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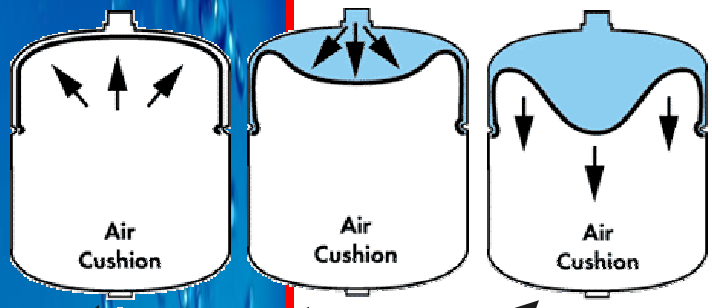
Typical Problems that Affect Pre-Charged Expansion Tanks

When it comes to a pre-charged diaphragm or bladder tank, there are typically three things that could go wrong with either installation or operation

1. **Tank air charge**
2. **Undersized tank**
3. **Leaking diaphragm/bladder**

1. The air charge on the tank does not match the fill pressure of the system it is connected to.



Air charge reaches 15 psi, tank is now 10% full of water

If the system fill pressure were 15psi, the tank would begin to fill with system solution before the boiler fires

12 psi factory set pre-charge, no water in the system, diaphragm up against tank

A tank holding solution before hydronic expansion even begins may not be able accept the full volume of expanded solution when the system water starts to warm up. An incorrect tank air charge could lead to system over pressure and water purging at the relief valve.

Tank pressure settings can be checked against the fill pressure while in service by isolating the tank with the hand isolation valve, bleeding the solution off at the hydronic drain valve and checking the tank pressure at the charging valve provided on the tank shell.

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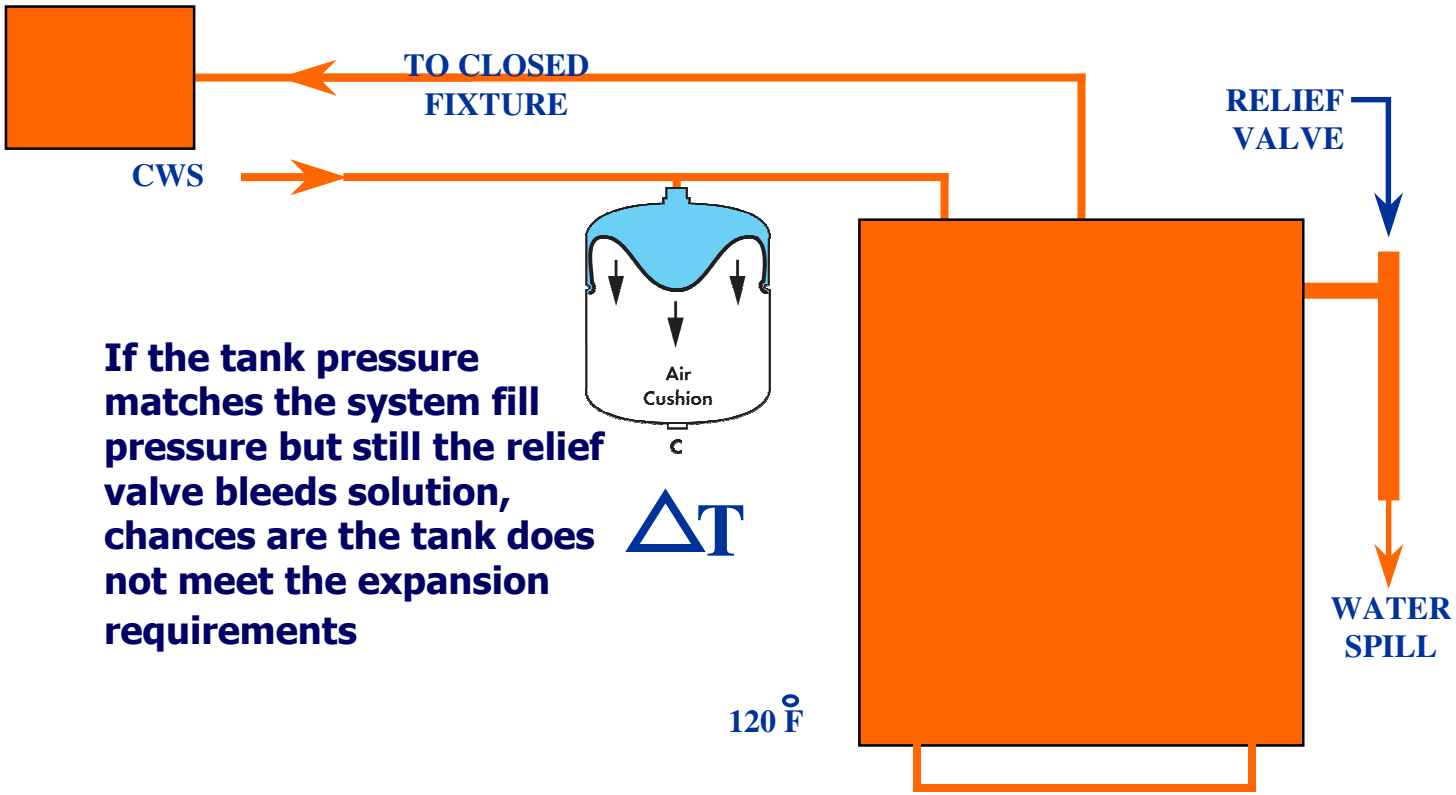
2. The pre-charged expansion tank is under sized for the HVAC system application it is connected to.

A tank to small for an application will not accept the total volume of expanded solution during peak system operation, leading to fluid purging at the boiler relief valve



If the tank pressure matches the system fill pressure but still the relief valve bleeds solution, chances are the tank does not meet the expansion requirements

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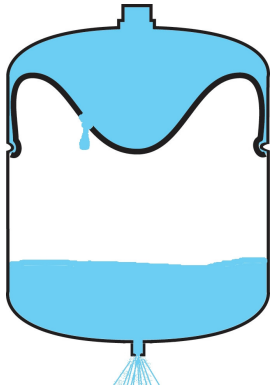
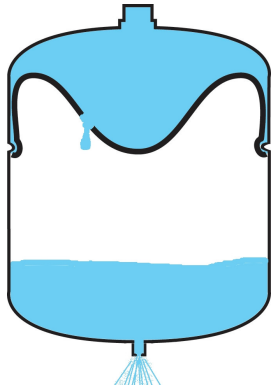
3. Tank diaphragm or bladder has developed a leak



A leaking expansion barrier contaminates the pneumatic charge of the tank, rendering the acceptance potential of the tank ineffective.



A tank that will bleed water through the air charging valve is a tank with an internal leak.

A tank with an internal leak will:

- ❖Fill with fluid
- ❖Increase system pressure above operating pressure
- ❖Cause the PRV to activate

A tank that will not hold pressure on the air side after it has been isolated & drained has an internal leak requiring a tank or bladder replacement.