How to Check Your Well Tank's Pressure

If you've noticed that your submersible well pump is kicking on and off with increased frequency, or that you're struggling to get water out of your tank, it's likely you are experiencing problems with your well tank's pressure charge. Low well tank pressure can damage your well pump, reduce water pressure throughout your household, and over time can cause your tank to prematurely fail. If you believe your well pressure tank is experiencing a loss of pressure, it's important to drain the tank and check the system's integrity immediately.

How do well pressure tanks work?

Well pressure tanks use compressed air to create water pressure. Since wells do not have positive pressure on their own, well tanks a water storage system that also creates pressurized water using air chambers or rubber diaphragms.

Steel well tanks have an air chamber that is separated from the water by a rubber diaphragm. As water flows into the tank, the compressed air bears down on the diaphragm, increasing the pressure within the tank. Composite well tanks have a balloon-shaped air bladder inside the tank

which functions in a similar manner. Every well tank is equipped with a pressure switch that actuates the cycling of the pump. When the pressure in the tank reaches the pre-determined cut-off pressure setting, the switch will alert the pump to cease delivering water to the pressure tank.

When you open a kitchen faucet to fill yourself a glass of water or step into a relaxing shower, pressurized water is delivered to the tap or showerhead on demand. The air within the tank propels the water through your home, so you don't have to deal with poor water flow and low pressure. However, as more and more water exits the tank, the pressure within the tank will start to decrease. When the internal pressure reaches the pre-determined low point (also known as the cut-on point), the pressure gauge senses the drop, alerting the pressure switch that the tank is in need of more water. The switch then kicks the pump back on and recommences water delivery to the tank. This will continue until the tank once again reaches the cut-off point.

Pressure tanks are an integral part of any well system. They ensure that your home always has adequate access to water. However, more importantly, they protect your well pump from short-cycling. Without the presence of a well tank, the pump would turn on and off every time water was demanded. Submersible well pumps are water-cooled. However, if they're turning on and off frequently, they are

generating a lot of electrical current. This will cause heat to build-up within the motor. This additional generation of heat is detrimental to the electric motor. This will ultimately shorten the life cycle of the motor, incurring a premature replacement. Well pumps are costly and complicated to replace, so preventative maintenance on the well pressure tank itself is crucial to preserving your well pump. So, tanks are not only important for maintaining household pressure, they are the buffer between your pump and rapid cycling.

Explore how water storage tanks work.

What pressure should my well tank be set at?

Your well tank's pressure should be set **at 2 psi below the pressure switch's cut-on point.** This differs depending on your tank's pressure settings. Most well tanks come set at 30/50. The cut-on pressure for the well pump is 30 psi, so the pressure of the tank should have a pressure of 28 psi. If

your well tank is on a 40/60 pressure switch, your pressure setting should be 38 psi. This pressure represents the tank empty of any water, as when there is water within the tank, the pressure will increase.

It is also important to note that there should be a 20 psi separation between the cut-on and cut-off pressure on all pressure switches (for example, 30/50 and 40/60). If there is too large a gap between the cut-on and cut-off pressure, your well pump will cycle constantly. Even light water usage will cause the pressure to drop and the pump to turn on. A pump that is short-cycling rapidly and frequently is destined for premature failure. This perpetual fluctuation between "on" and "off" will put an enormous amount of strain of the components of your pump, ultimately causing it to break. If the cut-on pressure is too close to the cut-off pressure, the tank will not be able to store enough water to fulfill your household's demands. The pump will cut-off before the tank is filled, and you may experience a total loss of water while you're standing in the shower.

How do I check my well tank's pressure setting?

Most pressure switches will clearly state the pressure setting of the tank on the switch itself. However, if you are unsure of your pressure switch settings, there is an easy way to

deduce it. Wait until the tank is full, then turn a faucet on in your house. As water flows out of the tank and into your home, the pressure in the tank will gradually decrease. Watch the pressure switch until your submersible well pump kicks on. If the pump kicks on at 30 psi, your tank is likely set at 30/50. If your pump turns on at 40, your pressure switch is probably set to 40/60. To make sure, turn off the faucet and wait until the well pump turns off. Check the pressure switch to see at what pressure this occurs. This is the second number, or cut-off pressure, of your tank.

How do you check your well tank's pressure?

1. Cut the power to your well tank. Make sure that you shut off your well's submersible pump to prevent it from starting. Ensure any other electrical connections to the well tank or pump are also turned off. If you have any water filtration equipment between the pump and the pressure tank, use the bypass valve to divert water away from the tank.
2. **Drain the well tank.** It's very important to empty the well tank before checking the tank's pressure. If you try to read the pressure of a tank full of water, you will only read the pressure of *the water* inside the tank, not the pressure. This is inaccurate. To

drain the tank, locate the boiler drain on the tank's manifold (also called the tank package). Connect a garden hose to the boiler drain, turn the drain on, and drain the tank outside your home or garage. If your well pressure tank does not have a manifold, open a faucet in your home and continue to run the water until the tank is emptied and the pressure switch reads 0.

3. **Locate a pressure gauge.** To test the tank's internal pressure, you will need a pressure gauge. Pressure gauges (also known as tire gauges) read the pressure of the tank by using a piston to propel a calibrated spring when exposed to pressurized air.
4. **Use the gauge to check the tank's pressure.** All well pressure tanks have a schrader valve. Schrader valves, which can also be found on automobile and bicycle tires, are used to both check pressure and add air pressure. On standard metal well tanks, the schrader valve will be located at the top of the tank. On composite tanks, the valve can be found toward the base of the tank. Unscrew the cap covering the valve, and press the tire gauge down on the valve. The air will trigger the piston inside the gauge and measure the air pressure within the tank.
5. **Adjust the pressure with an air compressor if**

necessary. The ideal pressure for your well tank depends on the pressure switch setting. As stated before, the pressure of your tank should be 2 psi below the pressure switch's low cut-in point. On a 30/50 switch, this would be 28. If your pressure is below this, carefully use an air compressor to amplify the pressure until it has reached the appropriate pressure setting. Be careful not to add too much pressure: an overpressurized tank will hold less water and can empty out entirely without signaling the well pump to kick on.

How do I change the pressure settings of my well tank?

Pressure switch settings are adjustable, and if you are unsatisfied with the pressure settings provided to you by the manufacturer, you can adjust them to better suit your household needs.

1. Drain the tank of water. Before making any changes to the pressure settings, you'll want to ensure the well tank itself has no water within it. This will make recalibrating the pressure of the well tank much easier.
2. **Find your pressure switch.** The pressure switch is a rectangular black box, usually attached to the

tank manifold found at the base of your tank. It is usually found adjacent to the circular pressure gauge, the device that indicates the pressure of the water in the waterline.

3. **Remove the pressure switch's cover.** The pressure switch's cover is usually black or dark gray and is attached to the body of the switch by a nut. Using an adjustable wrench, loosen the nut and remove the cover from the switch. Many pressure switch manufacturers will include an internal diagram that shows demonstrates standard pressure switch settings, like 30/50, 40/60, or 20/40.
4. **Examine the pressure switch.** Pressure switches will have nuts internally that can be rotated to modify the cut-on and cut-off pressure. Most commonly, pressure switches will use a single nut to raise both the cut-on and cut-off pressure simultaneously. This maintains the necessary 20 psi differential between the two pressure settings. The set relationship between the cut-on and cut-off pressure is crucial for the performance of your pump and well.
5. **Adjust the pressure settings with a wrench.** Using a wrench, turn the nut clockwise to raise the pressure and counter-clockwise to reduce the pressure. *For every complete turn of the nut, the*

pressure increases 2 1/2 psi. So, to raise the psi by 10, you will need to turn the nut three and a half times. If your pressure switch uses separate nuts to adjust the cut-on and cut-off pressures, consult the switch's manual before attempting to adjust the pressures. Usually, the 1/2 nut controls the cut-on pressure and the 7/16 nut controls the cut-off pressure. You want to make sure that you adjust the two pressures to maintain the 20 psi differential.

6. **Reset the well tank's pressure.** Now that you have changed the pressure switch settings, you will need to change the pressure of the tank itself to support the pressure settings. Since the pressure of the tank needs to be 2 psi below the cut-on pressure, use an air compressor to raise the pressure. Periodically check the pressure with a tire pressure gauge, and add or release pressure until you've reached the desired threshold.

Note: **Never set the cut-off pressure setting above 60 psi.** Some commercial tanks are capable of withstanding higher pressures, but for the safety of your home, you should never let the cut-off setting exceed 60 psi. Pressures higher than 60 psi can damage your pipes, fittings, and switches. This damage can lead to plumbing failure and costly leaks. If the pressure is set at 80 psi, it's very possible

the pump will be unable to reach the cut-off pressure. By the same token, **never set the cut-off setting below 20 psi.**

[WellMate Tank Fittings Package TFP2-RV]

$106.64

30/50 psi Pressure Switch

More expected soon

Please note: This item is not available for same day shipping. Use the chat feature or give us a call at 864-284-1801 for further information.

Why does my pressure tank have water coming out of the air valve?

If you go to check the pressure of your well tank and notice water coming out of the air valve, this means that the bladder has ruptured. Unfortunately, this means you will have to replace your well pressure tank. If water is leaking out of the schrader valve, this means that the barrier between air and water has become compromised. Additionally, if you are unable to add any air into the schrader valve with an air compressor, this is usually an indication that the bladder has failed.

Sometimes, tanks will continue to work briefly even after the bladder or diaphragm has failed. You may even be able to add air to it and draw water out from it. However, eventually, the destroyed bladder will cover the water inlet in the tank and you will no longer be able to draw water out of it. You will also notice rapid on and off cycling of your well's pump and increasingly short drawdown cycles. There is no way to repair a tank with a failed bladder. For the sake of protecting your pump and restoring water to your home, a tank with a ruptured bladder should be replaced as soon as possible.

Why does a tank's bladder fail?

The well tank's bladder expands and contracts over time. As the pump cycles on and off, the bladder will flex back and forth. This action strains the rubber bladder, and over time, the stress put on the material will cause pinhole leaks in the bladder. These leaks will cause air to escape and the pre-charge to slowly drop. As the tank loses pressure, the pump will be forced to cycle on and off with greater frequency. This increases the expansion and contraction of the bladder, causing greater stress to the rubber. Eventually, the pinhole leaks can break altogether, and the tank's bladder fails.

The best way to mitigate the amount of damage done to your tank's bladder is ensuring that the pump is not cycling frequently. Having an appropriately sized pressure tank is key to this. If your tank is too small, it will not take much water usage to alter the tank's pressure and trigger the pump's cycling. Similarly, if the pump's pressure settings are askew, the pump may turn on far more frequently than necessary. Rapid pump cycling damages not only the well pump itself but also damages the well pressure tank.

How do I replace a tank with a failed bladder?

Before you can install a new well pressure tank, you will need to drain and dispose of your broken tank first. If the tank is full of water, first try connecting the boiler drain to a hose

and draining the tank away from the home. If this does not work, it's very likely the burst bladder is obscuring the water inlet. If this is the scenario you are presented with, you will have to drill a hole in the side of the tank to release the stored water. This can be a messy undertaking, however, a tank full of water can weigh well over 500 lbs. If you are unable to haul the tank out of your well house or garage, you will have to resort to puncturing the tank to drain it.

Replacing the tank is then a matter of finding another tank with pressure settings and drawdown capacity suited for your household's water demand. If your tank was destroyed because of short-cycling, ensure your new tank has a drawdown that matches the output of your pump. **The tank's drawdown is the amount of available water between the well pump turning on and off.** To find the drawdown, calculate the minimum runtime of the pump (according to the manufacturer) and the flow rate of your pump in gallons per minute. For example, if your pump's minimum runtime is one minute, and your pump can produce 10 gallons-per-minute, your drawdown is 10 gallons (1 minute runtime x 10 GPM = 15 gallon drawdown). This is the amount of water protecting your pump from turning off and on.

If your well produces more than 1 gallon per minute, you should have a runtime of around a minute and a half. If your

tank's bladder has failed, reassess the drawdown capacity of your tank and make sure you have a tank that can support your pressure settings and well pump. **Keep in mind, the drawdown will change based on the pressure of the tank.** A certain tank may give you 11 or 12 gallons of water at a 30/50 pressure setting, but only 9 if the pressure setting is changed to 40/60. You may be fine with a 30-gallon tank, however, in some cases you may need to upgrade to a 60 or 80-gallon pressure tank.

Owning a correctly sized well tank is as important as maintaining adequate tank pressure. We've created a guide to help you size your well pressure tank.