



V.S.V. INDUSTRIAL SOLUTIONS LTD.

FIRE SPRINKLER PIPE AND FITTINGS

CATALOGUE



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SPRINKLER PIPE



Black Carbon Steel Pipe

STANDARD: ASTM A795

CERTIFICATIONS: FM, UL, API

SURFACE PREPARATION: black painted

QUALITY TOLERANCE: +/- 5%

LENGTH: 19ft

COUNTRY OF ORIGIN: China

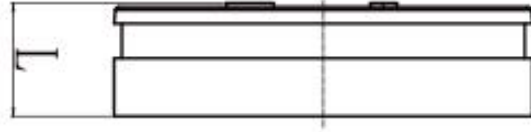
NOMINAL DIAMETER		OUTSIDE DIAMETER		SCH	WALL THICKNESS		NOMINAL WEIGHT		TEST PRESSURE		TYPE
(mm)	(inch)	(mm)	(inch)		(mm)	(inch)	(kg/m)	(lb/ft)	PSI	MPa	
25	1	33.4	1.32	40	3.38	0.133	2.50	1.68	700	4.8	seamless
32	1 1/4	42.2	1.66	40	3.56	0.140	3.39	2.27	1000	6.9	seamless
40	1 1/2	48.3	1.90	40	3.68	0.145	4.05	2.72	1000	6.9	seamless
50	2	60.3	2.38	40	3.91	0.154	5.45	3.66	1000	6.9	seamless
65	2 1/2	73.0	2.88	40	5.16	0.203	8.64	5.80	1000	6.9	seamless
100	4	114.3	4.50	10	3.05	0.120	8.37	5.62	1200	8.3	ERW
150	6	168.3	6.63	10	3.40	0.134	13.85	9.30	1000	6.9	ERW



SPRINKLER FITTINGS



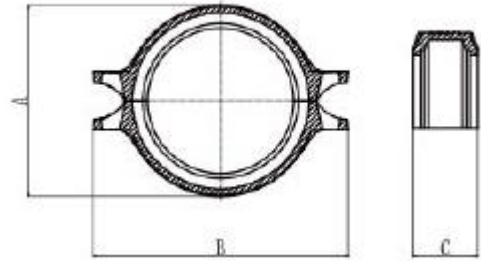
End Cap



Nominal Size in	Pipe OD in	Working Pressure PSI	Dimension L in
2"	2.375	300	1.102
2 1/2"	3	300	1.102
4"	4.5	300	1.213
6"	6.5	300	1.228



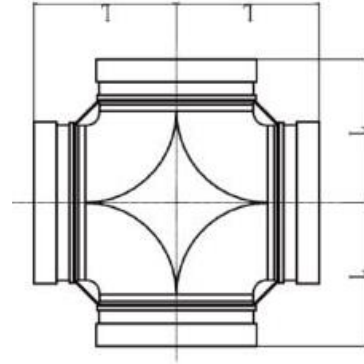
Standard Rigid Coupling



Nominal Size in	Pipe OD in	Working Pressure PSI	Dimensions		
			A in	B in	C in
2	2.735	300	3.236	4.803	1.736
2 ½	3	300	3.827	5.559	1.772
3	3.5	300	4.307	6.004	1.768
4	4.25	300	5.142	7.016	1.854
6	6.5	300	7.543	9.532	1.917



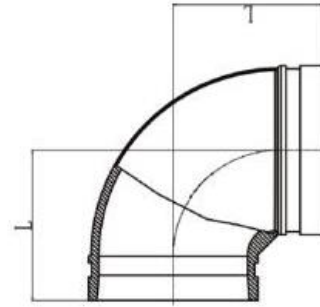
Cross



Nominal Size in	Pipe OD in	Working Pressure PSI	Dimensions L in
2 1/2"	3	300	3
4"	4.5	300	3.642
6"	6.5	300	4.883



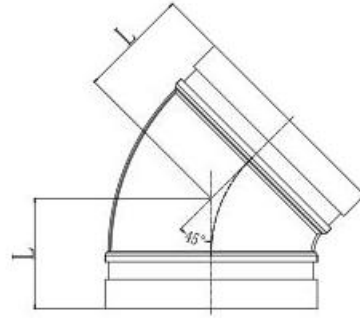
Elbow, 90 deg, standard radius



Nominal Size in	Pipe OD in	Working Pressure PSI	Dimension L in
2	2.375	300	2.559
2 ½	3	300	2.858
3	3.5	300	3.157
4	4.5	300	3.866
6	6.625	300	5.075



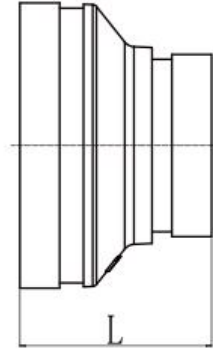
Elbow, 45 deg



Nominal Size in	Pipe OD in	Working Pressure PSI	Dimensions L in
2	2.375	300	1.176
2 ½	3	300	1.89
3	3.5	300	2.091
4	4.5	300	2.299
6	6.5	300	2.886



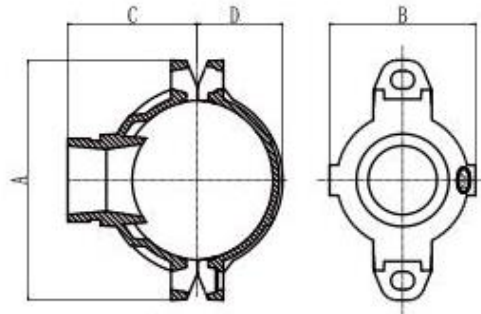
Concentric reducer



Nominal Size in	Pipe OD in	Working Pressure PSI	Dimension L in
1 1/4" X 1"	1.660x1.315	300	2.51
1 1/2" X 1"	1.900x1.315	300	2.51
2" X 1 1/2"	2.375x1.900	300	2.51
2 1/2" X 2"	2.875x2.375	300	2.51
4" X 2"	4.500x2.735	300	2.559
4" X 2 1/2"	4.500x3.000	300	2.638
6" X 4"	6.500x4.500	300	3.301



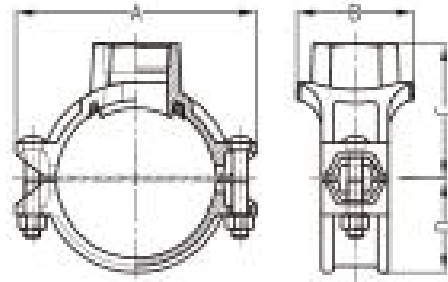
Mechanical tee, grooved outlet



Nominal Size in	Pipe OD in	Working Pressure PSI	Hole Dia in	Dimensions L				Bolt Size
				A in	B in	C in	D in	
4" X 2 1/2"	4.5x2.375	300	3.18	7.16	4.64	3.90	2.76	1/2* 65-2
6" X 2"	6.625x2.375	300	2.40	9.60	4.01	5.04	3.81	9/16* 75-2
6" X 2 1/2"	6.625x2.875	300	3.18	9.60	4.68	5.04	3.81	9/16* 75-2



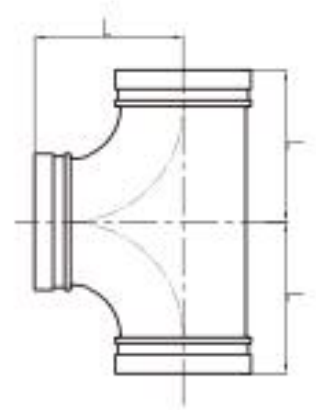
Mechanical tee, NPT threaded outlet



Nominal Size in	Pipe OD in	Working Pressure PSI	Hole Dia In +0.063,0	Dimensions L in				Bolt Size in
				A in	B in	C in	D in	
2 1/2" X 1"	3.000x1.315	300	1.5	5.39	2.8	3.05	1.95	0.5x2.756
2 1/2" X 1 1/4"	3.000x42.4	300	2.00	5.39	3.33	3.05	1.95	0.5x2.756
2 1/2" X 1 1/2"	3.000x1.900	300	2.00	5.39	3.33	3.05	1.95	0.5x2.756
4" X 2"	4.5x2.375	300	2.50	7.01	4.07	3.62	2.66	0.5x2.953



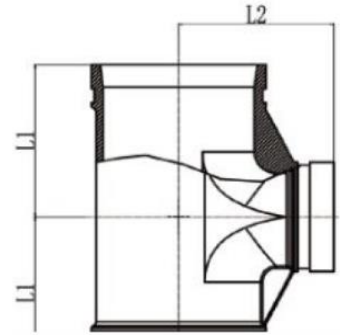
Tee



Nominal Size	Pipe OD	Working Pressure	Dimensions L
in	in	PSI	in
2"	2.375	300	3.25
2 1/2"	3.000	300	3.74
3"	3.5	300	4.25
4"	4.5	300	5.00
6"	6.625	300	6.5



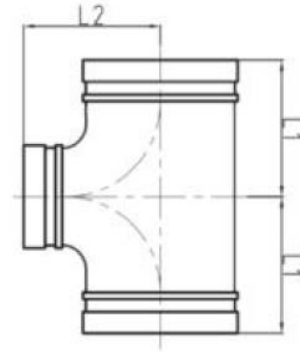
Reducing Tee



Nominal Size in	Pipe OD in	Working Pressure PSI	Dimensions L1 in	Dimensions L2 in
4" X 2 1/2"	4.500x3.00	300	3.74	3.071
6" X 4"	6.500x4.500	300	4.724	3.937



NPT Reducing Tee



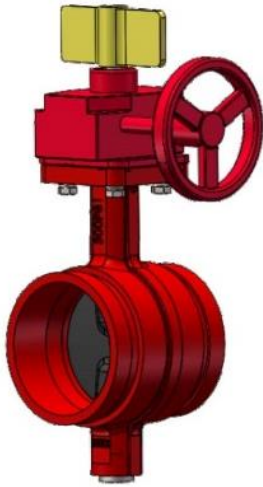
Nominal Size in	Pipe OD in	Working Pressure PSI	Dimensions L1 in	Dimensions L2 in
2 1/2" X 1 1/4"	3.000x1.660	300	2.48	2.165
2 1/2" X 1 1/2"	3.000x1.900	300	2.626	2.579
2 1/2" X 2"	3.000x2.375	300	2.921	2.756
4" X 2"	4.500x2.375	300	3.301	3.228



VALVES



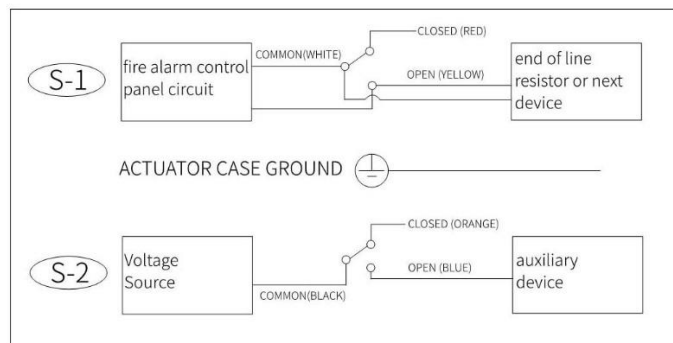
Grooved Butterfly Valve with Signal Box



Descriptions

GALA Model 25GG grooved butterfly valve is the gear operated fitted with visual indicator and supervisory switch. Model 25GG butterfly valves are suitable for installation in AWWA C606 grooved end pipeline. Model 25GG is listed for 200psi/250psi/300psi. Valve gear is fitted with two internal switches with SPDT contact to supervise valve open or closed position. Model 25GG offer minimum flow restriction and pressure loss when used in the fully open position.

Wire Diagram



(Valve Fully Open)

Switch1 (S-1): For connection to supervisory circuit of a alarm control panel.

Switch2 (S-2): Auxiliary switch for connection to a local device.

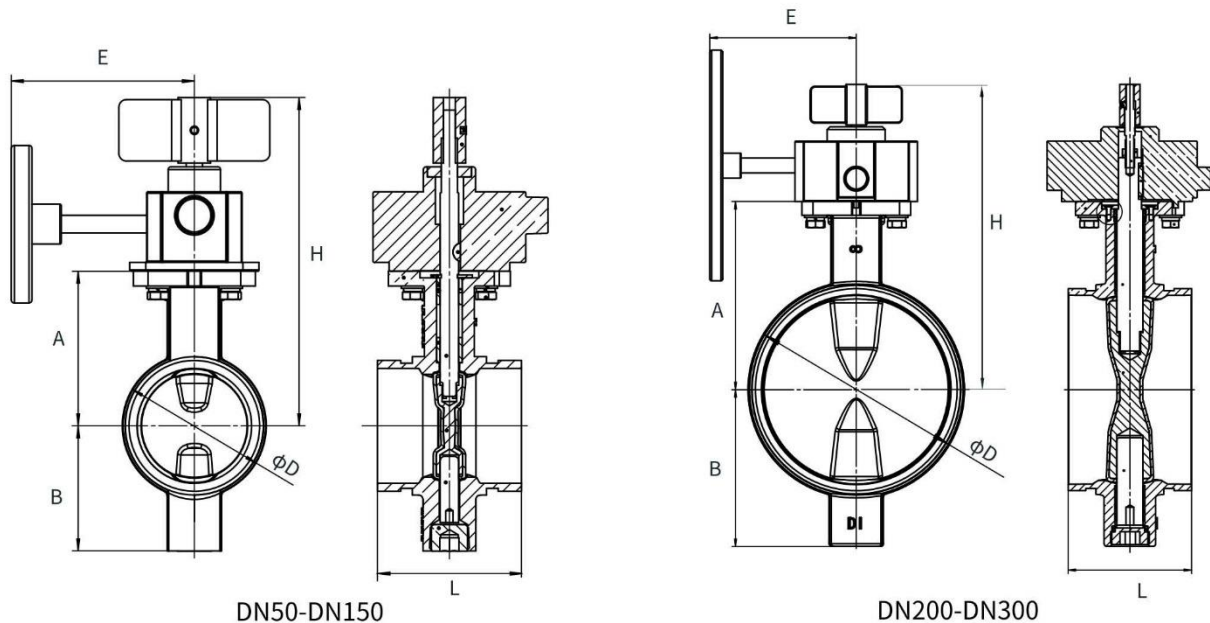


Features

- Robust valve body made of ductile iron
- Fully encapsulated valve disc.
- Fusion bonded epoxy power coating which complies with ANSI/AWWA C550
- FM approved and UL/CIL listed for use in fire protection systems.
- Remote electrical position indicator with two separate micro switches.

Technical Specifications

- Design Standard: FM1112, UL1091
- Face to Face Standard: MSS-SP67 Long
- Test Standard: FM1112, UL 1091
- Connection Standard: AWWA C606/VDS 2100
- Working Pressure: 300/250/200psi
- Working Temperature: -10°C to 120°C



Materials

Part	Material	Specification
Body	Ductile Iron	ASTM-A536
Disc	EPDM Fully Encapsulated Ductile Iron	ASTM A536+EDPM
Shaft (Upper/Lower)	Stainless Steel	ANSI SS410
O-Ring	EPDM	-
Bushing	Bronze	ASTM B150M C63000
Gland	Galvanized Carbon Steel Surface Passivation	
Washer	Galvanized Carbon Steel Surface Passivation	
Plug	Galvanized Carbon Steel Surface Passivation	
Gear Box Housing	Ductile Iron	ASRM A536
Gear Box Fasteners	Galvanized Carbon Steel Surface Passivation	

Dimensions (mm)

DN	A	B	E	H	L	φD
DN50	95	72	125	213	84.5	60.3
DN65	98	78	125	216	98	73/76.4
DN80	105	85	125	223	98	88.9
DN100	135	105	125	253	116	114.3
DN125	148	128	140	269	149	139.7/141.3
DN150	165	140	140	285	147.6	165.1/168.3
DN200	204	170	159	325	134	219.1
DN250	245	205	159	373	160	273
DN300	277.5	258.3	228	403.5	165	323.85





WATERFLOW VALVE


VSR
Vane Type Waterflow Alarm Switch W/ Retard

Features

- Assembled in USA
- 0-90 second field replaceable time delay retard
- Easy to read retard time delay adjustment knob
- UL Listed models for 2"-6" steel pipe schedules 5 through 40
- UL Listed and FM approved models for 2"-8" steel pipe schedules 10 through 40
- Two SPDT (form C) contacts
- Weatherproof
- Easy to read wire terminal designations

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 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.



Description

The Model VSR is a vane type waterflow switch for use on wet sprinkler systems. It is UL Listed for use on a steel pipe; schedules 5 through 40, sizes 2" - 6" and 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 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 Non-corrosive sleeve factory installed in saddle.
Flow Sensitivity Range for Signal	4-10 GPM (15-38 LPM) - UL
Maximum Surge	18 FPS (5.5 m/s)
Service Pressure	450 PSI (31 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

Specifications subject to change without notice.

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VSR Vane Type Waterflow Alarm Switch W/ Retard

Installation (see Fig. 1)

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.

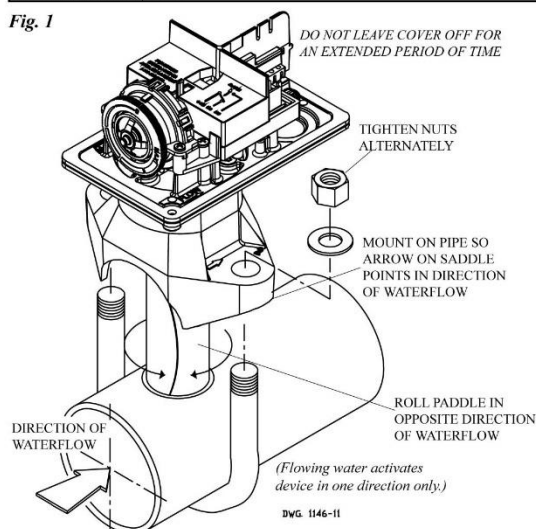
NOTE: Do not leave cover off for an extended period of time.

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

Fig. 1

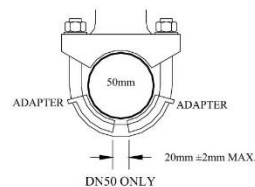
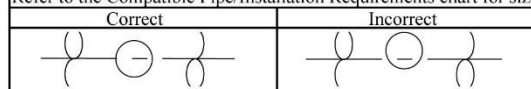


Retard Adjustment

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.



USE (2) 5180162 ADAPTERS AS SHOWN ABOVE

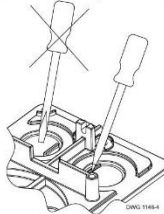
Compatible Pipe/ Installation Requirements																				
Model	Nominal Pipe Size		Nominal Pipe O.D.		Pipe Wall Thickness										Hole Size		U-Bolt Nuts Torque			
					Lightwall		Schedule 10 (UL)		Schedule 40 (UL)		BS-1387 (LPC)		DN (VDS)							
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	ft-lb	n-m		
VSR-2	2	DN50	2.375	60.3	.065	1.651	0.109	2.77	0.154	3.91	0.142	3.6	0.091	2.3	1.25 ± .125/-062	33.0 ± 2.0	20	27		
VSR-2 1/2	2.5	-	2.875	73.0	.084	2.134	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	.083	2.108	0.120	3.05	0.216	5.49	0.157	4.0	0.114	2.9	2.00 ± .125	50.8 ± 2.0			20	27
VSR-3 1/2	3.5	-	4.000	101.6	-	-	0.120	3.05	0.226	5.74	-	-	-	-						
VSR-4	4	DN100	4.500	114.3	.084	2.134	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	.115	2.921	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						

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Fig. 2

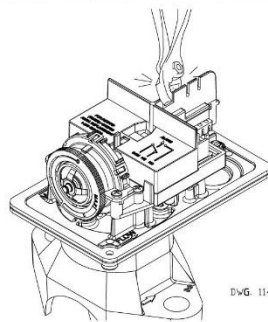
To remove knockouts: Place screwdriver at inside edge of knockouts, not in the center.

**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.

Fig. 3

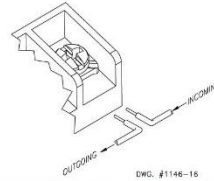
Break out thin section of cover when wiring both switches from one conduit entrance.



DWG. 1146-13

Switch Terminal Connections Clamping Plate Terminal

Fig. 4



DWG. #1146-16

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.

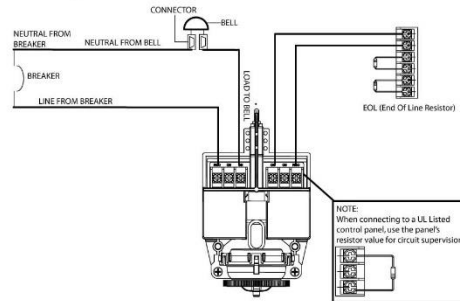
Do not strip wire beyond 3/8" of length or expose an uninsulated conductor beyond the edge of the terminal block. When using stranded wire, capture all strands under the clamping plate.

Typical Electrical Connections

Fig. 5

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" drawing and warning note (Fig. 4).



NOTE: When connecting to a UL Listed control panel, use the panel's resistor value for circuit supervision.

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.

Fig. 6 Mounting Dimensions

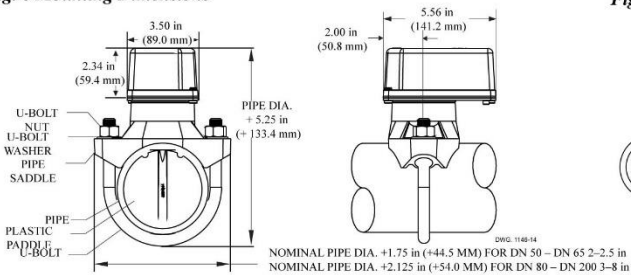
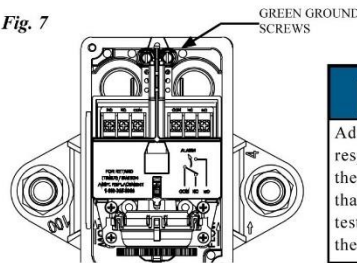


Fig. 7

**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.

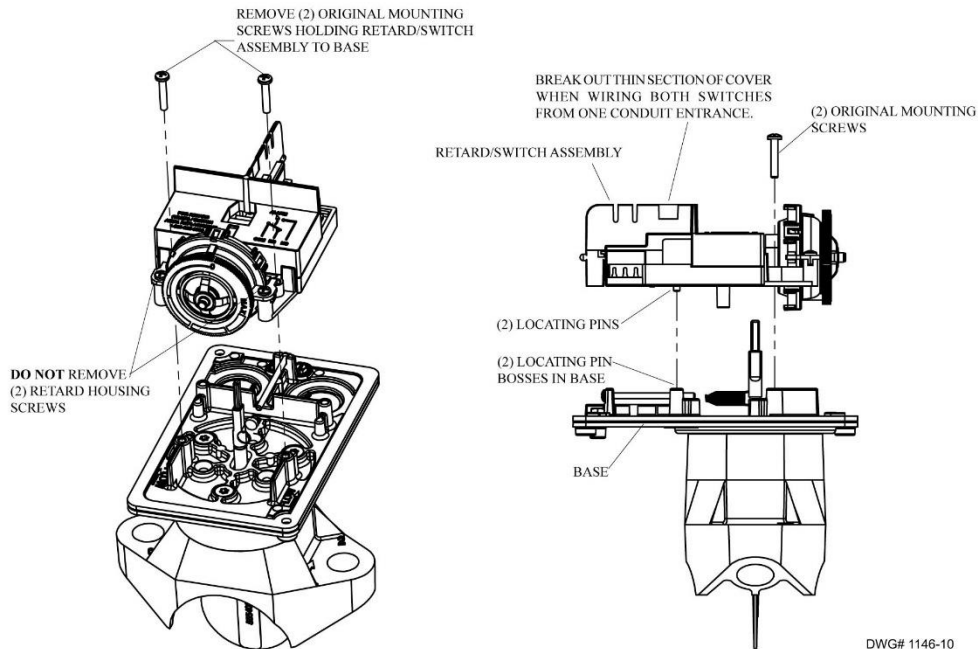
Retard/Switch Assembly Replacement (See Fig. 8)

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. 8





VSR

Vane Type Waterflow Alarm Switch W/ Retard

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.

NOTICE

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

Ordering Information

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

Optional: Cover Tamper Switch Kit, stock no. 0090148
 FSBS-FLOWSWITCH BYPASS SWITCH, stock no. 3001006
Replaceable Components: Retard/Switch Assembly, stock no. 1029030

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