SERIES UMC AS2118 (Australian Standards) FAQ'S

QUESTION 1:

Isn't it a requirement to provide a test orifice that is equal to the smallest orifice sprinkler on the system? The test orifice in the Test & Drain Valve comes with standardized K-Factors. What about all of the other K-Factors? Other manufacturers provide multiple options for test orifice K-Factors.

ANSWER:

> ***8.13.5 System interface alarm signal***
>
> *System interface alarm signals (see Clause 3.3) to other building fire safety systems, such as the building occupant warning system, requiring a fire mode response to a sprinkler system operation shall be initiated by a flow of water through a flow switch.*
>
> ***8.13.7 Testing of alarm devices***
>
> *Alarm devices shall be tested through a DN 15 test valve located downstream of the alarm device simulating the operation of a sprinkler. Installations on the alternate wet and dry system using both wet and dry alarm valves shall have testing valves fixed both above the dry alarm valve (for use when the installation is under water pressure) and between the wet and dry alarm valves (for use when the installation is under air pressure).*
>
> *Note: For test procedures, see AS 1851.*

A DN15 ball valve typically has a K-factor of 8.6 metric – Flow Switch sensitivity as per UL requirements is required to provide an alarm at greater than 15 lpm flowing but less than 38 lpm (4-10 gpm), (4-20 gpm/15-75 lpm for FM Global). They are not to activate on flows less than 15 lpm (4 gpm). The switch contacts change state when this 15-38 lpm (4-10 gpm) threshold is met. While a larger K-factor test orifice will result in a higher flow rate at the available pressure, a K4, K6.1, or K8.1 orifice will likewise experience greater than the required flow at the available pressure at the floor control assembly.

QUESTION 2:

Would the flow switch respond more quickly to a test orifice with a larger K-Factor?

ANSWER:

According to UL Listing requirements, the response time will be no different with a K4 test orifice and a larger K-Factor test orifice. Flow switch sensitivity is required to provide an alarm at greater than 15 lpm (4 gpm) flowing but less than 38 lpm (10 gpm). They are not to activate on flows less than 15 lpm (4 gpm). The switch contacts change state when this 15-38 lpm (4-10 gpm) threshold is met. While a larger K-factor test orifice will result in a higher flow rate at the available pressure, a K4, K6.1, or K8.1 orifice will likewise experience greater than 115-38 lpm (4-10 gpm) flow at the available pressure at the floor control assembly. Therefore, there would be no difference in time of flow switch contacts switching state. The set delay within the flow switch would then dictate when the alarm is sounded.

QUESTION 3:

The Potter and System Sensor Flow Switch Data Sheets state that a flow switch must be mounted on the top of horizontal piping. The flow switch for the smaller sized UMC's results in the flow switch being mounted on the side of the horizontal manifold. How can this be?

ANSWER:

As this unit is tested as an assembly to the UL and FM requirements, and has passed those tests for the flow switch sensitivity, the assembly is allowed to be designed in this configuration. See letter from Potter below:

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4/3/23

To Whom It May Concern:

Potter's literature states that VSR series waterflow switches should be installed on the top side of a horizontal pipe. The reason for this requirement is to prevent debris in the pipe from collecting in the throat area of the flowswitch.

The flowswitch can be mounted anywhere on the top half (90degrees from top dead center) of the pipe. It does not need to be mounted at top dead center. Typically, 45 degrees off top dead center resolves most clearance issues but up to 90 degrees off center is acceptable.

Tom Smith

Sprinkler Product Manager

Potter Electric Signal Company, LLC
1609 Park 370 Place, St. Louis, MO 63042
phone: 800-325-3936

QUESTION 4:

AS2118.1 requires a pressure gauge above and below check valves. Why does the UMC only have both gauges provided on the NB 100 mm, 150 mm, 200 mm (4", 6" and 8") sizes only and just one gauge (after the check valve clapper) on the smaller sizes?

ANSWER:

Victaulic manufactures standard product to suit a global marketplace but do make local provisions. The NFPA requirement for gauges both before and after a check valve contains an exception to the requirement. This exception essentially states that floor control assemblies of combined systems do not require the gauge below (before) the check valve. For this reason, Victaulic has not included a second gauge on the NB 32 mm, 40 mm, 50 mm, 65 mm (1 ¼", 1 ½", 2", 2 ½", and 3") UMC's as these sizes are most likely to be used in multi-level building floor control assemblies whereas the NB 100 mm, 150 mm, 200 mm (4", 6" and 8") sizes are most likely to be used in individual system risers which are not subject to this exception. A plugged gauge port has nevertheless been provided below the check valve should a gauge be desired to be installed, and Victaulic Australia provides an optional gauge kit.

8.1 CONTROL ASSEMBLIES

8.1.1 General

Each installation shall be provided with a control assembly located in a secured enclosure or room readily accessible to the fire brigade, and comprising the following:

(g) Installation and water supply pressure gauges (see Clause 8.15).

8.15 PRESSURE GAUGES

Pressure gauges shall comply with the requirements of AS 1349 and shall have scales with graduations in accordance with Table 8.15.

Each pressure gauge shall be provided with an isolation valve and be readily removable without interruption to installation water supplies.

Gauges to monitor pressures shall be installed in the system at the following locations:

(a) Immediately above the alarm valve.

(b) Adjacent to the main stop valve, connected to indicate the pressure of each water supply. The connection for such gauges shall be on the supply side of the non-return valve nearest the supply.

QUESTION 5:

The UMC comes with a pressure relief valve, but pressure relief valves are not required in any clause mentioned in Australian Standards.

ANSWER:

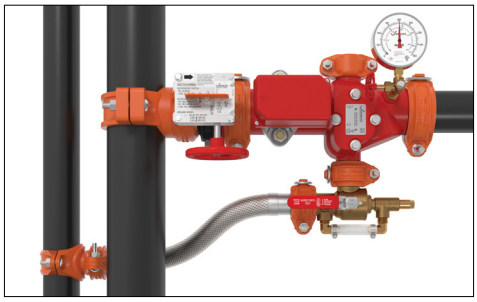
Noted earlier; Victaulic manufacture solutions to serve a global market taking into consideration best practice to provide enhanced value for the life of the system or – better fire protection. As such NFPA since 2010 have included and refined requirements tested by cost benefit analysis for the life safety provisions, aligned with NCC. Best practice for any pipework system that contains a check valve is to remove possibility of trapped excess pressure above that of the listed max working pressure of the components used – in the case of system designed to AS2118.X that is typically 1200kpa. In addition, the industry has seen many instances of micro-biologically induced corrosion in Wet Sprinkler pipework mostly due to trapped air in systems; and therefore NFPA13 latest recommendations is to remove ALL air with high point vents. AS as yet does not include any of these recommendations – however the inclusion of a standard ARV in the UMC product at minimal cost provides good coverage. Suggest reviewing NFPA13 HB edition for additional information plus FM global white paper on the subject.

QUESTION 6:

Why is a Left-Handed or Right-Handed version offered?

ANSWER:

When a floor control assembly is installed off of a riser, the riser may be located at the intersection of two adjacent walls (in the corner) in many cases. This results in the riser possibly being in the left corner or right corner of the space. When coming off horizontally from the riser, with water flow from left-to-right or from right-to-left, it is critical to allow for the Test & Drain to be located below the UMC, as well as for the cover of the UMC Check Valve to be facing forward and not against the wall.



QUESTION 7:

If a Right-Handed configuration is ordered, but it needs to be modified to a Left-Handed configuration in the field (or vice versa), is this acceptable?

ANSWER:

Yes, while Victaulic® offers separate part numbers to order a preassembled “Right-Handed” or “Left-Handed” configuration, we also offer “mirrored ports” so the Test & Drain may be relocated in the field to the opposite handed port. The UMC remains certified in either configuration.

QUESTION 8:

Can a UMC without the adjustable relief valve be ordered?

ANSWER:

The UMC has been engineered and Listed to meet the most recent NFPA 13 requirements for floor control assemblies. The requirement for a Listed pressure relief valve was implemented in the 2010 edition of NFPA 13. While a relief valve can be installed anywhere on the system after a check valve, Victaulic® has provided this on the UMC for convenience and has prepiped to drain. The UMC cannot be ordered without this relief valve.

QUESTION 9:

The Potter and System Sensor Flow Switch Data Sheets state that a flow switch must not be installed within 600mm (24") of a valve. However, the UMC includes a flow switch much closer than this recommendation. Is this acceptable?

ANSWER:

As this unit is tested as an assembly to the UL and FM requirements, and has passed those tests for the flow switch sensitivity, the assembly is allowed to be designed in this configuration. See letter below from Potter:

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To whom it may concern:

Potter's literature states that VSR waterflow switches should not be installed within 24" of a valve. This is only a recommendation, not a requirement. The reason for this recommendation is that valves can create turbulence when the water flows past them. This turbulence will not damage the flow switch, however, it may affect the sensitivity of the flow switch. This recommendation has been included on our data sheets for many years. It was intended to prevent someone from installing a flow switch close to a valve and then after performing a flow test, finding out the flow switch does not trip and having to re-install the device farther downstream.

There are no UL, FM, or NFPA codes or standards requiring a certain distance between a valve or fitting and a flow switch. If the device passes the flow test it can be considered an acceptable installation.

For the last several years there have been a number of manifold products on the market that place the flow switch closer than our recommended 24" including our own CPVC residential riser. Most if not all of the risers have been tested and listed by UL as complete assemblies thereby validating the location of the flowswitch is acceptable.

Potter is not aware of any reports of the flow switch not operating under these conditions. We are currently evaluating the need for the minimum distance from a valve recommendation. We simply may have overcome the need to maintain this distance recommendation as our product has evolved and improved over the years.

I hope that you find this information helpful, please don't hesitate to contact me for any reason.

Regards,

Mike Henke CET
Product Manager
Sprinkler Products Division

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QUESTION 10:

The UMC includes a flow switch in a different location than has been typically seen in the past. Is this permitted?

ANSWER:

There are no restrictions or limitations with regard to the location of a flow switch being on the upstream side of a check valve by either NFPA Australian Standards or the Listing agencies. This configuration has been tested and Listed by Underwriters Laboratories as well as Approved by Factory Mutual.

AS2118.6 Appendix E, Figure E1 has an "informative" schematic of a Sprinkler control assembly. It should be noted that;

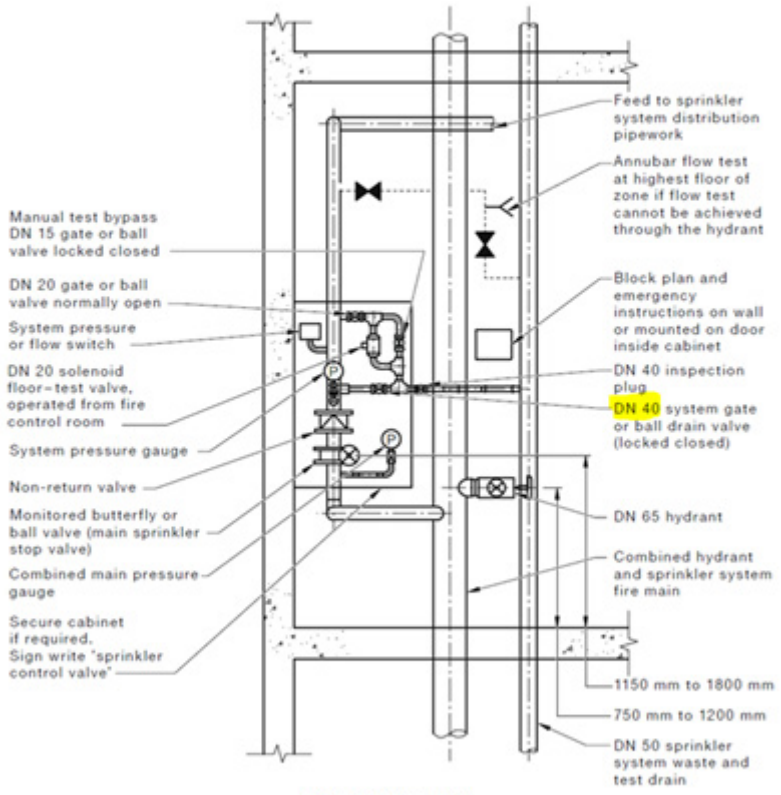
- Informative is not a mandatory requirement for compliance see; https://www.constructiondictionary.com.au/term/informative-appendix

  Therefore the arrangement shown is not the only way to achieve the definition of a sprinkler control assembly as per AS2118.6 Clause 1.5.3.

APPENDIX E

TYPICAL SPRINKLER CONTROL ASSEMBLY AND FIRE HYDRANT

(Informative)



NOTE: See Clause 2.2.1.

FIGURE E1 TYPICAL SPRINKLER CONTROL ASSEMBLY AND FIRE HYDRANT

1.5.3 Sprinkler Control Assembly

A group of sprinkler installation water supply valves comprising isolating (main stop) valve, alarm (non-return) valve and associated drain and test valves, pressure gauges and pressure or flow switch.

With today's abundance of available "Riser Manifolds" offered by numerous companies, the flow switches included typically result in them being located downstream of the separate check valve since the drain valve is also a component. The presence of the drain valve on these manifolds, results in the manifold (and therefore the flow switch) having to be installed downstream (after) the separate check valve. This allows the system piping to be drained from the drain valve. The UMC complete floor control assembly is configured in such a manner that the Test & Drain Valve is downstream (after) the integral check valve clapper while the Flow Switch is upstream (before) the check valve clapper. This allows for flow switch testing as well as system drainage.

If a pressure switch is used instead of a flow switch then there is a requirement for an end of line test and drain. Significant savings in pipework can be made using a flow switch instead as the end of line tes and drain may be eliminated. See AS2118.1 Clause 8.14.

8.14 REMOTE TEST VALVES

For the purpose of commissioning and periodic testing, a remote test valve shall be provided on each installation.

Sprinkler Remote Test Valve – To be locked shut

Where a building exceeds 25m in height, and flow test switches have been provided at each level, the flow test switch shall be considered to satisfy the requirement for remote test valves.

QUESTION 11:

Wouldn't the flow switch being below the check valve result in false flow signals upon water surges that would not be seen if the flow switch were on the system side of the check valve?

ANSWER:

There is no greater likelihood of a false flow signal with the UMC flow switch location upstream of the check than there would be with the typical current downstream location of flow switches installed on risers with or without a riser check valve and/or a Backflow Preventer upstream of the riser.

Pressure changes in the water supply (pressure surges) do not affect the flow switch differently when it is located upstream of the check valve. The flow switch requires a constant steady flow rate to operate. As the check valve stores any higher pressure increases or fluctuations, it eliminates any further flow or movement of water downstream of the check valve. In order for the flow switch to operate, a constant flow or movement of water at a rate of 15-38 LPM is required. The "slug" or section of water around the flow switch paddle physically cannot flow anywhere as the check valve clapper is "locked" in place by the higher pressure. The only water movement that the flow switch may see would be drainage back to the source. The flow switch does not operate on flow towards the source, only flow towards the sprinklers.

QUESTION 12:

What about the drain size for Australian standards, your UMC does not comply?

ANSWER:

7.5 Drainage NOTE – clearly states "Should" not shall and therefore is a recommendation only. UMC meets or exceeds drain size.

AS2118 vs UMC on drain sizes vs Valve body size;

Valve AS2118 NB	Min Drain Size Requirement	UMC Drain	UMC Size
<NB50	NB20	NB25	NB50 and smaller
NB65	NB25	NB32	NB65
<NB80	NB32	NB32	NB80
		NB50	Above NB80

7.5 DRAINAGE

7.5.1 Wet system piping

In basements and other areas where sprinkler piping is below the installation drain valve and in trapped sections of distribution piping, auxiliary drain valves of the following minimum sizes shall be provided:

(a) For pipes up to DN50 ..... 20mm

(b) For DN65 pipes 25mm

(c) For pipes larger than DN65 ..... 32mm

NOTE: Where practicable, distribution piping should be arranged to enable the installation to be drained using the drain valve at the installation control assembly. The installation drain valve should be not less than DN50 for Ordinary Hazard and High Hazard systems and not less than DN40 for Light Hazard systems.

Size		Dimensions											
Nominal	Actual Outside Diameter	E to E with control valve	E to E without control valve	A	B	C	C-1	D with control valve	D without control valve	E	F with control valve	F without control valve	Series UTD Valve Size (Nominal)
inches DN	inches mm	inches mm											inches DN
2 DN50	2.375 60.3	17.50 445	13.13 333	3.63 92	5.88 149	8.25 210	10.00 254	6.38 162	6.00 152	2.00 51	21.13 537	16.38 416	1.00 25
2½	2.875 73.0	17.38 441	13.50 343	4.25 108	6.75 171	9.25 235	11.50 292	7.50 191	6.13 156	2.25 57	21.25 540	16.63 422	1.25 32
DN65	3.000 76.1	17.38 441	13.50 343	4.25 108	6.75 171	9.25 235	11.50 292	7.50 191	6.13 156	2.25 57	21.25 540	16.63 422	1.25 32
3 DN80	3.500 88.9	17.63 448	13.75 349	4.38 111	7.13 181	9.63 244	11.88 302	7.75 197	6.38 162	2.38 60	21.13 537	16.50 419	1.25 32
4 DN100	4.500 114.3	19.50 495	14.63 371	5.75 146	8.75 222	11.63 295	14.88 378	8.75 222	7.00 178	3.00 76	22.75 578	17.63 448	2.00 51
	6.500 165.1	23.50 597	17.38 441	6.88 175	10.00 254	12.88 327	16.13 410	11.38 289	8.00 203	3.88 98	25.88 657	19.75 502	2.00 51
6 DN150	6.625 168.3	23.50 597	17.38 441	6.88 175	10.00 254	12.88 327	16.13 410	11.38 289	8.00 203	3.88 98	25.88 657	19.75 502	2.00 51