

Putting the Pressure On

Pressure testing to detect and locate leaks.

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As water conservation becomes an increasingly pertinent issue that effects our industry, preventing, finding and fixing leaks has become an unavoidable task for pool builders as well as service professionals. While leaks in a pool's shell, liner or equipment are certainly burdensome to find they are usually visible and thus able to be detected with visual inspection methods. Plumbing leaks on the other hand, especially in lines that have been buried underground require more drastic measures pressure testing!

It should be made clear that the procedures and techniques for pressure testing new pool plumbing (to pass inspections required from some municipalities) differs to some extent from those used to find leaks in existing plumbing. New pool construction must often pass tests that require the plumbing system to hold pressure for a specified period of time at a specified pressure. In this article I will not address specific techniques for new pool inspections because in so doing I may contradict the requirements or procedures dictated by your municipality. Builders should become well aware of, and if possible involved with the formulation of these specifications.

Pressure testing to identify a leaking line.

Pressure testing of existing plumbing for the purpose of detecting and locating underground plumbing leaks is more ambiguous and complex than that which is required for new pools. Those with experience in the field will undoubtedly have developed their own techniques and procedures however both new and experienced service professionals will find value in understanding the principles behind the tests they are performing, following a structured procedure, and utilizing good tools and equipment.

Regardless of whether the leak is suspected to be in the plumbing or the structure of the pool, a pressure test should be done to provide confirmation of which parts of the pool are leaking, and which parts can be eliminated as suspected leak areas. This is important not only because it saves time in later leak location steps, but also because it allows the technician to provide the pool owner with the assurance that leaks that have been found and fixed are the only ones in the pool.

To do a pressure test closed test plugs are used to block off all but one of the exposed openings of a section of plumbing. A pressure induction system is put in the remaining opening (usually at the equipment). Water is then put into the line through the pressure tester and the system is brought up to no higher than

20 psi. A pressure drop indicates a leak. A line that holds pressure can be eliminated as a potential leak area.

While a pressure test of the entire plumbing system may be adequate in situations where a structural leak is suspected, individual sections of plumbing should be tested if a plumbing leak is suspected. Valves at the equipment can often be used to isolate these sections as long as they are tested first. Do so by testing from the equipment to the closed valves to see if they hold pressure.

Water is used for this Isolation pressure test because it does not compress under pressure, and thus gives more accurate and quick results. Water is also advantageous for this test because if test pressures do get higher than a safe level, plugs that pop out under water pressure will not fly from the openings as dangerously as those that pop-out under air pressure.

Accept no compromises when it comes to the sealing effectiveness of your test plugs. Tapered winterizing plugs have a tendency to pop out under test pressures wasting valuable time and putting anybody in the area at risk of injury.

Plugs with straight-sided rubber and large corrosion resistant hardware allow for extra sealing area, easy expansion and ultimately more accurate results. Your pressure induction system should allow for easy access to a variety of different plumbing openings and allow the introduction of either water or air (for later leak location steps) into the plumbing. A system utilizing various sizes of open stem plugs which can be quick connected to the pressure tester provides the ability to do this without having to cut lines or jury-rig fittings. A pressure tester must include a 0-30 psi gauge, hook ups for a garden hose and air line, a valve to control these and block off the system, as well as a means of releasing pressure from a line that has been tested but does not leak.

Pressure testing to pinpoint the location of a leak.

Once the isolation step has been completed you should know whether the leak is in a plumbing section or in the structure of the pool. Different location methods will be used depending on where you are looking for the leak. To find leaks in underground plumbing the most effective method is Sonic Location.

The key to effective sonic location is creating a distinct sound at the leak that can be detected with special listening devices designed to pick up vibrations in the ground. This distinct sound is created by getting air to escape from the leak into water saturated soil thus producing a bubbling gurgling sound very similar to what you would here if you were to blow through a straw into a glass of water.

It is important to note that any water in the line will stay at the low end of the plumbing even as air is being added to the line. Thus, a good noise will not be

produced until all of the water above the leak level has been purged from the line. To assure air is reaching the leak it is often helpful to purge all water from the line before attempting a sonic location.

Using the same pressure testing set up that was used for the isolation test a constant stream of air from a regulated air source (small compressor or nitrogen tank) is fed into the line to maintain a pressure of no higher than 20 psi (5-10 is often enough). Some type of listening device ranging from simple geophones to sophisticated electronic equipment is then moved along the path of the buried line to detect the loudest most distinct sound. This sound will most often be directly above the leak. Listening devices are now available that also allow listening for leaks through the wall of the pool; a technique that often offers a more direct path to the leaking plumbing.

For more information on pressure testing new or existing pools, or on swimming pool leak detection and water conservation contact Anderson Manufacturing Co., at 800-348-1316 or visit [www. Leaktools.com](http://www.Leaktools.com)