

Stenner Pump Soda Ash

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 Stenner 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 Stenner installation manual entirely before beginning to install your system and follow the steps outlined for best results.

WARNING: Risk of electrical shock. Read Stenner 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 Stenner rainroof.



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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 soda ash system on a dry level spot where it will not be exposed to freezing. 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. Note that raising the pH of your water and turning on and off the water to the plumbing system may disturb sediment and rust in the pipes and cause aerators and other valves to plug up with debris, so some flushing may be required after installation.

Best Practices for Installation

1. See typical installation for well water. (see Fig 2).
2. Make sure that the Stenner pump turns on and off with the well pump, or if you are using a flow switch, plug into the flow switch so the Stenner pump is activated based on water flow.
3. Do not cut the cord on the Stenner 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 Soda Ash Injector Works

See Fig 1. The well pump is controlled by the pressure switch. A dedicated outlet for the Stenner 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, the soda ash solution is pumped into the water by the Stenner metering pump. Typically the Stenner pump is wall mounted, facing down. As outlined in the Stenner installation manual, the Optional Spill Recovery is recommended, where you punch out one of the indented holes at the end of pump assembly and insert a length of ¼" tubing (included with pump) so that if the Stenner pump tube fails and leaks, the solution will drain back into the solution tank instead of leaking on to the floor.

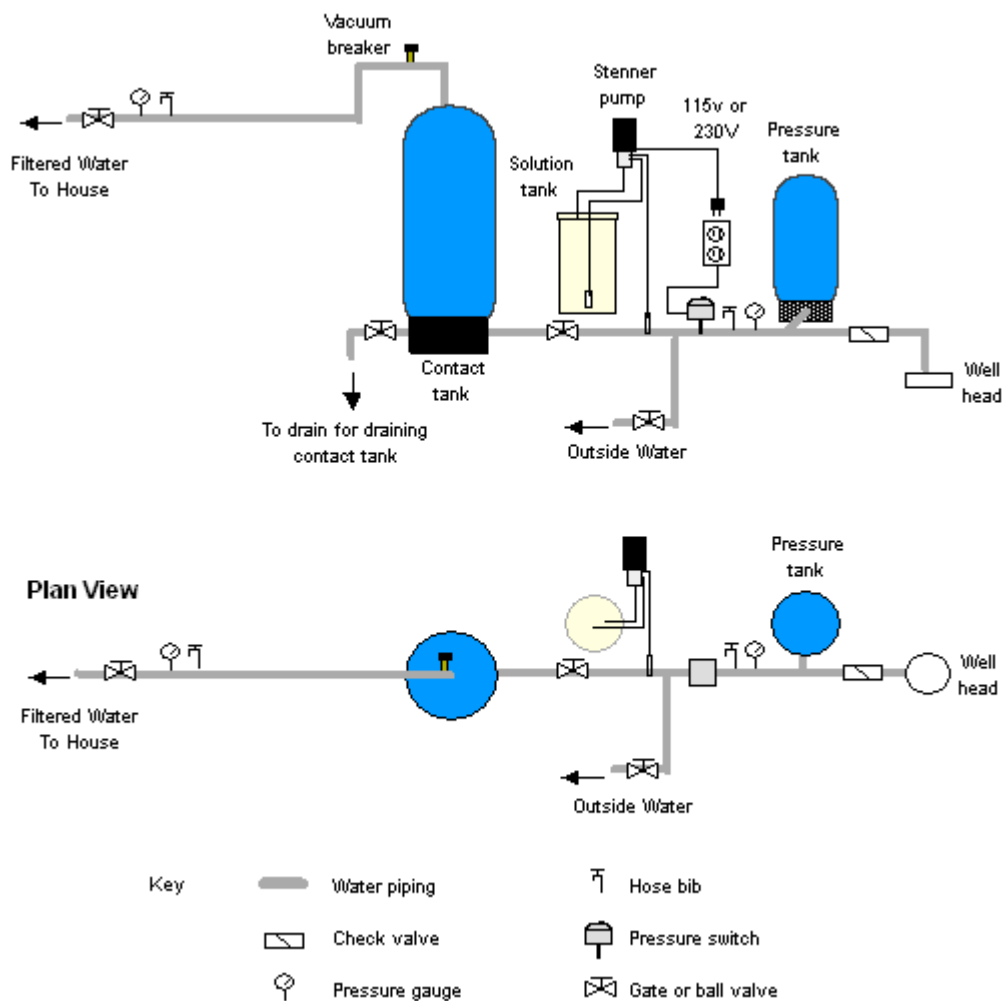
As the water flows into the contact tank, the soda ash is thoroughly mixed in the water, allowing contact time for the pH to raise and the soda ash solution to thoroughly mix in the water. You may have chosen not to use any contact tank, in which case the soda ash solution dissolves and mixes in the plumbing system.

Adjust the Stenner pump and the solution strength so the pH in the home or office is between 7.0 and 8.0, with 7.4 to 7.6 being ideal for most applications.

Regarding optional vacuum breaker: the contact tank can withstand a line pressure of 75 PSI, but cannot take any vacuum. If the contact tank is drained or if the well system loses pressure, and water accidentally drains back down the well, or is drained after contact tank and a hose bib or faucet is not opened to allow air into the tank, a vacuum may occur inside the tank. This will cause contact tank failure, so a small 1/2" or 3/4" vacuum breaker such as a Watts model N36 is recommended to prevent this rare occurrence.

Follow all local plumbing and electrical codes.

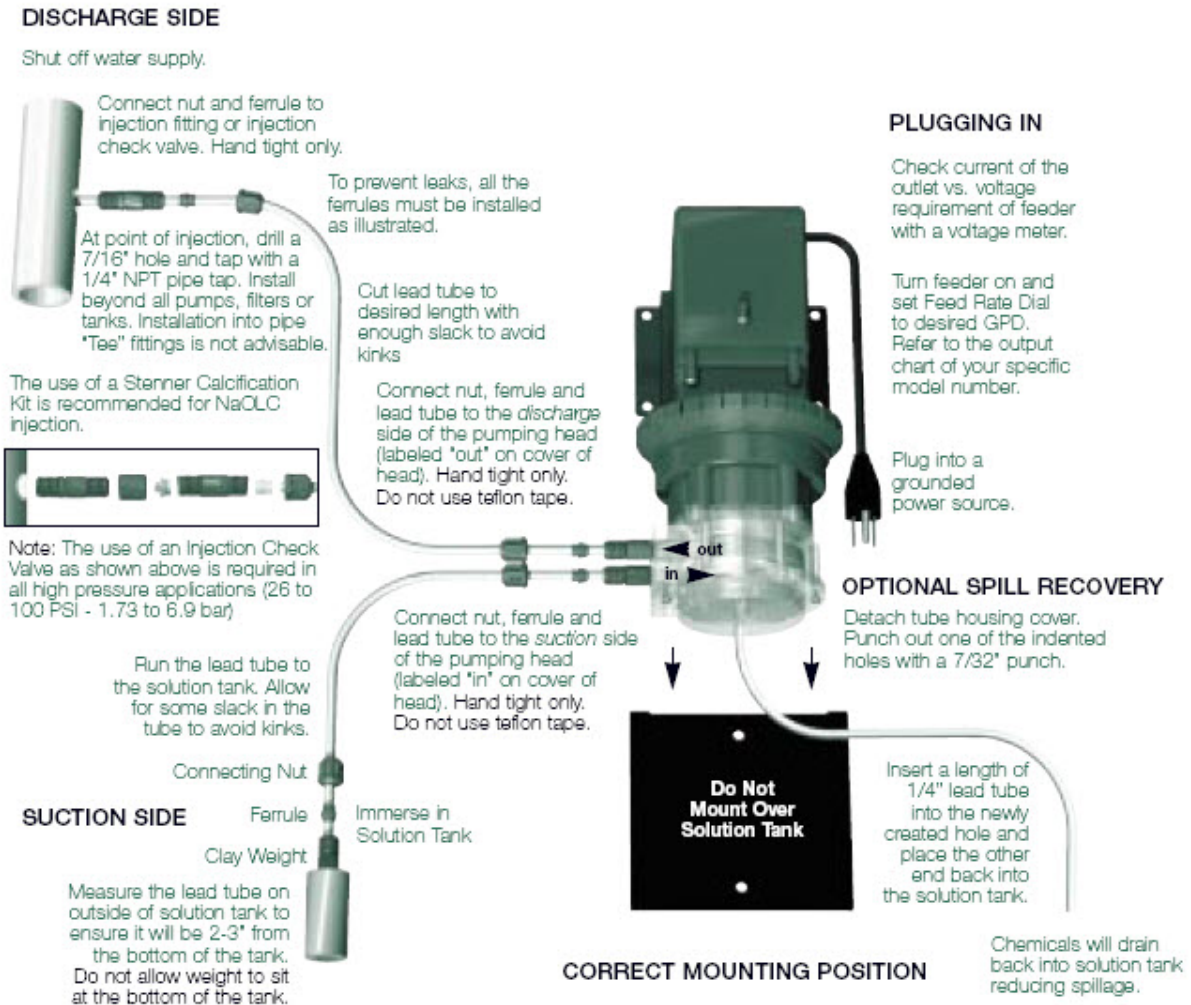
Fig 1: Typical installation with optional contact tank:



Installation Instructions - Follow instructions in the Stenner Classic Series Installation and Maintenance Manual. If you need a copy of the manual you can download it from the Stenner site:

<http://www.stenner.com/support.htm>

THIS IS THE RECOMMENDED INSTALLATION SET UP



Accessory Kit included with each Stenner pump:

3 connecting nuts 1/4" or 3/8"; 3 ferrules; 1 injection check valve 100 PSI; 1 weighted suction line strainer; 1 20" roll of suction/discharge tubing; 1 spare pump tube; 1 mounting bracket; 1 Stenner manual

How To Select the Soda ash Solution Strength and Pump Setting

The goal of a properly functioning soda ash injection system is to have a pH of 7.0 and 8.0 in the piping system.

This can be accomplished by adjusting the soda ash solution strength and setting the Stenner Feed Rate Control Dial until you achieve the desired residual.

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 Soda ash Should Be Injected?

Generally, you want to inject 100 to 200 mg of soda ash for each liter of water (mg/L). Milligrams per liter is the same as saying parts per million (PPM).

Step Three: Mix up the soda ash solution

Soda ash is a powder that is mixed with water to form a saturated solution. You can make the solution stronger or weaker. To start out, mix 4 lbs of soda ash powder to five gallons of warm purified water, which is approximately a 10% solution by weight. It is best to use purified distilled or reverse osmosis water to make up your solution, although if your untreated well water is very low in total dissolved solids and other minerals, you can generally use the untreated water to make up the solution.

Start out with a couple of gallons only in your solution tank and test the pH to see how it is working.

Step Four: Set the Stenner pump output

Set the Stenner pump "Feed Rate Dial" to 5 (which means that it is set to pump 50% of its output).

If you find the pH is fine (you want a pH of between 7 and 8 usually) then you don't have to change the solution. Otherwise if the pH is still too low, then you can first try turning up the Stenner pump adjustment ring to 10, which means 100%.

Formulation for Understand Stenner Pump Sizing

For most residential soda ash applications, using the Stenner 85MPH40 will inject a proper amount of soda ash solution to raise the pH to the 7.0 to 8.0 pH range. The Stenner 85MPH40 pump has a maximum output of 40 gallons of solution pumped in a 24 hour period.

For the soda ash feeder, generally one has to inject about 100 to 200 ppm of a saturated soda ash solution into the water, to raise the pH to the 7.0 to 7.4 range.

So for instance, say it was set up to inject it into your pipe before the pressure tank, and your well water flowed at 15 gallons per minute. You will use 4 lbs of soda ash powder dissolved into 5 gallons of water. Water weighs 8.34 lbs, so 5 gallons of water weighs 41.7 or about 42 lbs. So that makes your solution a 10% solution, which is the same as saying 100,000 parts per million.

Say you had 10 gallons per minute and wanted to inject 150 ppm of soda ash.

$150 \text{ ppm} \times 10 \text{ gpm} \times 1440 \text{ (minutes in a day)} \text{ divided by the solution strength of } 100,000 = 22 \text{ gallons per day.}$

So therefore, if your well flow rate was 10 gallons per minute, you would need a metering pump that pumped 22 gallons in 24 hours or "22 gallons per day". The Stenner 85MPH40 will work fine, because you can set the Feed Rate Dial to 55%. 22 divided by 40 is 55%.

Note your water may not need 150 ppm of the 10% soda ash solution, it might only need 50 ppm to bring up the pH to the 7.0 – 8.0 range, but you will be able to know immediately after turning on the system by checking the pH.

Maintenance: Add more soda ash solution as needed. See the Stenner manual for routine maintenance. Change the pump tube every 1 – 3 years.

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