

Operation:

Flomatic check valves are designed to give years of trouble free operation without maintenance when properly installed and in a properly selected pumping application with regards to flow and maximum system pressures.

Construction:

The Flomatic check valve body has been constructed to handle the rated system flow and pressures as stated and in addition support the weight of the submersible pump, pipe and the water in the riser pipe. In addition the valves have been uniquely designed to absorb some of the hydraulic water shocks associated with well water pumping when the check valve installation instructions are followed below.

IMPORTANT INSTALLATION INSTRUCTIONS

It is very important to install a check valve properly to help insure a trouble free water system. **If the installation instructions are not followed warranty or any warranty claims may be void.** On the back of this page is a diagram of a typical submersible valve installation (Fig. 1). ***For the CL valves please refer to Certa-Loks Installation instructions.***

- A. **Pipe Flow Velocities:** High Flow - When selecting a submersible check valve insure that the valve is sized properly to flows normally **not to exceed 10 feet per second**. Higher flow velocities will increase friction losses, hydraulic shocks and the possibility of destructive water hammer (explained below in more detail) leading to severe system failure. – Low flow (flow conditions below 3 feet per second or the use of VFD controlled pumps) for larger valve sizes above 2 ½" install our Model 80DIX Check Valve which is a double guided valve design. **Do not use the Model 80DI above 2 ½" in low flow conditions**. It is important that the valve is sized for the proper flow conditions. All smaller check valve types and sizes ½" thru 2" can be used in low flow conditions (including the use with VFD controlled pumps).
- B. **System pressure:** It is important to take the total system hydraulics into the calculation and not only the pump's well setting when selecting valve type and model. In general Danfoss Flomatic valves are pressure rated 400 psi or 920 feet of water pressure. This does not mean that a valve can be set at a well depth of 920 feet. To elevate and reduce the hydraulic shocks in the riser pipe it is recommended that a check valve be installed every 200 feet in the riser pipe. *See Recommend Check Valve Installation chart below.*
- C. **Prior to installing check valve:** Make sure that the check valve is free from defects and that the valve's spring-loaded poppet mechanism is operating freely. **Remove any foreign material (IE. PIPE DOPE) from valve seat.**
- D. Install check valve vertically with arrow pointed up in direction of liquid flow.
- E. In submersible pump applications, the first check valve should be installed directly on the discharge head of the pump or maximum one pipe length (20 feet) above pump.
- F. If the pump has a built-in check valve, the second check valve should be installed no more than 25 feet above the lowest pumping level in the well

Submersible pump setting in well	Recommended Check Valve Installation:	Type Check Valve
200 feet or less	One check valve on pump discharge and one on surface of well.	Series 80E, 80SS, 80S6, 80DI , 80MDI, 80DIX, 100E, 100MP, 100SS
200 feet to 600 feet	One check valve on pump discharge and additional check valves installed at maximum 200ft intervals and one at the surface of well.	Series 80E, 80SS, 80S6, 80DI , 80MDI, 80DIX, 100E, 100MP, 100SS
600 feet to 800 feet <i>For deeper settings contact factory</i>	One check valve on pump discharge and additional check valves installed at maximum 200ft intervals and one at the surface of well.	Series 80SS, 80S6, 80DI , 80MDI, 80DIX, 100E, 100SS



**Note: 3" – 10" DIX valves may be used vertically or horizontally all others contact factory.
12" DIX and ALL DI valves are designed for vertical installation ONLY**

Water Hammer

Water pumped and flowing through a piping system has a certain amount of energy (weight x velocity). If the pumping is stopped, the water continues to move and its remaining energy must be absorbed in some way. This absorption of energy can sometimes create undesirable noise and/or damage. This is called water hammer.

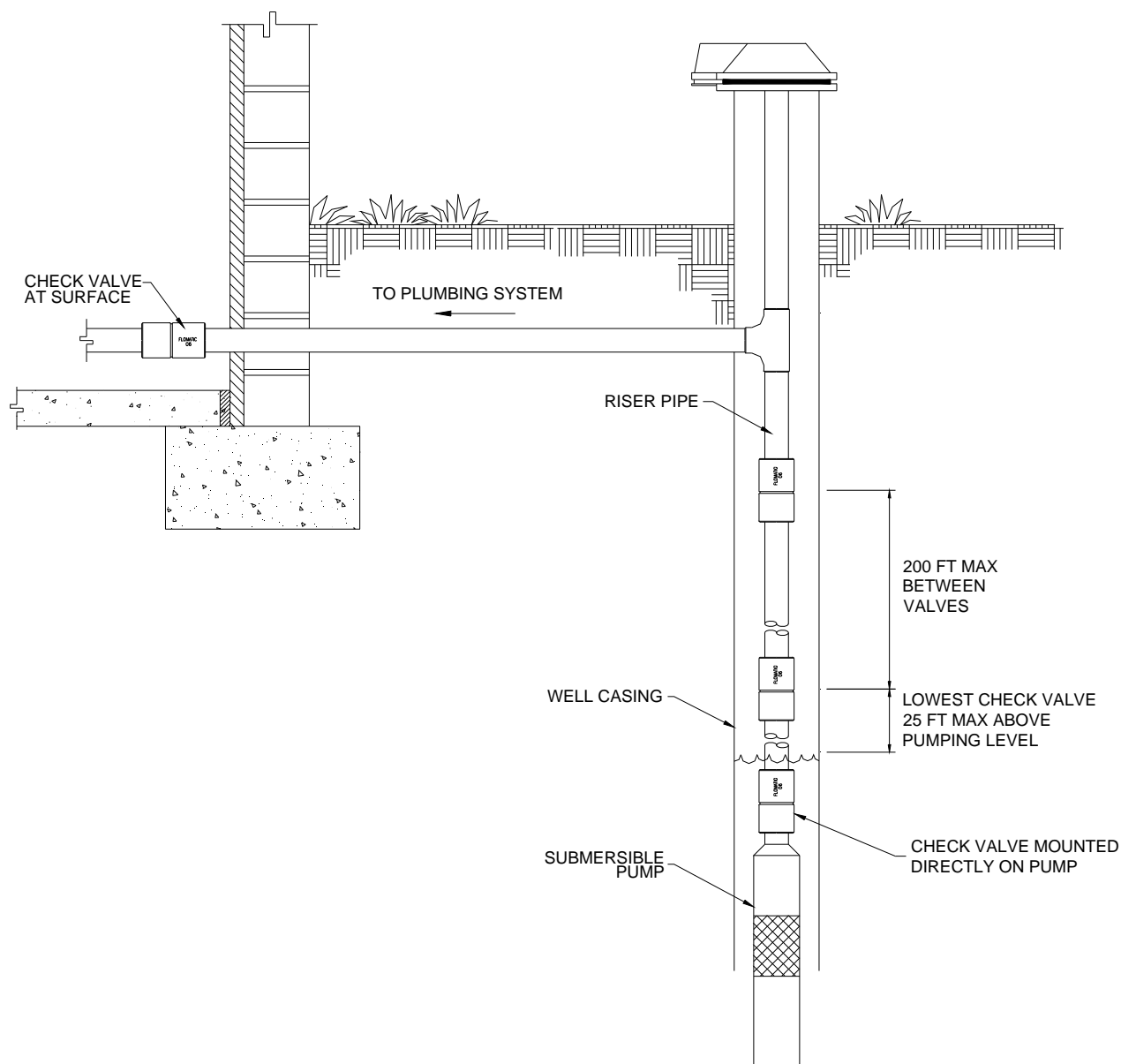
Water hammer can destroy piping systems, valves and related equipment. Water hammer varies in intensity depending on the velocity with which the water is traveling when the pump shuts down. It is very important for the installer to realize water hammer potential, and he must take this into consideration when sizing the system and deciding what material the valves should be made from.

It has been proven that for every foot per second of velocity 54 psi of backpressure is created. This means, in a 1" pipe, a flow of only 10 gpm could create a back pressure of 370 psi or more when the pump shuts down and the water column reverses. In a 4" pipe, a flow of 350 gpm could create a backpressure of 860 psi. This does not take in consideration the weight of the water column in the well. Danfoss Flomatic valves are designed to help lessen the sometimes-damaging effects of water hammer on piping and related equipment.

IMPORTANT CHECK VALVE INSTALLATION INSTRUCTIONS

If the installation instructions are not followed warranty or any warranty claims may be void.

NOTE: On initial system start-up gradual priming of vertical water column is recommended to avoid valve damage due to water shock.



(Fig. 1)

PLEASE CONTACT FLOMATIC FOR ANY FURTHER INFORMATION

Limited One Year Warranty: Flomatic valves are guaranteed against defects of material or workmanship when used for the services recommended. If, in any recommended service a defect develops due to material or workmanship, and the device is returned, freight prepaid, to Flomatic Valves within 12 months from date of purchase, it will be repaired or replaced free of charge. Flomatic Valves liability shall be limited to our agreement to repair or replacement of valve only.