

## Features

- 0-90 second field replaceable time delay retard
- Easy to read retard time delay adjustment knob
- Two SPDT (form C) contacts
- Weatherproof
- Easy to read wire terminal designations
- 5 year warranty

### ⚠ WARNING

Installation must be performed by qualified personnel and in accordance with all national and local codes and ordinances.

Shock hazard. Disconnect power source before servicing. Serious injury or death could result.

Risk of explosion. Not for use in hazardous locations. Serious injury or death could result.

### ⚠ CAUTION

Do not over-tighten the union nut, hand tighten only.



## Description

The Model VSR-ST is a vane type waterflow switch for use on wet sprinkler systems that use 1", 1-1/4", 1-1/2" or 2" pipe sizes. It is equipped with a union to accommodate installation in confined spaces. The unit 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 gallons per minute (38 liters per minute) or more occurs downstream of the device. The flow condition must exist for a period of time necessary to overcome the selected retard period.

## Installation

These devices may be mounted in horizontal or vertical pipe. On horizontal pipe they should be installed on the top side of the pipe where they will be accessible. The units should not be installed within 6" (15 cm) of a valve, drain or fitting which changes the direction of the waterflow. The unit has a 1" NPT fitting for threading into a non-corrosive TEE. See Fig. 1 for proper TEE size, type and installation. Select the proper paddle for the pipe size and type of TEE used. See Fig. 3 for instructions on how to change the paddle.

Loosen the union nut and separate the 1" NPT fitting from the VSR-ST. Use no more than three wraps of teflon tape as thread lubricant. Reattach the VSR-ST to the 1" NPT fitting, verifying that the o-ring is properly positioned in its groove. Hand tighten the nut on the union after orienting the device in the appropriate direction to detect waterflow as shown in Fig. 2.

The vane must not rub the inside of the TEE or bind in any way. The stem should move freely when operated by hand.

The device can also be used in copper or plastic pipe installations with the proper adapters so that the specified TEE fitting may be installed on the pipe run.

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

## Technical Specifications

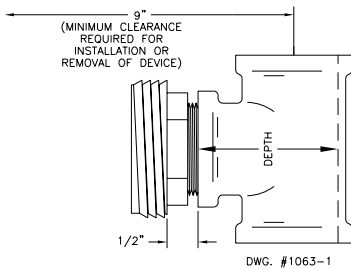
Conduit Entrances	Two knockouts provided for 1/2" conduit Individual switch compartments suitable for dissimilar voltages	
Contact Ratings	Two sets of SPDT (Form C) 10.0 Amps at 125/250VAC 2.0 Amps at 30VDC Resistive	
Enclosure	Cover - Weather/UV/Flame Resistant High Impact Composite Base - Die-cast aluminum	
Environmental Specifications	NEMA 4/IP54 Rated Enclosure suitable for indoor or outdoor use with factory installed gasket when used with appropriate conduit fitting. Temperature range: 40°F / 120°F, 4.5°C/49°C	
Maximum Surge	18 FPS (5,5 m/s)	
Minimum Flow for Alarm	10 GPM (38 LPM)	
Service Pressure	175 PSI (12,1 BAR) - UL	
Service Use	Automatic Sprinkler One or two family dwelling Residential occupancy up to four stories National Fire Alarm Code	NFPA-13 NFPA-13D NFPA-13R NFPA-72
Usage	Listed plastic, copper and schedule 40 iron pipe. Fits pipe sizes - 1", 1/4", 1/2" and 2" Note: 12 paddles are furnished with each unit, one for each pipe size of threaded and sweat TEE, one for 1" CPVC, one for 1" CPVC (Central), one for 1" threaded Nibco CPVC, and one for 1/2" threaded (Japan).	

## Inspection and Testing

Check the operation of the unit by opening the inspector's test valve at the end of the sprinkler line or the drain and test connection, if an inspector's test valve is not provided.

If there are no provisions for testing the operation of the flow detection device on the system, application of the VSR-ST is not recommended or advisable. The frequency of the inspection and testing and its associated protective monitoring system should be in accordance with the applicable NFPA Codes and Standards and/or authority having jurisdiction (manufacturer recommends quarterly or more frequently).

Fig. 1



Screw the fitting into the TEE fitting as shown. On sweat TEE's, no threaded bushings, inserts or adapters are permitted unless they comply with the dimensions listed in the chart below.

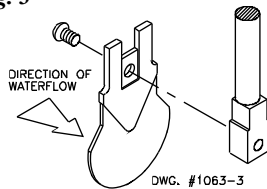
**Important** - the depth to the inside bottom of the TEE should have the following dimensions:

**CAUTION**

To prevent leakage apply teflon tape sealant to the 1" NPT male fitting only. Do not use any other type of lubricant or sealant.

Approximate Depth Requirement			
Tee Size	Threaded	Sweat	CPVC
1" X 1" X 1"	2-1/16"	1-3/4"	2-7/16"
1-1/4" X 1-1/4" X 1"	2-7/16"	2-7/16"	N/a
1-1/2" X 1-1/2" X 1"	2-11/16"	2-1/4"	N/a
2" X 2" X 1"	3-3/16"	2-3/4"	N/a

Fig. 3



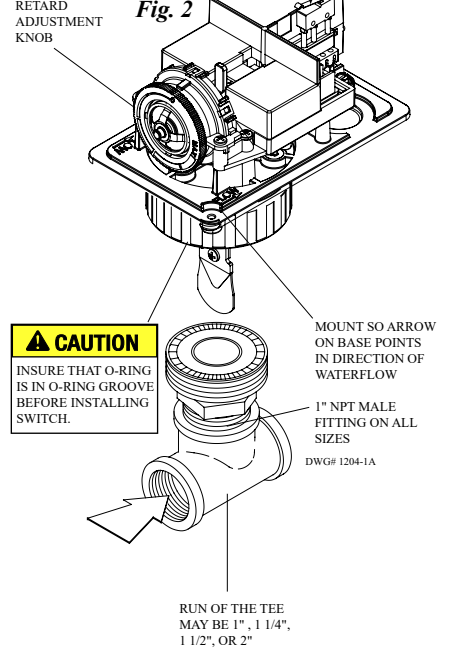
**WARNING**

There are 12 paddles furnished with each unit. One for each size of threaded, sweat or plastic TEE as described in Fig. 1. The paddles have raised lettering that show the pipe size and type of TEE that they are to be used with. The proper paddle must be used. The paddle must be properly attached (see Fig. 3) and the screw that holds the paddle must be securely tightened.

## Retard Adjustment

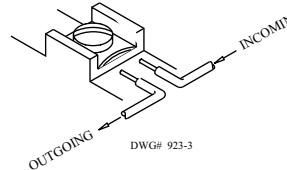
The delay can be adjusted by rotating the retard adjustment knob from 0 to the max setting (60-90 seconds). The time delay should be set at the minimum required to prevent false alarms.

Shown with optional Cover Tamper Switch. Do not leave cover off for an extended period of time.

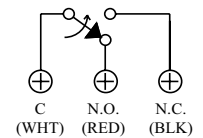


## Switch Terminal Connections Clamping Plate Terminal

Fig. 4



## Cover Tamper Switch (Shown with cover in place)



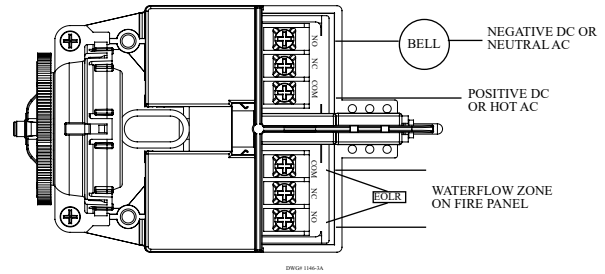
**CAUTION**

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 becomes dislodged from under the terminal.

## Typical Electrical Connections

### Notes:

1. The model VSR-ST has two switches, one can be used to operate a central station, proprietary or remote signaling unit, while the other is used to operate a local audible or visual annunciator.
2. For supervised circuits see "Switch Terminal Connections" drawing and CAUTION note (Fig. 4).



## Testing

The frequency of inspection and testing for the Model VSR-ST and its associated protective monitoring system should 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, that is usually located at the end of the most remote branch line, should 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-ST is not recommended or advisable. A minimum flow of 10 GPM (38 LPM) is required to activate this device.

## Maintenance

Inspect detectors monthly for leaks. If leaks are found, replace the detector. The VSR-ST 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 number 1029030. There is no maintenance required, only periodic testing and inspection.

### Important Notice

Please advise the person responsible for testing of the fire protection system that this system must be tested in accordance with the testing instructions.

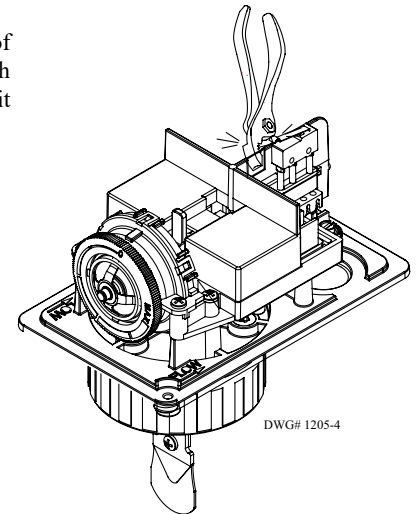
## Removal

- 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 union nut and separate unit from the glued in fitting.
- Gently lift the unit far enough to get your fingers under it. With your fingers, roll the vane so it will fit through the fitting while continuing to lift the waterflow detector.
- Lift detector clear of pipe

**⚠ CAUTION**

Waterflow switches that are monitoring wet pipe sprinkler systems shall not be used as the sole initiating device to discharge AFFF, deluge, or chemical suppression systems. Waterflow switches used for this application may result in unintended discharges caused by surges, trapped air, or short retard times.

**Fig. 6**  
Break out thin section of cover when wiring both switches from one conduit entrance.



## Ordering Information

Model	Description	Stock No.
VSR-ST	Vane Type Waterflow Switch W/Electronic Retard for Small Pipe	1144465

**Optional:** Cover Tamper Switch Kit, Stock No. 0090018

**Replaceable Components:** Retard/Switch Assembly, stock no. 1029030