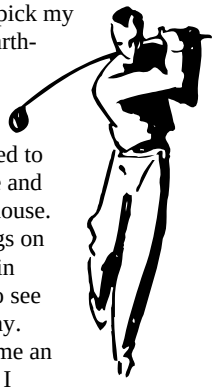
Water Stories

Boiling Filters are no match for the legendary Duke Waters

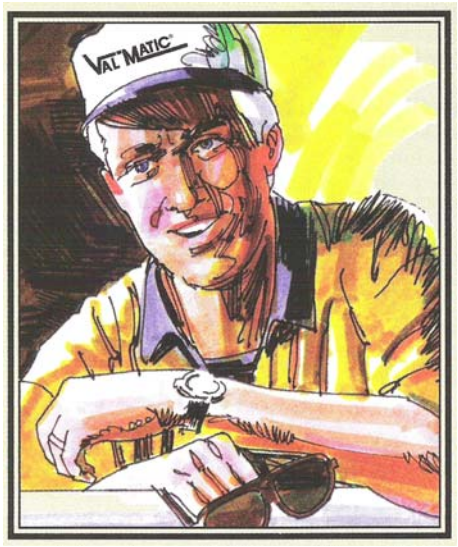
I knew I was in trouble when I saw Area Code 518 on my pager. It could only mean that my old engineering partner, Jim Wickman, was looking to pick my brain to solve one of his earth-shattering water system problems. But, being the semi-retired, free-lance engineer that I am, I decided to make the turn on 14th hole and give Jim a call at the clubhouse.



With my golf winnings on the table and a Macanudo in hand, I gave Jim a jingle to see what was shaking in Albany. Jim was upset that it took me an hour to return his page but I reminded him that he just saved himself $250 of my consulting time. Jim said he just started up the backwash pumps at the East Lake plant and boiled the sand in the number three water filter even though the venturi showed a good controlled flow rate. He sounded frantic as usual.

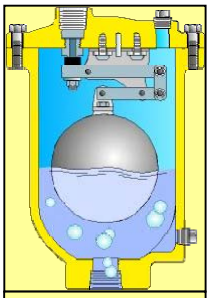
I said "*Jim, take a deep breath, relax, and describe the system layout for me.*" Jim explained that there were four vertical turbine backwash pumps feeding a 14" line which had a venturi and modulating butterfly valve for backwashing the sand filters in sequence. I reminded Jim that a boiling filter is a sure sign of air in the line. But Jim said, "*Duke, I made sure that there were air valves on the pump discharge and on the high point of the header.*" I said, "*Well you will need to fax a layout of the system to my beach house. I'll be there in about ten minutes. And by the way, the clock is ticking.*" On my way out I posted my two-under and aimed the XK8 at the ocean.

The ocean air on the deck was invigorating and the scenery on the beach made it difficult to concentrate. I forced myself to look at the plans and found the piping layout to be order. The four pumps had a 12 feet lift out of the clearwell and pumped the backwash water through 8" Tilted-Disc® Check Valves into a header equipped with Val-Matic Model 202C Combination Air Valves. The Combination Air Valve will not

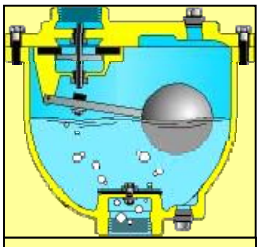


only release air rapidly during initial filling of the header, but will also relieve accumulated air during operation. That all looked fine. But the pump discharge air valves were missing from the plans. I wondered what Jim installed.

The pump discharge air valves must rapidly expel that gulp of air that is delivered by the pump during every start. If the wrong size or type of air valve is used for pump discharge, air can easily be sent downstream to the filters. So I got Jim on the horn and said, "*Hey buddy, I need to know the model number of the pump discharge air valves.*" Jim asked, "*Why? They are 2" valves which should be more than adequate for that pump?*" I simply replied that not all 2" valves are alike. Jim said the valve was a 2" Val-Matic Model 32 or 38 or something like that.



Air Release Valve
Vents air automatically from water systems during operating conditions.



Combination Air Valve
Performs the functions of both Air Release and Air/Vacuum Valves.

That's when I lost all patience and said, "*Come on Jim. Didn't you bother to look at the outlet of the valve and see that a Model 38 is an Air Release Valve with probably a 3/16 inch orifice? A 2" inlet does not imply a 2" orifice. Air Release Valves need a large inlet to allow the water to easily flow in and out of the valve to activate the float but the outlet orifice is small so that air can be relieved at high pressures. You need a Well Service Air/Vacuum Valve with full size orifice in pump discharge service.*" I concluded my lecture to Jim with a reminder that air valves are clearly defined in the American Water Works Association (AWWA) Standard C512 and that he should read it.

Well Service Air Valve
High capacity exhaust and intake during turbine pump start up and start down.

Jim called the next day with an apology for his lapse in consciousness and said that he installed some Val-Matic 102WST Well Service Air Valves which are specifically designed for vertical turbine pumps. The 2" outlet allowed the air to be rapidly expelled during pump starts before the check valve opened. Full vacuum flow was provided after pump shut down through the Dual-Ported Throttling Device, which has an independent inlet orifice.

The case of the boiling filters was solved. I let Jim off easy this time since he express mailed a couple dozen balatas and a greens fee pass to the Blue Monster at Doral.

Dual-Port Throttling Device
Controls the exhaust of air to control surges in the pump column and provides full air inflow through a hooded top port.

VAL-MATIC®

Val-Matic, 905 Riverside Dr., Elmhurst, IL 60126
www.valmatic.com