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Why You Need A Master Valve & Flow Sensor

There are multiple reasons including plant health, hardscape damage & liability issues but we are going to concentrate on water & dollar savings. First, what is a master valve & how does it work in conjunction with a flow sensor? It is a solenoid valve located on the mainline at the beginning of your system. It can be normally open or normally closed. A normally closed master valve opens when a zone valve is operating. A normally open master valve can be programmed to close when abnormal flow conditions occur. Either way, when operating with a flow sensor it can be programmed to turn OFF water flow at the source when there is unscheduled or excessive flow detected.

Next, what is a flow sensor. A flow sensor reads real time flow conditions. When paired together, a master valve & flow sensor can enable a *"SMART"* controller to report & react to multiple flow issues. For example, a mainline leak can be detected in real time as opposed to taking hours or days to be noticed. A stuck open zone valve can be discovered & the active program cancelled to avoid more water loss. High zone flow recorded when a zone is operating can initiate the shutdown of that zone when a broken sprinkler or lateral line leak has occurred. A low or no flow alarm will let you know if a station is not operating properly as opposed to only finding out when plant material has been damaged or died.

The addition of a master valve & flow sensor will enhance the capability of any *"SMART"* controller. Operational problems like large water losses will be detected before they occur. Plant damage or replacement can be avoided when actual flow readings confirm system operation. Remember someone needs to be responsible for receiving this information & communicating with all parties. Here are a few typical alert examples depicting how much water can be wasted when you don't have a master valve & flow sensor. As you can see, from a single event the cost in wasted water & dollars can justify including a Master Valve & Flow Sensor in a new system or adding them to an existing one.

a. Mainline Break (2" PVC – Typical commercial system)
   - 50 gpm leak over long weekend before anyone notices
   - 50 gpm x 60 min per hour x 24 hour per day x 3 days = 216,000 gallons
   - 216,000 gallons @ $7.50 per 1,000 gal = $1,620

b. Mainline Break (1" PVC – Typical residential system)
   - 15 gpm leak over long weekend before noticed
   - 15 gpm x 60 min per hour x 24 hours per day x 3 days = 64,800 gallons
   - 64,800 gallons @ $7.50 per 1,000 gal = $486

c. Stuck Open Zone Valve (Commercial system)
   - 50 gpm whenever irrigation program operates
   - 50 gpm x 60 min per hour x 8 hour irr cycle x 3 days per week x 4 weeks = 288,000 gal
   - 288,000 gallons @ $7.50 per 1,000 gal = $2,160

d. Stuck Open Zone Valve (Residential system)
   - 15 gpm whenever irrigation program operates
   - 15 gpm x 60 min per hour x 8 hour irr cycle x 3 days per week x 4 weeks = 86,400 gal
   - 86,400 gallons @ $7.50 per 1,000 gal = $648