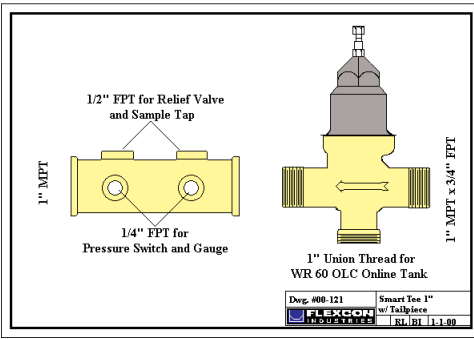




# Installation Instructions

## Models ST 25, ST 60, ST 140

**When the system demands constant pressure,  
give it what it needs: SMART TANK by Flexcon Industries**



### What it does

Flexcon Industries has combined the proven technology of a pressure regulating valve with the innovative design of our **Online** tank to produce the industries only Smart Tank. The Smart Tank pressure system provides constant pressure over a broad range of flows, and the storage that every water system needs. The unique Smart Tee valve is connected to the **Online** tank with a union. Every Smart Tank system includes a relief valve and a manifold that provides ports for the system's pressure switch, pressure gauge, drain valve and relief valve. This puts the controls right where they belong - at the tank. The Smart Tee valve and **Online** tank have been engineered to work together for optimum system performance.

### How it does it

The Smart Tank pressure system works just like a standard pressure tank system but with one major difference - consistent water pressure delivery!

1. On demand, water is drawn from the **Online** pressure tank until the cut-in pressure of the switch turns the pump on.
2. System water now flows through the regulating body of the Smart Tee valve. The valve will maintain constant water pressure at each given flow rate, and consistent water pressure over a broad range of flows.
3. When system demand ends, the Smart Tee's calibrated bypass port keeps the pump running just long enough to fill the tank and satisfy the cut-out setting of the pressure switch. The pump shuts off, and the system is now ready for the next demand.

**The SMART TANK PRESSURE SYTEM will reduce pump cycles by as much as 75%, and give the homeowner the benefit of constant water pressure. Fewer pump starts and longer run times means longer pump and tank life.**

### For flow rates up to 15 GPM (Factory set to 5 GPM @ 50 PSI)

- ST 25 & ST 60 INCLUDE:**
- 1" SMART TEE
  - Accessory Manifold and 75 psi relief valve
  - JR 25 S Horizontal 8.5 gallon tank with legs (ST 25) or
  - WR 60 *Online* 20 gallon tank (ST 60)

### For flow rates up to 30 GPM (Factory set to 10 GPM @ 50 PSI)

- ST 140 INCLUDE:**
- 1 1/4" SMART TEE
  - Accessory Manifold and 75 psi relief valve
  - WR 140 *Online* 44 gallon tank (ST 140)



## SMART TANK

## System Requirements

The Smart Tank Pressure System is designed for installation with submersible pumps. To function properly, the pump must have a shut off pressure at least 15 PSI above the cut out setting of the pressure switch. The maximum working pressure of the valve is 400 PSI. All water service connections such as hose bibs, yard hydrants, etc should be made on the outlet side of the Smart Tee valve. **CAUTION: All well system components (pipe, fittings, valves) on the inlet side of the valve can be subject to the full shutoff pressure of the pump and should be selected accordingly.**

The Smart Tank is supplied with a 75 PSI relief valve that must be installed on the accessory tailpiece. Follow the pump and motor manufacturers instructions for correct placement of the pump in the well casing to insure that minimum flow requirements are met for proper cooling of the motor. The well should be cleaned thoroughly before installing the Smart Tank Pressure System, and the system should be inspected yearly for accumulation of debris and sediment.

## SMART TANK

## Sizing

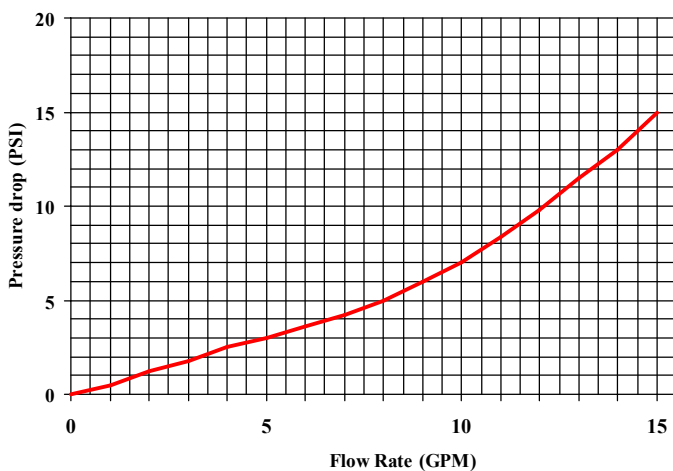
When selecting a Smart Tank pressure system, you must first determine the maximum flow rate requirement. To insure that the Smart Tank system functions properly, pump sizing must also take into account the pressure drop across the Smart Tee valve. The worksheet below will assist in proper pump selection.

1. Maximum Flow Rate  GPM
2. Desired Maximum System Pressure (cut-out setting)  PSI
3. Total Lift (sum of a, b ,c)
  - a. Pipe Friction Losses  Feet of Head
  - b. Static Water Level above the pump  Feet of Head
  - c. Well Drawdown Level  Feet of Head

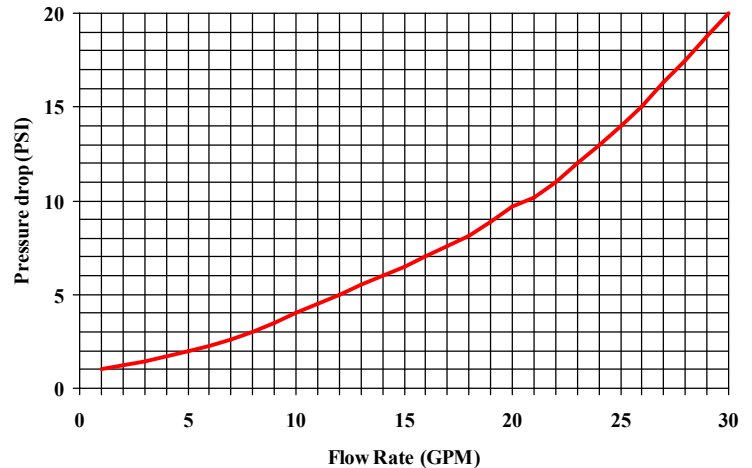
**Total Lift      1 PSI = 2.31 Feet of Head**  Feet of Head / 2.31 =  PSI
4. Performance Factor (add 15 PSI to cut-out setting)  PSI
5. Pressure drop through the Smart Tee valve (at the maximum expected flow rate)  PSI
6. Total pump pressure required (sum of 3, 4, 5)  PSI

Pump Selection Criteria      \_\_\_\_\_ GPM @ \_\_\_\_\_ PSI

### SMART TEE 1" SMT 100



### SMART TEE 1 1/4" SMT 125



## SMART TANK

## Settings

The Smart Tee valve and Flexcon pressure tank that make up the Smart Tank Pressure System have been engineered to work together for optimum system performance. It is not recommended that the Smart Tee valve be installed with any other pressure tank than the one provided. This valve is preset at the factory to maintain a system pressure of 50 PSI at either 5 GPM (ST 25 & ST 60) or 10 GPM (ST 140). This setting will require a 40/60 pressure switch and a tank precharge of 38 PSI. To change the pressure setting of the valve, see instructions on following pages. If the valve settings are changed, you may need to change the precharge of the tank. The tank should be precharged to 2 PSI below the cut-in setting of the pressure switch. To change the tank precharge, see tank installation instructions.

## SMART TANK

## Installation

The Smart Tank Pressure System should be installed in a location not subject to freezing and accessible for servicing. This tank and your connections may in time leak. Install the system where a water leak will not cause property damage. Flexcon Industries is not responsible for any damage in connection with the installation of this product.

It should be as close to the first point of water usage as possible to minimize the effects of pipe friction loss and or elevation on the line pressure. The diagram below shows the preferred piping arrangement of the Smart Tank Pressure System. It includes a pressure gauge on the inlet side of the valve to help with proper setting of the valve. The accessory manifold contains ports for the installation of a pressure switch, gauge, relief valve and drain valve.

**NOTE: Relief valve must be installed to protect downstream system components.**

**1. Connect the inlet side of the valve to the piping that comes from the pump.** The Smart Tee valve has an arrow cast into the body. Make sure that the arrow points to the downstream side of the system (direction of flow).

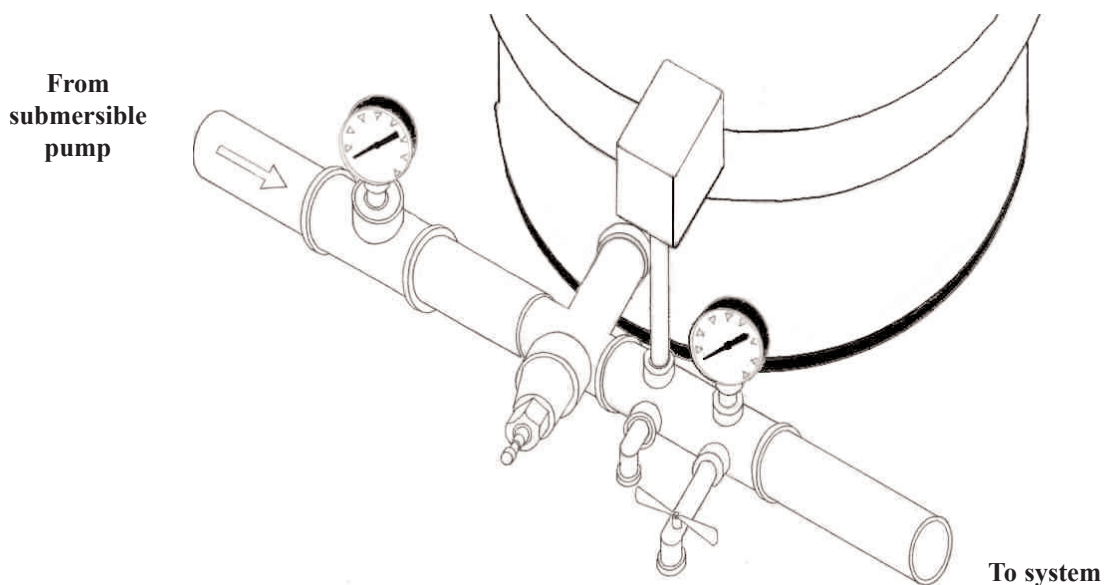
**NOTE: All threaded connections should be made with an appropriate pipe sealant such as teflon tape or pipe dope.**

**2. Connect the accessory manifold to the Smart Tee valve.** The manifold has been designed to connect to the downstream side of the system regardless of direction of flow.

**3. Connect the pressure switch, pressure gauge, relief valve and drain valve to the accessory manifold.** Make sure that components are installed so that they are accessible for servicing. Make sure that the pressure gauge is in a position to be read after installation.

**4. Connect the Smart Tee valve to the tank.** The Flexcon tank supplied has a union connection that mates up to the Smart Tee valve. When connecting the valve to the tank, use the gasket supplied with the valve.

**5. Connect electrical power to system components.** Be sure to follow the manufacturers' directions when making electrical connections to the pressure switch and pump. Follow all local electrical codes.



1. Before turning on the pump and filling the tank with water, check the pre-charge of the tank. It should be 2 PSI below the cut-in setting of the pressure switch.
2. Open all isolation valves and turn on power to the system. The pump should run, filling the system and tank with water. When the cut-out setting of the switch (60 PSI) is reached, the pump should shut off.
3. Open system faucets to approximate 5 GPM(ST 25 & ST 60) or 10 GPM (ST 140) draw. Watch the pressure gauges. Water should be drawn from the tank, pressure will decrease from 60 PSI to 40 PSI (cut-in), and the pump should come on. Downstream system pressure should stabilize at 50 PSI as viewed on the system side pressure gauge.
4. Open additional faucets to increase the system flow rate. Pressure will decrease slightly as flow increases up to the maximum flow rate of the valve. See the pressure/flow charts on page 2.
5. Close faucets to bring the flow rate below the factory setpoint (5GPM for the ST 25 & ST 60, and 10 GPM for the ST 140). Pressure will increase slightly above 50 PSI.
6. Close all faucets and watch as the pump continues to run for approximately 1-2 minutes. The tank should fill and the cut-out setting of the switch will be reached thus shutting off the pump. The system is now ready for the next demand.

**IMPORTANT: To insure proper system operation, the pressure setting of the valve should always be at least 10 PSI below the cut-out setting of the pressure switch. The pump must be capable of producing the desired pressure at the desired flow rate.**

1. **IMPORTANT:** Turn off all power to the pump and pressure switch to avoid the risk of electrical shock.
2. Adjust the pressure switch to the desired settings following the manufacturer’s directions.. Remember that the cut-out setting must be at least 7 PSI above the setpoint of the valve.
3. Turn on the power to the pump and pressure switch.
4. Open multiple faucets to drain the water from the tank and turn on the pump.
5. Adjust water flow rate until the pressure gauge on the tailpiece reads 50 PSI.
6. Loosen the top locking nut on the Smart Tee valve and turn the adjusting screw until the desired setpoint is reached.

**NOTE: To increase the setpoint, tighten the adjusting screw by turning clockwise.**

**To decrease the setpoint, loosen the adjusting screw by turning counter clockwise.**

7. Tighten the top locking nut and turn off all faucets.
8. The pump should continue to run for approximately 1-2 minutes as it fills the tank. The pressure gauge should show the adjusted cut-out pressure.

**NOTE: If the pump does not shut off this could indicate that the pump shut off pressure does not exceed the pressure switch cut-off setting or that the cut-out setting was not adjusted properly. Check the pressure gauge installed on the valve inlet. It should have a higher pressure reading than the pressure gauge installed on the tailpiece.**

Most problems with the Smart Tank pressure system will be due to variations in the settings of the pressure switch and the Smart Tee valve. Please refer to the instructions in this manual for proper setting of the switch and valve. The following checklist will assist you in diagnosing a problem.

***Pump won't shut off***

1. Pump capacity not sufficient
2. Pressure switch cut-out setting too high
3. Smart Tee valve is dirty or clogged. Clean valve screen and bypass port.

***Pump cycles during normal usage***

1. Flow rate is below 1 GPM
2. Smart Tee regulated pressure too close to cut-out setting of the pressure switch

**Notice to homeowners:** The Smart Tank pressure system has been carefully engineered to work as a package to provide consistent water pressure. It should be installed and serviced by a qualified professional. If you experience problems, please notify the installing contractor.



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