



# SCHAEFER NEWS

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## WELLS

### TESTING & IMPROVING PRESSURE

#### TESTING:

Every home buyer wants to know if their well equipment is in good shape, and more importantly, whether or not their well is going to run dry after they move into the home. Problems often occur when a buyer enters into the inspection process with false expectations of what type of evaluation the home inspector can provide for them. Unfortunately, sometimes this is as a result of misinformation from the home inspector himself. Generally, most home inspectors are not trying to mislead their customers; however, the meanings of terms like “gallons per minute, well flow” and “well recovery rate” often misunderstood by some home inspectors as well as the general public.

You may find a home inspector running the water from any given faucet or water outlet in the home through some type of gage or into a bucket, measuring how many gallons are supplied by that particular fixture. They may then report to you that your well produces so many gallons per minute. This, however, is an inaccurate statement. (Continued on page 2)

#### Well

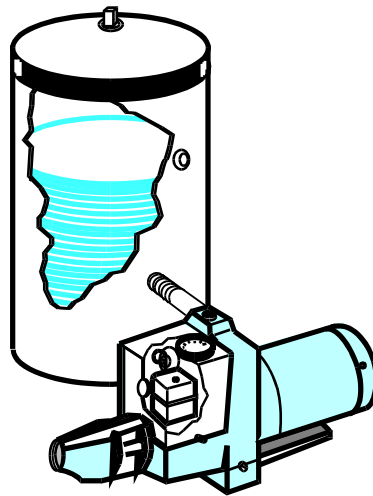
It tells you only how many gallons per minute that particular fixture will allow to flow through it with the present pressure settings. A tub faucet will obviously produce more water than a smaller bathroom sink faucet. The fact is, a well recovery rate measured in gallons per minute has nothing to do with what is coming out of a plumbing fixture in the home.

A well recovery test is conducted in the following manner:

1. Static level (water in casing or well pipe) is taken and recorded.

Water is then pumped out of the well for an amount of time that varies from well to well. The objective is to use an amount of water equal to that recovered by the well. In simpler terms, you are trying to maintain a constant static level while the water is running. The amount of water is then measured to find out how much has been pumped in one minute. If the static level has stayed constant, that same amount of water has to have been replaced, or recovered in the well.

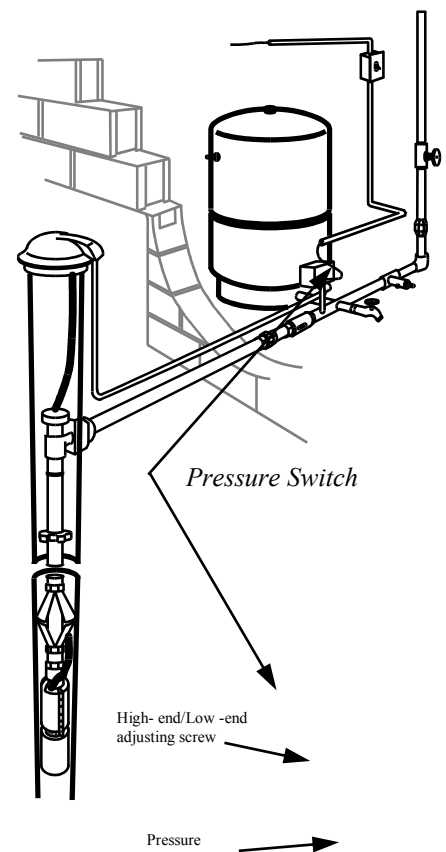
2. Another method of testing the recovery rate involves measuring the static level and then pumping the well down as low as possible without running the risk of damaging the equipment or the quality of the water. A low-level reading is then taken. A depth probe is then lowered to a certain depth. The length of time is then recorded for the water to recover from the low-level reading to the depth of the probe. The result is gallons per minute.



Above - Jet pump and storage tank.

Right - Submersible pump and storage tank

*Hydrofracking can often restore a failing well. Call us for further information or look for it in our spring newsletter.*



## **EXAMPLE:**

Let's say that the static level is 30 ft. down in the well casing, and we run the water down to a low-level mark of 160 ft. We then drop a probe to 50 ft., which will sound an alarm when the water has recovered to that depth. A standard well casing with a 6-inch diameter can hold about 1 1/2 gallons of water per foot. The 110 ft. of well casing from the low level mark to the probe holds about 165 gallons of water ( $110 \times 1\frac{1}{2} = 165$ ). The time is then measured to determine how long it takes the water to recover the 110 ft. from the low-level of 160 ft. to the depth of the probe at 50 ft. For this example, let's say it took 43 minutes to recover the 165 gallons of water.

**165 gallons in 43 minutes=3.83 GPM**

Although an actual well recovery test is the best way to evaluate a well, home inspectors can also be of great value. Not every one wants to spend the extra money it costs for a well recovery test. For many homes, information of well recovery, well depth, water quality, etc. can be obtained from a variety of sources which can be recommended or provided by a quality home inspection service. A home inspector's evaluation may lead to recommendation for further testing. A general home inspection should include running the water for about twenty minutes (running the water for an extended period of time without knowing the static level and depth of the well can damage well equipment). A noticeable drop in pressure during this twenty minutes or silt in the water may indicate the need for further evaluation. Internal well equipment can be visually inspected and monitored during the inspection. If the well pump begins to pump as soon as the water is turned on, this may indicate a need for additional pressure in the storage tank or a problem with the tank diaphragm. Again, further evaluation or repair would then be recommended by the home inspector.

## **WATER PRESSURE**

Another factor that is of great concern to home buyers is water pressure.

Low water pressure is not necessarily an indication of a problem with the well. Several factors can contribute to low water pressure. It takes about 1psi (pounds per square inch) of pressure to push water up 2.3 ft. This can lead to the loss of 5 psi to 10 psi from one floor to the next.

The main cause of low water pressure is restrictions in the water system. The first place to start would be to make sure aerators (screens on the ends of the faucets) are free of silt and debris. Next, you may want to remove water restrictors in the faucets and shower heads. These small dime-sized disk with a small hole in the middle can greatly reduce water pressure and are more beneficial for homes with a city water supply. They are normally located in the faucet aerators and in the nut that connects the shower head to the shower stem.

Another restriction may be water conditioning equipment and filters. All cartridge filters should be changed regularly.

Water conditioning equipment can reduce pressure by as much as 10 psi before it even leaves your basement. A house with an average setting of 50 psi may be reduced to 20 psi by the time it reaches second floor plumbing fixtures.

After removing as many restrictions as possible there is one more thing that may be possible to try. If your well pump can handle it, you may be able to increase the pressure by adjusting the pressure switch controls (see diagram on page 2). Although some handy homeowners may be able to do this on their own, it is recommended that you contact a well contractor or plumber to accomplish this procedure as follows:

1. Remove cover on the pressure switch (be careful not to touch the electrical contacts).
2. You will see two bolts with springs below the nuts. The bottom of the springs rest on the pressure plate. Turn the nut on the taller bolt four to six turns. This will adjust the low-end and high-end pressures at the same time. Be careful not to touch the nut on the shorter bolt.
3. Next, push the pressure plate down to activate the pump
4. As the pressure rises tap the pressure gauge to ensure a correct reading. When the pump shuts off make sure it is at the new pressure desired, then shut off the circuit breaker to the pump and drain the storage tank to 0 psi.
5. With a compressor or tire pump add air to the tank to 2 psi under the cut in pressure. If the new cut in pressure is 40 psi, fill the tank to 38 psi.
6. Replace the switch cover.
7. Turn the circuit breaker back on, you should have increased pressure.

The increased pressure in the tank may shorten the life span of the bladder or diaphragm in the tank and cause your pump to work somewhat harder. Consulting a professional to determine whether or not it is advisable to conduct this procedure with your existing pump and storage tank is recommended.