1. DESCRIPTION
The Waterflow Indicator is a vane-type waterflow switch designed to detect a sustained flow of water exceeding 10 gpm. It is intended for use on wet-pipe sprinkler systems only. The Model VSR-F has a built-in adjustable pneumatic retard device delays actuation of the electrical switches to reduce the possibility of false alarms caused by one or more transient flow surges. The Model VS-SP does not have a retard to prevent false alarm, therefore, it should NOT be used on systems with variable water pressure, except in the case of elevator recall. The unit includes two single-pole double-throw snap action switches used to operate local alarms, indicate signals to annunciator panels, trip municipal fire alarm boxes, start fire pumps, or any other function that can be initiated or controlled by the opening or closing of an electrical switch. The device may be installed on the main riser to give a system waterflow signal or on branch feed mains, cross mains, or branch lines to give a waterflow signal by zone or area.

2. LISTINGS AND APPROVALS
Model VSR-F and VS-SP
UL Listed - Guide No. USQT
FM Approved - Waterflow Detectors, Vane Type
Model VSR-D 10”
UL Listed - System Extinguishing Attachments - Guide No. USQT

3. TECHNICAL DATA
Specifications:
Manufacturer: Potter Electric Signal Company
Water Working Pressure:
Model VS-SP rated for water working service pressure up to 250 psi (1 730 mm) kPa) for size 1-1/2” (40 mm)
Model VSR-F rated for water working service pressure up to 450 psi (3 013 kPa) for sizes 2” (50 mm) to 8” (200 mm)
Model VSR-F 10” rated for water working service pressure up to 300 psi (2 076 kPa) for size 10” (250 mm)
Switches:
Model VSR-F
Two single-pole double-throw switches with Form C contacts rated at 15 Amps 125/250 V. AC, 2.0 Amp 0-30 V. DC. Each switch can be wired for open or closed circuit operation. See Figure 2.
Model VS-SP
Two single-pole double-throw switches with Form C contacts rated at 15 Amps 125/250 V. AC, 2.5 Amp 0-30 V. DC. Each switch can be wired for open or closed circuit operation. See Figure 2.
Adjustability for Flow Sensitivity:
Pneumatic retard adjustable from 0 to approximately 90 seconds with automatic resetting. Unit may be installed vertically or horizontally. Vane is corrosion resistant plastic. CAUTION: Vane-type waterflow indicators should be used only in wet-pipe systems and not in dry, deluge, or preaction systems. The paddle and/or mechanism may be damaged by the sudden surge of water in those systems.
Material Standards:
Body: Cast Aluminum
Base: Cast aluminum
Enclosure: Die-cast, red enamel finish
Cover held in place with tamper resistant screws
Ordering Information:
See Table 1

4. INSTALLATION
The waterflow indicator must be located on the system side of the system control valve, check valve, and main drain valve. Install a minimum of 6 inches (147 mm) from any fitting that changes the direction of the waterflow and 24 inches (588 mm) from a valve or drain. The device may be mounted on horizontal or vertical pipe. On horizontal piping, the unit should be mounted in a vertical position with the cover on top. If necessary, it may be mounted off center, but never exceed an angle greater than 90 degrees from vertical.
Close the water supply control valve and drain the system, relieving all pressure. At the selected location, drill a hole in the pipe using a circular saw in a slow-speed drill. The 2” (50 mm) and 2-1/2” (65 mm) devices require a 1-1/4” (32 mm) hole. All other sizes require a 2” (50 mm) hole. De-burr the hole and clean the pipe of all growth ad other material for a distance equal to the pipe diameter on each side of the hole.

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Viking Technical Data may be found on The Viking Corporation’s Web site at http://www.vikinggroupinc.com. The Web site may include a more recent edition of this Technical Data Page.
Roll the vane in the opposite direction of the water flow, taking care not to bend or crease the vane and insert it into the hole. The vane must be inserted so the arrow on the saddle points in the direction of the waterflow. Install the saddle strap and tighten the nuts alternately to 50 ft. lbs. (7 m kgf) of torque. To verify the vane does not bind in the pipe, press the trip rod toward the timing head and then release. It should move and return smoothly.

Place the system back in service and test the waterflow indicator using the system inspector’s test valve. If necessary, adjust the pneumatic retard and/or equipment and perform quarterly inspection.

A. Adjustments

The pneumatic retard is adjustable from 0 to approximately 90 seconds. To increase the time delay, turn the dial to the next higher letter. Normal setting is between 30 and 45 seconds. In no case should the time be set less than 20 seconds nor more than 90 seconds.

The flow sensitivity is set at approximately 10 gpm. A small coil spring holds the vane in its normal position against the waterflow. The spring can be adjusted to increase or decrease sensitivity, if necessary, but it must not be over-tightened. Too much tension will decrease the sensitivity of the device. The pneumatic retard must be checked after adjusting the flow sensitivity. All testing and adjusting of the waterflow indicator must be done using the remote inspector’s test valve.

5. OPERATION

The Waterflow Indicator detects a flow of water exceeding 10 gpm in the piping when the flexible vane is deflected. This motion activates the field-adjustable pneumatic retard device. The pneumatic retard device delays activation of the electrical switches to reduce the possibility of false alarms caused by a single or series of transient flow surges. The retard device instantly resets during a series of surges to prevent a cumulative effect. After a sustained flow, the two switches operate to open or close electrical contacts.

6. INSPECTIONS, TESTS AND MAINTENANCE

WARNING: Any system maintenance or testing that involves placing a control valve or detection system out of service may eliminate the fire protection of that system. Prior to proceeding, notify all authorities having jurisdiction. Consideration should be given to employment of a fire patrol in the affected area. Ascertain what alarms and equipment are connected to the waterflow indicator and take necessary precautions to protect connected equipment.

A. Inspection:

It is imperative that the system be inspected and tested on a regular basis. The following recommendations are minimum requirements. The frequency of the inspections may vary due to contaminated water supplies, corrosive water supplies, or corrosive atmospheres. In addition, the alarm devices, detection systems, or other connected trim may require a more frequent schedule. Refer to applicable codes and the authorities having jurisdiction for minimum requirements.

1. Monthly: Take necessary precautions and notify all connected alarm services, local fire department, security guards, or other affected personnel that the waterflow indicator is being tested to prevent a false alarm from being transmitted.
2. With the system in service, fully open the inspector’s test valve and record the time required to activate the alarm.
3. Close the inspector’s test valve. The waterflow indicator will automatically reset. All alarms and connected equipment should have operated as required by the system design. Compare the recorded operating time to previous readings. Investigate and correct any major changes in operating times.
4. Reset all connected alarms and equipment. Notify all affected personnel that the testing is complete and any further alarms must be responded to.

B. Repairs

Any waterflow indicator requiring repairs due to damaged components should be replaced with a new unit. Refer to installation instructions for adjustments.

7. AVAILABILITY & SERVICE

Viking Waterflow Indicators are available through a network of domestic and international distributors. See the Viking web site or contact The Viking Corporation for closet distributor.

8. GUARANTEES

For details of warranty, refer to Viking’s current list price schedule or contact Viking directly.
## Table 1

<table>
<thead>
<tr>
<th>Nominal Pipe Size</th>
<th>Hole Size</th>
<th>Friction Loss</th>
<th>Dimensions</th>
<th>Part Number</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inches</td>
<td>Inches</td>
<td>PSI</td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>1-1/2&quot; (38 mm)</td>
<td>See Note 1 below</td>
<td>3</td>
<td>See Note 2 below</td>
<td>2-1/2&quot; (63.5 mm)</td>
<td>See Note 3 below</td>
</tr>
<tr>
<td>2&quot; (50 mm)</td>
<td>1-1/4&quot; (32 mm)</td>
<td>3</td>
<td>1&quot; (25 mm)</td>
<td>5-1/4&quot; (133.4 mm)</td>
<td>2-3/8&quot; (60.3 mm)</td>
</tr>
<tr>
<td>2-1/2&quot; (63.5 mm)</td>
<td>1-1/4&quot; (32 mm)</td>
<td>3</td>
<td>7-1/2&quot; (190.5 mm)</td>
<td>5-3/8&quot; (158.4 mm)</td>
<td>2-7/8&quot; (73.0 mm)</td>
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<tr>
<td>3&quot; (80 mm)</td>
<td>2&quot; (50 mm)</td>
<td>3</td>
<td>8&quot; (203.2 mm)</td>
<td>5-3/4&quot; (146.1 mm)</td>
<td>3-1/2&quot; (88.9 mm)</td>
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<tr>
<td>3-1/2&quot; (88.9 mm)</td>
<td>2&quot; (50 mm)</td>
<td>3</td>
<td>6-1/2&quot; (164.2 mm)</td>
<td>6-1/4&quot; (158.8 mm)</td>
<td>4&quot; (101.6 mm)</td>
</tr>
<tr>
<td>4&quot; (101.6 mm)</td>
<td>2&quot; (50 mm)</td>
<td>3</td>
<td>6-3/4&quot; (171.5 mm)</td>
<td>6-3/4&quot; (189.3 mm)</td>
<td>4-1/2&quot; (114.3 mm)</td>
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<tr>
<td>5&quot; (127 mm)</td>
<td>2&quot; (50 mm)</td>
<td>1</td>
<td>10&quot; (254 mm)</td>
<td>7-3/4&quot; (196.9 mm)</td>
<td>5-9/16&quot; (141.3 mm)</td>
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<td>6&quot; (150 mm)</td>
<td>2&quot; (50 mm)</td>
<td>1</td>
<td>11&quot; (279.4 mm)</td>
<td>9-3/4&quot; (242.3 mm)</td>
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<td>8&quot; (200 mm)</td>
<td>2&quot; (50 mm)</td>
<td>1</td>
<td>13&quot; (330.2 mm)</td>
<td>10-3/4&quot; (273.1 mm)</td>
<td>8-5/8&quot; (219.1 mm)</td>
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<tr>
<td>10&quot; (254 mm)</td>
<td>2&quot; (50 mm)</td>
<td>1</td>
<td>14-1/2&quot; (368.3 mm)</td>
<td>12-3/4&quot; (323.8 mm)</td>
<td>10-3/4&quot; (273.0 mm)</td>
</tr>
</tbody>
</table>

### Notes:

1. 1-1/2" is installed in a tee in the piping rather than a hole in the piping. The waterflow indicator has a 1" male NPT fitting that screws into a 1" tee. See Figure 3.  
2. A dimension is 5-1/2" plus paddle size chosen (1" or 2")  
3. There are 10 paddles furnished with each unit. One for each size of threaded, sweat or plastic TEE as described in Figure 4. These paddles have raised lettering that shows 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 Figure 3) and the screw that holds the paddle must be securely tightened.
Waterflow Indicator with Two-Single Pole, Double Throw Micro Switches

Figure 2

Figure 3

Screw the device into the TEE fitting as shown. Care must be taken to properly orient the device for the direction of the水流.

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

<table>
<thead>
<tr>
<th>TEE SIZE</th>
<th>THREADED</th>
<th>SWEAT</th>
<th>CTS. POLYBUTYLENE</th>
<th>CPVC</th>
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</thead>
<tbody>
<tr>
<td>1&quot; x 1&quot; x 1&quot;</td>
<td>2/16&quot;</td>
<td>2/16&quot;</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>1/4&quot; x 1/4&quot; x 1&quot;</td>
<td>2/16&quot;</td>
<td>2/16&quot;</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>1/2&quot; x 1/2&quot; x 1&quot;</td>
<td>2/16&quot;</td>
<td>2/16&quot;</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2&quot; x 2&quot; x 2.5&quot;</td>
<td>2/16&quot;</td>
<td>2/16&quot;</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Figure 4