reflex

Thinking solutions.

Product Guide 2019 International

Valid from: 01/01/2019

Reflex –

a powerful brand for decades

Reflex Winkelmann GmbH – part of the Building+Industry division – is a leading provider of high-quality heating and hot-water supply technology. Under its Reflex brand, the company, develops, produces and sells not only expansion vessels, but also innovative components and holistic solutions for pressure maintenance, water make-up, degassing and water treatment, hot water storage tanks, heat exchangers, as well as hydraulic manifolds and storage components. With its headquarters located in Ahlen in the German region of Westphalia, Reflex Winkelmann GmbH has more than 1,500 employees worldwide, giving it an international presence in all major markets.

Committed to a sustainable energy policy and the climate-policy goals agreed by the German Federal Government, Reflex is already contributing to environmental protection with its energy-efficient and sustainable products. This is built on proven technologies and future-oriented innovations. The Reflex portfolio is completed by maintaining a cooperative partnership and customer focus as well as offering additional services such as an own factory customer service and a comprehensive range of training options.

A WINKELMANN BUILDING+INDUSTRY BRAND

Reflex Winkelmann GmbH, Gersteinstraße 19, 59227 Ahlen, Germany
info@reflex.de

www.reflex.de/en

How can you reach us? It's easy!

How can we help you? Talk to the right contact quickly by selecting the service number that matches your issue. Reflex offers a multitude of services to help you on the road to the perfect solution.

Make use of our accumulated expertise and knowledge and let us help you in the development of proper and professional solutions that are thought through to the last detail.

Head Office Switchboard

+49 2382 7069-0

For general inquiries, ordering brochures and presentation of a distributor partner or the appropriate field representative. Monday to Friday, 8:00 a.m. – 4:30 p.m. or via e-mail to:
info@reflex.de

Technical Hotline

For all questions about our products.

+49 2382 7069-9546

Fax: +49 2382 7069-9523 | hotline@reflex.de

After Sales & Services

For ordering repairs, servicing and commissioning.
Monday to Friday, 8:00 a.m. – 4:30 p.m.

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Content

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Your notes

Reflex Added Value

Award-winning design software: Reflex Pro

The powerful Reflex Pro family

Our powerful Reflex Pro family of software tools for design, dimensioning and quotation process is available – free-of-charge – under www.reflex.de/en/software in four different versions: Download Reflex Pro Win to your PC for convenient use of all functions even when Offline. The Reflex Pro Web Online variant is always updated with current information and returns the result as, for example, a PDF file for download. The design software has been developed for pressure-maintaining, water make-up and degassing systems as well as heat exchanger in various areas of modern building and supply engineering.

Perfectly tailored for the requirements of the specialist on-site

The Reflex Pro App: always at your side, fast and reliable. Reflex Pro is perfectly suited for mobile project determination, initial consultation and solution finding. The smartphone application returns calculated results with just a few essential parameters. Reflex Pro App is designed to increase the efficiency of trade specialists, with focus on practical results. Simple and self-explanatory – for Apple users with iPhone and iPad but also devices with Android operating systems.

Control Remote

Reflex Control Remote sets a new standard in system control. Pressurisation systems, water make-up systems and degassing modules "Made in Ahlen" can be now operated with a single and innovative control concept. Convenience for the operator – now even better: Whether Basic or Touch controller, the authorised user can now remotely access Reflex Control – from anywhere, by using the Internet. Reflex Control Remote thus supports trained operators, experienced specialists and, naturally, the Reflex Customer Service.

Digital, praxis-oriented sales support: the Reflex homepage

Find everything you need to know and use in your day-to-day activities

In addition to Reflex Pro, **www.reflex.de/en** offers much more by facilitating your quotation process, adds to your technical expertise and quickly and easily supports your daily tasks: Innovations, contacts, service contact information, a convenient search function for our products, brochures, operating and installation instructions, quotation templates, 2D and 3D product drawings for your system planning, standards and certificates. Always current and up-to-date.

Product search and documentation on www.reflex.de/en

Advantages with expertise: Reflex Training

Reflex Training – Advantage through Expertise

Training Team Contact
+49 2382 7069-9590
seminare@reflex.de

In the vicinity of the corporate head office in Ahlen, Germany, trade specialists, planners and operators are prepared for the challenges of heating and hot water supply in modern building service engineering. From the installation to planning and consultation to technical operation, the Reflex Training Centre and team focuses on the partners who want to obtain sound information about technology, standards and services. A beautiful Westphalian manor has been restored and converted to be the perfect ambient for learning, exercising and using new knowledge directly at Reflex equipment. Reality-conform simulation and comprehensive training equipment contribute to a flexible application of the learning modules, thanks to the effective linkage between theory and practice. The premises represent the perfect symbiosis between tradition and high-tech – building, ambience and equipment are the ideal foundation for successful learning away from the hectic daily life.

Reflex Customer Service – on site for you

After your investment and purchase decision, Reflex will continue to take care of you. From the initial set-up to recurring maintenance and conservation of value to repair and spare part services – our Customer Service responds promptly and everywhere in Germany. The Reflex commissioning service checks the proper installation, programs the system and, if requested, will train your operators. Regular servicing is not only smart but frequently mandatory.

Our Customer Service also operates the technical hotline for all questions and problems in your operation.

Factory Customer Service

+49 2382 7069-9505
service@reflex.de

Technical Hotline

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hotline@reflex.de

Expansion Vessels

CE

Reflex: Heating, chilled water and solar applications

3 bar

F – Diaphragm

F 8 – 24 litres
Page 18

C – Bladder

C 8 – 80 litres
Page 18

6 bar

NG & N – Diaphragm

NG 8 – 35 litres
Page 16

NG 50 – 140 litres
Page 16

N 200 – 1000 litres
Page 16

G – Bladder

G 100 – 5000 litres
Page 20

SL – Diaphragm

SlimLine
180 – 320 litres
Page 24

10 bar

S – Diaphragm

S 2 – 33 litres
Bladder

S 50 – 600 litres
Diaphragm
Page 22

G – Bladder

G 100 – 5000/16 bar
G 100 – 5000/10 bar
optional: 25 bar
Page 20

V Intermediate Tank

without membrane
V 500 – 5000 litres → 6 bar/120°C
V 6 – 5000 litres → 10 bar/120°C
Page 26

Other temperatures and working pressures optionally available

CE

Refix: Potable water and service water applications

DD
Bladder

DD 2–33/10 bar
DD 8/25 bar
Page 26

DT
Bladder

DT 60–3000/10 bar
DT 80–3000/16 bar
Page 30

For potable water, pressure booster and water-heating systems according to DIN 1988

C-DE
Bladder

C-DE 8–80/10 bar
Page 34

DE
Bladder

DE 2–5000/10 bar
DE 8–5000/16 bar
DE 8–3000/25 bar
Page 34

HW
Bladder

HW 25–100/10 bar
Page 42

DC
Diaphragm

DC 25–600/10 bar
Page 40

Only for systems not required to meet DIN 1988, such as fire-fighting and service water systems, underfloor heating and geothermal installations.

Water shock arrestor, e.g. for installation next to the tapping point

WD
Diaphragm

0.165 litres/10 bar
Page 42

Theoretical principles

Static pressurisation systems

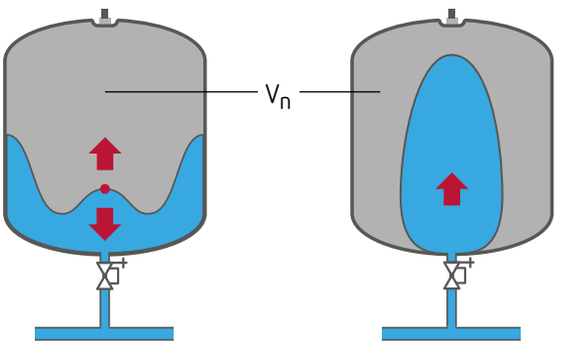
Expansion vessels with gas pad are functional without auxiliary energy and, for this reason, are classified as static pressurisation systems. A gas pad in the vessel generates the pressure.

Water level and pressure in the gas chamber are interconnected (p x V = constant).

For this reason, it is not possible to utilise the entire **nominal volume V_n** for holding water.

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

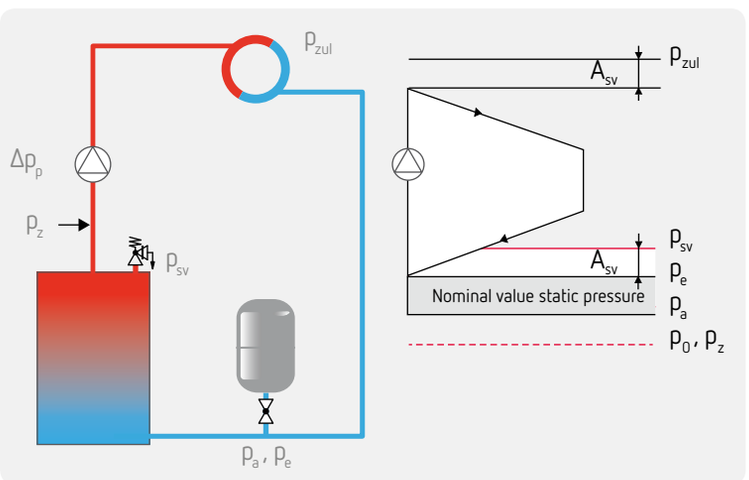
This is one of the reasons why dynamic pressure-maintaining systems are preferred in larger systems and tight pressure ratios ($p_e - p_0$).



Calculating the nominal volume

$$V_n = (V_e + V_v) \frac{p_e + 1}{p_e - p_0}$$

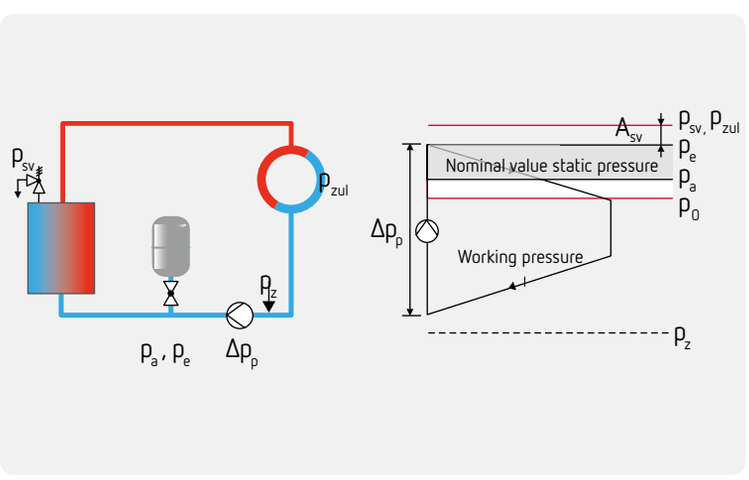
Intake pressure-maintenance (suction pressure maintenance)



The pressure-maintaining system is implemented **upstream** of the circulating pump (suction side). This concept is the most commonly used as it needs the least technical effort.

- Advantages:
  - \+ Low static pressure
  - \+ Working pressure → static pressure – no risk of vacuum formation
- Disadvantages:
  - – High working pressure at circulating pump pressure (in large systems), Permissible system stresses p_{zul} must be taken into account

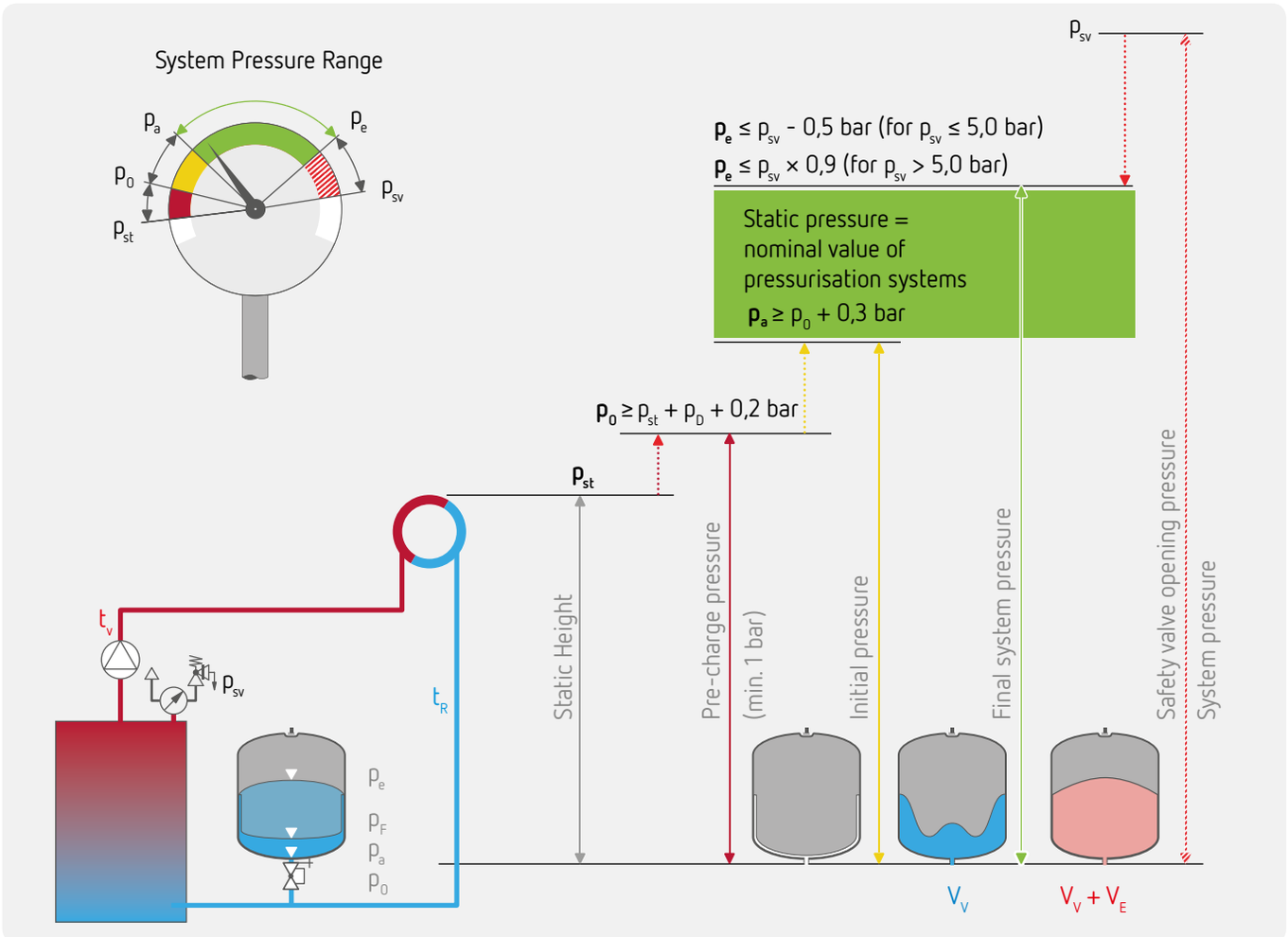
Holding pressure maintenance (final pressure maintenance)



The pressure-maintaining system is implemented **downstream** of the circulating pump (pressure side). To determine the static pressure, a system-specific differential pressure portion of the circulating pump (50 … 100 %) must be taken into account. This application type is limited to a few individual situations → solar plants.

- Advantages:
  - \+ Low static pressure level if not the entire pump pressure must be loaded
- Disadvantages:
  - – High static pressure level
  - – The required inlet pressure p_z, according to manufacturer information

Calculation parameters



Gauge pressures

Pressurisation systems – tasks

Pressurisation systems have a significant role in heating and cooling circuits and must essentially fulfil three fundamental tasks:

1. Maintaining the pressure within permissible limits at every point of the system, this means that the maximum operating pressure may not be exceeded, but also that a minimum pressure has to be ensured to prevent vacuum, cavitation and evaporation.
2. Compensation of volume fluctuations of the heating or cooling water due to temperature fluctuations.
3. Providing a water seal to counterbalance system-related water losses.

Careful calculation, commissioning and maintenance are prerequisites for the correct functioning of the overall system.

Quick selection table for expansion vessels

Heating systems: 90/70°C															
Safety valve p_{SV}	bar	2.5			V_n	3.0				V_n	4.0				V_n
Supply pressure p_0	bar	0.5	1.0	1.5	Litres	0.5	1.0	1.5	1.8	Litres	1.5	2.0	2.5	3.0	Litres
Contents V_A	Litres	65	30	-	8	85	50	19	-	8	55	30	5	-	8
		100	45	-	12	120	75	29	-	12	80	45	7	-	12
		170	85	-	18	200	130	60	17	18	140	85	28	-	18
		270	150	33	25	320	220	120	55	25	230	150	70	-	25
		410	240	80	33	470	340	200	110	33	330	240	130	25	35
		610	380	110	50	700	510	320	200	50	540	380	230	70	50
		980	500	170	80	1,120	840	440	260	80	870	650	410	120	80
		1,230	620	210	100	1,400	1,050	540	330	100	1,090	820	430	150	100
		1,720	870	300	140	1,960	1,470	760	460	140	1,530	1,140	610	200	140
		2,450	1,240	420	200	2,800	2,100	1,090	660	200	2,180	1,630	870	290	200
		3,060	1,550	530	250	3,500	2,630	1,360	820	250	2,720	2,040	1,090	370	250
		3,680	1,860	630	300	4,200	3,150	1,630	990	300	3,270	2,450	1,300	440	300
		4,900	2,480	850	400	5,600	4,200	2,180	1,320	400	4,360	3,270	1,740	580	400
		6,130	3,100	1,060	500	6,920	5,250	2,720	1,650	500	5,450	4,080	2,170	730	500
		7,350	3,720	1,270	600	8,400	6,300	3,260	1,980	600	6,540	4,900	2,610	880	600
		9,800	4,970	1,690	800	11,200	8,400	4,350	2,640	800	8,710	6,540	3,480	1,170	800
		12,250	6,210	2,120	1,000	13,830	10,500	5,440	3,300	1,000	10,890	8,170	4,350	1,460	1,000

Example calculation

Water content (approximately)

Radiators:
$V_A = \dot{Q}$ [kW] x 13.5 l/kW

Panel radiators:
$V_A = \dot{Q}$ [kW] x 8.5 l/kW

Selection example

p_{SV} = 3 bar
H = 13 m
$\dot{Q}$ = 40 kW (90/70°C panel)
V_{PH} = 1000 l (V buffer storage tank)

Calculation:
→ V_A = 40 kW x 8.5 l/kW + 1,000 = 1,340 l

$p_0 \geq (\frac{13}{10} + 0.2\ bar) = 1.5\ bar$

From the table

With p_{SV} = 3 bar and
p_0 = 1.5 bar
V_A = 1,340 l
→ V_n = 250 l
(for V_A, max. 1,360)

Selected:
1 x Reflex N 250, 6 bar,
→ Page 16
1 x lockshield ball valve,
→ Page 16

Quick selection table for expansion vessels

Heating systems: 90/70°C		Marker shows selection for Reflex S – other table: Selection for Reflex N											
Safety valve p_{SV}	bar	5.0					V_n	6.0					
Supply pressure p_0	bar	2.0	2.5	3.0	3.5	4.0	Litres	2.0	2.5	3.0	3.5	4.0	5.0
Contents V_A	Litres	55	37	16	-	-	8	75	60	41	24	7	-
		85	55	24	-	-	12	110	90	60	36	10	-
		140	100	55	8	-	18	190	150	110	70	32	-
		230	170	110	43	-	25	290	240	180	130	75	-
		360	270	180	95	5	33	440	370	290	220	140	-
		550	420	300	170	43	50	660	560	450	350	240	24
		890	710	530	320	95	80	1,060	900	750	600	430	90
		1,110	890	670	420	120	100	1,320	1,130	940	750	560	100
		1,560	1,250	940	510	170	140	1,850	1,580	1,320	1,060	790	140
		2,230	1,780	1,340	720	240	200	2,640	2,260	1,890	1,510	1,130	210
		2,790	2,230	1,670	900	300	250	3,300	2,830	2,360	1,890	1,410	260
		3,340	2,670	2,010	1,080	360	300	3,960	3,390	2,830	2,260	1,700	310
		4,460	3,570	2,670	1,440	480	400	5,280	4,520	3,770	3,020	2,260	410
		5,570	4,460	3,340	1,800	600	500	6,600	5,660	4,710	3,770	2,830	520
		6,680	5,350	4,010	2,170	730	600	7,920	6,790	5,660	4,520	3,390	620
		8,910	7,130	5,350	2,890	970	800	10,560	9,050	7,540	6,030	4,520	830
		11,140	8,910	6,680	3,610	1,210	1,000	13,200	11,310	9,430	7,540	5,660	1,030

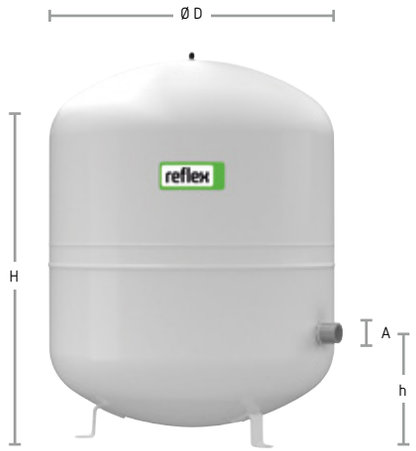
Reflex recommendations

- Set the safety valve operating pressure sufficiently high:
  $p_{SV} \geq p_0 + 1.5$ bar
- If possible, when calculating the gas supply pressure, add an extra 0.2 bar to the static pressure value:
  $p_0 \geq \frac{H\,[m]}{10} + 0.2$ bar
- Select a supply pressure of at least 1 bar on account of the necessary inlet pressure for the circulating pumps – even for low-rise buildings and central roof areas: $p_0 \geq 1$ bar
- On the water side, set the filling or initial pressure for the deaerated system in its cold state to at least 0.3 bar above the supply pressure: $p_F \geq p_0 + 0.3$ bar

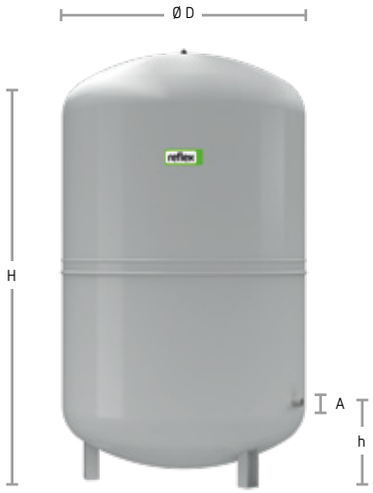
Reflex

Reflex NG & N

NG 8–25



NG 35–140



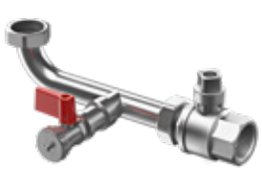
N 200–1000

Technical Features

- for closed heating and cooling systems
- with threaded connections
- starting at 35 litres standing, up to size N 80 wall mounting
- non-replaceable diaphragm in accordance with DIN EN 13831
- permissible operating temperature: 70°C for adding antifreeze at least 25 to 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

AG connection set

+ for particularly fast installation and maintenance of diaphragm pressure expansion vessels
+ Including lockshield valve and connecting elbow with connection union
+ With G ½" drain cock and hose nozzle
+ According to DIN EN 12828
+ PN 16/120°C



Digital pressure gauge

+ Supply pressure test device to approx. 9 bar

Reflex Lockshield Valve

+ Lockshield valve for maintenance and detachment of expansion vessels
+ With drainage
+ According to DIN EN 12828
+ PN 10/120°C
+ From N/S/G 80 choose 1" connection set

Wall-hung console with multi-connections

+ Console with multi-connections for Reflex 8–25 litres
+ With vessel connection to the top
+ 10 bar

Wall-hung holder

+ Console with strap retainer for Reflex 8–25 litres, vertical installation

CE

Reflex NG & N

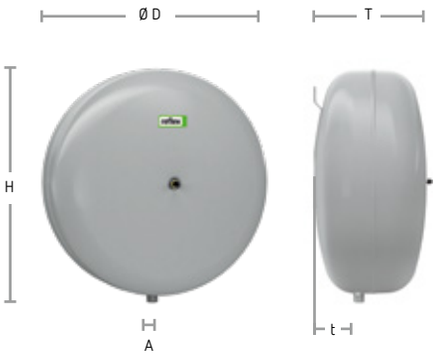
6 bar 70°C

Type	Art. No.	Std. Pack	Material group	Colour	Ø D [mm]	Height H [mm]	Height h [mm]	Connection A	Supply pressure [bar]	Weight [kg]
NG 8	8230100	96	10	Grey	206	305	-	R ¾"	1.5	1.7
NG 8	7230107	96	10	White	206	305	-	R ¾"	1.5	1.7
NG 12	8240100	72	10	Grey	280	275	-	R ¾"	1.5	2.2
NG 12	7240107	72	10	White	280	275	-	R ¾"	1.5	2.2
NG 18	8250100	56	10	Grey	280	380	-	R ¾"	1.5	2.9
NG 18	7250107	56	10	White	280	380	-	R ¾"	1.5	2.9
NG 25	8260100	42	10	Grey	280	490	-	R ¾"	1.5	3.6
NG 25	7260107	42	10	White	280	490	-	R ¾"	1.5	3.6
NG 35	8270100	24	10	Grey	354	460	130	R ¾"	1.5	5.0
NG 35	7270107	24	10	White	354	460	130	R ¾"	1.5	5.0
NG 50	8001011	24	11	Grey	409	493	175	R ¾"	1.5	9.6
NG 50	7001100	24	11	White	409	493	175	R ¾"	1.5	9.6
NG 80	8001211	12	11	Grey	480	565	166	R 1"	1.5	13.3
NG 80	7001300	12	11	White	480	565	166	R 1"	1.5	13.3
NG 100	8001411	10	11	Grey	480	670	166	R 1"	1.5	15.8
NG 100	7001500	10	11	White	480	670	166	R 1"	1.5	15.8
NG 140	8001611	8	11	Grey	480	912	175	R 1"	1.5	19.9
NG 140	7001700	8	11	White	480	912	175	R 1"	1.5	19.9
N 200	8213300	4	18	Grey	634	758	205	R 1"	1.5	23.8
N 250	8214300	4	18	Grey	634	888	205	R 1"	1.5	24.7
N 300	8215300	-	18	Grey	634	1,092	235	R 1"	1.5	27.0
N 400	8218000	-	18	Grey	740	1,102	245	R 1"	1.5	47.0
N 500	8218300	-	18	Grey	740	1,321	245	R 1"	1.5	52.0
N 600	8218400	-	18	Grey	740	1,531	245	R 1"	1.5	66.0
N 800	8218500	-	18	Grey	740	1,996	245	R 1"	1.5	96.0
N 1000	8218600	-	18	Grey	740	2,413	245	R 1"	1.5	118.0

Reflex N Accessories

Type	Art. No.	Std. Pack	Material group	Weight [kg]
Connection set 1"	9119204	-	80	0,90
Lockshield valve R ¾"	7613000	-	84	0,40
Lockshield valve R 1"	7613100	-	84	0,60
Console with strap retainer	7611000	36	75	0,30
Console with multi-connections	7612000	-	75	0,90
Digital test pressure gauge	9119198	-	86	0,10

Reflex C

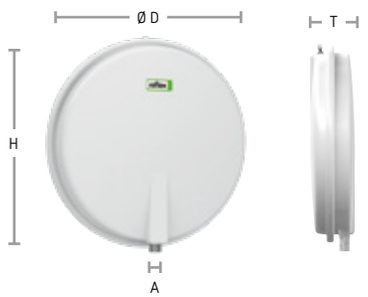


C 8–80 litres

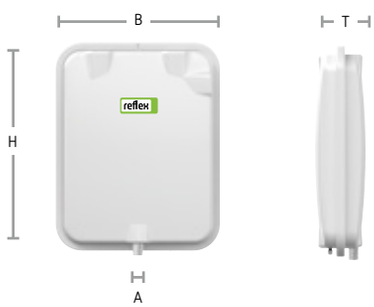
Technical Features

- For closed heating and cooling systems
- With thread connections
- Including brackets for easy installation
- Non-replaceable bladder according to DIN EN 13831
- Permissible operating temperature 70°C
- For antifreeze addition of at least 25–50 %
- Approval according to Pressure Equipment Directive 97/23/EC
- Long-lasting epoxy resin coating
- With factory-pressurised gas chamber
- Max. permissible system temperature 120°C

Reflex F



F 8 Litres



F 12–24 litres

Technical Features

- Flat form vessel for closed heating and cooling systems, designed, in particular, for installation in the boiler
- With thread connections
- From 18 litres, with bracket
- Non-replaceable diaphragm according to DIN EN 13831
- Permissible operating temperature 70°C
- For antifreeze addition of at least 25–50 %
- Approval according to Pressure Equipment Directive 97/23/EC
- Long-lasting epoxy resin coating
- With factory-pressurised gas chamber
- Max. permissible system temperature 120°C
- Reflex F 8 vessel honoured with Plus X Award

PLUS X AWARD
2017 achieved for:
Innovation
High Quality
Functionality

Digital pressure gauge

+ Supply pressure test device to approx. 9 bar

Reflex Lockshield Valve

+ Lockshield valve for maintenance and detachment of expansion vessels
+ With drainage
+ According to DIN EN 12828
+ PN 10 / 120°C

CE

Reflex C

	Type	Art. No.	Std. Pack	Material group	Colour	Ø D [mm]	Height H [mm]	Depth T [mm]	Depth t [mm]	Connection A	Supply pressure [bar]	Weight [kg]
3 bar 70°C	C 8	8280000	96	17	Grey	280	287	163	52	G ½"	1.0	2.8
	C 12	8280100	60	17	Grey	354	362	168	64	G ½"	1.0	3.2
	C 18	8280200	42	17	Grey	354	362	222	76	G ¾"	1.0	4.7
	C 25	8280300	42	17	Grey	409	419	239	93	G ¾"	1.0	5.5
	C 35	8280400	24	17	Grey	480	457	240	97	G ¾"	1.0	7.3
	C 50	8280500	20	17	Grey	480	457	318	125	G ¾"	1.5	8.1
	C 80	8280600	8	17	Grey	634	612	325	135	G ¾"	1.5	14.5

Reflex F

	Type	Art. No.	Std. Pack	Material group	Colour	Height H [mm]	Depth T [mm]	Ø D [mm]	Width B [mm]	Connection A	Supply pressure [bar]	Weight [kg]
3 bar 70°C	F 8	9600011	54	15	White	-	88	389	-	G ⅜"	0.75	6.3
	F 12	9600030	36	15	White	444	108	-	350	G ½"	1.00	7.7
	F 15	9600040	36	15	White	444	134	-	350	G ¾"	1.00	8.2
	F 18	9600000	28	15	White	444	158	-	350	G ¾"	1.00	8.7
	F 24	9600010	25	15	White	444	180	-	350	G ¾"	1.00	9.4

Reflex C/F Accessories

Type	Art. No.	Std. Pack	Material group	Weight [kg]
Supply pressure test device to approx. 9 bar	9119198	-	86	0.1
Lockshield valve R ¾"	7613000	-	84	0.4

Reflex G

G 100–500 litres

G 600–1000 litres

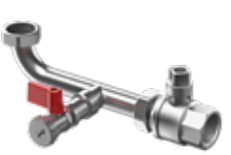
G 1000–5000 litres

Technical Features

- For closed heating and cooling systems
- Vertical design
- Connections:
  → Up to 1,000 litres / Ø 740 mm with thread connection
  → From 1,000 litres / Ø 1,000 mm with DN65 flange connections
- Replaceable bladder according to DIN EN 13831
- Max. operating temperature 70°C
- For antifreeze addition of at least 25–50 %
- Approval according to Pressure Equipment Directive 97/23/EC
- With bladder rupture detector (from 1,000 litres with 1,000 mm Ø)
- With viewing opening (from 1,000 litres with 1,000 mm Ø)
- Pressure gauge and supply pressure valve protected by clip
- Long-lasting epoxy resin coating
- With factory-pressurised gas chamber
- Max. permissible system temperature 120°C

AG connection set

+ For ultra-fast installation and maintenance of expansion vessels
+ Including lockshield valve and connecting elbow with connection union
+ With G ½" drain cock and hose nozzle
+ According to DIN EN 12828
+ PN 16/120°C



Digital pressure gauge

+ Supply pressure test device to approx. 9 bar

MBM II as bladder rupture detector

+ Signalisation for bladder rupture in Reflex G
+ Comprises an electrode relay and an electrode (factory-installed)
+ Power supply 230 V/50 Hz
+ Floating relay output (changeover)
+ Delivered only in conjunction with a vessel with MBM bushing

CE

Reflex G

	Type	Art. No.	Material group	Colour	Ø D [mm]	Height H [mm]	Height h [mm]	Connection A	Supply pressure [bar]	Weight [kg]
6 bar 70°C	G 100	8519000	21	Grey	480	870	153	G 1"	3.5	19.2
	G 200	8519100	21	Grey	634	972	144	G 1¼"	3.5	36.5
	G 300	8519200	21	Grey	634	1,272	144	G 1¼"	3.5	41.6
	G 400	8521605	21	Grey	740	1,253	146	G 1"	3.5	43.0
	G 500	8521705	21	Grey	740	1,473	146	G 1"	3.5	51.0
	G 600	8522605	21	Grey	740	1,718	146	G 1"	3.5	66.0
	G 800	8523610	21	Grey	740	2,183	146	G 1"	3.5	94.0
	G 1000	8546605	21	Grey	740	2,593	146	G 1"	3.5	150.0
	G 1000	8524605	22	Grey	1,000	1,973	307	DN65/PN6	3.5	228.0
	G 1500	8526605	22	Grey	1,200	1,971	305	DN65/PN6	3.5	280.0
	G 2000	8527605	22	Grey	1,200	2,431	305	DN65/PN6	3.5	300.0
	G 3000	8544605	22	Grey	1,500	2,480	334	DN65/PN6	3.5	620.0
	G 4000	8529605	22	Grey	1,500	3,053	334	DN65/PN6	3.5	770.0
	G 5000	8530605	22	Grey	1,500	3,588	334	DN65/PN6	3.5	849.0
10 bar 70°C	G 100	8518000	21	Grey	480	870	153	G 1"	3.5	19.2
	G 200	8518100	21	Grey	634	972	144	G 1¼"	3.5	33.4
	G 300	8518200	21	Grey	634	1,273	144	G 1¼"	3.5	34.6
	G 400	8521005	21	Grey	740	1,256	133	G 1¼"	3.5	52.0
	G 500	8521006	21	Grey	740	1,514	133	G 1¼"	3.5	60.0
	G 600	8522006	21	Grey	740	1,859	263	G 1½"	3.5	118.0
	G 800	8523005	21	Grey	740	2,324	263	G 1½"	3.5	166.0
	G 1000	8546005	21	Grey	740	2,805	263	G 1½"	3.5	190.0
	G 1000	8524005	22	Grey	1,000	2,001	286	G 1½"	3.5	335.0
	G 1500	8526005	22	Grey	1,200	1,991	291	DN65/PN16	3.5	390.0
	G 2000	8527005	22	Grey	1,200	2,451	291	DN65/PN16	3.5	485.0
	G 3000	8544005	22	Grey	1,500	2,532	320	DN65/PN16	3.5	830.0
	G 4000	8529005	22	Grey	1,500	3,107	320	DN65/PN16	3.5	1,064.0
	G 5000	8530005	22	Grey	1,500	3,642	320	DN65/PN16	3.5	1,274.0
16 bar 70°C	G 100	8518400	21	Grey	480	946	234	DN25/PN16	3.5	25.0
	G 200	8518500	21	Grey	634	1,060	221	DN25/PN16	3.5	57.0
	G 300	8518600	21	Grey	634	1,364	221	DN25/PN16	3.5	66.0
	G 400	8510206	21	Grey	740	1,405	201	DN40/PN16	3.5	118.0
	G 500	8518700	21	Grey	740	1,655	201	DN40/PN16	3.5	130.0
	G 600	8522007	21	Grey	740	1,859	201	DN40/PN16	3.5	158.0
	G 800	8523906	21	Grey	740	2,324	201	DN40/PN16	3.5	221.0
	G 1000	8546906	21	Grey	740	2,805	201	DN40/PN16	3.5	260.0
	G 1000	8524205	22	Grey	1,000	2,031	276	DN65/PN16	3.5	240.0
	G 1500	8526305	22	Grey	1,200	2,021	281	DN65/PN16	3.5	650.0
	G 2000	8527100	22	Grey	1,200	2,481	281	DN65/PN16	3.5	505.0
	G 3000	8544705	22	Grey	1,500	2,550	310	DN65/PN16	3.5	805.0
	G 4000	8529405	22	Grey	1,500	3,110	310	DN65/PN16	3.5	890.0
	G 5000	8529705	22	Grey	1,500	3,645	310	DN65/PN16	3.5	1,020.0

Reflex G Accessories

Type	Art. No.	Std. Pack	Material group	Weight [kg]
Connection set 1"	9119204	-	80	0.9
Connection set 1 ¼"	9119205	-	80	1.0
Connection set 1 ½"	9119206	-	80	1.2
Supply pressure test device to approx. 9 bar	9119198	-	86	0.1
Bladder rupture detector	7857700	-	86	0.2

Reflex S

S 2–33 litres

S 50–250 litres

S 300–600 litres

Technical Features

- For solar, heating and cooling systems
- With thread connections
- Up to 33 litres with brackets, from 50 litres with adjustable feet
- For antifreeze addition of at least 25–50 %
- Up to 33 litres non-replaceable bladder, non-replaceable diaphragm for 50–600 litres
- Max. operating temperature 70 °C
- Approval according to Pressure Equipment Directive 97/23/EC
- Long-lasting epoxy resin coating
- With factory-pressurised gas chamber
- Max. permissible system temperature 120 °C

AG connection set

+ for particularly fast installation and maintenance of diaphragm pressure expansion vessels
+ Including lockshield valve and connecting elbow with connection union
+ With G ½" drain cock and hose nozzle
+ According to DIN EN 12828
+ PN 16/120 °C

Reflex Lockshield Valve

+ Lockshield valve for maintenance and detachment of expansion vessels
+ With drainage
+ According to DIN EN 12828
+ PN 10/120 °C
+ From N/S/G 100 choose 1" connection set

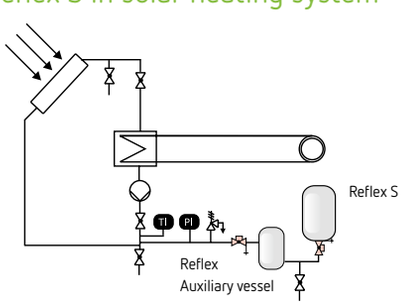
Console with multi-connections

+ Console with multi-connections for Reflex 8–25 litres
+ With vessel connection to the top
+ 10 bar

Wall-hung holder

+ Console with strap retainer for Reflex 8–25 litres, vertical installation

Reflex S in solar heating system



Note for the installer

- Due to the low temperature load, the circulating pump and Reflex S are installed in the collector return line. This necessitates the installation of the expansion vessel at the pressure side of the circulating pump. The pressure of this circulating pump must be taken into account when the supply pressure p_0 is calculated.
- The evaporation in the collector must be taken into account when calculating the nominal volume.
- A Reflex auxiliary vessel is not required if the temperature load at the expansion vessel will not exceed 70 °C.

CE

Reflex S

10 bar 70°C

Type	Art. No.	Std. Pack	Material group	Colour	Ø D [mm]	Height H [mm]	Height h [mm]	Connection A	Supply pressure [bar]	Weight [kg]
S 2	8707700	280	14	Grey	132	260	-	G ¾"	0.5	1.0
S 8	9702600	96	14	White	206	335	-	G ¾"	1.5	1.8
S 8	8703900	96	14	Grey	206	335	-	G ¾"	1.5	1.8
S 12	9702700	60	14	White	280	300	-	G ¾"	1.5	2.5
S 12	8704000	60	14	Grey	280	300	-	G ¾"	1.5	2.5
S 18	9702800	56	14	White	280	410	-	G ¾"	1.5	3.2
S 18	8704100	56	14	Grey	280	410	-	G ¾"	1.5	3.2
S 25	9702900	42	14	White	280	520	-	G ¾"	1.5	3.8
S 25	8704200	42	14	Grey	280	520	-	G ¾"	1.5	3.8
S 33	9706300	24	14	White	354	455	-	G ¾"	1.5	6.3
S 33	8706200	24	14	Grey	354	455	-	G ¾"	1.5	6.3
S 50	8209500	20	19	Grey	409	469	158	R ¾"	3	9.5
S 80	8210300	12	19	Grey	480	565	166	R 1"	3	12.1
S 100	8210500	10	19	Grey	480	670	166	R 1"	3	14.2
S 140	8211500	6	19	Grey	480	941	210	R 1"	3	17.4
S 200	8213400	-	19	Grey	634	758	205	R 1"	3	35.6
S 250	8214400	-	19	Grey	634	888	205	R 1"	3	40.8
S 300	8215400	-	19	Grey	634	1,092	235	R 1"	3	47.0
S 400	8219000	-	19	Grey	740	1,102	245	R 1"	3	61.0
S 500	8219100	-	19	Grey	740	1,321	245	R 1"	3	72.0
S 600	8219200	-	19	Grey	740	1,559	245	R 1"	3	87.0

Reflex S Accessories

Type	Art. No.	Std. Pack	Material group	Weight [kg]
Connection set 1"	9119204	-	80	0.9
Supply pressure test device to approx. 9 bar	9119198	-	86	0.1
Lockshield valve R ¾"	7613000	-	84	0.4
Lockshield valve R 1"	7613100	-	84	0.6
Console with strap retainer	7611000	36	75	0.3
Console with multi-connections	7612000	-	75	0.9

Reflex SL

SlimLine 180 litres

SlimLine 220 litres

SlimLine 280 litres

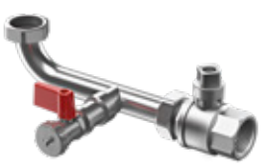
SlimLine 320 litres

Technical Features

- Slimline vessel for closed heating and cooling systems
- Non-replaceable butyl diaphragm in accordance with DIN EN 13831
- Supply pressure: 1.5 bar
- Coated on the outside
- G 1" connection
- Permissible operating pressure: 6 bar
- Permissible operating temperature: 70°C
- Permissible max. system temperature: 120°C
- For adding antifreeze at least 25 to 50 %

AG connection set

+ for particularly fast installation and maintenance of diaphragm pressure expansion vessels
+ Including lockshield valve and connecting elbow with connection union
+ With G ½" drain cock and hose nozzle
+ According to DIN EN 12828
+ PN 16/120°C



Digital pressure gauge

+ Supply pressure test device to approx. 9 bar

CE

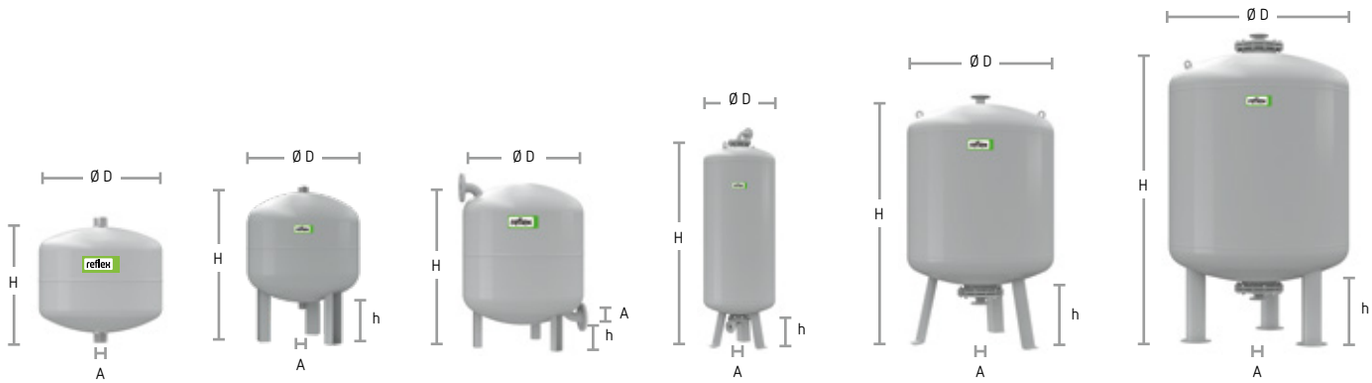
Reflex SL

	Type	Art. No.	Std. Pack	Material group	Colour	Ø D [mm]	Height H [mm]	Height h [mm]	Connection A	Supply pressure [bar]	Weight [kg]
6 bar 70°C	SL 180	8200200	1	20	grau	480	1,156	214	G 1"	1.5	27.4
	SL 220	8200250	1	20	grau	480	1,386	214	G 1"	1.5	33.3
	SL 280	8200300	1	20	grau	480	1,716	214	G 1"	1.5	41.8
	SL 320	8200350	1	20	grau	480	1,946	214	G 1"	1.5	47.8

Reflex SL Accessories

Type	Art. No.	Std. Pack	Material group	Weight [kg]
Connection set 1"	9119204	-	80	0.9
Supply pressure test device to approx. 9 bar	9119198	-	86	0.1

Reflex V



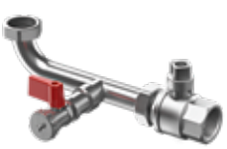
V 6–20 litres | V 40–60 litres | V 200–350 litres | V 500–750 litres | V 1000–2000 litres | V 3000–5000 litres

Technical Features

- Auxiliary vessels
- Up to 20 litres with brackets, from 40 litres with adjustable feet
- Without membrane
- Required in systems with return temperatures > 70°C or cooling systems with temperatures < 0°C
- Approval according to Pressure Equipment Directive 97/23/EC
- Can also be used as a buffer tank
- Special vessel >10 bar / >120°C available upon request
- Long-lasting epoxy resin coating
- Max. permissible system temperature 120°C
- Insulation on site

AG connection set

+ For ultra-fast installation and maintenance of Expansion vessels
+ Including Lockshield valve and connecting elbow with connection union
+ With G ½" drain cock and hose nozzle
+ According to DIN EN 12828
+ PN 16/120°C



Reflex Lockshield Valve

+ Lockshield valve for maintenance and detachment of expansion vessels
+ With drainage
+ According to DIN EN 12828
+ PN 10/120°C

Wall-hung holder

+ Console with strap retainer for Reflex 8–25 litres, vertical installation

CE

Reflex V

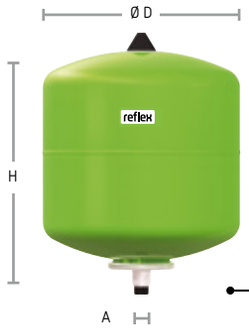
	Type	Art. No.	Std. Pack	Material group	Colour	Ø D [mm]	Height H [mm]	Height h [mm]	Connection A	Weight [kg]
6 bar 120°C	V 500	8852800	-	24	Grey	750	1.717	208	DN40/PN6	160,0
	V 750	8851800	-	24	Grey	750	2.323	208	DN40/PN6	205,0
	V 1000	8851905		24	Grey	1.000	2.020	305	DN65/PN6	310,0
	V 1500	8852305	-	24	Grey	1.200	2.020	305	DN65/PN6	445,0
	V 2000	8852405	-	24	Grey	1.200	2.478	305	DN65/PN6	545,0
	V 3000	8852505	-	24	Grey	1.500	2.556	337	DN65/PN6	775,0
	V 4000	8853405	-	24	Grey	1.500	3.131	337	DN65/PN6	1.060,0
	V 5000	8854805	-	24	Grey	1.500	3.666	337	DN65/PN6	1.095,0
10 bar 110°C	V 6	8303100	96	24	Grey	206	244	-	R ¾"	2,0
	V 12	8303200	72	24	Grey	280	244	-	R ¾"	3,0
	V 20	8303300	42	24	Grey	280	360	-	R ¾"	3,5
	V 40	8303400	18	24	Grey	409	562	113	R 1"	7,8
	V 60	8303500	12	24	Grey	409	732	172	R 1"	23,0
	V 200	8303600	-	24	Grey	634	901	142	DN40/PN16	43,0
	V 300	8303700	-	24	Grey	634	1.201	142	DN40/PN16	48,0
	V 350	8303800	-	24	Grey	634	1.341	142	DN40/PN16	51,0
10 bar 120°C	V 1000	8400205	-	24	Grey	1.000	2.055	286	DN65/PN16	560,0
	V 1500	8400305	-	24	Grey	1.200	2.045	284	DN65/PN16	780,0
	V 2000	8400405	-	24	Grey	1.200	2.505	284	DN65/PN16	940,0
	V 3000	8400505	-	24	Grey	1.500	2.600	313	DN65/PN16	1.405,0
	V 4000	8400605	-	24	Grey	1.500	3.178	313	DN65/PN16	1.930,0
	V 5000	8400705	-	24	Grey	1.500	3.713	313	DN65/PN16	2.015,0

Reflex V Accessories

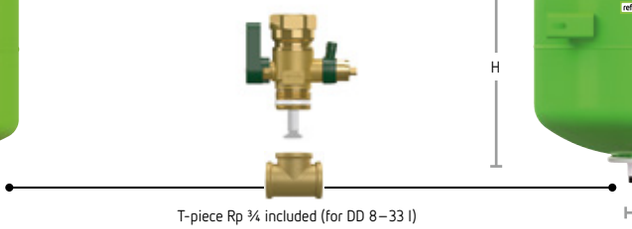
Type	Art. No.	Std. Pack	Material group	Weight [kg]
Connection set 1"	9119204	-	80	0.9
Lockshield valve R ¾"	7613000	-	84	0.4
Lockshield valve R 1"	7613100	-	84	0.6
Console with strap retainer	7611000	36	75	0.3

Refix

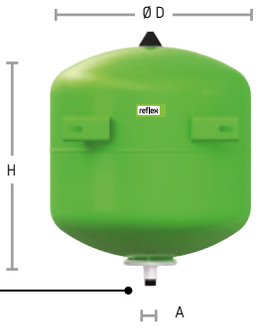
Refix DD



DD 8 – 25 litres



Flowjet – flow through valve



DD 33 litres with brackets (rear view)

Technical Features

- For potable water, pressure booster and water-heating systems according to DIN 1988
- With stainless thread connection
- 33 litres with brackets
- Flow-through with high-flow circulation star
- Non-replaceable bladder according to DIN EN 13831, DIN 4807 T5, KTW-C and W270
- Built and tested according to DIN 4807 T5, DIN DVGW Reg. No. NW-0411AT2534
- Approval according to Pressure Equipment Directive 97/23/EC
- Interior and exterior coating in compliance with KTW-A
- May be combined with the Flowjet – flow through valve
- Long-lasting epoxy resin coating
- 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)

Digital pressure gauge

+ Supply pressure test device to approx. 9 bar

Flowjet – flow through valve

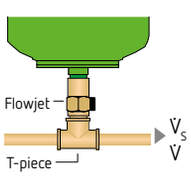
+ Lockshield valve fitting with drain for Refix DD according to DIN 4807 T5
+ Permissible gauge operating pressure 16 bar
+ Permissible operating temperature 70 °C
+ Connection both sides G ¾", I/E threads
+ May be combined with user-provided T-pieces
+ With nominal through diameter 1"

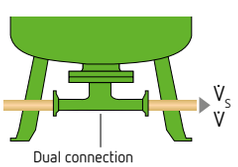
Wall-hung holder

+ Console with strap retainer for Reflex 8 – 25 litres, vertical installation

Selection by peak volume flow $\dot{V}_s$

When the nominal volume of the Refix has been selected, you must check as to whether the peak volume flow $\dot{V}_s$ resulting from the pipe system calculation according to DIN 1988 can be realised at the Refix for flown-through vessels. If this is the case, a Refix DT 60 litres must be used instead of a 8 – 33 litre vessel for Refix DD to ensure a larger flow. Alternatively, you may use a Refix DD with a correspondingly larger T-piece.





Available connections		Recommended max. peak volume flow $\dot{V}_s$*	Actual pressure loss at volume flow $\dot{V}$
Refix DD	**8 – 33 litres**		
With or without Flowjet	Rp ¾ = standard	≤ 2.5 m³/h	$\Delta p = 0.03 \text{ bar} \cdot \left(\frac{\dot{V} \text{ m}^3/\text{h}}{2.5 \text{ m}^3/\text{h}}\right)^2$
Passing T-piece	Rp 1 (user-supplied)	≤ 4.2 m³/h	Negligible
Refix DT	**60 – 500 litres**		
With Flowjet Rp 1¼		≤ 7.2 m³/h	$\Delta p = 0.04 \text{ bar} \cdot \left(\frac{\dot{V} \text{ m}^3/\text{h}}{7.2 \text{ m}^3/\text{h}}\right)^2$
Refix DT	**80 – 3,000 litres**		
Dual connection DN 50		≤ 15 m³/h	$\Delta p = 0{,}14 \text{ bar} \cdot \left(\frac{\dot{V} \text{ m}^3/\text{h}}{15 \text{ m}^3/\text{h}}\right)^2$
Dual connection DN 65		≤ 27 m³/h	$\Delta p = 0{,}11 \text{ bar} \cdot \left(\frac{\dot{V} \text{ m}^3/\text{h}}{27 \text{ m}^3/\text{h}}\right)^2$
Dual connection DN 80		≤ 36 m³/h	Negligible
Dual connection DN 100		≤ 56 m³/h	Negligible
Refix DE, DC (without through-flow)		Unlimited	$\Delta p = 0$

* calculated for a speed of 2 m/s

Refix DD

	Type	Art. No.	Std. Pack	Material group	Colour	Ø D [mm]	Height H [mm]	Connection A	Supply pressure [bar]	Weight [kg]
10 bar 70°C	DD 2	7381500	288	48	Green	132	269	G ¾"	4.0	1.0
	DD 8	7308000	96	48	Green	206	345	G ¾"	4.0	1.9
	DD 8	7307700	96	48	White	206	345	G ¾"	4.0	1.9
	DD 12	7308200	60	48	Green	280	318	G ¾"	4.0	2.0
	DD 12	7307800	60	48	White	280	318	G ¾"	4.0	2.0
	DD 18	7308300	56	48	Green	280	418	G ¾"	4.0	2.8
	DD 18	7307900	56	48	White	280	418	G ¾"	4.0	2.8
	DD 25	7308400	42	48	Green	280	528	G ¾"	4.0	3.6
	DD 25	7380400	42	48	White	280	528	G ¾"	4.0	3.6
	DD 33	7380700	24	48	Green	354	468	G ¾"	4.0	5.8
	DD 33	7380800	24	48	White	354	468	G ¾"	4.0	5.8
25 bar 70°C	DD 8	7290200	60	48	Green	206	344	G ¾"	4.0	3.4
	DD 8	7290300	60	48	White	206	344	G ¾"	4.0	3.4

Refix DD Accessories

Type	Art. No.	Std. Pack	Material group	Weight [kg]
Supply pressure test device to approx. 9 bar	9119198	-	86	0.1
Flowjet – flow through valve ¾"	9116799	5	85	0.3
Console with strap retainer	7611000	36	75	0.3

Refix DT

DT 60–500 litres (with Flowjet)

DT 600–1000 litres (Ø 740)

DT 1000 (Ø 1000)–2000 litres

DT 3000 litres

Technical Features

- For potable water, pressure booster and water-heating systems according to DIN 1988
- Flowjet incl. isolation and drainage or dual connection
- Replaceable bladder according to DIN EN 13831, DIN 4807 T5, KTW-C and W270, built and tested according to DIN 4807 T5, DIN DVGW Reg. No. NW-0411AT2534
- Approval according to Pressure Equipment Directive 97/23/EC
- Interior and exterior coating in compliance with KTW-A
- From 1,000 litres, with bladder rupture detector
- Pressure gauge and supply pressure valve protected by clip
- Long-lasting epoxy resin coating
- With factory-pressurised gas chamber
- Vessels certified to ACS upon request
- **Only for use in cold water pipes** (consider installation and operating instructions)

Selection by nominal volume V_n

10°C Cold-water inlet temperature

60°C Storage-tank temperature

- Gas supply pressure p_0 = 3.0 bar
- Pressure reducer setting pressure p_a ≥ 3.2 bar

- Gas supply pressure p_0 = 4.0 bar = standard
- Pressure reducer setting pressure p_a ≥ 4.2 bar

Refix Quick Selection

p_{SV} [bar]	6	7	8	10
V_{sp} [litre]	V_n nominal volume Refix [litre]			
90	8	8	8	8
100	8	8	8	8
120	8	8	8	8
130	8	8	8	8
150	8	8	8	8
180	12	8	8	8
200	12	12	8	8
250	12	12	12	8
300	18	18	12	12
400	25	18	18	18
500	25	25	18	18
600	33	25	25	18
700	33	33	25	25
800	60	33	33	25
900	60	60	33	25
1000	60	60	33	33
1500	80	80	60	60
2000	100	100	80	80
3000	100	100	100	100

p_{SV} [bar]	6	7	8	10
V_{sp} [litre]	V_n nominal volume Refix [litre]			
90	8	8	8	8
100	12	8	8	8
120	12	8	8	8
130	12	8	8	8
150	18	12	8	8
180	18	12	8	8
200	18	12	12	8
250	25	18	12	12
300	25	18	18	12
400	33	33	15	25
500	60	33	25	25
600	60	60	33	25
700	60	60	33	25
800	80	80	60	25
900	80	60	60	33
1000	100	60	60	60
1500	200	100	80	60
2000	200	200	100	80
3000	300	200	200	100

Refix DT

10 bar 70°C

Type	Art. No.	Material group	Colour	Ø D [mm]	Height H [mm]	Height h [mm]	Connection A	Supply pressure [bar]	Weight [kg]
DT 60	7309000	47	Green	409	766	80	Rp 1 ¼"	4.0	15.0
DT 80	7309100	47	Green	480	750	56	Rp 1 ¼"	4.0	17.0
DT 80	7365000	47	Green	480	750	97	DN50/PN16	4.0	23.7
DT 80	7335705	47	Green	480	750	107	DN65/PN16	4.0	24.7
DT 80	7335805	47	Green	480	750	115	DN80/PN16	4.0	26.8
DT 100	7309200	47	Green	480	834	56	Rp 1 ¼"	4.0	19.2
DT 100	7365400	47	Green	480	834	97	DN50/PN16	4.0	26.8
DT 100	7365405	47	Green	480	834	107	DN65/PN16	4.0	27.8
DT 100	7365406	47	Green	480	834	114	DN80/PN16	4.0	28.9
DT 200	7309300	47	Green	634	973	80	Rp 1 ¼"	4.0	37.0
DT 200	7365100	47	Green	634	973	105	DN50/PN16	4.0	53.0
DT 200	7365105	47	Green	634	973	115	DN65/PN16	4.0	54.0
DT 200	7365106	47	Green	634	973	120	DN80/PN16	4.0	57.0
DT 300	7309400	47	Green	634	1,273	80	Rp 1 ¼"	4.0	51.0
DT 300	7365200	47	Green	634	1,273	105	DN50/PN16	4.0	59.0
DT 300	7336305	47	Green	634	1,273	115	DN65/PN16	4.0	60.0
DT 300	7336405	47	Green	634	1,273	120	DN80/PN16	4.0	63.0
DT 400	7319305	47	Green	740	1,245	69	Rp 1 ¼"	4.0	74.0
DT 400	7365500	47	Green	740	1,245	95	DN50/PN16	4.0	80.0
DT 400	7336505	47	Green	740	1,245	105	DN65/PN16	4.0	81.0
DT 400	7336605	47	Green	740	1,245	110	DN80/PN16	4.0	83.0
DT 500	7309500	47	Green	740	1,475	69	Rp 1 ¼"	4.0	72.0
DT 500	7365300	47	Green	740	1,475	90	DN50/PN16	4.0	88.0
DT 500	7365307	47	Green	740	1,475	100	DN65/PN16	4.0	89.0
DT 500	7365305	47	Green	740	1,475	110	DN80/PN16	4.0	92.0
DT 600	7365600	47	Green	740	1,859	233	DN50/PN16	4.0	164.0
DT 600	7336705	47	Green	740	1,859	233	DN65/PN16	4.0	165.0
DT 600	7336806	47	Green	740	1,859	235	DN80/PN16	4.0	168.0
DT 800	7365700	47	Green	740	2,324	233	DN50/PN16	4.0	204.0
DT 800	7336905	47	Green	740	2,324	233	DN65/PN16	4.0	205.0
DT 800	7337006	47	Green	740	2,324	233	DN80/PN16	4.0	208.0
DT 1000	7365800	47	Green	740	2,804	233	DN50/PN16	4.0	260.0
DT 1000	7337105	47	Green	740	2,804	233	DN65/PN16	4.0	261.0
DT 1000	7337205	47	Green	740	2,804	233	DN80/PN16	4.0	264.0
DT 1000	7320105	46	Green	1,000	2,001	160	DN65/PN16	4.0	386.2
DT 1000	7337305	46	Green	1,000	2,001	150	DN80/PN16	4.0	386.2
DT 1000	7337405	46	Green	1,000	2,001	140	DN100/PN16	4.0	386.2
DT 1500	7320305	46	Green	1,200	2,001	158	DN65/PN16	4.0	502.4
DT 1500	7337505	46	Green	1,200	2,001	150	DN80/PN16	4.0	502.4
DT 1500	7337605	46	Green	1,200	2,001	140	DN100/PN16	4.0	502.4
DT 2000	7320505	46	Green	1,200	2,461	158	DN65/PN16	4.0	686.5
DT 2000	7337705	46	Green	1,200	2,461	150	DN80/PN16	4.0	686.5
DT 2000	7337805	46	Green	1,200	2,461	140	DN100/PN16	4.0	686.5
DT 3000	7320705	46	Green	1,500	2,580	187	DN65/PN16	4.0	1,054.0
DT 3000	7337905	46	Green	1,500	2,530	180	DN80/PN16	4.0	1,057.0
DT 3000	7338005	46	Green	1,500	2,530	170	DN100/PN16	4.0	1,057.0

Refix DT (cont.)

DT 60–500 litres (with Flowjet)

DT 600–1000 litres (Ø 740)

DT 1000 (Ø 1000)–2000 litres

DT 3000 litres

Technical Features

- For potable water, pressure booster and water-heating systems according to DIN 1988
- Flowjet incl. isolation and drainage or dual connection
- Replaceable bladder according to DIN EN 13831, DIN 4807 T5, KTW-C and W270, built and tested according to DIN 4807 T5, DIN DVGW Reg. No. NW-0411AT2534
- Approval according to Pressure Equipment Directive 97/23/EC
- Interior and exterior coating in compliance with KTW-A
- From 1,000 litres, with bladder rupture detector
- Pressure gauge and supply pressure valve protected by clip
- Long-lasting epoxy resin coating
- With factory-pressurised gas chamber
- Vessels certified to ACS upon request
- **Only for use in cold water pipes** (consider installation and operating instructions)

Digital pressure gauge

+ Supply pressure test device to approx. 9 bar

MBM II as bladder rupture detector

+ Signalisation for bladder rupture in Refix DT (for all vessels fitted with MBM bushing)
+ Comprises an electrode relay and an electrode (factory-installed)
+ Power supply 230 V/50 Hz
+ Floating relay output (changeover)
+ Supplied only with a vessel

Refix DT

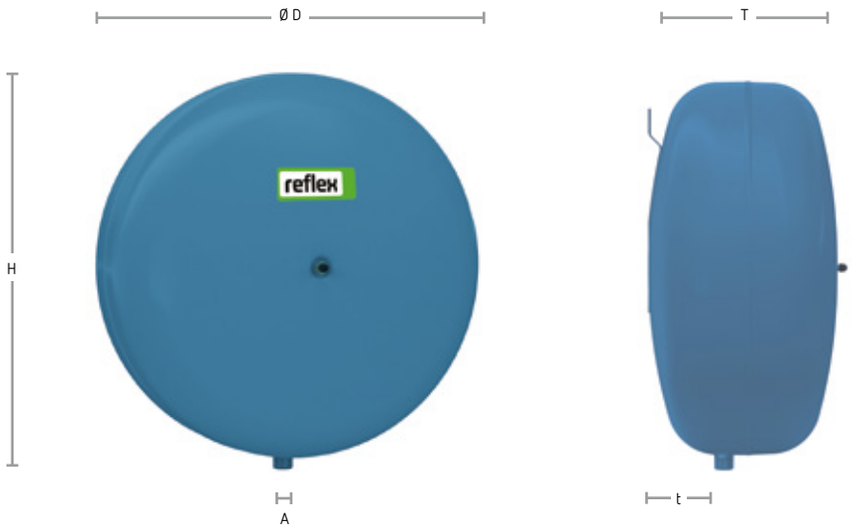
16 bar 70°C

Type	Art. No.	Material group	Colour	Ø D [mm]	Height H [mm]	Height h [mm]	Connection A	Supply pressure [bar]	Weight [kg]
DT 80	7316005	47	Green	480	750	56	Rp 1 ¼"	4.0	27.8
DT 80	7370000	47	Green	480	750	97	DN50/PN16	4.0	33.0
DT 80	7310306	47	Green	480	750	107	DN65/PN16	4.0	34.0
DT 80	7310307	47	Green	480	750	114	DN80/PN16	4.0	36.0
DT 100	7365408	47	Green	480	834	56	Rp 1 ¼"	4.0	29.9
DT 100	7370100	47	Green	480	834	97	DN50/PN16	4.0	35.0
DT 100	7370101	47	Green	480	834	107	DN65/PN16	4.0	36.0
DT 100	7370102	47	Green	480	834	114	DN80/PN16	4.0	38.0
DT 200	7365108	47	Green	634	973	80	Rp 1 ¼"	4.0	55.0
DT 200	7370200	47	Green	634	973	105	DN50/PN16	4.0	61.0
DT 200	7370205	47	Green	634	973	115	DN65/PN16	4.0	62.0
DT 200	7370206	47	Green	634	973	120	DN80/PN16	4.0	65.0
DT 300	7319205	47	Green	634	1,273	115	Rp 1 ¼"	4.0	64.0
DT 300	7370300	47	Green	634	1,273	105	DN50/PN16	4.0	70.0
DT 300	7314205	47	Green	634	1,273	80	DN65/PN16	4.0	71.0
DT 300	7314206	47	Green	634	1,273	120	DN80/PN16	4.0	74.0
DT 400	7370400	47	Green	740	1,394	235	DN50/PN16	4.0	115.0
DT 400	7339006	47	Green	740	1,394	235	DN65/PN16	4.0	121.0
DT 400	7339005	47	Green	740	1,394	235	DN80/PN16	4.0	124.0
DT 500	7370500	47	Green	740	1,615	235	DN50/PN16	4.0	136.0
DT 500	7370507	47	Green	740	1,615	235	DN65/PN16	4.0	137.0
DT 500	7370505	47	Green	740	1,615	235	DN80/PN16	4.0	140.0
DT 600	7370600	47	Green	740	1,859	235	DN50/PN16	4.0	174.0
DT 600	7339105	47	Green	740	1,859	235	DN65/PN16	4.0	175.0
DT 600	7339205	47	Green	740	1,859	235	DN80/PN16	4.0	178.0
DT 800	7370700	47	Green	740	2,324	235	DN50/PN16	4.0	224.0
DT 800	7339305	47	Green	740	2,324	235	DN65/PN16	4.0	225.0
DT 800	7339406	47	Green	740	2,324	235	DN80/PN16	4.0	228.0
DT 1000	7370800	47	Green	740	2,804	235	DN50/PN16	4.0	275.0
DT 1000	7339505	47	Green	740	2,804	235	DN65/PN16	4.0	276.0
DT 1000	7339605	47	Green	740	2,804	235	DN80/PN16	4.0	279.0
DT 1000	7320205	46	Green	1,000	2,001	160	DN65/PN16	4.0	488.0
DT 1000	7339705	46	Green	1,000	2,001	150	DN80/PN16	4.0	488.0
DT 1000	7339805	46	Green	1,000	2,001	140	DN100/PN16	4.0	488.0
DT 1500	7320405	46	Green	1,200	2,220	158	DN65/PN16	4.0	630.0
DT 1500	7339905	46	Green	1,200	2,220	150	DN80/PN16	4.0	630.0
DT 1500	7340005	46	Green	1,200	2,220	140	DN100/PN16	4.0	630.0
DT 2000	7320605	46	Green	1,200	2,480	158	DN65/PN16	4.0	850.5
DT 2000	7340105	46	Green	1,200	2,480	150	DN80/PN16	4.0	850.5
DT 2000	7340205	46	Green	1,200	2,480	140	DN100/PN16	4.0	850.5
DT 3000	7320805	46	Green	1,500	2,580	187	DN65/PN16	4.0	1,240.0
DT 3000	7340305	46	Green	1,500	2,580	180	DN80/PN16	4.0	1,240.0
DT 3000	7340405	46	Green	1,500	2,580	170	DN100/PN16	4.0	1,200.0

Refix DT Accessories

Type	Art. No.	Std. Pack	Material group	Weight [kg]
Supply pressure test device to approx. 9 bar	9119198	-	86	0.1
Bladder rupture detector	7857700	-	86	0.2

Refix C-DE



C–DE 8–80 litres

Technical Features

- Vertical, discus-shaped flat 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 thread connection
- Non-replaceable bladder according to DIN EN 13831
- No flow through, no isolation
- Components in contact with water are corrosion-protected
- Approval according to Pressure Equipment Directive 97/23/EC
- For antifreeze addition of at least 25–50 %
- Long-lasting epoxy resin coating
- With factory-pressurised gas chamber

Digital pressure gauge

+ Supply pressure test device to approx. 9 bar

Reflex Lockshield Valve

+ Lockshield valve for maintenance and detachment of expansion vessels
+ With drainage
+ According to DIN EN 12828
+ PN 10 / 120 °C

CE

Refix C-DE

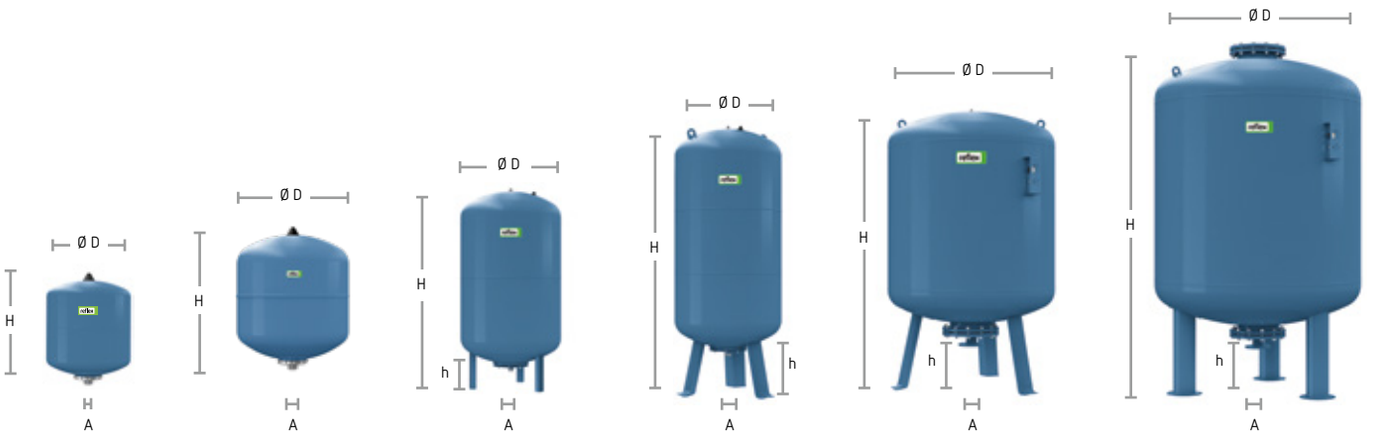
10 bar 70°C

Type	Art. No.	Std. Pack	Material group	Colour	Ø D [mm]	Height H [mm]	Depth T [mm]	Height h [mm]	Connection A	Supply pressure [bar]	Weight [kg]
C-DE 8	7270900	96	17	Blue	280	300	163	52	G ½"	4	3.8
C-DE 12	7270910	60	17	Blue	354	375	168	64	G ½"	4	5.2
C-DE 18	7270920	42	17	Blue	354	375	222	76	G ¾"	4	5.7
C-DE 25	7270930	42	17	Blue	409	430	239	93	G ¾"	4	8.3
C-DE 35	7270940	24	17	Blue	480	500	240	97	G ¾"	4	13.0
C-DE 50	7270950	20	17	Blue	480	500	318	125	G ¾"	4	15.4
C-DE 80	7270960	8	17	Blue	634	654	325	135	G ¾"	4	22.4

Refix C-DE Accessories

Type	Art. No.	Std. Pack	Material group	Weight [kg]
Supply pressure test device to approx. 9 bar	9119198	-	86	0.1
Lockshield valve R ¾"	7613000	-	84	0.4

Refix DE



DE 2–25 litres | DE 33 litres | DE 50–500 litres | DE 600–1000 litres (Ø 740) | DE 1000–2000 litres (Ø 1000) | DE 3000–5000 litres

Technical Features

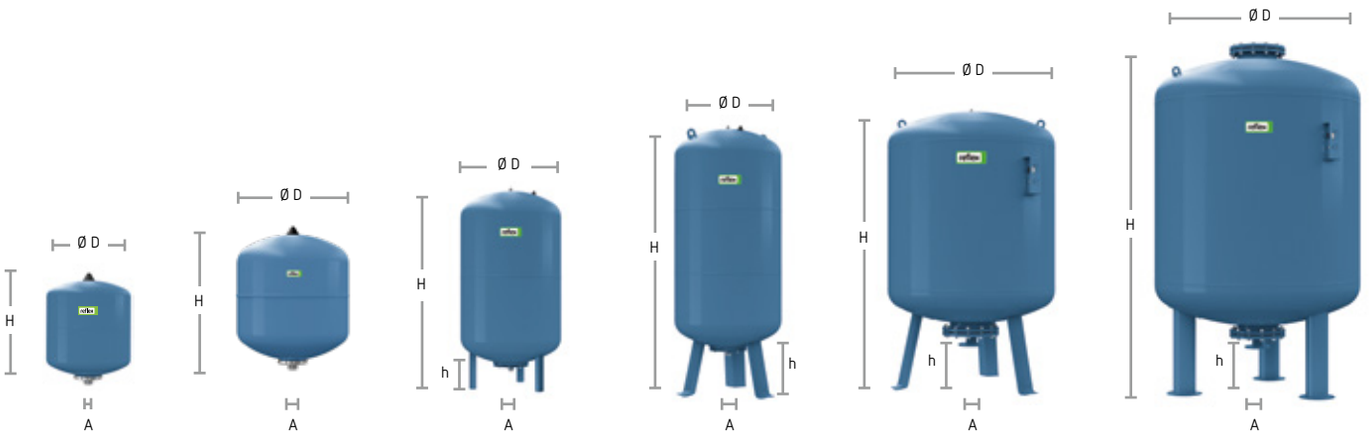
- Only for systems **not** required to meet DIN 1988, such as fire-fighting and service water systems, underfloor heating and geothermal installations
- 33 litres with brackets
- Components in contact with water are corrosion-protected
- Bladder according to DIN EN 13831 / replaceable from 50 litres
- No flow through, without isolation, without drain
- From Ø 1,000 mm including pressure gauge
- Pressure gauge and supply pressure valve protected by clip
- Approval according to Pressure Equipment Directive 97/23/EC
- Long-lasting epoxy resin coating
- With factory-pressurised gas chamber
- Vessels certified to WRAS and ACS upon request
- Versions with MBM on request

CE

Refix DE

	Type	Art. No.	Std. Pack	Material group	Colour	Ø D [mm]	Height H [mm]	Height h [mm]	Connection A	Supply pressure [bar]	Weight [kg]
10 bar 70°C	DE 2	7200300	288	40	Blue	132	260	-	G ¾"	4	1.0
	DE 8	7301000	96	40	Blue	206	335	-	G ¾"	4	1.8
	DE 12	7302000	60	40	Blue	280	307	-	G ¾"	4	2.4
	DE 18	7303000	56	40	Blue	280	410	-	G ¾"	4	3.2
	DE 25	7304000	42	40	Blue	280	520	-	G ¾"	4	3.8
	DE 33	7303900	24	40	Blue	354	454	-	G ¾"	4	5.7
	DE 33 (vertical design)	7305500	24	40	Blue	354	520	66	G ¾"	4	6.5
	DE 50	7306005	20	42	Blue	409	604	102	G 1"	4	9.5
	DE 60	7306400	18	42	Blue	409	734	161	G 1"	4	11.2
	DE 80	7306500	10	42	Blue	480	745	153	G 1"	4	14.0
	DE 100	7306600	10	42	Blue	480	850	153	G 1"	4	16.0
	DE 200	7306700	4	42	Blue	634	967	150	G 1 ¼"	4	36.5
	DE 300	7306800	-	42	Blue	634	1,267	150	G 1 ¼"	4	41.6
	DE 400	7306850	-	42	Blue	740	1,256	139	G 1 ¼"	4	74.0
	DE 500	7306900	-	42	Blue	740	1,516	133	G 1 ¼"	4	106.0
	DE 600	7306950	-	42	Blue	740	1,859	263	G 1 ½"	4	128.0
	DE 800	7306960	-	42	Blue	740	2,325	263	G 1 ½"	4	176.0
	DE 1000	7306970	-	42	Blue	740	2,805	263	G 1 ½"	4	230.0
	DE 1000	7311405	-	44	Blue	1,000	2,001	286	DN65/PN16	4	427.0
	DE 1500	7311605	-	44	Blue	1,200	1,991	291	DN65/PN16	4	542.0
	DE 2000	7311705	-	44	Blue	1,200	2,451	291	DN65/PN16	4	717.0
	DE 3000	7311805	-	44	Blue	1,500	2,521	320	DN65/PN16	4	962.0
	DE 4000	7354000	-	44	Blue	1,500	3,070	320	DN65/PN16	4	1,132.0
	DE 5000	7354200	-	44	Blue	1,500	3,635	320	DN65/PN16	4	1,292.0
16 bar 70°C	DE 8	7301006	96	40	Blue	206	335	-	G ¾"	4	2.8
	DE 12	7302105	72	40	Blue	280	309	-	G ¾"	4	3.5
	DE 25	7304015	42	40	Blue	280	520	-	G ¾"	4	5.8
	DE 80	7348600	4	42	Blue	480	745	153	G 1"	4	18.0
	DE 100	7348610	4	42	Blue	480	850	153	G 1"	4	21.0
	DE 200	7348620	-	42	Blue	634	967	150	G 1 ¼"	4	57.0
	DE 300	7348630	-	42	Blue	634	1,267	150	G 1 ¼"	4	66.0
	DE 400	7348640	-	42	Blue	740	1,405	265	G 1 ½"	4	118.0
	DE 500	7348650	-	42	Blue	740	1,655	265	G 1 ½"	4	133.0
	DE 600	7348660	-	42	Blue	740	1,859	265	G 1 ½"	4	158.0
	DE 800	7348670	-	42	Blue	740	2,324	265	G 1 ½"	4	202.0
	DE 1000	7348680	-	42	Blue	740	2,805	265	G 1 ½"	4	260.0
	DE 1000	7312805	-	44	Blue	1,000	2,001	286	DN65/PN16	4	530.0
	DE 1500	7312905	-	44	Blue	1,200	1,991	291	DN65/PN16	4	685.0
	DE 2000	7313005	-	44	Blue	1,200	2,451	291	DN65/PN16	4	895.0
	DE 3000	7313105	-	44	Blue	1,500	2,521	320	DN65/PN16	4	1,240.0
	DE 4000	7354100	-	44	Blue	1,500	3,110	320	DN65/PN16	4	1,442.0
	DE 5000	7354300	-	44	Blue	1,500	3,645	320	DN65/PN16	4	1,844.0

Refix DE (cont.)



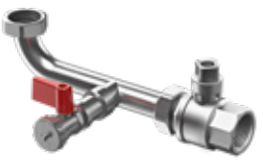
DE 2–25 litres | DE 33 litres | DE 50–500 litres | DE 600–1000 litres (Ø 740) | DE 1000–2000 litres (Ø 1000) | DE 3000–5000 litres

Technical Features

- Only for systems **not** required to meet DIN 1988, such as fire-fighting and service water systems, underfloor heating and geothermal installations
- 33 litres with brackets
- Components in contact with water are corrosion-protected
- Bladder according to DIN EN 13831 / replaceable from 50 litres
- No flow through, without isolation, without drain
- From Ø 1,000 mm including pressure gauge
- Pressure gauge and supply pressure valve protected by clip
- Approval according to Pressure Equipment Directive 97/23/EC
- Long-lasting epoxy resin coating
- With factory-pressurised gas chamber
- Vessels certified to WRAS and ACS upon request
- Versions with MBM on request

AG connection set

+ For ultra-fast installation and maintenance of expansion vessels
+ Including lockshield valve and connecting elbow with connection union
+ With G ½" drain cock and hose nozzle
+ According to DIN EN 12828
+ PN 16/120°C



Digital pressure gauge

+ Supply pressure test device to approx. 9 bar

Reflex Lockshield Valve

+ Lockshield valve for maintenance and detachment of expansion vessels
+ With drainage
+ According to DIN EN 12828
+ PN 10/120°C

Wall-hung holder

+ Console with strap retainer for Reflex 8–25 litres, vertical installation

CE

Refix DE

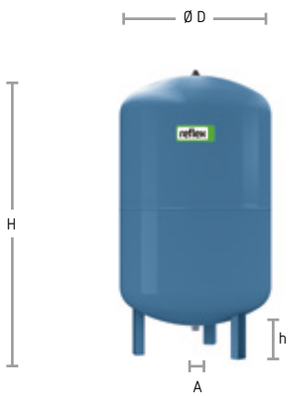
25 bar 70°C

Type	Art. No.	Std. Pack	Material group	Colour	Ø D [mm]	Height H [mm]	Height h [mm]	Connection A	Supply pressure [bar]	Weight [kg]
DE 8	7290100	60	40	Blue	206	334	-	G ¾"	4	2.4
DE 80	7317600	-	44	Blue	450	942	159	DN50/PN40	4	70.0
DE 120	7313700	-	44	Blue	450	1,253	159	DN50/PN40	4	100.0
DE 180	7313500	-	44	Blue	450	1,528	159	DN50/PN40	4	116.0
DE 300	7313800	-	44	Blue	750	1,318	160	DN50/PN40	4	150.0
DE 400	7313300	-	44	Blue	750	1,423	160	DN50/PN40	4	245.0
DE 600	7321500	-	44	Blue	750	1,868	159	DN50/PN40	4	290.0
DE 800	7321200	-	44	Blue	750	2,268	159	DN50/PN40	4	355.0
DE 1000	7321000	-	44	Blue	750	2,768	159	DN50/PN40	4	245.0
DE 1000	7322200	-	44	Blue	1.000	2,051	242	DN65/PN40	4	800.0
DE 1500	7322100	-	44	Blue	1,200	2,071	291	DN65/PN40	4	850.0
DE 2000	7313400	-	44	Blue	1,200	2,531	240	DN65/PN40	4	960.0
DE 3000	7345700	-	44	Blue	1,500	2,609	269	DN65/PN40	4	1,550.0

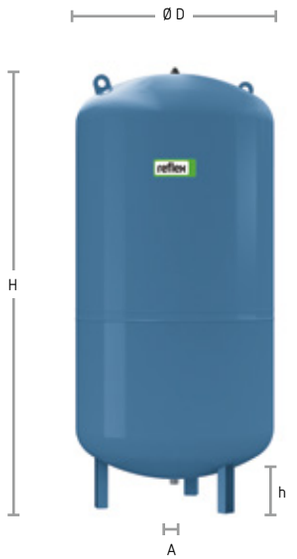
Refix DE Accessories

Type	Art. No.	Std. Pack	Material group	Weight [kg]
Connection set 1"	9119204	-	80	0.9
Connection set 1 ¼"	9119205	-	80	1.0
Connection set 1 ½"	9119206	-	80	1.2
Supply pressure test device to approx. 9 bar	9119198	-	86	0.1
Lockshield valve R ¾"	7613000	-	84	0.4
Console with strap retainer	7611000	36	75	0.3
Bladder rupture detector	7857700	-	86	0.2

Refix DC



DC 50–400 litres



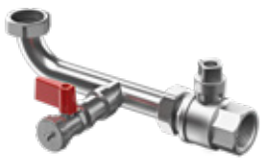
DC 500–600 litres

Technical Features

- Only for systems **not** required to meet DIN 1988, such as fire-fighting and service water systems, underfloor heating
- Components in contact with water are corrosion-protected
- Non-replaceable diaphragm according to DIN EN 13831
- No flow through, without isolation, without drain
- Approval according to Pressure Equipment Directive 97/23/EC
- Long-lasting epoxy resin coating
- With factory-pressurised gas chamber
- Vessels certified to WRAS and ACS upon request

AG connection set

+ For ultra-fast installation and maintenance of expansion vessels
+ Including lockshield valve and connecting elbow with connection union
+ With G ½" drain cock and hose nozzle
+ According to DIN EN 12828
+ PN 16/120°C



Digital pressure gauge

+ Supply pressure test device to approx. 9 bar

Reflex Lockshield Valve

+ Lockshield valve for maintenance and detachment of expansion vessels
+ With drainage
+ According to DIN EN 12828
+ PN 10/120°C

Wall-hung holder

+ Console with strap retainer for Reflex 8–25 litres, vertical installation

CE

Refix DC

10 bar 70°C

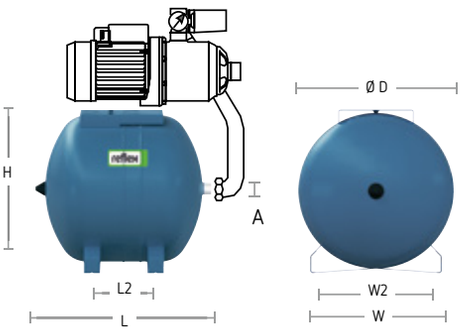
Type	Art. No.	Std. Pack	Material group	Colour	Ø D [mm]	Height H [mm]	Height h [mm]	Connection A	Supply pressure [bar]	Weight [kg]
DC 25	7200400	42	54	Blue	280	510	-	G 1"	2.0	4.8
DC 50	7309600	50	54	Blue	409	588	113	R 1"	4.0	12.5
DC 80	7309700	12	54	Blue	480	680	104	R 1"	4.0	17.5
DC 100	7309800	10	54	Blue	480	785	104	R 1"	4.0	21.1
DC 140	7309900	-	54	Blue	480	997	104	R 1"	4.0	29.0
DC 200	7363500	-	54	Blue	634	883	91	R 1"	4.0	40.0
DC 300	7363600	-	54	Blue	634	1,184	93	R 1"	4.0	52.0
DC 400	7363700	-	54	Blue	740	1,173	81	R 1"	4.0	78.0
DC 500	7363800	-	54	Blue	740	1,392	82	R 1"	4.0	80.0
DC 600	7363900	-	54	Blue	740	1,629	73	R 1"	4.0	103.0

Refix DC Accessories

Type	Art. No.	Std. Pack	Material group	Weight [kg]
Connection set 1"	9119204	-	80	0.9
Supply pressure test device to approx. 9 bar	9119198	-	86	0.1
Lockshield valve R ¾"	7613000	-	84	0.4
Console with strap retainer	7611000	36	75	0.3

Refix HW

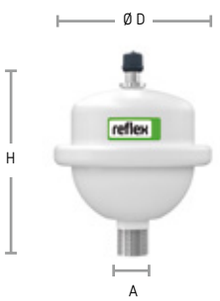
HW 25–100 litres



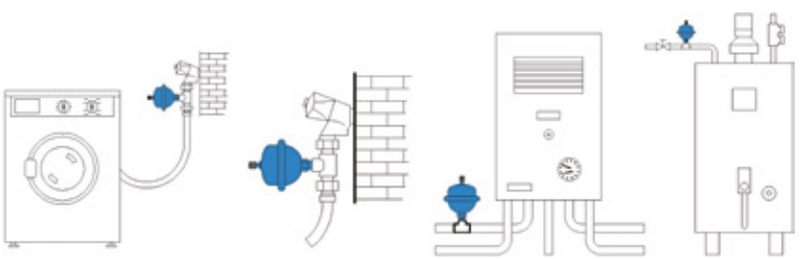
Technical Features

- As a buffer vessel for domestic water systems **not** subject to the DIN 1988 requirements
- Container surface and water-touching parts are corrosion-protected
- Bladder to DIN EN 13831 / replaceable from 50 litres
- Max. operating temperature 70°C
- Approval according to Pressure Equipment Directive 97/23/EC
- Long-lasting epoxy resin coating
- With factory-pressurised gas chamber
- Vessels certified to WRAS and ACS upon request

Refix Water Shock Arrestor



WD 0.165 litres



Technical Features

- For devices with quick-closing fittings such as washers and dishwashers
- Approval according to Pressure Equipment Directive 97/23/EC
- Total volume 165 cm^3
- Max. operating temperature 70°C
- Vessels certified to WRAS and ACS upon request
- Non-replaceable diaphragm in accordance with DIN EN 13831
- not permitted for drinking water

Digital pressure gauge

- Supply pressure test device to approx. 9 bar

CE

Refix HW

	Type	Art. No.	Std. Pack	Material group	Colour	Ø D [mm]	Height H [mm]	L [mm]	L 2 [mm]	W [mm]	W 2 [mm]	Connection A	Supply pressure [bar]	Weight [kg]
10 bar 70°C	HW 25	7200310	36	49	Blue	280	294	520	228	270	214	G ¾"	2	5.5
	HW 50	7200320	20	49	Blue	409	433	503	175	350	285	G 1"	2	15.0
	HW 60	7200330	16	49	Blue	480	433	573	175	350	285	G 1"	2	16.0
	HW 80	7200340	16	49	Blue	480	495	595	230	355	285	G 1"	2	17.4
	HW 100	7200350	16	49	Blue	480	495	705	340	355	285	G 1"	2	19.4

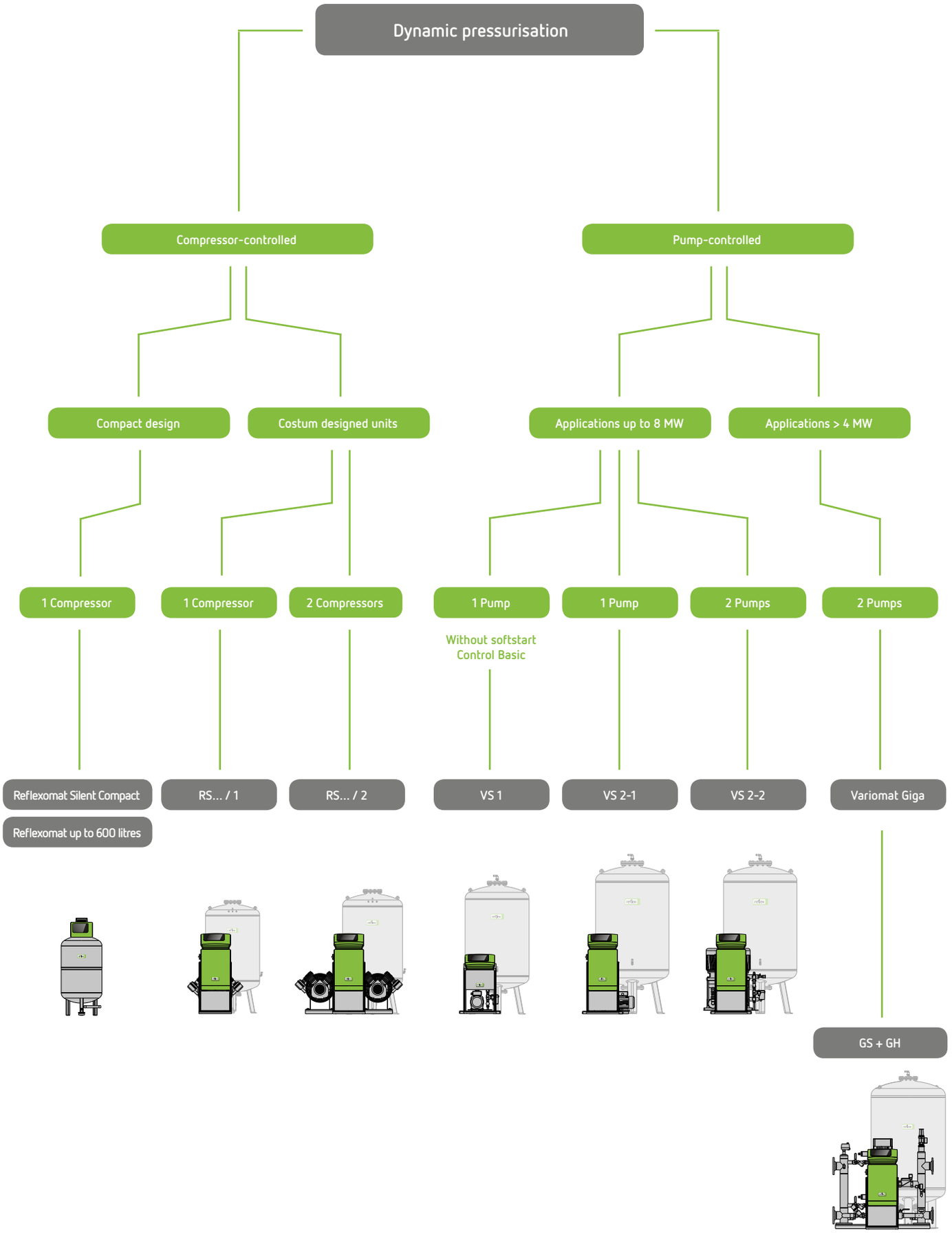
Refix Water Shock Arrestor

	Type	Art. No.	Std. Pack	Material group	Colour	Ø D [mm]	Height H [mm]	Connection A	Supply pressure [bar]	Weight [kg]
10 bar 70°C	Water Shock Arrestor	7351000	-	74	White	83	110	G ½"	3.5	0.3

Refix WD and HW Accessories

Type	Art. No.	Std. Pack	Material group	Weight [kg]
Supply pressure test device	9119198	-	86	0.1

Pressurisation Systems



*Note: Special sizes available and specific requirements can be met on request.

Reflex Control

Control Basic

- 2-line LCD display
- 8 control keys
- 2 status LED
- Integrated control of system pressure, deaeration and water make-up
- Manual and automatic operation
- Common fault output signal
- Input, for contact water meter
- RS-485 interface
- Remote Ready

Control Touch

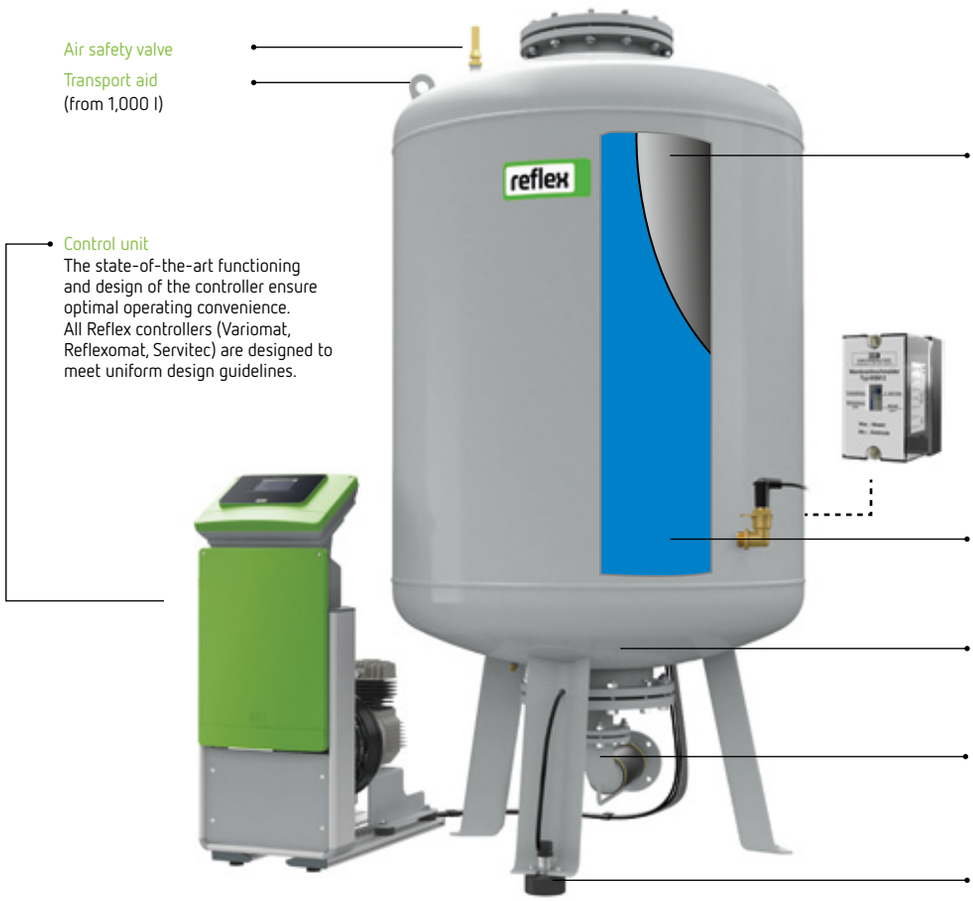
- 4.3" touch screen colour display
- Graphic user interface
- Simply structured plain text menus including operating instructions and help texts
- Integrated control of system pressure, deaeration and water make-up
- Manual and automatic operation
- Permanent display of the most important operating parameters in the system diagram
- Intelligent Plug & Play operational management
- Evaluation and storage of the most important operational data
- Extensive interfaces:
  - → 1 x meter pulse input, for contact water meter
  - → 2 x floating outputs for error messages
  - → 2 x analogue outputs for pressure and level
  - → 2 x RS-485 interfaces
  - → Slots for Bluetooth module and HMS networks, as well as SD card
- Remote Ready

Control Remote

- Remote control via secure server
- System monitoring via PC or mobile device at any time and everywhere
- (Professional) remote servicing by Reflex Customer Service
- Reflex Remote Portal with intuitive user interface
- Simple management of multiple installations
- Visualisation of all parameters
- Diagrams for run-time monitoring
- Alarm messages via e-mail or messaging
- User-provided Internet or GSM connection
- Factory-installed or retrofitting, independent of Touch or Basic

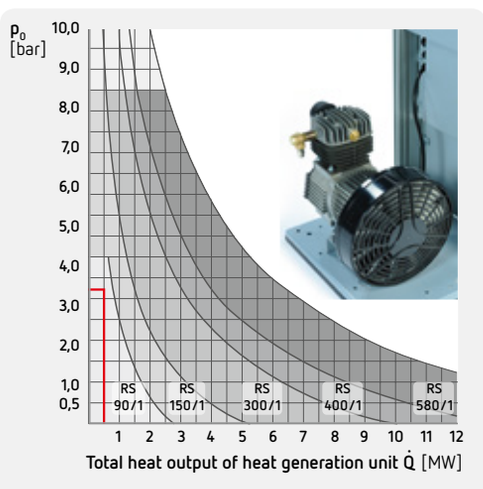
Theoretical principles

Reflexomat

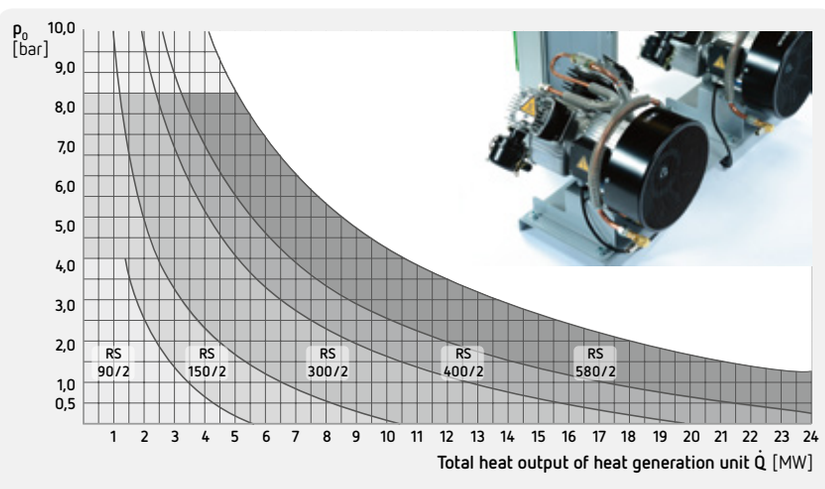


Reflexomat Quick Selection

Reflexomat with one compressor



Reflexomat with two compressors



Heat generator capacity	Q	= 500 kW
Water content	V_A	= 5,000 litres
Rated temperature	T	= 70/50°C
Static height	H_{st}	= 30 m
Expansion coefficient	n	= 0.0228

$$p_0 \geq \frac{H_{ST}[m]}{10} \text{ bar} + 0.2 \text{ bar}$$

$$p_0 \geq \frac{30}{10} \text{ bar} + 0.2 \text{ bar} = 3.2 \text{ bar}$$

$$V_n \geq V_A \times 0.031\ (70°C)$$

$$V_n \geq V_A \times 0.031\ (70°C) = 155 \text{ litres}$$

Selected:

Control unit	RS 90/1
Expansion vessel	RG 200
SU operating valve	R 1x1

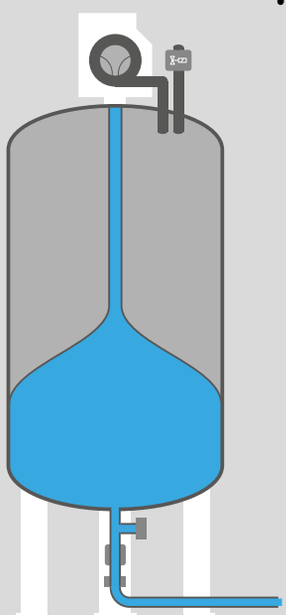
CE

Reflexomat, functional principle in heating

Low temperature

1

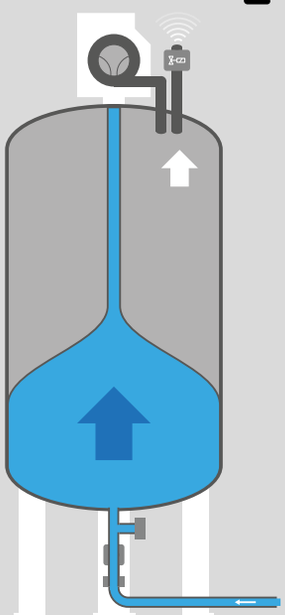
At lowest system temperature, Reflexomat receives the minimum water seal.



Temperature increase

2

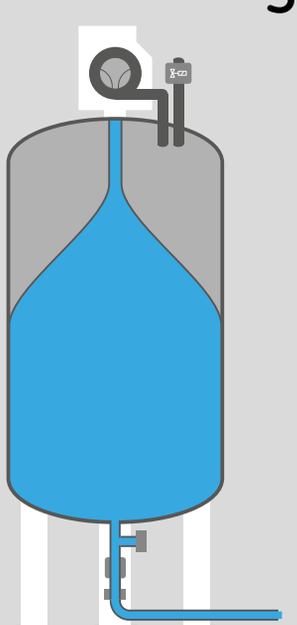
The controller immediately responds and opens the air solenoid valve when the system temperature and, therefore, the pressure rises. The expansion water can now enter the vessel.



Full capacity

3

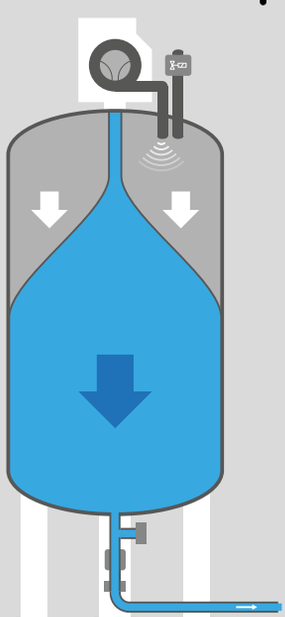
At maximum system temperature, the Reflexomat contains the entire expansion water and, therefore, the maximum filling level.



Cool down

4

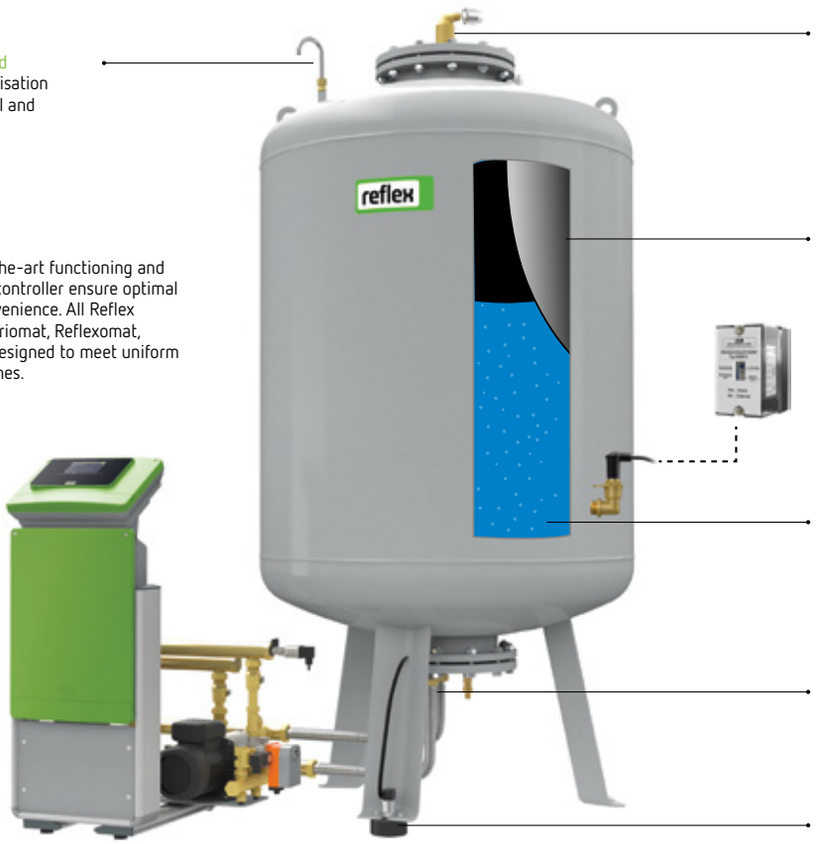
Cools the system; when the system pressure drops, the Reflexomat, with the help of the compressor, feeds the expansion water back into the system. Maximum pressure fluctuation is just 0.1 bar.



Video clips demonstrating the function of this and other products are available under **www.reflex.de/services/fachwissen-und-beitraege/videothek/**

Theoretical principles

Variomat



Expansion band
Pressure equalisation between vessel and atmosphere

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.

Exvoid T
Air separator with check valve

Bladder
Separates air from water, thereby protecting the system water before the air enters

MBM II bladder rupture monitor

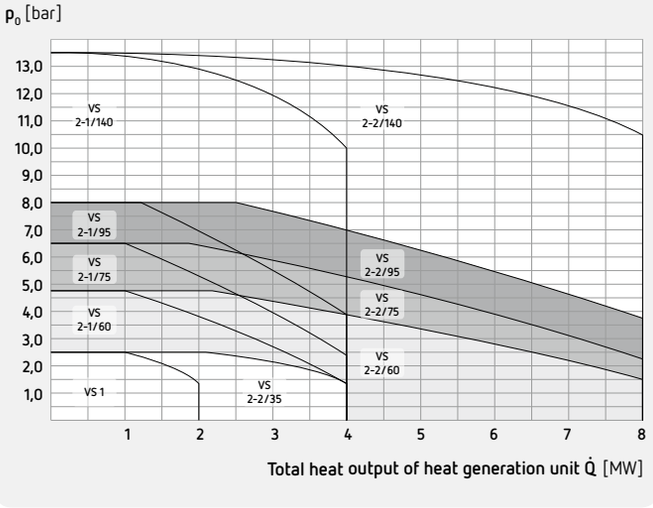
The pressure expansion relief at atmospheric pressure results in the deaeration of the expansion water

Flexible connection kit
for the expansion line is pre-requisite for the proper operation of the level control

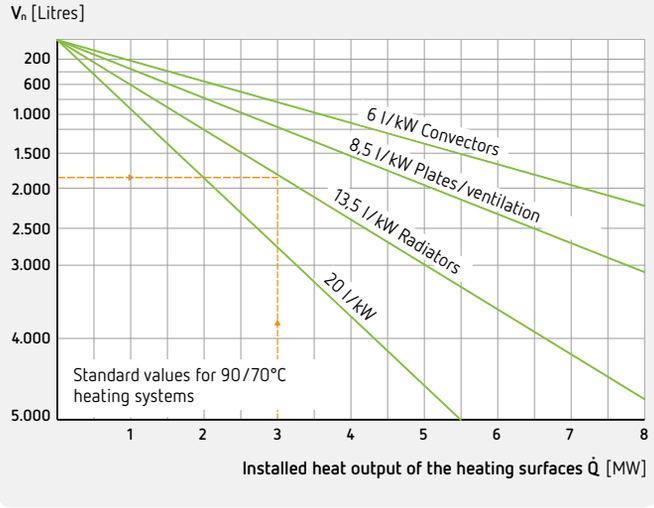
The pressure cell
(level measurement) enables the determination of the vessel fill level

Variomat Quick Selection

Range of Variomat control units



Range of Variomat vessels

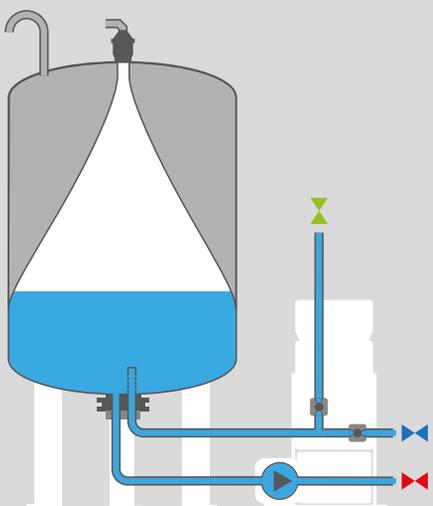


CE

Variomat, functional principle in heating

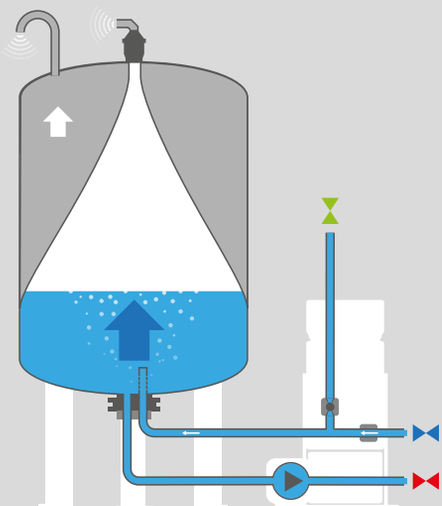
Low temperature 1

At lowest system temperature, Variomat receives the minimum water seal.



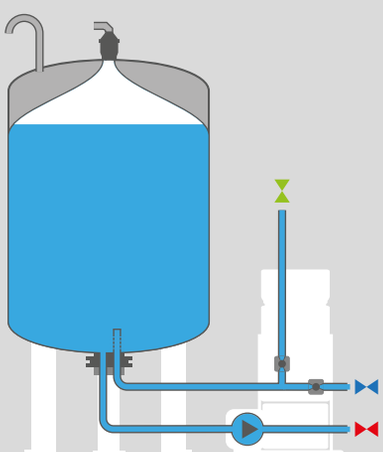
Temperature increase 2

The controller immediately responds and opens the overflow when the system temperature and, therefore, the pressure rises. Expansion water flows into the de-pressurised vessel and is degassed due the drop in pressure.



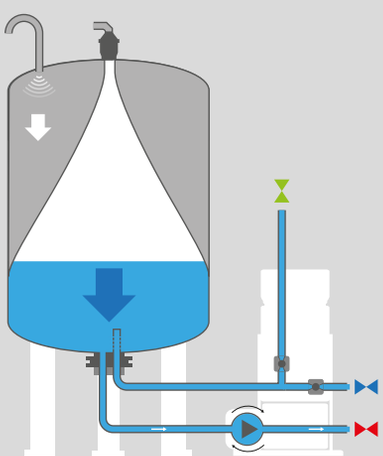
Full capacity 3

At maximum system temperature, the Variomat contains the entire expansion water and, therefore, the maximum filling level.



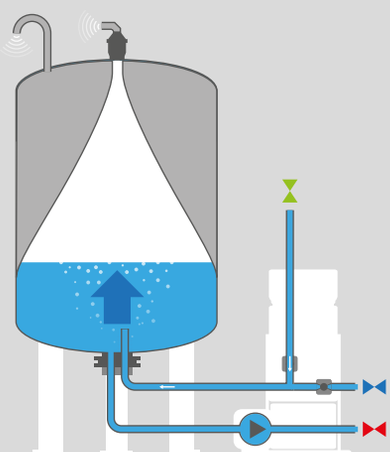
Cool down 4

Cools the system; when the system pressure drops, the Variomat, with the help of the compressor, feeds the expansion water back into the system. Maximum pressure fluctuation is just 0.2 bar.



Water make-up 5

The Variomat automatically opens the water make-up valve to offset the water loss when the water level in the vessel drops below the defined target value.

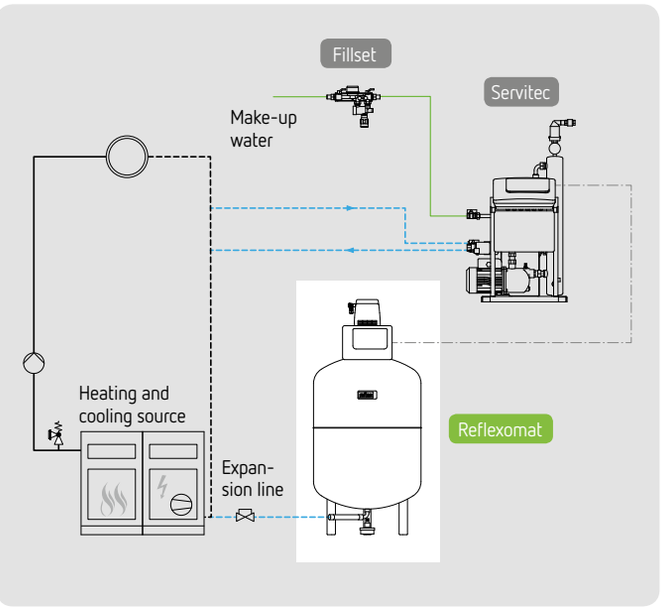


Video clips demonstrating the function of this and other products are available under **www.reflex.de/services/fachwissen-und-beitraege/videothek/**

Reflexomat

Reflexomat Silent Compact

Reflexomat Compact



Reflexomat in combination with Servitec water make-up and degassing

Technical Features

- Compressor-controlled pressurisation system in compact design for heating- and cooling-water systems
- Approval according to Pressure Equipment Directive 97/23/EC
- Diaphragm according to DIN EN 13831
- Degree of protection IP 54
- Operating pressure 6 bar
- Supply temperature 120°C
- Power supply 230 V
- Operating temperature 70°C
- Permissible ambient temperature 0–45°C
- Control Basic controller, common fault output and RS-485 interface to the internal communication
- Automatic water make-up with Fillvalve possible
- Max. permissible system temperature 120°C

Fillvalve

+ Solenoid valve ball valve
+ For automatic water make-up with Reflexomat

Control Remote

+ Remote servicing by Reflex Service
  → Reflex Remote Portal with intuitive user interface
+ Simple management of multiple installations

CE

Reflexomat Silent Compact

	Type	Art. No.	Material group	Electric power [kW]	Ø D [mm]	Height H [mm]	Height h [mm]	Connection A	Weight [kg]
6 bar 70°C	RSC 200	8800200	31	0,75	634	1.238	132	G 1"	52,0
	RSC 300	8800300	31	0,76	634	1.538	133	G 1"	69,0
	RSC 400	8800400	31	0,77	740	1.522	120	G 1"	80,0
	RSC 500	8800500	31	0,78	740	1.741	120	G 1"	93,0

Reflexomat Silent Compact Accessories

Type	Art. No.	WG	Weight [kg]
Connection set 1"	9119204	80	0.9
Reflexomat Compact Commissioning	7945600	95	-
Fillvalve for automatic Reflexomat water make-up	7858300	35	0.9
Reflex wall-hung holder for Basic controller and 90° module	8894500	86	-
Wall mounting console for compressor and Basic controller	7881900	35	4.5
Control Remote			
Remote Box	8910800	38	0.3
User fee	8910810	38	-
Maintanance contract	8910805	38	-

See page 55 for more optional accessories

Reflexomat control units

Reflexomat Control Basic

Reflexomat Control Touch

Technical Features

- Compressor-controlled pressurisation system for heating- and cooling-water systems
- Supply temperature 120°C
- Operating temperature 70°C
- Permissible ambient temperature 0–45°C
- Degree of protection IP 54
- Power supply 230 V or 400 V
- Common fault output and RS 485 interface to the internal communication
- Control Touch: graphic user interface, continuous display of operating parameters, comprehensive interfaces, for example, management system connection, remote monitoring and system expansion

Combination matrix

Reflexomat = RS control unit + RG primary vessel + Accessories

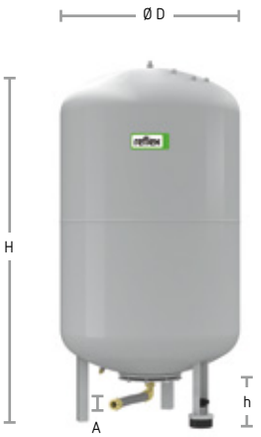
CE

Reflexomat control units

Type	Art. No.	Material group	Electric connection	Electric power [kW]	Height H [mm]	Width B [mm]	Depth T [mm]	Weight [kg]
RS control unit with 1 compressor								
Control Basic								
RS 90/1 for installation on vessel	8880111	33	230 V / 50 Hz	0.75	415	395	520	21.0
RS 90/1 stand alone unit	8880211	33	230 V / 50 Hz	0.75	690	395	345	25.0
Control Touch								
RS 90/1 T	8880210	33	230 V / 50 Hz	0.75	920	395	345	32.0
RS 150/1	8880311	33	400 V / 50 Hz	1.10	920	395	600	45.0
RS 300/1	8880411	33	400 V / 50 Hz	2.20	920	395	700	48.0
RS 400/1	8880511	33	400 V / 50 Hz	2.40	920	395	700	62.0
RS 580/1	8880611	33	400 V / 50 Hz	3.00	920	395	700	102.0
RS control unit with 2 compressors								
Control Touch								
RS 90/2	8882100	33	400 V / 50 Hz	1.50	920	1,225	800	45.0
RS 150/2	8883100	33	400 V / 50 Hz	2.20	920	1,225	800	60.0
RS 300/2	8884100	33	400 V / 50 Hz	4.40	920	1,225	800	86.0
RS 400/2	8885100	33	400 V / 50 Hz	4.80	920	1,225	800	118.0
RS 580/2	8886100	33	400 V / 50 Hz	6.00	920	1,225	800	196.1
RS controller without compressor, for user supplied compressed air*								
Control Basic								
Controller for installation on vessel	8881100	33	230 V / 50 Hz	-	415	395	520	15.0
Controller stand alone unit	8881105	33	230 V / 50 Hz	-	690	395	345	19.0
Control Touch								
Controller stand alone unit	8881400	33	230 V / 50 Hz	-	920	395	600	29.0

* - 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

Reflexomat vessels



RG 500

RG 1000

Technical Features

- Replaceable bladder according to DIN EN 13831
- Approval according to Pressure Equipment Directive 97/23/EC
- Permissible operating temperature 70°C
- Max. permissible system temperature 120°C

I/O modules

+ Two additional analogue outputs for controlling pressure and level
+ Six free-programmable digital inputs
+ Six free-programmable floating outputs

Busmodules

+ For data exchange between controller and building management system

Master/Slave

+ SoftwareTool
+ For the operation of up to 10 Reflexomat units in a hydraulic network at up to 1,000 m distance

Control Remote

+ Remote servicing by Reflex Service
  → Reflex Remote Portal with intuitive user interface
+ Simple management of multiple installations

MBM II as bladder rupture detector

+ Signalisation for bladder rupture in Reflexomat units
+ Comprises an electrode relay and an electrode (factory-installed)
+ Power supply 230 V/50 Hz
+ Floating relay output (changeover)
+ Supplied only with a vessel

CE

Reflexomat vessels

	Primary vessels	Art. No.	Material group	Height h [mm]	Secondary vessels	Art. No.	Material group	Height h [mm]	Ø D [mm]	Height H [mm]	HG* [mm]	Connection A	Weight [kg]
6 bar 70°C	RG 200	8799100	30	115	RF 200	8799100	30	155	634	970	1,350	G 1"	42.8
	RG 300	8799200	30	115	RF 300	8799200	30	155	634	1,270	1,650	G 1"	60.7
	RG 400	8799300	30	100	RF 400	8799300	30	140	740	1,255	1,640	G 1"	69.4
	RG 500	8799400	30	100	RF 500	8799400	30	140	740	1,475	1,860	G 1"	78.7
	RG 600	8799500	30	100	RF 600	8799500	30	140	740	1,720	2,110	G 1"	90.1
	RG 800	8799600	30	100	RF 800	8799600	30	140	740	2,185	-	G 1"	110.3
	RG 1000	8650105	32	195	RF 1000	8650105	32	305	1.000	2,025	-	DN65/PN6	308.6
	RG 1500	8650305	32	185	RF 1500	8650305	32	305	1,200	2,025	-	DN65/PN6	328.0
	RG 2000	8650405	32	185	RF 2000	8650405	32	305	1,200	2,480	-	DN65/PN6	380.0
	RG 3000	8650605	32	220	RF 3000	8650605	32	334	1,500	2,480	-	DN65/PN6	795.0
	RG 4000	8650705	32	220	RF 4000	8650705	32	334	1,500	3,065	-	DN65/PN6	1,100.0
	RG 5000	8650805	32	220	RF 5000	8650805	32	334	1,500	3,590	-	DN65/PN6	1,115.0
10 bar 70°C	RG 350	8654000	30	190	RF 350	8654000	30	190	750	1,340	-	DN40/PN16	230.0
	RG 500	8654100	30	190	RF 500	8654100	30	190	750	1,600	-	DN40/PN16	275.0
	RG 750	8654200	30	180	RF 750	8654200	30	180	750	2,185	-	DN50/PN16	345.0
	RG 1000	8651005	32	165	RF 1000	8651005	32	285	1.000	2,065	-	DN65/PN16	580.0
	RG 1500	8651205	32	165	RF 1500	8651205	32	285	1,200	2,055	-	DN65/PN16	546.0
	RG 2000	8651305	32	165	RF 2000	8651305	32	285	1,200	2,515	-	DN65/PN16	485.0
	RG 3000	8651505	32	195	RF 3000	8651505	32	310	1,500	2,520	-	DN65/PN16	954.0
	RG 4000	8651605	32	195	RF 4000	8651605	32	310	1,500	3,199	-	DN65/PN16	1,192.0
	RG 5000	8651705	32	195	RF 5000	8651705	32	310	1,500	3,630	-	DN65/PN16	1,286.0

Reflexomat Accessories

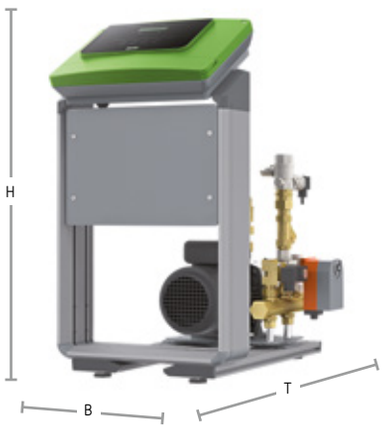
Type	Art. No.	Material group	Weight [kg]
Master/Slave			
Master-Slave Connect software control	7859000	35	0,1
I/O module			
I/O module Reflexomat	8858405	35	1,0
Bus module			
Lonworks Digital	8860000	86	1,5
Lonworks	8860100	86	1,9
Profibus-DP	8860200	86	1,9
Ethernet	8860300	86	1,9
Modbus RTU for Control Touch	9125592	86	0,4
Profibus DP for Control Touch	9118042	86	0,4
BACnet-IP for Control Touch	8860500	86	0,4
BACnet MS/TP for Control Touch	8860600	86	0,4
Control Remote			
Remote box	8910800	38	0,2
User fee	8910810	38	-
Remote servicing agreement	8910805	38	-

Type	Art. No.	Material group	Weight [kg]
Other accessories			
Reflex wall-hung holder for Basic controller and 90° module	8894500	86	1,0
Reflex wall-hung holder for Basic controller and 115° module	8894510	86	1,0
Wall mounting console for compressor and Basic controller	7881900	35	4,5
Fillvalve for automatic Reflexomat water make-up	7858300	80	1,0
Bladder rupture detector for wall mounting	7857700	86	0,2
Commissioning			
Reflexomat with one compressor	7945600	95	-
Reflexomat with two compressors	7945630	95	-

*HG is the height including mounted control unit

Variomat

Variomat control units



Variomat VS 1

Variomat VS 2-1 60

Variomat VS 2-2 95

Technical Features

- Approval according to Pressure Equipment Directive 97/23/EC
- Variomat controller VS 1 with Control Basic
- From Variomat controller VS 2 with Control Touch and softstart
- Permissible supply temperature 120°C
- Permissible operating temperature 70°C
- Permissible ambient temperature 0–45°C
- Sound level approx. 55 dB
- Degree of protection IP 54
- Water make-up connection Rp ½"
- Pump/overflow valve connection Rp 1" / Rp 1"
- Common fault output and RS-485 interface to the internal communication

Range of expansion lines

Expansion lines	DN 25 1"	DN 32 1¼"	DN 40 1½"	DN 50 2	DN 65	DN 80	DN 100
Q̇/kW Length ≤ 10 m	2.100	3.600	4.800	7.500	14.000	19.000	29.000
Q̇/kW Length > 10 m ≤ 30 m	1.400	2.500	3.200	5.000	9.500	13.000	20.000

If the length of the expansion line is > 10 m, we recommend selecting the nominal diameter one dimension larger.

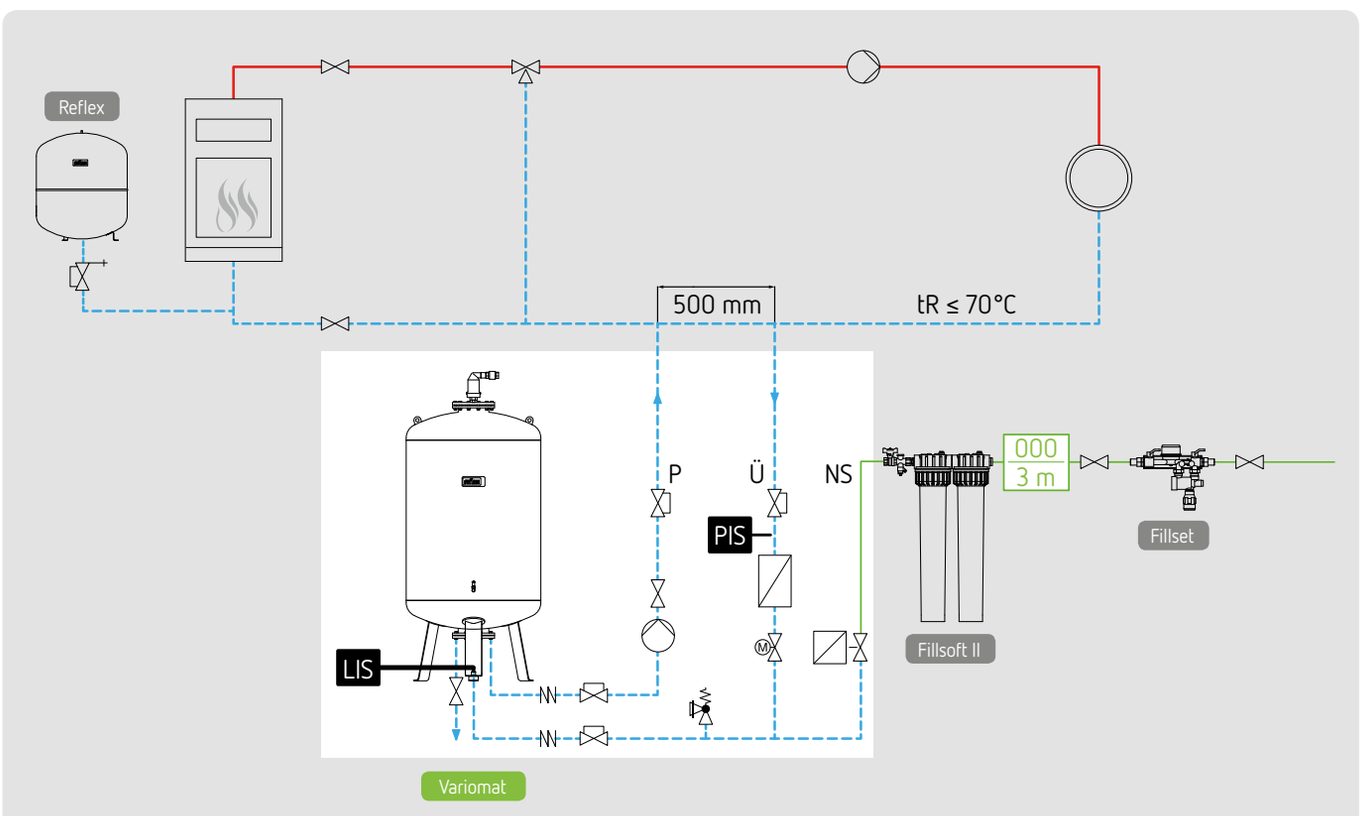
Combination matrix

Variomat = VS control unit + VG primary vessel + Connection set + Accessories

CE

Variomat control units

	Type	Art. No.	Material group	Elect. connection	Electric power [kW]	p_0 [bar]	Height H [mm]	Width B [mm]	Depth T [mm]	Connection A	Weight [kg]
	Control unit with 1 pump										
	Control Basic										
6 bar 70°C	VS 1	8910100	38	230 V / 50 Hz	0.7	≤ 2.5	680	530	580	2 x G 1"	25
	Control Touch										
10 bar 70°C	VS 2-1/35	8910110	38	230V / 50Hz	0,8	2,5	921	470	572	2 x G 1"	30,0
	VS 2-1/60	8910200	38	230V / 50Hz	1,1	4,8	921	470	572	2 x G 1"	36,9
	VS 2-1/75	8910300	38	230V / 50Hz	1,1	6,5	921	470	588	2 x G 1"	49,9
	VS 2-1/95	8910400	38	230V / 50Hz	1,1	8,0	921	470	588	2 x G 1"	51,4
16 bar 70°C	VS 1-1/140	8910500	38	400V /50Hz	2,2	13,0	964	470	557	2 x G 1"	47,0
	Control unit with 2 pumps										
	Control Touch										
10 bar 70°C	VS 2-2/35	8911100	38	230V / 50Hz	1,5	2,5	921	750	799	2 x G 1 ¼"	57,5
	VS 2-2/60	8911200	38	230V / 50Hz	2,2	4,8	921	750	799	2 x G 1 ¼"	61,1
	VS 2-2/75	8911300	38	230V /50Hz	2,2	6,5	921	750	706	2 x G 1 ¼"	89,0
	VS 2-2/95	8911400	38	230V / 50Hz	2,2	8,0	921	750	706	2 x G 1 ¼"	92,0
16 bar 70°C	VS 1-2/140	8911500	38	400V / 50Hz	2,2	13,0	964	750	698	2 x G 1 ¼"	85,0



*Note: A diaphragm pressure expansion vessel must be integrated as a control vessel (such as a single boiler safety device in this case).

Variomat vessels

Variomat VG 500

Variomat VG 1000

Technical Features

- Replaceable bladder according to DIN EN 13831
- Approval according to Pressure Equipment Directive 97/23/EC
- Permissible operating temperature 70°C
- Max. permissible system temperature 120°C

Heat insulation for Variomat vessels

Variomat VW

Technical Features

- Thermal insulation for Variomat vessels
- consisting of thick soft foam
- Insulation thickness for all insulation: 50 mm

CE

Variomat vessels

6 bar 70°C

Primary vessels	Art. No.	Material group	Secondary vessels	Art. No.	Material group	Ø D [mm]	Height H [mm]	Height h [mm]	Connection A	Weight [kg]
VG 200	8600011	36	VF 200	8600011	36	634	1,057	146	G 1"	37.0
VG 300	8600111	36	VF 300	8600111	36	634	1,357	146	G 1"	54.7
VG 400	8600211	36	VF 400	8600211	36	740	1,344	133	G 1"	69.9
VG 500	8600311	36	VF 500	8600311	36	740	1,564	133	G 1"	79.9
VG 600	8600411	36	VF 600	8600411	36	740	1,807	133	G 1"	89.4
VG 800	8600511	36	VF 800	8600511	36	740	2,188	133	G 1"	110.2
VG 1000	8600611	36	VF 1000	8600611	36	740	2,683	133	G 1"	156.0
VG 1000	8600705	37	VF 1000	8600705	37	1,000	2,127	348	G 1"	270.0
VG 1500	8600905	37	VF 1500	8600905	37	1,200	2,127	346	G 1"	320.0
VG 2000	8601005	37	VF 2000	8601005	37	1,200	2,587	346	G 1"	400.0
VG 3000	8601205	37	VF 3000	8601205	37	1,500	2,588	375	G 1"	740.0
VG 4000	8601305	37	VF 4000	8601305	37	1,500	3,160	375	G 1"	820.0
VG 5000	8601405	37	VF 5000	8601405	37	1,500	3,695	375	G 1"	980.0

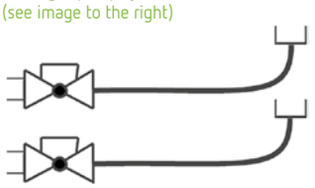
Heat insulation for Variomat vessels

Type	Art. No.	Material group	Ø D [mm]	Weight [kg]
VW 200 l	7985700	39	634	3.0
VW 300 l	7986000	39	634	3.5
VW 400 l	7995600	39	740	4.5
VW 500 l	7983900	39	740	5.5
VW 600 l	7995700	39	740	6.0
VW 800 l	7993800	39	740	8.0
VW 1000 l	7993900	39	740	8.0
VW 1000 l	7986800	39	1,000	9.0
VW 1500 l	7987000	39	1,200	10.6
VW 2000 l	7987100	39	1,200	13.0
VW 3000 l	7993200	39	1,500	15.0
VW 4000 l	7993300	39	1,500	17.0
VW 5000 l	7993400	39	1,500	21.8

Variomat Accessories

Variomat connection set

for single-pump system
(see image to the right)



2 connecting hoses
G 1" x G 1" with secure isolation

for two-pump system
(see image to the right)

2 connecting hoses
G 1¼" x G 1"

Variomat connections*

I/O modules

+ Two additional analogue outputs for controlling pressure and level required only for Control Basic
+ Six free-programmable digital inputs
+ Six free-programmable floating outputs

Busmodules

+ For data exchange between controller (RS485) and building management system

Master/Slave

+ SoftwareTool
+ For the operation of up to 10 Variomat units in a hydraulic network at up to 1,000 m distance

Control Remote

+ Remote servicing by Reflex Service
  → Reflex Remote Portal with intuitive user interface
+ Simple management of multiple installations

Safecontrol

+ Reliable water make-up for special applications
+ Rp ½"
+ Product no. 9119352, as a retrofit

MBM II as bladder rupture detector

+ Signalisation for bladder rupture in Variomat units
+ Comprises an electrode relay and an electrode (factory-installed)
+ Power supply 230 V/50 Hz
+ Floating relay output (changeover)
+ Supplied only with a vessel

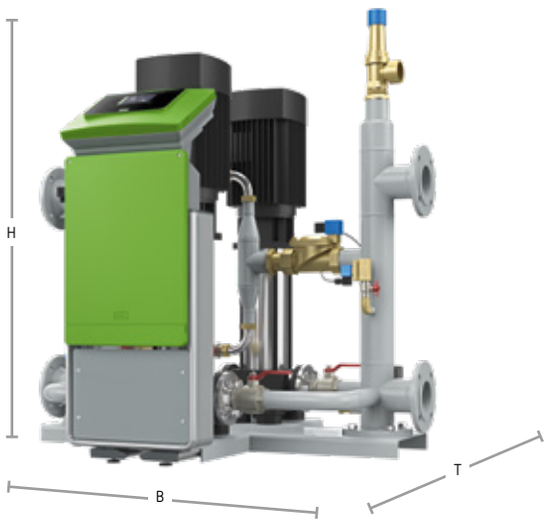
*Note: Variomat secondary vessels include a connection set for connection to the basic vessel in the scope of delivery.

CE

Variomat Accessories

Type	Art. No.	Material group	Weight [kg]
Variomat connection set for single-pump systems			
Connection set, primary vessel Ø = 480 – 740 mm	6940100	39	1.6
Connection set, primary vessel Ø = 1,000 – 1,500 mm	6940200	39	1.9
Variomat connection set for two-pump systems			
Connection set, primary vessel Ø = 480 – 740 mm	6940300	39	1.9
Connection set, primary vessel Ø = 1,000 – 1,500 mm	6940400	39	2.2
Master/Slave			
Variomat Master/Slave	7859100	39	0.1
I/O module			
I/O module Variomat	8997705	39	1.0
Busmodules			
LonWorks Digital	8860000	86	1.5
LonWorks	8860100	86	1.9
Profibus-DP	8860200	86	1.9
Ethernet	8860300	86	1.9
Modbus RTU for Control Touch	9125592	86	0.4
Profibus DP for Control Touch	9118042	86	0.4
BACnet-IP for Control Touch	8860500	86	0.4
BACnet MS/TP for Control Touch	8860600	86	0.4
Control Remote			
Remote box	8910800	38	0.3
User fee	8910810	38	-
Maintenance contract	8910805	38	-
Other accessories			
Safecontrol Rp ½" retrofit kit	9119352	86	0.9
Bladder rupture detector for wall mounting	7857700	86	0.2
Commissioning			
Single compressor unit / single pump unit	7945600	95	-
Dual compressor system / dual pump system	7945630	95	-

Variomat Giga control units



Variomat Giga

Technical Features

- Pump-controlled pressurisation system with integrated water make-up and degassing (RL → 70°C) for heating and cooling water systems
- With 2 pumps and 2 overflow valves
- Permissible gauge operating pressure 16 bar
- Permissible supply temperature 120°C
- Permissible operating temperature 70°C
- Sound level approx. 55 dB
- Pump connection DN 80 / PN 16
- Primary vessel connection DN 80 / PN 6
- Water make-up connection Rp ½
- Control Touch controller

Variomat Giga control units Quick Selection

Selection example

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

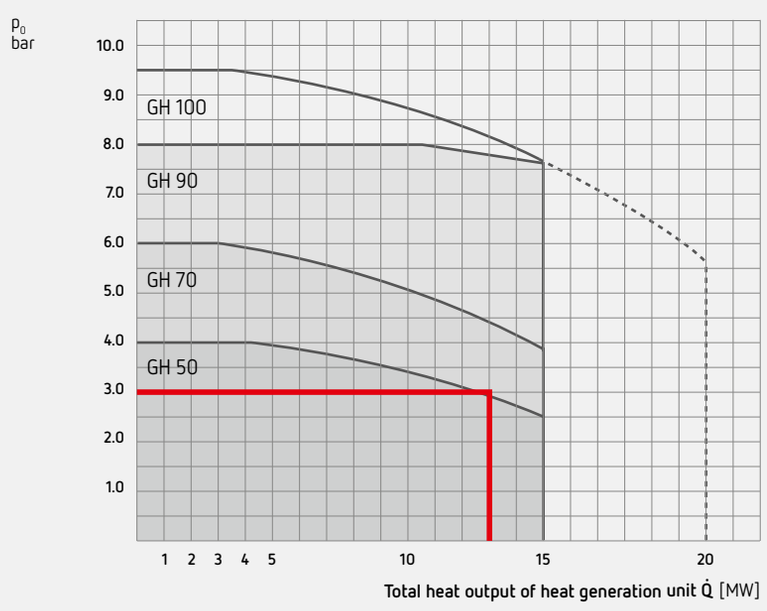
$$p_0 \geq \frac{H_{ST}[m]}{10}\ \text{bar} + 0.2\ \text{bar}$$

$$p_0 \geq \frac{30}{10}\ \text{bar} + 0.2\ \text{bar} = 3.0\ \text{bar}$$

Selected:

Control unit	GS 1,1
Expansion vessel	GH 50

Only 50% of the nominal heat capacity must be used for selecting the control unit for cooling water systems up to 30°C.



CE

Variomat Giga control units

Type	Art. No.	WG	Voltage	Electric power [kW]	For hydraulic module	Height H [mm]	Width B [mm]	Depth T [mm]	p_0 [bar]	Weight [kg]
Control modules										
GS 1,1	8912500	38	230V / 50Hz	2 x 1,1	GH 50 / GH 70	921	380	477	-	8,0
GS 3	8912600	38	400V / 50Hz	2 x 3	GH 90 / GH 100	921	380	477	-	8,0
Hydraulic module										
GH 50	8931000	38	230V / 50Hz	2 x 1,1	-	1.194	1.168	830	4,0	203,0
GH 70	8932000	38	230V / 50Hz	2 x 1,1	-	1.194	1.168	830	6,0	206,0
GH 90	8931400	38	400V / 50Hz	2 x 3,0	-	1.194	1.168	830	8,0	270,0
GH 100	8931200	38	400V / 50Hz	2 x 3,0	-	1.194	1.168	830	9,5	275,0

16 bar 70°C

Variomat Giga vessels

GG primary vessel

GF secondary vessel

Technical Features

- Replaceable bladder according to DIN EN 13831
- Approval according to Pressure Equipment Directive 97/23/EC
- Permissible operating temperature 70°C
- Max. permissible system temperature 120°C

I/O modules

+ Two additional analogue outputs for controlling pressure and level
+ Six free-programmable digital inputs
+ Six free-programmable floating outputs

Busmodules

+ For data exchange between controller and building management system

Control Remote

+ Remote servicing by Reflex Service
  → Reflex Remote Portal with intuitive user interface
+ Simple management of multiple installations

MBM II as bladder rupture detector

+ Signalisation for bladder rupture in Variomat Giga units (only in conjunction with a vessel with MBM bushing)
+ Comprises an electrode relay and an electrode (factory-installed)
+ Power supply 230 V/50 Hz
+ Floating relay output (changeover)
+ Supplied only with a vessel

SV1 safety valve

+ For additional protection of GG and GF vessels at nominal heat capacity > 10.5 MW

CE

Variomat Giga vessels

Primary vessels	Art. No.	WG	Height h [mm]
GG 1000	8920105	37	285
GG 1500	8920305	37	285
GG 2000	8920405	37	285
GG 3000	8920605	37	314
GG 4000	8920705	37	314
GG 5000	8920805	37	314

Secondary vessels	Art. No.	WG	Height h1 [mm]
GF 1000	8920105	37	305
GF 1500	8920305	37	305
GF 2000	8920405	37	305
GF 3000	8920605	37	335
GF 4000	8920705	37	335
GF 5000	8920805	37	335

Ø D [mm]	Height H [mm]	Connection A	Weight [kg]
1.000	2.127	DN65/PN6	270,0
1.200	2.127	DN65/PN6	340,0
1.200	2.587	DN65/PN6	430,0
1.500	2.588	DN65/PN6	651,0
1.500	3.163	DN65/PN6	890,0
1.500	3.698	DN65/PN6	980,0

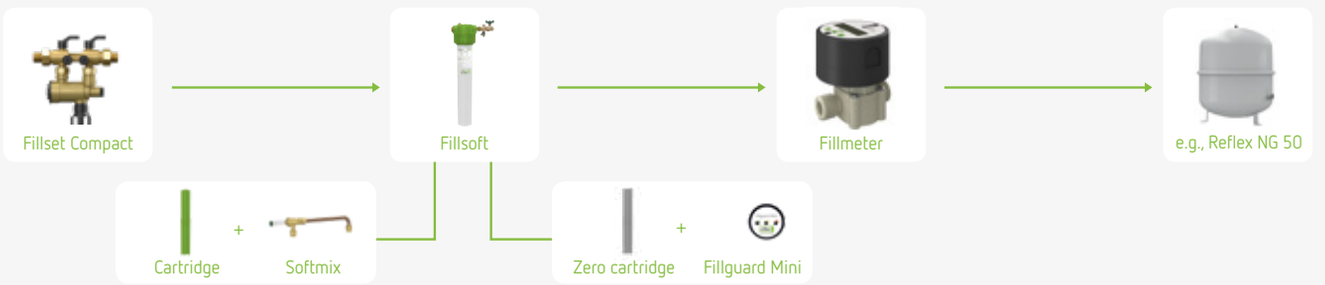
Variomat Giga Accessories

Type	Art. No.	Material group	Weight [kg]
Master/Slave			
Master-Slave Connect control	7859100	39	0.1
I/O module			
I/O module Variomat	8997705	39	1.0
Bus module			
LonWorks Digital	8860000	86	1.5
LonWorks	8860100	86	1.9
Profibus-DP	8860200	86	1.9
Ethernet	8860300	86	1.9
Modbus RTU for Control Touch	9125592	86	0.4
Profibus DP for Control Touch	9118042	86	0.4
BACnet-IP for Control Touch	8860500	86	0.4
BACnet MS/TP for Control Touch	8860600	86	0.4
Control Remote			
Remote box	8910800	38	0.3
User fee	8910810	38	-
Remote servicing agreement	8910805	38	-
Other accessories			
Safecontrol Rp ½" retrofit kit	9119352	86	0.9
Bladder rupture detector for wall mounting	7857700	86	0.2
SV1 safety valve	6942100	81	0.6
Commissioning			
Variomat Giga with two pumps	7945630	95	-

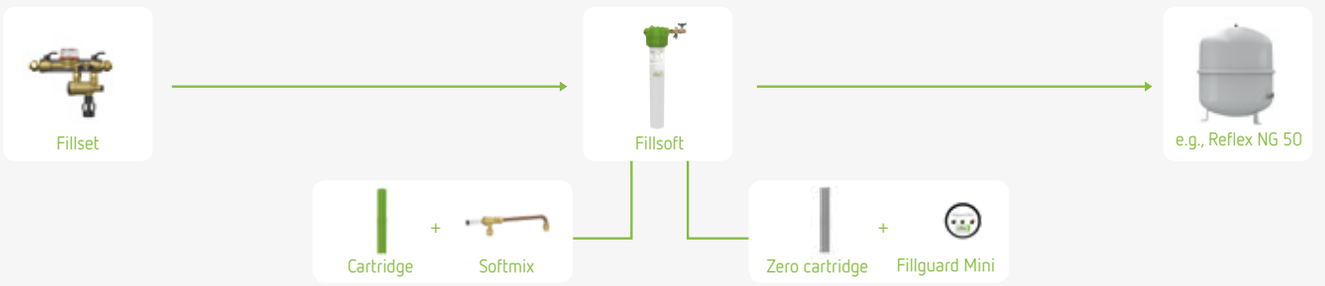
Water Make-Up Systems & Water Treatment

Manual water make-up

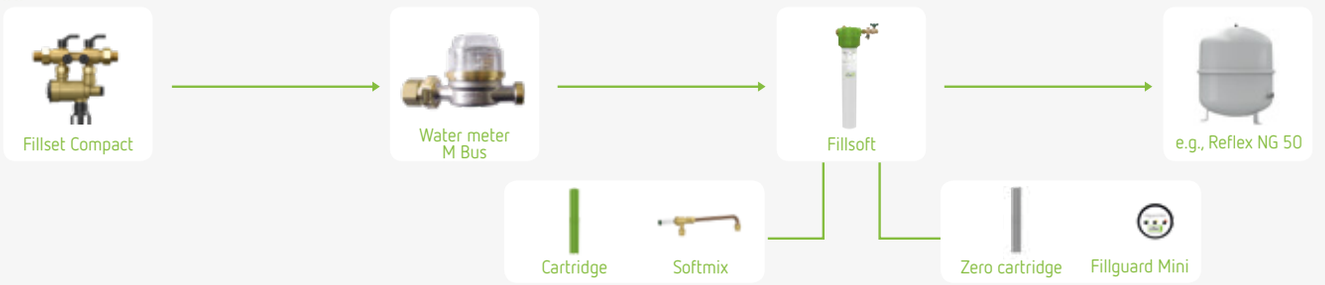
H01



H02

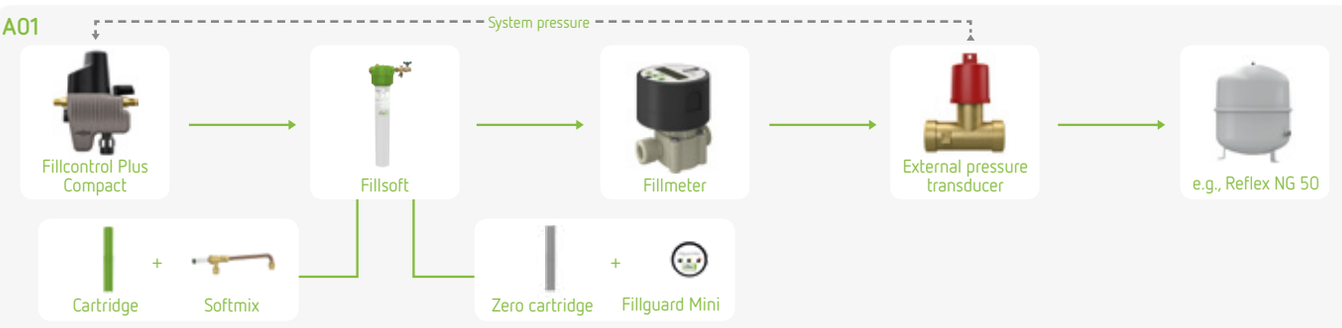


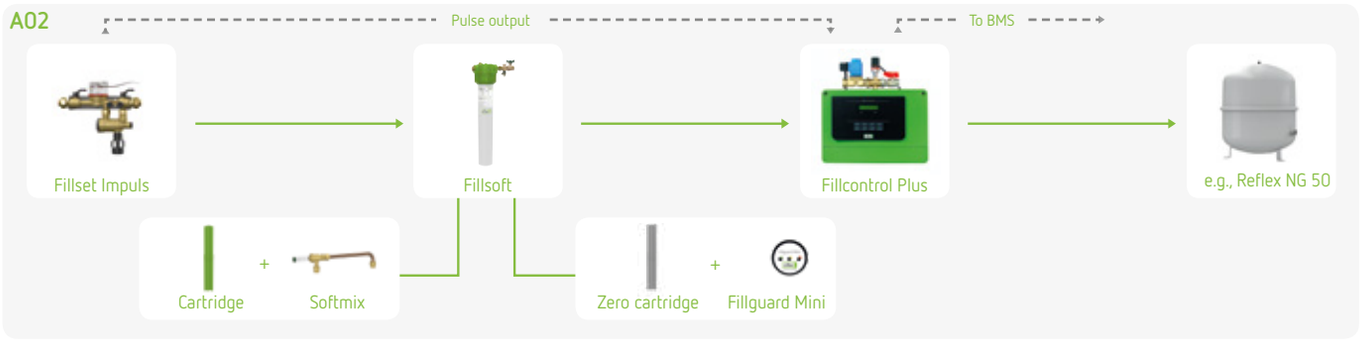
H03

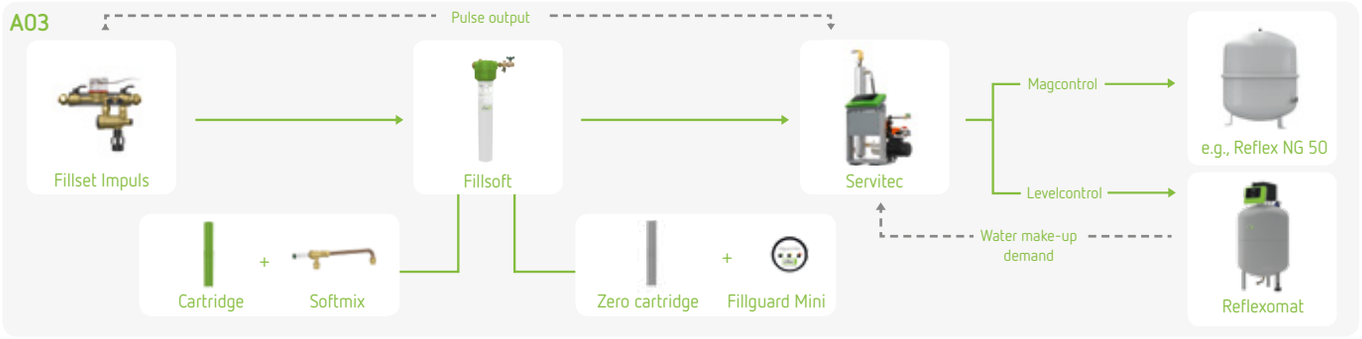


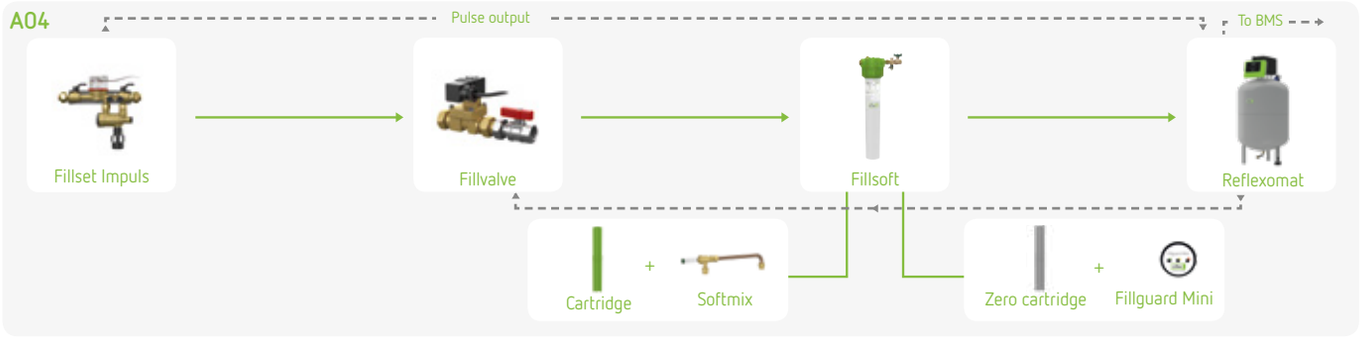
Automatic water make-up

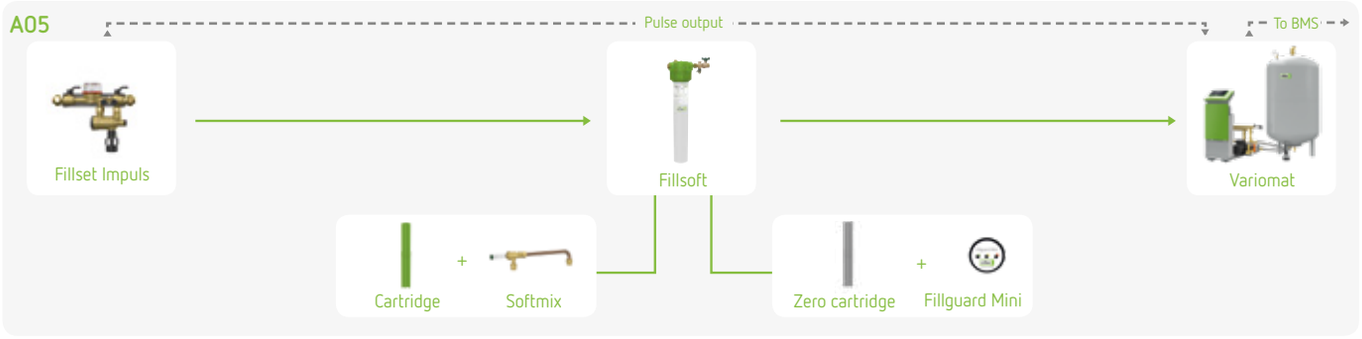
A01

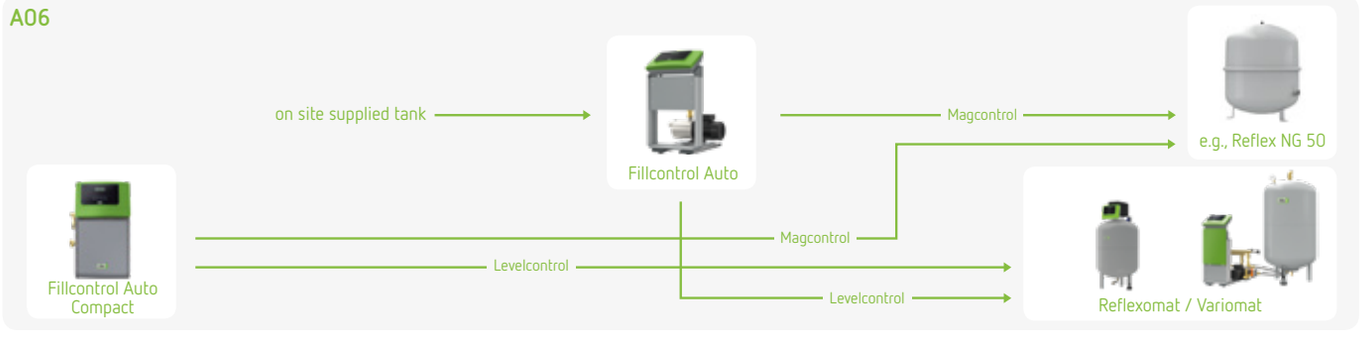



A02
Pulse output
To BMS
Fillset Impuls
Fillsoft
Fillcontrol Plus
e.g., Reflex NG 50
Cartridge
+
Softmix
Zero cartridge
+
Fillguard Mini


A03
Pulse output
Fillset Impuls
Fillsoft
Servitec
Magcontrol
Levelcontrol
e.g., Reflex NG 50
Reflexomat
Water make-up demand
Cartridge
+
Softmix
Zero cartridge
+
Fillguard Mini


A04
Pulse output
To BMS
Fillset Impuls
Fillvalve
Fillsoft
Reflexomat
Cartridge
+
Softmix
Zero cartridge
+
Fillguard Mini


A05
Pulse output
To BMS
Fillset Impuls
Fillsoft
Variomat
Cartridge
+
Softmix
Zero cartridge
+
Fillguard Mini


A06
on site supplied tank
Fillcontrol Auto
Magcontrol
e.g., Reflex NG 50
Fillcontrol Auto Compact
Magcontrol
Levelcontrol
Levelcontrol
Reflexomat / Variomat

Theoretical principles

Fillsoft water treatment system for make-up water

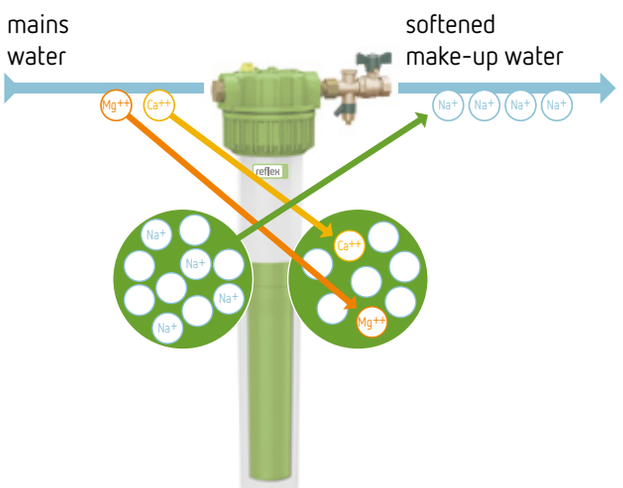
Continuously increasing heating surface loads are demanded on modern boilers. This increases the risk of deposits of calcium in particular. These deposits may reduce the capacity and may ultimately cause boiler destruction. When aluminium is used as material, the water should be desalinated as the potential for corrosion is higher with untreated water. To prevent corrosion, Reflex offers Fillsoft, a programme designed for treating filling and make-up water as required by the standards.

Reflex recommends to install Fillsoft in every water make-up system as it significantly contributes to facility reliability at little expense.

The core of Fillsoft is a pillar with a replaceable cartridge containing ions in synthetic resin beads. This pillar is equipped with connections for fresh water and filling or make-up water.
A shut-off ball valve with test valve at the water make-up side completes the structure.

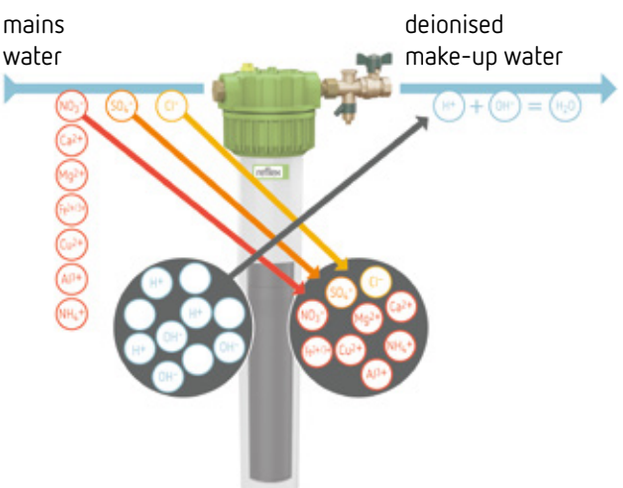
Softening

The softening process follows the principle of cation replacement. Hard fresh water is transported through the exchanger pillar. The magnesium and calcium ion hardening constituents are exchanged with the sodium ions of the resin beads, which process softens the water. The cartridge must be replaced when the sodium ion capacity is exhausted.



Deionisation

Deionisation uses the principle of ion exchange of cations and anions. Fillsoft Zero offers the option to de-mineralise filling and make-up water. All minerals are absorbed through the cartridge. The cartridge capacity decreases and must be replaced when conductivity and the ion number increases.



Simple capacity monitoring for “Fillsoft Zero“

Fillguard Mini is a conductivity measuring cell for the capacity monitoring of “Fillsoft Zero“ deionisation. It is easily and quickly installed at the Fillsoft Zero cartridge head. An additional adapter is not required.

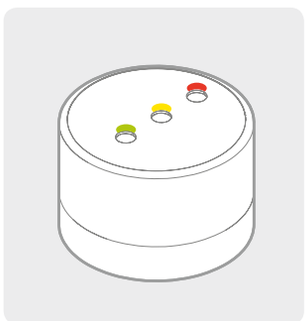
The three-level LED display sends out a signal once the ion exchanger is depleted. Thus it is guaranteed that only desalinated water flows into the heating system. Fillguard Mini is only suited for **“Fillsoft Zero“ deionisation**.

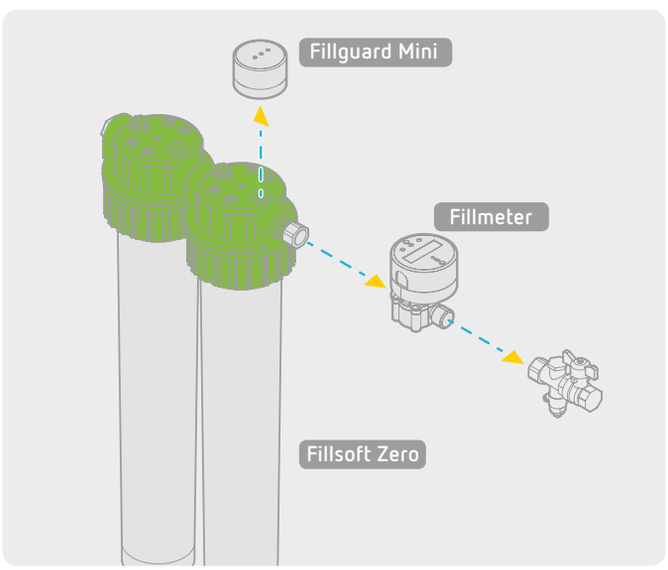
Immediately ready for use with Fillguard Mini

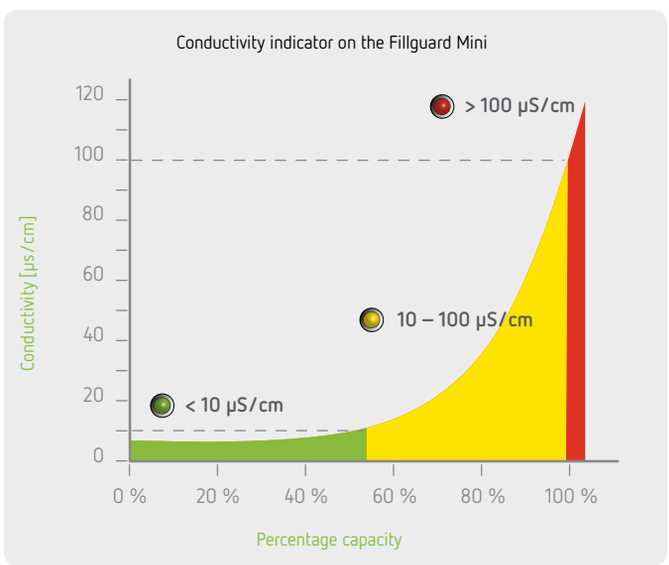
- The measuring cell is delivered as a fully functional device and is immediately ready for use.
- Fillguard Mini continuously measures the conductivity of make-up water.
- A display with three LEDs indicates the conductivity range and, depending on the required conductivity, the threshold value can be read at the LEDs.
- According to VDI 2035, any conductivity below 100 µS/cm is considered a low-salt operation.
- The cartridge should be replaced once conductivity is 100 µS/cm. At the latest after 18 months.
- The battery is designed for 10 years of operation.

Combination options

Fillsoft Zero + Fillmeter
Fillsoft Zero + Fillguard Mini
Fillsoft Zero + Fillmeter + Fillguard Mini

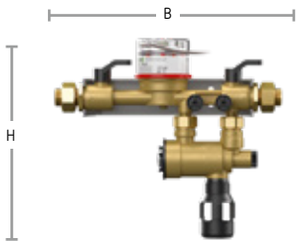






Fillset/Fillcontrol

Fillset

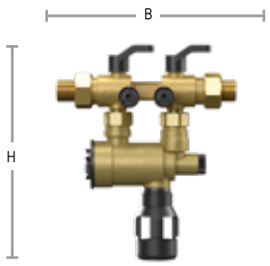


Fillset

Technical Features

- Connection assembly for water make-up systems according to DIN 1988 and DIN EN 1717
- For direct connection to drinking water systems
- With DVGW-tested system separator of Type BA
- Isolating fixtures at inlet and outlet
- Incl. standard or contact water meter and wall-hung holder
- Perm. gauge operating pressure 10 bar, perm. operating temperature 60°C

Fillset Compact

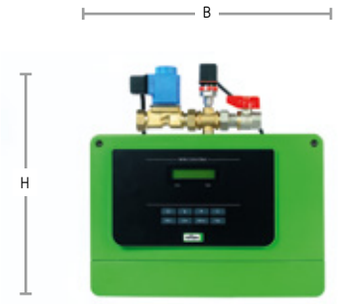


Fillset Compact

Technical Features

- Connection assembly for water make-up systems according to DIN 1988 and DIN EN 1717
- For direct connection to drinking water systems
- With DVGW-tested system separator of Type BA
- Isolating fixtures at inlet and outlet
- Without water meter
- Perm. gauge operating pressure 10 bar, perm. operating temperature 60°C

Fillcontrol Plus



Fillcontrol Plus

Technical Features

- For monitoring Expansion vessels and **automatic water make-up** of the specified supply pressure
- Incl. wall-hung holder and Control Basic control unit
- RS-485 interface, optional connection of bus and expansion modules
- Capacity monitoring of a Fillsoft water treatment system optional
- Connection voltage 230 V / 50 Hz
- Permissible maximum inlet pressure 10 bar
- Perm. gauge operating pressure 10 bar, perm. operating temperature 90°C

Fillcontrol Plus Compact

Fillcontrol Plus Compact

Fillcontrol Plus Compact Detail

Technical Features

- Compact **automatic water make-up station**, for systems with Expansion vessels according to DIN 1988 and DIN EN 1717
- With system separator of Type BA
- Controlled water make-up
- Connection voltage 230 V / 50 Hz
- Water make-up capacity approx. 0.5 m^3/h at $\Delta p = 1.5$ bar
- Permissible maximum inlet pressure 10 bar
- Permissible operating temperature 70°C

CE

Fillset

	Type	Art. No.	Material group	Width x Height [mm]	Minimum flow pressure	Volumetric flow rate parameter K_{VS}	Inlet/outlet connection	Weight [kg]
10 bar 60°C	Fillset with standard water meter	6811105	70	293 x 226	p_0+1,3 bar	0,8	R ½"/R ½"	1,7
	Fillset with contact water meter	6811205	70	293 x 226	p_0+1,3 bar	0,8	R ½"/R ½"	2,8

Fillset Compact

	Type	Art. No.	Material group	Width x Height [mm]	Minimum flow pressure	Volumetric flow rate parameter K_{VS}	Inlet/outlet connection	Weight [kg]
10 bar 60°C	Fillset Compact	6811305	70	175 x 212	p_0+1,3 bar	0,8	R ½"/R ½"	2,8
	Fillset Compact with water meter M-Bus	9115630	70	175 x 212	p_0+1,3 bar	0,8	R ½"/R ½"	2,8

Fillcontrol Plus

	Type	Art. No.	Material group	Width x Height [mm]	Minimum flow pressure	Volumetric flow rate parameter K_{VS}	Volumetric flow rate parameter K_{VS}	Inlet/outlet connection	Weight [kg]
10 bar 90°C	Fillcontrol Plus	8812100	70	292 x 340 x 270	p_0 + 1,3	0,7*	1,4	G ¾"/G ½"	2,5
	Fillcontrol Plus stainless steel	8812200	70	320 x 340 x 270	p_0 + 1,3	0,7*	1,4	G ¾"/G ½"	2,5

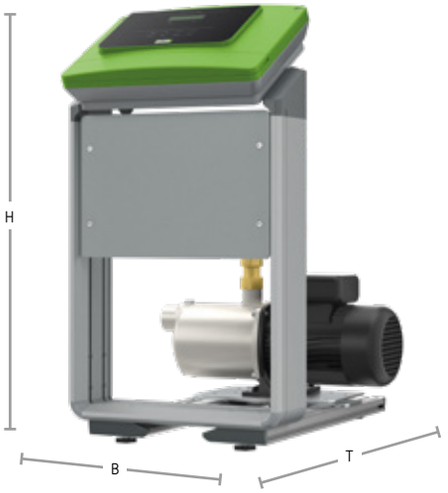
* in combination with Fillset

Fillcontrol Plus Compact

	Type	Art. No.	Material group	H x W x D [mm]	Minimum flow pressure	Outlet pressure	Inlet/outlet connection	Weight [kg]
10 bar 70°C	Fillcontrol Plus Compact	6811500	79	304 x 240 x 90	p_0 + 1,3	0,5–5,0	R ½"/R ½"	3,0
	Fillsoft external pressure transducer*	9112004	79	90 x 70 x 45	-	-	R ½"/R ½"	0,3

*Essential in combination with Fillsoft

Fillcontrol Auto



Fillcontrol Auto

Technical Features

- **Automatic** water make-up system with integrated pump
- Fillcontrol Auto for water make-up from drums or conditioning system for example
- 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
- Permissible gauge operating pressure 10 bar
- Maximum delivery pressure 5.5 bar
- Permissible operating temperature 30°C

Fillcontrol Auto Compact

Fillcontrol Auto Compact

Technical Features

- **Automatic** water make-up system with integrated pump
- Fillcontrol Auto Compact with built-in intermediate tank for system separation
- System equipped with Control Basic for easy operation
- RS-485 interface, optional connection of bus and expansion modules
- Including system separation according to DIN 1988 and DIN EN 1717
- Permissible maximum inlet pressure 10 bar
- Permissible gauge operating pressure 10 bar
- Maximum delivery pressure 8.5 bar
- Permissible operating temperature 30°C

CE

Fillcontrol Auto

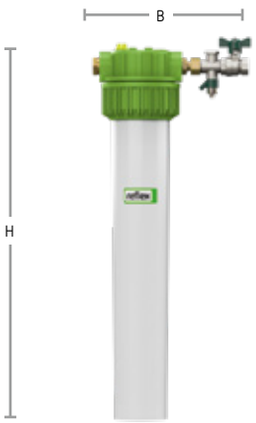
	Type	Art. No.	Material group	H x W x D [mm]	Delivery rate [m³/h]	Min. supply rate [l/h]	Heating connection	Tank drawing connection	Perm. feed pressure [bar]	Weight [kg]
10 bar 30°C	Fillcontrol Auto (suitable for glycol)	8812300	70	683 x 471 x 440	4,2	360	G 1"	G 1 1/4"	5,5	18,6

Fillcontrol Auto Compact

	Type	Art. No.	Material group	H x W x D [mm]	Delivery rate [m³/h]	Min. supply rate [l/h]	Connection Heating	Drinking water connection	Overflow connection	Max. supply pressure [bar]	Weight [kg]
10 bar 30°C	Fillcontrol Auto Compact	8688500	70	619 x 579 x 287	0,12–0,18	360	G ⅜"	G ⅜"	DN32/PN16	5,5	19,1

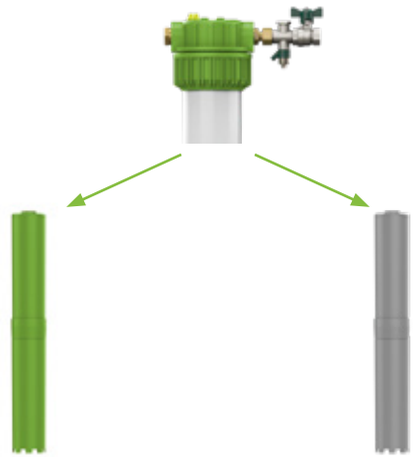
Fillsoft

Fillsoft



Fillsoft I casing

Fillsoft II casing



Fillsoft cartridge

Fillsoft Zero cartridge

Technical Features

- Water treatment cartridge for make-up of heating water acc. VDI 2035
- Fillsoft cartridge capacity, softening (green) 6,000 lx°dH
- Fillsoft cartridge capacity, deionisation (grey) 3,000 lx°dH
- Including monting materials
- Gauge operating pressure 8 bar
- Operating temperature 40 °C

Härtegrade für Heizungswasser

Group	Total heat capacity	Total hardness [°dH] as a function of the spec. system volume (system volume / lowest individual heating capacity)		
		< 20 l / kW	≥ 20 l / kW and < 50 l / kW	≥ 50 l / kW
1	< 50 kW	≤ 16.8°dH*	≤ 11.2 °dH	< 0.11°dH
2	50 kW to 200 kW	≤ 11.2°dH	≤ 18.4 °dH	< 0.11°dH
3	200 kW to 600 kW	≤ 8.4 °dH	≤ 0.11°dH	< 0.11°dH
4	> 600 kW	< 0.11°dH	< 0.11°dH	< 0.11°dH

* for closed-circuit water heaters and systems with electric heating elements

Softmix for softening

+ Mixing mechanism for Fillsoft softening

External pressure transducer

+ For use of Fillsoft in conjunction with Fillcontrol Plus Compact

Fillmeter

+ For automatic water make-up monitoring of Fillsoft for softening and deionisation
+ Acoustic signal when cartridge is exhausted
+ 230 V / 50 Hz

Fillguard Mini

+ Conductivity sensor for monitoring the Fillsoft Zero deionisation capacity

CE

Fillsoft

Fillsoft housing

Type	Art. No.	Material group	H x W [mm]	Cartridge capacity	Max. continuous flow [l/h]	Inlet/outlet connection	Perm. operating temperature [°C]	Permissible operating pressure	Weight [kg]
Fillsoft I	9125660	80	600 x 260	1	360	Rp ½" / Rp ½"	5–40	8.0 bar	1.9
Fillsoft II	9125661	32	600 x 380	2	360	Rp ½" / Rp ½"	5–40	8.0 bar	3.6

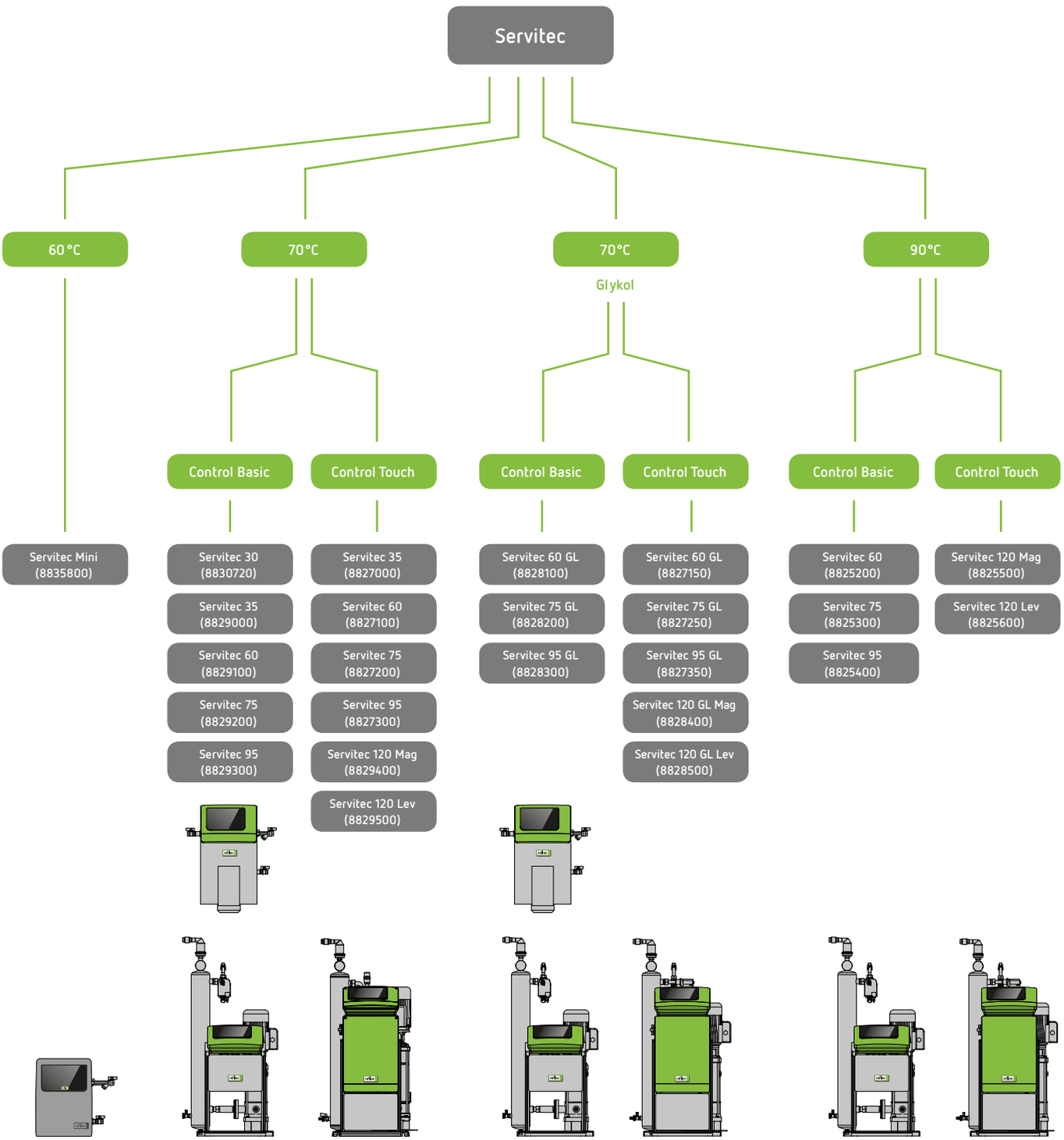
Fillsoft cartridges

Type	Art. No.	Material group	Colour	H x W [mm]	Capacity [lx°dH]	Perm. operating temperature [°C]	Permissible operating pressure	Weight [kg]
Fillsoft cartridge (softening)	6811800	100	Green	513 x 76	6,000	5–40	8.0 bar	1.5
Fillsoft Zero cartridge (deionisation)	9125662	100	Grey	513 x 76	3,000	5–40	8.0 bar	1.5

Fillsoft Accessories

Type	Art. No.	Material group	Weight [kg]
Fillsoft Accessories (Softening)			
Fillsoft Softmix (mixing mechanism)	9119219	78	0.2
Fillsoft external pressure transducer	9112004	78	0.3
Fillmeter digital water meter	9119193	78	0.4
Fillsoft total hardness measuring instrument	6811900	86	0.1
Fillsoft key for filter head	9200276	86	0.4
Fillsoft Accessories (Deionisation)			
Fillsoft external pressure transducer	9112004	78	0.3
Fillmeter digital water meter	9119193	78	0.4
Fillguard Mini	9125762	78	0.0
Fillsoft key for filter head	9200276	86	0.4

Degassing systems and separation technology



→ See Page 45 for details about the Reflex Control Basic, Control Touch and Control Remote controllers and their specifications.

* valid for existing systems older than 2 years in connection with hydraulic equalisation

Separation technology

Brass

Horizontal

Vertical

Steel

Welded connection

Flange connection

Exvoid

Automatic vent

T ½" / ⅜"
110°C/180°C

Micro-bubble separator

A22–2"
110°C/180°C

A22–1" V
110°C/180°C

Page 84 – 85

A60.3–A323.9

A50–A300

Page 86 – 87

Exdirt

Dirt and sludge trap

DN50V–DN100V

Dirt and sludge trap

D22–2"
110°C

D22–1" V
110°C

D60.3–D323.9

D50–D300

Dirt and sludge separator with magnet

D22–2" M
110°C

D22–1" V–M
110°C

Page 88 – 89

Magnet insert (optional)

D60.3R–D323.9

D50R–D300R

Page 90 – 93

Extwin

Combined micro-bubble, dirt and sludge separator

TW22–1"
110°C

TW22 V
110°C

TW60.3–TW323.9

TW50–TW300

Combined micro-bubble, dirt and sludge separator with magnet

TW22–1" M
110°C

TW22 V–M
110°C

Page 94 – 95

Magnet insert (optional)

TW60.3R–TW323.9

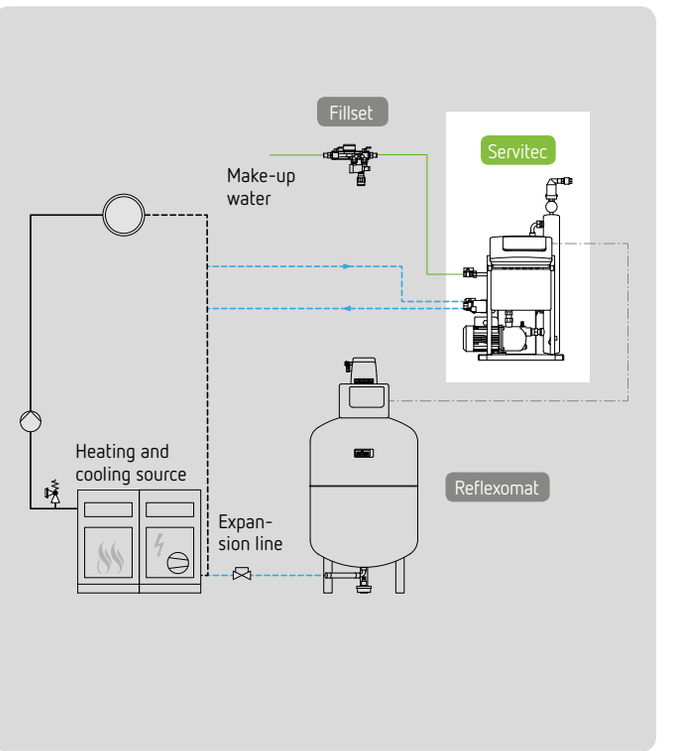
TW50R–TW300R

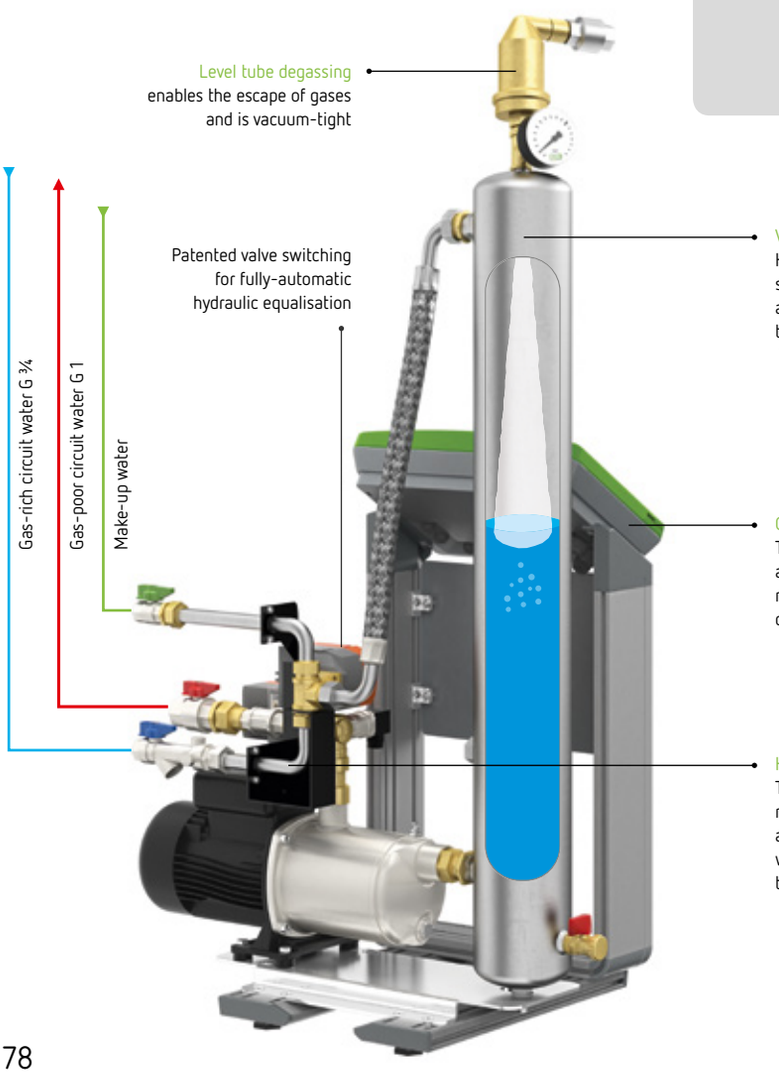
Page 94 – 95

Theoretical principles

Servitec – Patented Technology for Optimal Degassing

The Servitec series provides active degassing of even dissolved gases. A partial flow of the content water is diverted from the system, degassed under vacuum in the Servitec unit and returned, nearly completely gas-free, to the system. Automatically-controlled ball valves ensure a constant partial flow, independent of the pressure conditions within the system.





Level tube degassing
enables the escape of gases and is vacuum-tight

Patented valve switching for fully-automatic hydraulic equalisation

Vacuum spray tube
Height and diameter are balanced so that, immediately after the start of a degassing cycle, the atomisation of the water in a large free vacuum is ensured.

Controller
The degassing cycles are processed in an optimised timing programme or may controlled depending on the gas content in the water.

Hydraulics
The integrated plug&play function management of the controller automatically adjusts the hydraulics with the regulating ball valve to the system pressure conditions.

CE

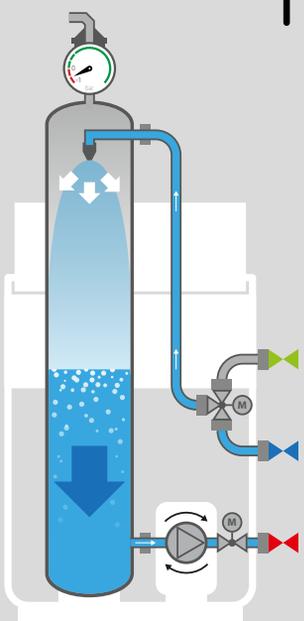
Servitec, functional principle

Vacuum generation (Create vacuum)

1

The pumps cuts in, the water level drops and a vacuum is generated in the vacuum spray tube.

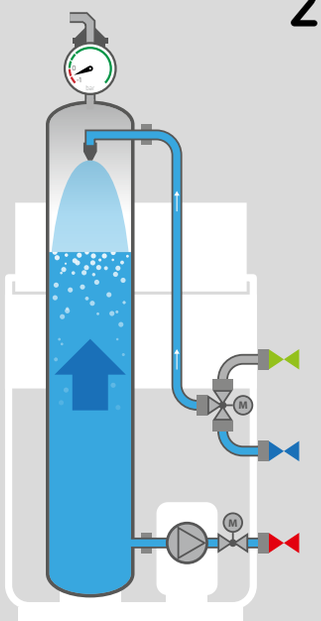
The circuit water (optionally make-up water) is atomised in the generated vacuum releasing the dissolved gases due to the vacuum and the large contact surface.



Degassing start

2

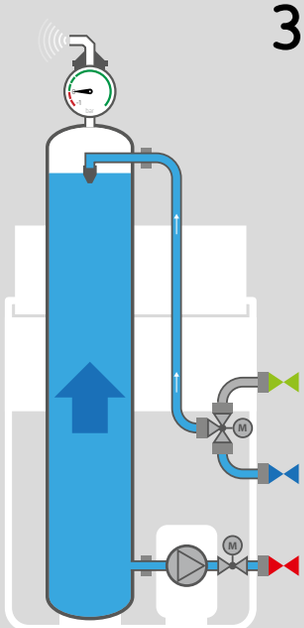
The pump shuts down. Water is sprayed until the vacuum spray tube is completely filled again. If there is an active make-up request, a switch-over enables high-gas make-up water in the vacuum spray pipe to be degassed too.



Discharge

3

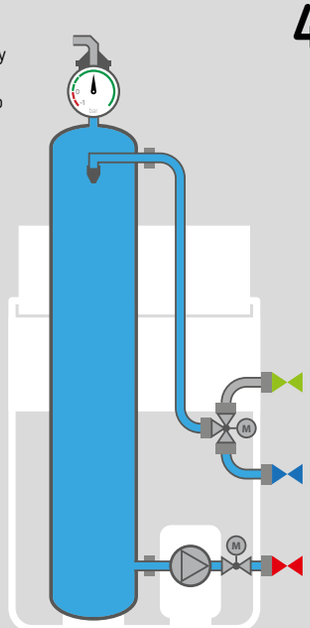
All released gases are discharged safely by the automatic fan.



Idling time

4

System pressure has built up in the spray tube. The system water within the tube is nearly gas-free and will be returned to the network in the following cycle.



Video clips demonstrating the function of this and other products are available under **www.reflex.de/services/fachwissen-und-beitraege/videothek/**

Servitec

Servitec

Servitec 30

Servitec 35

Servitec 60

Servitec 95

Technical Features

- Vacuum spray tube degassing with integrated water make-up for systems with Expansion vessels or pressurisation systems
- Permissible gauge operating pressure:
  → 8 bar: Type 30, 35, 60
  → 10 bar: Type 75, 95, 120
- Supply temperature to 120°C
- Micro-processor control with plan text display for pressure
- Floating contact for common fault output
- Easy commissioning thanks to Auto Setup
- Patented, fully-automatic overflow control
- Safe Control (make up via motor ball valve)
- Optional water make-up from a reservoir (user-supplied)
- Flexible setting of the Servitec Mag- or Levelcontrol operating modes
- Centralised degassing of content and make-up water

I/O modules

- Two additional analogue outputs for controlling pressure and level
- Six free-programmable digital inputs
- Six free-programmable floating outputs

Busmodules

- For data exchange between controller (RS485) and building management system

Control Remote

+ Remote servicing by Reflex Service
  → Reflex Remote Portal with intuitive user interface
+ Simple management of multiple installations

PLUS X AWARD honoured as: Ease of Use Functionality

PLUS X AWARD honoured as: BEST PRODUCT 2017

CE

Servitec

	Type	Art. No.	Material group	H x W x D [mm]	System volume VA [m³]	Working pressure [bar]	Water make-up output [m³/h]	Weight [kg]
	Permissible maximum operating temperature: 70 °C with Control Basic							
70°C	30	8830720	71	659 x 544 x 287	up to 12*	0.5 to 3.0	up to 0.025	13.5
	35	8829000	71	956 x 552 x 434	up to 220	0.5 to 2.5	up to 0.350	42.0
	60	8829100	71	1,121 x 595 x 434	up to 220	0.5 to 4.5	up to 0.550	40.0
	75	8829200	71	1,207 x 584 x 513	up to 220	0.5 to 5.4	up to 0.550	39.0
	95	8825600	71	1,212 x 606 x 563	up to 220	1.3 to 8.3	up to 0.550	43.0
	Permissible maximum operating temperature: 70 °C with Control Touch							
70°C	35	8827000	71	1,022 x 621 x 438	up to 220	0.5 to 2.5	up to 0.350	30.0
	60	8827100	71	1,205 x 678 x 438	up to 220	0.5 to 4.5	up to 0.550	36.0
	75	8827200	71	1,215 x 623 x 584	up to 220	0.5 to 5.4	up to 0.550	41.0
	95	8827300	71	1,215 x 623 x 584	up to 220	0.5 to 7.2	up to 0.550	42.0
	Magcontrol 120	8829400	71	1,212 x 606 x 563	up to 220	1.3 to 9	up to 0.550	43.0
	Levelcontrol 120	8829500	71	1,212 x 606 x 563	up to 220	1.3 to 9	up to 0.550	43.0
	Permissible maximum operating temperature: 90 °C with Control Basic							
90°C	60	8825200	71	1,121 x 595 x 434	up to 220	1.3 to 4.0	up to 0.550	40.0
	75	8825300	71	1,207 x 584 x 513	up to 220	1.3 to 4.9	up to 0.550	39.0
	95	8825400	71	1,207 x 584 x 513	up to 220	1.3 to 6.7	up to 0.550	40.0
	Special designs: Permissible maximum operating temperature: 90 °C with Control Touch							
90°C	Magcontrol 120	8825500	71	1,212 x 606 x 563	up to 220	1.3 to 8.3	up to 0.550	43.0
	Levelcontrol 120	8825600	71	1,212 x 606 x 563	up to 220	1.3 to 8.3	up to 0.550	43.0
	Special designs: permissible maximum operating temperature: 70 °C, suitable for glycol, with Control Basic							
70°C GL	30 GL	8830720	71	659 x 544 x 287	up to 4	0.5 to 3.0	up to 0.025	13.5
	60 GL	8828100	71	1,121 x 595 x 434	up to 50	0.5 to 4.5	up to 0.550	40.0
	75 GL	8828200	71	1,207 x 584 x 513	up to 50	1.3 to 4.9	up to 0.550	39.0
	95 GL	8828300	71	1,207 x 584 x 513	up to 50	1.3 to 6.7	up to 0.550	49.0
	Special designs: permissible maximum operating temperature: 70 °C, suitable for glycol, with Control Touch							
70°C GL	60 GL	8827150	71	1,205 x 678 x 438	up to 50	0.5 to 4.5	up to 0.550	36.0
	75 GL	8827250	71	1,215 x 623 x 584	up to 50	1.3 to 4.9	up to 0.550	41.0
	95 GL	8827350	71	1,215 x 623 x 584	up to 50	1.3 to 6.7	up to 0.550	42.0
	Magcontrol 120 GL	8828400	71	1,212 x 606 x 563	up to 50	1.3 to 8.3	up to 0.550	43.0
	Levelcontrol 120 GL	8828500	71	1,212 x 606 x 563	up to 50	1.3 to 8.3	up to 0.550	43.0

Special designs upon request: System volume > 220 m³ and operating pressure > 9.0 bar (see page 56, Variomat)
Magcontrol: For systems with diaphragm-type expansion vessels. Levelcontrol: For systems with pressurisation systems.

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

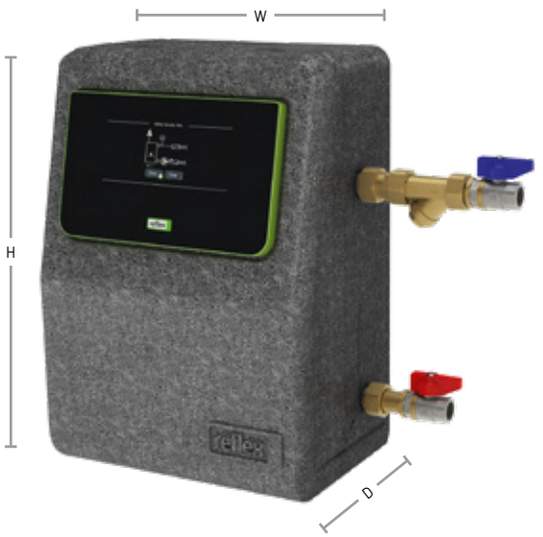
Servitec Accessories

Type	Art. No.	Material group	Weight [kg]
Busmodules			
LonWorks Digital	8860000	86	1.5
LonWorks	8860100	86	1.9
Profibus-DP	8860200	86	1.9
Ethernet	8860300	86	1.9
Modbus RTU for Control Touch	9125592	86	0.4
Profibus DP for Control Touch	9118042	86	0.4
BACnet-IP for Control Touch	8860500	86	0.4
BACnet MS/TP for Control Touch	8860600	86	0.4
I/O modules			
Servitec I/O modules	8860400	71	1.0

Type	Art. No.	Material group	Weight [kg]
Control Remote			
Remote box	8910800	38	0.2
User fee	8910810	38	-
Remote servicing agreement	8910805	38	-
Commissioning			
Servitec commissioning	7945600	95	-

Servitec Mini

Servitec Mini



Servitec Mini

Technical Features

- Max. operating pressure: 4 bar
- Operating range: 0.5 to 2.5 bar
- Water/glycol application available on request
- Permissible operating temperature: 60°C
- Permissible ambient temperature: 0 to 45°C
- Voltage supply supply: 230 V/50 Hz
- Elec. power consumption: 0.06 kW
- Elec. rated current: < 0.3 A
- Depth x Width x Height (mm): 220/295/420
- Connection on pressure side: G ½"
- Connection on downstream side: G ½"
- Max. system volume: 1 m³

Advantages

+ No circulation faults and no heating gurgles
+ Using energy more efficiently and thus save heating costs
+ No need to manually vent every radiator
+ Reliable and secure operation of the heating system
+ Avoid corrosion damages to the heating system
+ Help protect the environment

Servitec Mini & Fillcontrol Plus Compact

Automatic make-up takes place independently via the Fillcontrol Plus Compact

Technical Features

Fillcontrol Plus Compact

- Compact **automatic make-up station**, can be used for systems with an expansion vessel in accordance with DIN 1988 and DIN EN 1717
- With type BA system separator
- Controlled make-up
- Supply voltage: 230 V/50 Hz
- Make-up capacity approx. 0.5 m³/h where Δp = 1.5 bar
- Permissible maximum input pressure: 10 bar
- Permissible operating temperature: 70°C

CE

Servitec Mini

	Type	Art. No.	Material group	H x W x D [mm]	System volume VA [m³]	Working pressure	Minimum flow pressure*	Output pressure* [bar]	Connection inlet/outlet	Weight [kg]
2,5 bar 60°C	Servitec Mini	8835800	28	420 x 295 x 220	1,0	0,5 – 2,5 bar	-	-	G ½"	5,6
	Servitec Mini & Fillcontrol Plus Compact									
	Servitec Mini	8835900	28	558 x 360 x 258	1,0	0,5 – 2,5 bar	-	-	G ½"	5,6
	Fillcontrol Plus Compact				-	-	p_0 + 1,3 bar	0,5 – 5 bar	R ½" / R ½"	3,0

* applies to the make-up station

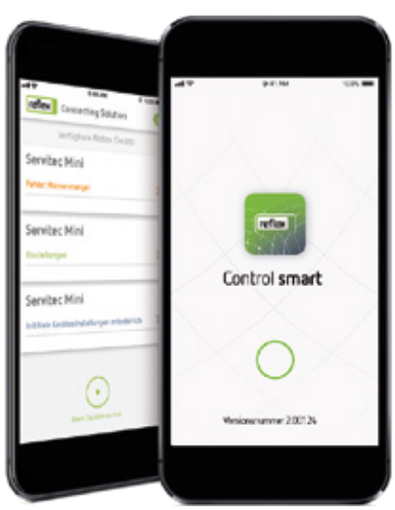
Reflex Control Smart

Servitec Mini now available with simple app control

Even more comfortable: Reflex Control Smart provides Bluetooth access to the Servitec Mini via a smartphone or tablet. The app is yet another digital service for the installation engineer for easy commissioning. End users can also schedule their own specific degassing times for set days and times throughout the week. Fault messages are shown in the app – for example, if insufficient water is detected in the system.

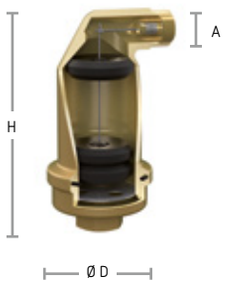
- Quick and easy setup of the Servitec Mini
- parameterisation of the degassing mode (continuous, interval, number of cycles) including days of the week and time
- error message display
- system pressure query
- software updates

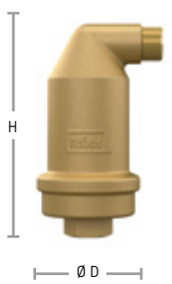
Available now
for Android and iOS



Exvoid

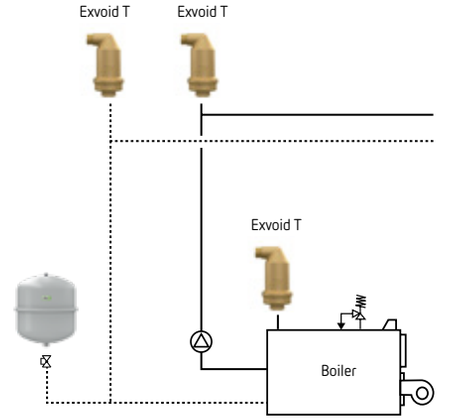
Exvoid T Large and quick air vent





Exvoid T

Exvoid T function diagram

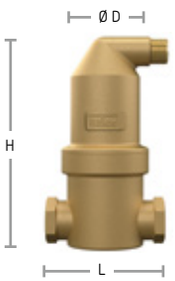


Exvoid T system – ventilation – diagram

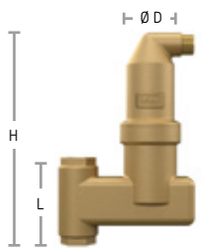
Technical Features

- Brass housing
- Quadruple-tested venting valve with high operational reliability
- For vertical installation
- With IG ½" and G 3/8 system connection, incl. connection thread at the venting valve of G ½"
- Application range to 110°C or 180°C and 10 bar

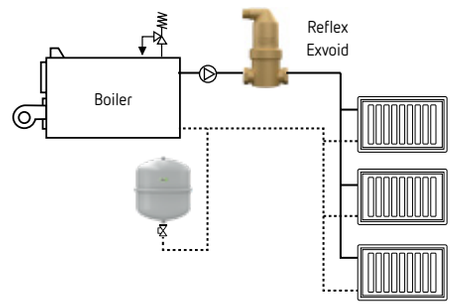
Exvoid Air and micro-bubble separator



Exvoid horizontal



Exvoid vertical



Exvoid brass system – degassing – diagram

Venting without leaks:
The precise and reliably functioning, not-lockable venting valve makes the difference.

Special air chamber design:
The large air chamber dampens pressure vibrations and prevents dirt from entering the venting valve. Stable operation is ensured – even under harsh conditions.

The core element is a proven mesh tube construction with an ultra-low pressure loss in flow direction. The flow element multiplies the separation effect in the low-flow chamber. The pulses applied to the micro-bubbles support their natural buoyancy motion. Air bubbles form which are automatically removed through the venting part.

Technical Features

- Connection diameter:
  A 22 – 2" (DN 20 – DN 50)
- Flow rate:
  1.25 – 8.0 m³/h (at v ≈ 1.0 m/s)
- Exiso heat insulation:
  A 22 – 2" (DN 20 – DN 50)
- Brass housing
- Application range: To 110°C or 180°C and 10 bar (solar to 180°C)
- Installation position:
  horizontal, vertical

CE

Exvoid T Large and quick air vent

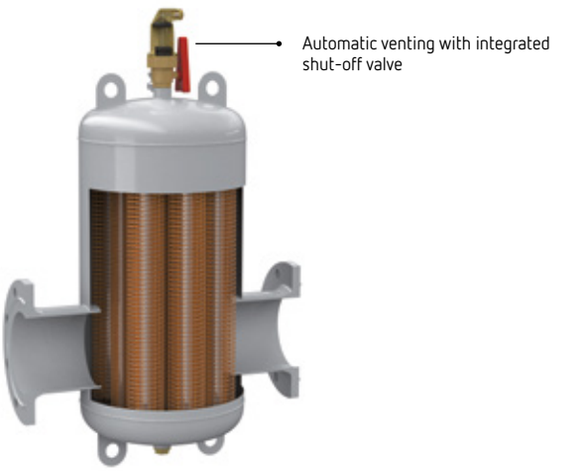
	Type	Art. No.	Std. Pack	Material group	Ø D [mm]	H [mm]	Connection A	Weight [kg]
	Brass, 110°C, 10 bar							
10 bar 110°C	Exvoid T ⅜	9250038	12	82	63	132	AG ⅜"	0.7
	Exvoid T ½	9250000	12	82	63	122	IG ½"	0.7
	Solar, brass, 180°C, 10 bar							
10 bar 180°C	Exvoid T ⅜ S	9250638	12	82	63	132	AG ⅜"	0.7
	Exvoid T ½ S	9250600	12	82	63	122	IG ½"	0.7

Exvoid Air and micro-bubble separator

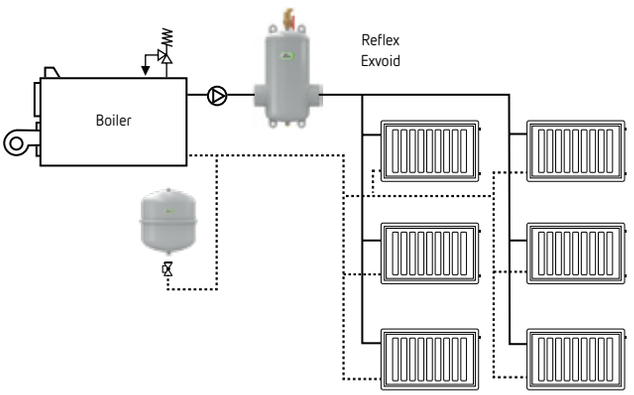
	Type	Art. No.	Std. Pack	Material group	Connection A	V_{max} [m³/h]	Ø D [mm]	L [mm]	H [mm]	Weight [kg]
	Brass, horizontal, 110°C, 10 bar									
10 bar 110°C	A 22	9251000	12	82	22 mm	1.25	63	106	165	1.2
	A ¾	9251010	12	82	IG ¾"	1.25	63	85	165	1.1
	A 1	9251020	8	82	IG 1"	2.00	63	88	180	1.3
	A 1 ¼	9251030	8	82	IG 1 ¼"	3.75	63	88	202	1.4
	A 1 ½	9251040	8	82	IG 1 ½"	5.00	63	88	236	1.6
	A 2	9251050	1	82	IG 2"	8.00	100	132	277	3.9
	Brass, vertical, 110°C, 10 bar									
10 bar 110°C	A 22 V	9251500	8	82	22 mm	1.25	63	104	216	2.0
	A ¾ V	9251510	8	82	IG ¾"	1.25	63	84	206	1.9
	A 1 V	9251520	8	82	IG 1"	2.00	63	84	206	1.9
	Solar, brass, horizontal, 180°C, 10 bar									
10 bar 180°C	A 22 S	9251600	12	82	22 mm	1.25	63	106	165	1.2
	A ¾ S	9251610	12	82	IG ¾"	1.25	63	85	165	1.1
	A 1 S	9251620	8	82	IG 1"	2.00	63	88	182	1.3
	A 1 ¼ S	9251630	8	82	IG 1 ¼"	3.70	63	88	202	1.4
	A 1 ½ S	9251640	8	82	IG 1 ½"	5.00	63	88	236	1.6
	Solar, brass, vertical, 180°C, 10 bar									
10 bar 180°C	A 22 SV	9251700	8	82	22 mm	1.25	63	104	216	2.0
	A ¾ SV	9251710	8	82	IG ¾"	1.25	63	84	206	1.9
	A 1 SV	9251720	8	82	IG 1"	2.00	63	84	206	1.9

Exiso heat insulation for the above separators are shown on pages 98 and 99 under Accessories.

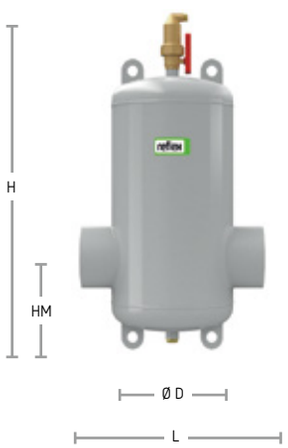
Exvoid Steel Air and micro-bubble separator



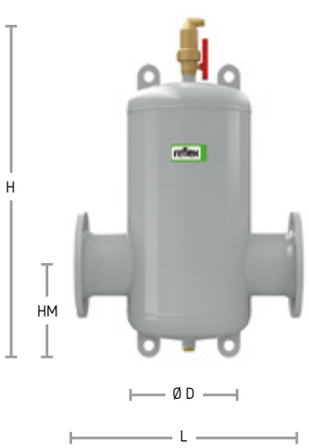
Exvoid Steel



Exvoid Steel system / degassing / diagram



Exvoid Steel welding connection



Exvoid Steel flange connection

Exvoid Steel function diagram

Technical Features

- Connection: DN 50 – DN 300
- Flow rate: 12.5-405 m³/h
- Exiso heat insulation: DN 50 – DN 150
- Steel housing
- Application range: To 110 °C and 10 bar

Advantages

+ Removes circulating free air and gas bubbles
+ Rugged construction from solid steel
+ Works in fully-automatic continuous operation
+ Generates only minimal, constant pressure drop
+ Enables significantly faster hydraulic equalisation after filling processes
+ Prevents noise development, corrosion-related wear and capacity loss caused by the formation of larger amounts of trapped air
+ Comprehensive assortment of different operating pressures, temperatures and materials
+ Special models for higher flow rates, operating pressures and temperatures available upon request

CE

Exvoid Steel Air and micro-bubble separator

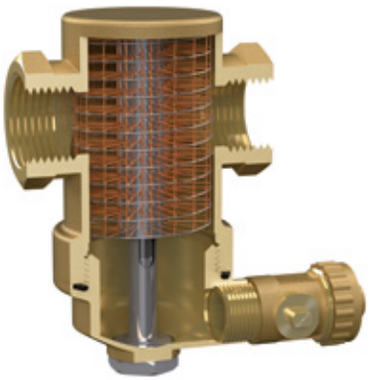
	Type	Art. No.	Material group	Connection	V_{max} [m³/h]	Ø D [mm]	L [mm]	H [mm]	HM [mm]	Weight [kg]
	Steel with welding connection, 110°C, 10 bar									
10 bar 110°C	A 60.3	8251100	83	60.3	12.5	132	260	625	153	3.0
	A 76.1	8251110	83	76.1	20	132	260	625	153	6.5
	A 88.9	8251120	83	88.9	27	206	370	740	159	9.0
	A 114.3	8251130	83	114.3	47	206	370	740	169	9.0
	A 139.7	8251140	83	139.7	72	354	525	915	214	22.0
	A 168.3	8251150	83	168.3	108	354	525	915	229	24.0
	A 219.1	8251160	83	219.1	180	409	650	1,125	284	44.0
	A 273.0	8251170	83	273.0	288	480	750	1,402	351	70.0
	A 323.9	8251180	83	323.9	405	634	850	1,612	406	112.0
	Steel with flange connection, 110°C, 10 bar									
10 bar 110°C	A 50	8251300	83	DN 50 / PN 16	12.5	132	350	625	165	9.0
	A 65	8251310	83	DN 65 / PN 16	20	132	350	625	163	10.0
	A 80	8251320	83	DN 80 / PN 16	27	206	470	740	159	16.0
	A 100	8251330	83	DN 100 / PN 16	47	206	470	740	169	19.0
	A 125	8251340	83	DN 125 / PN 16	72	354	635	915	214	35.0
	A 150	8251350	83	DN 150 / PN 16	108	354	635	915	229	39.0
	A 200	8251360	83	DN 200 / PN 16	180	409	775	1,125	284	65.0
	A 250	8251370	83	DN 250 / PN 16	288	480	890	1,402	351	108.0
	A 300	8251380	83	DN 300 / PN 16	405	634	1,005	1,612	406	156.0

→ Sizes A 350–A 600 are available on request

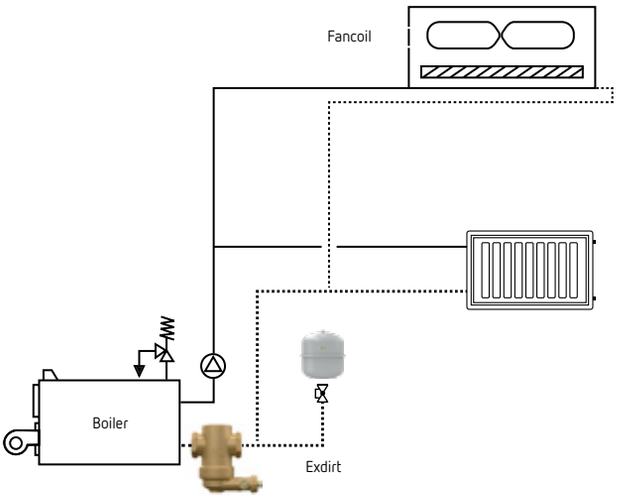
Exiso heat insulation for the above separators up to DN 150 are shown on pages 98 and 99 under Accessories.
More designs available upon request.

Exdirt

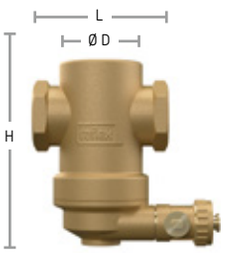
Exdirt Brass Dirt and sludge separator



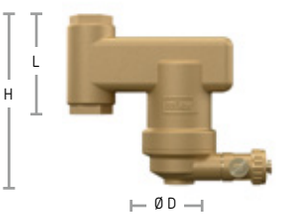
Exdirt Brass



Exdirt Brass system / dirt and sludge separation / diagram

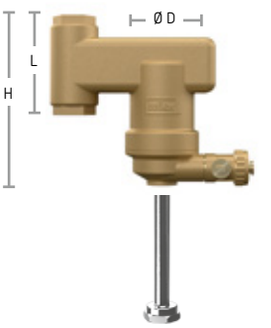


Exdirt Brass dirt and sludge separator, horizontal



Exdirt Brass dirt and sludge separator, vertical

Exdirt Brass dirt and sludge separator M, horizontal, with magnet insert



Exdirt Brass dirt and sludge separator M, vertical, with magnet insert

Technical Features

- Connection diameter: A 22–2" (DN 20–DN 50)
- Flow rate: 1.25–8.0 m³/h (at v ≈ 1.0 m/s)
- Exiso heat insulation: A 22–2" (DN 20 –DN 50)
- Brass housing
- Application range: To 110°C and 10 bar
- Installation position: horizontal, vertical
- Removes remotely-circulating dirt and sludge particles up to 5 µm

Advantages

+ Works in fully-automatic continuous operation, generates only minimal and constant pressure drop
+ No shut-off valves or bypass lines required. Desludging possible under facility operation without interruption
+ Permanently secures the proper functioning of heat generators, thermostatic valve, etc.
+ Reduces the risk of defects and failures over long time
+ Optional: Exferro high-performance magnetic insert for optimal efficiency when separating ferromagnetic dirt particles such as magnetite

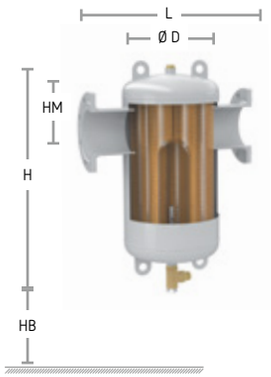
CE

Exdirt Brass Dirt and sludge separator

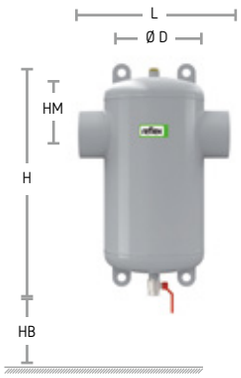
	Type	Art. No.	Std. Pack	Material group	Connection A	V_{max} [m³/h]	Ø D [mm]	L [mm]	H [mm]	Weight [kg]
	Brass, horizontal, 110°C, 10 bar									
10 bar 110°C	D 22	9252000	12	82	22 mm	1.25	63	106	103	1.0
	D ¾	9252010	12	82	IG ¾"	1.25	63	85	103	1.0
	D 1	9252020	12	82	IG 1"	2.00	63	88	120	1.2
	D 1 ¼	9252030	8	82	IG 1 ¼"	3.70	63	88	140	1.3
	D 1 ½	9252040	8	82	IG 1 ½"	5.00	63	88	174	1.5
	D 2	9252050	1	82	IG 2"	8.00	100	132	215	3.9
	Brass, vertical, 110°C, 10 bar									
10 bar 110°C	D 22 V	9252500	8	82	22 mm	1.25	63	104	144	1.9
	D ¾	9252510	8	82	IG ¾"	1.25	63	84	144	1.8
	D 1 V	9252520	8	82	IG 1"	2.00	63	84	144	1.8
	M with magnet insert, brass, horizontal, 110°C, 10 bar									
10 bar 110°C	D 22 M	9256000	12	82	22 mm	1.25	63	106	103	1.0
	D ¾ M	9256010	12	82	IG ¾"	1.25	63	85	103	1.0
	D 1 M	9256020	12	82	IG 1"	2.00	63	88	120	1.2
	D 1 ¼ M	9256030	8	82	IG 1 ¼"	3.70	63	88	140	1.3
	D 1 ½ M	9256040	8	82	IG 1 ½"	5.00	63	88	174	1.5
	D 2 M	9256050	1	82	IG 2"	8.00	100	132	215	3.9
	M with magnet insert, brass, vertical, 110°C, 10 bar									
10 bar 110°C	D 22 V-M	9256500	8	82	22 mm	1.25	63	104	144	1.0
	D ¾ V-M	9256510	8	82	IG ¾"	1.25	63	84	144	1.0
	D 1 V-M	9256520	8	82	IG 1"	2.00	63	84	144	1.2

Note: Exiso heat insulation for the above separators are shown on pages 98 and 99 under Accessories.

Exdirt Steel Dirt and sludge separator

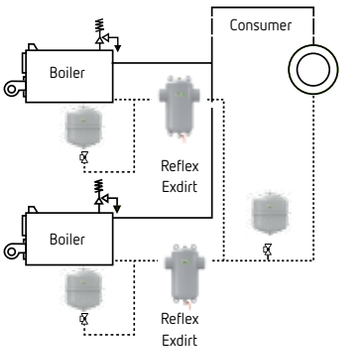


Exdirt Steel flange connection

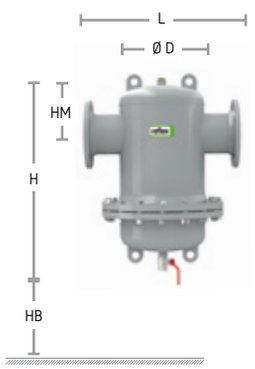


Exdirt Steel welding connection

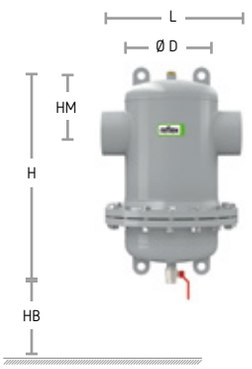
Exdirt Steel function diagram



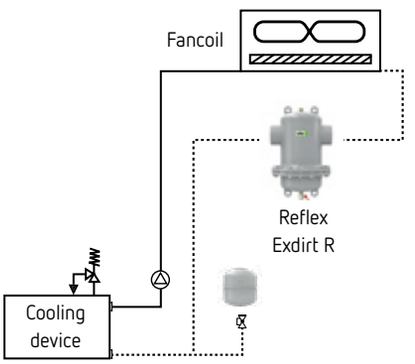
Exdirt Steel system / dirt and sludge separation / diagram



Exdirt Steel flange connection with service flange



Exdirt Steel R welding connection with service flange



Exdirt Steel system / dirt and sludge separation / diagram

Technical Features

- Connection: DN 50 – DN 300
- Flow rate: 12.5 – 405 m³/h
- Models with service flange
- Exiso heat insulation: DN 50 – DN 150 for models without service flange
- Application range: To 110 °C and 10 bar

Advantages

+ removes free-roaming dirt and sludge particles ≥ 5 micrometres
+ robust construction made of solid steel
+ works in fully automatic continuous operation, produces only a minimal and constant drop in pressure
+ maintenance can be performed quickly, sludge can be removed while the machine is running without interrupting operation
+ no shut-off valves or bypass lines required, permanent free-flow opening for the medium
+ ensures heat generators, thermostatic valves and similar run perfectly over the long term
+ reduces the risk of defects and failures over the long term
+ special versions for higher volume flows, operating pressures and operating temperatures are available on request
+ optional: Exferro high-performance magnetic insert for optimal efficiency when separating ferromagnetic dirt particles such as magnetite

CE

Exdirt Steel Dirt and sludge separator

	Type	Art. No.	Material group	Connection A	V_{max} [m³/h]	Ø D [mm]	L [mm]	H [mm]	HM [mm]	HB [mm]	Weight [kg]
	Steel with welding connection, 110 °C, 10 bar										
10 bar 110 °C	D 60.3	8252100	83	60.3	12.5	132	260	516	152	370	3
	D 76.1	8252110	83	76.1	20	132	260	516	162	370	3
	D 88.9	8252120	83	88.9	27	206	370	631	158	430	9
	D 114.3	8252130	83	114.3	47	206	370	631	168	430	9
	D 139.7	8252140	83	139.7	72	354	525	832	214	550	22
	D 168.3	8252150	83	168.3	108	354	525	832	228	550	24
	D 219.1	8252160	83	219.1	180	409	650	1,039	283	600	44
	D 273.0	8252170	83	273.0	288	480	750	1,505	355	800	70
	D 323.9	8252180	83	323.9	405	634	850	1,510	410	900	112
	Steel with flange connection, 110 °C, 10 bar										
10 bar 110 °C	D 50	8252300	83	DN 50 / PN 16	12.5	132	350	516	152	370	9
	D 65	8252310	83	DN 65 / PN 16	20	132	350	516	162	370	10
	D 80	8252320	83	DN 80 / PN 16	27	206	470	631	158	430	16
	D 100	8252330	83	DN 100 / PN 16	47	206	470	631	168	430	19
	D 125	8252340	83	DN 125 / PN 16	72	354	635	832	214	550	35
	D 150	8252350	83	DN 150 / PN 16	108	354	635	832	228	550	39
	D 200	8252360	83	DN 200 / PN 16	180	409	775	1,039	283	600	65
	D 250	8252370	83	DN 250 / PN 16	288	480	890	1,505	355	800	108
	D 300	8252380	83	DN 300 / PN 16	405	634	1,005	1,510	410	900	156

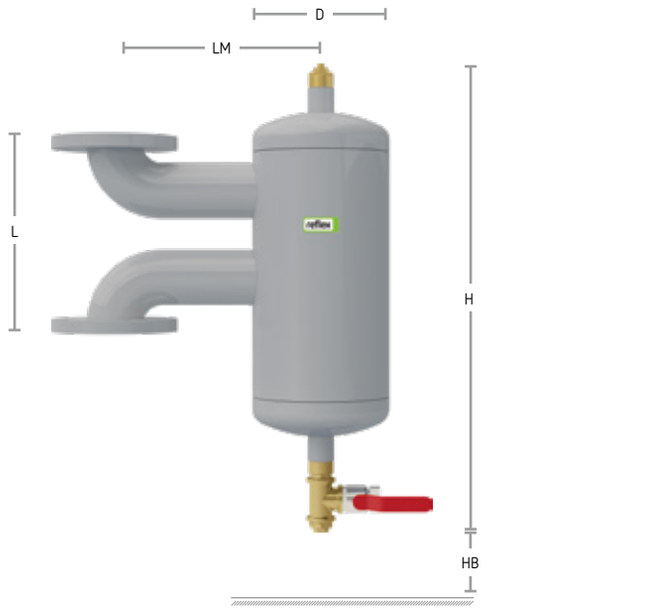
→ Sizes D 350–D 600 are available on request

	Type	Art. No.	Material group	Connection A	V_{max} [m³/h]	Ø D [mm]	L [mm]	H [mm]	HM [mm]	HB [mm]	Weight [kg]
	Steel with welding connection, 110 °C, 10 bar, service flange										
10 bar 110 °C	D 60.3 R	8252200	83	60.3	12.5	132	260	516	152	370	16
	D 76.1 R	8252210	83	76.1	20	132	260	516	162	370	23
	D 88.9 R	8252220	83	88.9	27	206	370	631	158	430	32
	D 114.3 R	8252230	83	114.3	47	206	370	631	168	430	37
	D 139.7 R	8252240	83	139.7	72	354	525	832	214	550	85
	D 168.3 R	8252250	83	168.3	108	354	525	832	228	550	78
	D 219.1 R	8252260	83	219.1	180	409	650	1,039	283	600	101
	D 273.0 R	8252270	83	273.0	288	480	750	1,505	355	800	158
	D 323.9 R	8252280	83	323.9	405	634	850	1,510	410	900	330
	Steel with flange connection, 110 °C, 10 bar, service flange										
10 bar 110 °C	D 50 R	8252400	83	DN 50 / PN 16	12.5	132	350	516	152	370	18
	D 65 R	8252410	83	DN 65 / PN 16	20	132	350	516	162	370	19
	D 80 R	8252420	83	DN 80 / PN 16	27	206	470	631	158	430	43
	D 100 R	8252430	83	DN 100 / PN 16	47	206	470	631	168	430	51
	D 125 R	8252440	83	DN 125 / PN 16	72	354	635	832	214	550	89
	D 150 R	8252450	83	DN 150 / PN 16	108	354	635	832	228	550	94
	D 200 R	8252460	83	DN 200 / PN 16	180	409	775	1,039	283	600	121
	D 250 R	8252470	83	DN 250 / PN 16	288	480	890	1,505	355	800	255
	D 300 R	8252480	83	DN 300 / PN 16	405	634	1,005	1,510	410	900	390

→ Sizes D 350 R–D 600 R are available on request

Exiso heat insulation for the above separators up to DN 150 are shown on pages 98 and 99 under Accessories.
More designs available upon request.

Exdirt V Dirt and sludge separator for vertical installation



D 50 – D 100

Technical Features

- System connection: Flanged socket from DN 50 to DN 150, PN 16/PN 6
- Standard installation length F1 in acc. with DIN EN 558:2012-03
- Drain connection: G 1"
- Venting connection: G 1"
- Permissible operating pressure: 6/10 bar
- Permissible operating temperature: 110°C
- Max. flow rate: 12.5 – 108 m³/h
- Water/glycol mixture up to a mixing ratio of 50/50 (25% minimum)
- Removal of particles ≥ 50 microns
- Insulation on site

Advantages

+ Particle separation for improved heating and cooling performance
+ Optional ExFerro high-performance magnetic insert for optimal efficiency when separating ferromagnetic dirt particles such as magnetite
+ Cleaning without interrupting operation
+ Much less maintenance compared to conventional dirt traps
+ Vertical, space-saving and straightforward installation – even in existing systems

CE

Exdirt V Dirt and sludge separator for vertical installation

	Type	Art. No.	Material group	Connection A	V_{max} [m³/h]	Ø D [mm]	L [mm]	LM [mm]	H [mm]	HB [mm]	Weight [kg]
	Steel with flange connection, 110 °C, 6 bar										
6 bar 110 °C	D 50 V F1	8259501	83	DN 50 / PN 6	12.5	206	230	295.5	489	370	16.0
	D 65 V F1	8259511	83	DN 65 / PN 6	20.0	206	290	305.5	538	370	18.0
	D 80 V F1	8259521	83	DN 80 / PN 6	27.0	206	310	313	588	370	22.0
	D 100 V F1	8259531	83	DN 100 / PN 6	47.0	206	350	323	638	370	24.0
	D 125 V F1	8259541	83	DN 125 / PN 6	72.0	354	400	412	889	430	38.0
	D 150 V F1	8259551	83	DN 150 / PN 6	108.0	354	480	429.5	939	430	44.0
	Steel with flange connection, 110 °C, 10 bar										
10 bar 110 °C	D 50 V F1	8259500	83	DN 50 / PN 16	12.5	206	230	295.5	489	370	16.0
	D 65 V F1	8259510	83	DN 65 / PN 16	20.0	206	290	305.5	538	370	18.0
	D 80 V F1	8259520	83	DN 80 / PN 16	27.0	206	310	313	588	370	22.0
	D 100 V F1	8259530	83	DN 100 / PN 16	47.0	206	350	323	638	370	24.0
	D 125 V F1	8259540	83	DN 125 / PN 16	72.0	354	400	412	889	430	38.0
	D 150 V F1	8259550	83	DN 150 / PN 16	108.0	354	480	429.5	939	430	44.0

Larger dimensions and special designs on request

Exdirt V pressure loss diagram

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

Pressure loss calculation for all flow rates

$$\Delta p = \left(\frac{\dot{V}}{K_{VS}} \right)^2 \cdot 1\ \text{bar};\ \dot{V} \leq \dot{V}_{max}$$

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

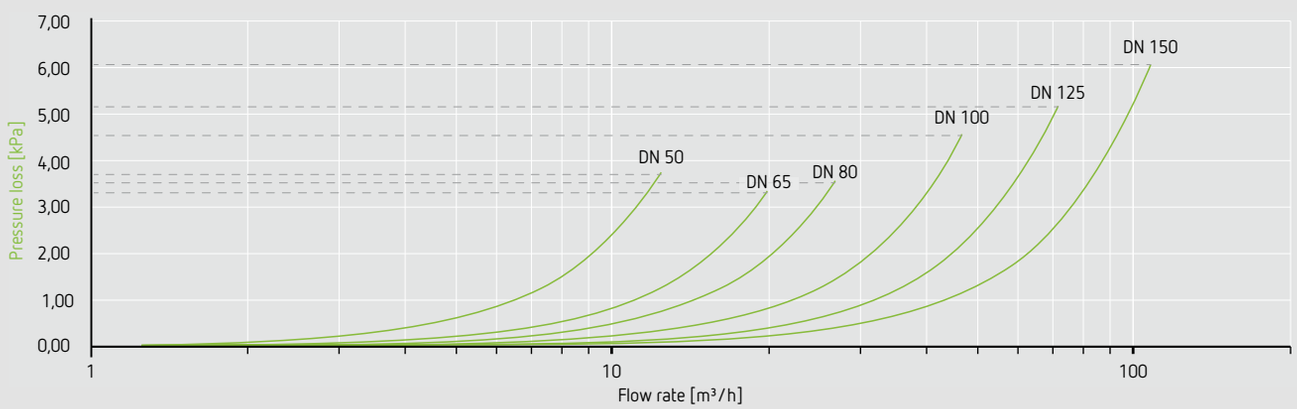
1. Volumetric flow calculation

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

$= 4{,}6\ \text{m}^3/\text{h} \rightarrow$ Range presented in a table: DN 50

$$\Delta p = \left(\frac{4{,}6\ \text{m}^3/\text{h}}{64{,}5\ \text{m}^3/\text{h}} \right)^2 \cdot 1\ \text{bar} = 5{,}08 \cdot 10^{-3}\ \text{bar}$$

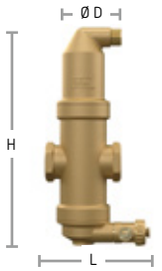
$= 0{,}508\ \text{kPa}$



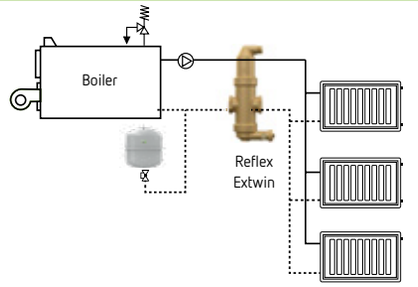
Extwin

Extwin Brass Combined micro-bubble, dirt and sludge separator

Extwin TW 1



Extwin TW 22



Extwin Brass system / combined micro-bubble, dirt and sludge separator / diagram

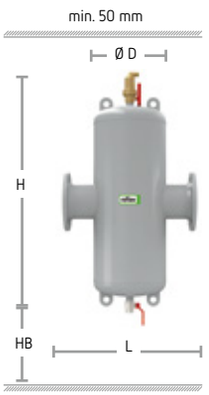
Technical Features

- Connection variants: Thread and clamping ring
- Connection diameter A22 – 1" (DN 20 – DN 25)
- Volume flow: 1.25 – 2.0 m³/h (at v ≈ 1.0 m/s)
- Brass housing
- Installation position: horizontal, vertical
- Range of use: up to 110°C and 10 bar

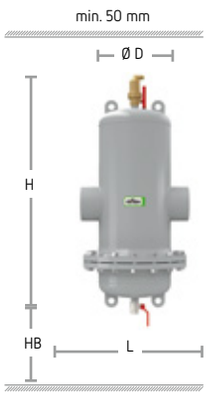
Advantages

+ removes free-roaming dirt and sludge particles, as well as air and gas bubbles
+ robust brass construction
+ produces only a minimal constant drop in pressure
+ works in fully automatic continuous operation
+ permanent free-flow opening for the medium
+ maintenance can be performed quickly, sludge can be removed while the machine is running
+ no shut-off valves or bypass lines required
+ ensures heat generators, thermostatic valves and similar run perfectly over the long term
+ reduces the risk of defects and failures over the long term
+ optional: Exferro high-performance magnetic insert for optimal efficiency when separating ferromagnetic dirt particles such as magnetite

Extwin Steel Combined micro-bubble, dirt and sludge separator

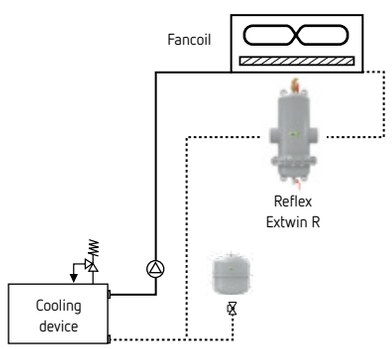


Extwin Steel flange connection



Extwin Steel welding connection with service flange

Extwin function diagram



Extwin Steel system with service flange / combined micro-bubble, dirt and sludge separator / diagram

Technical Features

- Connection: DN 50 – DN 300
- Flow rate: 12.5-405 m³/h
- Application range: To 110°C and 10 bar

Advantages

+ combines the protective functions of a Reflex Exvoid and Exdirt in a single component
+ simple installation, double effect
+ represents a significantly more cost-effective solution than the sum of the individual components
+ ensures heat generators, thermostatic valves, etc. run perfectly over the long term
+ reduces the risk of defects and failures over the long term
+ works in fully automatic continuous operation, produces only a minimal and constant drop in pressure
+ removes free-roaming dirt and sludge particles ≥ 5 microns in diameter
+ version with service flange simplifies maintenance thanks to removable lower part
+ special versions for higher volume flows, operating pressures and operating temperatures are available on request
+ optional: Exferro high-performance magnetic insert for optimal efficiency when separating ferromagnetic dirt particles such as magnetite

CE

Extwin Brass Combined micro-bubble, dirt and sludge separator

	Type	Art. No.	Std. Pack	Material group	Connection A	V_{max} [m³/h]	Ø D [mm]	L [mm]	H [mm]	Weight [kg]
	Brass, horizontal, 110°C, 10 bar									
10 bar 110°C	TW 22	9253000	6	82	22 mm	1.25	63	106	261	1.8
10 bar 110°C	TW 1	9253010	6	82	IG 1	2.00	63	84	261	1.7
	Brass, vertical, 110°C, 10 bar									
10 bar 110°C	TW 22 V	9253500	6	82	22 mm	1.25	63	106	261	2.1
	M with magnet insert, brass, horizontal, 110°C, 10 bar									
10 bar 110°C	TW 22 M	9257000	6	82	22 mm	1.25	63	106	261	1.8
10 bar 110°C	TW 1 M	9257010	6	82	IG 1	2.00	63	84	261	1.8
	M with magnet insert, brass, vertical, 110°C, 10 bar									
10 bar 110°C	TW 22 V-M	9257500	6	82	22 mm	1.25	63	106	261	1.9

Exiso heat insulation for the above separators are shown on pages 98 and 99 under Accessories.

Extwin Steel Combined micro-bubble, dirt and sludge separator

	Type	Art. No.	Material group	Connection A	V_{max} [m³/h]	Ø D [mm]	L [mm]	H [mm]	HB [mm]	Weight [kg]
	Steel with welding connection, 110°C, 10 bar									
10 bar 110°C	TW 60.3	8253100	83	60.3	12.5	132	260	771	370	4
	TW 76.1	8253110	83	76.1	20.0	132	260	771	370	5
	TW 88.9	8253120	83	88.9	27.0	206	370	926	430	12
	TW 114.3	8253130	83	114.3	47.0	206	370	926	430	14
	TW 139.7	8253140	83	139.7	72.0	354	525	1,186	550	34
	TW 168.3	8253150	83	168.3	108.0	354	525	1,186	550	31
	TW 219.1	8253160	83	219.1	180.0	409	650	1,456	600	113
	TW 273.0	8253170	83	273.0	288.0	480	750	1,876	800	215
	TW 323.9	8253180	83	323.9	405.0	634	850	2,196	900	265
	Steel with flange connection, 110°C, 10 bar									
10 bar 110°C	TW 50	8253300	83	DN 50 / PN 16	12.5	132	350	771	370	10
	TW 65	8253310	83	DN 65 / PN 16	20.0	132	350	771	370	10
	TW 80	8253320	83	DN 80 / PN 16	27.0	206	470	926	430	18
	TW 100	8253330	83	DN 100 / PN 16	47.0	206	470	926	430	24
	TW 125	8253340	83	DN 125 / PN 16	72.0	354	635	1,186	550	41
	TW 150	8253350	83	DN 150 / PN 16	108.0	354	635	1,186	550	46
	TW 200	8253360	83	DN 200 / PN 16	180.0	409	775	1,456	600	79
	TW 250	8253370	83	DN 250 / PN 16	288.0	480	890	1,876	800	156
	TW 300	8253380	83	DN 300 / PN 16	405.0	634	1,005	2,196	900	325

→ Sizes TW 350–TW 600 are available on request

	Type	Art. No.	Material group	Connection A	V_{max} [m³/h]	Ø D [mm]	L [mm]	H [mm]	HB [mm]	Weight [kg]
	Steel with welding connection, 110°C, 10 bar, service flange									
10 bar 110°C	TW 60.3 R	8253200	83	60.3	12.5	132	260	771	370	13
	TW 76.1 R	8253210	83	76.1	20.0	132	260	771	370	13
	TW 88.9 R	8253220	83	88.9	27.0	206	370	926	430	46
	TW 114.3 R	8253230	83	114.3	47.0	206	370	926	430	36
	TW 139.7 R	8253240	83	139.7	72.0	354	525	1,186	550	102
	TW 168.3 R	8253250	83	168.3	108.0	354	525	1,186	550	78
	TW 219.1 R	8253260	83	219.1	180.0	409	650	1,456	600	182
	TW 273.0 R	8253270	83	273.0	288.0	480	750	1,876	800	180
	TW 323.9 R	8253280	83	323.9	405.0	634	850	2,196	900	450
	Steel with flange connection, 110°C, 10 bar, service flange									
10 bar 110°C	TW 50 R	8253400	83	DN 50 / PN 16	12.5	132	350	771	370	18
	TW 65 R	8253410	83	DN 65 / PN 16	20.0	132	350	771	370	19
	TW 80 R	8253420	83	DN 80 / PN 16	27.0	206	470	926	430	43
	TW 100 R	8253430	83	DN 100 / PN 16	47.0	206	475	926	430	51
	TW 125 R	8253440	83	DN 125 / PN 16	72.0	354	635	1,186	550	89
	TW 150 R	8253450	83	DN 150 / PN 16	108.0	354	635	1,186	550	94
	TW 200 R	8253460	83	DN 200 / PN 16	180.0	409	775	1,456	600	138
	TW 250 R	8253470	83	DN 250 / PN 16	288.0	480	890	1,876	800	355
	TW 300 R	8253480	83	DN 300 / PN 16	405.0	634	1,005	2,196	900	500

→ Sizes TW 350 R–TW 600 R are available on request

Heat insulation for the aforementioned Extwin Steel separators available upon request.

Pressure loss diagram for Exvoid / Exdirt / Extwin standard models

Connection	K_{VS} m³/h	V_{max} m³/h
IG 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
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

Connection	K_{VS} m³/h	V_{max} m³/h
DN 150	487.9	108.0
DN 200	780.6	180.0
DN 250	1096.4	288.0
DN 300	1459.5	405.0
DN 350	1790.3	500.0
DN 400	2242.7	650.0
DN 450	2687.9	850.0
DN 500	3196.0	1,060.0
DN 600	4416.7	1,530.0

Pressure loss calculation for all volume flows

$$\Delta p = \left(\frac{\dot{V}}{K_{VS}} \right)^2 \cdot 1\ \text{bar};\ \dot{V} \le \dot{V}_{max}$$

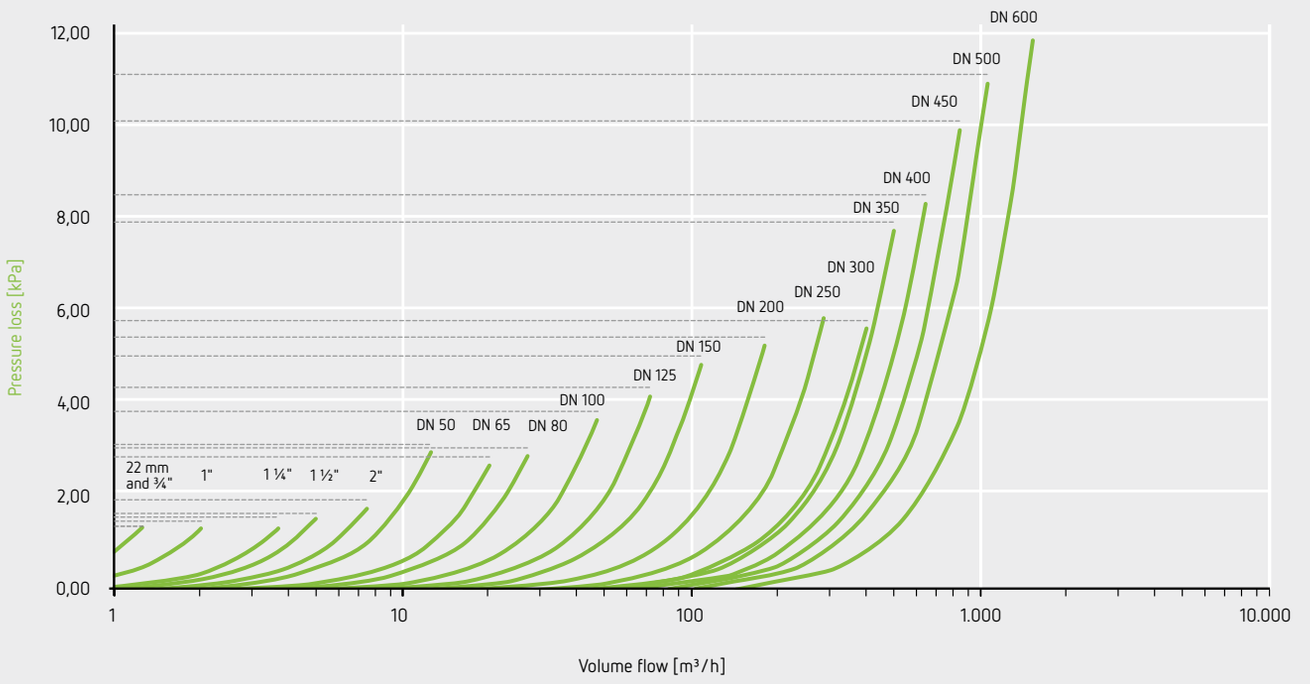
Example: Heating circuit 70/55°C; heating generator capacity 40 kW

1. Volume flow calculation

$$\dot{V} = \frac{40\ \text{kW}}{4.2\ \text{kJ/(kg} \cdot \text{K)} \cdot (70 - 55)\ \text{K}} \cdot 3{,}600\ \frac{\text{s}}{\text{h}} \cdot \frac{1\ \text{m}^3}{1{,}000\ \text{kg}}$$

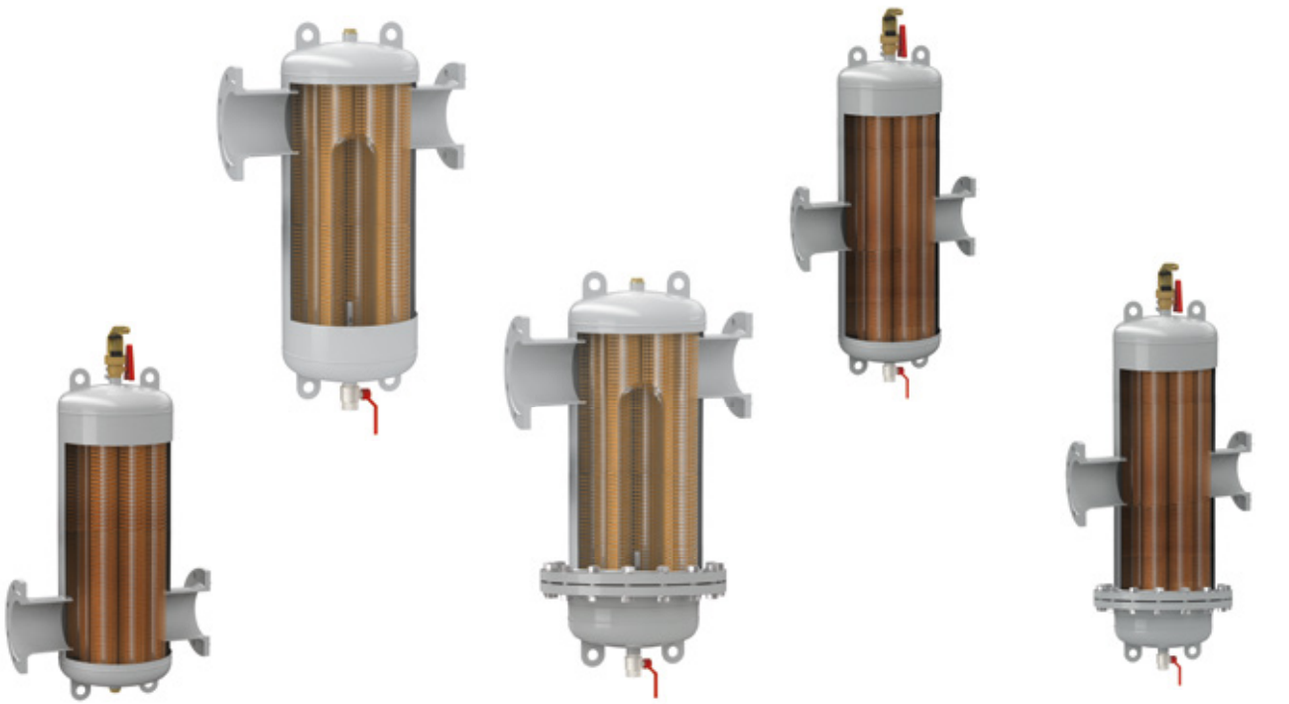
$= 2.3\ \text{m}^3/\text{h} \rightarrow$ Selection from table: IG 1 ¼"

$$\Delta p = \left(\frac{2.3\ \text{m}^3/\text{h}}{31.8\ \text{m}^3/\text{h}} \right)^2 \cdot 1\ \text{bar} = 5.23 \cdot 10^{-3}\ \text{bar} \triangleq 0.53\ \text{kPa}$$



CE

Exvoid HC, Exdirt HC and Extwin HC



Exvoid | Exdirt | Exdirt with service flange | Extwin | Extwin with service flange

All Reflex Steel separators are available as standard models and Hi Cap versions. The Hi Cap model is designed for high volume flow rates and used in flow velocities between 1.5 m/s and 3.0 m/s.

Higher flow velocities and, therefore, higher flow volumes generate a different flow pattern when entering the base body. The flow and idling zones are shifted. This changed flow pattern is optimally taken into consideration by enlarging the base body to ensure maximum separation effects within the high flow volumes.

Prices and delivery times available upon request.

Accessories

Exferro Magnetic insert for Exdirt and Extwin steel separator

Exferro

Technical Features

- Magnetic insert for Exdirt and Extwin made of steel for collecting ferromagnetic particles during sludge and dirt separation
- 110°C | 10 bar
- Magnet rod screwed into the immersion sleeve or T-piece

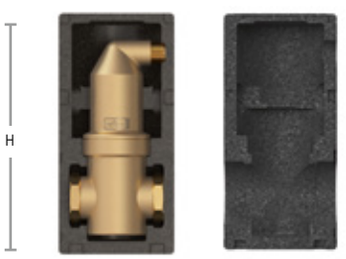
Exvoid T upper venting part for Exvoid air and micro-bubble separator made of steel with 3-way valve bottom part

Exvoid T upper venting part

Technical Features

- Venting without leakage: this precise and reliable venting valve makes a notable difference
- It can be shut off for easy replacement without interrupting operation
- Optional supplementary kit for dirt and sludge separator
- Bypass can be used to rinse the separator or as a filling and degassing connection
- 110°C | 10 bar

Exiso

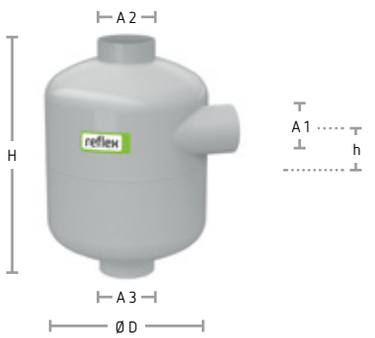


Exiso

Technical Features

- Heat insulation for Exvoid type A 22 - A 1 ½ and Exdirt D 22 – D 2

Expansion traps



Expansion trap 480

Technical Features

- For the connection to the safety valves of heat generators to separate water/vapour mixtures according to DIN EN 12828
- Grey-coated
- Maximum operating temperature 120°C
- Other sizes upon request.

CE

Exferro Magnetic insert for Exdirt and Extwin steel separator

10 bar 110 °C

Type	Art. No.	Material group	Connection A	Installation length [mm]	Weight [kg]
Exferro D/TW 50–65 (60.3–76.1)	9258340	83	G 1"	300	1.0
Exferro D/TW 80–100 (88.9–114.3)	9258350	83	G 1"	350	1.4
Exferro D/TW 125–150 (139.7–168.3)	9258360	83	G 1"	450	1.9
Exferro D/TW 200 (219.1)	9258370	83	G 1"	550	2.4
Exferro D/TW 250–300 (273.0–323.9)	9258380	83	G 2"	810	4.7

→ Sizes DN 350–DN 600 are available on request

Exvoid T upper venting part for Exvoid air and micro-bubble separator made of steel with 3-way valve bottom part

Type	Art. No.	Material group	Connection A	Ø D [mm]	H [mm]	Weight [kg]
Exvoid T upper venting part	9255805	82	G 1"	82.5	175	1.4

Exiso*

Type	Art. No.	Material group	Insulation strength [mm]	Ø D [mm]	H [mm]	Weight [kg]
Heat insulation for Exvoid, type Exvoid A22–A2 and Exdirt type D22–D2						
A/D 22–1 ½	9254811	82	15.0	125	225	0.1
A/D 2	9254801	82	15.0	135	270	0.2
Heat insulation for Exvoid und Exdirt steel models						
DN 50-65 (60.3–76.1)	9254831	82	30.5	196	442	0.4
DN 80-100 (88.9–114.3)	9254841	82	30.5	270	557	0.6
DN 125-150 (139.7–168.3)	9254851	82	30.5	420	857	2.2

Expansion traps*

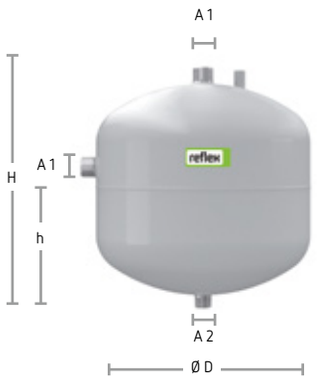
10 bar 110 °C

Type	Art. No.	Material group	Connection A	Ø D [mm]	H [mm]	h [mm]	Weight [kg]
T 170	8680000	73	A1/A2/A3: DN 50/65/65	206	328	55	3.2
T 270	8681000	73	A1/A2/A3: DN 65/80/80	280	400	65	5.0
T 380	8682000	73	A1/A2/A3: DN 80/100/100	490	528	75	10.1
T 480	8683000	73	A1/A2/A3: DN 125/150/150	480	710	115	19.5
T 550	8684000	73	A1/A2/A3: DN 150/200/200	634	896	125	32.3

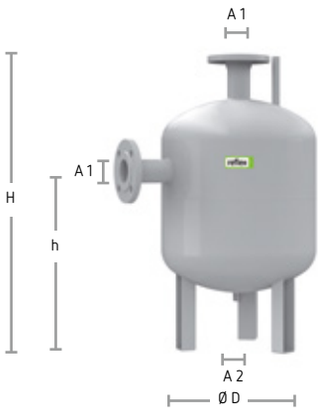
*Not for vertical separators, separators with service flange or Extwin!

Accessories

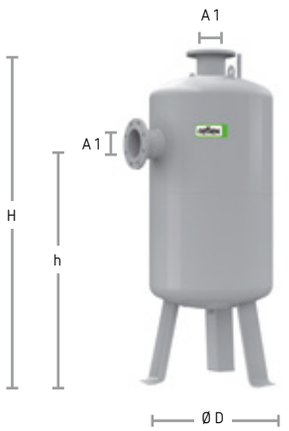
Desludging vessels



Desludging vessel 30 / 10 bar



Desludging vessel 60 / 10 bar

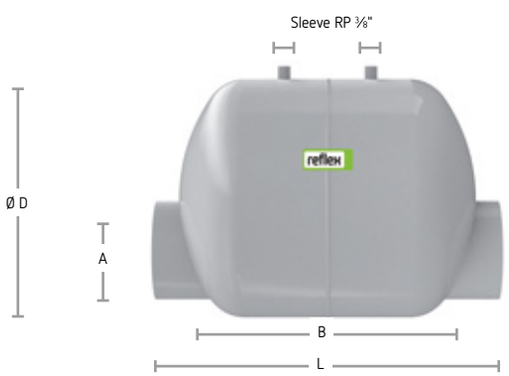


Desludging vessel 300 / 6 bar

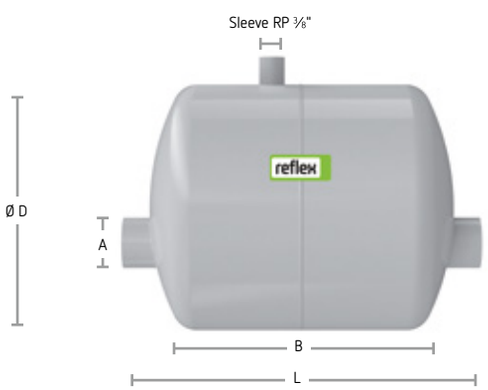
Technical Features

- For the installation in fluid circuits
- To precipitate oozes and suspended solids
- Grey-coated
- Maximum operating temperature 110°C

Air separators



Air separator 150



Air separator 32-50

Technical Features

- For the separation of gas bubbles in fluid circuits
- For low static pressures in particular
- With welded connection
- Grey-coated
- Maximum operating temperature 110 °C
- Maximum operating pressure 10 bar
- Number of bushings:
  LA 32–50: 1 bushing
  LA 65–200: 2 bushings

CE

Desludging vessels

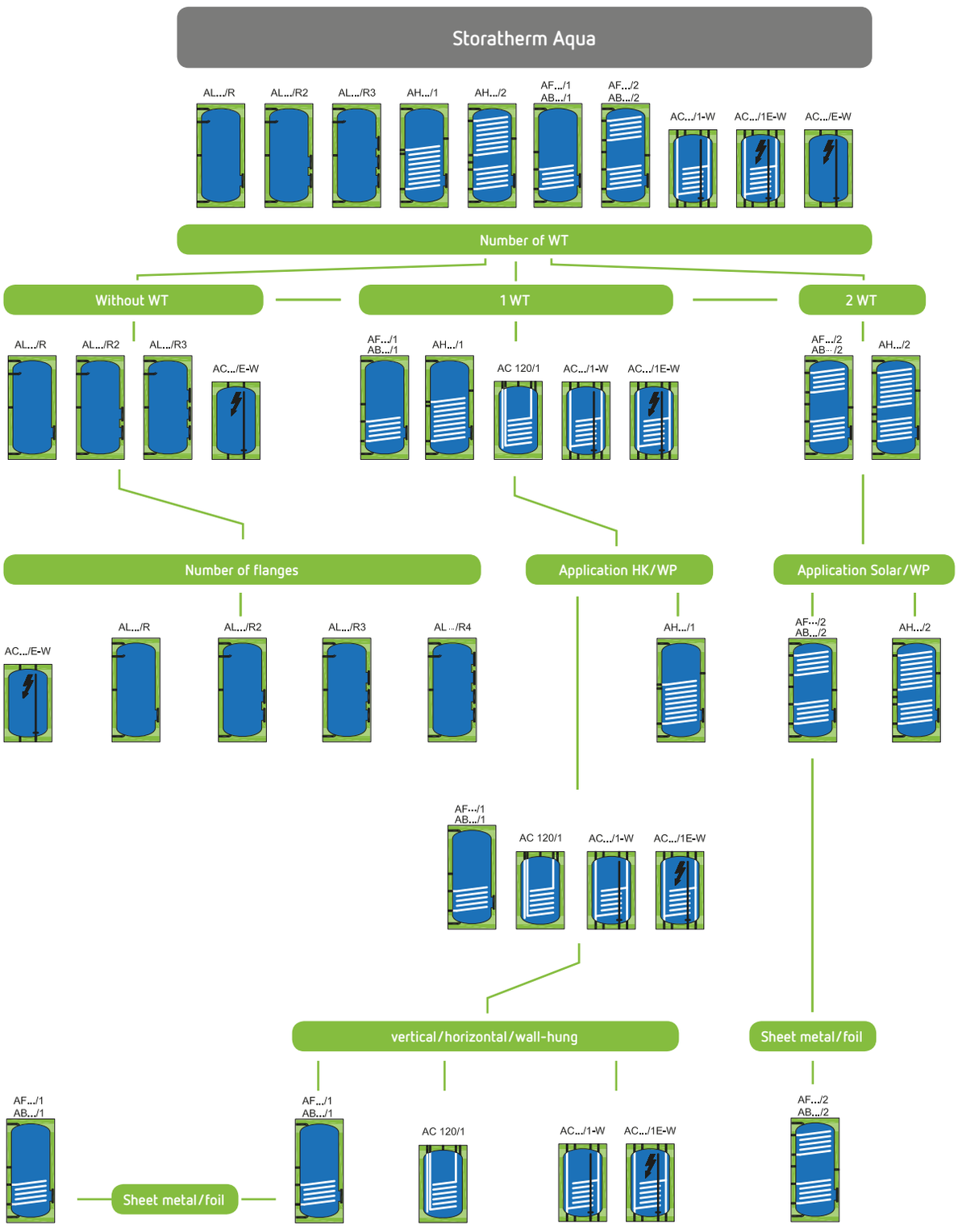
	Type	Art. No.	Material group	Connection A	Ø D [mm]	H [mm]	h [mm]	Weight [kg]
	6 bar, 110°C							
6 bar 110°C	EB 180	8632000	25	A1/A2: DN100/PN6	600	1,110	726	64.5
	EB 300	8633000	25	A1/A2: DN125/PN6	600	1,600	1,141	103.0
	EB 400	8634000	25	A1/A2: DN150/PN6	750	1,500	1,027	139.5
	EB 750	8634100	25	A1/A2: DN250/PN6	750	2,215	1,677	229.2
	10 bar, 110°C							
10 bar 11 0°C	EB 30	8636000	25	A1/A2: R 1 ¼"	409	455	270	8.7
	EB 60	8635100	25	A1/A2: DN50/PN16	409	770	465	18.3
	EB 80	8636200	25	A1/A2: DN65/PN16	480	765	468	23.8
	EB 100	8636300	25	A1/A2: DN80/PN16	480	870	535	30.0

Air separators

	Type	Art. No.	Material group	Connection A	Ø D [mm]	L [mm]	B [mm]	h [mm]	Weight [kg]
10 bar 120°C	LA 32	8671000	72	DN32 / PN16	206	300	255	30	2.4
	LA 40	8672000	72	DN40 / PN16	206	300	255	40	2.5
	LA 50	8673000	72	DN50 / PN16	206	300	255	40	2.6
	LA 65	8674000	72	DN65 / PN16	280	395	315	60	4.4
	LA 80	8675000	72	DN80 / PN16	280	395	315	60	4.5
	LA 100	8676000	72	DN100 / PN16	280	395	315	50	5.0
	LA 125	8677000	72	DN125 / PN16	280	390	315	40	5.3
	LA 150	8678000	72	DN150 / PN16	409	590	510	90	12.9
	LA 200	8679000	72	DN200 / PN16	409	590	510	40	13.8

Hot Water Storage Tanks & Heat Exchangers

Hot water storage tanks

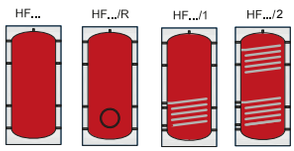


List of acronyms WP = Heat pump, **WT =** Heat exchanger, **HK =** Boiler

Reflex Storatherm Speicher Sortiment

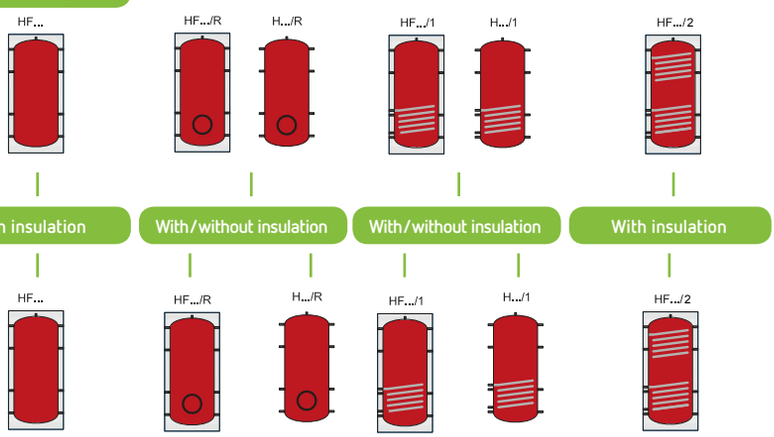
Buffer tanks

Storatherm Heat buffer tanks

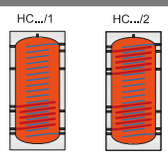


Number of WT

- without WT
  - Without flange
    - HF... → With insulation
    - HF.../R, H.../R → With/without insulation
    - HF.../1, H.../1 → With/without insulation
    - HF.../2 → With insulation
- 1 WT
- 2 WT



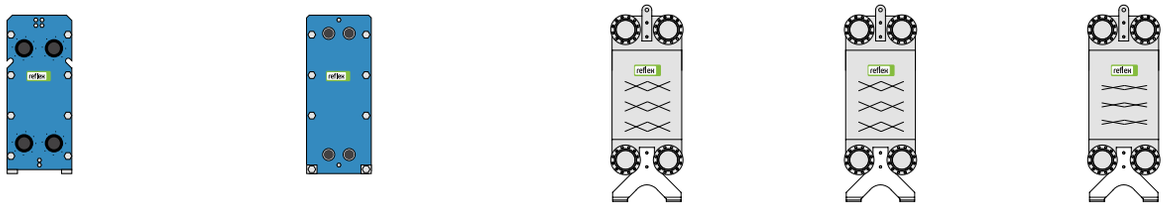
Storatherm Heat Combi buffer tanks



Number of WT 1 or 2

Longtherm heat exchanger

- screwed
  - Tpye RHG
  - Tpye RMG
- soldered
  - Tpye RHB
  - Tpye RMB
  - Tpye RLB



RH...-Channel:h = high
- → high pressure loss
- → large, thermally active length

RM...-Channel:m = middle
- → Medium pressure loss
- → medium, thermally active length

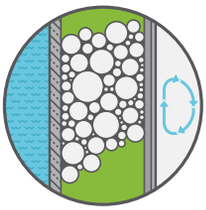
RL...-Channel:l = low
- → low pressure loss
- → small, thermally active length

Theoretical principles

Standard-compliant energy efficiency and more

Energy efficiency class A – the new generation of storage tanks

rECOflex®



New and exclusive to Reflex: With its closed-pore structure and tiny, microscopic cells, the innovative rECOflex® thermal insulation system achieves an exceptional level of thermal insulation with minimal material thickness.

- Class A storage tanks meet all the criteria of the ErP Directive
- Sleek new space-saving design
- Energy efficiency class A thanks to the rECOflex® insulation system
- Minimal heat losses to reduce energy costs
- Quick and uniform heating thanks to highly efficient heating surfaces
- Clean, hygienic potable water afforded by quality enamelling in line with DIN 4753 Part 3

The Reflex ErP App as a digital tool

VdZ HEIZUNGSlabel

Available on the App Store | GET IT ON Google play

Calculation of a composite system or system energy label

When a heating device is replaced or another component is added (such as a solar installation or temperature controller), you must create, in the quotation process, a system label with the energy efficiency class of the composite system.

Coinciding with the erP Directive to be effective, Reflex offers you the necessary tools to calculate digitally, that is, most easily, the corresponding system energy efficiency classes.
Use the App to calculate and create composite labels for systems comprising components from different assemblies and modules. This includes potable water systems, heating systems and the combination of both.

This App ensures that you have all necessary values for energy efficiency in time – individually and well structured, depending on the building situation, the devices to be installed and the budget specified. Of course, the actuality of the data at any time is ensured as we execute regular updates via Internet connection.

Via interface, our Reflex ErP App is connected to the German VdZ portal and thus ensures that you have access to the product data of all manufacturers registered with the portal.

Download the online version here!
www.reflex.de/services

Longtherm Heat Exchangers

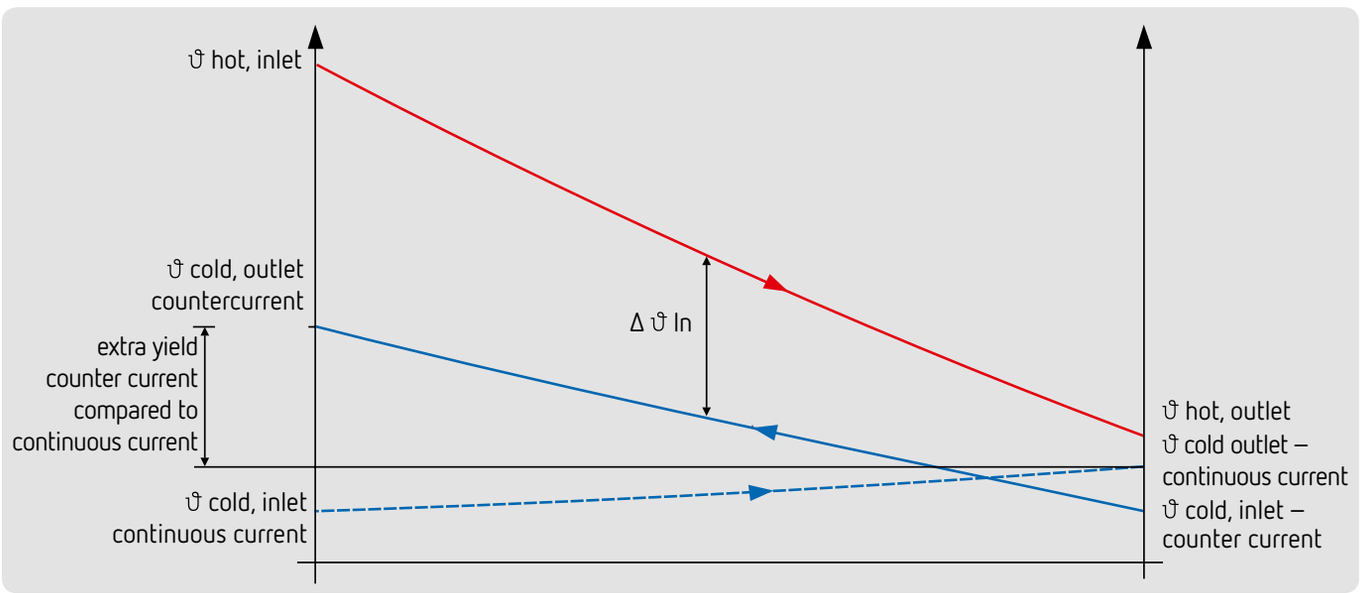
The Reflex Longtherm heat exchangers are available in copper-soldered and screwed versions. The variety of types available covers a whole host of applications in the fields of heating and district heating technology, as well as in refrigeration and industrial plants. These all-rounders are ideal for applications of any size up to a max. of 230°C and 30 bar for soldered heat exchangers, and 110°C and 16 bar for screwed heat exchangers. Other services, materials and demands in terms of pressure and temperature can also be met on request.

The following features are required for design:

- Transmission power
- Inlet and outlet temperatures for primary and secondary side
- Type of medium
- Max. permissible pressure losses
- Other requirements (connections, installation dimensions, etc.)

Counter current

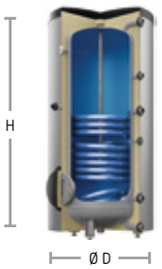
As a rule, heat exchangers should be always connected following the counter current principle, to ensure full capa-city utilisation. When connecting in concurrent flow, potentially significant capacity losses will be experienced.



Hot water storage tanks

rECOflex®

Storatherm Aqua Hot water storage tanks with one heating coil



AB/AF 100/1–3000/1

Technical Features

- Vertical tank for all heating systems
- According to DIN 4753 T3, with magnesium anode, thermometer, adjustable feet and service opening
- Tank up to 500 litres (type AF .../1M) with additional Rp 1 ½" coupling
- Up to 2,000 litres insulation preinstalled
- Max. operating pressure: Heating water 16 bar, potable water 10 bar
- Max. operating temperature: Heating water 110°C, potable water 95°C

Storatherm Aqua – Types

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

Insulation
rECOflex® Insulation system with foil jacket, not removable

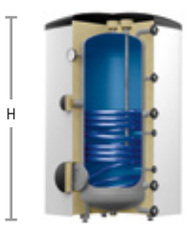
AF ... /1 (> 500 litres)
Hot water storage tanks with one heating coil

Insulation
up to 1,000l: 100 mm fleece insulation with foil jacket, removable
from 1,500l: 120 mm fleece insulation with foil jacket, removable

AB ... /1 (≤ 500 litres)
Hot water storage tanks with one heating coil

Insulation
rECOflex® Insulation system with sheet-steel cladding, not removable

Storatherm Aqua A Storage Tank Hot water storage tanks with one heating coil



AF 150–500/1M_A

Technical Features

- Vertical tank for all heating systems
- According to DIN 4753 T3, with magnesium anode, thermometer, adjustable feet and service opening
- With additional Rp 1 ½" coupling
- Max. operating pressure: Heating water 16 bar, potable water 10 bar
- Max. operating temperature: Heating water 110°C, potable water 95°C

Storatherm Aqua A Storage Tank – Types

AF ... /1M_A (≤ 500 litres)
Hot water storage tanks with one heating coil and additional coupling for electric heating

Insulation
rECOflex® Insulation system with foil jacket, not removable

CE

Storatherm Aqua Hot water storage tanks with one heating coil

Type	Art. No. White	Art. No. Silver	Material group	Volume [l]	Ø D [mm]	Height H	Tilt height [mm]	Weight [kg]	Heating surface [m²]	Heat losses [W]	EEK*
AF 150/1M_B	7861600	7861100	60	157	540	1,222	1,290	67	0.75	56	B
AF 200/1M_B	7861700	7861200	60	196	600	1,473	1,530	79	0.95	55	B
AF 200/1M_C	7847600	7847100	60	196	540	1,473	1,530	79	0.95	68	C
AF 300/1M_B	7861800	7861300	60	304	700	1,834	1,892	117	1.45	69	B
AF 400/1M_B	7861900	7861400	60	385	750	1,631	1,738	137	1.80	69	B
AF 400/1M_C	7847800	7847300	60	385	700	1,631	1,738	137	1.80	84	C
AF 500/1M_B	7862000	7861500	60	473	750	1,961	2,044	186	1.90	73	B
AF 500/1M_C	7847900	7847400	60	473	700	1,961	2,044	189	1.90	99	C
AF 750/1_C	7848000	7838000	60	744	950	2,023	1,990	259	3.70	123	C
AF 1000/1_C	7848100	7838100	60	970	1,050	2,050	2,025	322	4.50	142	C
AF 1500/1_C	7848200	-	52	1,500	1,240	2,216	2,520	480	6.00	171	C
AF 2000/1_C	7848300	-	52	2,000	1,440	2,126	2,545	650	7.00	188	C
AF 3000/1**	7848400	-	52	2,800	1,440	2,878	3,300	790	9.50	-	-
AB 100/1_C	7895500	7846400	60	99	512	849	960	50	0.61	50	C
AB 150/1_B	7895600	7846500	60	157	540	1,222	1,290	67	0.75	56	B
AB 200/1_C	7895700	7846600	60	196	540	1,473	1,530	79	0.95	68	C
AB 300/1_B	7895800	7846700	60	304	700	1,334	1,472	117	1.45	69	B
AB 400/1_C	7895900	7846800	60	385	700	1,631	1,738	137	1.80	84	C
AB 500/1_C	7896100	7846900	60	473	700	1,961	2,044	189	1.90	99	C

Fleece insulation with foil jacket for heating applications, installation by the user			
Type	Art. No.	Colour	Material group
AW 3000/1	5914300	White	64

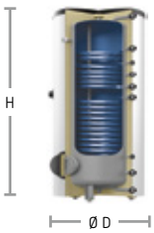
Storatherm Aqua A Storage Tank Hot water storage tanks with one heating coil

Type	Art. No. White	Art. No. Silver	Material group	Volume [l]	Dimensions [mm]	Height H	Tilt height [mm]	Weight [kg]	Heating surface [m²]	Heat losses [W]	EEK*
AF 150/1M_A	7355100	7350100	60	159	500	1.068	1.212	56,0	0,83	36	A
AF 200/1M_A	7355200	7350200	60	197	500	1.260	1.384	62,0	0,95	39	A
AF 300/1M_A	7355300	7350300	60	302	597	1.294	1.452	89,0	1,28	49	A
AF 400/1M_A	7355400	7350400	60	382	597	1.591	1.729	112,0	1,75	51	A
AF 500/1M_A	7355500	7350500	60	473	597	1.921	2.038	129,0	1,88	58	A

*EEK = Energy Efficiency Class

** Insulation must be ordered separately by number 5914300

Storatherm Aqua Solar Hot water storage tanks with two heating coil



AB/AF 200/2 – 3000/2

Technical Features

- Vertical storage tank with additional bare-tube heat exchangers for using solar energy
- According to DIN 4753 T3, with magnesium anode, thermometer, adjustable feet and service opening
- Up to 2,000 litres insulation preinstalled
- Max. operating pressure: Heating water 16 bar, potable water 10 bar
- Max. operating temperature: Heating water 110°C, potable water 95°C

Storatherm Aqua Solar–Types

AF .../2 (≤ 500 litres)
Hot water storage tanks with two heating coil

Insulation
rECOflex® Insulation system with foil jacket, not removable

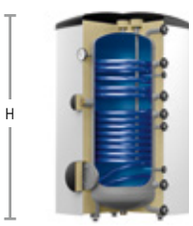
AF ... /2 (> 500 litres)
Hot water storage tanks with two heating coil

Insulation
up to 1,000l: 100mm fleece insulation with foil jacket, removable
from 1,500l: 120mm fleece insulation with foil jacket, removable

AB .../2 (≤ 500 litres)
Hot water storage tanks with two heating coil

Insulation
rECOflex® Insulation system with sheet-steel cladding, not removable

Storatherm Aqua Solar A Storage Tank Hot water storage tanks with two heating coil



AF 200 - 500/2_A

Technical Features

- Vertical storage tank with additional bare-tube heat exchangers for using solar energy
- According to DIN 4753 T3, with magnesium anode, thermometer, adjustable feet and service opening
- Max. operating pressure: Heating water 16 bar, potable water 10 bar
- Max. operating temperature: Heating water 110°C, potable water 95°C

Storatherm Aqua Solar A Storage Tank–Types

AF .../2_A (≤ 500 Litres)
Hot water storage tanks with two heating coil

Insulation
rECOflex® Insulation system with foil jacket, not removable

CE

Storatherm Aqua Solar Hot water storage tanks with two heating coil

Type	Art. No. White	Art. No. Silver	Material group	Volume [l]	Ø D [mm]	Height H	Tilt height [mm]	Weight [kg]	Heating surface [m²]	Heat losses [W]	EEK*
AF 200/2_B	7862100	7896700	61	196	600	1,473	1,530	84	0.7/0.95	58	B
AF 200/2_C	7848800	7896800	61	196	540	1,473	1,530	84	0.7/0.95	71	C
AF 300/2_B	7849800	-	61	299	700	1,334	1,472	106	0.85/1.45	65	B
AF 300/2S_B	7862200	7862500	61	299	650	1,834	1,892	123	0.8/1.55	65	B
AF 300/2S_C	7849000	7836300	61	299	600	1,834	1,892	123	0.8/1.55	83	C
AF 400/2_B	7862300	7862600	61	382	750	1,631	1,738	149	1.05/1.8	71	B
AF 400/2_C	7849100	7849900	61	382	700	1,631	1,738	149	1.05/1.8	86	C
AF 500/2_B	7862400	7862700	61	474	750	1,961	2,044	179	1.3/1.9	75	B
AF 500/2_C	7849200	7850000	61	474	700	1,961	2,044	179	1.3/1.9	100	C
AF 750/2_C	7849300	7838500	61	751	950	2,023	1,990	249	1.17/1.93	129	C
AF 1000/2_C	7849400	7838600	61	972	1,050	2,050	2,025	320	1.17/2.45	146	C
AF 1500/2_C	7849500	-	52	1,500	1,240	2,216	2,250	495	1.9/3.9	171	C
AF 2000/2_C	7849600	-	52	2,000	1,440	2,126	2,200	670	2.25/4.2	188	C
AF 3000/2**	7849700	-	52	3,000	1,440	2,875	3,300	820	3.4/6.8	-	-
AB 300/2S_C	7896400	7848500	61	299	600	1,834	1,892	123	0.8/1.55	83	C
AB 400/2_C	7896500	7836400	61	382	700	1,631	1,738	149	1.05/1.8	86	C
AB 500/2_C	7896600	7848700	61	474	700	1,961	2,044	179	1.3/1.9	100	C

Fleece insulation with foil jacket for heating applications, installation by the user			
Type	Art. No.	Colour	Material group
AW 3000/2	5914600	White	64

Storatherm Aqua Solar A Storage Tank Hot water storage tanks with two heating coil

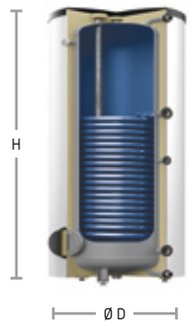
Type	Art. No. White	Art. No. Silver	MG	Volume [l]	Dimensions [mm]	Height H	Tilted dimension [mm]	Weight [kg]	Heating surface [m²]	Heat losses [W]	EEK*
AF 200/2_A	7355600	7350600	61	196	500	1.482	1.384	70,0	0,95/0,668	40	A
AF 300/2_A	7355700	7350700	61	300	597	1.519	1.452	100,0	1,415/0,835	48	A
AF 400/2_A	7355800	7350800	61	380	597	1.816	1.729	124,0	1,75/0,997	53	A
AF 500/2_A	7355900	7350900	61	470	597	2.151	2.038	146,0	1,88/1,28	58	A

*EEK = Energy Efficiency Class

** Insulation must be ordered separately by number 5914600

rECOflex®

Storatherm Aqua Heat Pump Hot water storage tank for heat pump application



AH 300–1000/1

AH 400–1000/2

Technical Features

- High-efficiency tank with enlarged heating surface, for use in heat pump systems in particular
- According to DIN 4753 T3
- With magnesium anode and thermometer, adjustable feet and service opening
- With 1 ½" coupling
- Insulation preinstalled
- Max. operating pressure: Heating water 10 bar, potable water 10 bar
- Max. operating temperature: Heating water 110°C, potable water 95°C

Storatherm Aqua Heat Pump – Type Overview

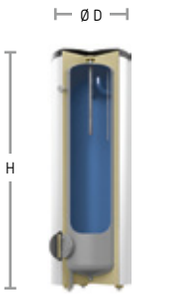
AH .../1
Hot water storage tanks with one heating coil

Insulation
Up to 500 l: rECOflex® Insulation system with foil jacket, not removable
from 750 l: 100 mm fleece insulation with foil jacket, removable

AH .../2
Hot water storage tanks with two heating coils

Insulation
Up to 500 l: rECOflex® Insulation system with foil jacket, not removable
from 750 l: 100 mm fleece insulation with foil jacket, removable

Storatherm Aqua Load Charging tanks



AL 300–500/R

AL 1500–3000/R3

Technical Features

- Vertical tank for hot water provision in the tank charging system
- According to DIN 4753 T3
- With magnesium anode, thermometer and adjustable feet
- Up to 2,000 litres insulation preinstalled
- Max. operating pressure: Potable water 10 bar
- Max. operating temperature: Potable water 95°C

Storatherm Aqua Load - Type Overview

AL .../R
Hot water storage tank with one flange

Insulation
Up to 500 l: rECOflex® Insulation system with foil jacket, not removable
from 750 l: 100 mm fleece insulation with foil jacket, removable

AL .../R2
Hot water storage tank with two flanges

Insulation
120 mm fleece insulation with foil jacket, removable

AL .../R3
Hot water storage tank with three flanges

Insulation
120 mm fleece insulation with foil jacket, removable

AL .../R4
Hot water storage tank with four flanges

Insulation
120 mm fleece insulation with foil jacket, removable

CE

Storatherm Aqua Heat Pump Hot water storage tank for heat pump application

Type	Art. No. White	Material group	Volume [l]	Ø D [mm]	Height H	Tilt height [mm]	Weight [kg]	Heating surface [m²]	Heat losses [W]	EEK*
Heat pump storage with one bare-tube heat exchanger										
AH 300/1_B	7864000	60	302	700	1.297	1.443	139,0	3,2	70	B
AH 400/1_B	7864100	60	380	750	1.594	1.722	170,0	5,0	68	B
AH 400/1_C	7845600	60	380	700	1.594	1.714	170,0	5,0	86	C
AH 500/1_B	7864200	60	469	750	1.921	2.039	222,0	6,2	78	B
AH 500/1_C	7845700	60	469	700	1.921	2.020	222,0	6,2	100	C
AH 750/1_C	7845800	60	729	950	2.050	2.107	263,0	7,0	141	C
AH 1000/1_C	7845900	60	965	1.050	2.085	2.158	335,0	9,2	140	C
Heat pump storage with two bare-tube heat exchangers										
AH 400/2_B	7864300	60	374	750	1.594	1.722	189,0	1,4/3,2	68	B
AH 400/2_C	7846000	60	374	700	1.594	1.722	189,0	1,4/3,2	87	C
AH 500/2_B	7864400	60	469	750	1.921	2.039	235,0	1,6/4,3	78	B
AH 500/2_C	7846100	60	469	700	1.921	2.020	235,0	1,6/4,3	100	C
AH 750/2_C	7846200	60	727	950	2.050	2.107	290,0	2,2/5,2	128	C
AH 1000/2_C	7846300	60	965	1.050	2.085	2.158	385,0	3,1/6,1	141	C

Storatherm Aqua Load Charging tanks

Type	Art. No. White	Material group	Volume [l]	Ø D [mm]	Height H	Tilt height [mm]	Weight [kg]	Heating surface [m²]	Heat losses [W]	EEK*
AL 300/R_C	7844400	51	301	600	1.834	1.892	90,0	-	83	C
AL 500/R_C	7844500	51	477	700	1.958	2.044	155,0	-	100	C
AL 750/R_C	7844600	51	751	910	2.035	1.990	214,0	-	123	C
AL 1000/R_C	7844700	51	972	1.010	2.060	2.025	267,0	-	142	C
AL 300/R2_C	7353100	51	301	600	1.834	1.892	90,0	-	83	C
AL 500/R2_C	7353200	51	477	700	1.958	2.044	155,0	-	100	C
AL 750/R2_C	7353300	51	751	910	2.035	1.990	214,0	-	123	C
AL 1000/R2_C	7353400	51	972	1.010	2.060	2.025	267,0	-	142	C
AL 1500/R2_C	7844800	52	1.459	1.200	2.215	2.200	390,0	-	171	C
AL 2000/R2_C	7844900	52	1.986	1.400	2.126	2.235	550,0	-	188	C
AL 3000/R2	7845000	52	2.780	1.400	2.876	2.848	630,0	-	-	-
AL 1500/R3_C	7845100	52	1.459	1.200	2.215	2.220	395,0	-	171	C
AL 2000/R3_C	7845200	52	1.986	1.400	2.126	2.235	555,0	-	188	C
AL 3000/R3	7845300	52	2.780	1.400	2.876	2.848	635,0	-	-	-
AL 3000/R4	7845400	52	2.780	1.400	2.876	2.848	642,0	-	-	-
AL 4000/R4	7845480	52	2.721	1.740	2.841	2.845	939,0	-	-	-
AL 5000/R4	7845490	52	3.230	1.740	3.350	3.311	1070,0	-	-	-

Fleece insulation with foil jacket for heating applications, installation by the user			
Type	Art. No.	Colour	Material group
AL 3000/R2	5913600	White	64
AL 3000/R3	5913900	White	64
AL 3000/R4	5914000	White	64
AL 4000/R4	5921800	White	64
AL 5000/R4	5921900	White	64

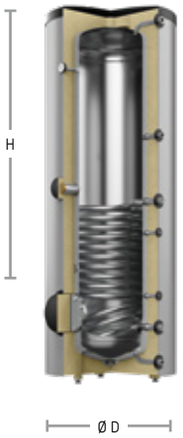
*EEK = Energy Efficiency Class

rECOflex®

Storatherm Aqua Inox Stainless-steel drinking water storage tank

Energieeffizienzklasse Energy efficiency class A

Energieeffizienzklasse Energy efficiency class B



AI .../1M

Technical Features

- Upright tank for all heating systems with a bare-tube heat exchanger
- made of high-quality stainless steel rECOflex® insulation system with foil jacket
- with 1 ½" bushing
- changing anode not necessary
- permissible operating pressure: Heating water 10 bar; drinking water 10 bar
- permissible operating temperature: Heating water 130°C; drinking water 90°C

Type overview Storatherm Aqua Inox

AI .../1M
Stainless-steel drinking water container
with a bare-tube heat exchanger

Insulation
rECOflex® Insulation system with foil jacket, not removable

CE

Storatherm Aqua Inox Stainless-steel drinking water storage tank

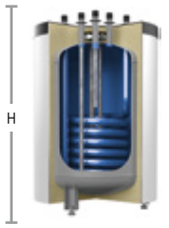
Type	Art. No. silver	WG	Inhalt [l]	Ø D [mm]	Insulation thickness [mm]	Height H [mm]	Tilted dimension [mm]	Weight [kg]	Heating surface [m²]	Heat losses [W]	EEK*
AI 150/1M_A	7364100	60	152,4	600	75	1.171	1.285	35,0	0,8	38	A
AI 200/1M_B	7364200	60	190,4	600	75	1.434	1.529	43,0	1,1	44	B
AI 300/1M_B	7364300	60	293,6	650	75	1.793	1.885	58,0	1,4	57	B
AI 400/1M_B	7364400	60	378,2	750	75	1.590	1.725	68,0	1,6	61	B
AI 500/1M_B	7364500	60	477,0	750	75	1.960	2.070	81,0	1,8	72	B

*EEC = Energy efficiency class

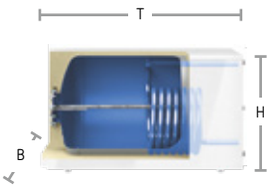
rECOflex®

Storatherm Aqua Compact Hot water storage tank

Energieeffizienzklasse Energy efficiency class B



AC 120/1



AC 150/1–250/1

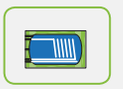
Technical Features

- Tank in compact design for all heating installations
- According to DIN 4753 T3, with magnesium anode, thermometer and insulation preinstalled
- Max. operating pressure:
  Heating water 16 bar, potable water 10 bar
- Max. operating temperature:
  Heating water 110°C, potable water 95°C

Storatherm Aqua Compact – Type Overview

AC 120/1
Compact storage tank with connections at the top for direct installation below a wall-hung water heater

Insulation
rECOflex® Insulation system with foil jacket, not removable



AC … /1
Base tank for space-saving boiler/tank combinations with one bare-tube heat exchanger, up to 300 kg load bearing capacity

Insulation
rECOflex® Insulation system with sheet-steel cladding, not removable

Storatherm Aqua Compact, wall-hung Hot water storage tank

Energieeffizienzklasse Energy efficiency class B

Energieeffizienzklasse Energy efficiency class C

AC …/1-W; AC …/1E-W; AC …/E-W

Technical Features

- Wall-hung tanks in compact design, usable with all conventional energy sources
- E-variant with high-quality ceramic immersion heater without contact with potable water
- Steel sheet jacket with rECOflex® insulation system
- For AC…/1E–W and AC…/E–W:
  Capacity 3,000 W at 400 V or 1,000 W at 230 V Regulating range: 7°C–85°C, shut-down at 110°C
- Max. operating pressure:
  Heating water 10 bar, potable water 10 bar
- Max. operating temperature:
  Heating water 110°C, potable water 95°C

Storatherm Aqua Compact, wall-hung – Type Overview

AC ..../1-W
Wall-hung hot water storage tank with one heating coil

Insulation
rECOflex® insulation with steel sheet jacket

AC ..../1E-W
Wall-hung hot water storage tank with one heating coil and electrical heating element

Insulation
rECOflex® insulation with steel sheet jacket

AC ..../E-W
Wall-hung hot water storage tank with electrical heating element

Insulation
rECOflex® insulation with steel sheet jacket

CE

Storatherm Aqua Compact Storage water heaters for hot-water provision

Type	Art. No. White	Art. No. Silver	Material group	Volume [l]	Ø D [mm]	Height H	Tilt height [mm]	Weight [kg]	Heating surface [m²]	Heat losses [W]	EEK*
AC120/1_B	7850100	-	60	120	560	800	980	56,0	0,71	53	B

Type	Art. No. White	Art. No. Silver	Material group	Volume [l]	Width [mm]	Height H	Depth D [mm]	Weight [kg]	Heating surface [m²]	Heat losses [W]	EEK*
AC150/1_B	7862800	7863100	62	150	620	590	1.045	85,0	0,90	41	B
AC250/1_B	7862900	7863200	62	250	653	644	1.125	114,0	0,90	61	B

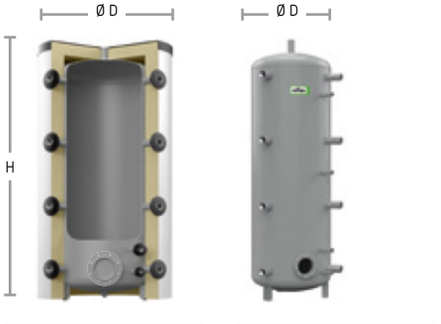
Storatherm Aqua Compact, wall-hung Storage water heater

Type	Art. No. White	Art. No. Silver	Material group	Volume [l]	Width [mm]	Height H	Tilt height [mm]	Weight [kg]	Heating surface [m²]	Heat losses [W]	EEK*
AC 60/1-W_B	7760200	-	62	67	461	700	-	52	0.75	38	B
AC 110/1-W_B	7760300	-	62	112	461	1,065	-	65	0.95	48	B
AC 160/1-W_C	7761800	-	62	166	461	1,492	-	91	0.95	63	C
AC 60/1E-W_B	7760220	-	62	65	461	700	-	58	0.75	38	B
AC 110/1E-W_B	7760320	-	62	110	461	1,065	-	71	0.95	48	B
AC 160/1E-W_C	7761820	-	62	164	461	1,492	-	97	0.95	63	C
AC 60/E-W_B	7760210	-	62	71	461	700	-	51	-	38	B
AC 110/E-W_B	7760310	-	62	117	461	1,065	-	64	-	48	B
AC 160/E-W_C	7761810	-	62	171	461	1,492	-	90	-	63	C

*EEK = Energy Efficiency Class

Buffer tanks

Storatherm Heat Buffer tank with service flange for heating and cooling systems



HF 300–2000/R H 300–5000/R

Technical Features

- Tank container from S235JRG2 (RSt 37-2) quality steel for heating and cooling applications
- Tank interior untreated, exterior powder-coated
- Up to 2,000 litres insulation preinstalled
- Fleece insulation with foil jacket (not applicable for cold)
- Max. operating pressure: Tank 3 bar (from 1,500, 6 bar)
- Max. operating temperature: Tank 95°C

Storatherm Heat–Type Overview

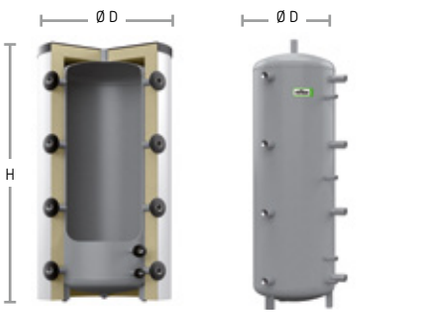
HF .../R
Buffer tank with cleaning opening and insulation
300–2,000 l

Insulation
Up to 1,000 litres: 100mm fleece insulation with foil jacket, removable
from 1,500 litres: 120mm fleece insulation with foil jacket, removable

H .../R
Buffer tank with cleaning opening **without insulation** for cooling applications. Suitable diffusion-tight heat insulation must be provided by the user.
For sizes 3,000 to 5,000 litres, the insulation for heating water applications may be ordered separately, see page 117.
300–5,000 l

Without insulation

Storatherm Heat Buffer tank without service flange for heating and cooling systems



HF 300–2000 HF 300–2000

Technical Features

- Tank container from S235JRG2 (RSt 37-2) quality steel for heating and cooling applications
- Tank interior untreated, exterior powder-coated
- Insulated delivery
- Fleece insulation with foil jacket
- Max. operating pressure: Tank: 3 bar (or 6 bar from 1500)
- Max. operating temperature: Tank: 95°C

Storatherm Heat–Type Overview

HF ...
Buffer tank with insulation, without cleaning opening
300–2,000 l

Insulation
Up to 1,000 litres: 100mm fleece insulation with foil jacket, removable
from 1,500 litres: 120mm fleece insulation with foil jacket, removable

CE

Storatherm Heat Buffer tank with service flange for heating and cooling systems

Type	Art. No. White	Art. No. Silver	Material group	Volume [l]	Ø D [mm]	Height H	Sleeves 9x	Tilt height [mm]	Weight [kg]	Heat losses [W]	EEK*
HF 300/R_C	7842600	7842000	63	300	797	1,320	Rp 1 ½"	1,355	62	79	C
HF 500/R_C	7842700	7842100	63	475	797	1,950	Rp 1 ½"	1,974	75	106	C
HF 800/R_C	7842800	7842200	63	778	990	1,825	Rp 1 ½"	1,870	127	132	C
HF 1000/R_C	7842900	7842300	63	921	990	2,115	Rp 1 ½"	2,153	142	141	C
HF 1500/R_C	7843000	7842400	63	1,500	1,240	2,120	Rp 1 ½"	2,178	189	167	C
HF 2000/R_C	7843100	7842500	63	2,031	1,440	2,122	Rp 1 ½"	2,200	269	188	C

Type (without insulation)	Art. No. Grey	Material group	Volume [l]	Ø D [mm]	Height H	Sleeves 9x	Tilt height [mm]	Weight [kg]	Heat losses [W]	EEK*
H 300/R	7783600	63	300	597	1,320	Rp 1 ½"	1,355	58	-	-
H 500/R	7783800	63	475	597	1,950	Rp 1 ½"	1,974	71	-	-
H 800/R	7784005	63	778	790	1,825	Rp 1 ½"	1,870	121	-	-
H 1000/R	7784205	63	921	790	2,115	Rp 1 ½"	2,153	135	-	-
H 1500/R	7784400	63	1,500	1,000	2,120	Rp 1 ½"	2,178	181	-	-
H 2000/R	7784600	63	2,031	1,200	2,122	Rp 1 ½"	2,200	257	-	-
H 3000/R	7788200	63	2,956	1,500	2,101	Rp 2"	2,205	570	-	-
H 4000/R	7788500	63	3,942	1,500	2,676	Rp 2"	2,756	677	-	-
H 5000/R	7788800	63	4,888	1,500	3,211	Rp 2"	3,264	814	-	-

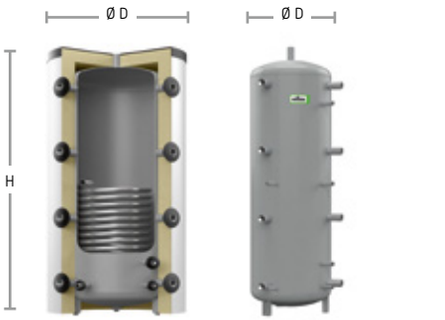
Fleece insulation with foil jacket for heating applications. installation by the user			
Type	Art. No.	Colour	Material group
HW 3000/R	9125888	White	64
HW 4000/R	9125889	White	64
HW 5000/R	9125890	White	64

Storatherm Heat Buffer tank without service flange for heating and cooling systems

Type	Art. No. White	Art. No. Silver	Material group	Volume [l]	Ø D [mm]	Height H	Sleeves 9x	Tilt height [mm]	Heating surface [m²]	Heat losses [W]	EEK*
HF 300_C	-	7839100	63	300	797	1.320	Rp 1 ½"	1335	59	79	C
HF 500_C	-	7839200	63	475	797	1.950	Rp 1 ½"	1974	72	106	C
HF 800_C	-	7839300	63	778	990	1.825	Rp 1 ½"	1870	124	132	C
HF 1000_C	-	7839400	63	921	990	2.115	Rp 1 ½"	2153	139	141	C
HF 1500_C	-	7839500	63	1.500	1.240	2.120	Rp 1 ½"	2178	186	167	C
HF 2000_C	-	7839600	63	2.031	1.440	2.122	Rp 1 ½"	2200	266	188	C

*EEK = Energy Efficiency Class

Storatherm Heat Buffer tank with bare-tube heat exchanger for heating and cooling systems



HF 300–2000/1 H 300–5000/1

Technical Features

- Tank container from S235JRG2 (RSt 37-2) quality steel for heating and cooling applications
- with one bare-tube heat exchanger for the connection of an additional heating source such as a solar system
- Tank interior untreated, exterior powder-coated
- Up to 2,000 litres insulation preinstalled
- Fleece insulation with foil jacket
- Max. operating pressure: Tank 3 bar (from 1,500, 6 bar), heating water 10 bar
- Max. operating temperature: Tank 95°C, heating water 110°C

Storatherm Heat–Type Overview

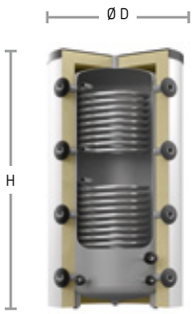
HF .../1
Buffer tank with bare-tube heat exchanger and insulation
300 – 2,000 l

Insulation
Up to 1,000 litres: 100mm fleece insulation with foil jacket, removable
from 1,500 litres: 120mm fleece insulation with foil jacket, removable

H .../1
Buffer tank with one bare-tube heat exchanger **without insulation** for cooling applications. Suitable diffusion-tight heat insulation must be provided by the user.
For sizes 3,000 to 5,000 litres, the insulation for heating water applications may be ordered separately, see page 119.
300–5,000 l

Without insulation

Storatherm Heat Buffer tank with two bare-tube heat exchangers for heating and cooling systems



HF 500–1500/2

Technical Features

- Tank container from S235JRG2 (RSt 37-2) quality steel for heating and cooling applications
- with two bare-tube heat exchangers for connecting to an additional heat source, such as a solar system
- Tank interior untreated, exterior powder-coated
- Insulated delivery
- Fleece insulation with foil jacket
- Max. operating pressure: Tank: 3 bar (or 6 bar from 1500), heating water: 10 bar
- Max. operating temperature: Tank 95°C, heating water 110°C

Storatherm Heat–Type Overview

HF .../2
Buffer tank with two bare-tube heat exchangers and insulation
500 – 1.500 l

Insulation
Up to 1,000 litres: 100mm fleece insulation with foil jacket, removable
from 1,500 litres: 120mm fleece insulation with foil jacket, removable

CE

Storatherm Heat Buffer tank with bare-tube heat exchanger for heating and cooling systems

Type	Art. No. White	Art. No. Silver	Material group	Volume [l]	Ø D [mm]	Height H	Sleeves 9x	Tilt height [mm]	Weight [kg]	Heating surface [m²]	Heat losses [W]	EEK*
HF 300/1_C	7843800	7843200	63	300	797	1,320	Rp 1 ½"	1,355	82	1.34	79	C
HF 500/1_C	7843900	7843300	63	475	797	1,950	Rp 1 ½"	1,974	100	1.88	106	C
HF 800/1_C	7844000	7843400	63	778	990	1,825	Rp 1 ½"	1,870	197	3.76	132	C
HF 1000/1_C	7844100	7843500	63	921	990	2,115	Rp 1 ½"	2,153	225	4.48	141	C
HF 1500/1_C	7844200	7843600	63	1,500	1,240	2,120	Rp 1 ½"	2,178	272	4.48	167	C
HF 2000/1_C	7844300	7843700	63	2,031	1,440	2,122	Rp 1 ½"	2,200	352	4.48	188	C

Type (without insulation)	Art. No. Grey	Material group	Volume [l]	Ø D [mm]	Height H	Sleeves 9x	Tilt height [mm]	Weight [kg]	Heating surface [m²]	Heat losses [W]	EEK*
H 300/1	7783700	63	300	597	1,320	Rp 1 ½"	1,355	74	1.34	-	-
H 500/1	7783900	63	475	597	1,950	Rp 1 ½"	1,974	95	1.88	-	-
H 800/1	7784115	63	778	790	1,825	Rp 1 ½"	1,870	190	3.76	-	-
H 1000/1	7784315	63	921	790	2,115	Rp 1 ½"	2,153	216	4.48	-	-
H 1500/1	7784500	63	1,500	1,000	2,120	Rp 1 ½"	2,178	265	4.48	-	-
H 2000/1	7784700	63	2,031	1,200	2,122	Rp 1 ½"	2,200	341	4.48	-	-
H 3000/1	7788300	63	2,956	1,500	2,101	Rp 2"	2,205	637	5.00	-	-
H 4000/1	7788600	63	3,942	1,500	2,676	Rp 2"	2,756	754	6.00	-	-
H 5000/1	7788900	63	4,888	1,500	3,211	Rp 2"	3,264	871	7.00	-	-

Fleece insulation with foil jacket for heating applications, installation by the user			
Type	Art. No.	Colour	Material group
HW 3000/1	9125988	White	64
HW 4000/1	9125989	White	64
HW 5000/1	9125990	White	64

Storatherm Heat Buffer tank with two bare-tube heat exchangers for heating and cooling systems

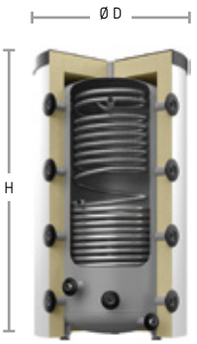
Type	Art. No. Silver	Material group	Volume [l]	Ø D [mm]	Height H	Sleeves 9x	Tilt height [mm]	Weight [kg]	Heating surface [m²]	Heat losses [W]	EEK*
HF 500/2_C	7837100	63	475	797	1.950	Rp 1 1/2"	1.974	125,0	1,17/1,88	106	C
HF 800/2_C	7837200	63	778	990	1.825	Rp 1 1/2"	1.870	267,0	1,36/2,47	132	C
HF 1000/2_C	7837300	63	921	990	2.115	Rp 1 1/2"	2.153	308,0	2,47/3,1	141	C
HF 1500/2_C	7837400	63	1.500	1.240	2.120	Rp 1 1/2"	2.178	355,0	2,37/3,72	167	C

*EEC= Energy Efficiency Class

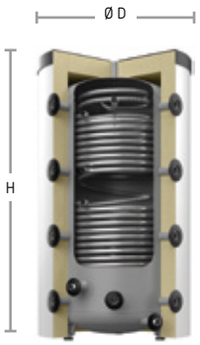
Storatherm Heat Combi

Combination tank with one and two bare-tube heat exchangers for heating and hot water preparation

Energieeffizienzklasse Energy efficiency class C



HC 500–1500/1

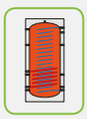


HC 500–1500/2

Technical Features

- Combination hygiene tank for hot-water provision and heating support
- Potable water heating in continuous flow principle (stainless steel corrugated pipe)
- Tank interior untreated, exterior powder-coated
- insulation preinstalled
- Fleece insulation with foil jacket
- Max. operating pressure:
  Tank 3 bar, heating water 10 bar, potable water 6 bar
- Max. operating temperature:
  Tank 95°C, heating water 110°C, potable water 95°C

Storatherm Heat Combi-Type Overview



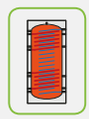
HC .../1

Combination storage with one bare-tube heat exchanger and one stainless steel corrugated pipe for potable water heating in continuous flow principle

Insulation

Up to 1,000 litres: 100mm fleece insulation with foil jacket, removable

from 1,500 litres: 120mm fleece insulation with foil jacket, removable



HC .../2

Combination storage with two bare-tube heat exchangers and one stainless steel corrugated pipe for potable water heating in continuous flow principle

Insulation

Up to 1,000 litres: 100mm fleece insulation with foil jacket, removable

from 1,500 litres: 120mm fleece insulation with foil jacket, removable

CE

Storatherm Heat Combi

Combination tank with one and two bare-tube heat exchangers for heating and hot water preparation

Combination storage with one bare-tube heat exchanger

Type	Art. No. Silver	Material group	Volume [l]	Ø D [mm]	Height H	Sleeves 9x	Tilt height [mm]	Weight [kg]	Heating surface [m²]	Heat losses [W]	EEK*
HC 500/1_C	7859200	63	428	800	1,970	Rp 1 ½"	1,974	92	1.60	106	C
HC 800/1_C	7859300	63	722	990	1,850	Rp 1 ½"	1,870	131	2.60	132	C
HC 1000/1_C	7859400	63	852	990	2,140	Rp 1 ½"	2,153	152	2.60	141	C
HC 1500/1_C	7859500	63	1,332	1,240	2,130	Rp 1 ½"	2,178	219	2.15	167	C

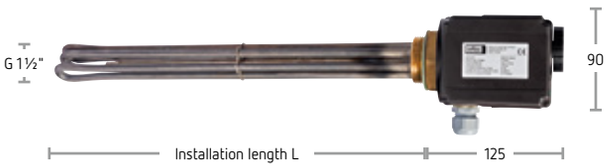
Combination storage with two bare-tube heat exchangers

Type	Art. No. Silver	Material group	Volume [l]	Ø D [mm]	Height H	Sleeves 9x	Tilt height [mm]	Weight [kg]	Heating surface [m²]	Heat losses [W]	EEK*
HC 500/2_C	7859600	63	418	800	1.970	Rp 1 ½"	1.974	106	1.14/1.60	106	C
HC 800/2_C	7859700	63	706	990	1.850	Rp 1 ½"	1.870	152	1.75/2.60	132	C
HC 1000/2_C	7859800	63	833	990	2.140	Rp 1 ½"	2.153	179	2.20/2.60	141	C
HC 1500/2_C	7859900	63	1.317	1.240	2.130	Rp 1 ½"	2.178	237	1.50/2.15	167	C

*EEK = Energy Efficiency Class

Accessories

Reflex EEHR screw-in electric heating element 1 ½"

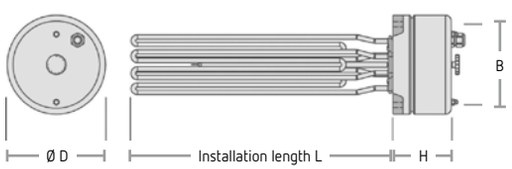


EEHR 2,0 – 9,0 kW

Technical Features

- As auxiliary electric heating
- Suitable for these types:
  - → Storatherm Aqua Heat Pump (AH.../1, AH.../2)
  - → Storatherm Aqua Solar (AB.../2, AF.../2)
  - → Storatherm Aqua (AF.../1M)
  - → Storatherm Heat Combi (HC.../1, HC.../2)
  - → Storatherm Heat (HF..., HF.../1, HF.../2)
  - → Storatherm Aqua Inox (AI .../1)
- For flange mounting, additional seal and flange cover required
- Safety temperature limiter (STB) 98°C
- Material: Incoloy
- Degree of protection IP 45
- Electric connections by the user
- Not approved for continuous operation
- Water hardness max. 14 °dH

Reflex EFHR flange-type electric heating element



EEHR 4.0-25.0kW

Technical Features

- As auxiliary electric heating
- Approved for continuous operation
- Suitable for these types:
  - → Storatherm Aqua Heat Pump
  - → Storatherm Aqua Solar
  - → Storatherm Aqua
  - → Storatherm Aqua Load
  - → Storatherm Heat HF...R
- Easy integration via the tank's service opening
- To 10.0 kW LK 150mm
  - → ≤ 500 litres tank volume
- From 16.0 kW LK 225mm
  - → > 500 litres tank volume
- 3 power levels, reversible connections
- With temperature controller to 95°C
- Safety temperature limiter 120°C
- Electric connections by the user
- Incl. flange and seal

CE

Reflex EEHR screw-in electric heating element 1 ½"

Reflex EEHR screw-in electric heating element

Type	Art. No.	Material group	Tank size [l]	Capacity kW	Voltage V	Installation length L [mm]	Weight [kg]
EEHR 2.0	9126474	68	> 100	2.0	230	320	1.4
EEHR 2.5	9126475	68	> 100	2.5	230	390	1.5
EEHR 3.0	9126476	68	> 100	3.0	230	390	1.5
EEHR 3.8	9126477	68	> 100	3.8	400	430	1.6
EEHR 4.5	9126478	68	> 300	4.5	400	470	1.6
EEHR 6.0	9126479	68	> 300	6.0	400	620	1.8
EEHR 7.5	9126480	68	> 750	7.5	400	720	2.0
EEHR 9.0	9126481	68	> 1,000	9.0	400	780	2.1

Note: Storatherm Heat HF .../R version can be installed via service flange with flange cover and seal. Storatherm Aqua Solar AF 300/2S version only possible up to 3 kW!

Accessories: Reflex EEHR electro screw-in heater for flanged installation

Type	Art. No.	Material group	Tank size [l]	Ø D [mm]
Flange cover with 1 ½" coupling				
Pitch circle 150 mm	7760000	68	150 – 500	150
Pitch circle 225 mm	7760100	68	750 – 3,000	225

*Not suitable for Storatherm Aqua Inox

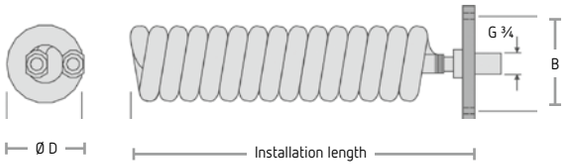
Flange cover				
Pitch circle 150 mm	7760900	68	150 – 500	150
Pitch circle 225 mm	7761000	68	750 – 3,000	225

Reflex EFHR flange-type electric heating element

Type	Art. No.	Material group	Buffertank Size [l]	Hot water storage tank Size [l]	Capacity kW	Voltage V	Installation length L [mm]	Width B [mm]	Height H [mm]	Ø D [mm]	Weight [kg]
EFHR 4.0	9116314	68	300 – 5,000	150	4.0 / 2.7 / 2.0	400	295	150	110	185	4.7
EFHR 6.0*	9116315	68	300 – 5,000	300 – 500	6.0 / 4.0 / 3.0	400	395	150	110	185	4.8
EFHR 8.0	9116316	68	300 – 5,000	300 – 500	8.0 / 5.5 / 4.0	400	495	150	110	185	5.0
EFHR 10.0	9116317	68	300 – 5,000	300 – 500	10.0 / 6.7 / 5.0	400	495	150	110	185	5.0
EFHR 16.0	9116501	68	not applicable	> 750	16.0 / 11.0 / 8.0	400	610	225	140	280	10.5
EFHR 19.0	9116502	68	not applicable	> 1,000	19.0 / 12.7 / 9.0	400	740	225	140	280	11.0
EFHR 25.0	9115569	68	not applicable	> 1,000	25.0 / 18.8 / 12.5	400	740	225	140	280	11.0
EFHR 35,0	9126720	68	not applicable	> 1,500	35.0 / 26.4 / 17.5	400	900	225	140	280	11.3

*Not suitable for Storatherm Aqua Solar AF 300/2S_C or AF 300/2S_B

Reflex RWT ribbed-pipe heat exchanger



Reflex RWT

Technical Features

- For the integration of an additional heat generator, for example, a solar installation
- Suitable for these models:
  - → Storatherm Aqua Heat Pump
  - → Storatherm Aqua Solar
  - → Storatherm Aqua
  - → Storatherm Aqua Load
  - → Storatherm Heat
- Incl. counterflange and seal
- **RWT1:** LK 150mm = potable water tank ≤ 500 litres and all buffer tanks
- **RWT2:** LK 225mm = potable water tank ≥ 750 litres
- Approved for heating water, solar fluid
- Made from copper ribbed pipe
- Electrical isolated connections for contact separation
- Max. operating pressure 10 bar
- Max. operating temperature 90°C

Magnesium protective anodes

Magnesium protective anode

Technical Features

- 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 dual anode

CE

Reflex RWT ribbed-pipe heat exchanger

Type	Art. No.	Material group	Capacity* [kW]	Heating surface [m²]	Installation length [mm]	Width B [mm]	Ø D [mm]
RWT 1	7755900	68	9 – 11	1.1	420	150	110
RWT 2	7756300	68	31 – 39	2.3	540	225	170

* Capacity for HW-VL 70 – 80°C with 0.65m3/h; TW from 10°C to 45°C

Magnesium protective anodes

Type	Art. No.	Material group	Note	Storage type
Magnesium protective anode	5415000	68	G 1 x 26 x 400	AF/AB 100/1
Magnesium protective anode	7757400	68	M 8 x 26 x 420	AC 120/1
Magnesium protective anode	7751400	68	G 1 x 26 x 480	AC 150/1; AF/AB 150/1
Magnesium protective anode	7751500	68	G 1 x 26 x 550	AF/AB 200/1, AF/AB 200/2, AC .../200
Magnesium protective anode	7751510	68	G 1 x 26 x 800	AL 300/R; AF/AB 300/1, AF/AB 300/2 Ø 700
Magnesium protective anode	7751520	68	G 1 x 26 x 900	AL 300/R - AL 500/R; AF/AB 400/1, AF/AB 300/1 Ø 600; AF/AB 400/2
Magnesium protective anode	7751530	68	G 1 x 26 x 1100	AL 500/R; AF/AB 500/1, AF/AB 500/2
Magnesium protective anode	7751540	68	G 1¼ x 33 x 530; 2 pieces required	AF 750/1 (2 units required)
Magnesium protective anode	5415300	68	G 1¼ x 33 x 625; 2 pieces required	AH 300/1; AH 300/2; AF 1000/1 (2 units required)
Magnesium protective anode	5415400	68	G 1¼ x 33 x 1060	AH 400/1; AH 400/2; AF 750/2; AH 750/1; AH 750/2
Magnesium protective anode	5415500	68	G 1¼ x 33 x 1250	AH 500/1; AH 500/2, AF 1000/2; AH 1000/1; AH 1000/2
Magnesium protective anode	7751560	68	G ¾ x 22 x 790	AC 250/1
Magnesium protective anode	7751610	68	G 1¼ x 33 x 590	AL 750/R; AH 750/1; AH 750/2; AH 1000/1; AH 1000/2
Magnesium protective anode	5415700	68	G 1¼ x 33 x 690	AL 1000/R2
Magnesium protective anode	7751540	68	G 1¼ x 33 x 530; 2 pieces required	AL 1500/R2 - AL 3000/R2; AL 1500/R2 - AL 3000/R2

Type	Art. No.	Material group	Note
Chain anode, G1 x 22 x 1600mm	7751600	68	Not for AC 120/1; AC 150/1; AC 250/1; AF 750/1 – AF 3000/1; AL 750/R – AL 3000/R2: AH 750/1; AH 1000/1; AH 750/2; AH 1000/2

Impressed-current anodes

Impressed-current anode

Technical Features

- Maintenance-free continuous protection to DIN 4753 T3 and T6
- Potential-controlled power supply 230 V; 50 / 60 Hz
- Wear-free titanium electrode
- Protection class II (operation in enclosed spaces)
- Reducer G 1" – G ¾", user-supplied

Spare parts for EFHR electric flanged heating elements

Type	Art. No.	Material group
Flange seal LK 150 (flat gasket)	7761020	68
Flange seal LK 225 (flat gasket)	7761030	68
Thermostat controller	9200447	68

Spare parts for EEHR electric screwed-in heating elements

Type	Art. No.	Material group
Seal 1 ½"	9119368	68
Flange cover LK 150, enamelled with Rp 1 ½" sleeve*	7760000	68
Flange seal LK 150 (profiled gasket) for flange cover with sleeve	7760900	68
Flange cover LK 225, enamelled with Rp 1 ½" sleeve*	7760100	68
Flange seal LK 225 (profiled gasket) for flange cover with sleeve	7761000	68
Thermostat controller (green housing)	9200445	68

*Not suitable for Storatherm Aqua Inox

CE

Impressed-current anodes

Type	Art. No.	Material group	Note
Impressed-current anode, G ¾" x 400mm, 230V	7751300	68	Not for AC 120/1, reducer G 1" – G ¾" user-supplied
Impressed-current anode, G 1 ¼" x 800	9119365	68	For AF 1500/1, AF 1500/2, AF 2000/1, AF 2000/2, AF 3000/1, AF 3000/2

Spare parts for RWT

Type	Art. No.	Material group
Flange cover LK 150, enamelled with 2 bores for RWT 1*	7759950	68
Flange seal LK 150 (flat gasket)	7761020	68
Flange cover LK 225, enamelled with 2 bores for RWT 2*	7759960	68
Flange seal LK 225 (flat gasket)	7761030	68

*Not suitable for Storatherm Aqua Inox

Miscellaneous

Type	Art. No.	Material group
Flange cover LK 150 (profiled gasket) for flange cover with sleeve	7760900	68
Thermostat controller for tank charging pump	7751100	68

Longtherm heat exchanger, soldered

Longtherm RMB-14

Longtherm R...B-22

Longtherm R...B-31

Longtherm R...B-34

Longtherm R...B-60

Longtherm R...B-110

Longtherm R...B-235

Technical Features

- stainless-steel heat exchanger (1.4401) soldered with copper solder
- approved according to Pressure Equipment Directive 2014/68/EU
- permissible operating temperature 230°C
- permissible operating pressure for R...B-14 to -60: 30 bar
- Permissible operating pressure for R...G-110 to -235: 25 bar
- Flange connections, only for R...B-235
- Counter flanges see page 134

CE

Longtherm heat exchanger, soldered

30 bar

Type	Number of plates	Art. No. RLB	Art. No. RMB	Art. No. RHB	MG	Connection [mm]	Length L [mm]	Width B/b [mm]	Height H/h [mm]	Volume [l]	Weight [kg]
RMB-14-10	10	-	8011100	-	67	AG ¾"	32	81/42	203/164	0,2	1,1
RMB-14-20	20	-	8011200	-	67	AG ¾"	55	81/42	203/164	0,4	1,6
RMB-14-30	30	-	8011300	-	67	AG ¾"	78	81/42	203/164	0,6	2,2
RMB-14-40	40	-	8011400	-	67	AG ¾"	101	81/42	203/164	0,8	2,6
RMB-14-50	50	-	8019300	-	67	AG ¾"	124	81/42	203/164	1	3,1
RMB-22-20	20	-	8011500	-	67	AG ¾"	55	81/42	299/260	0,6	2,3
RMB-22-30	30	-	8021300	-	67	AG ¾"	78	81/42	299/260	1	3,0
RMB-22-40	40	-	8011700	-	67	AG ¾"	101	81/42	299/260	1,4	3,7
RMB-22-50	50	-	8011800	-	67	AG ¾"	124	81/42	299/260	1,8	4,5
R...B-31-30	30	-	8012900	8011900	67	AG 1"	81	123/68	286/232	1,4	5,0
R...B-31-40	40	-	8013000	8012000	67	AG 1"	104	123/68	286/232	1,8	6,2
R...B-31-50	50	-	8013100	8012100	67	AG 1"	128	123/68	286/232	2,4	7,3
R...B-31-60	60	-	8013200	8012200	67	AG 1"	151	123/68	286/232	2,9	8,4
R...B-31-70	70	-	8013300	8012300	67	AG 1 ¼"	174	123/68	286/232	3,2	9,8
R...B-31-80	80	-	8013400	8012400	67	AG 1 ¼"	198	123/68	286/232	3,8	10,9
R...B-31-90	90	-	8013500	8012500	67	AG 1 ¼"	221	123/68	286/232	4,2	12,1
R...B-31-100	100	-	8019400	8012600	67	AG 1 ¼"	245	123/68	286/232	4,6	13,2
R...B-31-110	110	-	8019500	8012700	67	AG 1 ¼"	269	123/68	286/232	5,1	14,4
R...B-31-140	140	-	8019600	8012800	67	AG 1 ¼"	339	123/68	286/232	6,6	17,8
RMB-34-20	20	-	8013600	-	67	AG ¾"	55	81/42	471/432	0,6	3,5
RMB-34-30	30	-	8013700	-	67	AG ¾"	78	81/42	471/432	1,1	4,7
RMB-34-40	40	-	8013800	-	67	AG ¾"	101	81/42	471/432	1,6	5,8
RMB-34-50	50	-	8013900	-	67	AG ¾"	124	81/42	471/432	2,1	7,0
RMB-34-60	60	-	8014000	-	67	AG ¾"	147	81/42	471/432	2,6	8,1
RHB-60-40	40	-	-	8014100	67	AG 1"	104	123/68	538/480	3,6	11,4
RHB-60-50	50	-	-	8014200	67	AG 1"	128	123/68	538/480	4,4	13,6
RHB-60-60	60	-	-	8014300	67	AG 1"	151	123/68	538/480	5,4	15,7
RHB-60-70	70	-	-	8014400	67	AG 1"	175	123/68	538/480	6,2	17,9
RHB-60-80	80	-	-	8014500	67	AG 1"	198	123/68	538/480	7,2	20,1
RHB-60-90	90	-	-	8014600	67	AG 1 ¼"	222	123/68	538/480	8	22,3
RHB-60-100	100	-	-	8014700	67	AG 1 ¼"	245	123/68	538/480	9	24,5
RHB-60-110	110	-	-	8014800	67	AG 1 ¼"	268	123/68	538/480	10	26,7
RHB-60-120	120	-	-	8019700	67	AG 1 ¼"	292	123/68	538/480	11	27,6
RHB-60-130	130	-	-	8019800	67	AG 1 ¼"	316	123/68	538/480	12	29,8

Longtherm heat exchanger, soldered

	Type	Number of plates	Art. No. RLB	Art. No. RMB	Art. No. RHB	Material group	Connection [mm]	Length L [mm]	Width B/b [mm]	Height H/h [mm]	Volume [l]	Weight [kg]
25 bar	RLB-110-30	30	8014900	-	-	67	AG 2"	84	258/170	466/378	4,6	21,0
	RLB-110-40	40	8015000	-	-	67	AG 2"	108	258/170	466/378	6,4	25,0
	RLB-110-50	50	8015100	-	-	67	AG 2 ½"	132	258/170	466/378	8	30,4
	RLB-110-60	60	8015200	-	-	67	AG 2 ½"	156	258/170	466/378	9,6	34,5
	RLB-110-70	70	8015300	-	-	67	AG 2 ½"	180	258/170	466/378	11,2	38,5
	RLB-110-80	80	8015400	-	-	67	AG 2 ½"	204	258/170	466/378	12,8	42,6
	RLB-110-90	90	8019900	-	-	67	AG 2 ½"	228	258/170	466/378	14,4	46,5
	RLB110-100	100	8020000	-	-	67	AG 2 ½"	252	258/170	466/378	16	51,1
	RLB110-110	110	8020100	-	-	67	AG 2 ½"	276	258/170	466/378	17,6	55,7
	RLB110-120	120	8020200	-	-	67	AG 2 ½"	300	258/170	466/378	19,2	60,3
	RLB110-130	130	8020300	-	-	67	AG 2 ½"	324	258/170	466/378	20,8	64,9
	RLB110-140	140	8020400	-	-	67	AG 2 ½"	348	258/170	466/378	22,6	69,5
	RLB110-150	150	8020500	-	-	67	AG 2 ½"	372	258/170	466/378	24,2	74,1
	RLB110-160	160	8020600	-	-	67	AG 2 ½"	396	258/170	466/378	25,8	78,7
	RMB-110-40	40	-	8020700	-	67	AG 2"	108	258/170	466/378	6,4	23,5
	RMB-110-50	50	-	8015500	-	67	AG 2"	132	258/170	466/378	8	29,1
	RMB-110-60	60	-	8015600	-	67	AG 2"	156	258/170	466/378	9,6	33,2
	RMB-110-70	70	-	8015700	-	67	AG 2"	180	258/170	466/378	11,2	37,3
	RMB-110-80	80	-	8015800	-	67	AG 2"	204	258/170	466/378	12,8	41,4
	RMB-110-90	90	-	8015900	-	67	AG 2"	228	258/170	466/378	14,4	45,4
	RMB110-100	100	-	8016000	-	67	AG 2"	252	258/170	466/378	16	49,5
	RMB110-110	110	-	8016100	-	67	AG 2 ½"	276	258/170	466/378	17,6	54,9
	RMB110-120	120	-	8016200	-	67	AG 2 ½"	300	258/170	466/378	19,2	58,9
	RMB110-130	130	-	8020800	-	67	AG 2 ½"	324	258/170	466/378	20,8	63,1
	RMB110-140	150	-	8016300	-	67	AG 2 ½"	348	258/170	466/378	22,6	67,1
	RMB110-150	150	-	8020900	-	67	AG 2 ½"	372	258/170	466/378	24,2	71,2
	RMB110-160	160	-	8016400	-	67	AG 2 ½"	396	258/170	466/378	25,8	75,3
	RHB-110-70	70	-	-	8021000	67	AG 2"	192	191/91	620/520	16,8	37,3
	RHB-110-80	80	-	-	8016500	67	AG 2"	218	191/91	620/520	19,2	41,1
	RHB-110-90	90	-	-	8016600	67	AG 2"	244	191/91	620/520	21,6	45,2
	RHB110-100	100	-	-	8016700	67	AG 2"	270	191/91	620/520	24	49,2
	RHB110-110	110	-	-	8016800	67	AG 2"	296	191/91	620/520	26,4	53,3
	RHB110-120	120	-	-	8016900	67	AG 2"	322	191/91	620/520	28,8	57,4
	RHB110-130	130	-	-	8021400	67	AG 2"	348	191/91	620/520	31,2	61,5
	RHB110-140	140	-	-	8017000	67	AG 2"	374	191/91	620/520	33,6	65,6
	RHB110-150	150	-	-	8017100	67	AG 2"	400	191/91	620/520	34	69,7
	RHB110-160	160	-	-	8021100	67	AG 2"	426	191/91	620/520	36,4	73,6
	RHB110-170	170	-	-	8017200	67	AG 2"	452	191/91	620/520	38,8	77,8
	RHB110-180	180	-	-	8021200	67	AG 2"	478	191/91	620/520	41,2	81,9
	RHB110-190	190	-	-	8017300	67	AG 2"	504	191/91	620/520	43,6	86,0

CE

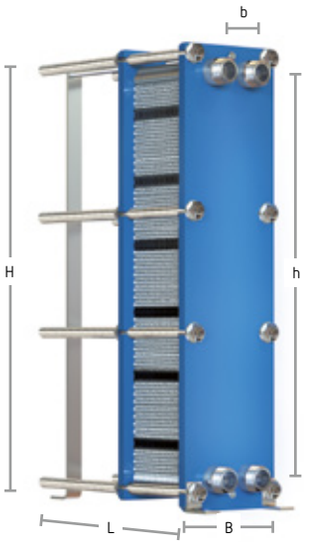
Longtherm heat exchanger, soldered

25 bar

Type	Number of plates	Art. No. RLB	Art. No. RMB	Art. No. RHB	Material group	Connection [mm]	Length L [mm]	Width B/b [mm]	Height H/h [mm]	Volume [l]	Weight [kg]
RLB-235-70	70	8017400	-	-	67	DN80/PN40	184	310/204	788/682	27,4	98,5
RLB-235-80	80	8017500	-	-	67	DN80/PN40	208	310/204	788/682	31,4	107,0
RLB-235-90	90	8017600	-	-	67	DN80/PN40	233	310/204	788/682	35,4	116,0
RLB235-100	100	8017700	-	-	67	DN80/PN40	257	310/204	788/682	39,4	124,0
RLB235-110	110	8017800	-	-	67	DN80/PN40	282	310/204	788/682	43,4	133,0
RLB235-120	120	8017900	-	-	67	DN80/PN40	306	310/204	788/682	47,4	141,0
RMB-235-90	90	-	8018000	-	67	DN80/PN40	233	310/204	788/682	35,4	114,6
RMB235-100	100	-	8018100	-	67	DN80/PN40	257	310/204	788/682	39,4	122,8
RMB235-110	110	-	8018200	-	67	DN80/PN40	282	310/204	788/682	43,4	131,1
RMB235-120	120	-	8018300	-	67	DN80/PN40	306	310/204	788/682	47,4	139,4
RMB235-130	130	-	8018400	-	67	DN80/PN40	331	310/204	788/682	51,4	147,7
RMB235-140	140	-	8021600	-	67	DN80/PN40	355	310/204	788/682	55,4	155,7
RMB235-150	150	-	8018500	-	67	DN80/PN40	380	310/204	788/682	59,4	164,2
RMB235-160	160	-	8018600	-	67	DN80/PN40	404	310/204	788/682	63,4	172,5
RMB235-170	170	-	8021700	-	67	DN80/PN40	429	310/204	788/682	67,4	180,8
RMB235-180	180	-	8018700	-	67	DN80/PN40	453	310/204	788/682	71,4	189,1
RMB235-190	190	-	8021800	-	67	DN80/PN40	478	310/204	788/682	75,4	197,4
RMB235-200	200	-	8018800	-	67	DN80/PN40	502	310/204	788/682	79,2	205,6
RMB235-220	220	-	8018900	-	67	DN80/PN40	551	310/204	788/682	87,2	222,2
RMB235-240	240	-	8019000	-	67	DN80/PN40	600	310/204	788/682	95,2	238,8
RMB235-260	260	-	8021900	-	67	DN80/PN40	649	310/204	788/682	103,2	255,0
RMB235-270	270	-	8019100	-	67	DN80/PN40	674	310/204	788/682	107,2	263,6
RMB235-280	280	-	8019200	-	67	DN80/PN40	698	310/204	788/682	111,2	271,9

Longtherm

Longtherm heat exchanger, screwed



Longtherm_R...G-14, -20

Longtherm_R...G-19, -21, -51

Technical Features

- Heat exchanger made of 0.5 mm stainless-steel plates (AISI 316) with NBR seals
- Flange connections only for R...G-19, -21 and -51
- Carbon steel flange and frame
- Permissible operating pressure for R...G-14 to -19: 16 bar
- Permissible operating pressure for R...G-21 to -51: 10 bar
- further seals and plate materials on request

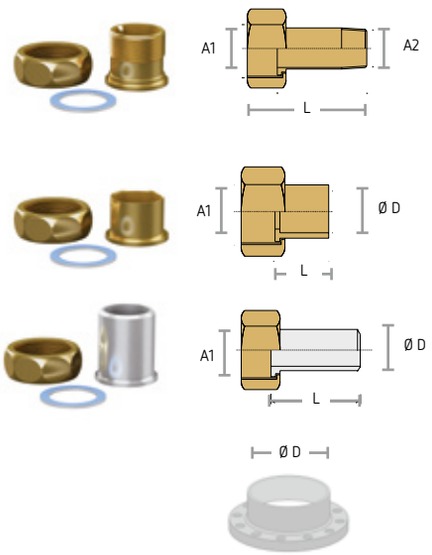
CE

Longtherm heat exchanger, screwed

	Type	Number of plates	Art. No. RMG	Art. No. RHG	MG	Connection [mm]	Lenght L [mm]	Width B/b [mm]	Height H/h [mm]	Total water content [l]	Weight [kg]
16 bar 110 °C	R...G-14-35	35	8111100	8111700	67	AG 2"	563	300/126	896/694	10,8	136,0
	R...G-14-45	45	8111200	8111800	67	AG 2"	763	300/126	896/694	14,0	149,0
	R...G-14-55	55	8111300	8111900	67	AG 2"	763	300/126	896/694	17,2	156,0
	R...G-14-65	65	8111400	8112000	67	AG 2"	763	300/126	896/694	20,4	164,0
	R...G-14-75	75	8111500	8112100	67	AG 2"	763	300/126	896/694	23,6	171,0
	R...G-14-85	85	8111600	8112200	67	AG 2"	963	300/126	896/694	26,8	184,0
	RHG-20-55	55	8112300	-	67	AG 2"	763	300/126	1.096/894	22,4	193,0
	RHG-20-65	65	8112400	-	67	AG 2"	763	300/126	1.096/894	26,5	203,0
	RHG-20-75	75	8112500	-	67	AG 2"	763	300/126	1.096/894	30,6	212,0
	RHG-20-85	85	8112600	-	67	AG 2"	963	300/126	1.096/894	34,8	228,0
	RHG-20-95	95	8112700	-	67	AG 2"	963	300/126	1.096/894	38,9	238,0
	R...G-19-70	70	8113600	8112800	67	DN65/PN16	758	395/192	946/700	29,3	284,0
	R...G-19-80	80	8113700	8112900	67	DN65/PN16	758	395/192	946/700	33,5	294,0
	R...G-19-90	90	8113800	8113000	67	DN65/PN16	958	395/192	946/700	37,7	305,0
	R...G-19-100	100	8113900	8113100	67	DN65/PN16	958	395/192	946/700	42,0	315,0
	R...G-19-110	110	8114000	8113200	67	DN65/PN16	1.158	395/192	946/700	46,2	338,0
	R...G-19-120	120	8114100	8113300	67	DN65/PN16	1.158	395/192	946/700	50,5	348,0
	R...G-19-130	130	8114200	8113400	67	DN65/PN16	1.158	395/192	946/700	54,7	358,0
	R...G-19-140	140	8114300	8113500	67	DN65/PN16	1.158	395/192	946/700	58,9	369,0
10 bar 110 °C	RMG-21-50	50	8114400	-	67	DN100/PN10	745	480/225	1.181/719	31,5	341,0
	RMG-21-55	55	8114500	-	67	DN100/PN10	745	480/225	1.181/719	34,7	348,0
	RMG-21-60	60	8114600	-	67	DN100/PN10	745	480/225	1.181/719	37,9	355,0
	RMG-21-65	65	8114700	-	67	DN100/PN10	745	480/225	1.181/719	41,2	362,0
	RMG-21-70	70	8114800	-	67	DN100/PN10	745	480/225	1.181/719	44,4	370,0
	RMG-21-80	80	8114900	-	67	DN100/PN10	1.145	480/225	1.181/719	50,8	405,0
	RMG-21-90	90	8115000	-	67	DN100/PN10	1.145	480/225	1.181/719	57,2	419,0
10 bar 110 °C	RMG-51-60	60	8115100	-	67	DN100/PN10	745	480/225	1.824/1.365	72,9	570,0
	RMG-51-65	65	8115200	-	67	DN100/PN10	745	480/225	1.824/1.365	79,0	582,0
	RMG-51-70	70	8115300	-	67	DN100/PN10	745	480/225	1.824/1.365	85,2	594,0
	RMG-51-75	75	8115400	-	67	DN100/PN10	1.145	480/225	1.824/1.365	91,4	632,0
	RMG-51-80	80	8115500	-	67	DN100/PN10	1.145	480/225	1.824/1.365	97,6	644,0
	RMG-51-85	85	8115600	-	67	DN100/PN10	1.145	480/225	1.824/1.365	103,7	656,0
	RMG-51-90	90	8115700	-	67	DN100/PN10	1.145	480/225	1.824/1.365	109,9	668,0
	RMG-51-100	100	8115800	-	67	DN100/PN10	1.145	480/225	1.824/1.365	122,3	691,0
	RMG-51-110	110	8115900	-	67	DN100/PN10	1.145	480/225	1.824/1.365	134,6	715,0
	RMG-51-120	120	8116000	-	67	DN100/PN10	1.145	480/225	1.824/1.365	147,0	738,0
	RMG-51-140	140	8116100	-	67	DN100/PN10	1.145	480/225	1.824/1.365	171,7	785,0
	RMG-51-150	150	8116200	-	67	DN100/PN10	1.645	480/225	1.824/1.365	184,0	839,0
	RMG-51-160	160	8116300	-	67	DN100/PN10	1.645	480/225	1.824/1.365	196,4	863,0
	RMG-51-180	180	8116400	-	67	DN100/PN10	1.645	480/225	1.824/1.365	221,1	910,0
	RMG-51-200	200	8116500	-	67	DN100/PN10	1.645	480/225	1.824/1.365	245,6	957,0
	RMG-51-220	220	8116600	-	67	DN100/PN10	1.645	480/225	1.824/1.365	270,5	1.004,0

Accessories

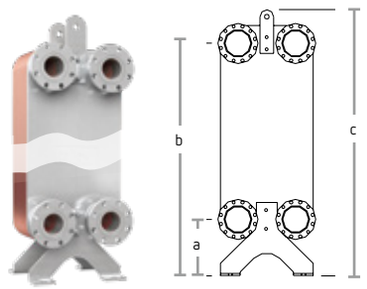
Longtherm connection variants



Technical Features

- Connection joints flat-sealing, including gasket, system connection as exterior thread, Solder-on end, weld-on end
- Starting at size RMB-235, the heat exchangers are fitted with carbon steel flanges as standard.
- Consisting of 2 units, delivery only as complete set
- Two sets are required per heat exchanger

Longtherm Bracket



Technical Features

- for sizes 110 and 235, a sturdy base structure and transport lugs are available for on-site installation

CE

Longtherm connection variants

Type 1	Type 2	Type 3	Art. No.	MG	G1	DN	Ø [mm]	G2	Lenght L [mm]	Weight [kg]
with external brass thread										
RMB-14	RMB-22	RMB-34	6762100	69	¾"	-	-	½"	36	0,1
R...B-31-≤60	R...B-60-≤80	-	6762200	69	1"	-	-	¾"	41	0,2
R...B-31-≥70	R...B-60-≥90	-	6762300	69	1 ¼"	-	-	1"	51	0,3
RLB-110-≤40	RMB-110-≤100	RHB-110	6762400	69	2"	-	-	1 ½"	60	0,5
RLB-110-≥50	RMB-110-≥110	-	6762500	69	2 ½"	-	-	2"	66	1,0
with welded steel end										
RMB-14	RMB-22	RMB-34	6760100	69	¾"	-	21,2	-	30	0,1
R...B-31-≤60	R...B-60-≤80	-	6760200	69	1"	-	26,9	-	30	0,2
R...B-31-≥70	R...B-60-≥90	-	6760300	69	1 ¼"	-	33,7	-	40	0,3
RLB-110-≤40	RMB-110-≤100	RHB-110	6760400	69	2"	-	48,3	-	40	0,5
RLB-110-≥50	RMB-110-≥110	-	6760500	69	2 ½"	-	60,3	-	50	1,0
R...B-235	-	-	6770500	69	-	DN80	200	-	21	5,18
with soldered brass end										
RMB-14	RMB-22	RMB-34	6761100	69	¾"	-	18,0	-	16	0,1
R...B-31-≤60	R...B-60-≤80	-	6761200	69	1"	-	22,0	-	19	0,2
R...B-31-≥70	R...B-60-≥90	-	6761300	69	1 ¼"	-	28,0	-	22	0,3

Longtherm Bracket

Type	Art. No.	Material group	Lenght L [mm]	Width B/b [mm]	Height H/h [mm]	Weight [kg]
Konsole RHB-110	8290400	69	320	240	70	2,8
Konsole R...B-110	8290500	69	320	240	70	2,8
Konsole R...B-235	8290600	69	320	270	75	4,7

Accessories

Longtherm Protect

R...B 110

Technical Features

- Longtherm thermal insulation made of 25 mm hard polyurethane foam for minimum heat loss with up to 110 panels
- Longtherm thermal insulation made of 32 mm hard polyurethane foam for minimum heat loss with more than 110 plates
- Made of two easily assembled half shells sheathed in 2 mm PS material, for increased impact resistance with up to 110 panels
- for greater than 110, the insulation is coated with aluminium
- max. operating temperature up to 110 plates of 110°C, and 135°C for more than 110 plates
- diffusion-tight insulation on site

CE

Longtherm Protect

Type	Art. No.	MG	Number of plates	Profile			Dimensions [mm]			Max. operating temperature [°C]	Weight [kg]
				H	M	L	L	B	H		
IsoRMB-14-10/20	8298200	69	10/20	-	x	-	115	140	260	110	0,2
IsoRMB-14-30/40	8298300	69	30/40	-	x	-	165	140	260	110	0,3
IsoRMB-14-50	8297500	69	50	-	x	-	215	140	260	110	0,4
IsoRMB-22-20	8298400	69	20	-	x	-	115	140	370	110	0,3
IsoRMB-22-30/40	8298500	69	30/40	-	x	-	165	140	370	110	0,4
IsoRMB-22-50	8298600	69	50	-	x	-	215	140	370	110	0,5
IsoR...B-31-30/40	8298800	69	30/40	x	x	-	205	190	360	110	0,6
IsoR...B-31-50/60	8298900	69	50/60	x	x	-	215	190	360	110	0,6
IsoR...B-31-70/80	8299000	69	70/80	x	x	-	265	190	360	110	0,7
IsoR...B-31-90/100	8299100	69	90/100	x	x	-	315	190	360	110	0,8
IsoR...B-31-110	8299200	69	110	x	x	-	370	190	360	110	0,9
IsoR...B-31-140	8299300	69	140	x	x	-	415	190	360	135	1,0
IsoRMB-34-20	8299400	69	20	-	x	-	115	140	530	110	0,3
IsoRMB-34-30/40	8299500	69	30/40	-	x	-	165	140	530	110	0,4
IsoRMB-34-50/60	8299600	69	50/60	-	x	-	215	140	530	110	0,5
IsoRHB-60-40	8297600	69	40	x	-	-	175	190	600	110	0,3
IsoRHB-60-50/60	8299700	69	50/60	x	-	-	215	190	600	110	0,7
IsoRHB-60-70/80	8299800	69	70/80	x	-	-	265	190	600	110	1,0
IsoRHB-60-90/100	8299900	69	90/100	x	-	-	315	190	600	110	1,2
IsoRHB-60-110	8300100	69	110	x	-	-	365	190	600	110	1,4
IsoRHB-60-130	8297700	69	130	x	-	-	415	190	600	110	1,5
IsoRLB-110-30/40	8300200	69	30/40	-	x	x	175	325	530	110	0,8
IsoR...B-110-50/60	8300300	69	50/60	-	x	x	225	325	530	110	1,0
IsoR...B-110-70/80	8300400	69	70/80	-	x	x	275	325	530	110	1,2
IsoR...B-110-90/100	8300500	69	90/100	-	x	x	315	325	530	110	1,4
IsoR...B-110-110/120	8300600	69	110/120	-	x	x	441	317	538	135	4,6
IsoR...B-110-130/140	8300700	69	130/140	-	x	x	489	317	538	135	5,4
IsoR...B-110-150/160	8300800	69	150/160	-	x	x	537	317	538	135	5,7
IsoRHB-110-70/80	8300900	69	70/80	x	-	-	370	258	699	110	4,8
IsoRHB-110-90/100	8301000	69	90/100	x	-	-	422	258	699	110	5,2
IsoRHB-110-110/120	8301100	69	110/120	x	-	-	474	258	699	135	5,8
IsoRHB-110-130/140	8301200	69	130/140	x	-	-	526	258	699	135	6,2
IsoRHB-110-150/160	8301300	69	150/160	x	-	-	578	258	699	135	6,5
IsoRHB-110-170/180	8301400	69	170/180	x	-	-	630	258	699	135	6,9
IsoRHB-110-190	8301500	69	190	x	-	-	682	258	699	135	7,4
IsoRLB-235-70	8301600	69	70	-	-	x	308	376	864	110	6,2
IsoRLB-235-80	8301700	69	80	-	-	x	333	376	864	110	6,5
IsoR...B-235-90	8301800	69	90	-	x	x	358	376	864	110	6,8
IsoR...B-235-100	8301900	69	100	-	x	x	383	376	864	110	7,1
IsoR...B-235-110	8302000	69	110	-	x	x	408	376	864	110	7,5
IsoR...B-235-120	8302100	69	120	-	x	x	433	376	864	135	7,8
IsoRMB-235-130	8302200	69	130	-	x	-	458	376	864	135	8,1
IsoRMB-235-140	8297800	69	140	-	x	-	483	376	864	135	8,5
IsoRMB-235-150	8302300	69	150	-	x	-	508	376	864	135	8,8
IsoRMB-235-160	8302400	69	160	-	x	-	533	376	864	135	9,1
IsoRMB-235-170	8297900	69	170	-	x	-	558	376	864	135	9,5
IsoRMB-235-180	8302500	69	180	-	x	-	583	376	864	135	9,8
IsoRMB-235-190	8298000	69	190	-	x	-	603	376	864	135	10,1
IsoRMB-235-200	8302600	69	200	-	x	-	633	376	864	135	10,4
IsoRMB-235-220	8302700	69	220	-	x	-	683	376	864	135	11,1
IsoRMB-235-240	8302800	69	240	-	x	-	733	376	864	135	11,8
IsoRMB-235-260	8298100	69	260	-	x	-	783	376	864	135	12,4
IsoRMB-235-270	8302900	69	270	-	x	-	808	376	864	135	12,8
IsoRMB-235-280	8303000	69	280	-	x	-	833	376	864	135	13,1

Quick selection table Longtherm

	System separation		Underfloor heating		District heating		Cold water		Drinking water storage tank Drinking water continuous flow heater	
Primary	70°C	50°C	55°C	49°C	110°C	55°C	16°C	10°C	70°C	50°C
Secondary	40°C	60°C	40°C	45°C	50°C	70°C	8°C	14°C	10°C	60°C
Log. temperature difference*	10 K		9,5 K		16,8 K		2 K		21,6 K	
Water / glycol	Water / water		Water / water		Water / water		Water / 35% glycol		Water / water	
Max. pressure loss	25 kPa		35 kPa		25 kPa		35 kPa		25 kPa	

Thermal output [kW]	Heat exchanger type (Type - No.)				
3	**RMB-14-10** (8011100)	**RMB-14-10** (8011100)	**RMB-14-10** (8011100)	**RMB-22-20** (8011500)	**RMB-14-10** (8011100)
6	**RMB-14-20** (8011200)	**RMB-14-20** (8011200)	**RMB-14-20** (8011200)	**RMB-22-30** (8021300)	**RMB-14-20** (8011200)
10	**RMB-14-30** (8011300)	**RMB-14-20** (8011200)	**RMB-14-20** (8011200)	**RMB-22-50** (8011800)	**RMB-14-20** (8011200)
15	**RMB-22-20** (8011500)	**RMB-14-30** (8011300)	**RMB-14-30** (8011300)	**RMB-34-50** (8013900)	**RMB-14-30** (8011300)
20	**RMB-22-20** (8011500)	**RMB-14-50** (8019300)	**RMB-14-30** (8011300)	**RMB-34-60** (801400)0	**RMB-14-30** (8011300)
25	**RMB-22-30** (8021300)	**RMB-31-30** (8012900)	**RMB-14-40** (8011400)	**RHB-60-40** (8014100)	**RMB-22-20** (8011500)
30	**RMB-22-30** (8021300)	**RMB-31-40** (8013000)	**RMB-22-20** (8011500)	**RHB-60-50** (8014200)	**RMB-22-20** (8011500)
35	**RMB-22-30** (8021300)	**RMB-31-40** (8013000)	**RMB-22-20** (8011500)	**RHB-60-60** (8014300)	**RMB-22-30** (8021300)
40	**RMB-22-40** (8011700)	**RMB-31-50** (8013100)	**RMB-22-30** (8021300)	**RHB-60-60** (8014300)	**RMB-22-30** (8021300)
45	**RMB-22-40** (8011700)	**RMB-31-60** (8013200)	**RMB-22-30** (8021300)	**RHB-60-70** (8014400)	**RMB-22-30** (8021300)
50	**RMB-22-40** (8011700)	**RMB-31-70** (8013300)	**RMB-22-30** (8021300)	**RHB-60-80** (8014500)	**RMB-22-40** (8011800)
60	**RMB-22-50** (8011800)	**RMB-31-70** (8013300)	**RMB-22-40** (8011700)	**RHB-60-100** (8014700)	**RMB-22-50** (8011800)
70	**RHB-31-30** (8011900)	**RMB-31-90** (8013500)	**RMB-22-50** (8011800)	**RHB-60-130** (8019800)	**RMB-22-50** (8011800)
80	**RHB-31-30** (8011900)	**RLB-110-30** (8014900)	**RHB-31-30** (8011900)	**RHB-110-70** (8021000)	**RHB-31-40** (8012000)
90	**RHB-31-40** (8012000)	**RLB-110-30** (8014900)	**RHB-31-40** (8012000)	**RHB-110-80** (8016500)	**RHB-31-40** (8012000)
100	**RHB-31-40** (8012000)	**RLB-110-40** (8015000)	**RHB-31-40** (8012000)	**RHB-110-90** (8016600)	**RHB-31-50** (8012100)
110	**RHB-31-50** (8012100)	**RLB-110-40** (8015000)	**RHB-31-40** (8012000)	**RHB-110-100** (8016700)	**RHB-31-50** (8012100)
120	**RHB-31-50** (8012100)	**RLB-110-40** (8015000)	**RHB-31-50** (8012100)	**RHB-110-110** (8016800)	**RHB-31-60** (8012200)
130	**RHB-31-50** (8012100)	**RLB-110-50** (8015100)	**RHB-31-50** (8012100)	**RHB-110-120** (8016900)	**RHB-31-60** (8012200)
140	**RHB-31-60** (8012200)	**RLB-110-50** (8015100)	**RHB-31-60** (8012200)	**RHB-110-140** (8017000)	**RHB-31-70** (8012300)
150	**RHB-31-60** (8012200)	**RLB-110-60** (8015200)	**RHB-31-60** (8012200)	**RHB-110-140** (8017000)	**RHB-31-70** (8012300)
160	**RHB-31-70** (8012300)	**RLB-110-60** (8015200)	**RHB-31-70** (8012300)	**RHB-110-160** (8021100)	**RHB-31-80** (8012400)
170	**RHB-31-70** (8012300)	**RLB-110-60** (8015200)	**RHB-31-70** (8012300)	**RHB-110-170** (8017200)	**RHB-31-80** (8012400)
180	**RHB-31-80** (8012400)	**RLB-110-60** (8015200)	**RHB-31-80** (8012400)	**RHB-110-180** (8018700)	**RHB-31-90** (8012500)
190	**RHB-31-80** (8012400)	**RLB-110-70** (8015300)	**RHB-31-90** (8012500)	**RLB-235-80** (8017500)	**RHB-31-100** (8012600)
200	**RHB-31-90** (8012500)	**RLB-110-80** (8015400)	**RHB-31-100** (8012600)	**RLB-235-90** (8017600)	**RHB-31-110** (8012700)
225	**RHB-31-110** (8012700)	**RLB-235-70** (8017400)	**RHB-31-110** (8012700)	**RMB-235-110** (8018200)	**RMB-110-40** (8020700)
250	**RHB-31-140** (8012800)	**RLB-235-70** (8017400)	**RHB-31-140** (8012800)	**RMB-235-120** (8018300)	**RMB-110-50** (8015500)
275	**RMB-110-50** (8015500)	**RLB-235-80** (8017500)	**RMB-110-50** (8015500)	**RMB-235-130** (8018400)	**RMB-110-50** (8015500)
300	**RMB-110-50** (8015500)	**RLB-235-90** (8017600)	**RMB-110-50** (8015500)	**RMB-235-150** (8018500)	**RMB-110-60** (8015600)
325	**RMB-110-50** (8015500)	**RLB-235-100**) (8017700)	**RMB-110-50** (8015500)	**RMB-235-160** (8018600)	**RMB-110-60** (8015600)
350	**RMB-110-60** (8015600)	**RLB-235-110** (8017800)	**RMB-110-60** (8015600)	**RMB-235-180** (8018700)	**RMB-110-60** (8015600)
375	**RMB-110-60** (8015600)	**RLB-235-120** (8017900)	**RMB-110-60** (8015600)	**RMB-235-200** (8018800)	**RMB-110-70** (8015700)
400	**RMB-110-70** (8015700)	–	**RMB-110-60** (8015600)	**RMB-235-200** (8018800)	**RMB-110-70** (8015700)

CE

Quick selection table Longtherm

	System separation		Underfloor heating		District heating		Cold water		Drinking water storage tank Drinking water continuous flow heater	
Primary	70°C	50°C	55°C	49°C	110°C	55°C	16°C	10°C	70°C	50°C
Secondary	40°C	60°C	40°C	45°C	50°C	70°C	8°C	14°C	10°C	60°C
Log. temperature difference*	10 K		9,5 K		16,8 K		2 K		21,6 K	
Water / glycol	Water / water		Water / water		Water / water		Wasser / 35% Gylkol		Water / water	
Max. pressure loss	25 kPa		35 kPa		25 kPa		35 kPa		25 kPa	

Thermal output [kW]	Heat exchanger type (Type - No.)				
425	**RMB-110-70** (8015700)	–	**RMB-110-70** (8015700)	**RMB-235-220-P25** (8018900)	**RMB-110-80** (8015800)
450	**RMB-110-80** (8015800)	–	**RMB-110-70** (8015700)	**RMB-235-240-P25** (8019000)	**RMB-110-80** (8015800)
475	**RMB-110-80** (8015800)	–	**RMB-110-80** (8015800)	–	**RMB-110-90** (8015900)
500	**RMB-110-90** (8015900)	–	**RMB-110-80** (8015800)	–	**RMB-110-100** (8016000
525	**RMB-110-90** (8015900)	–	**RMB-110-90** (8015900)	–	**RMB-110-110** (8016100)
550	**RMB-110-100** (8016000)	–	**RMB-110-90** (8015900)	–	**RMB-110-120** (8016200)
575	**RMB-110-100** (8016000)	–	**RMB-110-100** (8016000)	–	**RLB-110-130** (8020300)
600	**RMB-110-110** (8016100)	–	**RMB-110-100** (8016000)	–	**RLB-110-140** (8020400)
625	**RMB-110-110** (8016100)	–	**RMB-110-110** (8016100)	–	**RLB-110-140** (8020400)
650	**RMB-110-120** (8016200)	–	**RMB-110-110** (8016100)	–	**RLB-110-150** (8020500)
675	**RMB-110-120** (8016200)	–	**RMB-110-120** (8016200)	–	**RLB-110-150** (8020500)
700	**RMB-110-140** (8016300)	–	**RMB-110-140** (8016300)	–	**RLB-110-160** (8020600)
725	**RMB-110-140** (8016300)	–	**RMB-110-140** (8016300)	–	**RLB-110-160** (8020600)
750	**RMB-110-160** (8016400)	–	**RLB-235-70** (8017400)	–	**RLB-235-70** (8017400)
775	**RMB-110-160** (8016400)	–	**RLB-235-70** (8017400)	–	**RLB-235-80** (8017500)
800	**RLB-235-80** (8017500)	–	**RLB-235-70** (8017400)	–	**RLB-235-80** (8017500)
825	**RLB-235-80** (8017500)	–	**RLB-235-80** (8017500)	–	**RLB-235-80** (8017500)
850	**RLB-235-90** (8017600)	–	**RLB-235-80** (8017500)	–	**RLB-235-90** (8017600)
875	**RLB-235-90** (8017600)	–	**RLB-235-80** (8017500)	–	**RLB-235-90** (8017600)
900	**RLB-235-90** (8017600)	–	**RLB-235-90** (8017600)	–	**RLB-235-90** (8017600)
925	**RLB-235-100** (8017700)	–	**RLB-235-90** (8017600)	–	**RLB-235-100** (8017700)
950	**RLB-235-100** (8017700)	–	**RLB-235-90** (8017600)	–	**RLB-235-100** (8017700)
975	**RLB-235-110-P25** (8017800)	–	**RLB-235-100** (8017700)	–	**RLB-235-100** (8017700)
1000	**RLB-235-110-P25** (8017800)	–	**RLB-235-100** (8017700)	–	**RLB-235-100** (8017700)

* As long as the logarithmic temperature differences and the medium remain identical, the same heat exchanger can also be selected for modified temperature profiles. The max. pressure loss can vary, however, and should be checked accordingly.

General Terms and Conditions for Sale and Delivery of Reflex Winkelmann GmbH

These General Terms and Conditions for the Sale and Delivery of Goods shall only apply to natural persons or entities, or the partnerships with legal personality acting in their commercial or self-employed capacity (entrepreneurs) at the time the contract is concluded and shall exclusively apply. As far as not otherwise agreed, the terms stated herein shall be decisive for all our deliveries and sales. Our terms of sale shall also be applicable for all future transactions with the customer:

I. General

1. Our terms of sale shall exclusively be applicable; customer's terms adverse to or deviating from our terms of sale shall not be acknowledged by us, unless we have explicitly given our written consent to the validity of said terms. Our terms of sale shall even be applicable in the event that we carry out customer's order without any reservations, although being aware of customer's adverse or deviating terms.
2. All agreements (verbal, by phone or telegraph, by e-mail or fax) made between us and customer in order to execute this contract are subject to our written confirmation to become effective; the same also applies to collateral agreements and other commitments.
3. Our conditions of sale shall also be applicable for all future transactions, in case of orders for goods to be delivered on demand, these apply to every request for delivery.
4. Orders confirmed by us can be cancelled by customer only for important reasons. The right of cancelling the agreement pursuant to statutory provisions and agreed terms shall not be affected. This applies particularly to orders for successive deliveries, framework agreements or orders for goods to be delivered on demand.
5. Our offer is subject to change. Customer's order shall be a binding offer. The contract is concluded by sending a written order confirmation within ten days as from receipt of the order or by sending the ordered goods to customer within said term (acceptance). In case of orders for goods to be delivered on demand, customer undertakes to accept the delivery ten months after placing the order at the latest, unless another agreement has been made; customer's request for delivery needs to be made in due time, but at the latest four weeks before delivery.
6. Customer's rights resulting from this contractual relationship are not transferable. The provision of § 354a HGB (German Commercial Code) remains unaffected.
7. In the event that a provision of this contract is or becomes totally or partially ineffective, the validity of the rest of the contract shall not be affected by this.
8. All legal relationships shall exclusively be governed by German law, excluding the UN Convention on International Sale of Goods (CISG) dated 11 April 1980.

II. Intellectual Property Rights

1. The right of ownership and copyright of illustrations, drawings and calculations as well as of other documents are reserved; these must not be made accessible to third parties. This applies particularly to written documents which are designated as "confidential"; passing on said documents by customer to third parties is subject to our explicit written consent.
2. As far as we have to supply objects according to drawings, models, samples, tools, calculations or illustrations handed over to us by customer, the latter shall assume liability towards us that by the production and delivery of said objects no property rights of third parties are infringed. In such a case we shall not be responsible to review whether the tools to be made by us and the objects to be produced by means of these tools infringe any protective rights of third parties at home or abroad; this falls rather within customer's exclusive scope of responsibility.
3. As far as we are prohibited by a third party – making reference to an intellectual property right which belongs to said party – from producing or supplying objects manufactured according to drawings, models, samples, calculations, illustrations or tools of customer, we shall be entitled – without any obligation to review the factual and legal situation – to stop the production and delivery, excluding any claims for damages on the part of customer, and to demand refund of the costs incurred and compensation for lost profit.
4. Customer undertakes to exempt us immediately on our request from any damage claims asserted by third parties. Customer shall make to us an adequate advance payment for all direct and indirect damages resulting from an infringement and assertion of possible protective rights, including the expenses for consultations and proceedings incurred by
5. Samples or drawings made available to us will only be returned on request. In the event that no contract is concluded, we shall have the right to destroy samples and drawings at the end of three months after having passed the offer.

III. Prices and Payment

1. As far as not otherwise stated in the order confirmation, our prices are understood to be "ex works", excluding freight and packaging; this will separately invoiced. In case of freight free return of boxes and multi-use packaging, a credit note of 2/3 of the sum invoiced will be issued. The rent for hired railway-containers shall come to the account of customer.
2. Our prices are understood to be exclusive of the statutory value-added tax on the date of invoice; VAT shall exclusively be shown in the in- voice.
3. In contracts with continuing obligations prices are subject to change. The prices are calculated on the basis of the price and discount structure negotiated in each case with customer. In the event of an increase of wages or prices for material at least three months after the date of the order confirmation, we shall be entitled to pass on the increased expenses for wages and/or material to customer, if they are not compensated by decreases of other costs reflected in the price structure. Accordingly we will pass on to the customer decreased expenses for wages and/or material. Customer shall furthermore accept that we are entitled to an increase of prices if the execution of the order requires – particularly in case of first supply – additional substantial production phases and tools which according to generally accepted codes of practice were unforeseeable and therefore not included in the pre-calculations being the basis for the stipulation of prices and negotiations as apparent to the customer. Price increases as defined by clauses 2 and 3 shall take place pursuant to sections 315, 316 of the German Civil Code (BGB). The customer in such a case has an extraordinary termination right with regard to work not yet performed. Work performed has to be reimbursed.
4. For lack of explicit written agreement, the payment has to be made to us net cash, i.e. without any deductions. Differing terms of payment are subject to written agreement with us. This applies in particular to longer periods for payment and to payment by bill or payments by bill / cheque. Cheques and bills shall only be accepted for the purpose of payment, invoicing all charges for collection and discount. No liability shall be assumed for presentation in due time and for protest. C.O.D. charges shall be borne by customer.
5. Cash discount shall only be granted in writing. As far as cash discount has been granted, this refers only to the price of the goods excluding additional expenses.
6. If several debts are overdue, we shall have the right to determine the order of repayment.
7. As far as not otherwise stated in the order confirmation, our invoices fall due for payment immediately after receipt. 14 days after due date and receipt of invoice the customer comes in arrears. § 286 sect. 3 of the German Civil Code remains unaffected in other aspects.
8. In the event that customer fails to pay in due time, we shall be entitled to demand default interest exceeding by 8 % the applicable basic interest rate as defined by section 247 of the German Civil Code. We shall have the right to assert a higher loss of interest which will have to be proved by us. Assertion of additional damages caused by delay is still reserved. Rebates and/or price reductions conceded for the respective payments shall not apply in case of default in payment and collection becoming necessary or in case of stopping payments.
9. All payments need to be made in Euro to us but not to our business agents.
10. Customer shall only be entitled to exercise a retention right or a setoff if the counterclaim is based on the same contractual relationship.

IV. Period of delivery

1. The delivery period stated by us shall only start to run provided that technical issues have been clarified with the customer and – if this has explicitly been stipulated – all agreed down payments have been received; it shall on no account start to run before receipt of all documents, drawings, calculations and components the customer has to provide and which are necessary for the execution of the order. In the event that pattern references need to be supplied, all delivery periods for the continued supply shall start to run on acceptance of the pattern reference.
2. Delivery periods stated by us shall only be binding if these are explicitly designated by us in writing to be binding. Obtaining supplies ourselves is a prerequisite for the observance of delivery periods. Information about emerging delays will be given by us immediately. In case the goods cannot be obtained or only partially and we are not responsible for this, we have the right to rescind the contract. We will inform the customer immediately and restitute any prepayments of the customer ímmediately.
3. Observance of our obligation to supply requires perfect fulfillment in due time of all obligations on the part of customer.
4. In the event that customer gets into default of acceptance or infringes other duties to cooperate, we shall be entitled to demand compensation for the damage caused to us, including possible additional expenditures. In such case, the risk of accidental loss or deterioration of the delivery object shall also pass to customer at the moment at which the latter gets into default of acceptance.
5. In the event of agreeing collection of the goods by customer himself or on his behalf, but collection does not take place within one week after advising the completion, we shall have the right to deliver the goods, charging customer with the expenses thereof; customer undertakes to accept the goods supplied by us. Customer shall get into default of acceptance at the latest at the moment of not accepting the goods supplied, according to N° 4.
6. Force Majeure exempts us from performance of the contract for the duration of the impediment; in the event of a duration of more than six months both parties shall have the right to cancel the contract. Force Majeure shall also include accidents and other causes non-foreseeable or avoidable by us which result in a postponement of our production start or a partial or complete stop of work, such as lack of material and/or fuel, problems of transport, difficulties in energy supply, disorders in the own enterprise or in an ancillary supplier firm, as well as delayed supply of raw materials, tools and machines for the ordered manufacturing.

V. Passing of risks, Delivery

1. As far as not otherwise stated in the order confirmation, delivery is agreed to take place "ex works". We use to forward the goods at customer's expense and risk even in case of freight free delivery and transport by vehicles of our own firm.
2. Packaging and dispatch shall be made to the best of our discretion; we shall only be liable pursuant to N° VIII.
3. The goods and/or the transport thereof shall be insured by us according to customer's instruction and at customer's expense. Customer shall be responsible for the regulation of transport damages or losses.
4. Partial deliveries are permissible to an extent which is reasonable for customer, unless otherwise stated in our order confirmation. In case of a partial delivery contrary to the contract, a right to cancel the agreement shall only exist after the expiration of an appropriate period for performance or subsequent fulfillment and only as far as customer makes clear not to have any interest in a partial performance.
5. Customer must not export our products out of the EU without our previous written consent; this explicit consent is not required if the destination of the products coincides with customer's invoice address. Customer shall take care that this provision is accordingly observed by his own clients.

VI. Components supplied by or on behalf of the Buyer

1. In case additional parts and/or additional packaging (e.g. pallets or molded shells to be provided by customer) are supplied by customer, the latter undertakes to deliver these free our works with a reserve in quantity of 5 – 10 % for possible refuse or additional production, i. e. in due time, in perfect conditions and in such quantities that a continuous processing in our plant is possible.
2. In the event that said additional parts are not supplied in due time or in sufficient quantity, customer undertakes to refund additional costs incurred by this and to compensate the damages caused to us. In such cases we reserve the options to interrupt the production and to continue at a later time or, after timely having informed customer about our needs, to buy ahead on our own and to charge customer with the additional costs. In such case, all delivery periods shall be considered to have been cancelled.

VII. Warranties

1. Warranty shall be assumed by us for defects in performance.. We assume warranty for the functionability of our products in accordance with the conditions described in the attached instruction for use and provided proper assembly. In the event that no instruction for use was included into the delivery, this will subsequently be delivered to customer immediately on his request. Parts exposed to pressure need only to be checked for density in our plant if this has explicitly been agreed in writing, according to N° I.2).
2. Customer's warranty claims are subject to due fulfillment of his requirements to examine and to give notice of defects pursuant to section 377 of the Commercial Code; customer himself shall be responsible for all costs incurred by a receiving inspection. Apparent defects can only be objected to within seven days as from passing of risk to customer, i.e. in writing and exactly specifying the asserted defects. Other defects have to be objected immediately after their detection, at the longest12 months as from passing of risk. Persons charged with the examination of defects are not entitled to the recognition of defects with effect against us.
3. In the event that a deficiency claims turns out to be justified, we shall have the choice to render subsequent performance (elimination of the defects, substitute delivery) or to reduce the remuneration; in case of longlasting business relations the reduction of the remuneration can be made by issuing a credit note for defective goods. In case of subsequent service we undertake to bear all expenditures necessary for the elimination of the defects or of the substitute delivery, in particular the expenses for transport, fares, work or material, as far as these are not increased by a transport of the goods to a location other than the place of performance.
4. In case of failure of the subsequent performance, customer shall have the right – according to his choice – to cancel the contract or to reduce the remuneration by the amount by which the defect diminishes the value of the defective object, compared to the remuneration. The subsequent performance shall be considered to have failed after two unsuccessful attempts.
5. In the event of customer asserting claims because of a quality missing although having been guaranteed by us, we shall be liable pursuant to the statutory provisions. Guarantee undertakings are only given by us in writing and designated as such. As for the rest, we shall only be liable pursuant to N° VIII.
6. Goods, which are acknowledged by us to be defective, are to be returned to us on our request.
7. In case of faulty deliveries, customer undertakes to pay the undisputed and faultless part of the delivery plus expenses for transport and packaging as well as the proportionate VAT.
8. Claims relating to defects shall become statute-barred within 24 months after transfer of risk. This period does not apply, if in case of § 438 section 1 no. 2 German Civil Code (buildings and goods integrated in buildings), § 479 section 1 (delivery regress) the statutes regulate longer periods and in cases where we can be charged with malice or intent, non-fulfilment of a durability guarantee or damages to life, limb or health.

VIII. Total liability

1. We shall basically be liable for compensation of damages towards customer only as far as we are responsible for a default in performance. We shall only assume responsibility for,

a) infringement of essential contractual duties (duties which endanger to the achievement of the contract purpose) at least resulting from simple negligence,
b) infringement with intent or by gross negligence of contractual duties which are not essential,
c) the culpable violation of life, body and health,
d) defects which have maliciously been concealed by us or which we have guaranteed not to exist,
e) defects of the object of the delivery, as far as liability is assumed pursuant to the law of product liability for personal injuries or property damages of objects which are used for private purposes.

2. As far as no gross negligence of the general management or of executive employees is concerned, the obligation to compensate damages shall be limited in events according to section VIII. 1a) or b) to the damage which is foreseeable and typical of the contract.
3. Customer shall only be entitled to demand compensation for damages after having sent to us a registered letter granting an adequate grace period for performance or subsequent performance; said grace period shall at least be of four weeks. The same applies to the right of cancelling the contract
4. As far as our liability is excluded or limited, the same applies also to the personal liability of our employees, colleagues, agents and persons employed in performing the contractual obligations.
5. All contractual claims for damages shall become statute-barred within 24 months after transfer of risk. This period does not apply, if in case of § 438 section 1 no. 2 German Civil Code (buildings and goods integrated in buildings), § 479 section 1 (delivery regress) the statutes regulate longer periods and in cases where we can be charged with malice or intent, non-fulfilment of a durability guarantee or damages to life, limb or health..

IX. Tools

1. The expenses for tools, which are possibly stated in our offer or in our order confirmation, only show a part of the labor and material costs, which are actually to be apportioned to the expenses for tools, and have therefore to be considered as target prices. By payment of said quota of the tool expenses, customer shall not acquire property of and claim to the acquisition of property of the tools. These shall rather remain in our property and in our possession.

X. Reservation of title and security interests

1. We reserve title of the goods of delivery until complete payment of all accounts receivable to which we are entitled now or in future as a result of the business relationship with customer.

2. In case of acting in breach of the contract on the part of customer, and in particular in case of default in payment, we shall be entitled to take back the goods. Taking back the goods shall not mean cancellation of the contract by us, unless this has explicitly been declared by us in writing. Seizure of the goods by us under distress shall always mean cancellation of the contract. After taking back the goods, we shall have the right to make use thereof. The proceeds resulting from the utilization need to be allowed on customer's outstanding liabilities, deducting adequate costs of the utilization.

3. Customer undertakes to treat the goods carefully; he is in particular obliged to insure these at own expense sufficiently at the original value against damages by fire, water and theft.

4. Customer is entitled to resale and further dispose of the goods in the normal course of business. The installation in soil or in buildings connected to plants or the utilization for fulfillment of other contracts for services or for work done and material supplied are equivalent to further disposal.

5. Even at this stage customer assigns to us at the sum of the total of the invoice (VAT included) agreed with us all accounts receivable achieved by further disposal to his subpurchasers or to third parties, irrespective whether the goods have been sold without or after having been processed. Customer shall be entitled to collection of said accounts receivable also after assignment. Our authorization to collect the account receivable ourselves shall not be affected by this. Nevertheless, we undertake not to collect the receivable as long as customer fulfils his payment obligations resulting from the proceeds collected, is not in default of payment and as long as no application for opening of an insolvency procedure has been filed or payments have been stopped. If this, however, should be the case, we can demand that customer discloses to us the assigned accounts receivable and the debtors thereof, gives all information necessary for collection and notifies debtor (third party) of the assignment.

6. Processing or reshaping of the goods by customer shall always be made for us; we shall in particular be considered as manufacturer as defined by section 950 of the Civil Code. Customer's expectant right to the goods shall be continued with the new or reshaped physical object. In the event that the goods are connected or processed with other physical objects not being our property, we shall acquire co-ownership of the new physical object in the proportion of the real value of our goods to the other connected or processed objects at the time of connection or processing. As for the rest, the same shall apply to the physical object resulting from connection or processing as to the goods supplied under reservation of title.

7. In the event that the physical object supplied is inseparably mixed with other objects not belonging to us, we shall acquire co-ownership of the new physical object in proportion of the real value of our physical object to the other mixed object at the time of mixture. If the mixture is made in such way that customer's physical object needs to be considered to be the main thing, it is deemed to be agreed that customer transfers to us co-ownership on a pro rata basis. Customer shall hold in custody for us the sole ownership or co-ownership, which has thus been created.

8. Customer shall also assign to us the receivables to secure our claims towards him resulting from the business relationship, which are created towards a third party by connection of the goods to a piece of property.

9. As far as customer is entitled to claims towards insurers or third parties as a result of damaging, diminution, loss or destruction of mortgaged property or for other reasons, customer undertakes to assign in advance to us said claims even at this stage.

10. Customer undertakes to inform us immediately in writing about seizures by third parties of reserved goods or assigned claims, in particular seizures under distress. In such case customer has to send to us immediately a copy of the bailiff's record and an affidavit about the identity of the goods seized under distress. As far as the third party is not in a position to refund to us the judicial or extrajudicial expenses of our prosecution or defence, in particular an action as defined by section 771 of the Civil Procedure Code, customer shall be liable towards us for the loss resulting from this.

11. On customer's request we undertake to release the securities to which we are entitled, as far as the realizable value of our securities exceeds the claims to be secured by more than 20 % or the nominal value of the securities by more than 50 %; the choice of the securities to be released is within our scope of responsibility.

12. In countries where a right similar to reservation does not exist, customer shall grant to us – where possible even at this stage, otherwise on first request – the comparable kind of security in the country concerned and shall cooperate in the additional measures, which are necessary to establish appropriate securities.

XI. Places of Jurisdiction and Performance

1. Exclusive place of jurisdiction shall be at the courts competent at our place of business; we shall nevertheless have the right to sue the customer also at his place of business or court of his place of residence.

2. As far as not otherwise stated in the order confirmation, our place of business is the place of performance for all obligations resulting from the contractual relationship.

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Your notes

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