

## WATERFLOW DETECTOR

Model VSR

Vane type waterflow alarm switch with retard



### PRODUCT DESCRIPTION

The Model VSR is a vane type waterflow switch for use on wet sprinkler systems.

The VSR may also be used as a sectional waterflow detector on large systems. The VSR contains two single pole, double throw, snap action switches and an adjustable, instantly recycling pneumatic retard. The switches are actuated when a flow of 10 gpm (38 lpm) or more occurs downstream of the device. The flow condition must exist for a period of time necessary to overcome the selected retard period.

### TECHNICAL DATA

<b>Model</b>	VSR
<b>Nominal pipe size</b>	2" DN50, 2 1/2" DN65, 3" DN80, 4" DN100, 5" DN125, 6" DN150 & 8" DN200
<b>Service pressure</b>	450 psi (31 bar) – UL.
<b>Flow sensitivity range for signal</b>	4 to 10 gpm (15 to 38 lpm) – UL.
<b>Maximum surge</b>	18 fps (5,5 m/s).
<b>Contact ratings</b>	Two sets o SPDT (Form C) 10 A at 125/250 VAC 2 A at 30 VDC resistive 10 mA minimum at 24 VDC
<b>Conduit entrances</b>	Two knockouts provided for 1/2" conduit Individual switch compartments suitable for dissimilar voltages
<b>Environmental Specifications</b>	40°F to 120°F (4.5°C to 49°C) – UL NEMA 4/IP54 rated enclosure suitable for indoor or outdoor use with Factory installed gasket and die-cast housing when used with appropriate conduit fitting Non-corrosive sleeve Factory installed in saddle
<b>Service use</b>	Automatic Sprinkler NFPA-13 One or two Family dwelling NFPA-13D Residential occupancy up to four stories NFPA-13R National Fire Alarm Code NFPA-72

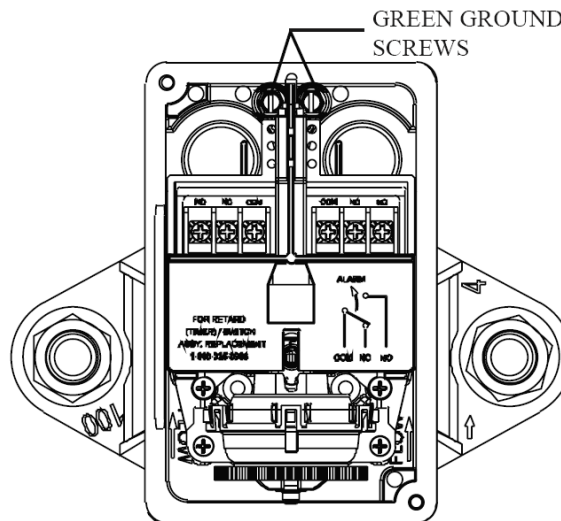
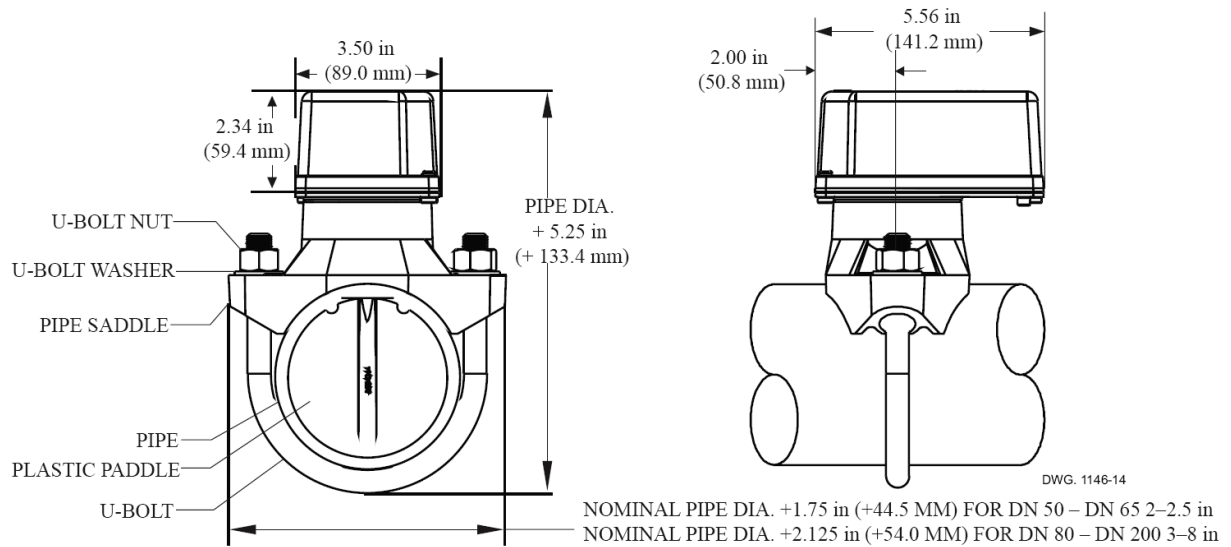
### ENCLOSURE

The VSR switches and retard device are enclosed in a general purpose, die-cast housing. The cover is held in place with two tamper resistant screws which require a special key for removal. A field installable cover tamper switch is available as an option which may be used to indicate unauthorized removal of the cover.

## DIMENSIONS

COMPATIBLE PIPE / INSTALLATION REQUIREMENTS																
Model	Nominal pipe size		Nominal pipe O.D.		Pipe wall thickness								Hole size		U-bolt nuts torque	
					Schedule 10 (UL)		Schedule 40 (UL)		BS-1387 (LPC)		DN (VDS)					
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	Ft-Lb	N-m
VSR-2	2	50	2,375	60,3	0,109	2,77	0,154	3,91	0,142	3,6	0,091	2,3	1,25	33	20	27
VSR 2-1/2	2,5		2,875	73,0	0,120	3,05	0,203	5,16					+0,125	±2		
VSR 2-1/2		65	3,000	76,1					0,142	3,6	0,102	2,6	-0,062			
VSR 3	3	80	3,500	88,9	0,120	3,05	0,216	5,49	0,157	4,0	0,114	2,9				
VSR 3-1/2	3,5		4,000	101,6	0,120	3,05	0,226	5,74								
VSR-4	4	100	4,500	114,3	0,120	3,05	0,237	6,02	0,177	4,5	0,126	3,2	2	50,8		
VSR-5	5		5,563	141,3	0,134	3,40	0,258	6,55					±20,125	±2		
VSR-6	6	150	6,625	168,3	0,134	3,40	0,280	7,11	0,197	5,0	0,157	4,0				
VSR-8	8	200	8,625	219,1	0,148	3,76	0,322	8,18	0,248	6,3	0,177	4,5				

## MOUNTING DIMENSIONS

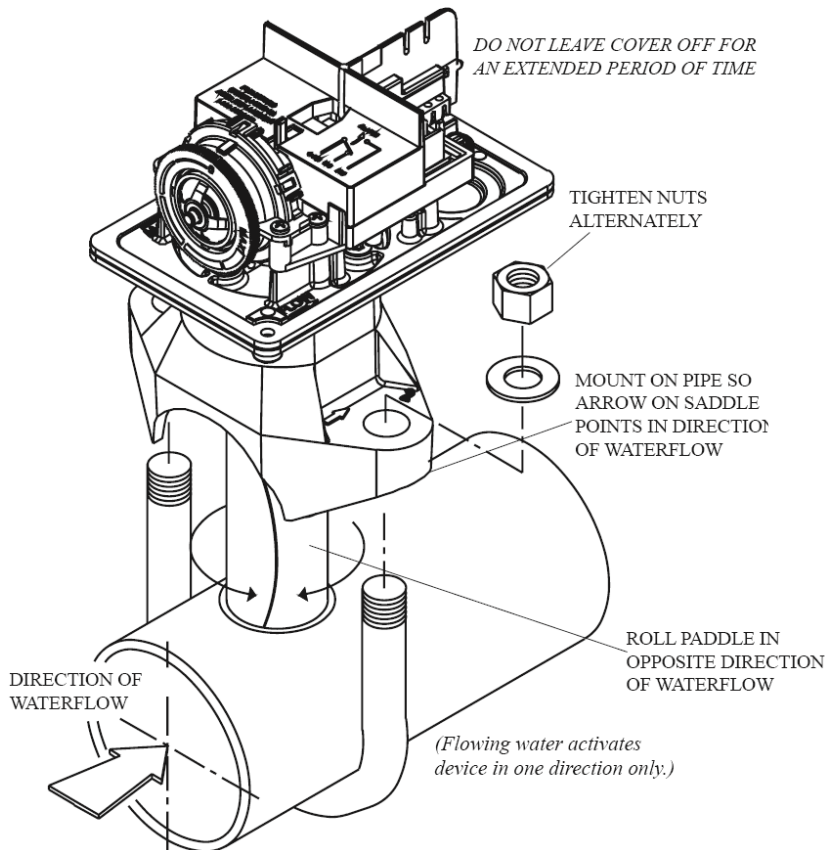


## INSTALLATION

These devices may be mounted on horizontal or vertical pipe. On horizontal pipe they shall be installed on the top side of the pipe where they will be accessible. The device should not be installed within 6" (15 cm) of a fitting which changes the direction of the waterflow or within 24" (60 cm) of a valve or drain.

**NOTE:** Do not leave cover off for an extended period of time.

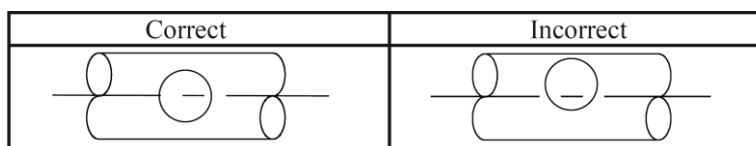
Drain the system and drill a hole in the pipe using a hole saw in a slow speed drill. Clean the inside pipe of all growth or other material for a distance equal to the pipe diameter on either side of the hole. Roll the vane so that it may be inserted into the hole; do not bend or crease it. Insert the vane so that the arrow on the saddle points in the direction of the waterflow. Take care not to damage the non-corrosive bushing in the saddle. The bushing should fit inside the hole in the pipe. Install the saddle strap and tighten nuts alternately to required torque. The vane must not rub the inside of the pipe or bind in any way.



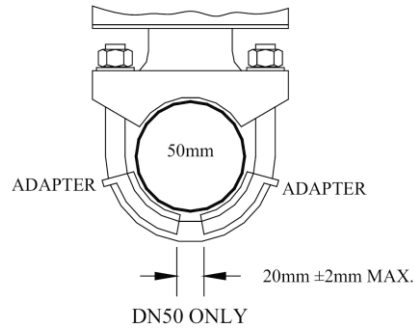
**CAUTION:** Do not trim the paddle. Failure to follow these instructions may prevent the device from operating and will void the warranty. Do not obstruct or otherwise prevent the trip stem of the flow switch from moving when water flows as this could damage the flow switch and prevent an alarm. If an alarm is not desired, a qualified technician should disable the alarm system.

## RETARD ADJUSTMENT

The delay can be adjusted by rotating the retard adjustment knob from 0 to the max setting (60-90 seconds). The time delay should be set at the minimum required to prevent false alarms.

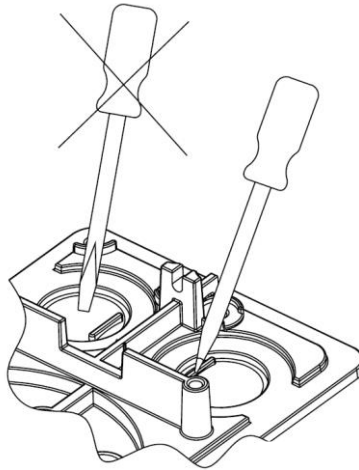


CAUTION: Hole must be drilled perpendicular to the pipe and vertically centered. Refer to the Compatible Pipe/Installation Requirements chart for size.



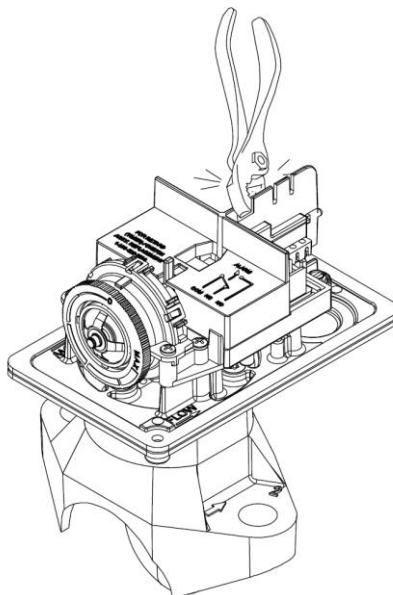
### KNOCKOUT REMOVAL

To remove knockouts: Place screwdriver at inside edge of knockouts, not in the center.



NOTICE: Do not drill into the base as this creates metal shavings which can create electrical hazards and damage the device. Drilling voids the warranty.

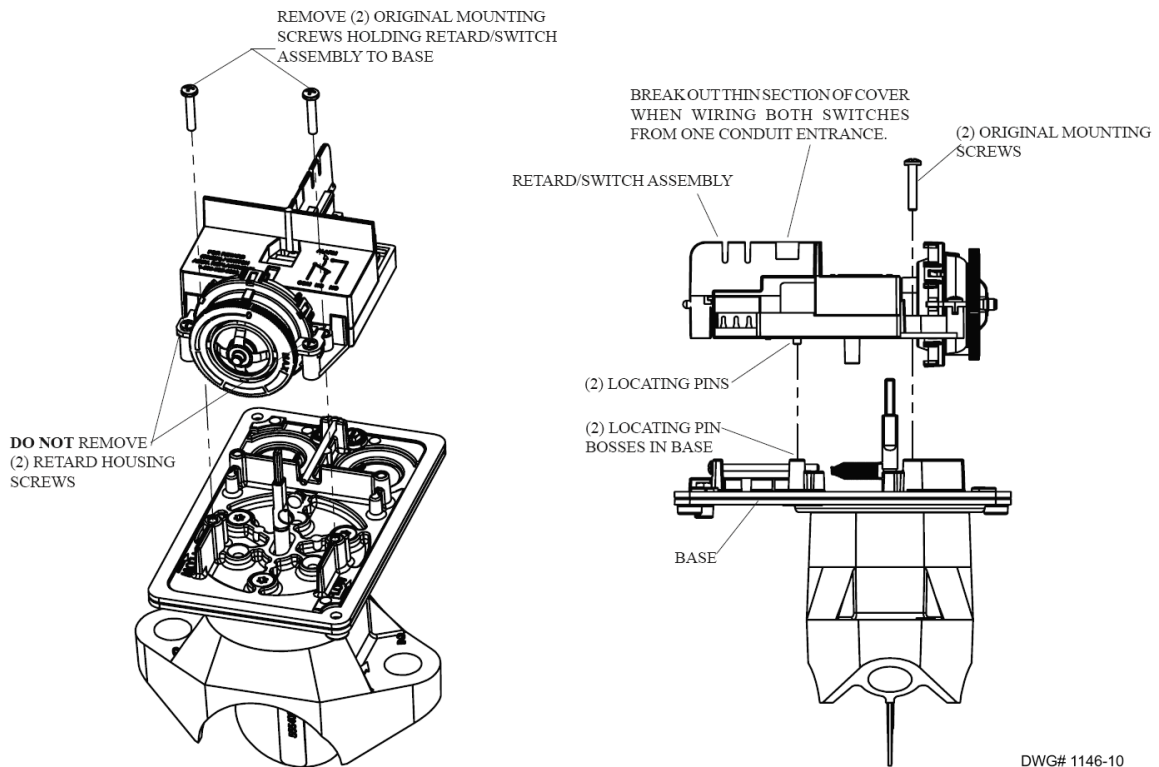
Break out thin section of cover when wiring both switches from one conduit entrance.



### RETARD / SWITCH ASSEMBLY REPLACEMENT

The Retard/Switch Assembly is field-replaceable without draining the system or removing the waterflow switch from the pipe.

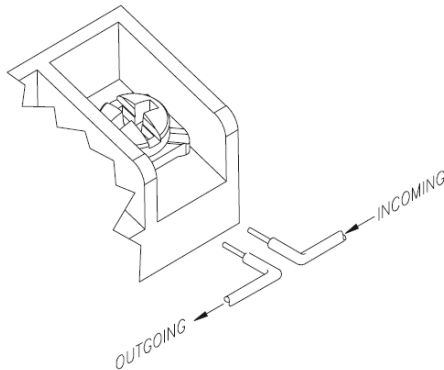
1. Make sure the fire alarm zone or circuit connected to the waterflow switch is bypassed or otherwise taken out of service.
2. Disconnect the power source for local bell (if applicable).
3. Identify and remove all wires from the waterflow switch.
4. Remove the (2) mounting screws holding retard/switch assembly to the base. Do not remove the (2) retard housing screws.
5. Remove the retard assembly by lifting it straight up over the tripstem.
6. Install the new retard assembly. Make sure the locating pins on the retard/switch assembly fit into the locating pin bosses on the base.
7. Re-install the (2) original mounting screws.
8. Reconnect all wires. Perform a flow test and place the system back in service.



### REMOVAL OF WATERFLOW SWITCH

- To prevent accidental water damage, all control valves should be shut tight and the system completely drained before waterflow detectors are removed or replaced.
- Turn off electrical power to the detector, then disconnect wiring.
- Loosen nuts and remove U-bolts.
- Gently lift the saddle far enough to get your fingers under it. With your fingers, roll the vane so it will fit through the hole while continuing to lift the waterflow detector saddle.
- Lift detector clear of pipe.

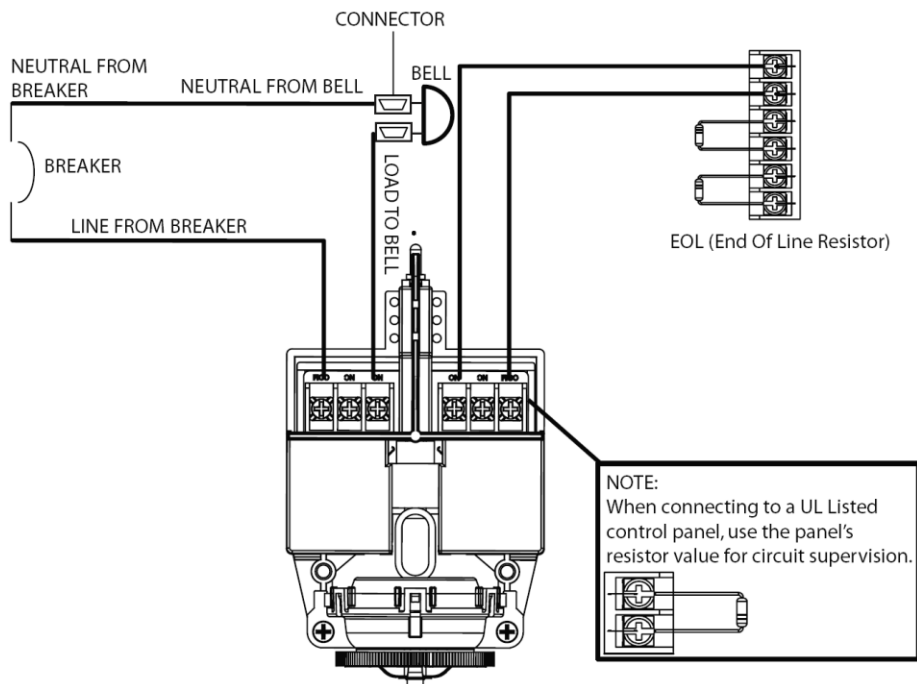
### SWITCH TERMINAL CONNECTIONS CLAMPING PLATE TERMINAL



**WARNING:** An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire become dislodged from under the terminal. Failure to sever the wire may render the device inoperable risking severe property damage and loss of life.

Do not strip wire beyond 3/8" of length or expose an uninsulated conductor beyond the edge of the terminal block. When using stranded wire, capture all strands under the clamping plate.

### TYPICAL ELECTRICAL CONNECTIONS



**Notes:**

1. The Model VSR has two switches, one can be used to operate a central station, proprietary or remote signaling unit, while the other contact is used to operate a local audible or visual annunciator.
2. For supervised circuits, see "Switch Terminal Connections".

## TESTING

The frequency of inspection and testing for the Model VSR and its associated protective monitoring system shall be in accordance with applicable NFPA Codes and Standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).

If provided, the inspector's test valve shall always be used for test purposes. If there are no provisions for testing the operation of the flow detection device on the system, application of the VSR is not recommended or advisable.

A minimum flow of 10 gpm (38 lpm) is required to activate this device.

NOTICE: Advise the person responsible for testing of the fire protection system that this system must be tested in accordance with the testing instructions.

## MAINTENANCE

Inspect detectors monthly. If leaks are found, replace the detector. The VSR waterflow switch should provide years of trouble-free service. The retard and switch assembly are easily field replaceable. In the unlikely event that either component does not perform properly, please order replacement retard switch assembly stock #1029030 (see Fig. 8). There is no maintenance required, only periodic testing and inspection.

## ORDERING INFORMATION

SIZE	CODE
2" DN50	DFVSR0500000
2 1/2" DN65	DFVSR0650000
3" DN80	DFVSR0800000
4" DN100	DFVSR1000000
6" DN150	DFVSR1500000
8" DN200	DFVSR2000000
10" DN250	DFVSR2500000

Specify:

Model	
Quantity	
Size	

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  - High Velocity Nozzles
  - Medium Velocity Nozzles
  - Window Nozzles
  - Hydroshield Nozzles
  - Mushroom Type Nozzles
  
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  - Foam Discharge Equipment
  - Foam Concentrates
  
- Deluge equipment for Water Spray and Foam
  - Clapper Deluge Valves
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  - Butterfly Valves
  - Gate Valves
  - Check Valves
  - Pressure Control Valves
  - Test and Drain
  - Hose, Hydrant and Fire Connection Valves
  - Fire Department Connections

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The equipment presented in this bulletin is to be installed in accordance with the latest published Standard of the National Fire Protection Association, Factory Mutual Research Corporation, or other similar organizations and also with the provisions of governmental codes or ordinances whenever applicable.  
This documentation is not contractual. AG Fire Sprinkler reserves the right to any kind of change without notice.

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