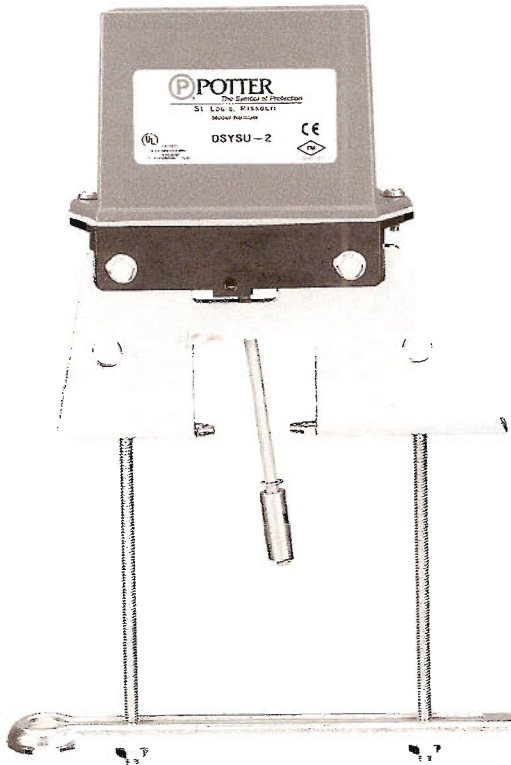




OSYSU-1, -2 OUTSIDE SCREW AND YOKE VALVE SUPERVISORY SWITCH



OSYSU-1 Stock No. 1010106

OSYSU-2 Stock No. 1010206

UL and CSFM Listed, FM Approved, NYMEA Accepted,
CE Marked

Dimensions: 6.19"L X 2.25"W X 5.88"H
15,7cm L X 5,7cm W X 14,6cm H

Weight: 2 lbs. (0,9 kg.)

Enclosure: Cover - Die-Cast
Finish - Red Spatter Enamel
Base - Die Cast Zinc
All parts have corrosion resistant finishes.

Cover Tamper: Tamper resistant screws,
Optional cover tamper kit available.

Contact Ratings:

OSYSU-1: One set of SPDT (Form C)
OSYSU-2: Two sets of SPDT (Form C)
15.00 Amps at 125/250VAC
2.50 Amps at 30VDC resistive

Environmental Limitations:

- **NEMA 4 and NEMA 6P Enclosure (IP67) when used with appropriate watertight conduit fittings.**
- Indoor or Outdoor use (Not for use in hazardous locations. See bulletin no. 5400705 OSYS-U-EX for hazardous locations.)
- Temperature Range: -40°F to 140°F (-40°C to 60°C)

Conduit Entrances:

2 knockouts for 1/2" conduit provided

Service Use:

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

GENERAL INFORMATION

The OSYSU is used to monitor the open position of an OS & Y (outside screw and yoke) type gate valve. This device is available in two models; the OSYSU-1, containing one set of SPDT (Form C) contacts and the OSYSU-2, containing two sets of SPDT (Form C) contacts. These switches mount conveniently to most OS & Y valves ranging in size from 2" to 12" (50mm to 300mm). They will mount on some valves as small as 1/2" (12,5mm).

The cover is held in place by two tamper resistant screws that require a special tool to remove. The tool is furnished with each device and should be left with the building owner or responsible party. Replacement or additional cover

screws and hex keys are available. See ordering information on page 4.

OPTIONAL COVER TAMPER SWITCH

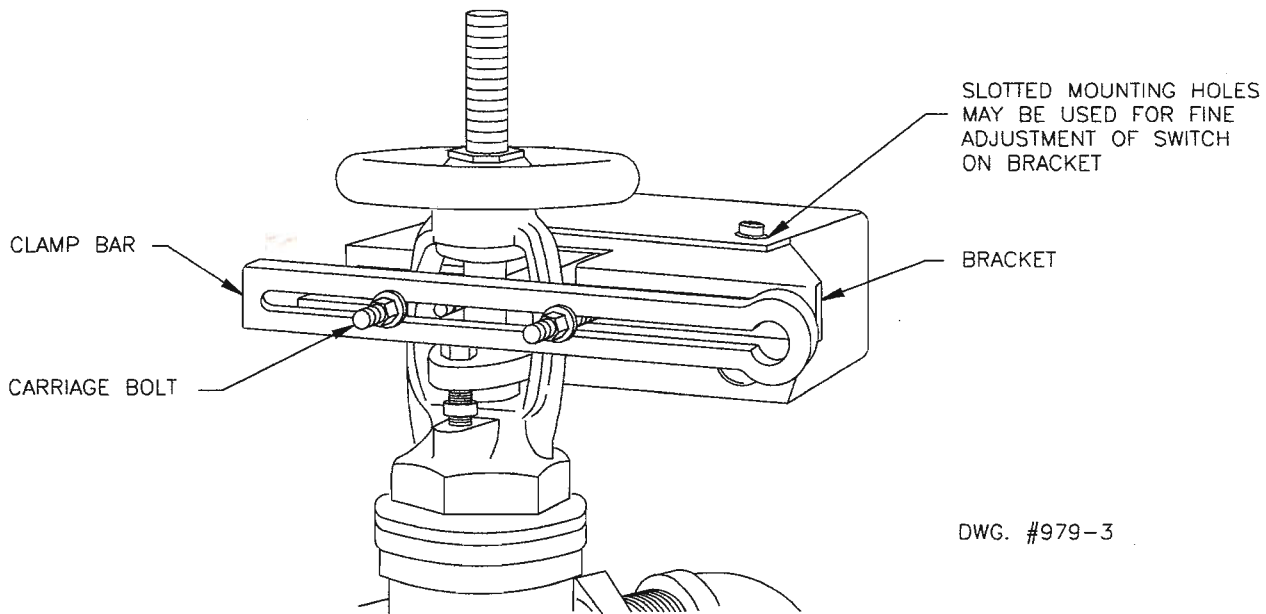
A field installable cover tamper switch is available as an option which may be used to indicate removal of the cover. See ordering information on page 4.

TESTING

The OSYSU and its associated protective monitoring system should be inspected and tested in accordance with applicable NFPA codes and standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).

FIG. 1 SMALL VALVE INSTALLATION - 1/2" THRU 2 1/2" (12,5mm THRU 63,5mm) SIZES

THESE SWITCHES MOUNT CONVENIENTLY TO MOST 2" TO 12" OS & Y VALVES. THEY WILL MOUNT ON SOME VALVES AS SMALL AS 1/2" (12,5MM). J-HOOKS MAY BE REQUIRED ON VALVES WITH LIMITED CLEARANCE.



SMALL VALVE INSTALLATION

1. Remove and discard "C" washer and roller from the trip rod.
 2. With the valve in the FULL OPEN position, locate the OSYSU across the valve yoke as far as possible from the valve gland, so that the trip rod lays against the non-threaded portion of the valve stem.
 3. Loosen the locking screw that holds the trip rod in place and adjust the rod length (see Fig. 4). When adjusted properly, the rod should extend past the valve screw, but not so far that it contacts the clamp bar. Tighten the locking screw to hold the trip rod in place.
- NOTE:** If trip rod length is excessive, loosen the locking screw and remove the trip rod from the trip lever. Using pliers, break off the 1" (25mm) long notched section (see Fig. 5). Reinstall trip rod and repeat Step 3 procedure.
4. Mount the OSYSU loosely with the carriage bolts and clamp bar supplied. On valves with limited clearance use J-hooks supplied instead of the carriage bolts and clamp bar to mount the OSYSU.
 5. Mark the valve stem at the center of the trip rod.

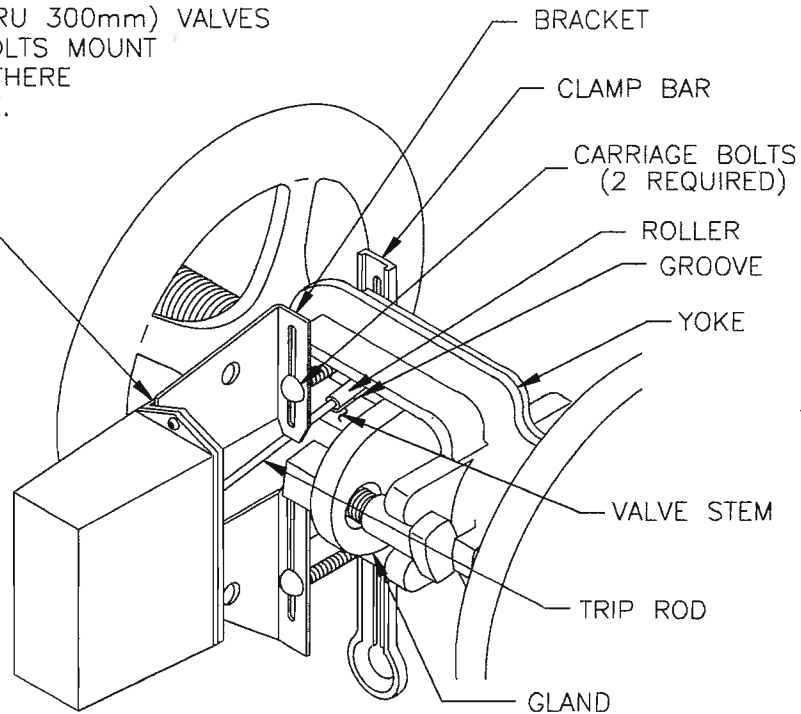
6. Remove the OSYSU. File a 1/8" (3,2mm) deep groove centered on the mark on the valve stem utilizing a 3/16" (4,8mm) round, non-tapered file. Round and smooth the edges of the groove to prevent damage to the valve packing and to allow the trip rod to move easily in and out of the groove as the valve is operated.
7. Mount the OSYSU with the trip rod centered in groove.
8. Final adjustment is made by loosening 2 screws (see Fig. 1) and sliding the OSYSU on the bracket. Adjustment is correct when switches are not activated with the trip rod seated in the valve stem groove and that the switches activate when the trip rod moves out of the groove.
9. Tighten the adjustment screws and all mounting hardware. Check to insure that the rod moves out of the groove easily and that the switches activate within one turn when the valve is operated from the FULL OPEN towards the CLOSED position.

NOTE: CLOSE THE VALVE FULLY TO DETERMINE THAT THE STEM THREADS DO NOT ACTIVATE THE SWITCH. THE SWITCH BEING ACTIVATED BY THE STEM THREADS COULD RESULT IN A **FALSE VALVE OPEN** INDICATION.

FIG. 2 LARGE VALVE INSTALLATION - 3" THRU 12" (76mm THRU 300mm) SIZES

3" THRU 12" (76mm THRU 300mm) VALVES USE CARRIAGE BOLTS. BOLTS MOUNT ON INSIDE OF YOKE, IF THERE IS SUFFICIENT CLEARANCE.

SLOTTED MOUNTING HOLES. MAY BE USED FOR FINE ADJUSTMENT OF SWITCH ON BRACKET.



DWG. #979-4

LARGE VALVE INSTALLATION

1. With the valve in the FULL OPEN position, locate the OSYSU across the valve yoke as far as possible from the valve gland, so that the trip rod lays against the non-threaded portion of the valve stem.
2. Mount the OSYSU loosely with the carriage bolts and clamp bar supplied.
3. Loosen the locking screw that holds the trip rod in place and adjust the rod length (see Fig. 4). When adjusted properly, the rod should extend past the valve screw, but not so far that it contacts the clamp bar. Tighten the locking screw to hold the trip rod in place.
NOTE: If trip rod length is excessive, loosen the locking screw and remove the trip rod from the trip lever. Using pliers, break off the one 1" (25mm) long notched section (see Fig. 5). Reinstall trip rod and repeat Step 3 procedure.
4. Mark the valve stem at the center of the trip rod.
5. Remove the OSYSU. File a 1/8" (3,2mm) deep groove centered on the mark of the valve stem utilizing a 3/8"

(9,5mm) round, non-tapered file. Round and smooth the edges of the groove to prevent damage to the valve packing and to allow the trip rod to move easily in and out of the groove as the valve is operated.

6. Mount the OSYSU loosely with the trip rod centered in groove.
7. Final adjustment is made by loosening 2 screws (see Fig. 2) and sliding the OSYSU on the bracket. Adjustment is correct when switches are not activated with the trip rod seated in the valve stem groove and that the switches activate within one turn when the valve is operated from the FULL OPEN towards the CLOSED position.
8. Tighten the adjustment screws and mounting hardware. Check to insure that the rod moves out of the groove easily and that the switches activate within one turn when the valve is operated from the FULL OPEN towards the CLOSED position.

NOTE: CLOSE THE VALVE FULLY TO DETERMINE THAT THE STEM THREADS DO NOT ACTIVATE THE SWITCH. THE SWITCH BEING ACTIVATED BY THE STEM THREADS COULD RESULT IN A **FALSE VALVE OPEN** INDICATION.

FIG. 3

DIMENSIONS

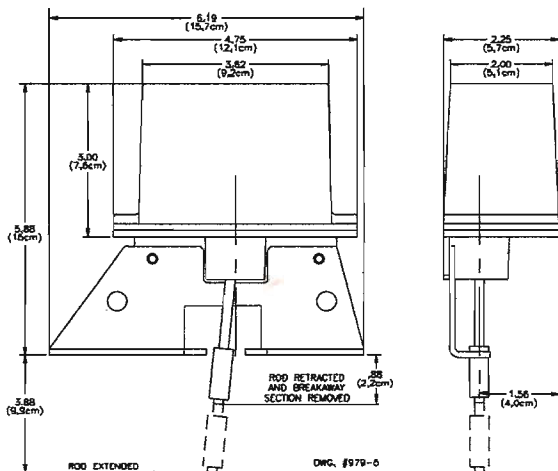
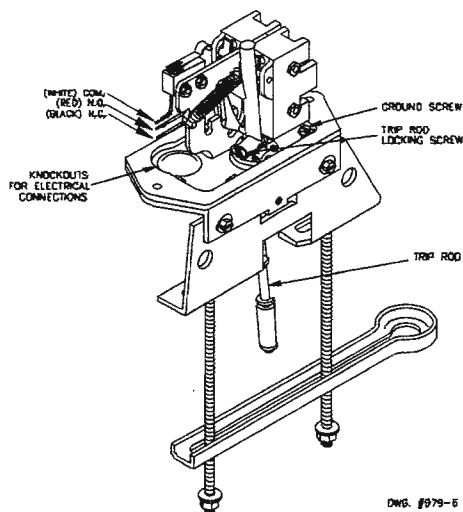


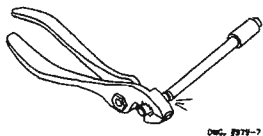
FIG. 4

PARTS



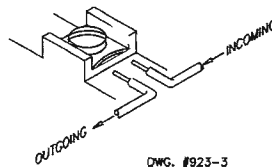
BREAKING EXCESSIVE ROD LENGTH

FIG. 5



DWG. #979-7

**SWITCH TERMINAL CONNECTIONS
CLAMPING PLATE
TERMINAL**

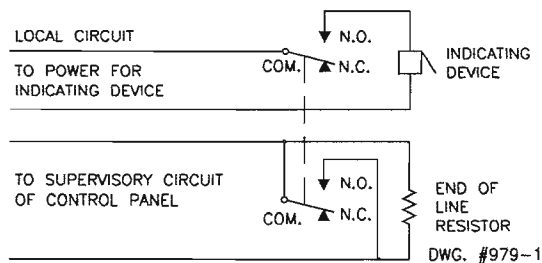


DWG. #923-3

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.

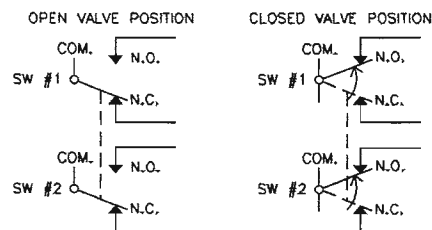
TYPICAL ELECTRICAL CONNECTIONS



DWG. #979-1

Contacts shown in normal (valve open) condition.

TYPICAL SWITCH ACTION



DWG. #979-2

ORDERING INFORMATION

MODEL	DESCRIPTION	STOCK NO.
OSYSU-1	Outside Screw & Yoke-Supervisory Switch (Single switch)	1010106
OSYSU-2	Outside Screw & Yoke-Supervisory Switch (Double switch)	1010206
--	Cover Screw	5490344
--	Hex Key for Cover Screws and Installation Adjustments	5250062
--	Optional Cover Tamper Switch Kit	0090131

For pressure reducer type valve installation kits (if required) contact valve manufacturer.



⚠ 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.

UL, CUL and CSFM Listed, FM Approved, LPCB Approved, For CE Marked (EN12259-5) / VdS Approved model use VSR-EU

Service Pressure: 450 PSI (31 BAR) - UL

Flow Sensitivity Range for Signal:

4-10 GPM (15-38 LPM) - UL

Maximum Surge: 18 FPS (5.5 m/s)

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

Conduit Entrances: Two knockouts provided for 1/2" conduit.

Individual switch compartments suitable for dissimilar voltages.

Environmental Specifications:

- 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.
- Temperature Range: 40°F - 120°F, (4.5°C - 49°C) - UL
- Non-corrosive sleeve factory installed in saddle.

Service Use:

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

Optional: Cover Tamper Switch Kit, Stock No. 0090148

General Information

The Model VSR is a vane type waterflow switch for use on wet sprinkler systems. It is UL Listed and FM Approved for use on steel pipe; schedules 10 through 40, sizes 2" thru 8" (50 mm thru 200 mm). LPC approved sizes are 2" thru 8" (50 mm thru 200 mm). See Ordering Information chart.

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.

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. See bulletin number 5401103 for installation instructions of this switch.

Installation: See Fig. 1

These devices may be mounted on horizontal or vertical pipe. On horizontal pipe they should 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.

Drain the system and drill a hole in the pipe using a hole saw in a slow speed drill. (see Fig. 1)

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. Install the saddle strap and tighten nuts alternately to required torque. (see Fig. 1). The vane must not rub the inside of the pipe or bind in any way.

Specifications subject to change without notice.

Ordering Information			
Nominal Pipe Size	Model	Part Number	
2"	DN50	VSR-2	1144402
2 1/2"	DN65	VSR-2 1/2	1144425
3"	DN80	VSR-3	1144403
3 1/2"	-	VSR-3 1/2	1144435
4"	DN100	VSR-4	1144404
5"	-	VSR-5	1144405
6"	DN150	VSR-6	1144406
8"	DN200	VSR-8	1144408

Fig. 1

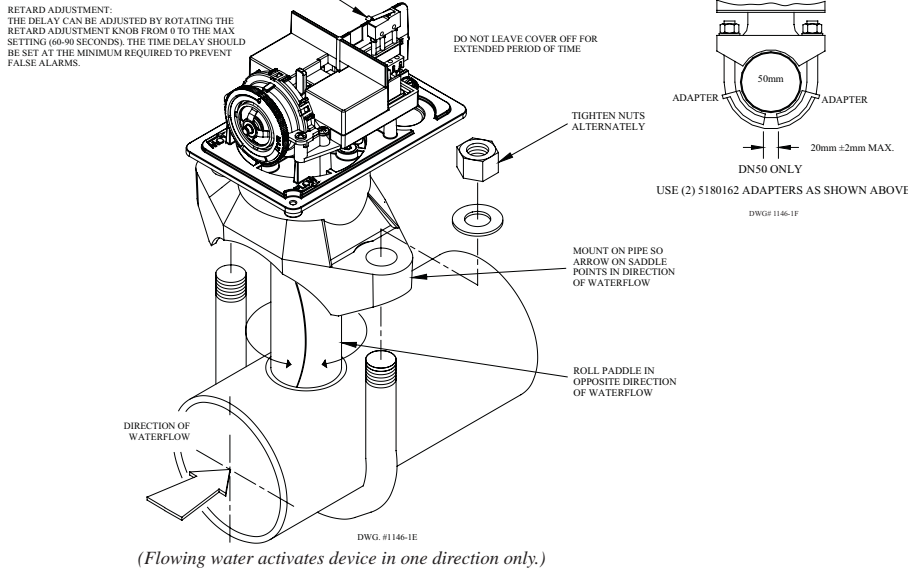
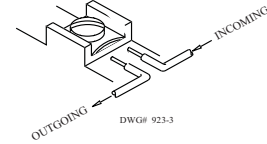


Fig. 2 Switch Terminal Connections
Clamping Plate Terminal



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.

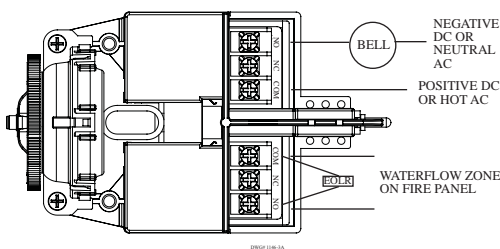
CAUTION

Waterflow switches that are monitoring wet pipe sprinkler systems should 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.

Installation Requirements

Model	Nominal Pipe Size		Nominal Pipe O.D.		Hole Size		U-Bolt Nuts Torque	
	inch	mm	inch	mm	inch	mm	ft-lb	n-m
VSR-2	2	DN50	2.375	60.3	1.25 + .125/-062	33.0 ± 2.0	20	27
VSR-2 1/2	2 1/2		2.875	73.0				
VSR-2 1/2	2 1/2	DN65	3.000	76.1				
VSR-3	3	DN80	3.500	88.9	2.00 ± .125	50.8 ± 2.0		
VSR-3 1/2	3 1/2		4.000	101.6				
VSR-4	4	DN100	4.500	114.3				
VSR-5	5		5.563	141.3				
VSR-6	6	DN150	6.625	168.3				
VSR-8	8	DN200	8.625	219.1				

Fig. 3 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. A condition of LPC Approval of this product is that the electrical entry must be sealed to exclude moisture.
3. For supervised circuits see "Switch Terminal Connections" drawing and caution note (Fig. 2).

Fig. 4

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

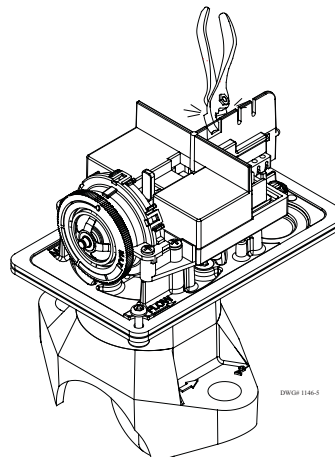
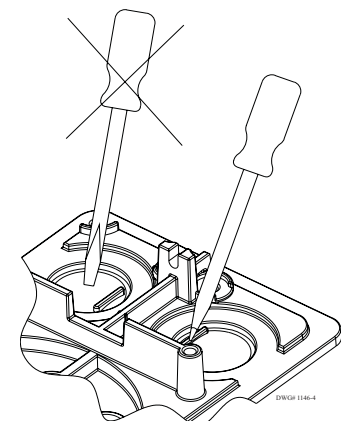


Fig. 5

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



Model	Nominal Pipe Size		Nominal Pipe O.D.		Compatible Pipe							
					Pipe Wall Thickness				DN (VDS)			
	inch	mm	inch	mm	Schedule 10 (UL)		Schedule 40 (UL)		BS-1387 (LPC)		DN (VDS)	
VSR-2	2	DN50	2.375	60.3	0.109	2.77	0.154	3.91	0.142	3.6	0.091	2.3
VSR-2 1/2	2 1/2		2.875	73.0	0.120	3.05	0.203	5.16				
VSR-2 1/2		DN65	3.000	76.1					0.142	3.6	0.102	2.6
VSR-3	3	DN80	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 1/2		4.000	101.6	0.120	3.05	0.226	5.74				
VSR-4	4	DN100	4.500	114.3	0.120	3.05	0.237	6.02	0.177	4.5	0.126	3.2
VSR-5	5		5.563	141.3	0.134	3.40	0.258	6.55				
VSR-6	6	DN150	6.625	168.3	0.134	3.40	0.280	7.11	0.197	5.0	0.157	4.0
VSR-8	8	DN200	8.625	219.1	0.148	3.76	0.322	8.18	0.248	6.3	0.177	4.5

Note: For copper or plastic pipe use Model VSR-CF.

Testing

The frequency of inspection and testing for the Model VSR 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 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 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 #1029055. There is no maintenance required, only periodic testing and inspection.

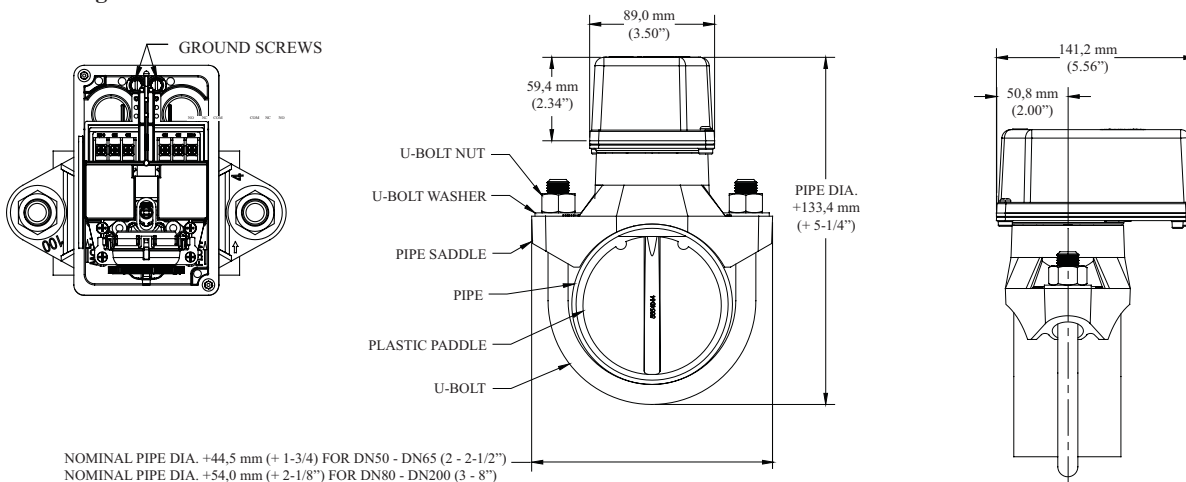
Removal

- 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 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.

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.

Mounting Dimensions



DWG# 1146-6