle

reducing nipple

- for 120 / 80 with 200 mm nozzle spacing
- for implementation of the connections as threaded connections, made of malleable cast iron with male threading on both ends

stand bracket

- sound-proofed and galvanised, comprising floor plate with steel tube and head plate with guide tube including connecting screws
- height adjustable in two variants (270 – 340 mm or 405 – 600 mm), the dimension indicates the distance between the floor and bottom edge of the manifold

wall bracket

- sound-proofed and galvanised comprising a head plate fitted on an adjustable guide carriage
- infinitely adjustable in depth
- overhang to manifold middle

maintenance box

- for magnetite slurry removal for all small manifolds, SINUS MonoFixx and SINUS HydroFixx
- enables desludging in pressurised systems
- comprising special section tube 120 × 80 or 80 × 60, steel S235
- provided with a desludging nozzle and ½" ball valve as well as a magnetic rod screwed into the immersion sleeve
- for mounting in the main boiler return of the manifold
- with EPP insulation
- max. permissible operating temperature -10 °C – 110 °C
- max. permissible operating overpressure 0 bar – 4 bar

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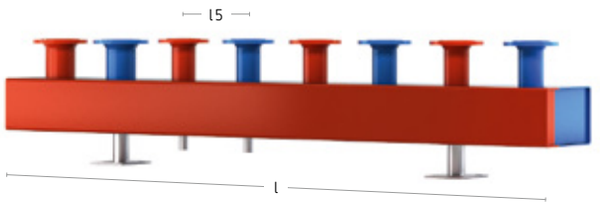
Small manifolds accessories

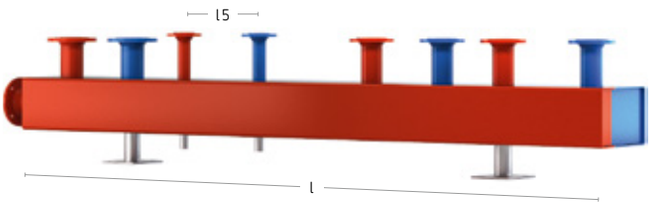
Type	Art. No.	DG	Weight [kg]
adapter piece	4200001	0085	–
threaded flange DN 50/PN 6	4200906	0001	–
name plate			
name plate RD	4200015	0001	–
name plate BU	4200021	0001	–
maintenance box			
maintenance box 80/60	4209770	0003	2,06
maintenance box 120/80	4209771	0003	2,06
reducing nipple			
reducing nipple RN 1½" × ¾"	4205890	0001	–
reducing nipple RN 1½" × 1"	4205891	0001	–
reducing nipple RN 1½" × 1¼"	4205892	0001	–
reducing nipple RN 1½" × 1½"	4205960	0001	–
reducing nipple RN 1½" × 2"	4205961	0001	–
stand bracket			
stand bracket STKO 405 – 600 mm max 120/80	4205850	0001	–
stand bracket STKO 270 – 340 mm max 120/80	4205954	0001	2,85
wall bracket			
wall bracket WAKO 200 mm max 120/80	4207264	0001	2,68

SINUS

Compact manifolds



Compact manifold with uniform nozzle spacings



Compact manifold with variable nozzle spacings

Technical Features

- combined flow and return manifold, consisting rectangular tube with adjoining chambers divided by sinusoidal dividing wall made from mild steel sheet S235
- 100 % factory-checked for leak tightness and primed
- with threaded or PN 6 / PN 16 flange nozzle
- max. permissible operating temperature -10 °C – 110 °C
- max. permissible operating overpressure 0 bar – 6 bar (max. 16 bar upon request)
- nozzles aligned at the height of the shut-off valves
- optionally possible from above, the side or below
- draining sleeves for flow and return chambers are fitted as standard
- possible special configurations:
  → larger dimensions, other version
  → corrosion protection according to AGI, worksheet Q 151

Type	Art. No.		DG	Number of nozzles [pcs.]	Largest nozzle	V_{max} [m³/h]	Output at ΔT 20 °K [kW]	Length [mm]	Connection separation l5 [mm]
	16 bar	6 bar							
Uniform nozzle spacing									
120/80	–	4205817	0001	6	to DN 50	6,5	150,00	1.200	200
120/80	–	4205759	0001	6	to DN 50	6,5	150,00	1.490	250
120/80	–	4205804	0001	8	to DN 50	6,5	150,00	1.600	200
120/80	–	4205799	0001	8	to DN 50	6,5	150,00	2.000	250
120/80	–	4205805	0001	10	to DN 50	6,5	150,00	2.000	200
120/80	–	4205814	0001	10	to DN 50	6,5	150,00	2.400	250
160/80	–	4205942	0001	6	to DN 65	10,8	250,00	1.450	250
160/80	–	4205937	0001	6	to DN 65	10,8	250,00	1.700	300
160/80	–	4205917	0001	8	to DN 65	10,8	250,00	1.950	250
160/80	–	4205943	0001	8	to DN 65	10,8	250,00	2.300	300
160/80	–	4205952	0001	10	to DN 65	10,8	250,00	2.900	300

You can find the enquiry form at **www.reflex-winkelmann.com/en**

SINUS

Compact manifolds

Type	Art. No.		DG	Number of nozzles [pcs.]	Largest nozzle	V_{max} [m^3/h]	Output at ΔT 20 °K [kW]	Length [mm]	Connection separation l5 [mm]
	16 bar	6 bar							
180/110	–	4205936	0001	6	to DN 100	17,2	400,00	1.500	250
180/110	–	4205803	0001	6	to DN 100	17,2	400,00	1.750	300
180/110	–	4205829	0001	6	to DN 100	17,2	400,00	1.950	350
180/110	–	4205761	0001	8	to DN 100	17,2	400,00	2.000	250
180/110	–	4205800	0001	8	to DN 100	17,2	400,00	2.350	300
180/110	–	4205652	0001	8	to DN 100	17,2	400,00	2.650	350
180/110	–	4205827	0001	10	to DN 100	17,2	400,00	2.400	250
180/110	–	4205779	0001	10	to DN 100	17,2	400,00	2.950	300
180/110	–	4205762	0001	10	to DN 100	17,2	400,00	3.350	350
200/120	–	4206245	0001	6	to DN 100	25,8	600,00	1.500	250
200/120	–	4205695	0001	6	to DN 100	25,8	600,00	1.950	350
200/120	–	4206246	0001	8	to DN 100	25,8	600,00	2.000	250
200/120	–	4205757	0001	8	to DN 100	25,8	600,00	2.350	300
200/120	–	4205662	0001	8	to DN 100	25,8	600,00	2.650	350
200/120	–	4206247	0001	10	to DN 100	25,8	600,00	2.400	250
200/120	–	4205838	0001	10	to DN 100	25,8	600,00	3.350	350
280/180	–	4207847	0001	6	to DN 125	53,8	1.250,00	1.800	300
280/180	–	4209319	0001	6	to DN 125	53,8	1.250,00	2.100	350
280/180	–	4209318	0001	8	to DN 125	53,8	1.250,00	2.400	300
280/180	–	4207845	0001	8	to DN 125	53,8	1.250,00	2.800	350
280/180	–	4207846	0001	10	to DN 125	53,8	1.250,00	3.000	300
280/180	–	4207872	0001	10	to DN 125	53,8	1.250,00	3.500	350
300/200	–	4205953	0001	6	to DN 150	68,8	1.600,00	1.800	300
300/200	–	4205832	0001	6	to DN 150	68,8	1.600,00	2.100	350
300/200	–	4205944	0001	8	to DN 150	68,8	1.600,00	2.400	300
300/200	–	4205656	0001	8	to DN 150	68,8	1.600,00	2.800	350
300/200	–	4205950	0001	10	to DN 150	68,8	1.600,00	3.000	300
300/200	–	4205696	0001	10	to DN 150	68,8	1.600,00	3.500	350
Variable nozzle spacing									
120/80	4202245	4200905	0001	–	to DN 50	6,5	150,00	–	–
160/80	4202316	4200967	0001	–	to DN 65	10,8	250,00	–	–
180/110	4202317	4205976	0001	–	to DN 100	17,2	400,00	–	–
200/120	4202328	4200975	0001	–	to DN 100	25,8	600,00	–	–
250/150	4205185	4205184	0001	–	to DN 125	38,7	900,00	–	–
280/180	4207593	4205923	0001	–	to DN 125	53,8	1.250,00	–	–
300/200	4202330	4200989	0001	–	to DN 150	68,8	1.600,00	–	–
400/200	4202331	4200971	0001	–	to DN 150	90,0	2.100,00	–	–
450/250	4202322	4200961	0001	–	to DN 200	150,0	3.500,00	–	–
500/300	4202323	4200956	0001	–	to DN 250	194,0	4.500,00	–	–
600/400	4202324	4200974	0001	–	to DN 300	267,0	6.200,00	–	–
700/500	4202325	4200968	0001	–	to DN 350	391,0	9.100,00	–	–

Compact manifolds accessories

name plate

- for marking the heating circuits, made of galvanised steel sheet for three rows of lettering. The name plate is suitable for screwing to the finished insulation
- size: 100 × 50 mm
- colours: red (RD) for flow & blue (BU) for return

insulation

- comprising interlocking half shells with end-pieces
- customised and precisely fitting cut-outs for all connection nozzles are provided in the factory
- the half-shells are fitted using stainless-steel clamping straps and quick-release fasteners
- this enables simple installation and disassembly for overhaul purposes

SINUS EasyFixx

- can be used in combination with dynamic pressure maintenance and/or degassing
- capacity range approx. 250 kW to 2.100 kW
- max. permissible operating temperature 110 °C
- max. permissible operating overpressure 6 bar
- application range:
  - → compact manifold 180/110 – 300/200
  - → thermally insulated compact manifold: 250/151 – 300/201
  - → SINUS HydroFixx: 180/180 – 300/350
  - → round tube manifold DN 65 – DN 300

draining gutter

- discharge trough for safe and clean collection and capture of the system water to be drained from the respective heating or cooling circuits
- comprising galvanised steel plate edged in the form of a U-section
- the length of the trough depends on the corresponding manifold and is prefabricated in the factory to ensure a precise fit
- to prevent spray water, a spray water lip of 30 mm is provided
- a chrome plated flow sieve with a 2" male thread is included

stand bracket

- sound-proofed and galvanised, comprising floor plate with steel tube and head plate with guide tube including connecting screws
- height adjustable in two variants (270 – 340 mm or 405 – 600 mm), the dimension indicates the distance between the floor and bottom edge of the manifold

wall bracket

- sound-proofed and galvanised comprising a head plate fitted on an adjustable guide carriage
- infinitely adjustable in depth
- overhang to manifold middle

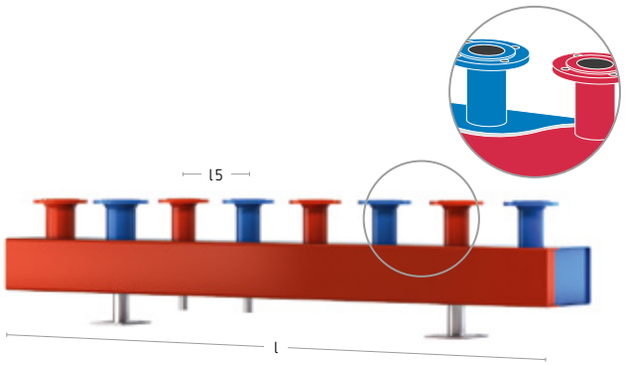
SINUS

Compact manifolds accessories

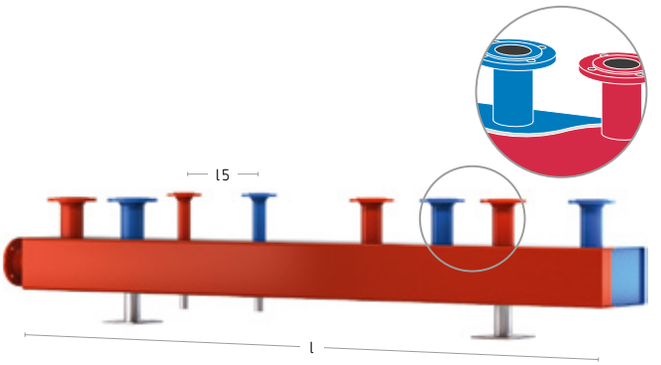
Type	Art. No.	DG	Weight [kg]
SINUS EasyFixx	4202284	0003	4,46
draining gutter			
draining gutter ELR galv	4205889	0001	15,00
stand bracket STKO ELR	4205878	0001	2,40
wall bracket WKO ELR	4205705	0001	1,58
name plate			
name plate RD	4200015	0001	–
name plate BU	4200021	0001	–
insulation 45 mm PUR foam/Aluminium coarse grain jacket, thermal conductivity 0,026 W/m × K			
insulation 120/80	4205731	0001	–
insulation 160/80	4205897	0001	–
insulation 180/110	4205703	0001	–
insulation 200/120	4206010	0001	–
insulation 50 mm PUR foam/Aluminium coarse grain jacket, thermal conductivity 0,026 W/m × K			
insulation 280/180	4201454	0001	–
insulation 300/200	4206448	0001	–
insulation 45 mm PUR foam/galvanised sheet steel jacket, thermal conductivity 0,026 W/m × K			
insulation 120/80	4205658	0001	–
insulation 160/80	4205518	0001	–
insulation 180/110	4205643	0001	–
insulation 200/120	4205956	0001	–
insulation 250/150	4210849	0001	–
insulation 50 mm PUR foam/galvanised sheet steel jacket, thermal conductivity 0,026 W/m × K			
insulation 280/180	4201353	0001	–
insulation 300/200	4205592	0001	–
insulation 60 mm PUR foam/galvanised sheet steel jacket, thermal conductivity 0,026 W/m × K			
insulation 400/200	4206045	0001	–
insulation 450/250	4206046	0001	–
insulation 500/300	4206047	0001	–
insulation 600/400	4206048	0001	–
insulation 700/500	4206049	0001	–
insulation 100 mm mineral wool/galvanised sheet steel jacket, thermal conductivity 0,038 W/m × K			
insulation 120/80	4205659	0001	–
insulation 160/80	4205996	0001	–
insulation 180/110	4205593	0001	–
insulation 200/120	4205704	0001	–
insulation 250/150	4209925	0001	–
insulation 280/180	4201347	0001	–
insulation 300/200	4205517	0001	–
insulation 400/200	4206050	0001	–
insulation 450/250	4206051	0001	–
insulation 500/300	4206052	0001	–
insulation 600/400	4206053	0001	–
insulation 700/500	4206054	0001	–
stand bracket			
stand bracket STKO 270 – 340 mm max 200/120 DN 200	4206574	0001	3,00
stand bracket STKO 270 – 340 mm max 300/200 DN 250	4205957	0001	5,40
stand bracket STKO 270 – 340 mm max 500/300 DN 400	4206097	0001	12,00
stand bracket STKO 300 mm max 700/500 DN 800	4205580	0001	24,00
wall bracket			
wall bracket WAKO 220 mm max 160/80 DN 200	4205900	0001	2,30
wall bracket WAKO 300 mm max 200/120 DN 200	4205955	0001	3,73
wall bracket WAKO 500 mm max 300/200 DN 250	4205581	0001	5,07

SINUS

Compact manifold, thermally separated



Compact manifold, thermally separated with uniform nozzle spacings



Compact manifold, thermally separated with variable nozzle spacings

Technical Features

- combined flow and return manifold, comprising rectangular tube with adjoining chambers divided by sinusoidal dividing walls and 20 mm thick air layer made from black steel sheet S235. The air layer reduces the heat transfer between the flow and return chambers.
- 100 % factory-checked for leak tightness and primed
- max. permissible operating temperature -10 °C – 110 °C
- max. permissible operating overpressure 0 bar – 6 bar (max. 16 bar upon request)
- nozzles aligned at the height of the shut-off valves
- optionally possible from above, the side or below
- draining sleeves for flow and return chambers are fitted as standard
- possible special configurations:
  → larger dimensions, other version
  → corrosion protection according to AGI, worksheet Q 151

Type	Art. No.		DG	Number of nozzles [pcs.]	Largest nozzle	V_{max} [m³/h]	Output at ΔT 20 °K [kW]	Length [mm]	Connection separation l5 [mm]
	16 bar	6 bar							
Uniform nozzle spacing									
160/81	–	4205666	0001	6	to DN 65	9,0	210,00	1.500	250
160/81	–	4205649	0001	6	to DN 65	9,0	210,00	1.750	300
160/81	–	4205711	0001	8	to DN 65	9,0	210,00	2.000	250
160/81	–	4205771	0001	8	to DN 65	9,0	210,00	2.350	300
160/81	–	4205712	0001	10	to DN 65	9,0	210,00	2.400	250
160/81	–	4205668	0001	10	to DN 65	9,0	210,00	2.950	300
180/111	–	4205669	0001	6	to DN 80	13,8	320,00	1.500	250
180/111	–	4205845	0001	6	to DN 80	13,8	320,00	1.750	300
180/111	–	4205844	0001	8	to DN 80	13,8	320,00	2.000	250
180/111	–	4205672	0001	8	to DN 80	13,8	320,00	2.350	300
180/111	–	4205670	0001	10	to DN 80	13,8	320,00	2.400	250
180/111	–	4205746	0001	10	to DN 80	13,8	320,00	2.950	300

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Compact manifold, thermally separated

Type	Art. No.		DG	Number of nozzles	Largest nozzle	V_{max}	Output at ΔT 20 °K	Length	Connection separation l5
	16 bar	6 bar		[pcs.]		[m³/h]	[kW]	[mm]	[mm]
200/121	–	4206255	0001	6	to DN 80	22,0	510,00	1.500	250
200/121	–	4205749	0001	6	to DN 80	22,0	510,00	1.750	300
200/121	–	4206256	0001	8	to DN 80	22,0	510,00	2.000	250
200/121	–	4205720	0001	8	to DN 80	22,0	510,00	2.350	300
200/121	–	4206257	0001	10	to DN 80	22,0	510,00	2.400	250
200/121	–	4205674	0001	10	to DN 80	22,0	510,00	2.950	300
280/181	–	4205798	0001	6	to DN 125	42,0	980,00	1.800	300
280/181	–	4205752	0001	6	to DN 125	42,0	980,00	2.100	350
280/181	–	4205675	0001	8	to DN 125	42,0	980,00	2.400	300
280/181	–	4205678	0001	8	to DN 125	42,0	980,00	2.800	350
280/181	–	4205751	0001	10	to DN 125	42,0	980,00	3.000	300
280/181	–	4205679	0001	10	to DN 125	42,0	980,00	3.500	350
300/201	–	4205722	0001	6	to DN 125	60,2	1.400,00	1.800	300
300/201	–	4205683	0001	6	to DN 125	60,2	1.400,00	2.100	350
300/201	–	4205723	0001	8	to DN 125	60,2	1.400,00	2.400	300
300/201	–	4205826	0001	8	to DN 125	60,2	1.400,00	2.800	350
300/201	–	4205724	0001	10	to DN 125	60,2	1.400,00	3.000	300
300/201	–	4205728	0001	10	to DN 125	60,2	1.400,00	3.500	350
Variable nozzle spacing									
160/81	–	4213873	0001	–	to DN 65	9,0	210,00	–	–
180/111	4202333	4200562	0001	–	to DN 80	13,8	320,00	–	–
200/121	4202334	4200754	0001	–	to DN 80	22,0	510,00	–	–
250/151	4204789	4204299	0001	–	to DN 125	32,2	825,00	–	–
280/181	4202335	4200797	0001	–	to DN 125	42,0	980,00	–	–
300/201	4202336	4200798	0001	–	to DN 125	60,2	1.400,00	–	–
400/201	4202337	4200969	0001	–	to DN 150	77,0	1.800,00	–	–
450/251	4202338	4200962	0001	–	to DN 200	125,0	2.900,00	–	–
500/301	4202339	4200963	0001	–	to DN 250	194,0	4.500,00	–	–
600/401	4202340	4200957	0001	–	to DN 300	267,0	6.200,00	–	–
700/501	4202343	4200972	0001	–	to DN 350	391,0	9.100,00	–	–

Compact manifold, thermally separated accessories

name plate

- for marking the heating circuits, made of galvanised steel sheet for three rows of lettering. The name plate is suitable for screwing to the finished insulation
- size: 100 × 50 mm
- colours: red (RD) for flow & blue (BU) for return

insulation

- comprising interlocking half shells with end-pieces
- customised and precisely fitting cut-outs for all connection nozzles are provided in the factory
- the half-shells are fitted using stainless-steel clamping straps and quick-release fasteners
- this enables simple installation and disassembly for overhaul purposes

SINUS EasyFixx

- can be used in combination with dynamic pressure maintenance and/or degassing
- capacity range approx. 250 kW to 2.100 kW
- max. permissible operating temperature 110 °C
- max. permissible operating overpressure 6 bar
- application range:
  - → compact manifold 180/110 – 300/200
  - → thermally insulated compact manifold: 250/151 – 300/201
  - → SINUS HydroFixx: 180/180 – 300/350
  - → round tube manifold DN 65 – DN 300

draining gutter

- discharge trough for safe and clean collection and capture of the system water to be drained from the respective heating or cooling circuits
- comprising galvanised steel plate edged in the form of a U-section
- the length of the trough depends on the corresponding manifold and is prefabricated in the factory to ensure a precise fit
- to prevent spray water, a spray water lip of 30 mm is provided
- a chrome plated flow sieve with a 2" male thread is included

stand bracket

- sound-proofed and galvanised, comprising floor plate with steel tube and head plate with guide tube including connecting screws
- height adjustable in two variants (270 – 340 mm or 405 – 600 mm), the dimension indicates the distance between the floor and bottom edge of the manifold

wall bracket

- sound-proofed and galvanised comprising a head plate fitted on an adjustable guide carriage
- infinitely adjustable in depth
- overhang to manifold middle

SINUS

Compact manifold, thermally separated accessories

Type	Art. No.	DG	Weight [kg]
SINUS EasyFixx	4202284	0003	4,46
draining gutter			
draining gutter ELR galv	4205889	0001	15,00
stand bracket STKO ELR	4205878	0001	2,40
wall bracket WKO ELR	4205705	0001	1,58
name plate			
name plate RD	4200015	0001	–
name plate BU	4200021	0001	–
insulation 45 mm PUR foam/Aluminium coarse grain jacket, thermal conductivity 0,026 W/m × K			
insulation 160/80	4205897	0001	–
insulation 180/110	4205703	0001	–
insulation 200/120	4206010	0001	–
insulation 50 mm PUR foam/Aluminium coarse grain jacket, thermal conductivity 0,026 W/m × K			
insulation 280/180	4201454	0001	–
insulation 300/200	4206448	0001	–
insulation 45 mm PUR foam/galvanised sheet steel jacket, thermal conductivity 0,026 W/m × K			
insulation 160/80	4205518	0001	–
insulation 180/110	4205643	0001	–
insulation 200/120	4205956	0001	–
insulation 250/150	4210849	0001	–
insulation 50 mm PUR foam/galvanised sheet steel jacket, thermal conductivity 0,026 W/m × K			
insulation 280/180	4201353	0001	–
insulation 300/200	4205592	0001	–
insulation 60 mm PUR foam/galvanised sheet steel jacket, thermal conductivity 0,026 W/m × K			
insulation 400/200	4206045	0001	–
insulation 450/250	4206046	0001	–
insulation 500/300	4206047	0001	–
insulation 600/400	4206048	0001	–
insulation 700/500	4206049	0001	–
insulation 100 mm mineral wool/galvanised sheet steel jacket, thermal conductivity 0,038 W/m × K			
insulation 160/80	4205996	0001	–
insulation 180/110	4205593	0001	–
insulation 200/120	4205704	0001	–
insulation 250/150	4209925	0001	–
insulation 280/180	4201347	0001	–
insulation 300/200	4205517	0001	–
insulation 400/200	4206050	0001	–
insulation 450/250	4206051	0001	–
insulation 500/300	4206052	0001	–
insulation 600/400	4206053	0001	–
insulation 700/500	4206054	0001	–
stand bracket			
stand bracket STKO 270 – 340 mm max 200/120 DN 200	4206574	0001	3,00
stand bracket STKO 270 – 340 mm max 300/200 DN 250	4205957	0001	5,40
stand bracket STKO 270 – 340 mm max 500/300 DN 400	4206097	0001	12,00
stand bracket STKO 300 mm max 700/500 DN 800	4205580	0001	24,00
wall bracket			
wall bracket WAKO 220 mm max 160/80 DN 200	4205900	0001	2,30
wall bracket WAKO 300 mm max 200/120 DN 200	4205955	0001	3,73
wall bracket WAKO 500 mm max 300/200 DN 250	4205581	0001	5,07

SINUS

Single-chamber manifold

Round tube manifold

Technical Features

- single chamber manifold- / collector from welded pipe, provided with boiler ends at both ends
- material P235 TR1 according to EN 10217-1
- 100 % factory-checked for leak tightness and primed
- max. permissible operating temperature -10 °C – 110 °C
- max. permissible operating overpressure 0 bar – 6 bar / 16 bar, the actual operating overpressure is limited by the pressure rating of the flange nozzle
- nozzles aligned at the height of the shut-off valves
- with threaded, Victaulic and / or PN 6 / PN 16 flange nozzle
- drain sleeve ½"
- nozzle spacing variabel
- possible special configurations:
  → higher design temperatures
  → larger dimensions, other version
  → corrosion protection according to AGI, worksheet Q 151

Type	Art. No.			DG	Flow velocity 0,4 m/s		Flow velocity 0,6 m/s	
	6 bar	10 bar	16 bar		V_{max} [m³/h]	Output at ΔT 20 °K [kW]	V_{max} [m³/h]	Output at ΔT 20 °K [kW]
variable nozzle spacing								
DN 50	4206421	–	4208130	0001	3,5	80	5,0	115
DN 65	4206420	–	4208131	0001	5,5	125	8,5	200
DN 80	4206415	–	4208132	0001	7,0	160	12,0	280
DN 100	4206160	–	4208135	0001	10,0	245	17,0	395
DN 125	4205821	–	4208136	0001	17,0	410	27,0	630
DN 150	4205822	–	4208137	0001	24,0	560	38,0	880
DN 200	4206159	–	4208141	0001	44,0	1.020	72,0	1.670
DN 250	4205939	–	4208142	0001	70,0	1.625	115,0	2.670
DN 300	4205913	–	4208143	0001	100,0	2.350	153,0	3.560
DN 350	4205914	4208147	–	0001	140,0	3.250	208,0	4.840
DN 400	4205915	4208148	–	0001	180,0	4.200	271,0	6.300
DN 500	4205933	4206425	–	0001	280,0	6.500	424,0	9.860
DN 600	4205934	4206426	–	0001	400,0	9.330	611,0	14.200
DN 700	4205916	4206427	–	0001	550,0	12.850	830,0	19.370
DN 800	4205935	4206428	–	0001	700,0	17.500	1.085,0	25.320

Single-chamber manifold Accessories

name plate

- for marking the heating circuits, made of galvanised steel sheet for three rows of lettering. The name plate is suitable for screwing to the finished insulation
- size: 100 × 50 mm
- colours: red (RD) for flow & blue (BU) for return

insulation

- comprising interlocking half shells with end-pieces
- customised and precisely fitting cut-outs for all connection nozzles are provided in the factory
- the half-shells are fitted using stainless-steel clamping straps and quick-release fasteners
- this enables simple installation and disassembly for overhaul purposes

SINUS EasyFixx

- can be used in combination with dynamic pressure maintenance and/or degassing
- capacity range approx. 250 kW to 2.100 kW
- max. permissible operating temperature 110 °C
- max. permissible operating overpressure 6 bar
- application range:
  - → compact manifold 180/110 – 300/200
  - → thermally insulated compact manifold: 250/151 – 300/201
  - → SINUS HydroFixx: 180/180 – 300/350
  - → round tube manifold DN 65 – DN 300

draining gutter

- discharge trough for safe and clean collection and capture of the system water to be drained from the respective heating or cooling circuits
- comprising galvanised steel plate edged in the form of a U-section
- the length of the trough depends on the corresponding manifold and is prefabricated in the factory to ensure a precise fit
- to prevent spray water, a spray water lip of 30 mm is provided
- a chrome plated flow sieve with a 2" male thread is included

stand bracket

- galvanised standing support for secure locating of the trough behind or in front of the manifold
- the height can be adjusted on-site

wall bracket

- sound-proofed and galvanised comprising a head plate fitted on an adjustable guide carriage
- infinitely adjustable in depth
- overhang to manifold middle 160 – 500 mm

Single-chamber manifold Accessories

Type	Art. No.	DG	Weight [kg]
SINUS EasyFixx	4202284	0003	4,46
draining gutter			
draining gutter ELR galv	4205889	0001	15,00
stand bracket STKO ELR	4205878	0001	2,40
wall bracket WKO ELR	4205705	0001	1,58
name plate			
name plate RD	4200015	0001	–
name plate BU	4200021	0001	–
insulation 60 mm PUR foam/galvanised sheet steel jacket, thermal conductivity 0,026 W/m × K			
insulation DN 50	4207255	0001	–
insulation DN 65	4207254	0001	–
insulation DN 80	4205639	0001	–
insulation DN 100	4205573	0001	–
insulation DN 125	4205574	0001	–
insulation DN 150	4205575	0001	–
insulation DN 200	4205576	0001	–
insulation DN 250	4205577	0001	–
insulation DN 300	4205578	0001	–
insulation DN 350	4205579	0001	–
insulation DN 400	4205640	0001	–
insulation DN 500	4207256	0001	–
insulation 50 mm mineral wool/galvanised sheet steel jacket, thermal conductivity 0,038 W/m × K			
insulation DN 50	4207284	0001	–
insulation 70 mm mineral wool/galvanised sheet steel jacket, thermal conductivity 0,038 W/m × K			
insulation DN 65	4207007	0001	–
insulation 80 mm mineral wool/galvanised sheet steel jacket, thermal conductivity 0,038 W/m × K			
insulation DN 80	4207014	0001	–
insulation 100 mm mineral wool/galvanised sheet steel jacket, thermal conductivity 0,038 W/m × K			
insulation DN 100	4207019	0001	–
insulation DN 125	4207021	0001	–
insulation DN 150	4207026	0001	–
insulation DN 200	4207027	0001	–
insulation DN 250	4207032	0001	–
insulation DN 300	4207033	0001	–
insulation DN 350	4207035	0001	–
insulation DN 400	4207038	0001	–
insulation DN 500	4207274	0001	–
stand bracket			
stand bracket STKO 270 – 340 mm max 200/120 DN 200	4206574	0001	3,00
stand bracket STKO 270 – 340 mm max 300/200 DN 250	4205957	0001	5,40
stand bracket STKO 405 – 600 mm max 300/200 DN 250	4205504	0001	6,06
stand bracket STKO 300 mm max 700/500 DN 800	4205580	0001	24,00
wall bracket			
wall bracket WAKO 220 mm max 160/80 DN 200	4205900	0001	2,30
wall bracket WAKO 500 mm max 300/200 DN 250	4205581	0001	5,07

SINUS

SINUS LegioNixx Stainless steel potable water manifold

SINUS LegioNixx potable water manifold

Technical Features

- potable water manifold made of stainless steel 1.4571 (V4 A)
- thanks to its design, water flows uniformly through the manifold, this prevents any stagnant water, avoids dead zones and prevents legionella
- 100 % factory-checked for leak tightness
- TIG-welded, pickled and passivated
- max. permissible operating temperature -10 °C – 110 °C
- max. permissible operating overpressure 0 bar – 10 bar
- nozzles aligned at the height of the shut-off valves

Type	Art. No.	DG	Flow velocity 1,5 m/s V_{max} [m³/h]	Dimension [mm]
DN 50	4206078	0001	13,5	60 × 2,0
DN 65	4206079	0001	22,1	76 × 2,0
DN 80	4206080	0001	30,6	88 × 2,0
DN 100	4206081	0001	50,5	114 × 2,6
DN 125	4206082	0001	76,6	139 × 2,6
DN 150	4206083	0001	112,8	168 × 2,6
DN 200	4206084	0001	192,0	219 × 3,0
DN 250	4206085	0001	302,0	273 × 3,0

SINUS LegioNixx accessories

draining gutter

- discharge trough for safe and clean collection and capture of the system water to be drained from the respective heating or cooling circuits
- comprising galvanised steel plate edged in the form of a U-section
- the length of the trough depends on the corresponding manifold and is prefabricated in the factory to ensure a precise fit
- to prevent spray water, a spray water lip of 30 mm is provided
- a chrome plated flow sieve with a 2" male thread is included

stand bracket

- galvanised standing support for secure locating of the trough behind or in front of the manifold
- the height can be adjusted on-site

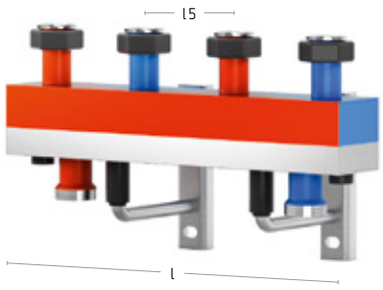
wall bracket

- sound-proofed and galvanised comprising a head plate fitted on an adjustable guide carriage
- infinitely adjustable in depth
- overhang to manifold middle 160 – 500 mm

Type	Art. No.	DG	Weight [kg]
draining gutter ELR galv	4205889	0001	15,00
stand bracket STKO ELR	4205878	0001	2,40
wall bracket WKO ELR	4205705	0001	1,58

SINUS HydroFixx

SINUS HydroFixx Mini



SINUS HydroFixx Mini

Technical Features

- no interacting pumps at partial and full load
- 100 % factory-checked for leak tightness and primed
- packed as a set
- including EPP thermal insulation and wall mount
- ½" sleeve for temperature sensor
- with horizontal welded Hydraulic Separator located directly underneath
- ensures optimum hydraulic decoupling of the various primary and secondary circuits under all operating conditions
- can also be used with several different heat generators or chillers
- the boiler connection is made from below and the respective heating circuits are connected from above in a space-saving and clear manner
- max. permissible operating overpressure 0 bar – 4 bar
- max. permissible operating temperature -10 °C – 110 °C
- ideal for use with: maintenance box

Type	Art. No.	DG	Heating circuits [pcs.]	Connection consumer circuit	Connection generator circuit	V_{max} [m^3/h]	Output at ΔT 20 °K [kW]	Length l [mm]	Connection separation l5 [mm]
80/80	4200041	0001	2	G 1½" coupling nut	G 1½"	3,0	70,00	460	125
80/80	4208061	0001	3	G 1½" coupling nut	G 1½"	3,0	70,00	710	125
80/80	4200089	0001	4	G 1½" coupling nut	G 1½"	3,0	70,00	960	125
120/120	4208581	0001	2	G 1½" coupling nut	G 2"	7,0	160,00	515	125
120/120	4208505	0001	3	G 1½" coupling nut	G 2"	7,0	160,00	765	125
120/120	4200268	0001	4	G 1½" coupling nut	G 2"	7,0	160,00	1.015	125

You can find the enquiry form at **www.reflex-winkelmann.com/en**

SINUS HydroFixx Mini accessories

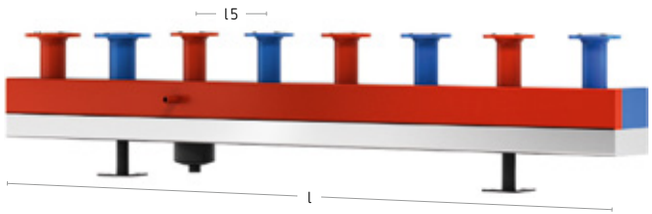
maintenance box

- for magnetite slurry removal for all small manifolds, SINUS MonoFixx and SINUS HydroFixx
- enables desludging in pressurised systems
- comprising special section tube 120 × 80 or 80 × 60, steel S235
- provided with a desludging nozzle and ½" ball valve as well as a magnetic rod screwed into the immersion sleeve
- for mounting in the main boiler return of the manifold
- with EPP insulation
- max. permissible operating temperature -10 °C – 110 °C
- max. permissible operating overpressure 0 bar – 4 bar

Type	Art. No.	DG	Weight [kg]
maintenance box			
maintenance box 80/60	4209770	0003	2,06
maintenance box 120/80	4209771	0003	2,06

SINUS

SINUS HydroFixx with uniform nozzle spacings



SINUS HydroFixx with uniform nozzle spacings

Technical Features

- combined flow and return manifold, consisting rectangular tube with adjoining chambers divided by sinusoidal dividing wall made from mild steel sheet S235
- no interacting pumps at partial and full load
- 100 % factory-checked for leak tightness and primed
- max. permissible operating overpressure 0 bar – 6 bar
- max. permissible operating temperature -10 °C – 110 °C
- nozzles aligned at the height of the shut-off valves — optionally possible from above, the side or below
- with threaded or PN 6/PN 16 flange nozzle
- sludge trap is provided as standard
- with horizontal welded Hydraulic Separator located directly underneath
- ensures optimum hydraulic decoupling of the various primary and secondary circuits under all operating conditions
- can also be used with several different heat generators or chillers
- space-saving and clear layout of the respective heating or cooling circuits
- with downward-directed outgoing sludge trap inclusive of desludging sleeve
- fitted as standard is a sleeve for locating the Hydraulic Separator's sensor, which is used for measuring the secondary-side flow temperature for system control; it is positioned in the correct location on site
- supplementary sensor sleeves can be fitted for an additional charge
- **article numbers, prices and delivery time available on request**

SINUS HydroFixx with uniform nozzle spacing **available on request**

You can find the enquiry form at **www.reflex-winkelmann.com/en**

SINUS

SINUS HydroFixx with variable nozzle spacings

SINUS HydroFixx with variable nozzle spacings

Technical Features

- combined flow and return manifold, consisting rectangular tube with adjoining chambers divided by sinusoidal dividing wall made from mild steel sheet S235
- no interacting pumps at partial and full load
- 100 % factory-checked for leak tightness and primed
- max. permissible operating overpressure 0 bar – 6 bar
- max. permissible operating temperature -10 °C – 110 °C
- optionally possible from above, the side or below
- with threaded and / or PN 6 / PN 16 flange nozzle
- draining sleeves for flow and return chambers are fitted as standard
- with horizontal welded Hydraulic Separator located directly underneath
- ensures optimum hydraulic decoupling of the various primary and secondary circuits under all operating conditions
- can also be used with several different heat generators or chillers
- space-saving and clear layout of the respective heating or cooling circuits
- with downward-directed outgoing sludge trap inclusive of desludging sleeve
- fitted as standard is a sleeve for locating the Hydraulic Separator's sensor, which is used for measuring the secondary-side flow temperature for system control; it is positioned in the correct location on site
- supplementary sensor sleeves can be fitted for an additional charge

You can find the enquiry form at **www.reflex-winkelmann.com/en**

SINUS

SINUS HydroFixx with variable nozzle spacings

Type	Art. No.	DG	Largest connection nozzle	V_{max} [m^3/h]	Output at ΔT 20 °K [kW]
120/120	4208461	0001	DN 50	7,0	160,00
160/160	4207954	0001	DN 65	10,8	250,00
180/180	4207992	0001	DN 100	17,2	400,00
200/200	4207993	0001	DN 125	25,8	600,00
280/320	4207994	0001	DN 125	53,8	1.250,00
300/350	4207995	0001	DN 150	68,8	1.600,00
400/400	4206361	0001	DN 150	90,0	2.100,00
450/450	4208462	0001	DN 200	150,0	3.500,00
500/550	4208464	0001	DN 250	194,0	4.500,00
600/650	4210556	0001	DN 300	267,0	6.200,00
700/750	4210559	0001	DN 350	387,0	9.000,00

SINUS HydroFixx accessories

name plate

- for marking the heating circuits, made of galvanised steel sheet for three rows of lettering. The name plate is suitable for screwing to the finished insulation
- size: 100 × 50 mm
- colours: red (RD) for flow & blue (BU) for return

insulation

- comprising interlocking half shells with end-pieces
- customised and precisely fitting cut-outs for all connection nozzles are provided in the factory
- the half-shells are fitted using stainless-steel clamping straps and quick-release fasteners
- this enables simple installation and disassembly for overhaul purposes

SINUS EasyFixx

- can be used in combination with dynamic pressure maintenance and/or degassing
- capacity range approx. 250 kW to 2.100 kW
- max. permissible operating temperature 110 °C
- max. permissible operating overpressure 6 bar
- application range:
  - → compact manifold 180/110 – 300/200
  - → thermally insulated compact manifold: 250/151 – 300/201
  - → SINUS HydroFixx: 180/180 – 300/350
  - → round tube manifold DN 65 – DN 300

draining gutter

- discharge trough for safe and clean collection and capture of the system water to be drained from the respective heating or cooling circuits
- comprising galvanised steel plate edged in the form of a U-section
- the length of the trough depends on the corresponding manifold and is prefabricated in the factory to ensure a precise fit
- to prevent spray water, a spray water lip of 30 mm is provided
- a chrome plated flow sieve with a 2" male thread is included

stand bracket

- sound-proofed and galvanised, comprising floor plate with steel tube and head plate with guide tube including connecting screws
- height adjustable in two variants (270 – 340 mm or 405 – 600 mm), the dimension indicates the distance between the floor and bottom edge of the manifold

wall bracket

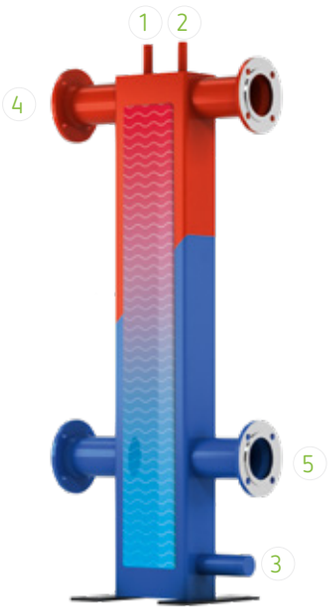
- sound-proofed and galvanised comprising a head plate fitted on an adjustable guide carriage
- infinitely adjustable in depth
- overhang to manifold middle

SINUS HydroFixx accessories

Type	Art. No.	DG	Weight [kg]
SINUS EasyFixx	4202284	0003	4,46
draining gutter			
draining gutter ELR galv	4205889	0001	15,00
stand bracket STKO ELR	4205878	0001	2,40
wall bracket WKO ELR	4205705	0001	1,58
name plate			
name plate BU	4200021	0001	–
name plate RD	4200015	0001	–
insulation 60 mm PUR foam/Aluminium coarse grain jacket, Thermal conductivity 0,026 W/m×K			
insulation 120/120	4208466	0001	–
insulation 160/160	4208276	0001	–
insulation 180/180	4208277	0001	–
insulation 200/200	4208278	0001	–
insulation 60 mm PUR foam/galvanised sheet steel jacket, Thermal conductivity 0,026 W/m×K			
insulation 120/120	4203382	0001	–
insulation 160/160	4203370	0001	–
insulation 180/180	4203372	0001	–
insulation 200/200	4203374	0001	–
insulation 280/320	4203375	0001	–
insulation 300/350	4203380	0001	–
insulation 400/400	4206362	0001	–
insulation 450/450	4208470	0001	–
insulation 500/550	4208471	0001	–
insulation 600/650	4210691	0001	–
insulation 700/750	4210692	0001	–
insulation 100 mm mineral wool/galvanised sheet steel jacket, Thermal conductivity 0,038 W/m×K			
insulation 120/120	4203384	0001	–
insulation 160/160	4203196	0001	–
insulation 180/180	4203197	0001	–
insulation 200/200	4208279	0001	–
insulation 280/320	4208280	0001	–
insulation 300/350	4208283	0001	–
insulation 400/400	4206363	0001	–
insulation 450/450	4208472	0001	–
insulation 500/550	4208476	0001	130,00
insulation 600/650	4210693	0001	–
insulation 700/750	4210721	0001	–
stand bracket			
stand bracket STKO 270–340 mm max 200/120 DN 200	4206574	0001	3,00
stand bracket STKO 270–340 mm max 300/200 DN 250	4205957	0001	5,40
stand bracket STKO 270–340 mm max 500/300 DN 400	4206097	0001	12,00
stand bracket STKO 300 mm max 700/500 DN 800	4205580	0001	24,00
wall bracket			
wall bracket WAKO 300 mm max 200/120 DN 200	4205955	0001	3,73
wall bracket WAKO 500 mm max 300/200 DN 250	4205581	0001	5,07

Theoretical principles

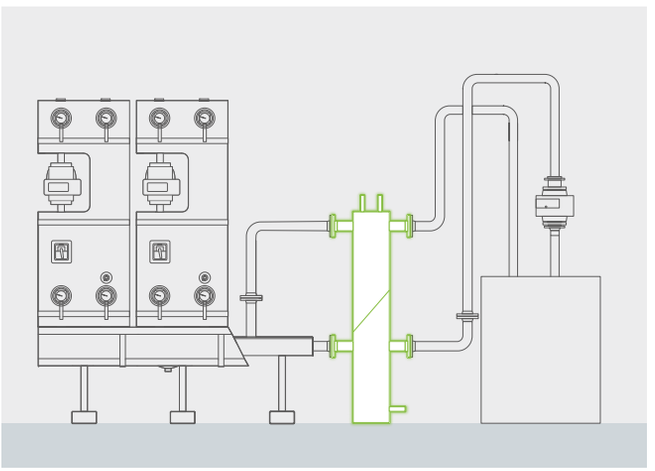
Hydraulic Separator — construction



The basic principle behind a Hydraulic Separator is thermal stratification, according to which, hot water (low density) collects in the upper area and cold water (high density) in the lower area.

1. Venting
   continuously removes free air bubbles from the system
2. Temperature sensor
   detects the secondary side supply temperature for a safe system control
3. Draining
   for discharging free suspended solids such as magnetite
4. Hot medium
5. Cold medium

Hydraulic Separator — connection



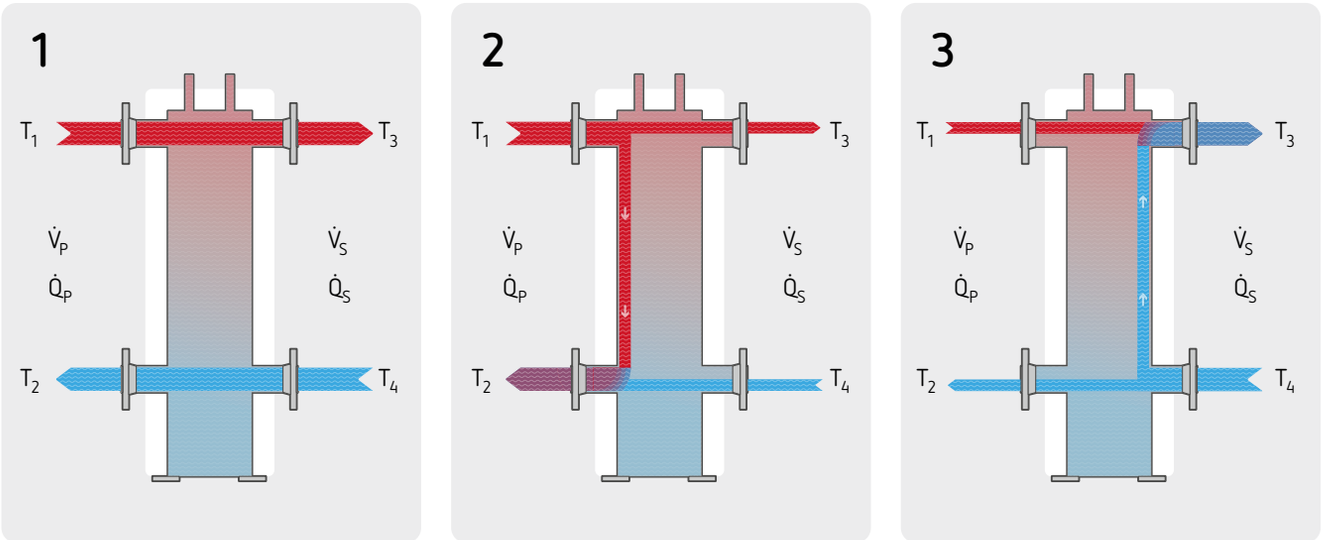
Hydraulic Separators provide hydraulic decoupling of the primary and secondary side, if these circuits each have their own pumps. Due to their design, Hydraulic Separators balance out oscillating volume flows and, in so doing, prevent hydraulic problems because the pumps do not influence each other. In particular, in current heating and cooling systems, dynamic power requirements are present that result in fluctuating volume flows. A Hydraulic Separator is positioned between the primary and secondary sides.

Hydraulic Separator — dimensioning

Decisive for reliable functioning is the flow velocity inside the body of the Hydraulic Separator. If the flow velocity is too high, there is a risk of turbulence. Therefore, the maximum expected volume flow must be taken into account to achieve the correct dimensioning. The correct dimensioning can be selected based on the product tables → p. 218

In addition, there must be a sufficient minimum distance between the flow and return connections to prevent any undesirable mixing. This is automatically ensured with the standard designs. In the event of limited space, custom solutions are available.

Hydraulic Separator — operating principle



1. Primary circuit volume flow = Secondary circuit volume flow
   - In this case, the Hydraulic Separator is in a neutral situation.
   - The volume flow of the primary circuit ($\dot{V}_P$) and the volume flow of the secondary circuit ($\dot{V}_S$) are the same.
   - The temperatures (T) in the primary circuit are the same as those in the secondary circuit.
   - The heat quantity ($\dot{Q}$) is also the same.
   - Under normal circumstances this operating status only exists for very short transition periods.

2. Primary circuit volume flow > Secondary circuit volume flow
   - In the partial load range, the primary pump delivers more water through the heat generator than the consumer side requires.
   - Hot flow water is mixed with the primary-side return; the return temperature increases.
   - As in this operating status, the provided heating capacity is greater than that actually required, the feedback control system counteracts this by reducing the generator output. For example, this is achieved by reducing the primary volume flow. In general, the increasing return temperature, as measured by a sensor, provides a measured variable for the feedback control system.

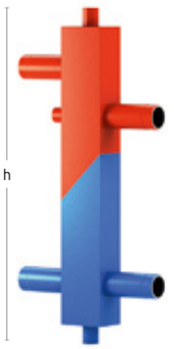
3. Primary circuit volume flow < Secondary circuit volume flow
   - The consumer requires more volume flow than the generator circuit makes available.
   - This frequently occurs automatically because modern heat and cold generators only have very small water volumes.
   - The Hydraulic Separator balances the circuits by mixing return water from the consumer circuits with the flow water from the primary circuit.
   - The reduction in the secondary flow temperature is initially not a problem because the provided flow temperatures are generally higher than the ones actually required.
   - As soon as the secondary-side flow temperature falls below the required target value, the generator output is increased, for example by increasing the primary volume flow.
   - To measure the setpoint temperature, each Hydraulic Separator has a correctly positioned sensor sleeve.

Note:
The operating statuses behave in an equivalent way in cooling systems. However, it should be noted that here the flows must be connected at the bottom in the area of the low temperatures and the returns connected at the top where high temperatures are present.

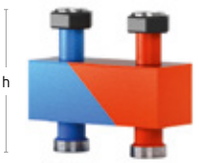
Hydraulic Separators

SINUS

Small Hydraulic Separators



Upright small Hydraulic Separator



SINUS MonoFixx small horizontal Hydraulic Separator

Technical Features

- ensures optimum hydraulic decoupling of the various primary and secondary circuits under all operating conditions
- no interacting pumps at partial and full load
- with four connection nozzles for heat consumers and heat generators
- 100 % factory-checked for leak tightness and primed
- packed as a set
- max. permissible operating temperature -10 °C – 110 °C
- max. permissible operating overpressure 0 bar – 4 bar
- with EPP insulation
- ½" sleeves for venting, draining and sensors
- Ideal for use with: Maintenance box & magnetite separation module for small hydraulic separators – threaded

Type	Art. No.	DG	Connection consumer circuit	Connection generator circuit	V_{max} [m^3/h]	Height h [mm]
Vertical						
60/50	4207263	0002	Rp 1"	Rp 1"	3,0	500
80/60	4205730	0002	R 1¼"	R 1¼"	4,5	500
120/80	4205684	0002	R 2"	R 2"	8,0	800
Horizontal						
80/80	4200160	0002	G 1½" coupling nut	G 1½"	3,0	–
120/80	4206338	0002	G 2" coupling nut	G 1½"	6,5	–

SINUS

Small Hydraulic Separators Accessories

wall-fastening set

- wall mounting kit comprising two wall brackets

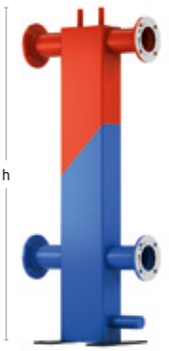
maintenance box

- for magnetite slurry removal for all small manifolds, SINUS MonoFixx and SINUS HydroFixx
- enables desludging in pressurised systems
- comprising special section tube 120 × 80 or 80 × 60, steel S235
- provided with a desludging nozzle and ½" ball valve as well as a magnetic rod screwed into the immersion sleeve
- for mounting in the main boiler return of the manifold
- with EPP insulation
- max. permissible operating temperature -10 °C – 110 °C
- max. permissible operating overpressure 0 bar – 4 bar

Type	Art. No.	DG	Weight [kg]
maintenance box			
maintenance box 80/60	4209770	0003	2,06
maintenance box 120/80	4209771	0003	2,06
wall-fastening set			
wall-fastening set 60/50	4208188	0002	–
wall-fastening set 80/60	4208191	0002	–
wall-fastening set 120/80	4208174	0002	–
wall-fastening set SINUS MonoFixx 80/80	4208354	0002	1,53
wall-fastening set SINUS MonoFixx 120/80	4208060	0002	1,70

SINUS

Hydraulic Separators Compact design



Compact Hydraulic Separator

Technical Features

- vertical-design Hydraulic Separator
- ensures optimum hydraulic decoupling of the various primary and secondary circuits under all operating conditions
- made from a rectangular chamber from rectangular hollow section steel S235 with welded cover and bottom
- no interacting pumps at partial and full load
- with four connection nozzles for heat consumers and heat generators
- with PN 6 / PN 16 weld-neck flanges
- 100 % factory-checked for leak tightness and primed
- max. permissible operating temperature -10 °C – 110 °C
- max. permissible operating overpressure 0 bar – 6 bar
- 2" threaded connections for desludging
- ½" sleeve for temperature sensor
- standing foot with holes for attachment to the floor

Type	Art. No.	DG	Connection consumer circuit	Connection generator circuit	V_{max} [m³/h]	Height h [mm]
Compact Hydraulic Separator						
160/80	6310060	0002	DN 65/PN 6	DN 65/PN 6	10,0	1.440
200/120	6310065	0002	DN 80/PN 6	DN 80/PN 6	18,0	1.450
250/150	6310070	0002	DN 100/PN 6	DN 100/PN 6	27,0	1.470
300/200	6310075	0002	DN 125/PN 6	DN 125/PN 6	43,0	1.480
400/200	6310250	0002	DN 150/PN 6	DN 150/PN 6	57,0	1.495
450/250	6310255	0002	DN 200/PN 6	DN 200/PN 6	85,0	1.520
500/300	6310260	0002	DN 200/PN 6	DN 200/PN 6	110,0	1.820

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Hydraulic Separators Accessories

insulation

- comprising interlocking half shells with end-pieces
- customised and precisely fitting cut-outs for all connection nozzles are provided in the factory
- the half-shells are fitted using stainless-steel clamping straps and quick-release fasteners
- this enables simple installation and disassembly for overhaul purposes

Type	Art. No.	DG	Weight [kg]
insulation 65 mm PUR foam / Aluminium coarse grain jacket, thermal conductivity 0,026 W/m×K			
insulation 160/80	9120214	0001	6,00
insulation 200/120	9120215	0001	9,20
insulation 250/150	9120216	0001	11,50
insulation 300/200	9120217	0001	13,50
insulation 400/200	9120218	0001	15,50
insulation 100 mm mineral wool / galvanised sheet steel jacket, thermal conductivity 0,038 W/m×K			
insulation 160/80	4201009	0001	23,50
insulation 250/150	4201010	0001	28,50
insulation 300/200	4201011	0001	24,50
insulation 400/200	9120219	0001	35,50
insulation 450/250	9120220	0001	42,50
insulation 500/300	9120221	0001	55,00

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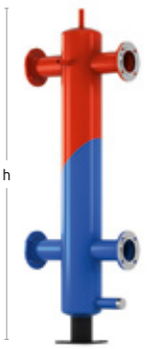
Hydraulic Separators Round design



Round Hydraulic Separator

Technical Features

- vertical-design Hydraulic Separator
- ensures optimum hydraulic decoupling of the various primary and secondary circuits under all operating conditions
- from vertical round chamber from welded P235 pipe with welded dished boiler ends
- no interacting pumps at partial and full load
- with four connection nozzles for heat consumers and heat generators
- with PN 6/PN 16 weld-neck flanges
- 100 % factory-checked for leak tightness and primed
- max. permissible operating temperature -10 °C – 110 °C
- max. permissible operating overpressure 0 bar – 6 bar
- 2" threaded connections for desludging
- ½" sleeve for temperature sensor
- standing foot with holes for attachment to the floor
- **stainless steel round switching points available on request**

Type	Art. No.	DG	Connection consumer circuit	Connection generator circuit	V_{max} [m³/h]	Height h [mm]
Round Hydraulic Separator						
DN 150	4205738	0002	DN 65/PN 6	DN 65/PN 6	12,0	1.700
DN 200	4205631	0002	DN 80/PN 6	DN 80/PN 6	18,0	1.700
DN 200	4205632	0002	DN 100/PN 6	DN 100/PN 6	28,0	1.700
DN 250	4205633	0002	DN 125/PN 6	DN 125/PN 6	40,0	1.700
DN 300	4205512	0002	DN 150/PN 6	DN 150/PN 6	65,0	1.800
DN 350	4207939	0002	DN 200/PN 6	DN 200/PN 6	85,0	1.850
DN 400	4205739	0002	DN 200/PN 6	DN 200/PN 6	125,0	1.900
DN 500	4205740	0002	DN 250/PN 6	DN 250/PN 6	215,0	2.000
DN 500	4207411	0002	DN 300/PN 6	DN 300/PN 6	225,0	2.050
DN 600	4205741	0002	DN 350/PN 6	DN 350/PN 6	350,0	2.450
DN 600	4207412	0002	DN 400/PN 6	DN 400/PN 6	395,0	2.550
DN 700	4207413	0002	DN 400/PN 6	DN 400/PN 6	480,0	2.750
DN 800	4207423	0002	DN 500/PN 6	DN 500/PN 6	700,0	2.975

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Hydraulic Separators Accessories

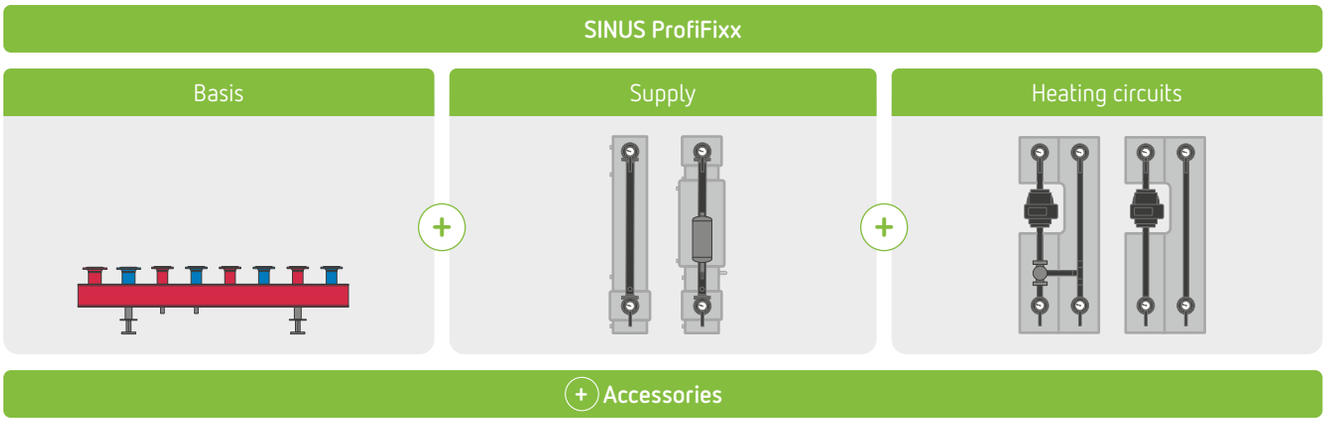
insulation

- comprising interlocking half shells with end-pieces
- customised and precisely fitting cut-outs for all connection nozzles are provided in the factory
- the half-shells are fitted using stainless-steel clamping straps and quick-release fasteners
- this enables simple installation and disassembly for overhaul purposes

Type	Art. No.	DG	Weight [kg]
insulation 60 mm PUR foam/galvanised sheet steel jacket, thermal conductivity 0,026 W/m × K			
insulation DN 300	4206029	0001	23,00
insulation DN 200	4208254	0001	14,60
insulation DN 200	4206948	0001	14,60
insulation DN 250	4206028	0001	17,00
insulation DN 150	4206027	0001	15,35
insulation DN 400	4206030	0001	24,00
insulation DN 500	4208395	0001	30,80
insulation DN 350	4208255	0001	24,80
insulation 100 mm mineral wool/galvanised sheet steel jacket, thermal conductivity 0,038 W/m × K			
insulation DN 300	4207932	0001	44,50
insulation DN 200	4208023	0001	34,50
insulation DN 200	4208024	0001	34,50
insulation DN 250	4207931	0001	39,80
insulation DN 150	4207930	0001	23,50
insulation DN 400	4207424	0001	26,70
insulation DN 500	4207425	0001	32,70
insulation DN 350	4207933	0001	55,50

Theoretical principles

SINUS ProfiFixx — combination matrix

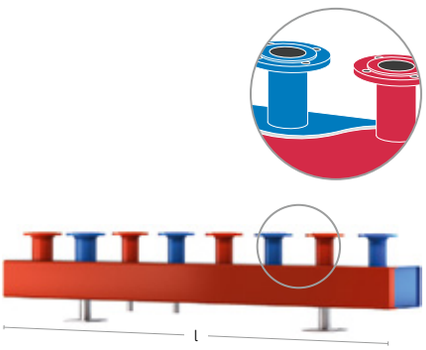


SINUS ProfiFixx — construction

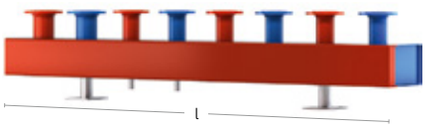
1. Basis
   optionally as compact manifold, thermally separated manifold or SINUS HydroFixx
2. Supply
   optional with Exdirt V
3. Heating circuits
   variable number, optionally regulated or unregulated
4. SINUS EasyFixx
   configurable in conjunction with base

SINUS ProfiFixx

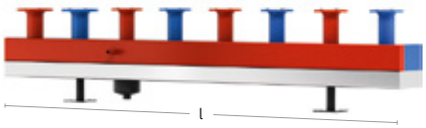
SINUS ProfiFixx Basis



Compact manifold, thermally separated



Compact manifold not thermally separated



SINUS HydroFixx

Technical Features

- combined flow and return manifold, consisting rectangular tube with adjoining chambers divided by sinusoidal dividing wall made from mild steel sheet S235
- 100 % factory-checked for leak tightness and primed
- max. permissible operating temperature -10 °C – 110 °C
- max. permissible operating overpressure 0 bar – 6 bar
- nozzles aligned at the height of the shut-off valves
- space-saving and clear layout of the respective heating or cooling circuits
- optionally also available as a thermally separated version or as a SINUS HydroFixx

You can find the enquiry form at **www.reflex-winkelmann.com/en**

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SINUS ProfiFixx Basis

Type	Art. No.	DG	Number of nozzles [pcs.]	Largest nozzle	V_{max} [m^3/h]	Output at ΔT 20 °K [kW]	Length [mm]
160/80	4209393	0001	6	to DN 65	10,8	250,00	1.830
160/80	4209394	0001	8	to DN 65	10,8	250,00	2.450
160/80	4209356	0001	10	to DN 65	10,8	250,00	3.070
160/80	4209360	0001	12	to DN 65	10,8	250,00	3.690
160/80	4209361	0001	14	to DN 65	10,8	250,00	4.310
160/80	4209362	0001	16	to DN 65	10,8	250,00	4.930
180/110	4209434	0001	6	to DN 100	17,2	400,00	1.830
180/110	4209435	0001	8	to DN 100	17,2	400,00	2.450
180/110	4209437	0001	10	to DN 100	17,2	400,00	3.070
180/110	4209438	0001	12	to DN 100	17,2	400,00	3.690
180/110	4209439	0001	14	to DN 100	17,2	400,00	4.310
180/110	4209397	0001	16	to DN 100	17,2	400,00	4.930
200/120	4209367	0001	6	to DN 100	25,8	600,00	1.830
200/120	4209370	0001	8	to DN 100	25,8	600,00	2.450
200/120	4209371	0001	10	to DN 100	25,8	600,00	3.070
200/120	4209374	0001	12	to DN 100	25,8	600,00	3.690
200/120	4209375	0001	14	to DN 100	25,8	600,00	4.310
200/120	4209378	0001	16	to DN 100	25,8	600,00	4.930
280/180	4209325	0001	6	to DN 125	53,8	1.250,00	1.830
280/180	4209326	0001	8	to DN 125	53,8	1.250,00	2.450
280/180	4209327	0001	10	to DN 125	53,8	1.250,00	3.070
280/180	4209328	0001	12	to DN 125	53,8	1.250,00	3.690
280/180	4209333	0001	14	to DN 125	53,8	1.250,00	4.310
280/180	4209336	0001	16	to DN 125	53,8	1.250,00	4.930
300/200	4209341	0001	6	to DN 150	68,8	1.600,00	1.830
300/200	4209342	0001	8	to DN 150	68,8	1.600,00	2.450
300/200	4209389	0001	10	to DN 150	68,8	1.600,00	3.070
300/200	4209390	0001	12	to DN 150	68,8	1.600,00	3.690
300/200	4209391	0001	14	to DN 150	68,8	1.600,00	4.310
300/200	4209316	0001	16	to DN 150	68,8	1.600,00	4.930

SINUS ProfiFixx Basis accessories

name plate

- for marking the heating circuits, made of galvanised steel sheet for three rows of lettering. The name plate is suitable for screwing to the finished insulation
- size: 100 × 50 mm
- colours: red (RD) for flow & blue (BU) for return

stand bracket

- sound-proofed and galvanised, comprising floor plate with steel tube and head plate with guide tube including connecting screws
- height adjustable in two variants (270 – 340 mm or 405 – 600 mm), the dimension indicates the distance between the floor and bottom edge of the manifold

wall bracket

- sound-proofed and galvanised comprising a head plate fitted on an adjustable guide carriage
- infinitely adjustable in depth
- overhang to manifold middle

Type	Art. No.	DG	Weight [kg]
name plate			
name plate RD	4200015	0001	–
name plate BU	4200021	0001	–
stand bracket			
stand bracket STKO 270 – 340 mm max 200/120 DN 200	4206574	0001	3,00
stand bracket STKO 270 – 340 mm max 300/200 DN 250	4205957	0001	5,40
wall bracket			
wall bracket WAKO 220 mm max 160/80 DN 200	4205900	0001	2,30
wall bracket WAKO 300 mm max 200/120 DN 200	4205955	0001	3,73
wall bracket WAKO 500 mm max 300/200 DN 250	4205581	0001	5,07

SINUS

SINUS ProfiFixx supply

SINUS ProfiFixx supply

SINUS ProfiFixx supply with Exdirt V

Technical Features

- 100 % factory-checked for leak tightness and primed
- the insulation is fitted using the supplied stainless-steel straps including quick-release connections and can be opened and closed again for maintenance purposes
- the pump groups are provided with upper threaded flanges (female thread) for system-side connection
- comprising welded flange adapter pieces inclusive of isolating valves and draining
- pre-insulated according to the current building regulations (GEG)
- supplied:
  → shut-off valves incl. thermometers
  → flange adapter incl. screws and gaskets
  → insulation box according to GEG

Type	Art. No.	DG	Input dimension
SINUS ProfiFixx supply			
FPG ESP	4204745	0001	DN 40
FPG ESP	4203824	0001	DN 50
FPG ESP	4203819	0001	DN 65
FPG ESP	4203818	0001	DN 80
FPG ESP	4203859	0001	DN 100
FPG ESP	4203813	0001	DN 125
FPG ESP	4203817	0001	DN 150
SINUS ProfiFixx supply with Exdirt V			
FPG ESP	4205382	0001	DN 50
FPG ESP	4211961	0001	DN 65
FPG ESP	4211962	0001	DN 80
FPG ESP	4211963	0001	DN 100

SINUS

SINUS ProfiFixx heating circuits

SINUS ProfiFixx with regulated heating circuits incl. 3-way mixer

SINUS ProfiFixx with unregulated heating circuits

Technical Features

- flange pump group comprising pre-assembled and pre-insulated heating circuits compliant with the current building regulations (GEG) for direct installation without any on-site welding
- 100 % factory-checked for leak tightness and primed
- implemented with regulated circuits with a 3-way mixer
- the entire SINUS ProfiFixx system is insulated in a visually uniform manner
- the insulation is fitted using the supplied stainless-steel straps including quick-release connections and can be opened and closed again for maintenance purposes
- the on-site pump is also freely accessible during operation, without it being necessary to remove the insulation
- the pump groups are provided with upper threaded flanges (female thread) for system-side connection
- supplied:
  - → shut-off valves incl. thermometers
  - → dummy adapter for on-site pump
  - → non-return valve with air lock
  - → KFE filling and drain valve ½"
  - → flange adapter incl. screws and gaskets
  - → insulation box according to GEG
  - → two sensor sleeves
- additional with regulated heating circuits:
  - → three-way mixer incl. 230 V 3 point actuator
  - → 24 V actuator motors on request

Type	Art. No.	DG	Dimension pump group	Dimension pump	Installed length installer supplied pump [mm]	K_{vs} three-way mixer	Actuator type	Power supply
SINUS ProfiFixx with regulated heating circuits incl. 3-way mixer								
MK25 P25	4216214	0001	DN 25	DN 25	180	2,5	ESBE ARA659 3-point 24V	24V
MK25 P25	4216209	0001	DN 25	DN 25	180	2,5	ESBE ARA661 3-point 230V	230V
MK25 P25	4209392	0001	DN 25	DN 25	180	4,0	ESBE ARA659 3-point 24V	24V
MK25 P25	4209268	0001	DN 25	DN 25	180	4,0	ESBE ARA661 3-point 230V	230V
MK25 P25	4216215	0001	DN 25	DN 25	180	6,3	ESBE ARA659 3-point 24V	24V
MK25 P25	4216210	0001	DN 25	DN 25	180	6,3	ESBE ARA661 3-point 230V	230V
MK32 P25	4216216	0001	DN 32	DN 25	180	6,3	ESBE ARA659 3-point 24V	24V
MK32 P25	4216211	0001	DN 32	DN 25	180	6,3	ESBE ARA661 3-point 230V	230V

SINUS

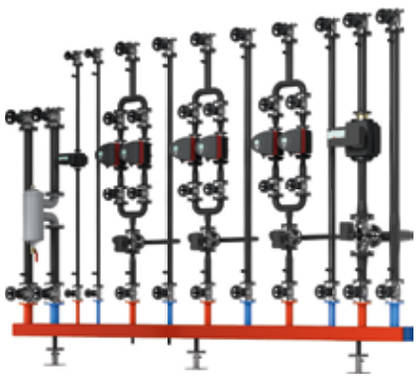
SINUS ProfiFixx heating circuits

Type	Art. No.	DG	Dimension pump group	Dimension pump	Installed length installer supplied pump [mm]	K_{vs} three-way mixer	Actuator type	Power supply
MK32 P25	4209386	0001	DN 32	DN 25	180	10,0	ESBE ARA659 3-point 24V	24V
MK32 P25	4209267	0001	DN 32	DN 25	180	10,0	ESBE ARA661 3-point 230V	230V
MK32 P32	4216217	0001	DN 32	DN 32	180	6,3	ESBE ARA659 3-point 24V	24V
MK32 P32	4216218	0001	DN 32	DN 32	220	6,3	ESBE ARA659 3-point 24V	24V
MK32 P32	4216212	0001	DN 32	DN 32	180	6,3	ESBE ARA661 3-point 230V	230V
MK32 P32	4216213	0001	DN 32	DN 32	220	6,3	ESBE ARA661 3-point 230V	230V
MK32 P32	4209384	0001	DN 32	DN 32	220	10,0	ESBE ARA659 3-point 24V	24V
MK32 P32	4209385	0001	DN 32	DN 32	180	10,0	ESBE ARA659 3-point 24V	24V
MK32 P32	4209260	0001	DN 32	DN 32	220	10,0	ESBE ARA661 3-point 230V	230V
MK32 P32	4209261	0001	DN 32	DN 32	180	10,0	ESBE ARA661 3-point 230V	230V
MK 40 P25	4209355	0001	DN 40	DN 25	180	16,0	ESBE ARA659 3-point 24V	24V
MK40 P25	4209259	0001	DN 40	DN 25	180	16,0	ESBE ARA661 3-point 230V	230V
MK 40 P32	4209347	0001	DN 40	DN 32	220	16,0	ESBE ARA659 3-point 24V	24V
MK 40 P32	4209348	0001	DN 40	DN 32	180	16,0	ESBE ARA659 3-point 24V	24V
MK40 P32	4209241	0001	DN 40	DN 32	220	16,0	ESBE ARA661 3-point 230V	230V
MK40 P32	4209254	0001	DN 40	DN 32	180	16,0	ESBE ARA661 3-point 230V	230V
MK40 P40	4209343	0001	DN 40	DN 40	250	16,0	ESBE ARA659 3-point 24V	24V
MK40 P40	4209236	0001	DN 40	DN 40	250	16,0	ESBE ARA661 3-point 230V	230V
MK50 P32	4209339	0001	DN 50	DN 32	220	25,0	ESBE ARA659 3-point 24V	24V
MK50 P32	4209340	0001	DN 50	DN 32	180	25,0	ESBE ARA659 3-point 24V	24V
MK50 P32	4209232	0001	DN 50	DN 32	220	25,0	ESBE ARA661 3-point 230V	230V
MK50 P32	4209235	0001	DN 50	DN 32	180	25,0	ESBE ARA661 3-point 230V	230V
MK50 P40	4209335	0001	DN 50	DN 40	250	25,0	ESBE ARA659 3-point 24V	24V
MK50 P40	4209230	0001	DN 50	DN 40	250	25,0	ESBE ARA661 3-point 230V	230V
MK50 P50	4209330	0001	DN 50	DN 50	280	25,0	ESBE ARA659 3-point 24V	24V
MK50 P50	4209225	0001	DN 50	DN 50	280	25,0	ESBE ARA661 3-point 230V	230V
MK65 P40	4209323	0001	DN 65	DN 40	250	40,0	ESBE ARA659 3-point 24V	24V
MK65 P40	4209220	0001	DN 65	DN 40	250	40,0	ESBE ARA661 3-point 230V	230V
MK65 P50	4209300	0001	DN 65	DN 50	280	40,0	ESBE ARA659 3-point 24V	24V
MK65 P50	4209210	0001	DN 65	DN 50	280	40,0	ESBE ARA661 3-point 230V	230V
MK80 P50	4209299	0001	DN 80	DN 50	280	60,0	ESBE ARA659 3-point 24V	24V
MK80 P50	4209215	0001	DN 80	DN 50	280	60,0	ESBE ARA661 3-point 230V	230V
MK80 P65	4209298	0001	DN 80	DN 65	340	60,0	ESBE ARA659 3-point 24V	24V
MK80 P65	4209216	0001	DN 80	DN 65	340	60,0	ESBE ARA661 3-point 230V	230V
SINUS ProfiFixx with unregulated heating circuits								
UK25 P25	4203802	0001	DN 25	DN 25	180	–	–	–
UK32 P25	4203801	0001	DN 32	DN 25	180	–	–	–
UK32 P32	4203797	0001	DN 32	DN 32	220	–	–	–
UK32 P32	4203798	0001	DN 32	DN 32	180	–	–	–
UK40 P25	4203796	0001	DN 40	DN 25	180	–	–	–
UK40 P32	4203792	0001	DN 40	DN 32	220	–	–	–
UK40 P32	4203793	0001	DN 40	DN 32	180	–	–	–
UK40 P40	4203788	0001	DN 40	DN 40	250	–	–	–
UK50 P32	4203785	0001	DN 50	DN 32	220	–	–	–
UK50 P32	4203787	0001	DN 50	DN 32	180	–	–	–
UK50 P40	4203781	0001	DN 50	DN 40	250	–	–	–
UK50 P50	4203779	0001	DN 50	DN 50	280	–	–	–
UK65 P40	4203826	0001	DN 65	DN 40	250	–	–	–
UK65 P50	4203814	0001	DN 65	DN 50	280	–	–	–
UK80 P50	4203820	0001	DN 80	DN 50	280	–	–	–
UK80 P65	4203821	0001	DN 80	DN 65	340	–	–	–

Customised pre-assembly

SINUS

Customised pre-assembly



Customised pre-assembly

Technical Features

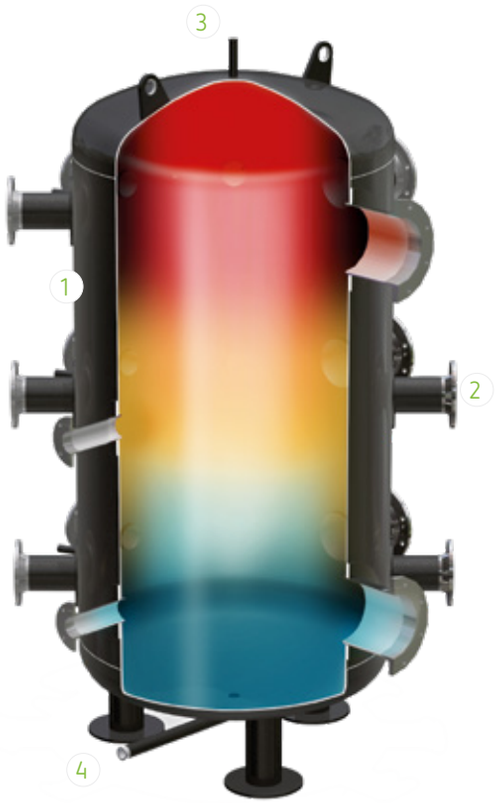
- for all requirements that are not solved by the modular design of the SINUS ProfiFixx
- all construction parts are designed and manufactured based on a manifold
- all supplied components are individually leak tested and primed at the factory
- all components are marked and can be quickly and easily installed according of the assembly drawing provided
- your advantages at a glance:
  - → individual manifold assemblies according to your specifications
  - → quick and clean installation thanks to prefabrication
  - → advantages: Cost, time and personnel control
  - → detailed CAD drawing for testing and production release
  - → numbering of all adapters
  - → CAD bill of materials with item number for each adapter
  - → precise manufacturing, priming and pressure testing of all parts

NEW:
Factory pre-assembled constructions
anfragen@sinusverteiler.com

You can find the enquiry form at
www.reflex-winkelmann.com/en

Theoretical principles

Multivalent solutions — construction

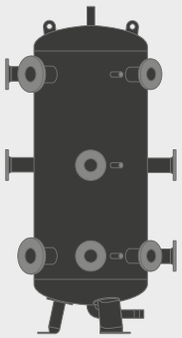


1. Hot water storage tank
   always planned and manufactured in an individual and project-specific manner
2. Connections
   the type and number of connections can be individually selected
3. Venting
4. Draining

SINUS MultiFlow — possible applications

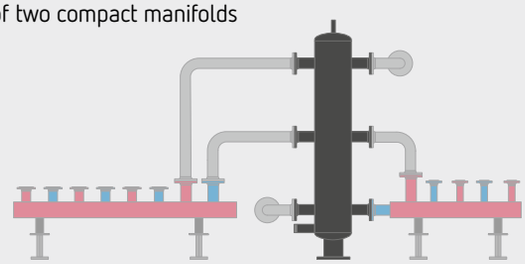
SINUS MultiFlow Center

- combines multivalent distribution, energy storage and hydraulic decoupling
- both minimum generator run times and peak loads are covered, while safe and fault-free operation are also ensured

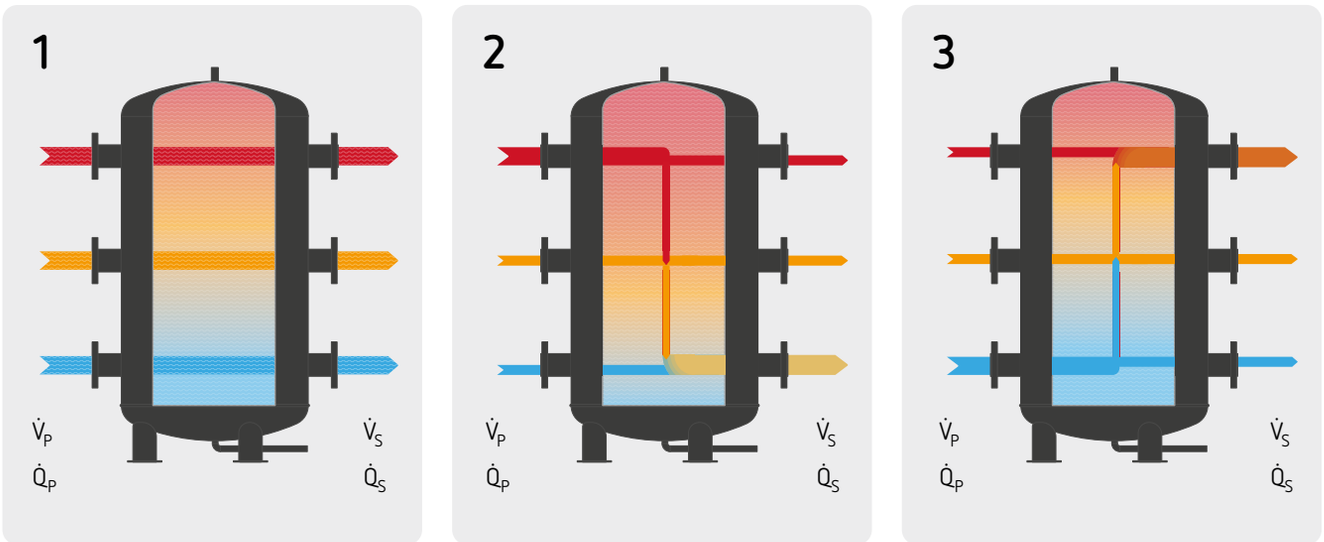


SINUS MultiFlow Expert

- functions hydraulically in a manner identical to the SINUS MultiFlow
- even clearer and easier installation through the addition of two compact manifolds



Multivalent solutions — operating states based on the example of a SINUS MultiFlow Center

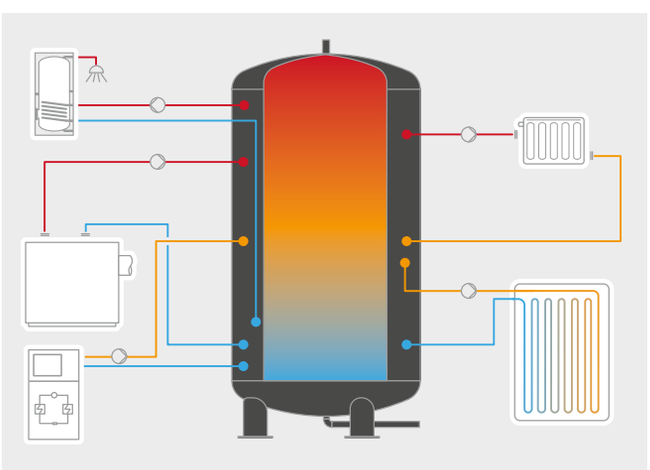


1. Heat generator volume flow = Heat consumer volume flow
   - Equal heat quantities in the generator circuit and consumer circuit.
   - The same stratification in the SINUS MultiFlow.
   - Temperatures on the generator and consumer side are identical.

2. Heat generator volume flow > Heat consumer volume flow
   - Heat supply is greater than heat consumption.
   - Hot flow water is added to the primary return via the SINUS MultiFlow Center.
   - However due to the design of the SINUS MultiFlow Center, only the differing water quantity is added. Otherwise the stratification is retained.

3. Heat generator volume flow < Heat consumer volume flow
   - Heat consumption is greater than heat supply.
   - Cold return water is added to the secondary flows via the SINUS MultiFlow Center.
   - However due to the design of the SINUS MultiFlow Center, only the differing water quantity is added. Otherwise the stratification is retained.

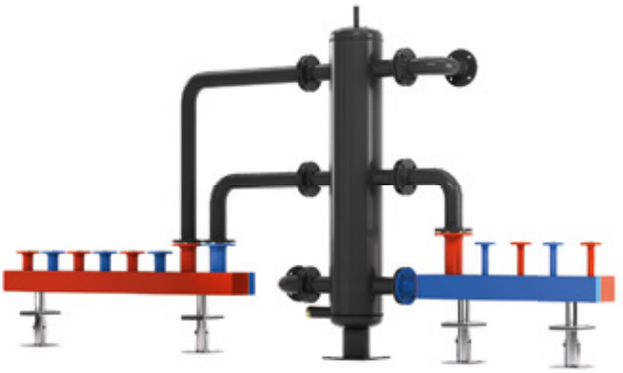
Function of multivalent solutions



Systems with different technologies for heat or cold generation are multivalent systems. Where the hydraulics are concerned, challenges arise because of different temperature levels. By using a SINUS MultiFlow Expert or SINUS MultiFlow Center, the systems can be reliably divided into the respective temperature levels. A SINUS MultiFlow Center functions as a Hydraulic Separator, a manifold and an energy storage tank in one unit. Simultaneously, the system is divided into different hydraulic temperature zones. As a result, very efficient functioning with maximum system safety are achieved.

Multivalent solutions

SINUS MultiFlow Expert



SINUS MultiFlow Expert

Technical Features

- multi-temperature zone switching point for collecting and distributing volume flows and temperatures of different sizes in different temperature zones using patented SINUS diffuser tubes
- undesirable mixing of temperatures is prevented by internal pressure loss-free nozzle chambers
- in this way, an influencing of pumps and different control loops is prevented
- comprising a vertical round chamber from welded P235 pipe with welded dished cover and bottom
- connection nozzles from welded steel pipe with PN 6 / PN 16 weld-neck flanges
- can be used as a low-loss header distribution centre, hydraulic centre and, in refrigeration engineering simultaneously as a buffer tank
- 100 % factory-checked for leak tightness and primed
- max. permissible operating temperature -10 °C – 110 °C
- max. permissible operating overpressure 0 bar – 6 bar
- 2" threaded connections for desludging
- ½" sleeve for temperature sensor

Type	Art. No.	DG	Largest connection nozzle	V_{max} [m^3/h]	Chamber size
MTW-150	4206366	0003	DN 65	12,0	DN 150
MTW-200	4206469	0003	DN 100	28,0	DN 200
MTW-250	4206464	0003	DN 125	40,0	DN 250
MTW-300	4206465	0003	DN 150	65,0	DN 300
MTW-350	4206482	0003	DN 200	85,0	DN 350
MTW-400	4206452	0003	DN 200	125,0	DN 400
MTW-500	4206491	0003	DN 300	215,0	DN 500
MTW-600	4206463	0003	DN 400	300,0	DN 600
MTW-700	4206657	0003	DN 400	400,0	DN 700

SINUS

SINUS MultiFlow Center

SINUS MultiFlow Center

Technical Features

- is designed as a hydraulic centre for collecting and distributing various temperature-controlled generator and consumer circuits
- as a cylindrical version with dished boiler ends, standing on three feet
- manufactured from S 235 JRG2 or P 265 GH
- perfectly functioning hydraulics under partial and full load
- between two adjacent temperature zones, one dimensioned ring plate each for optimum temperature zone formation and for ensuring a sufficient buffer volume
- the ring plate is designed in such a way that only differential mass flows are exchanged between two adjacent temperature zones
- pumps do not interfere with each other because of reliable hydraulic decoupling of the generator and consumer circuits
- specially integrated inlet pipes for steady-flow media introduction
- in combination with the star-shaped deflection plates used, ensures an even temperature distribution is achieved within a zone
- designed and manufactured according to PED Art. 4. para. 3 and a supplementary factory standard
- tested for leak tightness to 1,43 times the operating pressure by means of a hydrostatic test
- max. permissible operating temperature -10 °C – 110 °C
- max. permissible operating overpressure 0 bar – 10 bar
- diameter & contents as required

You can find the enquiry form at **www.reflex-winkelmann.com/en**

Your notes

General Terms and Conditions of Contracts, Delivery and Services

Our General Terms and Conditions of Contracts, Delivery and Services apply.

Due to regular updates, please note the amended General Terms and Conditions of Contracts, Delivery and Services on our website

www.reflex-winkelmann.com/en/gbc

Privacy Policy

Information on data protection and the Reflex Privacy Policy can be found at

www.reflex-winkelmann.com/en/privacy-policy

www.reflex-winkelmann.com/en

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Subject to technical changes

Thinking solutions.

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