

# APPLICATION TIPS' SUMMARY SHEET #1

California PROP 65 guidelines Pressure Testing with Air VS. Pressure Testing with Water

Hydronic Technology Solutions that fit

## APPLICATION TIPS

**Questions about this application?**

Contact [info@GriswoldControls.com](mailto:info@GriswoldControls.com) or 949-559-6000

### Griswold Controls Valves Meet California PROP 65 Guidelines



lead content. They also have EPDM o-rings, Teflon seals, a stainless steel cartridge, and

Griswold Controls has been providing the K valve in domestic water systems for years. Both the K valves and Isolator series valves have brass housings with approximately 2-3%

chrome plated brass balls. All these materials are commonly used in standard plumbing fixtures for potable water. Some states or counties require that domestic water components have a NSF rating, which we have chosen not to pursue due to the expense and time line. Other states however follow California's Prop 65 guidelines that say brass is allowed for domestic water as long as the lead content is below 5%. With our 2-3% lead content, we readily meet the requirement.

### Pressure Testing with Air vs. Pressure Testing with Water



Pressure testing with either air or water to detect leakage is a common practice in our industry. We are often asked why air testing must be done at lower pressures than water testing. To find leaks, a low pressure (30-50 PSI) air test is just as effective as a high pressure (150 PSI) water test. This is because the viscosity and surface tension of water are both greater than that of air. For example, the viscosity of water is about 89 times greater than the viscosity of air, viscosity being the internal friction of water making it resist the tendency to flow, particularly through a small opening.

And, while the surface tension of a water to air surface is 0.005 lb. ft./ft., air has no surface tension. Both viscosity and surface tension are forces that will prevent water from escaping through even a very small hole, forces that do not prevent air from escaping through the same size hole. Therefore, many times systems show a leak with a high pressure air test when in actuality no water is leaking. Our experience has shown that on numerous occasions

a high pressure air test indicates leakage, but when water is introduced into the system, or a low pressure air test is conducted, there is no leakage.

Another reason high pressure air should not be used to locate leaks as opposed to low pressure air is it can be dangerous. Unlike water, which is incompressible, air is very compressible, making it hydraulically equivalent to a large mechanical spring. If something were to break or come free during a high pressure air test, the released air could propel an object a far distance with a great deal of force. This is why the elimination of trapped air when initially filling pipelines can be so hazardous. Air tries to move things to relieve built up pressure. Water, because it is incompressible, does not.

The only reason to test anything with high pressure (150 PSI) air is to test a tank or pipe to determine if the pipe has structural integrity, i.e., if it will burst during its service life. The force experienced on the interior of a pipe is the same for either air or water at 150 PSI. However, this is not the purpose of a pressure test for leakage and low pressure air or water testing is the recommendation in those situations.

Griswold Controls is  
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Certified

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