



THERMXTROL®

Commercial Thermal Expansion Tanks



188

AntiLegionella™



Antimicrobial™



Turbulator™

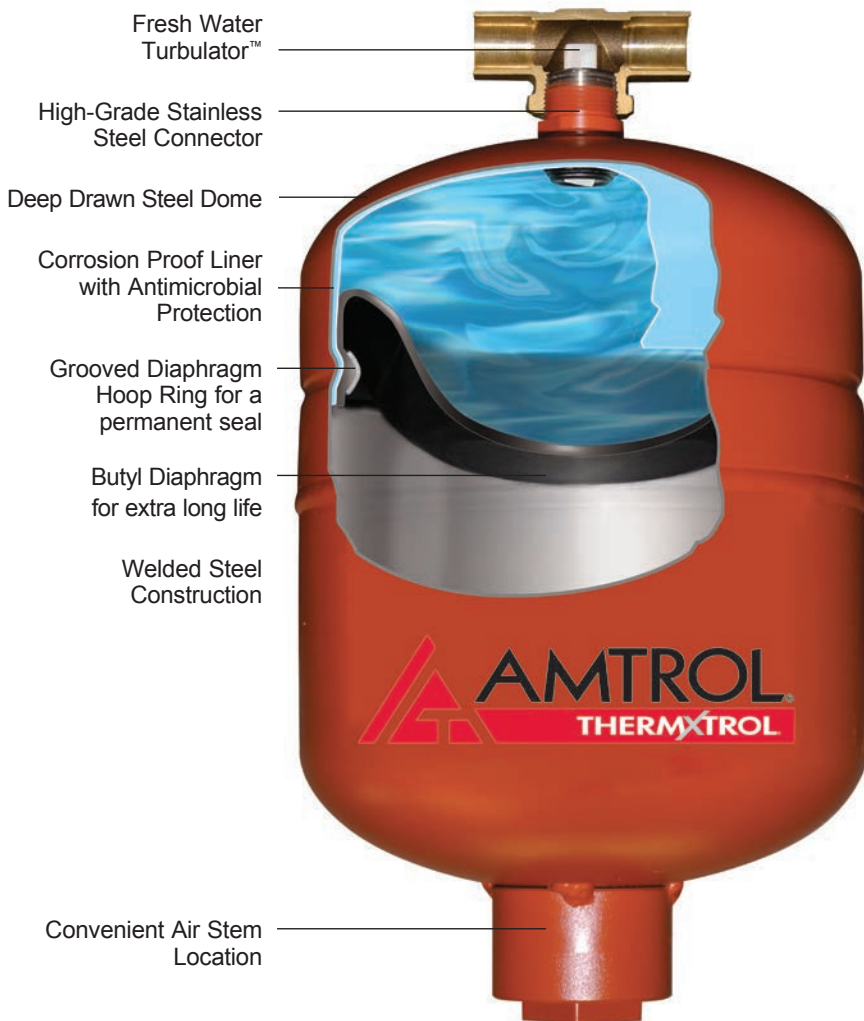


THERMXTROL®

Amtrol thermal expansion tanks are engineered to control pressure build-up in closed, potable water systems. Available in diaphragm, full acceptance and partial acceptance bladder designs, all Therm-X-Trol expansion tanks are made in the USA at our ISO 9001 : 2008 registered facilities. ASME tanks meet Section VIII, Division 1 Standards.

Inline Diaphragm Models ST-5C & ST-12C; 150 & 175 PSI

- Deep-drawn shell increases tank strength, reduces tank diameter by 20% and cuts tank weight by 50%.
- Antimicrobial liner neutralizes bacteria on contact; lasts for the life of the tank.
- Tested to JIS Z 2801 for reduction of Legionella, staphylococcus and E. coli.
- Follows ASHRAE 188 Anti-Legionella guidelines.
- Patented Turbulator™ prevents sediment buildup.



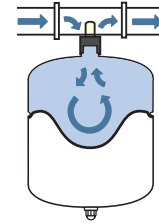
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AntiLegionella. Antimicrobial. Turbulator.



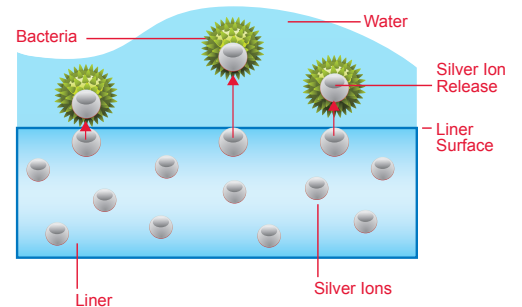
Fresh Water Turbulator™

- Patented diffuser agitates incoming water to keep it tasting fresh and clean.
- Prevents sediment build-up to extend tank life.

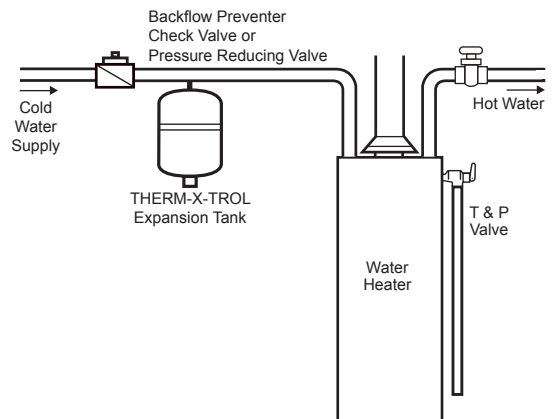


Antimicrobial Liner Protection

- Safe, Silver-Ion technology targets active microorganisms; neutralizes bacteria on contact.
- Compound is molded into the water reservoir lining; lasts the life of the tank; patent pending.

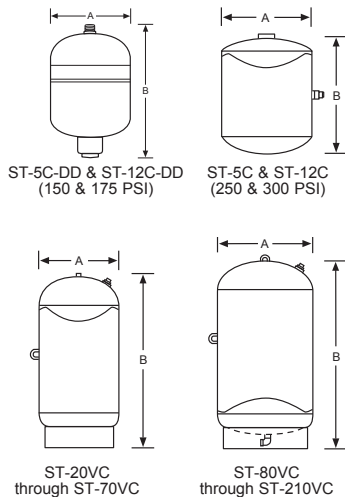


Typical Installation



ASME Thermal Expansion Tanks

ASME Diaphragm Series Specifications

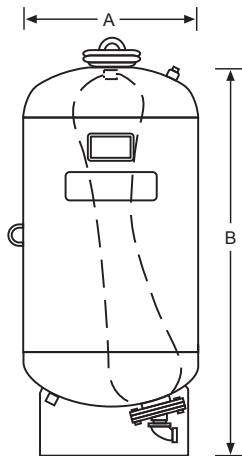


Model Number	Tank Volume (Gallons)	Max. Accept. Volume (Gallons)	A Diameter (Inches)	B Height (Inches)	System Conn. ¹ (Inches)	Shipping Weight (lbs.) Max. Working Pressure			
						150 PSI	175 PSI	250 PSI	300 PSI
ST-5C-DD	2.0	0.9	8	14	3/4 NPTM	10	12	-	-
ST-5C	2.1	0.9	10	10	3/4 NPTF	-	-	25	30
ST-12C-DD	6.4	3.2	12	18	3/4 NPTM	17	19	-	-
ST-12C	6.4	3.2	12	14	3/4 NPTF	-	-	42	50
ST-20VC	8.0	3.2	12	19	3/4 NPTF	41	43	50	62
ST-30VC	14.0	9.0	16	19	3/4 NPTF	59	64	96	108
ST-42VC	18.0	11.0	16	24	3/4 NPTF	71	75	101	112
ST-60VC	25.0	11.0	16	32	3/4 NPTF	85	113	125	139
ST-70VC	34.0	11.0	16	45	3/4 NPTF	99	122	136	151
ST-80VC	53.0	35.0	24	37	1 1/4 NPTF	224	296	305	340
ST-120VC	68.0	35.0	24	44	1 1/4 NPTF	266	340	375	400
ST-180VC	77.0	35.0	24	49	1 1/4 NPTF	285	360	380	420
ST-210VC	90.0	35.0	24	57	1 1/4 NPTF	319	380	405	440

¹Stainless Steel System Connection.

Maximum Operating Temperature: 200°F. Factory Pre-charge: 55 PSIG.

ASME Full Acceptance Bladder Series Specifications

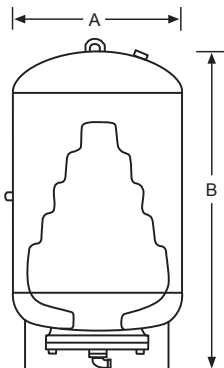


Model Number	Tank Volume (Gallons)	Max. Accept. Volume (Gallons)	A Diameter (Inches)	B Height (Inches)	System Conn. ¹ NPTF (Inches)	Shipping Weight (lbs.) Max. Working Pressure				
						125 PSI	150 PSI	175 PSI	250 PSI	300 PSI
ST-447C	53	53	24	45	2	236	262	290	370	425
ST-448C	80	80	24	59	2	274	340	430	492	540
ST-449C	106	106	24	73	2	320	360	450	510	560
ST-450C	132	132	24	87	2	354	400	460	570	632
ST-451C	158	158	30	73	2	494	587	680	815	895
ST-452C	211	211	30	91	2	593	625	699	1,005	1,107
ST-453C	264	264	36	86	3	667	760	845	1,100	1,205
ST-454C	317	317	36	98	3	762	850	960	1,265	1,400
ST-455C	370	370	36	110	3	842	935	1,065	1,350	1,490
ST-456C	422	422	48	82	3	1,152	1,423	1,650	1,660	1,830
ST-457C	528	528	48	97	3	1,335	1,505	1,875	2,230	2,455

¹Bronze System Connection.

Maximum Operating Temperature: 240°F. Factory Pre-charge: 55 PSIG.

ASME Partial Acceptance Bladder Series Specifications

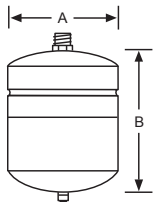


Model Number	Tank Volume (Gallons)	Max. Accept. Volume (Gallons)	A Diameter (Inches)	B Height (Inches)	System Conn. ¹ NPTF (Inches)	Shipping Weight (lbs.)
						Max. Working Pressure 150 PSI
ST-35CL	10	10	10	37	1	76
ST-50CL	13	11	12	37	1	78
ST-85CL	22	11	16	35	1	95
ST-100CL	26	11	16	39	1	102
ST-130CL	34	27	20	35	1	134
ST-165CL	44	27	20	40	1	153
ST-200CL	53	27	24	41	1	205
ST-300CL	80	27	24	56	1	254
ST-400CL	106	53	24	69	1	308
ST-500CL	132	53	24	83	1	352
ST-600CL	158	53	30	67	1	442

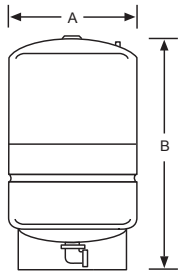
¹Stainless Steel System Connection.

Maximum Operating Temperature: 240°F. Factory Pre-charge: 55 PSIG.

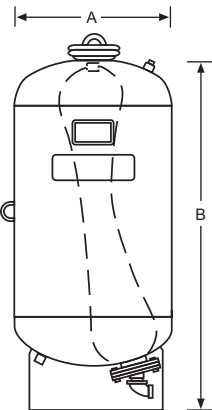
Non-ASME Thermal Expansion Tanks



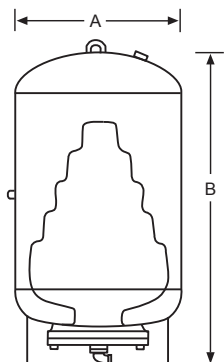
ST-5, ST-8, ST-12



ST-25V through ST-210V



ST-451 through ST-457



ST-35L through ST-600L

Non-ASME Diaphragm Series Specifications

Model Number	Tank Volume (Gallons)	Max. Accept. Volume (Gallons)	A Diameter (Inches)	B Height (Inches)	System Conn. ¹ (Inches)	Shipping Weight (lbs.)
						Max. Working Pressure 150 PSI
ST-5	2.0	0.9	8	13	¼ NPTM	5
ST-8	3.2	1.9	9	15	¼ NPTM	7
ST-12	4.4	3.2	11	15	¼ NPTM	9
ST-25V	10.3	10.3	15	19	¼ NPTF	23
ST-30V	14.0	11.3	15	24	¼ NPTF	25
ST-42V	20.0	11.4	15	32	¼ NPTF	33
ST-60V	34.0	34.0	22	30	1¼ NPTF	61
ST-80V	44.0	33.9	22	36	1¼ NPTF	69
ST-180V	62.0	34.1	22	47	1¼ NPTF	92
ST-200V	81.0	33.2	22	56	1¼ NPTF	103
ST-210V	86.0	46.4	26	47	1¼ NPTF	123

¹Stainless Steel System Connection.

Maximum Operating Temperature: 200°F.

Factory Pre-charge: ST-5, ST-8, ST-12: 50 PSIG; ST-25V through ST-210V: 40 PSIG.

Non-ASME Full Acceptance Bladder Series Specifications

Model Number	Tank Volume (Gallons)	Max. Accept. Volume (Gallons)	A Diameter (Inches)	B Height (Inches)	System Conn. ¹ NPTF (Inches)	Shipping Weight (lbs.)
						Max. Working Pressure 150 PSI
ST-451	158	158	30	73	2	587
ST-452	211	211	30	91	2	625
ST-453	264	264	36	86	3	760
ST-454	317	317	36	98	3	850
ST-455	370	370	36	110	3	935
ST-456	422	422	48	82	3	1,423
ST-457	528	528	48	97	3	1,505

¹Bronze System Connection.

Maximum Operating Temperature: 240°F. Factory Pre-charge: 55 PSIG.

Non-ASME Partial Acceptance Bladder Series Specifications

Model Number	Tank Volume (Gallons)	Max. Accept. Volume (Gallons)	A Diameter (Inches)	B Height (Inches)	System Conn. ¹ NPTF (Inches)	Shipping Weight (lbs.)
						Max. Working Pressure 150 PSI
ST-35L	10	10	10	37	1	76
ST-50L	13	11	12	37	1	78
ST-85L	22	11	16	35	1	95
ST-100L	26	11	16	39	1	102
ST-130L	34	27	20	35	1	134
ST-165L	44	27	20	40	1	153
ST-200L	53	27	24	41	1	205
ST-300L	80	27	24	56	1	254
ST-400L	106	53	24	69	1	308
ST-500L	132	53	24	83	1	352
ST-600L	158	53	30	67	1	442

¹Stainless Steel System Connection.

Maximum Operating Temperature: 240°F. Factory Pre-charge: 55 PSIG.

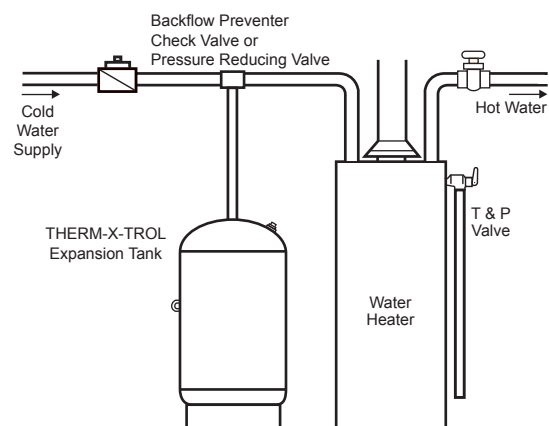
Thermal Expansion Tanks



Vertical Diaphragm Models ST-20VC through ST-210VC

- Head and shell design with internal diaphragm tank(s).
- Antimicrobial liner neutralizes bacteria on contact.
- Tested to JIS Z 2801 for reduction of Legionella, staphylococcus and E. coli.
- Follows ASHRAE 188 Anti-Legionella guidelines.
- Fixed diaphragm design.

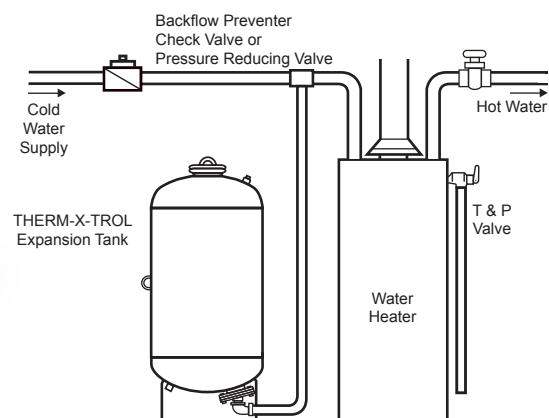
Typical Installation



Vertical Bladder Models ST-440/450 & ST-CL/L Series

- Butyl bladder, industry's thickest.
- Replaceable bladder avoids costly tank replacement.
- Available in full acceptance and partial acceptance models.

Typical Installation





Sizing Guide

Things You Must Know:

1. Total Water Heater Volume _____ gallons
2. Maximum System Temperature _____ °F
3. Minimum System Temperature _____ °F
4. Maximum Operating Pressure at Expansion Tank _____ PSIG
5. Line Pressure at Expansion Tank _____ PSIG

Selection of Expansion Tank:

6. Find and enter "Water Expansion Factor" _____ (see Table 1)
7. Max. Acceptance Volume = Line (1) x Line (6) _____ gallons
8. Find and enter "Design Pressure Factor (DPF)" _____ (see Table 2)
9. Minimum Tank Volume = Line (7) x Line (8) _____ gallons
10. Select an ASME or non-ASME THERM-X-TROL® Expansion Tank that is at least equal to Line (9) for Tank Volume (gallons) and Line (7) for Max. Acceptance Volume (gallons). Multiple tanks may be required.

Table 1: Water Expansion Factor							
Maximum System Temp.	Minimum System Temperature						
	40° F	50° F	60° F	70° F	80° F	90° F	100° F
60° F	.0005	.0049	—	—	—	—	—
70° F	.0015	.0014	.0009	—	—	—	—
80° F	.0026	.0025	.0020	.0011	—	—	—
90° F	.0041	.0040	.0035	.0026	.0015	—	—
100° F	.0058	.0057	.0052	.0043	.0031	.0017	—
110° F	.0077	.0077	.0072	.0062	.0051	.0037	.0019
120° F	.0100	.0099	.0095	.0086	.0074	.0060	.0043
130° F	.0124	.0123	.0118	.0109	.0098	.0083	.0066
140° F	.0150	.0149	.0145	.0135	.0124	.0110	.0093
150° F	.0179	.0178	.0173	.0164	.0153	.0133	.0121
160° F	.0209	.0208	.0204	.0194	.0181	.0165	.0148
170° F	.0242	.0241	.0236	.0227	.0216	.0201	.0184
180° F	.0276	.0275	.0271	.0261	.0250	.0236	.0219
190° F	.0313	.0312	.0307	.0298	.0287	.0272	.0255
200° F	.0351	.0350	.0346	.0336	.0325	.0311	.0294
210° F	.0391	.0390	.0386	.0376	.0365	.0351	.0334
220° F	.0434	.0433	.0428	.0419	.0408	.0393	.0376
230° F	.0476	.0475	.0471	.0461	.0450	.0436	.0419
240° F	.0522	.0521	.0517	.0507	.0496	.0482	.0465

For fluid applications other than water, consult AMTROL technical services.

Table 2: Design Pressure Factor (DPF)		
Maximum Allowable Pressure (PSI)	Line Pressure (PSI)	Design Pressure Factor (DPF)
100	40	1.9
	50	2.3
	60	2.9
	70	3.8
125	40	1.6
	50	1.9
	60	2.1
	70	2.5
150	40	1.5
	50	1.6
	60	1.8
	70	2.1
175	40	1.4
	50	1.6
200	40	1.3
	50	1.5
225	40	1.2
	50	1.4
250	40	1.1
	50	1.3
275	40	1.0
	50	1.2
300	40	0.9
	50	1.1
325	40	0.8
	50	1.0
350	40	0.7
	50	0.9
375	40	0.6
	50	0.8
400	40	0.5
	50	0.7
425	40	0.4
	50	0.6
450	40	0.3
	50	0.5
475	40	0.2
	50	0.4
500	40	0.1
	50	0.3
525	40	0.0
	50	0.2
550	40	0.0
	50	0.1
575	40	0.0
	50	0.0
600	40	0.0
	50	0.0
625	40	0.0
	50	0.0
650	40	0.0
	50	0.0
675	40	0.0
	50	0.0
700	40	0.0
	50	0.0
725	40	0.0
	50	0.0
750	40	0.0
	50	0.0
775	40	0.0
	50	0.0
800	40	0.0
	50	0.0
825	40	0.0
	50	0.0
850	40	0.0
	50	0.0
875	40	0.0
	50	0.0
900	40	0.0
	50	0.0
925	40	0.0
	50	0.0
950	40	0.0
	50	0.0
975	40	0.0
	50	0.0
1000	40	0.0
	50	0.0

For conditions not shown in table, use equation:

$$DPF = \frac{\text{Max. Allow. Pressure} + 14.7}{\text{Max. Allow. Pressure} - \text{Line Pressure}}$$



1400 Division Road, West Warwick, RI USA 02893
T: 800.426.8765 F: 800.293.1519
www.amtrol.com

