Sioux Chief Manufacturing
Technical Report #798
Water Hammer Arresters

Subject: Expansion tanks used as water hammer arresters

Question: Does one expansion tank, centrally located in a residential plumbing system, serve the same purpose as multiple water hammer arresters placed at the points of use?

Answer: No, it absolutely does not—neither practically, nor under UPC-97 or IPC -97.

• Water hammer is caused by the momentum of the water column flowing toward the terminal valve or faucet. The initial impact of water hammer starts right at the valve or faucet immediately upon closure, causing a tremendous pressure surge. This surge works its way back upstream, damaging everything in its wake until it dissipates at a point of relief. By the time the pressure surge has reached the expansion tank, it has already done its damage. On the other hand, an arrester placed at the valve or faucet will absorb the momentum before it creates a damaging pressure surge.

• Companies that manufacture both expansion tanks and water hammer arresters recommend an arrester installed at the point of use or at the end of the branch line in order to properly arrest water hammer—they do not recommend the installation of an expansion tank for water hammer control. Expansion tanks are recommended for thermal expansion, and water hammer arresters are recommended for water hammer

• Section 609.10 of the UPC-97 calls for “Water pressure shock arresters (to) be installed as close as possible to quick-acting valves at the end of long pipe or near batteries of fixtures or both.” It also says in 609.10.2 “the manufacturer’s specifications as to placement and method of installation shall be followed.” Neither UPC requirement allows the use of an expansion tank to take the place of arresters.

• Table 14-1 of the UPC-97 lists the ASSE 1010 as the accepted standard for water hammer control products. (Update: The ANSI/ASME A112.1.2-91, also listed in UPC-97, has recently been replaced with ANSI/ASSE 1010-96.) None of the common expansion tanks sold in the plumbing industry meet either of these standards.

• Expansion tanks have an average life of only 3-7 years, due to the limited functional life of the rubber diaphragm. This is not the type of product that is defined by the ASSE 1010 Standard, Section 1.2.1 “… arresters having a permanently sealed cushion of gas … and designed to provide continuous protection, without maintenance …”

1-800-821-3944 • www.siouxchief.com

Sioux Chief
MANUFACTURING COMPANY