

WFDTNR Vane-type Waterflow Detector

SPECIFICATIONS

| | |
|---|---|
| Contact Ratings: | 10 A @ 125/250 VAC ; 2.5 A @ 24 VDC |
| Triggering Threshold Bandwidth (Flow Rate): | 4 to 10 GPM |
| Static Pressure Rating: | 250 PSI (Max.) |
| Dimensions (Installed): | 3/4 in H x 3/4 in W x 4 1/4 in D; 3/4 in above pipe tee |
| Operating Temperature Range: | 32°F to 120°F (0°C to 49°C) |
| Shipping Weight: | 1.5 lbs |
| Enclosure Rating: | IP56 |
| U. S. Patent Number: | 5,213,205 |

IMPORTANT

Please Read Carefully And Save

This instruction manual contains important information about the installation and operation of waterflow detectors. Purchasers who install waterflow detectors for use by others must leave this manual or a copy of it with the user. Read all instructions carefully before beginning.



Use vane-type waterflow detectors in wet-pipe systems only. DO NOT USE IN DRY-PIPE, DELUGE, OR PRE-ACTION SYSTEMS. The sudden inrush of water in such systems may break the vane off or damage the mechanism. Do not use in potentially explosive atmospheres. Do not leave unused wires exposed.

PRINCIPLES OF OPERATION

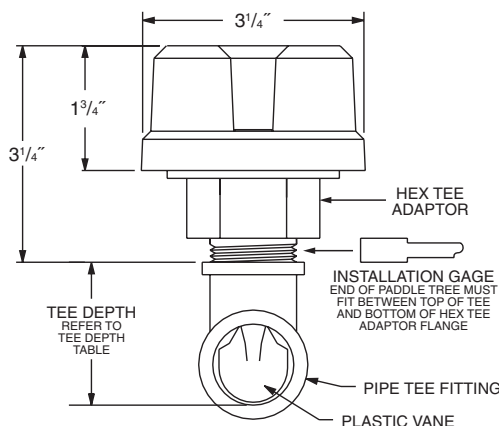
Vane-type waterflow detectors mount to wet-pipe systems only. Water flow in the pipe deflects a vane. Deflection of the vane produces a switched output. All detectors will activate on a sustained flow of water greater than 10 gallons per minute (gpm) but will not activate if the flow rate is less than 4 gpm.

COMPATIBLE PIPE TEES/RISERS

Model WFDTNR fits 1- to 1 1/2-inch NPT threaded ferrous and brass, 1- to 2-inch sweat brass, 1 1/2-inch polybutylene plastic and 1-inch pvc plastic tees having a 1-inch threaded NPT branch (see **Figure 1** and chart for recommended tee depths). For 2-inch cast and malleable threaded tees use 2-inch paddle (P02-0023-00) provided. Use 1-inch CPVC paddle when installing detector on 1-inch slip by 1-inch slip by 1-inch FPT NIBCO tee.

| APPROXIMATE TEE DEPTH REQUIREMENTS (SEE FIGURE 1) | | | | | | |
|---|----------|--------|--------|--------|-----------------------|-----------|
| TEE DEPTH | Threaded | Sweat | Poly B | CPVC | CPVC/Spears/Victaulic | CPVC/Tyco |
| 1 x 1 x 1" | 2 1/8" | 1 3/4" | N/A | 2 1/4" | 2 15/32" | 2 13/16" |
| 1 1/4 x 1 1/4 x 1" | 2 1/2" | 2 1/6" | N/A | N/A | N/A | N/A |
| 1 1/2 x 1 1/2 x 1" | 2 3/4" | 2 1/4" | 2 1/2" | N/A | N/A | N/A |
| 2 x 2 x 1" | 3 1/4" | 2 3/4" | N/A | N/A | N/A | N/A |

FIGURE 1. MOUNTING DIMENSIONS:

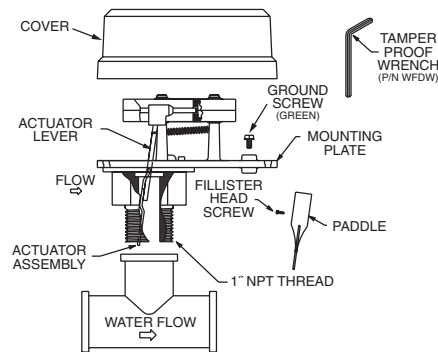


INSTALLATION GUIDELINES

Before installing any waterflow alarm device, be thoroughly familiar with:

- NFPA 72: *Installation, Maintenance and Use of Local Protective Signalling Systems*
- NFPA 13: *Installation of Sprinkler Systems, specifically Section 3.17*
- NFPA 25: *Inspection, Testing and Maintenance of Sprinkler Systems, specifically Chapters 4 and 5, and Section 5.3.3.2*
- NFPA 13D: *Standard for Residential Dwellings*
- NFPA 13R: *Standard for Multifamily Dwellings*

FIGURE 2. ASSEMBLY DIAGRAM:



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Other applicable NFPA standards, local codes and the requirements of the authority having jurisdiction.

Failure to follow these directions may result in failure of the device to report a waterflow condition. System Sensor is not responsible for devices that have been improperly installed, tested or maintained.

1. Mount the detector where there is adequate clearance for installation and removal and a clear view of it for inspection. See **Figure 1** for mounting dimensions.
2. Locate to protect from damage, 6-7 feet above the floor.
3. On horizontal runs, position the detector on top of the pipe or on the side. Do not mount it upside down.
4. Mount detector at least 6 inches from a fitting which changes the direction of the water flow.
5. BE SURE DIRECTION-OF-FLOW ARROW MATCHES ACTUAL DIRECTION OF FLOW IN THE PIPE.

MOUNTING INSTRUCTIONS

1. This WFDTNR waterflow detector is designed to fit only the appropriate tee fitting. **NOTE:** Leg of tee perpendicular to flow of water must have a 1-inch NPT thread. Do not use a reducer to achieve the correct thread size. Failure to follow this instruction will result in failure of the detector to report a waterflow condition.
2. WFDT units are shipped without the paddles mounted to the actuator. Select the correct size paddle for the tee being used the appropriate nominal pipe diameter size is molded on the surface of the paddles. Align hole on stem of paddle with hole on actuator lever. Fasten together using a #4-40 x 1/4-inch fillister head screw supplied in bag assembly. See **Figure 2**. Use only the screw provided with the WFDTNR. Drive screw head

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through hole in paddle until it seats firmly to actuator lever surface. No washer is required. For paddle replacement refer to Maintenance section.

- Thread detector onto tee fitting and tighten with wrench. Use of thread sealant or tape is recommended. Use height gage (located at end of paddle tree) to ensure proper depth of detector on tee fitting. See **Figure 1**. Height gage must fit between top of tee fitting and under side of hex tee adapter. A gap between gage and tee adapter is acceptable. When correctly installed, the detector must face in the proper direction of waterflow and be aligned with the pipe.
- Remove the plastic cover with the tamper proof wrench provided. Move the actuator lever back and forth to check for binding. If the vane binds, remove the detector and correct the problem before proceeding.

CAUTION

Be sure the direction-of-flow arrow points in the correct direction, otherwise a waterflow condition will go unreported. See **Figure 2**.

OPERATIONAL TESTING

Always notify a central station monitoring waterflow alarms before repairing, maintaining, or testing waterflow alarm devices.

- Fill the sprinkler and check for leaks around the WFDTNR. If it leaks, check to see that the fittings are tight. If leak persists, drain the system and remove the detector (see removal instructions under Maintenance). Check for damaged threads or cracked fitting. Reinstall detector and check again for leaks. Do not proceed until all leaks have been stopped.
- With cover removed, connect an ohmmeter or continuity tester across (COM and B-NO) terminal switch contacts. The ohmmeter should show an open circuit, no continuity (when the red switch buttons are depressed).
- Deflect the actuator lever to release the switch buttons. The ohmmeter or continuity tester should show a short circuit when the switch buttons are released.
- Open the inspector's test valve to allow the detector to indicate a flow condition. The detector should remain activated until the inspector's test valve is closed. Air pockets in the sprinkler system may prevent the detector from firing immediately.
- Replace the cover and tighten the security screws with the tamper proof wrench. Store wrench in a secure place.

FIELD WIRING

- The WFDT has two SPDT switches. Switch contacts (COM and B-NO) are closed when water is flowing and open when water is not flowing. Connect the switches as shown in Figure 3 depending on the application.
- When connected to a listed sprinkler/fire alarm control panel, the initiating circuit must be non-silenceable.
- A ground screw is provided with all WFDT units. When grounding is required, clamp wire with screw in hole located between conduit entrance holes. See **Figure 2**.

WARNING

THE LIMITATIONS OF WATERFLOW ALARM DEVICES

- Waterflow detectors may not work or operate properly if sprinkler piping being monitored is plugged with pipe scale, mud, stones or other foreign material. Sprinkler systems should be checked regularly for such blocking material, following the instructions in Chapter 5 of NFPA Standard 13A.
- Alarms generated by the activation of waterflow detectors may not be received by a central station if telephone or other communication lines to the detector are out of service, disabled, or open.
- Vane-type waterflow detectors have a normal service life of 10-15 years. Hard water systems, however, may substantially reduce waterflow detector service life.
- Waterflow detectors are not a substitute for insurance. Building owners should always insure property and lives being protected by sprinkler systems.
- If valves controlling the water supply to a sprinkler system are closed, vane-type waterflow detectors will not work. All valves controlling a sprinkler water supply should be sealed or locked in the normally open position. The normally open position should be monitored by a sprinkler supervisory switch.

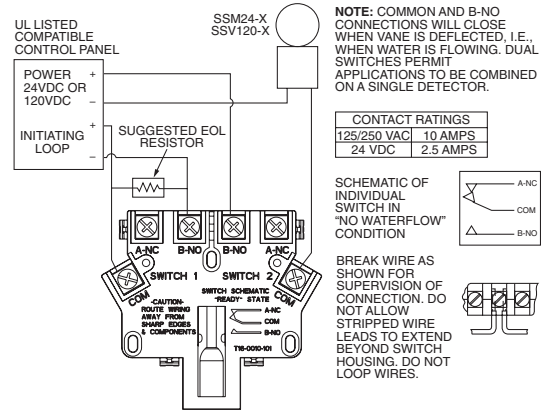
Please refer to insert for the Limitations of Fire Alarm Systems

THREE-YEAR LIMITED WARRANTY

System Sensor warrants its enclosed waterflow detector to be free from defects in materials and workmanship under normal use and service for a period of three years from date of manufacture. System Sensor makes no other express warranty for this waterflow detector. No agent, representative, dealer, or employee of the Company has the authority to increase or alter the obligations or limitations of this Warranty. The Company's obligation of this Warranty shall be limited to the repair or replacement of any part of the waterflow detector which is found to be defective in materials or workmanship under normal use and service during the three year period commencing with the date of manufacture. After phoning System Sensor's toll free number 800-SENSOR2 (736-7672) for a Return Authorization number, send defective units postage prepaid to: System Sensor, Return

WARNING
High Voltage. Electrocution Hazard. Do not handle live AC wiring or work on a device to which AC power is applied. Doing so may result in severe injury or death.
When utilizing switches at voltages greater than 74VDC --- or 49VAC ~ means to provide all-pole disconnection must be incorporated in the field wiring, such as a circuit breaker.

FIGURE 3. FIELD WIRING:



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MAINTENANCE

To prevent accidental water damage, control valves should be shut tightly and the system completely drained before waterflow detectors are removed or replaced.

Inspect detectors in accordance with applicable NFPA codes and standards and/or the authority having jurisdiction for leaks. Test detectors at least quarterly as described under Operational Testing to insure proper operation. This device is not designed for use on "dry pipe" systems. Test more often if required by the authority having jurisdiction.

Under normal conditions System Sensor waterflow detectors should provide years of trouble-free service. If, however, the switch enclosure becomes faulty, request Part No. A77-01-08. If damage occurs to paddle, order replacement kit PRK9. Refer to procedure below for removal of detector on pipe. Do not repair or replace any other waterflow detector components in the field. If any other part of the detector does not perform properly, replace the entire detector. **Failure to follow this instruction may result in failure of the detector to report a waterflow condition.**

Proceed as follows to remove a detector:

- Drain the pipe
- Turn off electrical power to the detector, and then disconnect wiring
- Unscrew WFDTNR from tee fitting