HYDRA-RESTER®

ENGINEERED WATER HAMMER ARRESTER

CHRYSSAFIDIS

ASSE

ANSI/ASSE 1010

- Tested, approved and certified.
- Keeps pressure surges below 150 PSI.
- 500,000 cycles strong.
- Lifetime guaranteed.

SIOUX CHIEF MADE IN THE U.S.A.

Sioux Chief MANUFACTURING COMPANY

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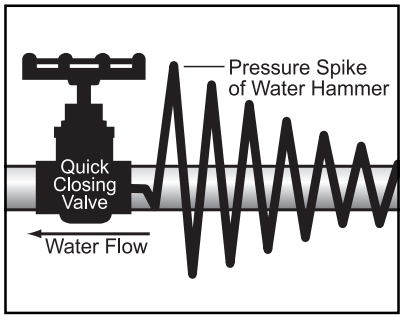
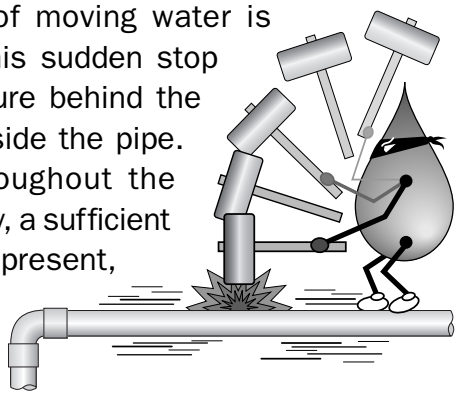
Controlling Water Hammer

What is water hammer?

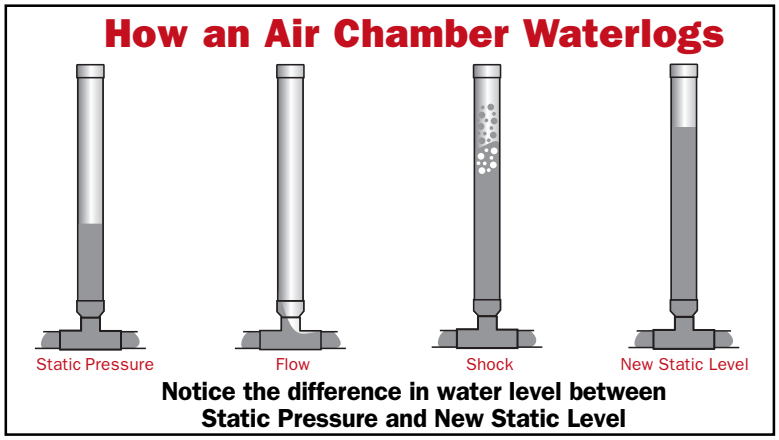


Water hammer is usually recognized by a banging or thumping in water lines when valves are shut off. Although this is an easy way to recognize the problem, water hammer doesn't always make these telltale noises. Water hammer occurs when the flow of moving water is suddenly stopped by a closing valve. This sudden stop results in a tremendous spike of pressure behind the valve which acts like a tiny explosion inside the pipe. This pressure spike reverberates throughout the plumbing system, rattling and shaking pipes, until it is absorbed. Normally, a sufficient pocket of air will absorb such a pressure spike, but if no pocket of air is present, expensive fixtures and appliances within the plumbing system will be damaged as they are left to absorb this pressure spike.

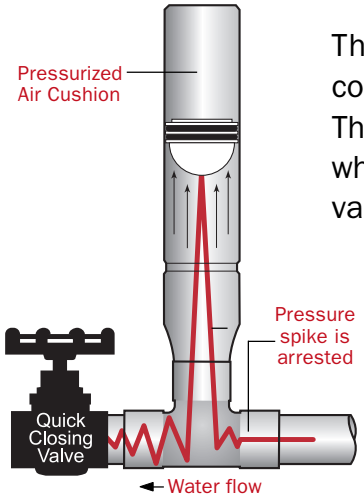


Why Air Chambers Don't Work

It used to be thought that an air chamber, or capped stand-pipe, was an effective solution to controlling water hammer. However, within an air chamber, nothing separates the air from the water. It only takes a few short weeks before the air is absorbed into the water, leaving the air chamber waterlogged and completely ineffective. Laboratory tests confirm that the air is depleted by simple air permeation and by interaction between static pressure and flow pressure (right).



Choosing the HYDRA-RESTER®



The most effective means of controlling water hammer is a measured, compressible cushion of air which is permanently separated from the water system. The Hydra-Rester® employs a pressurized cushion of air and a two o-ring piston, which permanently separates this air cushion from the water system. When the valve closes and the water flow is suddenly stopped, the pressure spike pushes the piston up the Hydra-Rester's® chamber against the pressurized cushion of air. The air cushion in the Hydra-Rester® reacts instantly, absorbing the pressure spike that causes water hammer. Although arresters are typically tested to 10,000 on/off cycles, the Hydra-Rester® has been lab tested to 500,000 cycles without failure. All Hydra-Resters® are guaranteed to control water hammer for the lifetime of the plumbing system.

SIZING & PLACEMENT

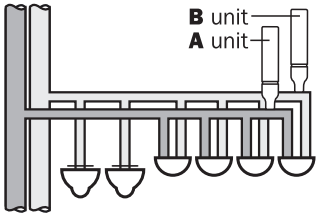
Fixture	Type of Supply Control	Fixture Units					
		Public			Private		
		Total	C.W.	H.W.	Total	C.W.	H.W.
Water Closet	Flush Valve	10	10	10	6	6	–
Water Closet	Flush Tank	5	5	–	3	3	–
Pedestal Urinal	Flush Valve	10	10	–	–	–	–
Stall or Wall Urinal	Flush Valve	5	5	–	–	–	–
Stall or Wall Urinal	Flush Tank	3	3	–	–	–	–
Lavatory	Faucet	2	1-1/2	1-1/2	1	1	1
Bathtub	Faucet	4	2	3	2	1-1/2	1-1/2
Shower Head	Mixing Valve	4	2	3	2	1	2
Bathroom Group	Flush Valve Closet	–	–	–	8	8	3
Bathroom Group	Flush Tank Closet	–	–	–	6	6	3
Seperate Shower	Mixing Valve	–	–	–	2	1	2
Service Sink	Faucet	3	3	3	–	–	–
Laundry Tubs (1-3)	Faucet	–	–	–	3	3	3
Combination Fixture	Faucet	–	–	–	3	3	3

The fixture unit values shown in the table (left) represent the standard ratings used by engineers to size water distribution systems as well as water hammer arresters. Match fixture units in the table to the Hydra-Rester with the corresponding fixture unit capacity.

Example

Cold Water
Equal to 26 Fixture Units
Requires - **B** Unit
Sioux Chief's 653-B or 653-BS

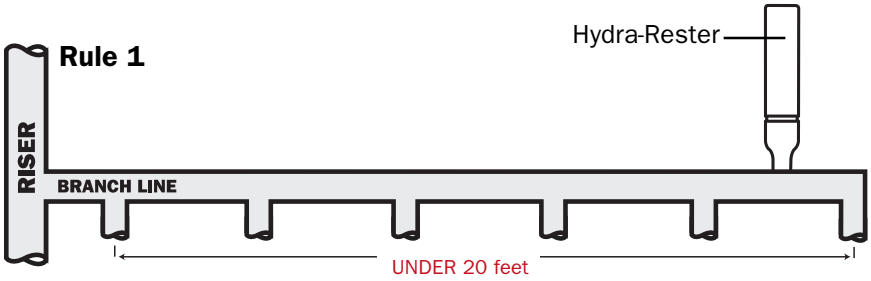
Hot Water
Equal to 6 Fixture Units
Needs - **A** Unit
Sioux Chief's 652-A or 652-AS



MULTI-FIXTURE BRANCH LINES

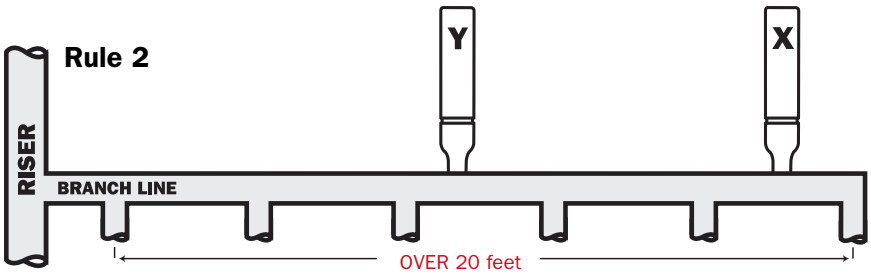
Rule 1
Branch Lines of 20 Feet or Less

The Hydra-Rester should be placed at the end of the branch line between the last two fixtures served, as shown. (right) Select required model using fixture unit sizing (above).

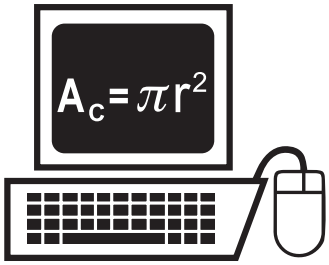


Rule 2
Branch lines over 20 feet

An additional Hydra-Rester (**Y**) should be placed as shown. (right) The additional unit should be placed at the midpoint of the run longer than 20 feet. Select required model(s) using fixture unit sizing (above). The sum of the fixture unit ratings of units **X** and **Y** combined, shall be equal to or greater than the demand of all branches.



LONG RUNS OF PIPING TO REMOTE EQUIPMENT



When long runs of piping serve remote equipment, we recommend custom sizing for each specific application. If you have such an application, fill out the arrester sizing form on the last page of the *Water Hammer Arresters* section of our current catalog and fax it to us. Your specific job will be analyzed and calculated by our sizing program. The results will be sent to you, including the required arrester size and information on how to order.

CHRYSSAFIDIS

HYDRA-RESTER®

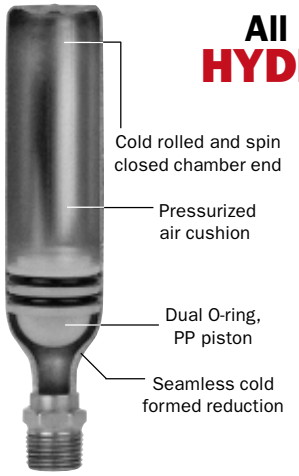
Engineered Water Hammer Arrester

Certified by the American Society of Sanitary Engineering to the ANSI/ASSE 1010 Standard.

Quality Assured

Lifetime cycle tested at U.S. Testing Laboratories in Fairfield, NJ, to withstand 10,000 shock cycles.

Factory tested to withstand 500,000 cycles, without failure. (#654-C tested)

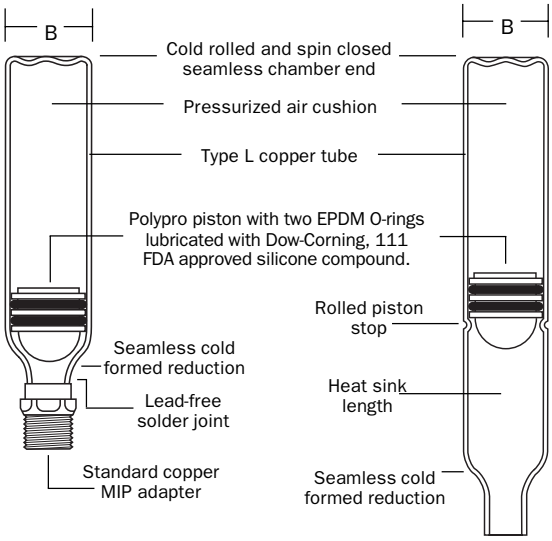


All HYDRA-RESTERS® feature . . .

Compact Size
Allows for installation in a 2 x 4 wall cavity.

Installation Angle
Install upright, horizontally, or any angle in between.

Sealed Wall Installation
Approved for installation with no access panel required.



Item No.	Conn. Size	Unit Size	Dimensions		Fixture Unit Capacity	Cubic Inch Volume	Box Qty.	Mstr Crtn
			Length	B				
MIP CONNECTION								
652-A	1/2"	A	6-1/2"	1-3/8"	1-11	5	1	16
653-B	3/4"	B	8-3/4"	1-3/8"	12-32	7	1	16
654-C	1"	C	11"	1-3/8"	33-60	11	1	16
655-D	1"	D	10-1/8"	2-1/8"	61-113	20	1	4
656-E	1"	E	12-5/8"	2-1/8"	114-154	29	1	4
657-F	1"	F	15-1/8"	2-1/8"	155-330	36	1	4
MALE SWEAT CONNECTION								
652-AS	1/2"	A	8-1/4"	1-3/8"	1-11	5	1	16
653-BS	3/4"	B	10"	1-3/8"	12-32	7	1	16
654-CS	1"	C	12-1/2"	1-3/8"	33-60	11	1	16
655-DS	1"	D	11"	2-1/8"	61-113	20	1	4
656-ES	1"	E	13-1/2"	2-1/8"	114-154	29	1	4
657-FS	1"	F	16"	2-1/8"	155-330	36	1	4

SPECIFICATIONS

Maximum working Temp ..... 250 °F
Maximum working pressure ..... 350 PSIG
Burst tested to ..... 2,900 PSIG

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