



reflex

Thinking solutions.

PRESSURE TANKS

PRODUCT RANGE



2020

 **WHITE**
INTERNATIONAL

THE COMPANY

Reflex Winkelmann GmbH – part of the Building+Industry division – is a leading provider of high quality cold water, 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 potable cold water, 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 POWERFUL BRAND FOR DECADES

CONTENTS

Diaphragm and bladder expansion vessels. For potable applications.

Refix DE

Non-replaceable bladder for DE, according to DIN EN 13831 norm. All vessel parts in contact with water are corrosion resistant and meets or exceeds EC norms for pressure vessels 2014/108/EC directives.



Refix DC

Non-replaceable diaphragm for DC, according to DIN EN 13831 norm. All vessel parts in contact with water are corrosion resistant and meets or exceeds EC norms for pressure vessels 2014/108/EC directives.



THE BRAND

Reflex tanks are ideally suited for a wide range of applications including booster systems, bore hole systems, sprinklers, irrigation systems, HVAC, thermal expansion and water hammer arresting.

FEATURES

- Manufactured in Europe
- 304 (DE, HW) AND 316TI (DC) Stainless Steel water connection
- Corrosion resistant for long life
- UV resistant epoxy coating with a minimum thickness of 30 micron in blue RAL5007
- Air valve with sealing cap eliminates leaks
- Internal coating for drinking water applications
- Food grade approved high-grade butyl membranes and bladders WRAS, ACS, AS/NZS4020
- Maximum working temperature 70° C
- Maximum working pressures of 145psi/10bar or 232psi/16bar
- Tank pre-charge 58psi/4bar Nitrogen
- 5 year tank replacement guarantee



BENEFITS

- Constructed for long life
- Extends pump life
- Reduces pump starts and noise
- Protects against water hammer and thermal expansion



APPLICATIONS

An energy saving device such as a Reflex Pressure Tank pressure storage cell, stores energy in the form of pressurised water.

The energy is transformed by the pump from electricity to water pressure. With a Reflex Pressure Tank, there is no loss of energy once it has been stored in the device.

By installing a Reflex Tank, the pump start events can be cut by 40 – 80%

- Saving Power
- Extending Pump Life
- Reducing Noise
- Low initial cost

The Reflex Tank is easy to fit to most pumps and can also be wall mounted. The tank can be installed within minutes and the system can be fitted to any brand or type of pump.

ENERGY
SAVING
DEVICE

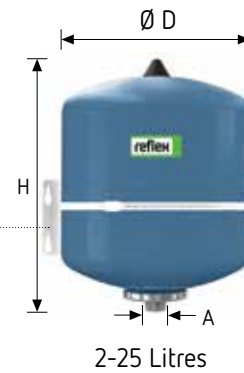


REFIX DE

- 2-18 Litres
- Bladder according to DIN EN 13831
- All vessel parts in contact with water are corrosion resistant
- Meets or exceeds EC norms for pressure vessels 2014/108/EC directives
- Durable epoxy coating
- Factory pre-charged
- Vertical



Option
Wall Bracket



2-25 Litres



MODEL 10 BAR 70°C	ITEM CODE	TOTAL VOLUME LITRES	NOMINAL DRAW-OFF LITRES	WEIGHT KG	Ø D MM	H MM	A BSP	PRE-CHARGE PRESSURE BAR
REF-DE2	806043**	2	1	1.0	132	260	¾ - 1"	4
REF-DE8	806044**	8	3	1.7	206	335	¾ - 1"	4
REF-DE18	806045**	18	6	2.8	280	410	¾ - 1"	4

Codes marked ** are WaterMark approved to WMTS-485:2018 Certificate No. 23340

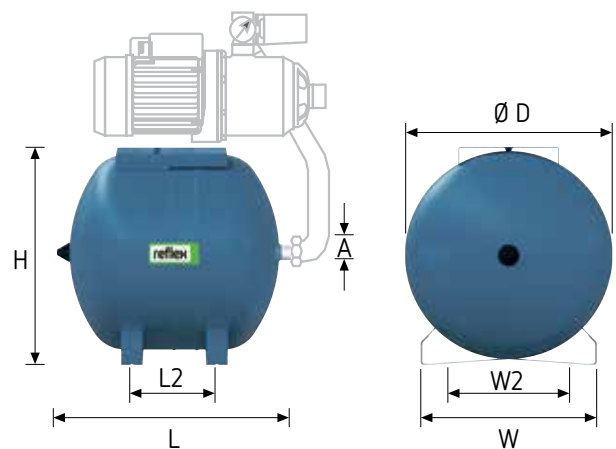
MODEL 16 BAR 70°C	ITEM CODE	TOTAL VOLUME LITRES	NOMINAL DRAW-OFF LITRES	WEIGHT KG	Ø D MM	H MM	A BSP	PRE-CHARGE PRESSURE BAR
REF-DE8-16	806046	8	3	2.8	206	335	¾ - 1"	4
REF-DE25-16	806048	25	9	5.8	280	520	¾ - 1"	4
REF-DE80-16	806049	80	29	18.0	480	745	¾ - 1"	4

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REFIX HW

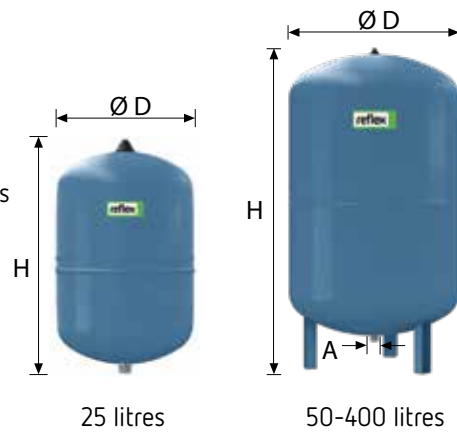
- 25-80 Litres
- Diaphragm according to DI EN 13831 norm part 3
- All vessel parts are corrosion resistant
- Meets or exceeds EC norms for pressure vessels 2014/108/EC directives
- Durable epoxy coating
- Factory pre-charged nitrogen
- Horizontal



MODEL 10 BAR / 70°C	ITEM CODE	TOTAL VOLUME LITRES	NOMINAL DRAW-OFF LITRES	WEIGHT KG	Ø D MM	H MM	L MM	L2 MM	W2 MM	W MM	A	PRE-CHARGE PRESSURE BAR
REF-HW25	806058	25	9	5.3	280	293.4	520	228	214	270	1"	2
REF-HW60	806059	60	18	15.0	409	433	503	175	285	350	1"	2
REF-HW80	806060	80	29	17.0	480	495	595	230	285	355	1"	2

REFIX DC

- 25-400 Litres
- Diaphragm, according to DIN EN 13831 norm part 3
- All vessel parts in contact with water are corrosion resistant
- Meets or exceeds EC norms for pressure vessels 2014/108/EC directives
- Durable epoxy coating
- Factory pre-charged nitrogen
- Vertical / Free-Standing

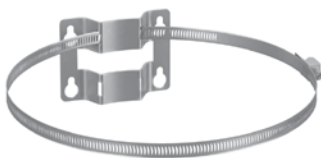


MODEL 10 BAR / 70°C	ITEM CODE	TOTAL VOLUME LITRES	NOMINAL DRAW-OFF LITRES	WEIGHT KG	Ø D MM	H MM	A BSP	PRE-CHARGE PRESSURE BAR
REF-DC25	806050**	25	9	4.7	280	520	1"	4
REF-DC50	806051**	50	18	12.5	409	588	1"	4
REF-DC80	806052	80	29	17.0	480	680	1"	4
REF-DC100	806053	100	36	20.5	480	785	1"	4
REF-DC140	806054	140	50	29.0	480	997	1"	4
REF-DC200	806055	200	72	40.0	634	883	1"	4
REF-DC300	806056	300	108	52.0	634	1184	1"	4
REF-DC400	806057	400	144	78.0	740	1173	1"	4

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ACCESSORIES



Option
Wall Bracket

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



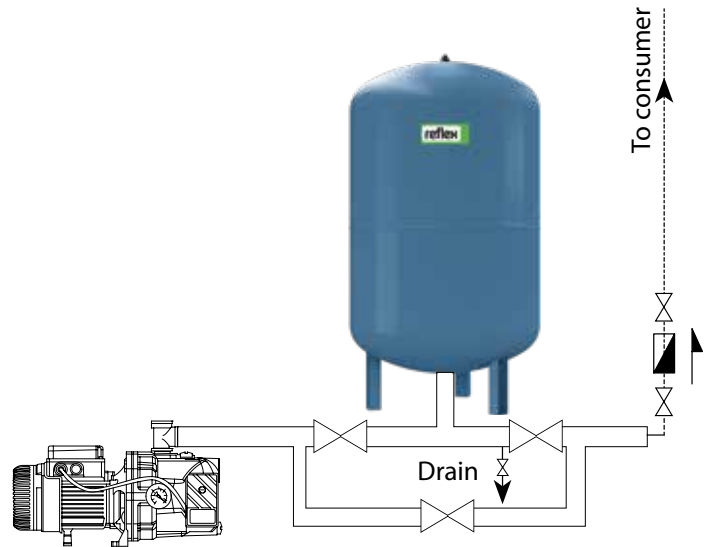
MODEL	ITEM CODE	DESCRIPTION
REF-WALLBRACKET	806107	Wall Bracket
REF-LOCKSHEILD1	806108	Lockshield Valve 1"
REF-PG	806109	Digital Pressure Gauge

REFIX APPLICATIONS

Vessel on a pressure system

With the vessel mounted on the discharge side of the booster system, the numbers of pump starts are reduced and also pump starts at small draw-offs are totally eliminated. This reduces pump wear and extends pump life time. Maintenance of the vessel can be done without shutting off the water supply with the shown pipework.

Diaphragm expansion tank mounted on discharge side of pump	
Cut-in pressure of pump	Precharge pressure of tank
2 bar	1.8 bar
3 bar	2.8 bar
4 bar	3.7 bar
5 bar	4.7 bar
6 bar	5.7 bar
7 bar	6.6 bar
8 bar	7.5 bar
9 bar	8.5 bar
10 bar	9.5 bar
11 bar	10.5 bar
12 bar	11.5 bar
13 bar	12.5 bar



Configuration: Reflex on discharge side of pressure system pump.

• To restrict the switch frequency of pressure-controlled systems

Cut-in pressure	P_{in}	=.....bar
Cut-out pressure	P_{out}	=.....bar
Max. delivery rate*	V_{maxP}	=.....l/h
*Flow at pressure switch cut out pressure		
Switch frequency	s	=.....1/h
Number of pumps	n	=.....

s - switch frequency	1/h	20	15	10
Pump output	kW	≤ 4.0	≤ 7.5	≤ 7.5

Nominal volume $V_n = 0,33 \times V_{maxP} \frac{(P_{out} + 1)}{(P_{out} - P_{in}) \times s \times n}$

Example:

1 x DAB-251MP		
Cut-out pressure	538kPa	5.4bar
Cut-in pressure	317kPa	3.2bar
	1.85kW	
Max. delivery rate*	Flow at cut out pressure 32 l/m or 1920 1/hr	
	= 133 x 1920	$\times \frac{(5.4 + 1)}{(5.4 - 3.2) \times 20 \times 1}$
	= 633.6	$\times \frac{6.4}{44}$
	= 92.16 litres	
	Select REF - 100V	

Pre-charge instructions

1. Pressure switch controlled pumps with differential pressure set at 140 kPa (20 psi), pre-charge the tank to 20 kPa (3 psi) below the cut in pressure.
2. For pumps controlled by pressure switches with higher differential pressures, electronic controls or variable speed controls, pre-charge the tank to 65% of the maximum system pressure.
3. Pressure tanks installed on mains pressure, pre-charge should be set at the mains pressure.
4. For hot water expansion, pre-charge should be set at the mains pressure.



Reflex Factory

• To store the minimum supply volume V_e between activation and deactivation of the pressure system pump

Cut-in pressure P_{in} =bar
 Cut-out pressure P_{out} =bar
 Storage capacity V_e =l

Nominal volume $V_n = \frac{V_e}{\left(\frac{P_{in} + 1}{P_{out} + 1}\right)}$ or $\frac{V_e}{\text{Drawdown factor}}$
 *see table

Note $\left(\frac{P_{in} + 1}{P_{out} + 1}\right)$ must not be greater than 0.333

CUT OUT PRESSURE BAR (PSI)		DRAWDOWN FACTORS																
		CUT IN PRESSURE BAR (PSI)																
		2.0 (29)	2.5 (36)	3.0 (44)	3.5 (51)	4.0 (58)	4.5 (65)	5.0 (73)	5.5 (80)	6.0 (87)	6.5 (94)	7.0 (102)	8.0 (116)	9.0 (131)	10.0 (145)	11.0 (160)	12.0 (174)	13.0 (189)
2.5 (36)	0.143																	
3.0 (44)	0.250	0.125																
3.5 (51)	0.333	0.222	0.111															
4.0 (58)		0.300	0.200	0.100														
4.5 (65)			0.273	0.182	0.091													
5.0 (73)			0.333	0.250	0.167	0.083												
5.5 (80)				0.308	0.231	0.154	0.077											
6.0 (87)					0.286	0.214	0.143	0.071										
6.5 (94)					0.333	0.267	0.200	0.133	0.067									
7.0 (102)						0.313	0.250	0.188	0.125	0.063								
7.5 (109)							0.294	0.235	0.176	0.118	0.059							
8.0 (116)							0.333	0.278	0.222	0.167	0.111							
8.5 (123)								0.316	0.263	0.211	0.156	0.053						
9.0 (131)									0.300	0.250	0.200	0.100						
9.5 (138)									0.333	0.286	0.238	0.143	0.048					
10.0 (145)										0.318	0.273	0.182	0.091					
10.5 (152)											0.304	0.217	0.130	0.043				
11.0 (160)											0.333	0.250	0.167	0.083				
11.5 (167)												0.280	0.200	0.120	0.040			
12.0 (174)												0.308	0.231	0.154	0.077			
12.5 (181)												0.333	0.259	0.185	0.111	0.037		
13.0 (189)													0.286	0.214	0.143	0.071		
13.5 (196)													0.310	0.241	0.172	0.103	0.034	
14.0 (203)													0.333	0.267	0.200	0.133	0.067	
14.5 (210)														0.290	0.226	0.161	0.097	
15.0 (218)														0.313	0.250	0.188	0.125	
15.5 (225)														0.335	0.273	0.212	0.152	
16.0 (232)															0.294	0.235	0.176	

Drawdown Factors Greater Than 0.333 Will Void Warranty

Available from your local Reflex distributor:

REFLEX_MARCH_2020

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