

Truth or Myth?

Busting the common Myths about Constant Pressure Water Pump Control Valves

Over the past 30 years you have probably seen multiple articles on constant pressure water pump control valves (CPV). Every article talks about the “magic” of these simple mechanical valves, but rarely do they talk about the benefits of constant pressure during variable water demand for your entire water system.

Adding life to your pump is what CPV’s are all about. Additionally, you have the benefits of longer life on all other well components such as pressure switch points and pressure tank bladders/diaphragms. This is due to a CPV limiting excessive cycling on your system.

The goal of these valves has always been to control the pump and keep it from cycling itself to an early death. Your customers enjoying constant pressure is icing on the cake.

Let’s look at the most common myths about constant pressure water pump control valves:

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**Model CSV125 &
Stainless CSVS125**

Myth 1: It hurts a pump to run continuously.

NOT TRUE. All water pumps are rated for continuous use. It is often even noted “duty-continuous” on the motor itself. In fact, allowing a water pump to run continuously while water is being demanded is the best thing you can do for it. The worst thing for a pump is to start and stop it excessively. Not only is excessive cycling damaging to everything in your water system, amperage pulled every time that pump is called to restart can be 6 to 10 times higher than full running amps.

On a standard constant speed pump/pressure tank system, your pump will cycle off and on because the pump is running at a constant GPM regardless of your demand. Any water being pumped that is not being demanded starts refilling the pressure tank. This causes the system pressure to rise and the pump to shut off. This cycle repeats itself over and over while you are using water. Your customer will also have to deal with a 20 PSI rise and fall in pressure. While this isn’t normally a problem for household use, the exception being the shower, that pressure rising and falling makes it difficult to set up an

irrigation system that create the same spread of water all the time. This can lead to hot spots or over irrigation which wastes water.

A CPV allows the pump to run continuously during variable demand. This not only allows the pump to operate the way it was intended, but also allows your customers to enjoy the luxury of having constant pressure. Whether you are washing your hair or using a sprinkler zone on your irrigation, you will have water and pressure delivered to you directly from the pump.

Myth 2: Back Pressure is bad for the pump.

NOT TRUE. Building pressure is a pump's main function. Not only does the extra back pressure not hurt the pump, but just the opposite is true. The back pressure from a constant pressure pump control valve simply makes the pump think it is in a deeper well. Increasing back pressure by restricting the flow with a CPV decreases the amp draw, making the motor run cooler, and eliminates cycling, which makes the pump and motor last longer. A lack of back pressure can be more damaging to a pump. Lack of back pressure can cause upthrust on impellers that is damaging to the pump.

Myth 3: Back pressure from a constant pressure valve will blow up my pipe.

NOT TRUE. People commonly associate back pressure with broken piping. That is simply not the case if the pipe between the pump and CPV is rated for the pressure that the pump is producing.

Keep in mind the CPV also has pressure limits. If you have an especially deep-set pump with a shallow water level, care should be taken to stay within the published limits of the constant pressure water pump control valve and/or the pipe itself. Even then, pipe is more likely to rupture from excessive pressure created by water hammer (caused by cycling that happens when not using a CPV).

Myth 4: It's like driving with one foot on the gas and one foot on the brake.

NOT TRUE. Restricting most centrifugal style pumps with a valve makes the amps drop, not go up. No matter how much your brain wants you to believe that restricting a pump makes it work harder, nothing could be further from the truth. A centrifugal impeller only draws the power needed to supply the flow of water produced. When a valve is closed or restricted, the impeller is just spinning in nice cool lubricant and

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Model CSVIA

drawing almost no load. As the valve is opened, the amount of water and the weight being lifted increases and the amps go up. Most centrifugal pumps are made to be non-overloading, so opening a valve completely only gets them to full load or service factor amps. Restricting the flow of some full speed pumps can reduce the amps or energy needed by as much as 60%. Surprisingly, amps are reduced by restricting a pump with a valve or CPV just the same as when reducing the speed of the motor. None the less, this is just how a centrifugal impeller pump works. Restricting a pump with a valve or CPV reduces amps and makes the motor use less energy and run cooler. This is nothing like driving a car with one foot on the gas and one on the brake.

In comparison, while VFD's slow a pump motors RPM's, a constant pressure pump control valve derates the motor. You may have a 3HP in the well; however, using a pump control valve can derate that motor to a 1.5 or 2HP pump depending on your pump's brake horse curve. This means the amps required to run will drop. This also lowers the minimum cooling requirements for that 3 HP pump as it is no longer pulling 3HP amps.

While many still incorrectly argue that a VFD saves energy, the actual science of the matter for both VFD's and CPV's is that neither saves energy when working in a pressurized water system. The drop in GPM's isn't linear to the drop in amps. You will always be paying more per gallon with either system when pumping less than the full pump capacity. So, if you aren't saving energy; longer pump and components life must be the goal here. Varying RPMs with a VFD will shorten the life of a pump motor in most cases.

Myth 5: Quality water systems need big pressure tanks.

NOT TRUE. The pressure tanks only purpose is to limit the on/ off cycling of the pump. With a constant pressure water pump control valve, your water doesn't come from the pressure tank; it comes from the well, cistern or other supply and is direct from the pump.

When a CPV is used to limit the number of cycles on a pump not much of a tank is needed. With a pressure tank only holding 25% of its total capacity in water, an 80 gallon pressure tank only holds about 20 gallons of water. When the average home uses 150-300 gallons per day, that same 80 gallon pressure tank isn't very useful at limiting pump cycles.

Being able to utilize a smaller tank means it empties more quickly so that your pump provides fresh well water as needed. No more drinking stale water that has set in a rubber bladder for hours or days.

While there are many advantages to having a CPV on a water pump system, one hidden benefit is the small environmental footprint of the smaller pressure tank. Along with fewer failed pumps and huge tanks to add to our ever-growing trash heap.

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Model CSV3A2T

Myth 6: You can't accommodate minimum cooling run time with a small tank.

NOT TRUE. Pump manufacturers recommend a minimum run time to protect motors from overheating due to cycling too often and/or running in short spurts. Most commonly is it recommended that there is a one minute worst case run time guaranteed by the pressure tank. This means that your tank drawdown must be at least as much as your pump's GPM output. For example, if you have

a 10 GPM pump, you would need 44 gallon pressure tank, at minimum, to help guarantee that 1 minute minimum run time.

With a CPV on the system the pressure tank fills at a reduced rate. This means that on that same 10 GPM pump with a CPV the fill rate would be 1 GPM. Therefore, you are able to get the same recommend run time from a 4.5 gallon tank with a CPV, that you would need a 44 gallon pressure tank for without a CPV.

Myth 7: Fast closing valves cause water hammer.

NOT TRUE. Not only do CPV's not cause water hammer when closing fast (as they never close completely), they stop water hammer on systems due to slamming check valves closed on shut down or uncontrolled pumps shoving way more water into a system than is being demanded on startups.

Almost 50 % of water lost in older systems is water that is lost due to leaks that have been caused by water hammer. Water hammer is hard on any system, and it can lead to enough damage and leaks to result in large amounts of wasted water over time. In this era of working to preserve natural resources, lost water on any system should never be acceptable.

Myth 8: A constant pressure pump control valve will void my pumps warranty.

NOT TRUE. This myth is not only incorrect, but it also willfully misleading.

In 30 years of selling this product, no pump manufacturer has voided any pump warranty based on the use of a CPV on a system.

Pump/motor warranties have to do with visual signs of a lack of cooling flow or other misuse and not with how the pump is controlled. There are countless ways to control pumps. Manufacturers cannot choose which controls are used. They can only inspect the pump/motor for damage caused by abuse or misuse.

Myth 9: A failed valve means no water.

NOT TRUE. Time, wear, and tear will cause any valve to fail. CPV's will fail open; meaning your customer will still have water. The pump will cycle and your customer will see that constant pressure is no longer being maintained, but they will **NEVER** be cut off from water like they will be if using a computerized component to control the pump.

If you would like to dig deeper into the world of constant pressure water pump control valves you can contact Cycle Stop Valves® at info@cyclestopvalves.com or explore their website www.cyclestopvalves.com.

For nearly 30 years, Cycle Stops Valves® has been paving the way in the well and pump community with their patented constant pressure water pump control valves. Cycle Stop Valves® not only boasts unparalleled customer service, we are happy to help you work with any size of project, from simple home usage to agricultural and municipal applications. While your needs in the field may change from project to project, Cycle Stop Valves® is proud to offer long-lasting, top-quality products along with the knowledge and expertise to answer all the questions you may have along the way.

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