

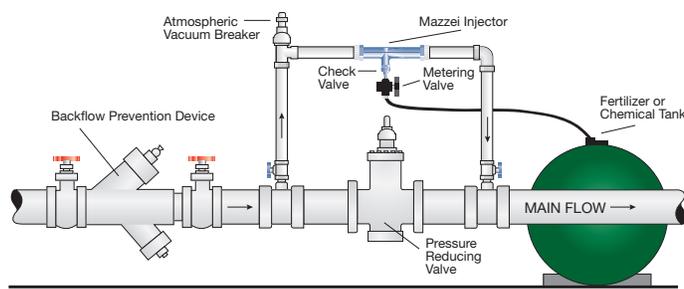
Use of Anti-Siphon and Backflow Prevention Equipment with Mazzei Injectors

Recently, the Environmental Protection Agency and other Federal and State regulatory bodies have voiced concerns (and in some states have already adopted regulations) regarding backflow prevention and anti-siphoning in conjunction with the injection of fertilizers or other chemicals into irrigation systems. Generally, these regulations are designed to safeguard individual household or community water supplies and underground aquifers from contamination. This is accomplished by eliminating the possibility of backflow into a well or siphoning into a water system once the irrigation water is shut off.

The following illustrations depict methods of installing Mazzei Injectors in conjunction with anti-siphon and backflow prevention equipment.

Example #1

This first example depicts a Mazzei Injector installed around a point of restriction such as a regulator valve, which creates a differential pressure in the main flow line, thereby allowing the injector to produce a vacuum for chemical induction into the system.



NOTE:

The injector is installed above the level of the fertilizer or chemical tank.

A simple atmospheric vacuum breaker is placed on the injector bypass line, also above the level of the chemical tank. (This assures a positive anti-siphon system during main flow shutdown.)

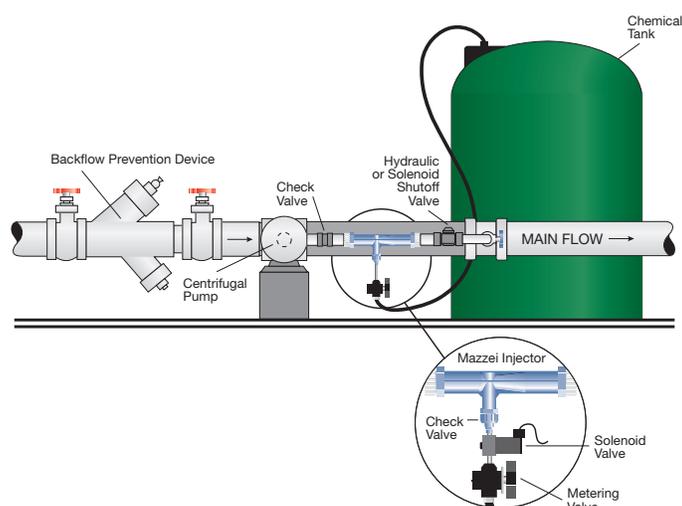
A Reduced Pressure Principle backflow prevention device is installed on the main flow line upstream from the injection equipment to prevent any possible backflow from that point. (Most areas in the U.S. require some type of backflow prevention on all irrigation systems whether they include injection equipment or not.)

Example #2

This example depicts a Mazzei Injector installed in conjunction with a straight centrifugal pump, which boosts a portion of the main flow through the injector, thereby creating a differential pressure, allowing the injector to produce a vacuum for chemical induction downstream from the pump.

When employing this method, the auxiliary centrifugal pump must be interlocked electrically with the main supply pump so it can be operational only while the main supply pump is running.

Since it may not always be practical to install the injector above the level of the chemical tank, this illustration shows methods of isolating the injection system from the main flow line (during shutdown) when the injector is installed below the tank level.



NOTE:

A one-way check valve is installed on the injector bypass line prior to the inlet of the injector.

A normally closed hydraulic shut-off valve is installed on the injector bypass downstream from the outlet of the injector. (This valve will automatically close during shutdown of the main flow line.) A normally-closed solenoid valve (electrically interlocked with the pump) can also be used at this point.

As in example #1, a Reduced Pressure Principle backflow prevention device should always be installed in the main flow line upstream from any injection equipment.

INSET:

Another method of isolating the chemical from the main flow line, during shutdown, is the use of a small, normally-closed solenoid valve on the chemical suction line between the injector and the chemical tank. This valve must also be electrically interlocked with the pump. A positive shut-off of the chemical line will then occur during a power or breaker failure or at any time the pump is stopped.