



THERM-X-TROL® ASME THERMAL EXPANSION ABSORBERS

The Best Solution for
Controlling Thermal Expansion



| | |
|----------------------------------|-------------------------|
| A.S.M.E. | |
| MFG. SERIAL NO. _____ | |
| CERTIFIED BY AMTROL, INC. | |
| W | |
| DESIGN PRESS. _____ | P.S.I. MAX. AT _____ °F |
| DESIGN PRESS. _____ | KPa MAX. AT _____ °C |
| MIN. DESIGN METAL TEMP. _____ °F | P.S.I. _____ |
| MIN. DESIGN METAL TEMP. _____ °C | KPa _____ |
| MFG. SER. NO. _____ | YEAR BUILT _____ |
| SIZE _____ | PRECHARGE PRESS. _____ |

| | |
|----------------------------------|-------------------------|
| A.S.M.E. | |
| MFG. SERIAL NO. _____ | |
| CERTIFIED BY AMTROL, INC. | |
| W | |
| MAX. ALLOW. WORKING PRESS. _____ | P.S.I. MAX. AT _____ °F |
| MAX. ALLOW. WORKING PRESS. _____ | KPa MAX. AT _____ °C |
| MIN. DESIGN METAL TEMP. _____ °F | P.S.I. _____ |
| MIN. DESIGN METAL TEMP. _____ °C | KPa _____ |
| MFG. SER. NO. _____ | YEAR BUILT _____ |
| SIZE _____ | PRECHARGE PRESS. _____ |



THERM-X-TROL® ASME Expansion Tanks

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What Is Thermal Expansion?

With modern plumbing codes mandating backflow prevention, thermal expansion can cause pressure buildup in domestic water systems. When demand is put upon a potable water system, hot water is drawn from the water heater. Cold water from the supply line enters the water heater to replenish it. The colder water is heated to replace the hot water used. With the installation of a backflow preventer, check valve or pressure reducing valve on the supply line, the water heater and the system piping form a closed plumbing system under pressure. As the water is heated, thermal expansion occurs. Pressure increases until the relief valve opens and the expanded water "spills" from the water heater. This "spillage" results in wasted BTU's and a potential safety hazard for the homeowner (See Diagram 1).

Closed Potable Hot Water System without THERM-X-TROL®

Backflow preventer, pressure reducing valve or meter causes expanded (heated) water to build pressure causing the relief valve to open resulting in...

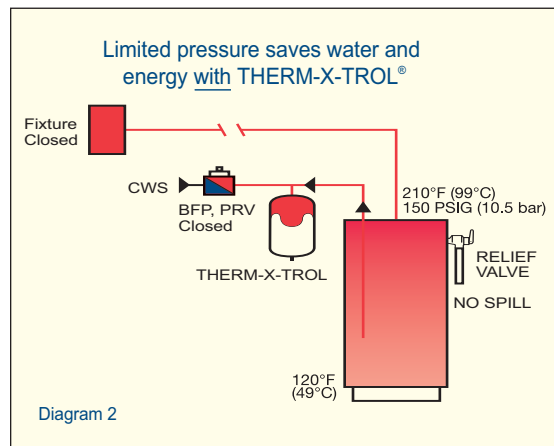
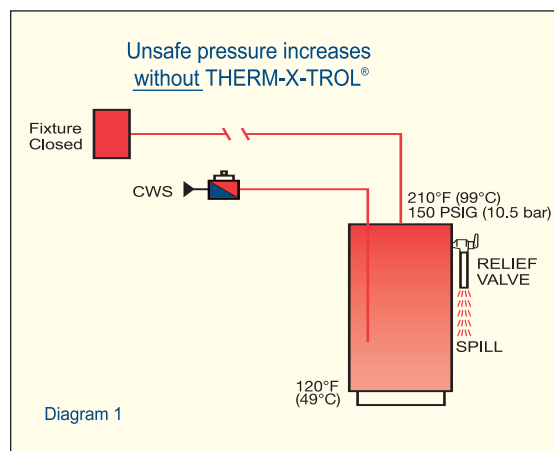
- Wasted BTU's
- Shortened water heater life
- Wasted municipal water and sewer dollars
- Potential safety hazard for homeowner

The THERM-X-TROL® is designed to eliminate this problem by providing control of maximum pressures at a level below the relief valve setting. It also provides an additional space in the system to accommodate the increased volume of water created by thermal expansion, returning it to the system when hot water delivery is demanded. Maximum pressure is kept well below the relief valve setting by the THERM-X-TROL, with its pre-charged air cushion that is separated from system water. The relief valve does not open, therefore "spillage" is eliminated (Diagram 2).

Closed Potable Hot Water System with THERM-X-TROL®

Expanded (heated) water is absorbed by THERM-X-TROL® which means...

- Water heater and fixtures are protected
- Eliminates BTU and water waste, saving money and energy
- No dangerous pressure build-up in the system
- Relief valves will not be triggered
- Potential safety hazard reduced

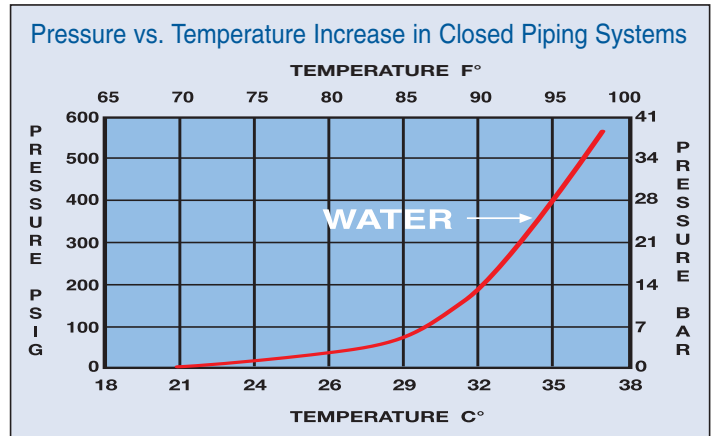


THERM-X-TROL® ASME

The Market Leader

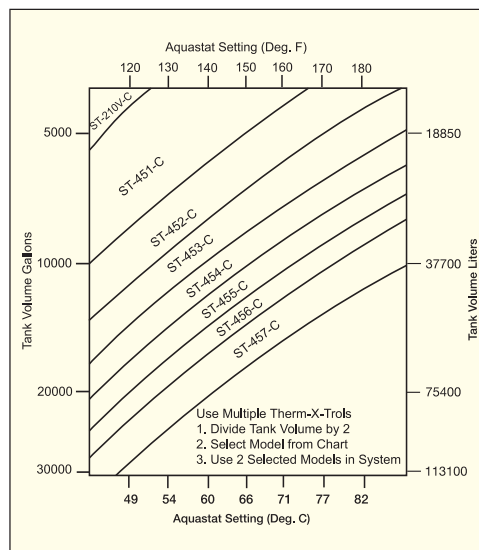
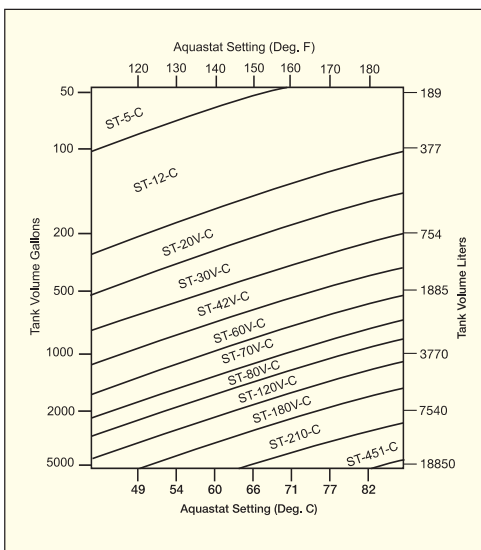
- #1 choice of Professional Installers in USA
- Safest and most cost effective way to control Thermal Expansion
- Easy to install - Maintenance Free
- The Innovator of Thermal Expansion Control in Closed Potable Hot Water Systems
- Recognized Industry Leader in Quality, Design, Manufacturing, Delivery and Service
- Broadest line of sizes and models (37 models, ASME code and non code)
- First to offer 5 year limited warranty
- First to obtain ANSI/NSF61, IAPMO* & SBCCI*

Specifications and Sizing



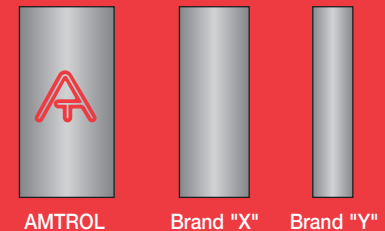
Based on 40°F (4°C) incoming supply water temperature and water heaters protected with 150 psi (10.5 bar) relief valve and supply line pressure up to:

60 psi (4 bar)



Superior Performance with AMTROL's Heavy-Duty Butyl Bladder

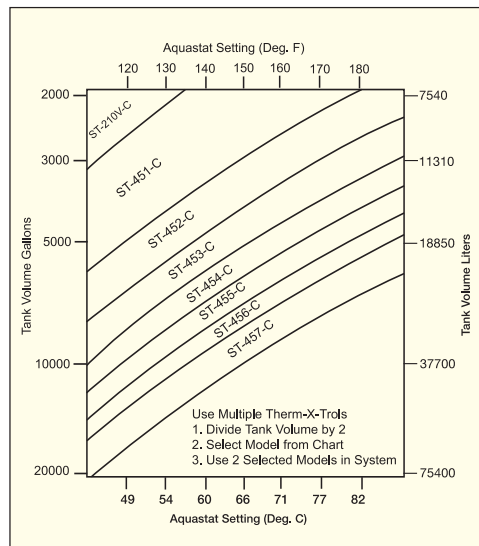
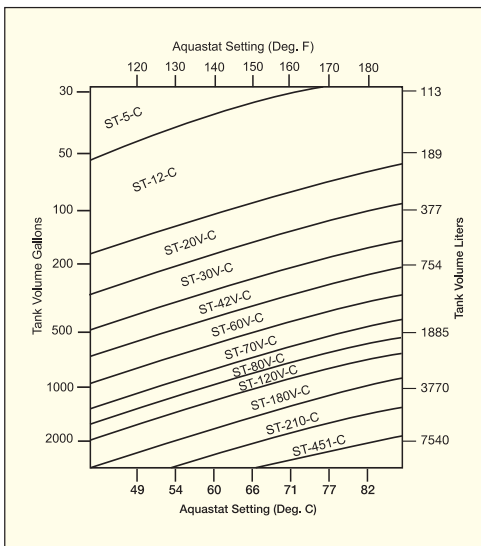
Bladder Cross-Section Comparison



THICKER IS BETTER!

(ST-447-C through ST-457-C)

90 psi (6 bar)



* IAPMO - International Association of Plumbing and Mechanical Officials

* SBCCI - Southern Building Code Congress International



Typical Installations and Specifications

General Usage

- Office Buildings
- Apartment Buildings
- Elderly Housing
- Extended Care Facilities
- Condominiums/Large Residential
- Food Service (other than Restaurants)
- Laundromats
- Hospitals
- Hotels and Motels
- Schools and Dormitories

The pressurization system shall include a THERM-X-TROL, diaphragm or bladder type expansion tank which will accommodate the expanded water of the system generated within the normal operating temperature range, limiting this pressure increase at those components in the system to the maximum allowable pressure at those components. It shall maintain minimum operating pressure.

Furnish and install as shown on plans a _____ gallon(liter), _____ in.(mm) diameter X _____ in.(mm) (high) AMTROL, model ST-_____(C).

The expansion tank shall be welded steel, constructed, tested and stamped in accordance with Section VIII, Division 1 of the ASME Code for a working pressure of 125 psig (8.6 bar), 150 psig (10.5 bar) _____, factory air pre-charged and field adjustable. All welds conforming to ASME Section IX. All internal parts must comply with FDA regulations and approvals.

The tank shall be supported by steel legs or a base (integral ring mount) for a vertical installation. Each tank shall have a steel shell and an internal butyl/EPDM diaphragm or butyl bladder with code approvals ANSI/NSF 61 used to isolate the air charge from fluid.

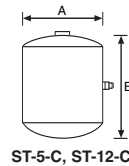
The manufacturer shall be AMTROL Inc. The manufacturer shall have at least five years experience in the fabrication of bladder / diaphragm-type ASME expansion tanks.

THERM-X-TROL® ASME Specifications

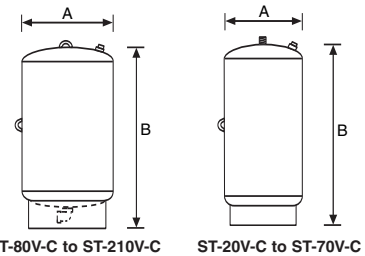


| Model No. | Total Volume | | Max. Acceptance | | Diameter (A) | | Height (B) | | System Connection | Ship Weight | |
|-----------|--------------|------|-----------------|------|--------------|-----|------------|------|-------------------|-------------|------|
| | Gals. | Lit. | Gals. | Lit. | ins. | mm | ins. | mm | | lbs. | kg |
| ST-5-C | 2.1 | 8 | .9 | 3.44 | 10" | 254 | 10 3/8" | 264 | 3/4" NPT | 21 | 9.5 |
| ST-12-C | 6.4 | 24 | 3.2 | 12.0 | 12" | 305 | 13 3/8" | 340 | 3/4" NPT | 26 | 12 |
| ST-20V-C | 8.0 | 30 | 3.2 | 12.0 | 12" | 305 | 20 1/16" | 510 | 3/4" NPT | 41 | 19 |
| ST-30V-C | 14.0 | 53 | 10.5 | 33.9 | 16 1/4" | 419 | 19 5/16" | 491 | 3/4" NPT | 84 | 38.1 |
| ST-42V-C | 17.5 | 66 | 11.3 | 42.9 | 16 1/4" | 419 | 25 3/16" | 640 | 3/4" NPT | 90 | 41 |
| ST-60V-C | 25.0 | 95 | 11.3 | 42.9 | 16 1/4" | 419 | 34" | 864 | 3/4" NPT | 96 | 44 |
| ST-70V-C | 34.0 | 129 | 11.3 | 42.9 | 16 1/4" | 419 | 42 3/8" | 1076 | 3/4" NPT | 123 | 56 |
| ST-80V-C | 53.0 | 200 | 34 | 130 | 24" | 610 | 40 1/2" | 1029 | 1 1/4" NPT | 229 | 104 |
| ST-120V-C | 66.0 | 250 | 34 | 130 | 24" | 610 | 47 3/4" | 1213 | 1 1/4" NPT | 258 | 117 |
| ST-180V-C | 77.0 | 292 | 34 | 130 | 24" | 610 | 52 5/8" | 1337 | 1 1/4" NPT | 288 | 131 |
| ST-210V-C | 90.0 | 341 | 34 | 130 | 24" | 610 | 60" | 1524 | 1 1/4" NPT | 318 | 144 |

Maximum Working Pressure: 150 PSIG (10.5 bar)



ST-5-C, ST-12-C



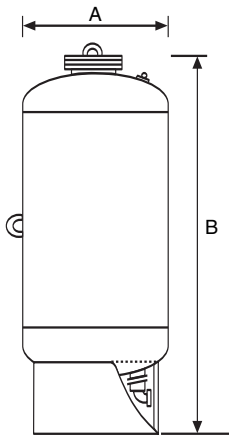
ST-80V-C to ST-210V-C

ST-20V-C to ST-70V-C

THERM-X-TROL® Replaceable Bladder Design ASME Tanks

| Model No. | Total Volume | | Diameter (A) | | Height (B) | | System Connection | Ship Weight | |
|-----------|--------------|------|--------------|------|------------|------|-------------------|-------------|-----|
| | Gals. | Lit. | ins. | mm | ins. | mm | | lbs. | kg |
| ST-447-C | 53.0 | 200 | 24" | 610 | 45 1/4" | 1150 | 2" NPT | 263 | 120 |
| ST-448-C | 80.0 | 300 | 24" | 610 | 59 1/8" | 1502 | 2" NPT | 308 | 140 |
| ST-449-C | 106.0 | 400 | 24" | 610 | 73 1/8" | 1857 | 2" NPT | 353 | 161 |
| ST-450-C | 132.0 | 500 | 24" | 610 | 86 5/8" | 2200 | 2" NPT | 391 | 178 |
| ST-451-C | 158.0 | 600 | 30" | 762 | 73 1/4" | 1861 | 2" NPT | 508 | 230 |
| ST-452-C | 211.0 | 800 | 30" | 762 | 91" | 2317 | 2" NPT | 760 | 345 |
| ST-453-C | 264.0 | 1000 | 36" | 914 | 85 5/8" | 2175 | 3" NPT | 810 | 368 |
| ST-454-C | 317.0 | 1200 | 36" | 914 | 98" | 2489 | 3" NPT | 914 | 415 |
| ST-455-C | 370.0 | 1400 | 36" | 914 | 110 3/8" | 2804 | 3" NPT | 1,018 | 462 |
| ST-456-C | 422.0 | 1600 | 48" | 1220 | 81 7/8" | 2080 | 3" NPT | 1,655 | 750 |
| ST-457-C | 528.0 | 2000 | 48" | 1220 | 97 1/4" | 2470 | 3" NPT | 1,925 | 873 |

Maximum Working Pressure: 125 PSIG (8.6 bar), 150 PSIG (10.5 bar). Maximum Allowable Working Temperature: ST-5-C through ST-210V-C: 200°F (93°C); ST-447-C through ST-457-C: 240°F (115°C). Standard Factory Precharge: 55 PSIG (3.8 bar). All Models listed by NSF 61 (excluding ST-447-C through ST-457-C). ST-447-C through ST-457-C are replaceable bladder design.



ST-447-C to ST-457-C

*Refer to installation manual for warranty information or visit our website at www.amtrol.com



www.amtrol.com

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