



J-PRO-24 Pump Chlorinator

Installation & Start-Up Guide

Thank you for purchasing a Clean Water System! With proper installation and a little routine maintenance, your system will be providing treated water for many years.

Your new system comes with a printed J-PRO-24 Pump installation manual, which along with this start-up guide will help guide you in the installation and start-up of your new system. Please review this start-up guide and the J-PRO-24 Pump installation manual entirely before beginning to install your system and follow the steps outlined for best results.



**CHLORINE BLEACH CAN DAMAGE CLOTHING AND IRRITATE SKIN AND EYES.
USE RUBBER GLOVES AND EYE PROTECTION WHEN HANDLING.**

WARNING: Risk of electrical shock. Read J-PRO-24 Pump Installation Manual before installing. The pump is supplied with a grounding conductor and grounding type of attached plug. To reduce risk of electrical shock, be certain that it is connected to a properly grounded grounding-type electrical receptacle.

This pump is intended for indoor use. Suitable for outdoor use when installed with a J-PRO-24 Manual Pump rainproof cover.

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Pre-Installation

1. Review your packing list and make sure you have received all the parts before beginning installation.
2. If you are going to be turning off the water to the house and you have an electric water heater, shut off the power to the water heater before beginning installation in case water heater is accidentally drained.
3. Pick a suitable location for your chlorination system on a dry level spot where it won't be exposed to freezing temperatures. Maximum line pressure is 100 PSI.
4. Get all of your plumbing parts together before beginning installation. Installation typically takes 1 to 5 hours.
5. After the system is installed and running, your water may temporarily be discolored from the initial chlorinated water, or full of sediment or rust, particularly if you have older or corroded piping.

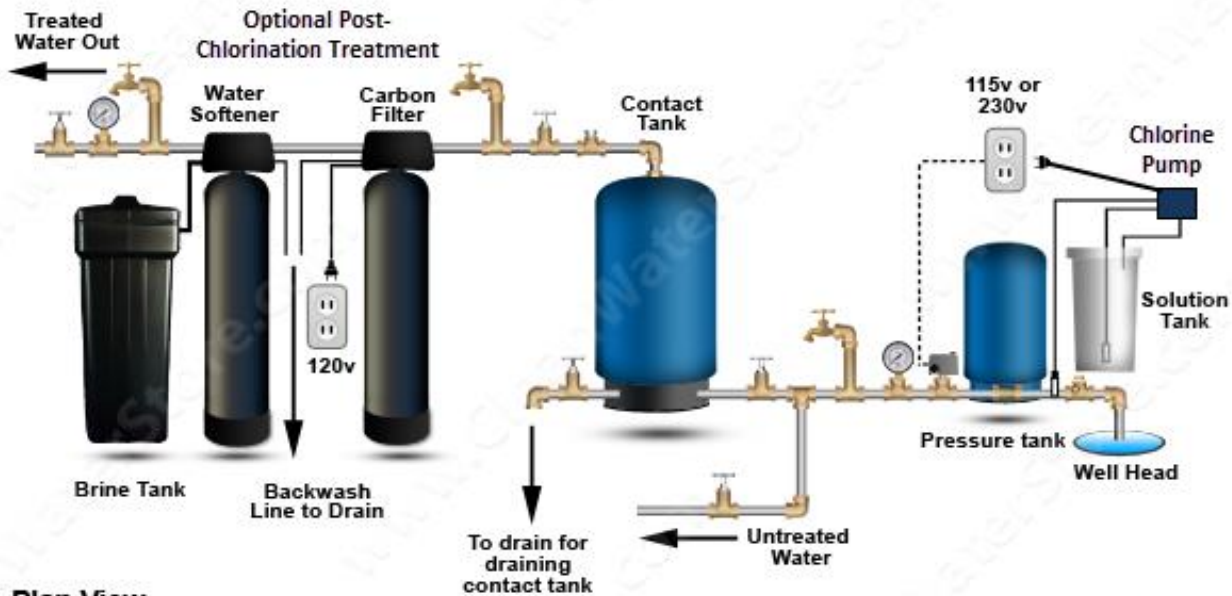
Best Practices for Installation

1. See typical installation for well water (see Fig 1).
2. Make sure that the J-PRO-24 Pump turns on and off with the well pump, or if you are using a flow switch, plug into the flow switch so the J-PRO-24 Pump is activated based on water flow.
3. Do not cut the cord on the J-PRO-24 Pump for direct wiring to the pressure switch. It is better to install a dedicated wall receptacle that is wired to power on and off with the well pump, unless you are using a flow switch.

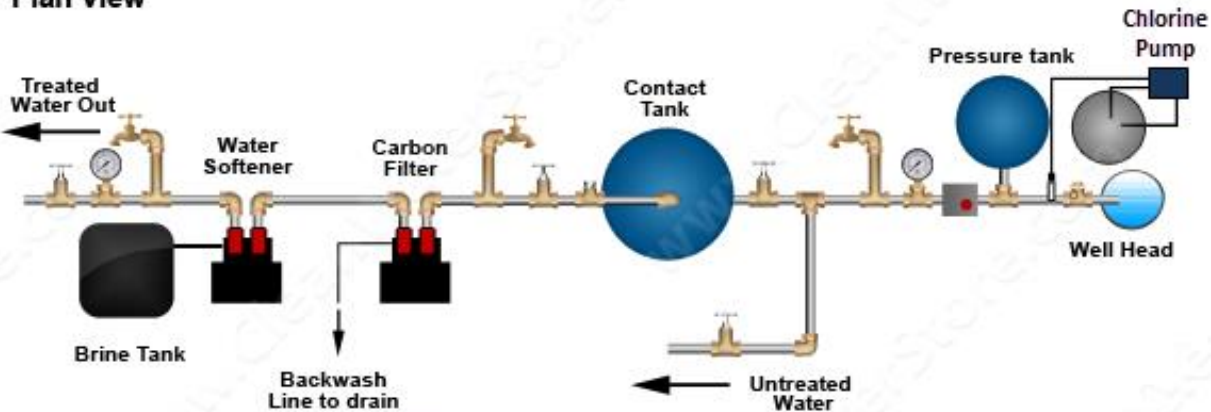
How Your Chlorinator Works

See Fig 1. The well pump is controlled by the pressure switch. A dedicated outlet for the J-PRO-24 Pump is installed and wired so it is energized when the well pump is energized. When the water pressure in the pressure tank drops below the cut-in point on the pressure switch, the well pump and metering pump turn on. As water is pumped through the system, a small amount of chlorine is pumped into the water by the chlorine metering pump.

Fig 1: Typical installation with contact tank and carbon backwash or iron filter. NOTE – J-PRO-24 Pump must be wired so it switches on and off with well pump by wiring to same circuit as well pressure switch. Alternatively a Flow Switch can be used (Option 2 on next page). The J-PRO-24 Pump cannot just be plugged into a wall and left to run for 24 hours a day.



Plan View



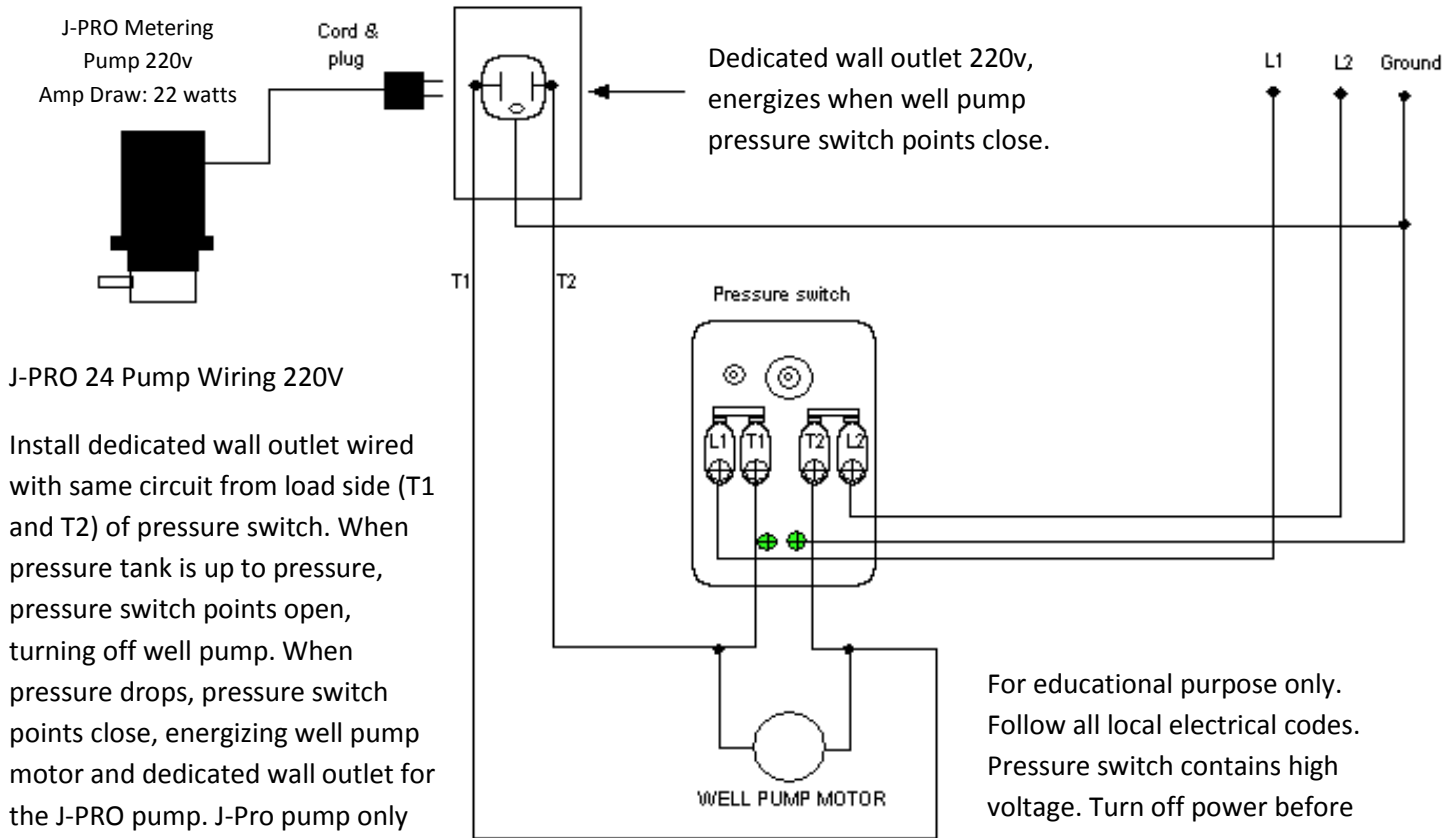
CLEAN WATER SYSTEMS www.cleanwaterstore.com

Key

-  Water piping
-  Pressure Gauge
-  Pressure switch
-  Vacuum Breaker
-  Hose Bib
-  Check Valve
-  Gate or ball Valve

Wiring the J-PRO-24 Pump

Figure 2: (Option 1) Typical wiring 220v J-PRO-24 Pump on same circuit as well pump. Run wires from T1 and T2 (load side of pressure switch) to dedicated wall outlet, and plug J-PRO-24 Pump into an outlet so the J-PRO-24 Pump only runs when well pump is energized.



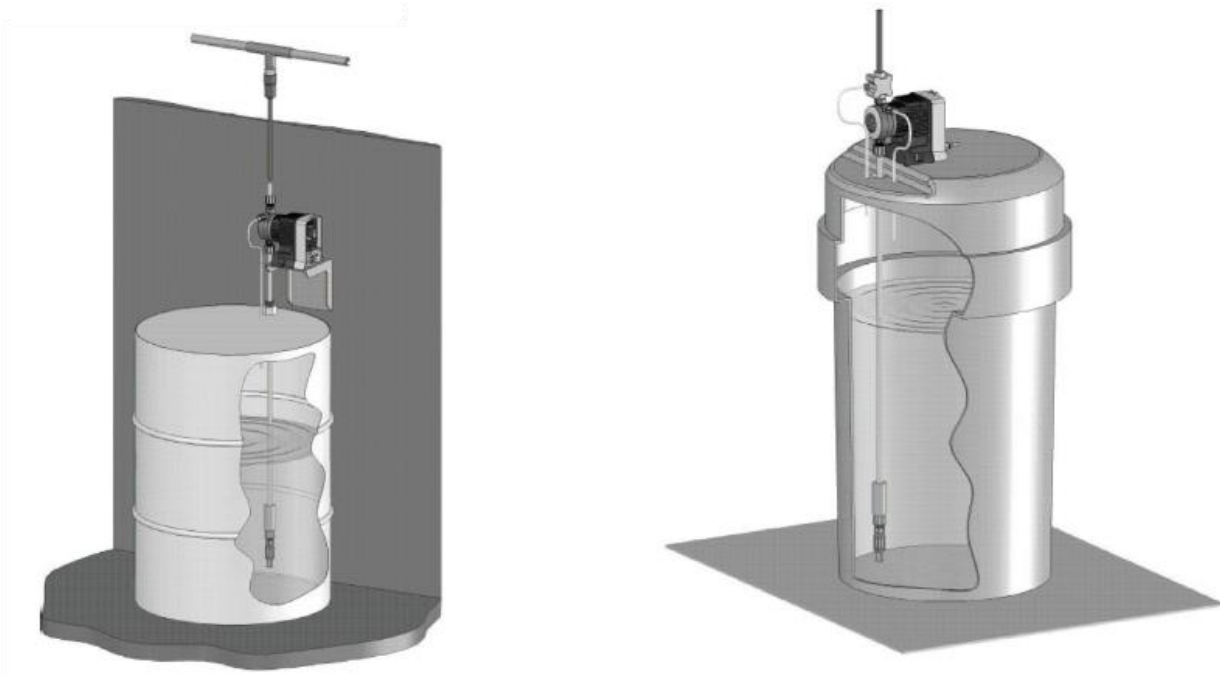
J-PRO 24 Pump Wiring 220V

Install dedicated wall outlet wired with same circuit from load side (T1 and T2) of pressure switch. When pressure tank is up to pressure, pressure switch points open, turning off well pump. When pressure drops, pressure switch points close, energizing well pump motor and dedicated wall outlet for the J-PRO pump. J-Pro pump only runs the well is running.

For educational purpose only. Follow all local electrical codes. Pressure switch contains high voltage. Turn off power before attempting to service or install.

Installation Instructions -

Typically the J-PRO-24 Pump is mounted on the tank, but can be mounted on a shelf above the tank as long as the pump is less than 60" from the bottom of the suction tubing.



*Wire the J-PRO-24 pump so it turns on and off each time well pump runs, or by flow switch if a flow switch is being used .

Mounting Pump to Solution Tank

1. Position pump for installation.



2. Mark where the anchor holes will connect the pump to the tank. Drill the pilot holes with a drill bit so that the pump can be mounted on the tank with two wood or sheet metal screws. We recommend screwing them in **after** the pump has been primed and the tubing has been hooked up for easiest installation.



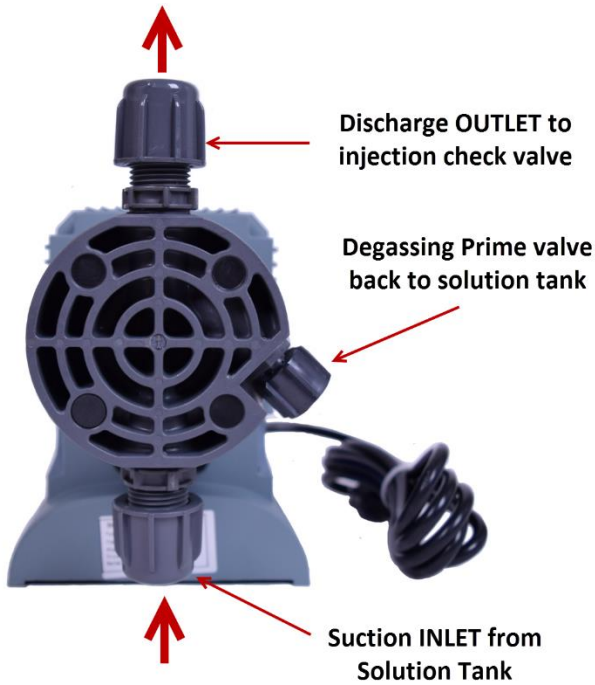
3. Mark the hole for the suction tube and the degassing prime valve and drill with a 3/8" drill.



Quick Start Guide

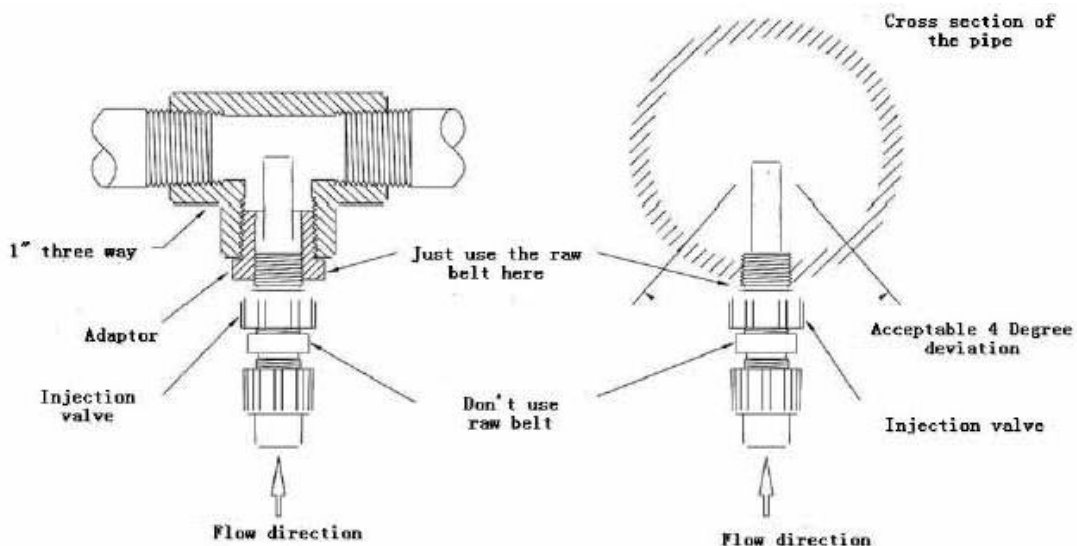
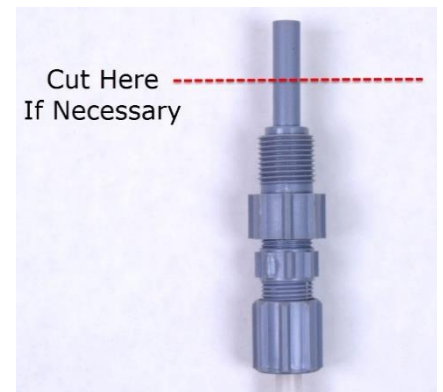
1. Install metering pump so it turns on and when the well pump runs.
2. Fill suction tubing with plain water.
3. Adjust Stroke Knob to 100%.
4. Put 2 gallons of clean water in the solution tank (no chlorine yet)
5. Turn on pump and allow pump to prime and start pumping.
6. Adjust Speed setting to desired speed (typically 20 – 60 %) using the up or down arrow speed setting.
7. **Allow pump to run for at least one minute, which saves the Speed setting to memory.**
8. Adjust the Stroke knob to the desired setting (typically 50% to 90%)
9. **READ ON FOR MORE DETAILED INSTRUCTIONS**

Installing the Pump Tubing



Discharge Side (tubing that feeds from top of pump into pipe where the water is to be chlorinated)

1. Shut off well pump or water supply and de-pressurize pipe.
2. Install injection check valve by installing a pipe tee in your pipe that has a 1/2" NPT fitting, where you can screw in the injection check valve (included with your J-PRO-24 pump). Wrap two wraps of Teflon tape on the 1/2" pipe threads of the injection check valve and apply a light coating of Teflon white pipe paste and install into pipes. It is ok to trim the end of the injection tube if it does not fit (photo on right), the end should be centered in the pipe as shown below.
3. Install tubing that came with your pump and connect pump to injection check valve. Use harder or stiffer tubing for connection from discharge to injection check valve. Use softer tubing supplied, for the suction connection inlet from the solution tank.
4. Cut lead tube to desired length with enough slack to avoid kinks. Hand tighten only. Do not use Teflon tape on the tubing fitting connections.



Suction Side (tubing inside solution tank)

1. Measure the lead tube on outside of solution tank to ensure it will be 2-3" from the bottom of the tank. Do not allow weight to sit at the bottom of the tank.
2. Run the lead tube to the solution tank. Allow for some slack in the tube to avoid kinks.
3. Add the weight, and connect the nut ferrule to the suction side of the pumping head (labeled 'in' on cover of head). Hand tighten only. Do not use Teflon tape.



Degassing Prime Valve (tubing that allows the solution to be pumped back into the tank for fast priming)

1. Connect the 3/4" tubing supplied to the degassing prime valve to the solution by drilling a hole as shown.
2. Insert and trim the tubing so it inserts into the solution tank a few inches, but does not touch the solution.

Prime & Start The Pump:

1. Fill solution tank with 2 gallons of clean water (don't add chlorine bleach yet).
2. Fill suction tubing with water, by submersing the suction end in the water and rapidly jerking the suction tubing up and down. Within a few moments, the suction tubing will be full of water. Keeping the open end at a lower elevation will prime it faster. The suction tubing can also be submerged or filled with water manually. This makes it faster to prime. (Picture on right)
3. Connect the suction tubing and discharge tubing to your injection check valve.
4. Connect the degassing prime valve tubing and route to the solution tank, above the water line.
5. Open up the degassing prime valve two turns counter-clock-wise to open it up. This will allow the solution to be pumped back into the tank for fast priming.
6. Turn on the pump and adjust the Stroke Knob to 100% and Speed control to 100%.
7. You will quickly see water being pumped out the discharge tube.
8. Close the degassing prime valve one turn, to allow some chlorine to drip back into tank and gasses to vent back to tank if needed.
9. Your pump is now ready for use!
10. Add 1 gallon of chlorine to 3 gallons of water, or follow your own solution strength and speed settings by consulting the formula below.



Adjusting the Metering Pump Settings:

Adjust the output by turning the stroke knob and/or adjusting the speed setting of the pump

Stroke Knob: Adjusts the rate from 10%-100% output of pump



Discharge (Outlet of pump)

Speed Adjustment: Press Up or Down Arrows

***The SET Button serves no function on this pump.**

How To Select the Chlorine Solution Strength and Pump Setting

The goal of a properly functioning chlorine injection system is to have a free-chlorine residual of 0.2 to 1.0 ppm after sufficient contact time, before any carbon filter system. Or if no carbon filter or other de-chlorination is used, to have a free-chlorine residual of 0.2 to 1.0 ppm at the end of the distribution system or furthest point in the plumbing.

This can be accomplished by adjusting the chlorine bleach solution strength and setting the J-PRO-24 Stroke Knob and/or adjusting the speed setting until you achieve the desired residual.

In determining your metering pump's settings and solution strength, keep in mind that it's best to make up fresh solution once every 1 to 3 months. The chlorine solution loses strength as it ages, and is sensitive to heat and light. Generally, keep solution tank out of the sun and use fresh solution regularly for best results.

Step One: Determine flow rate of the water stream you are injecting into, in Gallons Per Minute (GPM)

1. Open any hose bib or faucet until pump turns on.
2. Close hose bib or faucet and let pump fill up pressure tank until it turns off.
3. Using a 1 or 5 gal. bucket, open faucet, collect and measure all water discharged until pump turns on.
4. When pump turns on, immediately close faucet and start timing pump cycle.
5. When pump turns off, record pump cycle time to refill pressure tank in seconds.
6. Divide the number of gallons collected in Step 3 by the number of seconds in Step 5.

7. Multiply the answer from Step 6 by 60.

8. The answer in Step 7 is the average pumping capacity of the pump in gallons per minute (GPM).

Step Two: How Much Chlorine Should Be Injected? Determine the parts per million of chlorine you are trying to achieve in parts per million (PPM).

Chlorine is injected in parts per million ('ppm') which is the same as saying milligrams per liter ('mg/L'). The amount of chlorine to add depends on the "chlorine demand" of the water. Chlorine demand is the amount of various contaminants in the water that combine with the chlorine after the chlorine has been injected and sufficient contact time has occurred. After the chlorine has combined with the various substances such as bacteria, iron, manganese and odor, some level of uncombined or "free" chlorine will exist. The goal is to have some small amount of free-chlorine, usually around 0.2 to 0.4 ppm of free-chlorine, up to a maximum of 1.0 ppm of free-chlorine.

For bacteria you want to inject 1 – 2 ppm of chlorine with approximately 10 minutes of contact time. If the water is colder than 50F (10C) and/or the pH is higher than 7.5 you may need longer contact time or a higher residual.

For each part per million of iron or manganese generally you want to inject 1 ppm of chlorine. For each 1.0 ppm of hydrogen sulfide gas (which causes the rotten egg smell in water) you want to inject 2 to 3 ppm of chlorine. So say you have bacteria and 2.0 ppm of iron. For our example here, we will assume you want to inject 3 ppm of chlorine.

Step Three: Determine what solution strength of bleach to use

Household bleach is approximately 5% chlorine; pool chlorine is 10 to 12%. 5% is the same as saying 50,000 parts per million (PPM) and 10% is the same as saying 100,000 PPM.

Regarding the solution strength: If you dilute the bleach by using 3 gallons of pure water to 1 gallon of household bleach, you end up with solution strength of approximately 1.25% or 12,500 ppm. In other words, household bleach has a solution strength of 50,000 ppm, and if you dilute it with 3 gallon of water, you end up with solution strength of 12,500 ppm, which is a good solution strength to use for most home well water applications with water flow rates of 5 to 20 gallons per minute.

Regarding setting the output of the metering pump: You can vary the applied dosage of chlorine by adjusting the chlorine bleach solution strength and setting the J-PRO-24 Pump Feed Rate Stroke Dial until you achieve the desired residual.

Formula for Finding the Solution Strength and Metering Pump Settings:

The formula is simple, you only have to:

Multiply the Well Pump Flow Rate (in gallons per minute) times the Applied Chlorine Dosage in Parts Per Million Desired times 1440. Then divide by the Solution Strength in PPM that is being used.

Example: Assume that you have a well pump that has a flow rate of 12 gallons per minute (12 GPM) and that you want to inject 3.0 ppm of chlorine into the water. You have decided to use a solution strength of 12,500 ppm or 1 gallon of 5% bleach to 3 gallons of purified or at least softened water. There are 1440 minutes in 24 hour period, and the formula will tell you how many gallons of chlorine you will use for every 24 hours the well pump runs.

The formula is: $12 \text{ GPM} \times 3.0 \text{ PPM} \times 1440$ and then divided by $12,500 = 4.14$ Gallons Per Day

This means that you need a metering pump that has an output of 4 gallons per day. The maximum output of your J-PRO-24 metering pump is 24.0 gallons per day, but it can be easily adjusted to put out 4.0 gallons per day. This means if the J-PRO-24 pump were to run for 24 hours, it would pump a total of 4.0 gallons.

For example, by setting the stroke knob to 70% and the speed to 25% we can achieve the output needed of 2.0 gallons per day. $(24 \times 0.7) \times 0.25 = 4.2$ gallons per day.

Your well pump might run for 1 hour a day, so at this rate you would use 4.0 gallons of your chlorine bleach solution every 24 hours the pump runs. It is better to add more solution every one to two months as the solution can lose its potency over time.

Whatever your initial setting be sure to test for total and free-chlorine and then adjust the pump and/or the solution strength to achieve your desired free-chlorine residual in your piping.

Troubleshooting: If the pump does not keep the settings you have programmed, adjust the speed to the desired setting and allow it to run for more than one minute before turning off the pump. **The pump need to run for at least one minute to remember the speed setting.**

Maintenance: Check free-chlorine residual at least once per month and adjust the J-PRO-24 Pump and/or solution strength if needed. See the J-PRO-24 Pump manual for routine maintenance. Change the pump tube every 1 – 3 years.

Winterizing: do not let the J-PRO-24 Pump or tubing freeze. If you need to winterize, drain the chlorine solution tank and discard chlorine solution. Place the suction of the pump into a bucket of clean water and allow the pump to run until the J-PRO-24 Pump is free of any chlorine solution. Remove the suction from the water, and allow the pump to pump dry. Pump is ready to store.

NOTE: when diluting the bleach, use only distilled water, water from a reverse osmosis system, or at least softened water. Do not use untreated well water.

Need Assistance?

Call us at 831-462-8500 or email support@cleanwaterstore.com