Climate
Control

IMI Pneumatex

Intermediate vessels

For protection against inadmissible temperatures in expansion vessels

From 8 L to 5000 L

Breakthrough
engineering for
a better world

Intermediate vessels

Intended to protect the butyl bag of a downstream expansion vessel from temperature extremes.

Key features

Wide range of vessel sizes for different system needs
From 8 L to 5000 L

Brilliantly simple, robust design
Special versions available on request.

Technical description

Applications:
Heating, solar and chilled water systems.

Functions:
Protection against inadmissible temperature in expansion vessels.

Pressure:
Min. admissible pressure, PSmin: 0 bar
Max. admissible pressure, PS:
see Articles

Temperature:
Intermediate vessel DD/DU:
Max. admissible temperature, TS: 110 °C
Min. admissible temperature, TS_{min}:
-10 °C
Intermediate vessel DG:
Max. admissible temperature, TS: 180 °C
Min. admissible temperature, TS_{min}:
-10 °C

Material:
Steel. Color beryllium.

Media:
Non-aggressive and non-toxic system media.
Addition of antifreeze agent up to 50%.

Transportation and storage:
In frostless, dry places.

Standard:
Constructed according to PED 2014/68/EU.

Calculation

For systems TAZ ≤ 110°C

Calculation following EN 12828, SWKI HE301-01 *). Solar systems ENV 12977-1.

General equations

Vs	Water capacity of the system	Heating	**Vs = vs · Q**	vs Q	Specific water capacity, table 4. Installed heat capacity
			Vs= Known		System design, content calculation
		Cooling	Vs= Known		System design, content calculation

Intermediate vessels [5]

VN	Nominal volume [5]	EN 12828, cooling	**VN ≥ Vs · Δe + 1.1 · Vgsolar** [6] **+ 2** [3]	Δe Vgsolar	for tr and t_{min} , table 3 Collector volume [6]
		SWKI HE301-01	**VN ≥ Vs · Δe + 2 · Vgsolar** [6] **+ 2** [3]		

3) Add 2 litres when a Vento is installed in the system.
5) Please select a vessel which has an equal or higher nominal content.
6) In solar systems to ENV12977-1: collector volume Vgsolar that can evaporate when not in operation; otherwise Vgsolar = 0.
*) SWKI HE301-01: Valid for Switzerland
HySelect calculation software is based on an advanced calculation method and database. Results may vary.

Table 1: e expansion coefficient

t (TAZ, ts_{max}, tr, ts_{min}), °C		**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**	**105**	**110**
e Water	= 0 °C	0,0016	0,0041	0,0077	0,0119	0,0169	0,0226	0,0288	0,0357	0,0433	0,0472	0,0513
e % weight MEG*												
30 %	= -14,5 °C	0,0093	0,0129	0,0169	0,0224	0,0286	0,0352	0,0422	0,0497	0,0577	0,0620	0,0663
40 %	= -23,9 °C	0,0144	0,0189	0,0240	0,0300	0,0363	0,0432	0,0505	0,0582	0,0663	0,0706	0,0750
50 %	= -35,6 °C	0,0198	0,0251	0,0307	0,0370	0,0437	0,0507	0,0581	0,0660	0,0742	0,0786	0,0830
e % weight MPG**												
30 %	= -12,9 °C	0,0151	0,0207	0,0267	0,0333	0,0401	0,0476	0,0554	0,0639	0,0727	0,0774	0,0823
40 %	= -20,9 °C	0,0211	0,0272	0,0338	0,0408	0,0481	0,0561	0,0644	0,0731	0,0826	0,0873	0,0924
50 %	= -33,2 °C	0,0288	0,0355	0,0425	0,0500	0,0577	0,0660	0,0747	0,0839	0,0935	0,0985	0,1036

Table 3: Δe expansion (in chilled water systems when tr < 5°C; in heating systems when tr > 70°C)

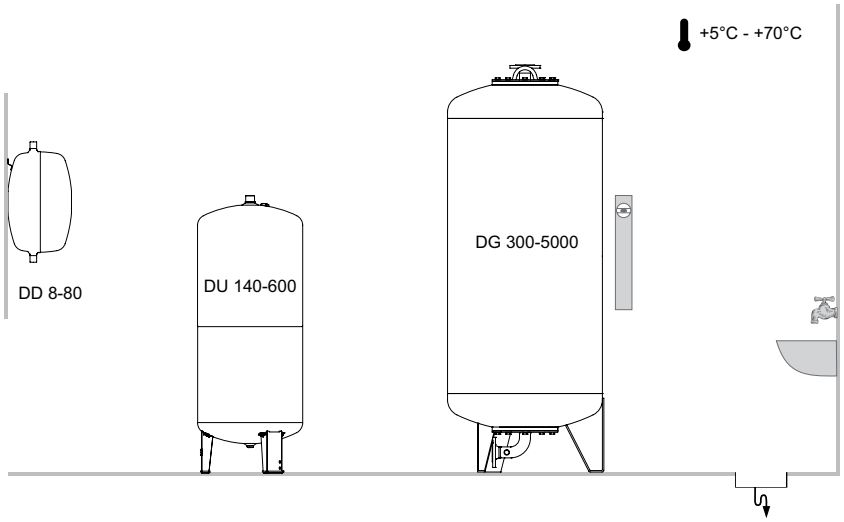
tr, °C		**-35**	**-30**	**-25**	**-20**	**-15**	**-10**	**-5**	**0**		**80**	**90**	**100**	**105**	**110**
Δe Water	= 0°C	-	-	-	-	-	-	-	-	-	0,0062	0,0131	0,0207	0,0246	0,0287
Δe % weight MEG*															
30%	= -14,5°C	-	-	-	-	-	0,0032	0,0023	0,0012	-	0,0070	0,0145	0,0226	0,0269	0,0312
40%	= -23,9°C	-	-	-	0,0081	0,0069	0,0055	0,0038	0,0019	-	0,0073	0,0150	0,0231	0,0274	0,0318
50%	= -35,6°C	0,0131	0,0121	0,0109	0,0094	0,0076	0,0056	0,0038	0,0019	-	0,0075	0,0154	0,0236	0,0279	0,0324
Δe % weight MPG**															
30%	= -12,9°C	-	-	-	-	-	0,0068	0,0045	0,0023	-	0,0078	0,0163	0,0252	0,0298	0,0347
40%	= -20,9°C	-	-	-	0,0125	0,0099	0,0077	0,0052	0,0026	-	0,0083	0,0170	0,0265	0,0313	0,0363
50%	= -33,2°C	-	0,0187	0,0162	0,0137	0,0111	0,0086	0,0058	0,0029	-	0,0088	0,0179	0,0276	0,0325	0,0376

Table 4: vs approx. water capacity * of central heatings referred to the installed heat capacity Q**

ts_{max} | tr	**°C**	**90 | 70**	**80 | 60**	**70 | 55**	**70 | 50**	**60 | 40**	**50 | 40**	**40 | 30**	**35| 28**
Radiators	vs liter/kW	14,0	16,5	20,1	20,6	27,9	36,6	-	-
Flat radiators	vs liter/kW	9,0	10,1	12,1	11,9	15,1	20,1	-	-
Convectors	vs liter/kW	6,5	7,0	8,4	7,9	9,6	13,4	-	-
Air handlers	vs liter/kW	5,8	6,1	7,2	6,6	7,6	10,8	-	-
Floor heating	vs liter/kW	10,3	11,4	13,3	13,1	15,8	20,3	29,1	37,8

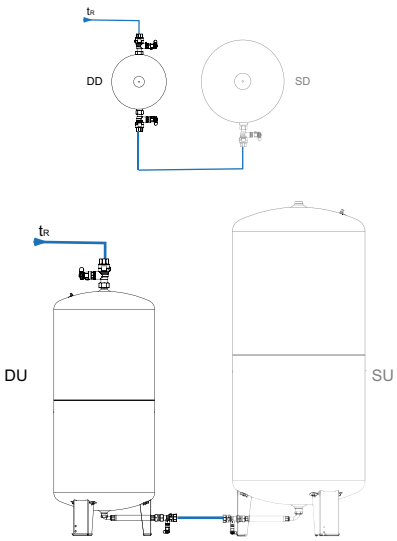
*) MEG = Mono-Ethylene Glycol
**) MPG = Mono-Propylene Glycol
***) Water capacity = heat generator + distribution net + heat emitters

Installation

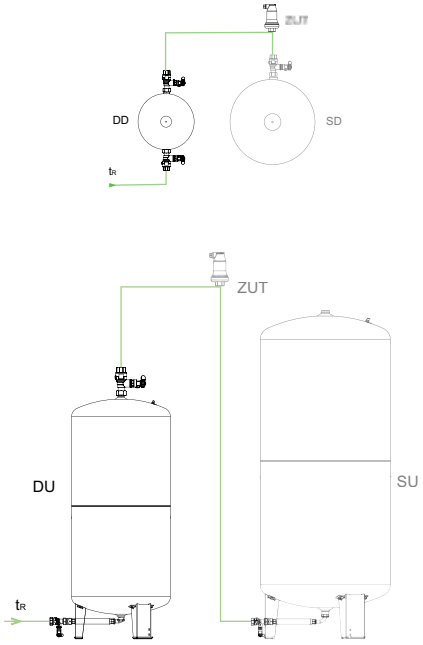


Application examples

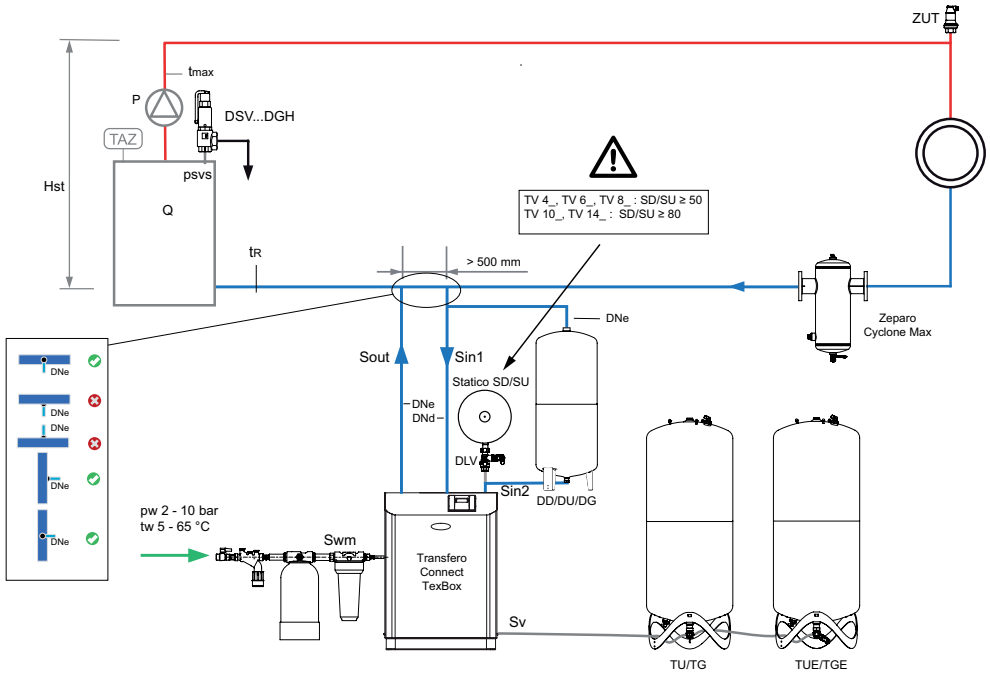
Example for heating system, return temperature tr > 70°C
(May require changes to meet local legislation)



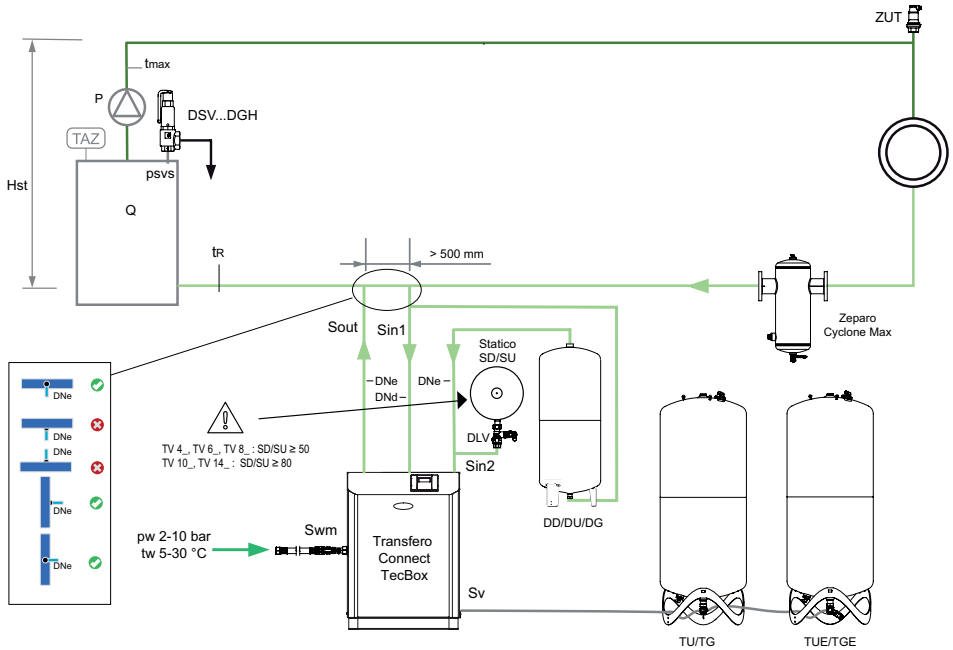
Example for cooling system, return temperature tr < 5°C
(May require changes to meet local legislation)



Example for heating system with Transfero pressurisation, return temperature 70°C < tr ≤ 90°C
(May require changes to meet local legislation)

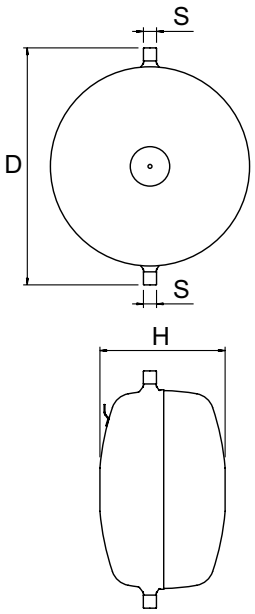


Example for cooling system with Transfero pressurisation, return temperature 0°C < tr ≤ 5°C
(May require changes to meet local legislation)



Zeparo Cyclone Max for the central separation of sludge.
Zeparo ZUT for automatic venting during filling and during draining.
Further accessories, product and selection details, see: Datasheet Pleno, Zeparo and Accessories.

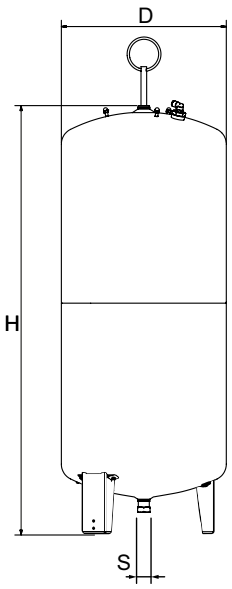
Articles



Intermediate vessel DD
Wall bracket for easy assembly.

Type	VN [l]	D	H**	m [kg]	S	EAN	Article No
10 bar (PS)							
DD 8.10	8	345	166	3,9	2x R1/2	7640148634359	714 2020
DD 12.10	12	386	201	5,1	2x R1/2	7640148634366	714 2021
DD 18.10	18	430	224	6,3	2x R3/4	7640148634373	714 2022
DD 25.10	25	472	251	8,1	2x R3/4	7640148634380	714 2023
DD 35.10	35	521	280	10	2x R3/4	7640148634397	714 2024
DD 50.10	50	587	317	12,2	2x R1	7640148634403	714 2025
DD 80.10	80	687	347	16,4	2x R1	7640148634410	714 2026

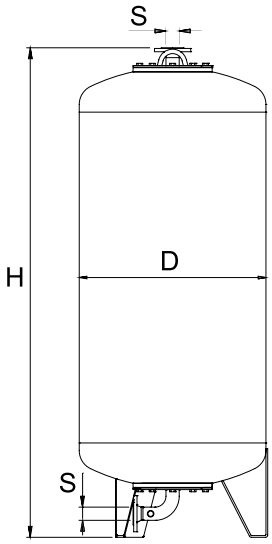
VN = Nominal volume
**) Tolerance 0 /+35



Intermediate vessel DU
Feet for upright assembly.

Type*	VN [l]	D	H	m [kg]	S	EAN	Article No
6 bar (PS)							
DU 140.6	140	420	1274	23	2x Rp1 1/2	7640148634427	714 1002
DU 200.6	200	500	1330	29	2x Rp1 1/2	7640148634434	714 1003
DU 300.6	300	560	1451	35	2x Rp1 1/2	7640148634441	714 1004
DU 400.6	400	620	1499	52	2x Rp1 1/2	7640148634458	714 1005
DU 500.6	500	680	1588	60	2x Rp1 1/2	7640148634465	714 1006
DU 600.6	600	740	1596	70	2x Rp1 1/2	7640148634472	714 1007
10 bar (PS)							
DU 200.10	200	500	1330	37	2x Rp1 1/2	7640148634489	714 2003
DU 300.10	300	560	1451	54	2x Rp1 1/2	7640148634496	714 2004
DU 500.10	500	680	1588	89	2x Rp1 1/2	7640148634502	714 2006

VN = Nominal volume
*) Vessels > 500 litres, 10 bar upon request.



Intermediate vessel DG
Feet for upright assembly.
Two flange openings for internal inspections.

Type	VN [l]	D	H**	m [kg]	S EN 1092-1	EAN	Article No
6 bar (PS)							
DG 700.6	700	750	1987	200	2xDN50	7640148634519	714 1008
DG 1000.6	1000	850	2112	280	2xDN50	7640148634526	714 1009
DG 1500.6	1500	1016	2288	385	2xDN50	7640148634533	714 1010
DG 2000.6	2000	1016	2799	655	2xDN65	7640148634540	714 1015
10 bar (PS)							
DG 300.10	300	500	1865	170	2xDN50	7640148634588	714 2008
DG 500.10	500	650	1915	225	2xDN50	7640148634595	714 2009
DG 700.10	700	750	1987	240	2xDN50	7640148634601	714 2010
DG 1000.10	1000	850	2112	330	2xDN50	7640148634618	714 2011
DG 1500.10	1500	1016	2294	445	2xDN50	7640148634625	714 2012
DG 2000.10	2000	1016	2818	735	2xDN65	7640148634632	714 2017
DG 3000.10	3000	1300	2924	890	2xDN65	7640148634649	714 2014
DG 4000.10	4000	1300	3569	1030	2xDN65	7640148634656	714 2015
DG 5000.10	5000	1300	4214	1145	2xDN65	7640148634663	714 2016
16 bar (PS)							
DG 300.16	300	500	1865	190	2xDN50	7640148634670	714 3000
DG 500.16	500	650	1915	255	2xDN50	7640148634687	714 3001
DG 700.16	700	750	1988	280	2xDN50	7640148634694	714 3002
DG 1000.16	1000	850	2146	385	2xDN50	7640148634700	714 3003
DG 1500.16	1500	1016	2294	510	2xDN50	7640148634717	714 3004
DG 2000.16	2000	1016	2835	820	2xDN65	7640148634724	714 3012
DG 3000.16	3000	1300	2940	995	2xDN65	7640148634731	714 3006
DG 4000.16	4000	1300	3585	1145	2xDN65	7640148634748	714 3007
DG 5000.16	5000	1300	4230	1280	2xDN65	7640148634755	714 3008

VN = Nominal volume
**) Tolerance 0 /-100.

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