

**Features**

- Assembled in USA
- 0-90 second field replaceable time delay retard
- Easy to read retard time delay adjustment knob
- Fits 1" to 2" CPVC plastic fittings
- Comes with all necessary paddles
- 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**

Waterflow switches that are monitoring wet pipe sprinkler systems shall not be used as the sole initiating switch 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.

**Description**

The Model VSR-SG is a vane type waterflow switch for use on wet sprinkler systems using CPVC plastic fittings (manufactured by Tyco, Nibco, Victaulic, Ipex, and Spears Manufacturing Company) 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 VSR-SG 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 switch. The flow condition must exist for a period of time necessary to overcome the selected retard period.

**Enclosure**

The VSR-SG switches and retard device are enclosed in a weather/UV/ flame resistant high impact composite plastic. 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. See bulletin number 5401103 for installation instructions of this switch.

**NOTICE**

This document contains important information on the installation and operation of the VSR. Please read all instructions carefully and notify the building owner or their authorized representative before any work is done on the fire sprinkler or fire alarm system. A copy of this document is required by NFPA 72 to be maintained on site.

**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 10 mAmps min. at 24VDC	
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) - UL	
Flow Sensitivity Range for Signal	4-10 GPM (15-38 LPM) - UL	
Maximum Surge	18 FPS (5.5 m/s)	
Service Pressure	Up to 175 PSI (12,07 BAR)	
Service Use	British Standard Automatic Sprinkler One or two family dwelling Residential occupancy up to four stories National Fire Alarm Code	B59251 NFPA-13 NFPA-13D NFPA-13R NFPA-72

Specifications subject to change without notice.

**Installation (see Fig. 1, 3, and 5)**

These switches 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 switch 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. The unit has a 1" male fitting for gluing into a CPVC plastic tee.

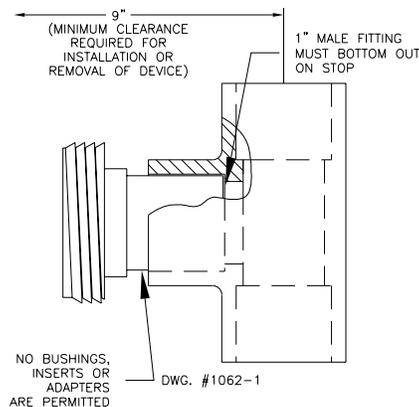
**NOTE:** Do not leave cover off for an extended period of time.

Loosen the union nut and separate the 1" male fitting from the VSR-SG. Glue the 1" male fitting into the TEE following the TEE manufacturer's instructions for preparation and gluing of CPVC piping systems. (Note: The 1" male fitting must bottom out on the stop of the TEE for proper operation of the VSR-SG. See Fig. 1.) Wait 2 to 4 hours to allow the glue to dry before attaching the VSR-SG to the 1" male fitting. Select the proper paddle for the pipe size and type of TEE used. See Fig. 3 for instructions on how to change paddle. **Verify that the o-ring is properly positioned in its groove.** Hand tighten the nut on the union after orienting the switch in the appropriate direction to detect waterflow as shown in Fig. 5 & Fig. 7.

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

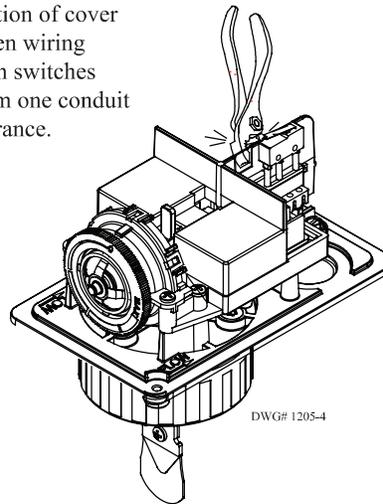
**Fig. 1**

Glue the 1" male fitting into the TEE following the TEE manufacturer's instructions for preparation and gluing of CPVC piping systems. Wait 2 to 4 hours to allow the glue to dry before attaching the VSR-SG to the 1" male fitting.

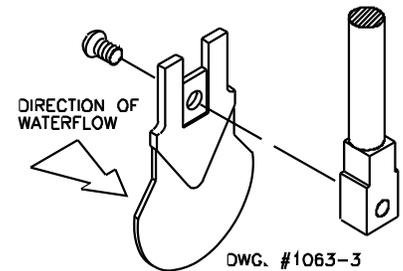


**Fig. 2**

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



**Fig. 3**



**WARNING**

11 paddles are furnished with each unit to accommodate the various sizes and manufacturers of TEES. *The paddles have raised lettering that show the pipe size and the TEE manufacturer 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.*

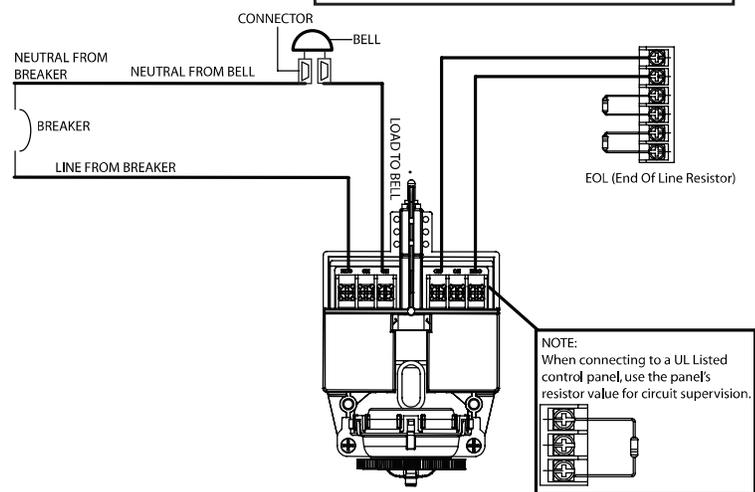
**CAUTION**

Do not over-tighten the union nut, hand tighten only. Use of a wrench may damage the union nut.

**Typical Electrical Connections**

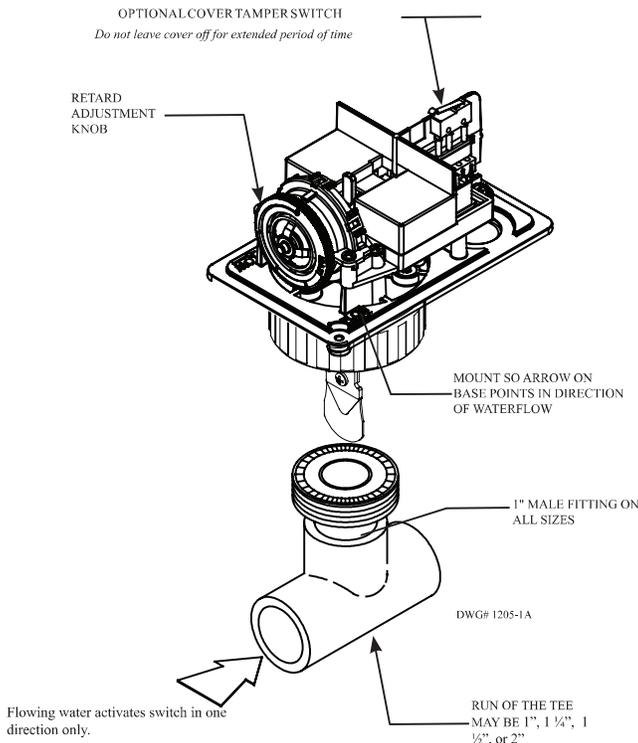
**Notes:**

1. The Model VSR-SG 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" drawing and warning note (Fig. 6).



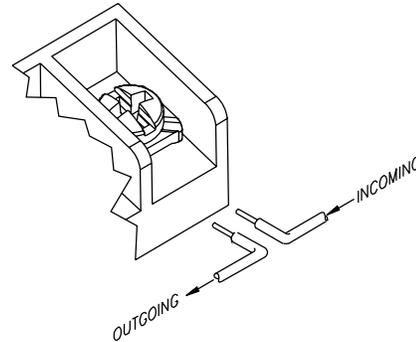
## Retard Adjustment

*Fig. 5*  
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.



## Switch Terminal Connections Clamping Plate Terminal

*Fig. 6*



### **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.

## Testing

The frequency of inspection and testing for the Model VSR-SG 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).

A method of testing the VSR-SG must be provided. The valve used for testing shall be easily reached and shall produce a minimum flow of 10 GPM to activate the switch. The discharge orifice shall be equal to the smallest sprinkler used in the system.

## **NOTICE**

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

**Mounting Dimensions-Orientation**

Fig. 7

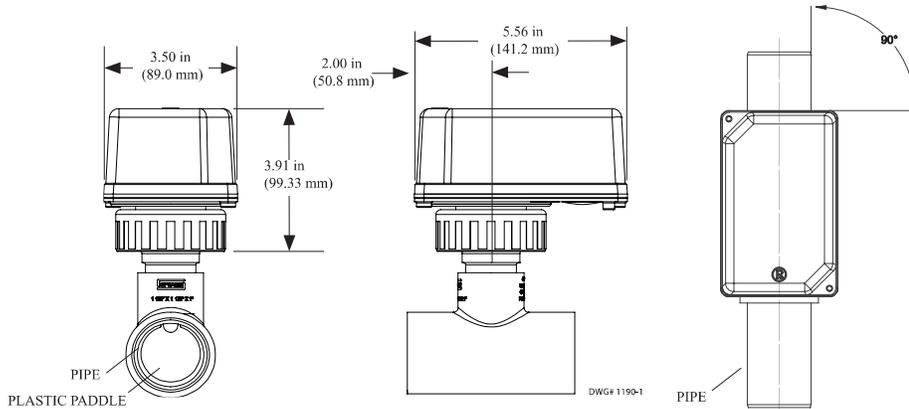
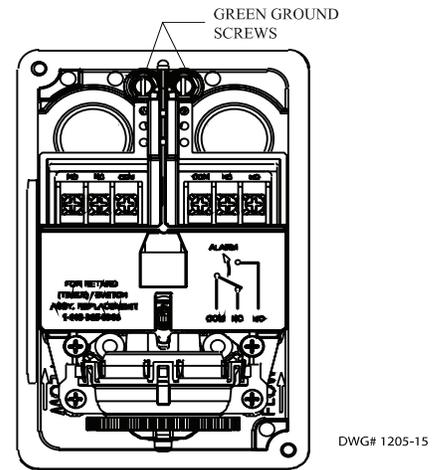


Fig. 8



**CAUTION**

Flow switch must be properly orientated. Side of cover must be perpendicular with the pipe. Improper orientation could delay or prevent notification of waterflow.

**Maintenance**

Inspect the waterflow switch monthly. If leaks are found, replace the waterflow switch. The VSR-SG 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. 9). There is no maintenance required, only periodic testing and inspection.

**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 separate unit from the glued-in fittings
- Gently lift the unit 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.
- Lift detector clear of pipe.

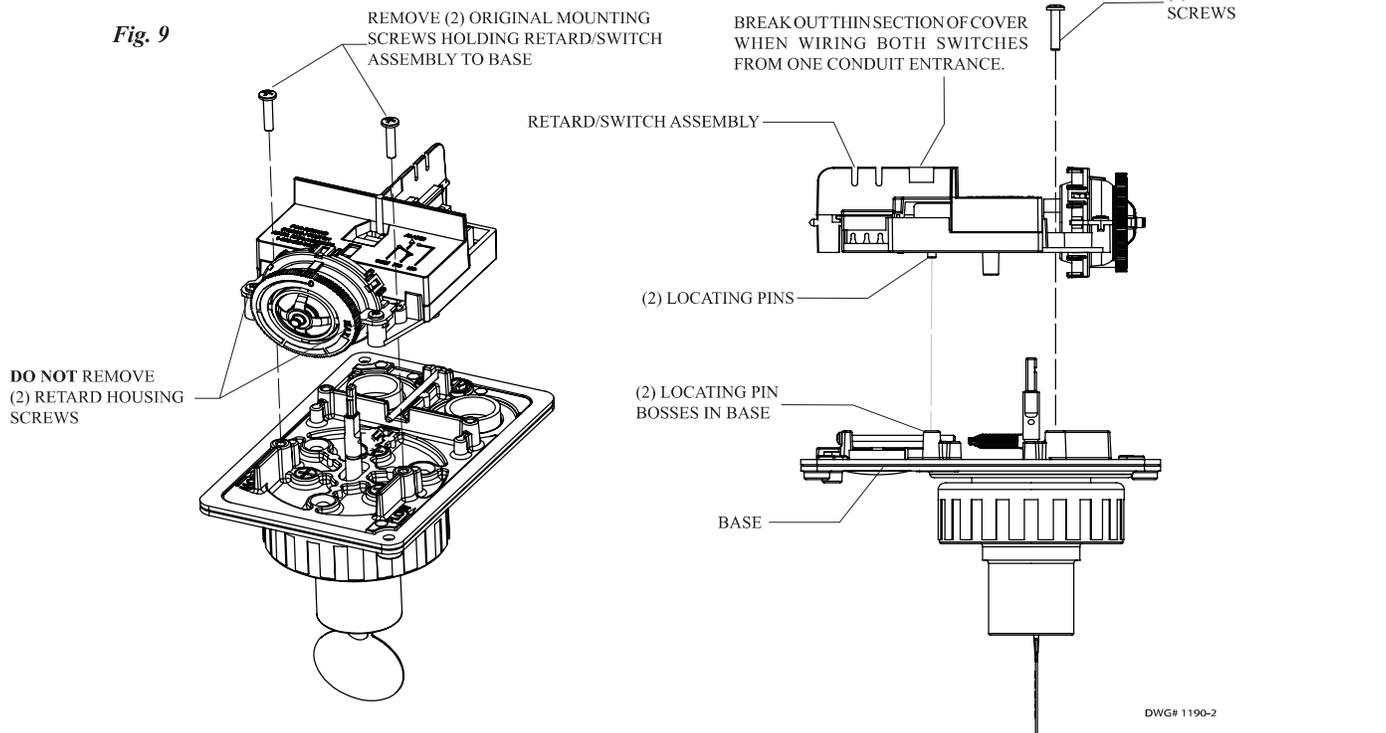
**Retard/Switch Assembly Replacement (See Fig. 9)**

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.

**NOTICE**

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

Fig. 9



**Ordering Information**

Model	Description	Stock No.
VSR-SG	Vane Type Waterflow Alarm Switch w/Retard and Glue-In Union, For CPVC Pipe	1144460

**Optional:** Cover Tamper Switch Kit, stock no. 0090148  
 FSBS-Flowswitch Bypass Switch, stock no. 3001006  
**Replaceable Components:** Retard/Switch Assembly, stock no. 1029030

**NOTICE**

Flow switches have a normal service life of 10-15 years. However, the service life may be significantly reduced by local environmental conditions.