Amtrol ST-12

Amtrol ST-12 Thermal Expansion Tank User Manual

Model: ST-12

1. Product Overview

The Amtrol ST-12 THERM-X-TROL Thermal Expansion Tank is designed to manage pressure fluctuations in domestic hot water systems. Modern plumbing codes often require backflow prevention devices, check valves, or pressure reducing valves on supply lines. These devices can create a closed plumbing system where heating water causes thermal expansion and a subsequent increase in pressure.

Without an expansion tank, this pressure buildup can lead to the relief valve opening, wasting water and energy, and potentially shortening the lifespan of the water heater and plumbing fixtures. The ST-12 tank provides an additional space within the system to accommodate this increased water volume, maintaining system pressure below the relief valve setting and returning the expanded water to the system when hot water is demanded.

Figure 1: Amtrol ST-12 Thermal Expansion Tank. This image displays the beige cylindrical tank with the red Amtrol THERM-X-TROL logo prominently on its side. The threaded connection point is visible at the top, and a small air valve is at the bottom.

2. Installation Instructions

Proper installation is crucial for the safe and effective operation of your Amtrol ST-12 Thermal Expansion Tank. If you are unsure about any step, consult a qualified plumber.

1. **Pre-Installation Check:**

- Ensure the water supply to the water heater is turned off and the hot water faucet is open to relieve pressure.
- Measure your household's incoming cold water pressure using a pressure gauge.
- Adjust the air pre-charge pressure of the ST-12 tank to match your incoming cold water pressure. This is done via the Schrader valve located at the bottom of the tank. Use a standard tire pressure gauge and pump. The factory pre-charge is typically around 51.8 PSI.

2. **Mounting Location:**
    - The tank should be installed on the cold water supply line to the water heater, before any check valves or backflow preventers.
    - It is recommended to install the tank with the threaded pipe connection facing upwards, in a hanging position. This orientation helps keep the internal bladder wet, potentially extending its lifespan. If installed with the connection facing down, ensure adequate support for the tank's weight, especially when full of water.
3. **Connection:**
    - Apply Teflon tape or pipe sealant to the threads of the tank's connection.
    - Thread the tank onto the appropriate plumbing fitting (e.g., a tee fitting) on the cold water supply line. Hand-tighten first, then use wrenches to secure it firmly. Avoid over-tightening.
4. **Post-Installation:**
    - Slowly turn the main water supply back on.
    - Open a nearby hot water faucet to purge air from the system. Allow water to flow until it runs smoothly without sputtering.
    - Inspect all connections for leaks.
    - Allow the water heater to reach its set temperature. Once fully heated, check for any further leaks or unusual noises.

3. Operation

The Amtrol ST-12 operates passively within your plumbing system. As water in the water heater heats up, it expands. In a closed system, this expansion would cause pressure to rise rapidly. The expansion tank's internal diaphragm or bladder flexes, allowing the expanded water to enter the tank, thereby absorbing the excess volume and preventing excessive pressure buildup.

When hot water is drawn from the system, the pressure within the plumbing system drops. The pre-charged air pressure in the tank then pushes the stored water back into the system, maintaining stable pressure and ensuring efficient water delivery.

4. Maintenance

Regular maintenance ensures the longevity and proper function of your expansion tank and overall plumbing system.

- **Annual Pressure Check:** At least once a year, check the air pre-charge pressure of the tank.
    a. Turn off the water supply to the water heater.
    b. Open a hot water faucet to relieve system pressure.
    c. Use a tire pressure gauge to check the pressure at the Schrader valve on the bottom of the tank.
    d. If the pressure is low, use a bicycle pump or air compressor to re-inflate the tank to match your incoming cold water pressure.

e. Close the faucet and restore water supply.

- **Visual Inspection:** Periodically inspect the tank for any signs of corrosion, leaks, or physical damage. Some Amtrol tanks feature a clear plastic cap over the air valve that changes color if the bladder ruptures and leaks water.
- **Aerator Cleaning:** If you notice black rubber particles in your faucet aerators, it may indicate a failed expansion tank bladder. Clean aerators regularly, especially after replacing an expansion tank.

5. Troubleshooting

If you experience any of the following issues, your expansion tank may require attention or replacement.

- **Frequent Relief Valve Discharge:** If your water heater's temperature and pressure (T&P) relief valve frequently opens and discharges water, it is a strong indicator that the expansion tank is not functioning correctly or is undersized. This suggests excessive pressure buildup in the system.
- **Water Hammer or Banging Pipes:** While not exclusively an expansion tank issue, a failed tank can contribute to water hammer by not properly absorbing pressure surges.
- **Water from Air Valve:** If water comes out when you press the Schrader valve (air valve) at the bottom of the tank, the internal bladder has ruptured, and the tank needs to be replaced.
- **Low or No Air Pressure:** If the tank's air pressure cannot be maintained or is consistently zero, the bladder may be compromised, or the tank is waterlogged.
- **Black Particles in Water:** Small black rubber particles in faucet aerators or water can be a sign of a deteriorating expansion tank bladder.

If troubleshooting indicates a failed expansion tank, it should be replaced promptly to prevent damage to your water heater and plumbing system.

6. Specifications

Feature	Specification
Model Number	ST-12
Manufacturer	AMTROL
Item Weight	2.2 pounds
Product Dimensions	8 x 11 x 15 inches
Color	White
Power Source	Ac/dc (*Note: This likely refers to the system it integrates with, not the tank itself.*)
Item Package Quantity	1
Date First Available	June 25, 2008

7. Warranty and Support

For specific warranty information regarding your Amtrol ST-12 Thermal Expansion Tank, please refer to the

documentation included with your purchase or visit the official Amtrol website. For technical support or assistance, contact Amtrol customer service directly. Keep your purchase receipt as proof of purchase for warranty claims.

Note: This manual provides general instructions. Local plumbing codes and regulations may vary. Always consult with a qualified professional for installation and service if you are unsure.