

**NC Department of Insurance  
Office of the State Fire Marshal - Engineering Division  
1202 Mail Service Center, Raleigh, NC 27699-1202  
919-647-0000**

**Thermal Expansion Control**

**Code:** 2018 Plumbing Code

**Date:** January 3, 2019

**Section:** 607.3

**Question:**

When a check valve, pressure reducing valve or backflow preventer is installed at the water supply meter, is a thermal expansion device required?

**Answer:**

Yes, an expansion device (tank, valve, etc.) shall be installed in a residential or commercial building when a storage-type water heater is installed in the water distribution system with a check valve, pressure reducing valve or backflow preventer installed in the water supply line. Also, an expansion device shall be installed on a water heater replacement when a check valve, pressure reducing valve or backflow preventer is installed in the water supply line. This requirement for an expansion device shall also apply to a manufactured home. An expansion device is not required for a tankless water heater that is not in a closed loop recirculation system.

**Code Reference:**

**607.3 Thermal expansion control.** Where a storage water heater is supplied with cold water that passes through a check valve, pressure reducing valve or backflow preventer, a thermal expansion tank shall be connected to the water heater cold water supply pipe at a point that is downstream of all check valves, pressure reducing valves and backflow preventers. Thermal expansion tanks shall be sized in accordance with the tank manufacturer's instructions and shall be sized such that the pressure in the water distribution system shall not exceed that required by Section 604.8.