

October 2010 Pressure Test

The Alabama Propane Gas Association's "Safe Installation of Water Heaters Rebate Program" will begin on October 1, 2010. A safety inspection must be performed by the participating propane marketer prior to submission of any rebate application. An important function in the safety inspection is a pressure test, if required. For this program, pressure tests are required for new constructions, new lines between 1st and 2nd stage regulators, new integral two stage lines, and new lines run to convert an electric water heater to a propane water heater. See below for more clarification.

The requirements for a pressure test are found in NFPA 54, Chapter 4, Sections 4.1-4.1.5. **Highlighted** below are the issues that need review and/or clarification.

The term "pressure test" is generally used to designate a test, over a specific period of time, performed as prescribed in the applicable NFPA (National Fire Protection Agency) code, at the time of installation and before pressure regulators and appliances are connected. The pressure test normally is conducted once, prior to initial operation of the piping system, and **again only when the piping system is modified**. A pressure test is an operation performed to verify the gastight integrity of gas piping following its installation or modification. A pressure test shall not be confused with a leak check.

Suggested Procedures for Pressure Testing

The purpose of these procedures is to set forth general safety practices for the installation, operation, and maintenance of LP-gas equipment. It is not intended to be an exhaustive treatment of the subject, and should not be interpreted as precluding other procedures which would enhance safe LP-gas operations. Issuance of these procedures is not intended to nor should they be construed as an undertaking to perform services on behalf of any party either for their protection or for the protection of third parties. The Alabama Propane Gas Association assumes no liability for reliance on these procedures. Members of the Alabama Propane Gas Association are not required to use this document.

A pressure test shall be performed before any connections are made to the container, regulators, and/or appliances. **The following procedures shall be performed on a system of new piping or newly installed branch piping. The test shall be performed using air, nitrogen, carbon dioxide or an inert gas. Oxygen shall never be used. Propane gas is not permitted as a pressure source for a pressure test.**

- A visual inspection shall be performed on the piping system to ensure compliance with the requirements of NFPA 54 in regard to design, installation, fabrication, and materials utilized.
- **Where new branches are installed from the point of delivery to new appliances, only the newly installed branch(es) shall be required to be pressure tested. Connections between the new piping and the existing piping shall be tested with non-corrosive leak-detecting fluid or approved leak-detecting methods. (Example:**

if you are adding a new section of piping to an existing system, that has previously been pressure tested, the new section is required to be pressure tested. You do not have to pressure test the entire system, only the newly installed section. In an event where you might replace a short piping nipple or an elbow, then you are not required to do a pressure test on the newly installed portion (as this would be impractical to do on such a short portion of the system). You are permitted to carefully inspect the pipe fittings that you have installed and test the system with non-corrosive leak-detecting solution or other acceptable methods, such as an electronic leak detector.

- Disconnect all gas burning appliances. To do this, remove the appliance connector(s) and the equipment shutoff valve(s) from the piping system and plug or cap those pipe openings. *(Example: you must disconnect all appliances which operate at less than the test pressure prior to performing the pressure test to prevent damage to expensive appliance controls. Most appliances are designed to operate at 11" Water Column (less than ½# pressure) and pressure tests are performed at 1 ½ times the working pressure of the piping system, but not less than 3.0 pounds per square inch. Even though we use gas valves on each outlet upstream of the appliance control valve, many of these valves are not designed to hold this much pressure. If you simply shut off the valve and leave the appliance connected to the piping system, excessive pressure might bleed past the shut off valve and subject the appliance control valve to excessive pressure, above 11" W.C., which might damage the control valve and require its replacement)*
- Select proper pressure measuring device. When using a pressure gauge, code requires the test gauge scale be no greater than 5 times the test pressure. The test pressure to be used shall be no less than 1 ½ times the proposed maximum working pressure, but not less than 3 psi, irrespective of design pressure. (Example: for a 3 psi test, the scale shall be no greater than a 0-15 psi gauge. For a 15 psi test, the scale shall be no greater than a 0-75 psi gauge.)
- Attach pressure measuring device at the point in the piping system requiring the pressure test.
- Pressurize system with air, nitrogen, carbon dioxide or an inert gas.
- **You must hold test pressure for a minimum of 10 minutes.** The test duration is based on the cubic feet of pipe volume. Single family dwellings and most systems will not require more than a 10 minute test. The duration of the test shall not exceed 24 hrs.
- If system **does not** hold test pressure for a minimum of 10 minutes, locate and repair leak(s) and repeat pressure test.
- When the system holds the test pressure for a minimum of 10 minutes, record in writing on a service order or company approved document the beginning and

ending test pressure as well as the amount of time pressure was held. (*Example: the vast majority of the time, we will test a system for a minimum of 10 minutes. It is very important to record the **actual time of the test** rather than simply marking down 10 minutes. If you hold the test pressure for 15 minutes, then record 15 minutes as the test period. If you do 18 minutes, then record that. It may look suspicious when an accident investigator reviews pressure tests and finds that 10 minutes is **always** the time recorded.*)

- After properly documenting the test results, you must unplug or uncap the gas lines, install valves on each line that will be connected to an appliance, install appliance connectors and then perform a leak check of the entire system including the newly installed valves, appliance connectors, regulators, and tank connector.

Class Discussion:

Your company may have standard operating procedures that are more stringent than these suggested methods. If so, review them and always follow your company procedures.

Closing:

Propane piping systems **must** be given a pressure test whenever a new piping system is placed into service or additions are made to existing piping systems. Do not forget that new yard lines must be pressure tested. **Never** omit a pressure test.

October 2010 Test

Pressure Test

Name: _____

Date: _____

Instructions: Read and answer each of the following questions. When complete, grade the test and review incorrect answers so each employee is “armed” with the correct answers before they leave the training.

1. A pressure test is the same as a leak check.
 - a) True
 - b) False

2. When performing a pressure test, the test medium shall be:
 - a) Oxygen
 - b) Propane
 - c) Air
 - d) All of the above

3. When performing a pressure test, the system must hold pressure for a minimum of _____ minutes.
 - a) 5
 - b) 3
 - c) 6
 - d) 10

4. The test pressure to be used shall be no less than _____ times the maximum working pressure, but not less than _____ psi.
 - a) 1 ½, 3
 - b) 3, 1 ½
 - c) 5, 10
 - d) 10, 5

5. When using a pressure gauge, code requires the test gauge scale be no greater than _____ times the test pressure.
 - a) 1 ½
 - b) 3
 - c) 5
 - d) 10

October 2010 Answer Sheet

1. B
2. C
3. D
4. A
5. C