Aquatherm Standard Pressure Testing Procedure

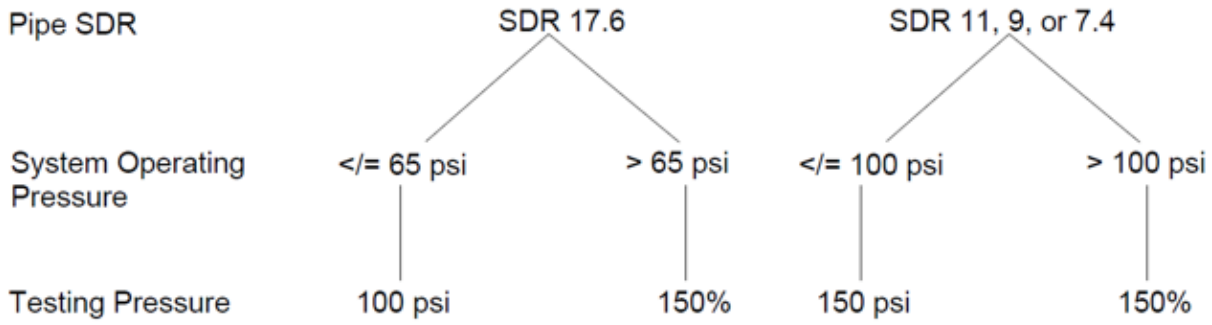
The following test procedure is intended to help ensure a leak-free system upon completion of product installation by properly trained installers.

Step 1: Determine your testing pressure

To help ensure the integrity of the heat fusion connections, a pressure test must be performed on the completed system. The amount of pressure used depends on the type of pipe and intended pressure of the application.

- If the piping system has a mixture of SDR pipe, you should test to the higher SDR's (thinner walled pipe's) testing requirements. For example, if the piping system contains SDR 17.6 pipe and SDR 11 piping, you should test to the requirements of the SDR 17.6 piping.
- If the piping system contains SDR 17.6 pipe and has an intended operating pressure of 65 psi or lower, the system must be tested at 100 psi.
- If the piping system contains SDR 17.6 pipe and has an intended operating pressure higher than 65 psi, the system must be tested at 150% of the intended operating pressure or a maximum of 200 psi[8].
- If the system contains only SDR 11 or heavier-walled pipe (lower SDR) and has an intended operating pressure of 100 psi or less, the system must be tested at 150 psi.
- If the system contains only SDR 11 or heavier-walled pipe (lower SDR) and has an intended operating pressure higher than 100 psi, the system must be tested at 150% of the intended operating pressure.
- If you have concerns regarding your testing pressure, please contact Aquatherm.

Step 1: Determine your testing pressure (cont.)



The following are maximum testing pressures for high-rise buildings or high-pressure systems. The maximum testing pressures should not exceed the following:

Pipe	Maximum Test Pressure Allowed
PP-RP (RCT) SDR 9	400 psi
PP-RP (RCT) SDR 11	320 psi
PP-RP (RCT) SDR 17.6	200 psi

Step 2: Preliminary Low-Pressure (<15 psi) Leak Check

Prior to conducting the Aquatherm Pressure Test (cyclic, 30-min, and 2-hr hydrostatic tests), it is recommended to perform a low-pressure preliminary test to check for leaks or open-end pipes. Air may be used for this test; however, the pressure must not exceed 15-psi. WARNING: Temperature changes can significantly affect the pressure of compressed air. Exceeding 15 psi can result in a hazardous condition with risk of injury or death.

While this preliminary low-pressure leak check may be performed with air, the Aquatherm Pressure Test must be performed with water only, due to it's incompressibility.

Step 3: Observe safety protocols

It is important for the tester and all others at the project site[7] to observe all safety recommendations from Aquatherm until the testing is complete.

For all systems:

- Visually inspect the connections for signs of proper fusion, following the guidelines provided during training and given in the Aquatherm Installer Manual. Socket connections should have two even rings of melted plastic ("beads"), and a visible depth mark. Butt fused connections should have a single bead with a rounded top. This inspection is most easily done during the fusion process. The absence of these signs may be indicative of an improper fusion.
- Ensure all air has been completely purged from the system prior to pressure testing. Entrapped air can result in significant pressure surges and violent, dangerous and catastrophic rupture.
- Remove all fusion equipment from the system before starting the pressure test.
- Set your pressure gauge near the lowest point[3] of the system, where the pressure will be highest. This reduces the risk of over-pressurizing the system.
- Observe the system during the test for any indications of leaks. If a leak is found, relieve all test pressure and repair the leak before continuing.

Step 4: Perform the test[2]

Follow the steps as indicated below. Use a pressure test gauge that is accurate to within 0.5 psi. The cyclic, 30-min hydrostatic, and 2-hr hydrostatic tests must be performed with water only[8].

Cyclic Pressure Test:

- Release any existing pressure from the system.
- Bring the system up to test pressure for two minutes.
- Reduce the system pressure to 15 psi for two minutes.
- Release the pressure from the system.
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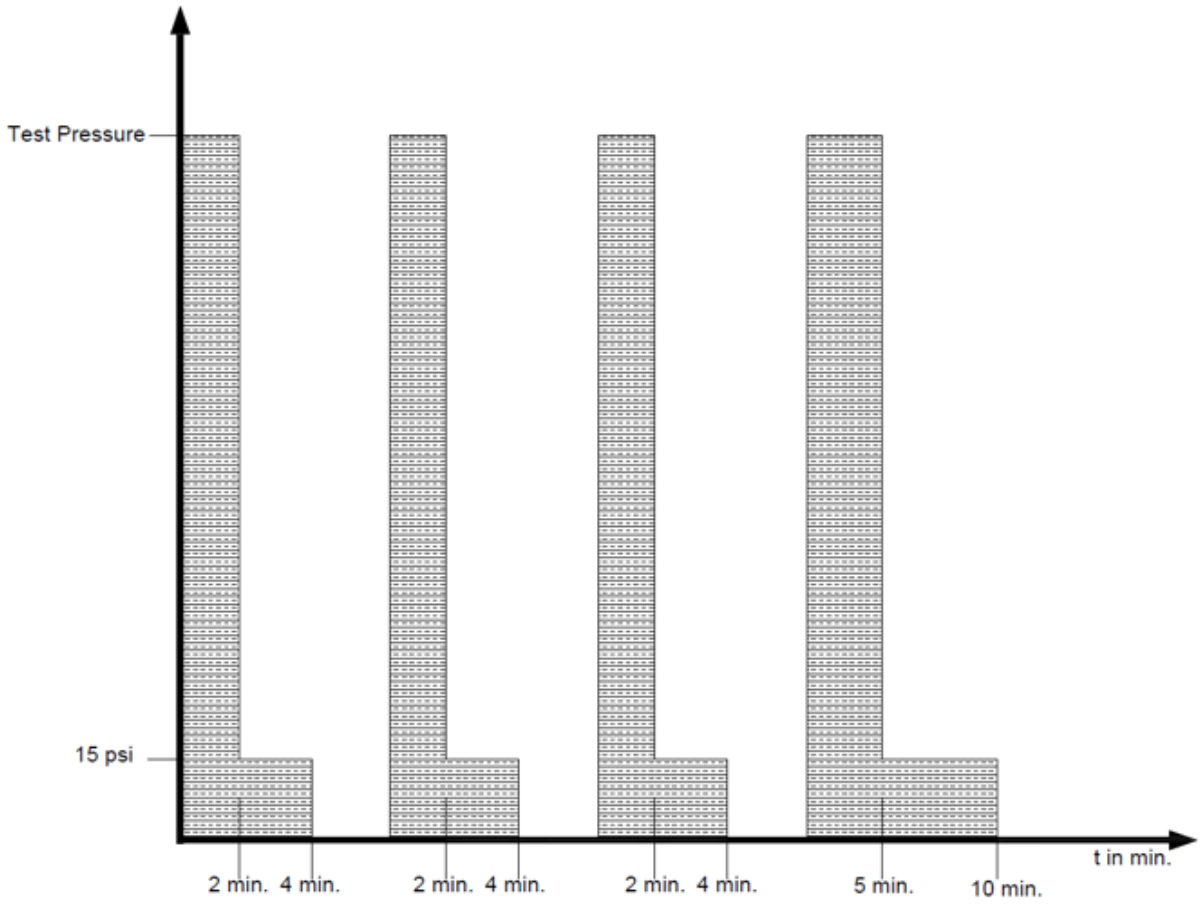
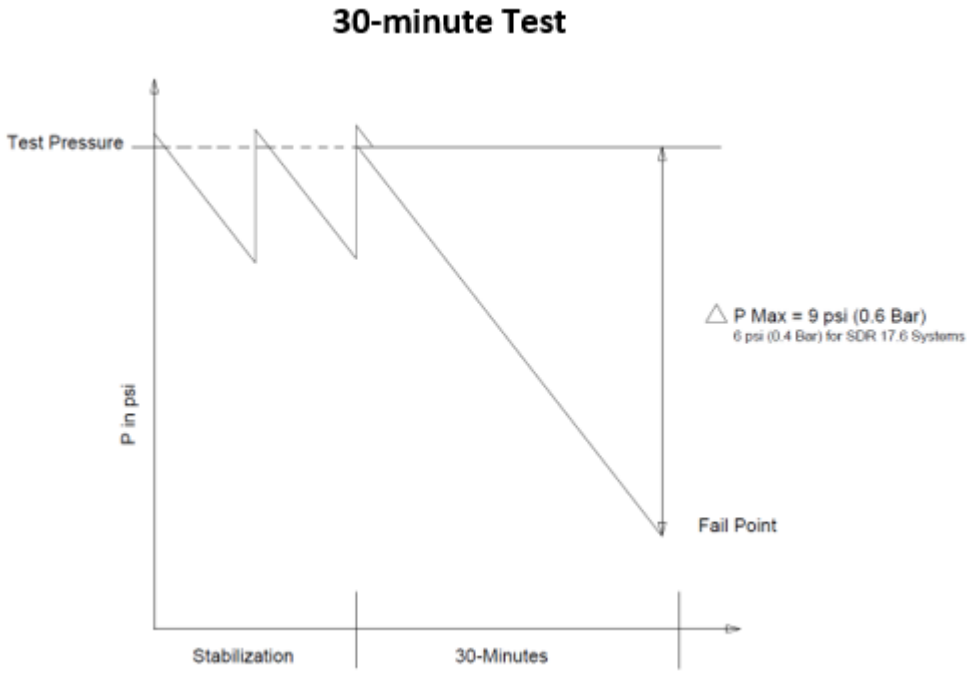
- Release the pressure from the system.
- Bring the system up to test pressure for five minutes.
- Reduce the system pressure to 15 psi for five minutes.
- Release the pressure from the system.
- This test is intended to expand and stress the system and joints, so additional pump pressure may be necessary to maintain the test pressure initially. Any significant loss of pressure or inability to maintain the test pressure should be investigated for leaks, damage, entrapped air or equipment malfunction.

Cyclic Pressure Test



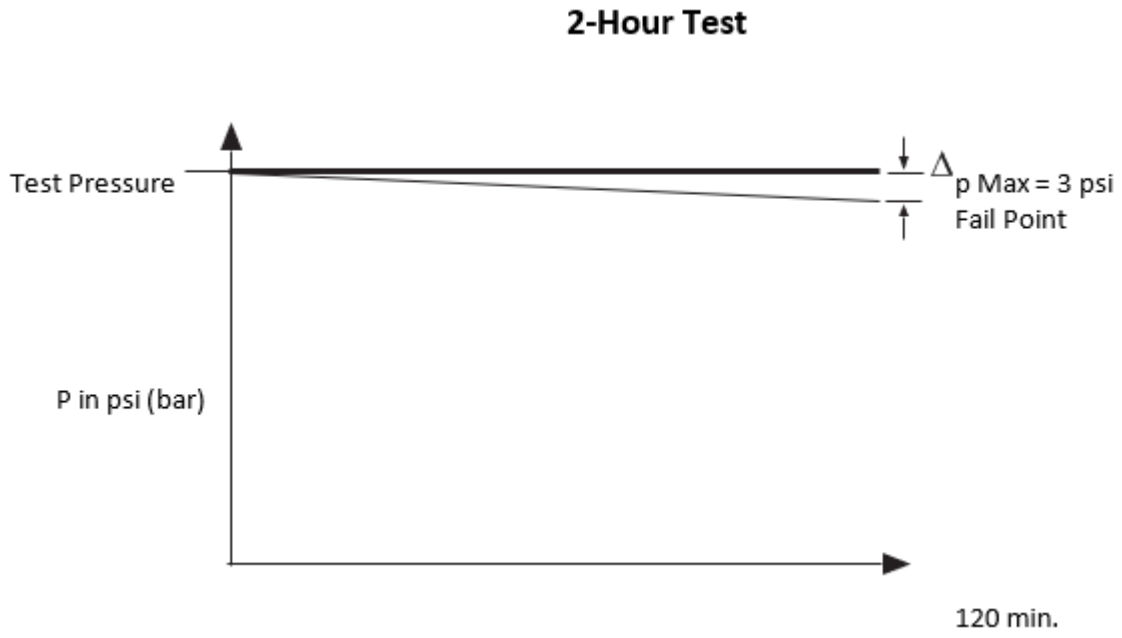
30-Minute test:

- Bring the system up to the test pressure. The system will expand slightly once it is up to pressure, so additional pressure may be required to help it stabilize.
- Once the system stabilizes, observe it for 30 minutes. The system should be able to hold the test pressure during that time.
- The loss of more than 9 psi (6 psi for SDR 17.6 systems) or steadily decreasing pressure during this test is indicative of a leak. If a leak occurs, identify the leak and repair the system then repeat this test.
- If the system does not stabilize properly, but no leak is found, then there is likely entrapped air in the piping. Inspect the system for high points or other locations where filling may have entrapped air and ensure all air is removed from the piping system.[3]



2-Hour test:

- If the system has lost any pressure during the 30-minute test, bring the system back up to the test pressure.
- Observe the system for 120 minutes. The system should be able to hold the full test pressure during that time.
- The loss of more than 3 psi or steadily decreasing pressure during this test is indicative of a leak. Identify the leak and repair the system before repeating this test. The test pressure must have less than 3 psi loss and have stabilized at a value of less than 3 psi loss during the test.



Step five: Complete the pressure test record and give to building owner[7]

- Submit the forms to the building owner promptly[7] after completing the pressure test.
- If you are testing a system in sections, save all the pressure test records and submit them together.
- Include the installer numbers of all the installers who fused connections on the system.

Revisions:
1. Revised 13 March 2018
2. Revised 14 Nov. 2018
3. Revised 20 May 2019
4. Revised 25 July 2019
5. Revised 19 August 2019
6. Revised 9 December 2021
7. Revised 1 April 2024 – Warranty revisions
8. Revised 1 September 2024 – compressed air revisions