

SPECIALIZED VALVES FOR SPECIAL SITUATIONS

We know that valves are used to control the movement of water through the irrigation system. So all you need are some automatic valves to control which sprinklers come on, some other manual valves to isolate areas of the course for maintenance, and a few valves here and there to give you a hose attachment in case you have problems with the automatic valves that control the sprinklers - right? Maybe so.....but probably not!

Suppose the valves that you're using to control the sprinklers work best at a certain pressure, and suppose your pump station has to run the sprinklers at the top of the hill at the same time you're running some heads way down in the valley. You should have "pressure regulating valves" in your mainline pipe network if the difference in pressure required by one leg of mainline exceeds any other leg by a margin that is greater than the optimum pressure to operate your sprinklers. Pressure regulating valves are usually spring and diaphragm operated valves that have the ability to be set within a range of operating pressures by tightening or loosening the spring tension within the valve body. You need to know the volume of water (gallons per minute) and the dynamic (working) pressure that you want at the valve location in order to determine what size and type of pressure regulating valve is best for your particular situation.

Now let's say you have a mainline that runs a long way in a straight line down hill and you've been having a problem at the end of the line because the fittings are always blowing out. Your problem may be due to something other than faulty fittings.....namely "surge pressure" or "water hammer". Detrimental surge pressure is the result of several factors which combine to create a pressure wave within the pipe that increases the water pressure to a level that far exceeds the rating of the pipe. The main factors contributing to surge pressure are:

- 1) The closing speed of the automatic control valves within the system,
- 2) The length of uninterrupted pipe runs without direction changes, and
- 3) The dynamic water pressure within the system.

If you have a valve that closes quickly it will send a "shockwave" through the pipe that will tend to grow unless it is deflected at some point along the way.

If it is not deflected soon enough it may weaken (or even wipe out) the unlucky fitting that happens to be at the end of the line. One method of dealing with this problem is to continually replace this fitting. Another method would be to install a "spring-loaded check valve" within the mainline that would allow water to pass through when needed downstream but would artificially deflect any surge pressure waves before they get unmanageable. Spring loaded check valves are valves that allow water to flow through them in one-direction when the water exerts more pressure than the integral spring is capable of holding back. An added advantage to having this check valve within your mainline is that if you should have a mainline break downstream from the check valve, you could shut down the water pressure or flow at the source and the valve will hold back the water rather than letting it all drain to the break. Be aware, however, that this check valve will only allow water to flow one way through the mainline and will create some pressure loss through the valve itself. You should seek the advice of a professional irrigation consultant prior to installing these valves in your existing systems.

O.K., so your pump station has come on just like it's supposed to but the valves that are supposed to come on didn't. Wow, the pressure is really building up in your system and it has nowhere to go. You need a "pressure relief valve" but quick. This type of valve is usually installed near the discharge of your pump station on a bypass line so it doesn't impede the normal flow of your system. Pressure relief valves usually include a "pilot valve" that allows you to set the pressure at which the relief valve will open and allow water through. This water can be piped back into your water source lake for use when the next control valve is opened.

There happens to be some hills on your golf course. And, just your luck, they're irrigated. Your mainline is running up and down, up and down. You may not know it but at the crest of these hills the water in your mainline may not fill the pipe when the system is running. This is where "air release valves" come into play. If you install these valves at the high points along your mainline, they will let the air out and keep the water in. This will allow your system to operate at the proper flow that the pipe was designed to

accommodate.

What if you have a break in your mainline on the downslope of one of those hills and the pump system shuts down? More that likely the water will drain out from the top of the hill and create a potentially damaging suction vacuum behind it. What you need is a valve at the top of the hill that will recognize a loss of pressure in the mainline due to the break and will open up to let air in to displace the vacuum caused by the loss of water. This type of valve is naturally called an "air and vacuum valve". As you can see, we are able to use different types of valves to control the flow of water within the irrigation system in a variety of situations found on the golf course. If you have any specific situations on your course that may require a specialized valve not mentioned here, please write a letter to this

A LOOK AHEAD

January 7, 1991
Hidden Valley CC, Middletown, CA

February
GCSAA National Convention

March
Joint Meeting with USGA, NCGA

April
GCSANC Annual Meeting, Rossmoor

May
Open

June 13
Orinda CC

July 15
Supt./Pro Tournament, San Francisco Golf Club

August
Oakland A's Baseball Game, Oakland Coliseum

September
Richmond CC