Datasheet

Expansion Vessel

BS1

Description

Our stainless steel expansion vessels are a high quality product, thanks to the materials used offering maximum guarantee for hygiene, resistance to corrosion and durability. They in fact consist of an outside shell in stainless steel AISI 304 or 316 and a pressurized interchangeable membrane in BUTYL or EPDM, both non-toxic materials with very low permeability. This feature ensures that the pressure inside the vessel remains unchanged for a long period, preventing the membrane from breaking due to excessive deflation. If the membrane should rupture, the fluid will come into contact with the stainless steel of the expansion vessel, making it therefore economically advantageous to only replace the membrane. On your request we can install different membranes, to apply our expansion vessels in systems with special fluids (oils, glycol, etc.). Due to the thickness of the sheet metal used to manufacture them, the BS1 stainless steel expansion vessels are capable of working at a maximum service pressure of 14 Bar. An HP16 or HP25 version is available for some of the models, made with a different thickness and a special flange to be able to work up to a maximum 16 or 25 Bar working pressure. To check the pressure capabilities, please see the vessel overview. The BS1 series of stainless steel expansion vessels are made to hold from 2 to 2000 liters; all sizes are available for vertical positioning while a horizontal model is available for the sizes 20 to 500 liters.

Technical data	
Capacity	: 2 to 2000 litre
Housings	: stainless steel 304 or 316L
Membrane	: Butyl or EPDM

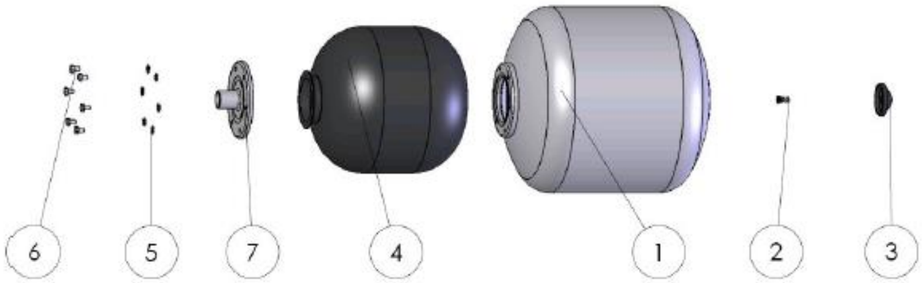
Vessel overview

Type (SS316 optional, EPDM optional for P16 & P25)	Max. Pressure [Barg]	Total Volume [Litre]	Membrane material
BS1-MP1-VT002-BTYL/304	14	2	Butyl
BS1-MP1-VT005-BTYL/304	14	5	Butyl
BS1-P16-VT005-BTYL/304	16	5	Butyl
BS1-P25-VT005-BTYL/304	25	5	Butyl
BS1-MP1-VT008-BTYL/304	14	8	Butyl
BS1-P16-VT008-BTYL/304	16	8	Butyl
BS1-P25-VT008-BTYL/304	25	8	Butyl
BS1-MP1-VT012-BTYL/304	14	12	Butyl
BS1-P16-VT012-BTYL/304	16	12	Butyl
BS1-P25-VT012-BTYL/304	25	12	Butyl
BS1-MP1-VT020-BTYL/304	10	20	Butyl
BS1-MP2-VT020-BTYL/304	13	20	Butyl
BS1-MP1-HS020-BTYL/304	10	20	Butyl
BS1-MP2-HS020-BTYL/304	13	20	Butyl
BS1-P16-VT020-BTYL/304	16	20	Butyl
BS1-P25-VT020-BTYL/304	25	20	Butyl
BS1-MP1-VT035-BTYL/304	5,7	35	Butyl
BS1-MP2-VT035-BTYL/304	14	35	Butyl
BS1-P16-VT035-BTYL/304	16	35	Butyl
BS1-P25-VT035-BTYL/304	25	35	Butyl
BS1-MP1-VB050-BTYL/304	4	50	Butyl
BS1-MP2-VB050-BTYL/304	11	50	Butyl
BS1-MP1-VT050-BTYL/304	4	50	Butyl
BS1-MP2-VT050-BTYL/304	11	50	Butyl
BS1-MP1-HS050-BTYL/304	4	50	Butyl
BS1-MP2-HS050-BTYL/304	11	50	Butyl
BS1-P16-VT050-BTYL/304	16	50	Butyl
BS1-P25-VT050-BTYL/304	25	50	Butyl
BS1-MP2-VB100-EPDM/304	9	100	EPDM
BS1-MP2-HS100-EPDM/304	9	100	EPDM
BS1-MP3-VB150-EPDM/304	8	150	EPDM
BS1-MP3-HS150-EPDM/304	8	150	EPDM
BS1-MP3-VB200-EPDM/304	8	200	EPDM
BS1-MP3-HS200-EPDM/304	8	200	EPDM
BS1-MP3-VB300-EPDM/304	8	300	EPDM
BS1-MP3-HS300-EPDM/304	8	300	EPDM
BS1-MP3-VB500-EPDM/304	6	500	EPDM
BS1-MP3-HS500-EPDM/304	6	500	EPDM
BS1-MP4-VB500-EPDM/304	8	500	EPDM
BS1-MP4-HS500-EPDM/304	8	500	EPDM
BS1-P10-VB1TH-EPDM/304	10,5	1000	EPDM
BS1-P10-VB2TH-EPDM/304	10,5	2000	EPDM

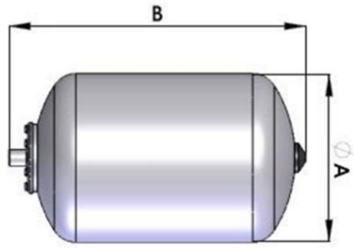
MP1-VT & MP2-VT

Medium pressure vertical expansion vessels with top connection.
BSP thread connection
Max. 110 ˚C
PED I & PED II n° 97/23/CE
*PED grade is number after MP

Type (SS316 optional)	Max. Pressure [Barg]	Connect-ion	Total Volume [Litre]	Membrane material	Dimension A/B [mm]	Weight [kg]
BS1-MP1-VT002-BTYL/304	14	¾”	2	Butyl	114/200	0,8
BS1-MP1-VT005-BTYL/304	14	1”	5	Butyl	250/240	2,2
BS1-MP1-VT008-BTYL/304	14	1”	8	Butyl	250/259	2,4
BS1-MP1-VT012-BTYL/304	14	1”	12	Butyl	250/370	3,1
BS1-MP1-VT020-BTYL/304	10	1”	20	Butyl	250/500	4,4
BS1-MP2-VT020-BTYL/304	13	1”	20	Butyl	250/500	4,4
BS1-MP1-VT035-BTYL/304	5,7	1”	35	Butyl	350/480	7,2
BS1-MP2-VT035-BTYL/304	14	1”	35	Butyl	350/480	7,2
BS1-MP1-VT050-BTYL/304	4	1”	50	Butyl	350/610	10,3
BS1-MP2-VT050-BTYL/304	11	1”	50	Butyl	350/610	10,3



	Description	Qty.
1	Tank shell	1
2	Air vent	1
3	Vent cover	1
4	Diaphragm	1
5	Washer	6
6	Bolt	6
7	Connection Flange	1

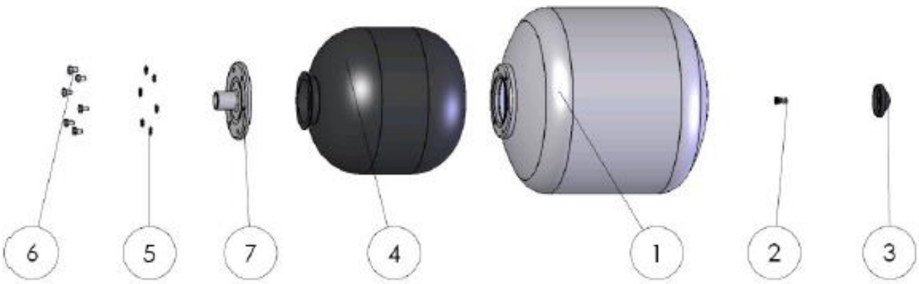


P16-VT & P25-VT

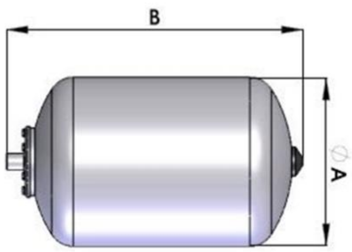
High pressure vertical expansion vessels with top connection.

BSP thread connection
Max. 110 ˚C
PED II n° 97/23/CE

Type (SS316 optional, EPDM membrane optional)	Max. Pressure [Barg]	Connect-ion	Total Volume [Litre]	Membrane material	Dimension A/B [mm]	Weight [kg]
BS1-P16-VT005-BTYL/304	16	1"	5	Butyl	250/254	4,0
BS1-P25-VT005-BTYL/304	25	1"	5	Butyl	250/259	4,7
BS1-P16-VT008-BTYL/304	16	1"	8	Butyl	250/284	4,3
BS1-P25-VT008-BTYL/304	25	1"	8	Butyl	250/289	5
BS1-P16-VT012-BTYL/304	16	1"	12	Butyl	250/374	5,3
BS1-P25-VT012-BTYL/304	25	1"	12	Butyl	250/379	6
BS1-P16-VT020-BTYL/304	16	1"	20	Butyl	250/484	6,3
BS1-P25-VT020-BTYL/304	25	1"	20	Butyl	250/289	7
BS1-P16-VT035-BTYL/304	16	1"	35	Butyl	350/461	8
BS1-P25-VT035-BTYL/304	25	1"	35	Butyl	350/466	8,7
BS1-P16-VT050-BTYL/304	16	1"	50	Butyl	350/621	10
BS1-P25-VT050-BTYL/304	25	1"	50	Butyl	350/626	10,7

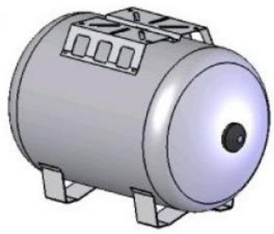


	Description	Qty.
1	Tank shell	1
2	Air vent	1
3	Vent cover	1
4	Diaphragm	1
5	Washer	6
6	Bolt	6
7	Connection Flange	1

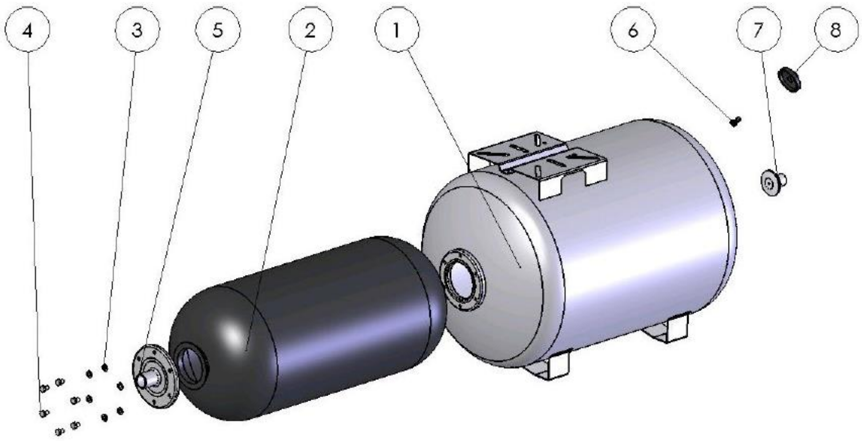


MP1, 2, 3, 4-HS

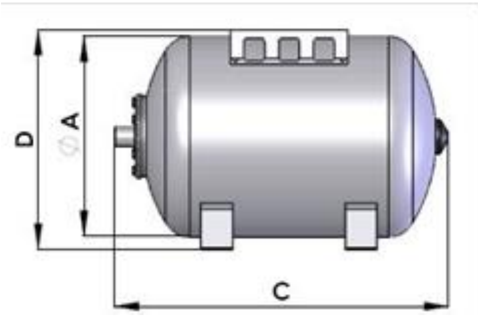
Medium pressure horizontal expansion vessels with side connection.
BSP thread connection
Max. 110 ˚C
PED I, II, III, IV n° 97/23/CE
*PED grade is number after MP



Type (SS316 optional)	Max. Pressure [Barg]	Connect-ion	Total Volume [Litre]	Membrane material	Dimens-ion A/D [mm]	Dimens-ion C [mm]	Weight [kg]
BS1-MP1-HS020-BTYL/304	10	1”	20	Butyl	250/270	500	5
BS1-MP2-HS020-BTYL/304	13	1”	20	Butyl	250/270	500	5
BS1-MP1-HS050-BTYL/304	4	1”	50	Butyl	350/395	640	10,3
BS1-MP2-HS050-BTYL/304	11	1”	50	Butyl	350/395	640	10,3
BS1-MP2-HS100-EPDM/304	9	1”	100	EPDM	450/500	780	17
BS1-MP3-HS150-EPDM/304	8	1”	150	EPDM	500/584	837	49
BS1-MP3-HS200-EPDM/304	8	1”1/2	200	EPDM	550/637	1065	74,5
BS1-MP3-HS300-EPDM/304	8	1”1/2	300	EPDM	650/742	1077	101
BS1-MP3-HS500-EPDM/304	6	1”1/2	500	EPDM	750/845	1338	137
BS1-MP4-HS500-EPDM/304	8	1”1/2	500	EPDM	750/845	1338	137



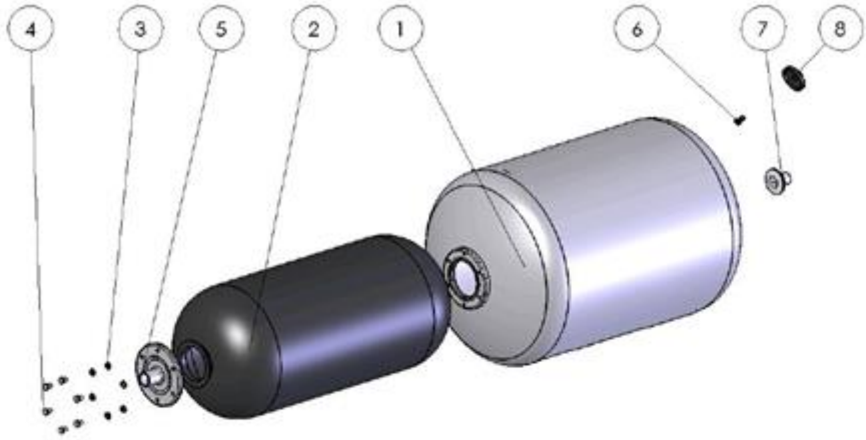
	Description	Qty.
1	Tank shell	1
2	Diaphragm	1
3	Washer	6
4	Bolt	6
5	Connection Flange	1
6	Air vent	1
7	Connection coupling diaphragm	1
8	Vent cover	1



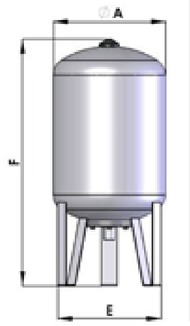
MP1, 2, 3, 4-VB

Medium pressure vertical expansion vessels with bottom connection.
BSP thread connection
Max. 110 ˚C
PED I, II, III, IV n° 97/23/CE
*PED grade is number after MP

Type (SS316 optional)	Max. Pressure [Barg]	Connect-ion	Total Volume [Litre]	Membrane material	Dimens-ion A/E [mm]	Dimens-ion F [mm]	Weight [kg]
BS1-MP1-VB050-BTYL/304	4	1”	50	Butyl	350/370	770	10,3
BS1-MP2-VB050-BTYL/304	11	1”	50	Butyl	350/370	770	10,3
BS1-MP2-VB100-EPDM/304	9	1”	100	EPDM	450/465	910	16,5
BS1-MP3-VB150-EPDM/304	8	1”	150	EPDM	500/500	994	43
BS1-MP3-VB200-EPDM/304	8	1”1/2	200	EPDM	550/500	1203	68,5
BS1-MP3-VB300-EPDM/304	8	1”1/2	300	EPDM	650/650	1202	95
BS1-MP3-VB500-EPDM/304	6	1”1/2	500	EPDM	750/750	1449	130,5
BS1-MP4-VB500-EPDM/304	8	1”1/2	500	EPDM	750/750	1449	130,5



	Description
1	Tank shell
2	Diaphragm
3	Washer
4	Bolt
5	Connection Flange
6	Air vent
7	Connection coupling diaphragm
8	Vent cover

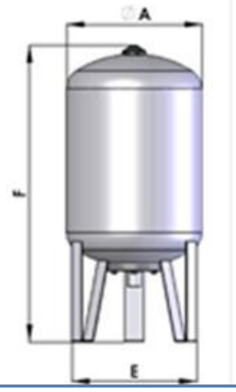


P10-VB

Large, medium pressure, vertical expansion vessels with top connection.
Flange ASTM-A182 ASME B16.5 WN/RF150# 4”
Max. 115 ˚C
PED IV n° 97/23/EG

Type (SS316 optional)	Max. Pressure [Barg]	Total Volume [Litre]	Membrane material	Dimension A/E [mm]	Dimension F [mm]	Weight [kg]
BS1-P10-VB1TH-EPDM/304	10,5	1000	EPDM	850/764,5	~2420	340
BS1-P10-VB2TH-EPDM/304	10,5	2000	EPDM	850/1118,5	~2420	650

See manual for assembly data



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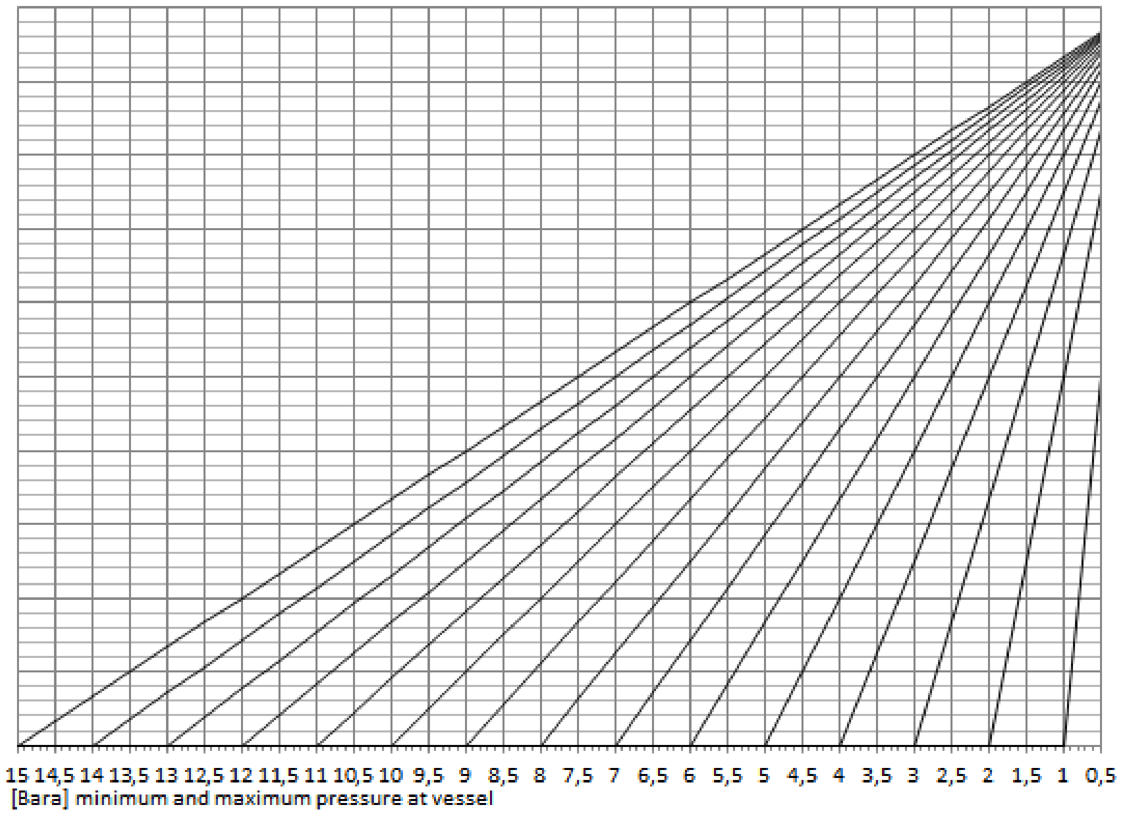
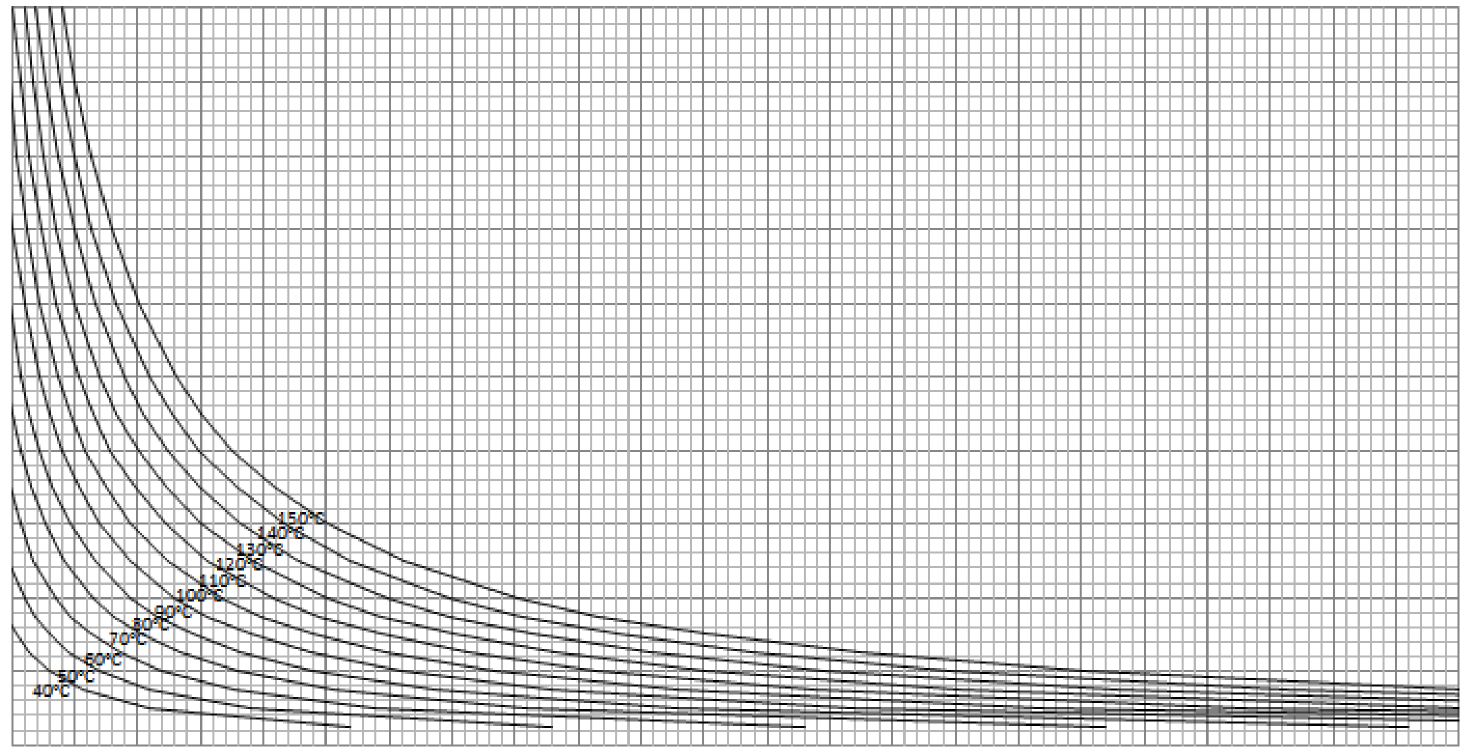
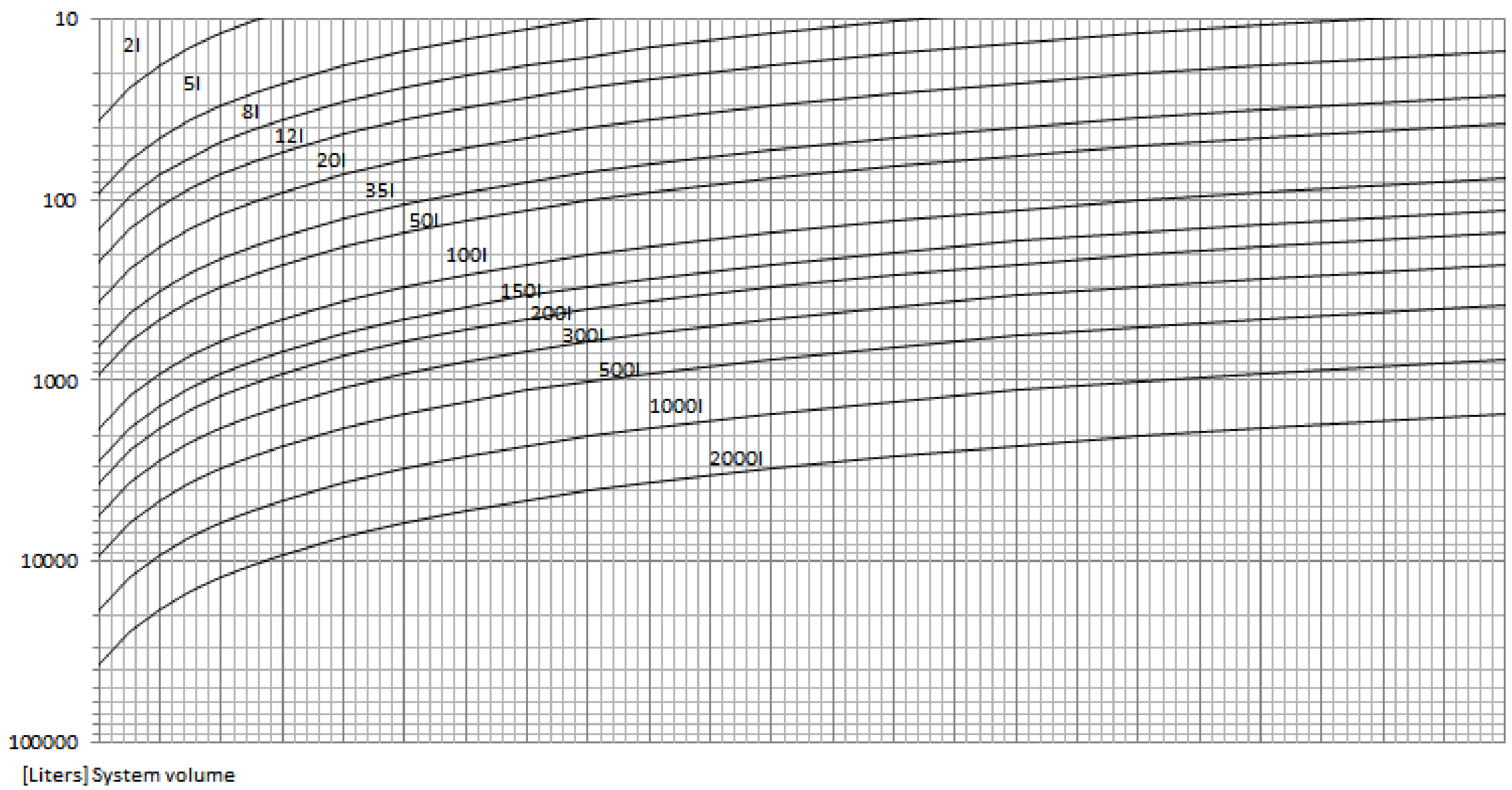
Process systems and solutions

Selection graph







How to use the selection graph.

Determine the following parameters:
- Minimum pressure at expansion vessel (which is also the pre-pressure);
- Maximum pressure at expansion vessel;
- Average maximum temperature (minimum is set to 10˚C);
- Total volume of water in closed system at 10˚C.

Determine if case is within graph range:
- Mostly pressure increase at expansion vessel due to thermal expansion;
- Maximum pressure 15 Bara or below;
- Minimum temperature between 0-20 ˚C;
- System between 10 and 100.000 liters. Set a safety factor on this value.

Start at top left graph. Follow line starting at maximum pressure (horizontal-axis) until directly above minimum pressure. Draw line horizontal from this point. Stop at maximum temperature line in top right graph. Draw line downwards from this point to the end of bottom graph. Draw horizontal line from system volume in bottom graph. The expansion vessel size is where the two lines meet.

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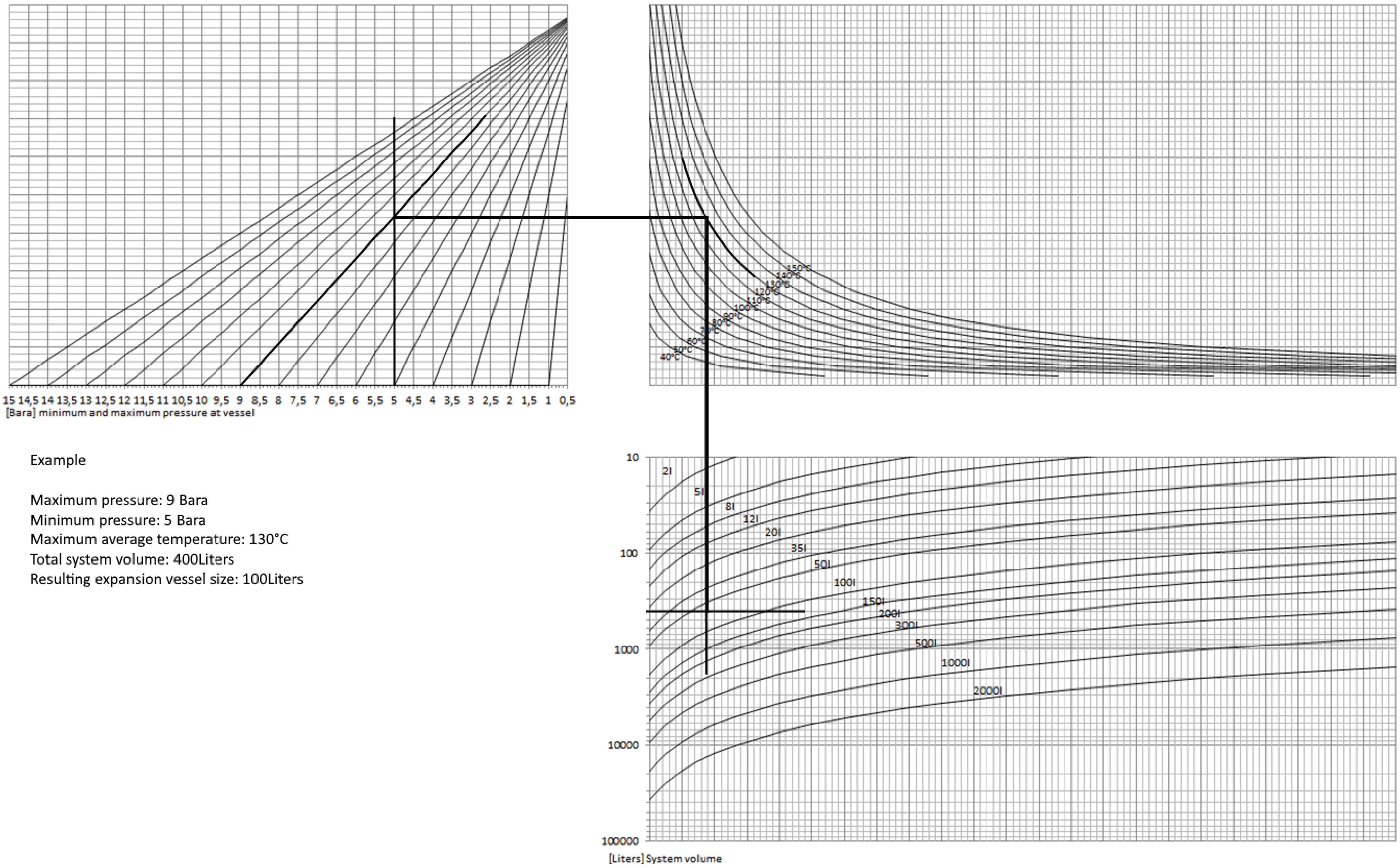

Example

Maximum pressure: 9 Bara
Minimum pressure: 5 Bara
Maximum average temperature: 130°C
Total system volume: 400Liters
Resulting expansion vessel size: 100Liters