

Sioux Chief Manufacturing Technical Report #91097 Water Hammer Arresters

Subject: Hydra-Rester Water Hammer Arrester- 500,000 Cycle Endurance Test

In order to establish a higher criteria for our water hammer arrester performance, and to address concerns posed by engineers and contractors regarding our o-ring performance, Sioux Chief Manufacturing Company conducted a 500,000 cycle endurance test. We chose to test our 654-C Hydra-Rester because it has the *LONGEST* piston stroke of any Sioux Chief arrester, and therefore the wear and resistance on the o-ring is tested most stringently.

The endurance test was performed on a shock cycle tester which hydraulically plunged the piston simulating the maximum allowable system surge as outlined by the **ANSI/ASSE 1010** standard. During the plunging process, each piston stroke travelled five inches up the arrester chamber and back. During the test, the piston was plunged thirty times per minute, twenty four hours a day, for twelve consecutive days.

At different intervals throughout the test, the arrester was removed from the shock cycle tester and subjected to the performance testing equipment consistent with the **ANSI/ASSE 1010** standard for certifying water hammer arresters. The testing apparatus consisted of a 50 foot run of one inch galvanized pipe with a 60 PSIG flow pressure. The arrester was then subjected to a 400 PSIG pressure spike, and was required to keep the line pressure below 150 PSIG. The Sioux Chief Hydra-Rester kept the pressure spike below the specified 150 PSIG at each interval and at the completion of the 500,000 cycle test. The exact results of the test are found below.

Cycle No.	Line Pressure	Actual Peak Shock Pressure	Maximum Allowable Shock Pressure*
1	60	115	150
70,000	60	123	150
185,000	60	137	150
375,000	60	139	150
500,000	60	144	150

* allowed by ANSI/ASSE 1010 Standard



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