

# Exercising Waterline Valves is First Step to Rejuvenating Them

Undoubtedly, it's been explained at training sessions; it's been discussed among utility staff. But for all the good intentions, exercising waterline valves always seems to get put off in many cases. It was no different with me. When I was an operator I started a valve-exercising program; we invested in a valve turner but no one ever seemed to find or take the time to use it as it was intended to be. I didn't realize how beneficial exercising valves might be until I had the opportunity to assist with a large project. It would require a good shut down of sections of the distribution system to complete it. Knowing the system and that the most of the valves would never shut down completely, I wanted to try the valve turner and exercise the five valves that would have to be shut off to do the project.

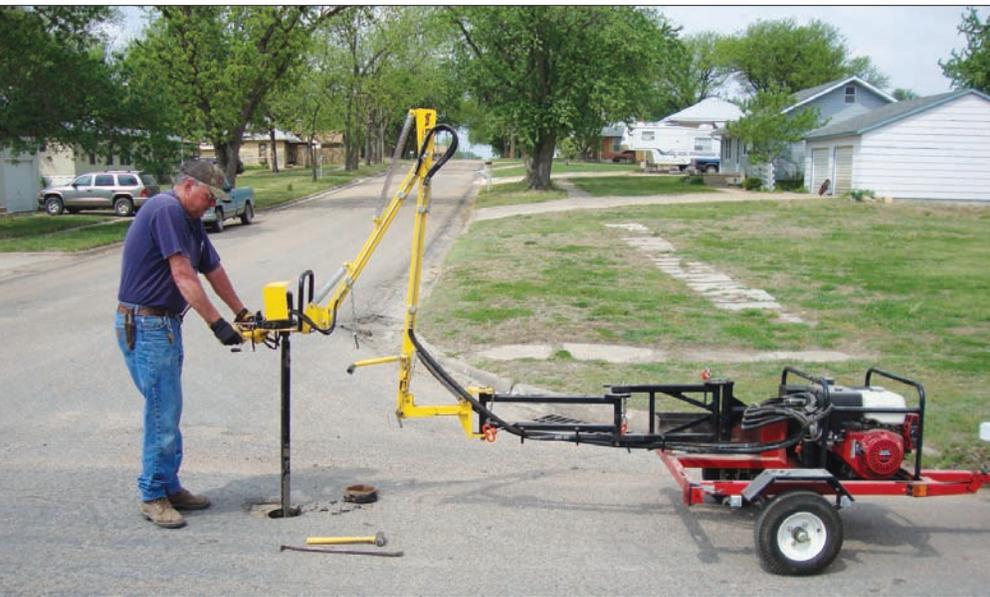


This Hurco Spin Doctor valve exerciser owned by the city of Washington, KS was originally designed to mount in a truck receiver hitch with the power unit loaded in the bed. Because loading required three or four people then City Water, Wastewater and Street Supervisor Greg Metz and other crew members constructed a small trailer to transport the equipment. The city invested \$300; a trailer could have been purchased for an additional \$2,500.

An eight-inch valve should rotate 27 times for full closure.

After checking the valves we found only one of the valves that would rotate the proper number of turns for that size of valve. Knowing the size of valve and the proper number of turns when exercising is a must. Knowing the number of turns tells the operator how close the valve is to complete closure. Knowing the number of turns also helps prevent the operator from possibly breaking a valve. The project had three valves that were eight-inch on the map. Operating the valves manually, I knew something was wrong. We could only rotate 20 times. An eight-inch valve should rotate 27 times for full closure. After using the exerciser on the valve, and running it up and down numerous times, and putting a little pressure down each time, we kept gaining little by little. We eventually were able to get to 26 turns before it felt like it wasn't going go any more and stopped. This was the same scenario on the other valves as well.

Without getting the valves to shut down completely, the project would have required a wet tap by a company



Dennis Stigge, employee with the city of Washington, works on exercising another valve. Getting valves to fully open and close should be a goal of all water systems.

that would have had to be hired. Our exercising of the valves allowed us to get a 95 percent or better shut down on the lines; we were able to complete the job with just the city crew.

To summarize, I have found that if the water system is older and has valves that may operate but don't shut down all the way, operators may be able to spend a little time exercising them – perhaps we can call it rejuvenation, for more successful shut downs. I have found this to be the case especially with the larger valves, e.g., 6-inch and 8-inch. This is where a valve exerciser really pays off.

Valve exercisers can be rented from different companies or even maybe contact a nearby city that may have one and see about renting theirs.

Yes, exercising valves will cost some money but the benefits will far outweigh the cost in the long run. The distribution system will be more reliable. Routine maintenance is a must; operable valves will help sustain the system for a longer life expectancy. Like anything else, if neglected then sooner or later it will cost more to replace it or repair it.

Just like a vehicle or other equipment, good maintenance practices apply to water systems too. Some valves will not close; some might break. This is part of the process and the utility should be prepared for these unexpected incidents. Valves that cannot be operated should be noted.

Exercising every valve at least annually is recommended for all water systems. When exercising valves and flushing lines, don't forget the fire hydrants. Fire hydrants should be flushed and exercised as well.

If you would like any assistance or advice on valve exercising, please feel free to give me a call or contact Kansas Rural Water Association.

*Greg Metz joined KRWA as a Technical Assistant in July 2009. He previously worked at the city of Washington for 13 years where he was involved in city utilities including the power plant, streets, water and wastewater. He also served as purchasing agent for those utilities.*



## Important points when initiating a valve exercising program

1. Have accurate maps of the system, including valve locations and sizes.
2. Prioritize the exercising program by determining which valves are most important, e.g., those near schools, hospitals, nursing homes. Larger valves with larger flows would be more critical in emergency situations such as a main break on a frigid night.
3. Develop a spreadsheet or report with all the valve numbers, locations and sizes to create a maintenance record showing the date the valve was exercised and what condition the valve is in.
4. For those valves that are not located, spend the time to locate them, uncover the riser, raise the riser if needed, clean out the valve boxes if needed. Some sort of vacuum can be used to clean out sediment around valves in valve boxes. A good shop vac will work but that requires a portable power source and a rod or something to breakup sediment that is packed in the valve boxes. A potholer works well to. The payback for doing this work during reasonable weather is huge when a valve has to be found quickly during extreme weather conditions or other emergency.

## Other important details when exercising valves

- ✓ Don't force the valve
- ✓ Don't be in a big hurry
- ✓ Avoid using a cheater bar (a handle extension that allows for greater torque). A cheater bar should only be used in emergencies.
- ✓ Do not close the valve on the first cycle.
- ✓ If and when the valve turns freely, turn it slowly to avoid water hammer. If a valve is opened or closed too rapidly, the waterline may be subjected to extreme pressure changes and it may burst.
- ✓ Listen closely. Sometimes a change in flow can be detected when opening a valve. This indicated the valve is moving.
- ✓ Because debris can be stirred up during valve exercising, notify the public before starting the process. This will keep the complaint calls down.
- ✓ Consider conducting the flushing program at the same time as exercising the valves.
- ✓ Always count the turns to open and close; they should match.



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