



Pressure Tank (Bladder Style) – Air Pre-charge

The pressure tank is an energy storage device. The tank stores energy in the form of compressed air that pushes water into the system to supply small flows and thereby prevents the pump from having to start to feed these small needs. Low flow rates can result from any minimal water usage such as small system leaks, faucets or hose bibs operating, small drip zones operating, etc.

Checking and Correcting the Pre-Charge Pressure

1. First, determine the pump starting pressure. Watch the pressure gauge while dropping system pressure VERY SLOWLY by opening a hose bib or faucet. Record the pressure at which the pump starts. This is the start pressure. Remember to drop the pressure VERY SLOWLY to determine the start pressure because if system pressure is dropped rapidly when taking this reading you will obtain a false reading (you will record a start pressure that is too low).
2. Next, turn off the pump and remove all water pressure from the pressure tank feed line by opening a hose bib or faucet. Once all water pressure is removed close the hose bib or faucet.
3. Once the tank is completely drained of water pressure then the only pressure left inside the tank will be the AIR PRE-CHARGE.
4. Using an accurate tire pressure gauge, check the air pre-charge pressure at the schrader valve usually located at the top of the tank. Add or remove air as needed through the Schrader valve. Typically you will always be adding air in maintenance operations.
5. Correct pre-charge pressure is about 2 - 5 psi below the start pressure of a system. For example; if a pump is starting at 40 psi, then the air pre-charge pressure should be set to 35-38 psi. (35 psi in winter, 38 in summer due to expansion)

Principles of Operation

Imagine the system fully pressurized and the pump is off. The pressure tank is pushing small amounts of water into the system to feed small leaks or water flows by means of the air expanding in the pressure tank. This air expansion either crushes the bag or pushes against the bladder/diaphragm forcing the water contained in the tank into the system.

If the pressure tank will not hold air reliably, or if water is expelled from the schrader valve when the pressure tank is under system pressure, then the bladder/diaphragm has failed and must be replaced. When there is either no air pre-charge at all, or if the tank bladder has failed, the pressure tank is said to be WATER LOGGED.

Symptoms of low pre-charge air pressure or failed bladder/diaphragm (Water Logged Tank)

1. Pump starts more frequently.
2. Pump does not run as long once started.