



**Operation**

Flomatic Foot 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 foot valves check valve body has been constructed to handle the rated system flow and pressures as stated and to assure that the pump does not lose its prime between stops and starts. 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 instruction are followed below.

The foot valves screen protects the valve and the pumps internal parts as well as the system from harmful debris. The screen slides over the valve and is held in place with screws and acts as a filter for large particles, though a finer filter can be added after the pump. The screen is design with a large flow area (approximately three time pipe area) to minimize flow losses. Flomatic foot valve screens are removable for cleaning and or replacement.

**IMPORTANT INSTALLATION INSTRUCTIONS**

It is very important to install a Foot Valve in a vertical position to help insure a trouble free operation. **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 foot valve installation (Fig. 1).

- A. **Pipe Flow Velocities:** High flow- When selecting a foot valve insures that the valve is sized properly to flows normally **not to exceed 5 feet per second.** Too high of a flow can create cavitation of the pump resulting in efficient operation and potential premature failure. Industry practice is to use one size larger suction pipe than pump discharge pipe size. If pump discharge is 1” use a minimum 1 ¼” suction pipe and foot valve. If pump discharge pipe is 6” use an 8” suction pipe and foot valve etc. Low flow- conditions below 2 feet per second is not recommended as it can cause premature wear on the internal foot valve poppet parts. It is important that the foot valve is sized for the proper flow conditions and not the pipe size.
- B. **System pressure:** It is important to take the total system hydraulics into the calculation and not only the pumps well setting when selecting valve type and model. In general 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 alleviate 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 foot check valve:** Make sure well has been pumped clean. Make sure that the foot valve is free from defects and that the valve's spring-loaded poppet mechanism is operating freely. Remove any foreign material from valve seat.
- D. **Install foot check valve vertically** with arrow pointed up in direction of liquid flow. The foot valve shall be installed a maximum of 25 feet vertical distance below the suction pipe of the pump inlet. The foot valve screen shall not be supported at the bottom of tank or well for best operation efficiencies. In addition the foot valve screen shall be a minimum .75 times the pipe diameter (i.e. 6” valve x 0.75 = 4.5”), below the minimum water pumping level. This will insure minimum submersion to avoid suction vortex.

Foot Valve Location	Recommended Foot Valve Installation:	Type Foot Valve
Max. 25 feet or less below pump suction inlet	Install Foot Valve in a vertical position for best and most efficient operation.	Series 60E, 63, 600E, 302BT

**Water Hammer**

Water pumped and flowing through a piping system has a certain amount of energy (= water weight x velocity). If the pumping is stopped, the water continues to move and its remaining energy must be absorbed in someway. 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

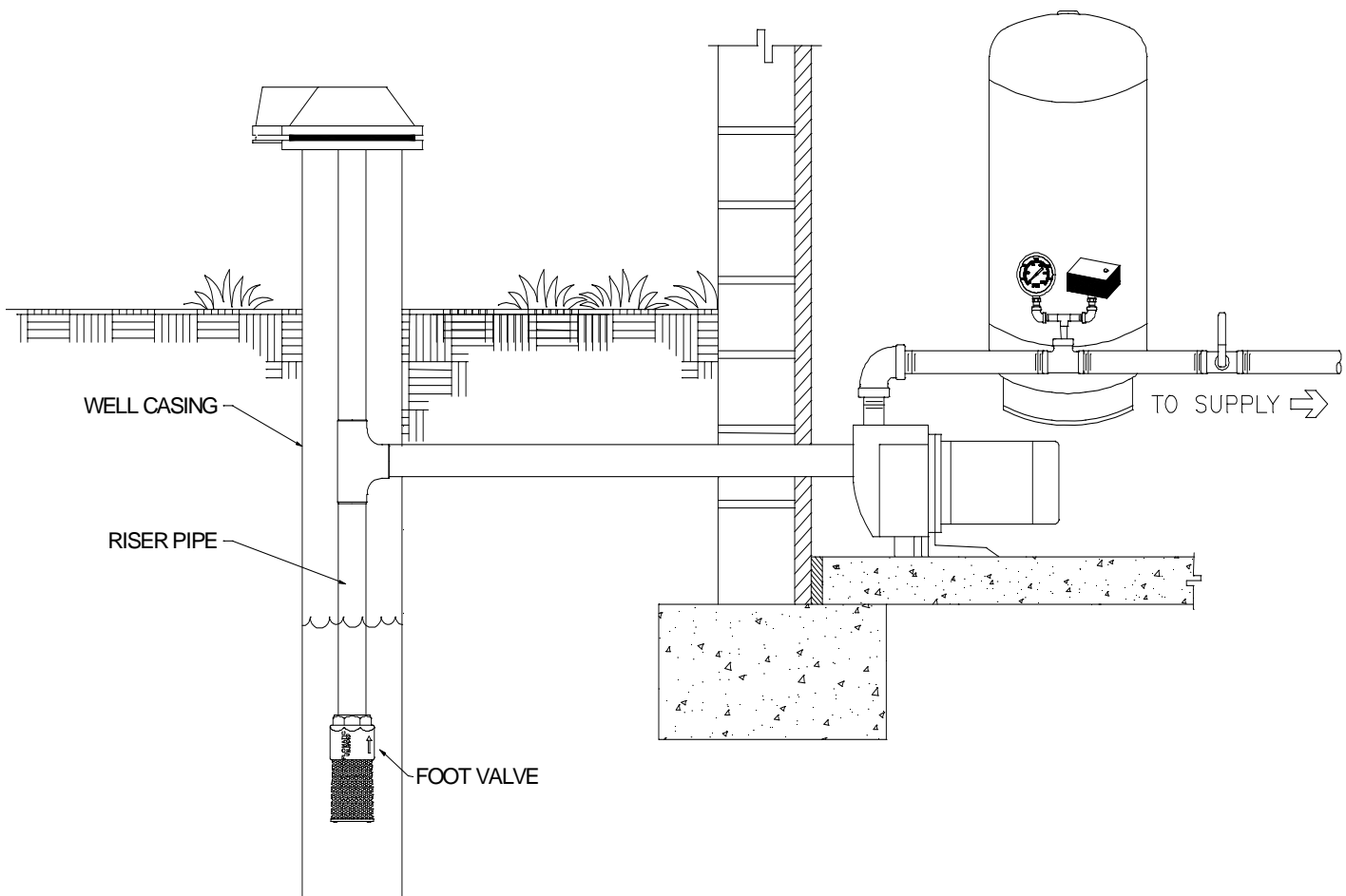
installer to realize water hammer potential, and he must take this into consideration when sizing the system and deciding what material the valves should be made from.

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 backpressure 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. Flomatic valves are designed to help lessen the sometimes-damaging effects of water hammer on piping and related equipment.

### IMPORTANT FOOT 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 foot 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 Corporation within 12 months from date of purchase, it will be repaired or replaced free of charge. Flomatic Corporations' liability shall be limited to our agreement to repair or replacement of valve only.