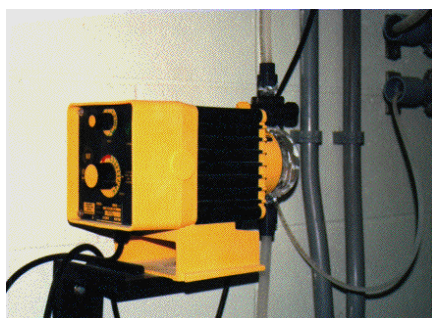


Starting up a chemical feed pump disinfection system.



A chemical feed pump

Use this guide to help start up your chemical feed pump system. If you have any questions, contact Field Services at 287-2070.

1. Purchase a flooded suction chemical feed pump. Flooded suction pumps are less likely to become airbound. Keep the pump supplier's number handy for spare parts and manuals.
2. Keep the chemical injection lines as short as possible to minimize air binding and leaks.
3. Make sure the chemical feed pump activates when the well pump turns on. The well pump and the chemical feed pump should be on the same circuit. *If multiple wells are in use*, the chemical feed pump must be paced to flow using a water meter. An electrical signal is sent out by the water meter to the chemical feed pump. As the meter turns faster, the speed of the pump increases.
4. Check the chemical feed pump to make sure the stroke and feed settings are set as close to 50% as possible for each. Chemical feed pumps work best when the stroke and feed are within the range of 25% to 75%.
5. Remove dust and other debris from the chemical storage tank. Keep the chemical storage tank covered in a cool, dry area. Make sure that dust, debris and insects can not enter the top of the chemical storage tank.
6. If you use a hose to fill the chemical storage tank with water, *do not leave the hose in the tank* after you're done filling it. This is a hazardous cross connection that can carry serious health risks.
7. Use an initial solution ratio of about 1 part household bleach to 15 parts water. Write down the date and the amount of bleach and water added to the tank. This can tell you whether you should increase or decrease the solution strength later to get the correct chlorine residual.
8. The target chlorine residual is 0.5 mg/l in the system. Purchase a DPD method, free chlorine, low range (0 mg/l to 3.5 mg/l) chlorine test kit. Follow the instructions in your chlorine test kit to measure chlorine residual. Pick the faucet nearest the chemical feed system to sample. **Report the chlorine residual levels to the Drinking Water Program on the enclosed forms each month!**
9. You may find that the chlorine residual is too high or too low. You can either increase or decrease the solution strength to compensate for the chlorine residual levels, or you can make small adjustments (in 5% increments) in the stroke and feed rate.

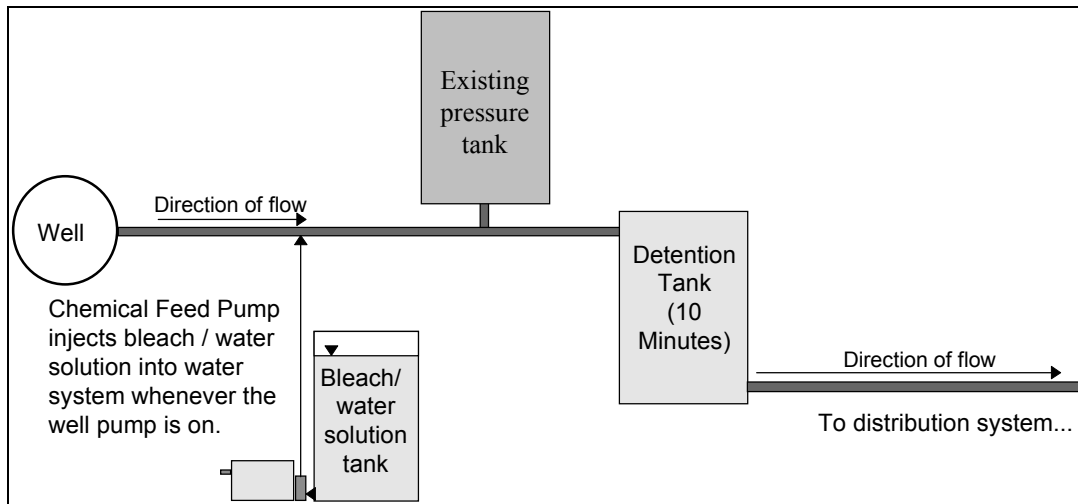


Figure 1: Chemical Feed Pump Disinfection System

Figure 1 shows a typical installation of a chemical feed pump disinfection system. The parts added to the existing well and pressure tank system are the:

- chemical feed pump
- bleach / water storage tank
- detention tank.

The chemical feed pump draws a bleach and water solution from the bleach / water storage tank and pumps it into the water line from the well. The chemical feed pump is wired so that each time the well pump comes on, the chemical feed pump turns on. This ensures that the only time chemicals are injected into the water supply is when the well pump is on. A water treatment installer can recommend the size of the chemical feed pump based on flowrate from the well and operating pressure. Be sure to request a flooded suction pump with an off gassing head. These items will make the pump easier to maintain and operate.

The strength of the solution in the bleach / water storage tank varies, but an initial concentration of 1 gallon of household bleach (5.25% sodium hypochlorite) to 15 gallons of water is a good place to start.

The detention tank is where the bacteria are destroyed. The chlorine solution works best if it has time to kill bacteria. The Drinking Water Program requires systems to have at least 10 minutes of contact time before chlorinated water reaches the first customer.

The size of the detention tank is calculated by the formula below.

$$\text{size of tank (gallons)} = (10 \text{ minutes}) \times (\text{pump rate in gallons per minute})$$

For example, say your well pump worked at 5 gallons per minute (gpm). 5 gpm times 10 minutes equals 50 gallons. 50 gallons is the size of the detention tank needed to get 10 minutes of detention time.

Finally, ensure that you have your pump supplier's number handy for emergency repairs. Familiarize yourself with the parts of the pump and keep the owner's manual nearby.