WATERFLOW DETECTOR, MODEL TF 10”

GENERAL DESCRIPTION



The model TF detects a waterflow condition in a wet sprinkler system.

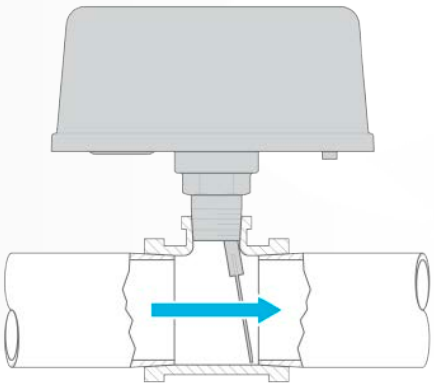
The switch assembly contains single-pole, double-throw (SPDT) contacts, and an adjustable pneumatic vane. The switch activates when a flow rate that exceeds the flow sensitivity of the switch occurs. The flow condition must exist for a longer period than the retard delay setting of the vane for the switch to operate. For information about the retard delay time ranges, see Retard delay times.

The cover incorporates a tamper resistant screw that requires a special tamper resistant key for removal. One key supplied with each device.

TECHNICAL DATA

- Approvals: UL and ULC.
- Maximum service pressure: 20 bar (300 psi).
- Flow sensitivity range for signal: 15 l/min to 37 l/min.
- Contact ratings:
  - 8 A at 125/250 VAC.
  - 3 A at 24 VDC.
  - 2,5 A at 30 VDC.
- Operating temperature range: 0°C to 49°C.
- Maximum surge: 5,5 m/s.
- Retard delay times: adjustable range 0 s to 90 s.

FIGURE 1: Waterflow switch operation



OPERATION

Waterflow in the pipe/fitting deflects the vane as shown figure 1. The vane deflection triggers a switch featuring a retard that can be set to a specific a time delay. This setting is called the retard delay.

The switch contains a pneumatically controlled mechanical delay mechanism. The delay mechanism resets if the waterflow stops before the entire time of the delay timer has elapsed.

The waterflow detector model TF described herein must be installed and maintained un compliance with this document, in addition to the standards of any other authorities having jurisdiction. Failure to do so may impar the performance of the related devices,
The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.

FIGURE 2: Components and dimensions

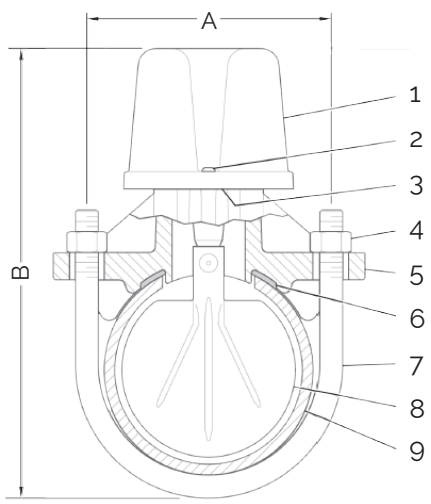


TABLE 1: Components.

Callout	Description
1	Cover
2	Tamper resistant cover screw
3	Conduit connection
4	Hex nut with flat washer
5	Saddle
6	Saddle pipe gasket
7	U-bolt
8	Vane
9	Pipe (not included)

TABLE 2: Specifications and installation dimensions.

Nominal pipe size	Nominal pipe size OD	Pipe wall thickness		Dimensions		Hole size	Bolt torque	Retard delay time	Contacts
		Sch. 10	Sch. 40	A	B				
10" (DN250)	273,0 mm	4,19 mm	9,27 mm	302 mm	405 mm	0,079 mm	70-95 N·m	0-90 s	2 set SPDT

INSTALLATION

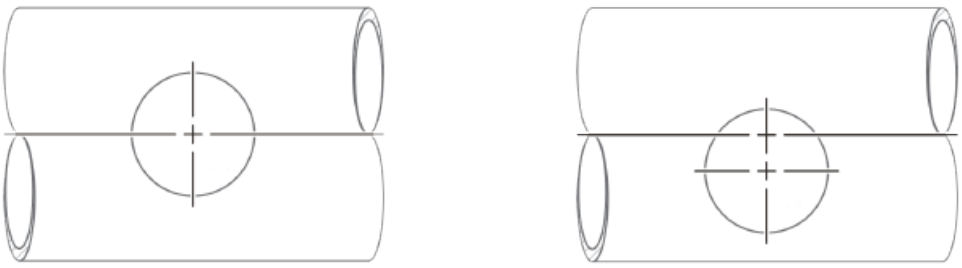
When installing a switch, observe the following guidelines:

- The switches should be installed vertically or horizontally. For horizontal installation, the switch should be installed on top of the pipe.
- The switches should be installed within 15 cm of a fitting that changes direction of the waterflow or within 60 cm of a valve or drain.

Complete the following steps:

1. Install switch in a location where is adequate clearance for installation or removal.
2. Drain the system and drill a hole in the pipe according to the dimensions in table 2. Use a hole saw in a slow speed drill to make the cut. The hole should be perpendicular to the center of the pipe as shown in figure 3.
3. Remove the burrs and sharp edges from the hole. Clean and remove all scale and foreign matter from the inside of the pipe for a distance equal to the diameter of the pipe on either side of the hole. Clean the outside of the pipe around the hole to remove any dirt, metal chips or cutting lubricant.
4. Roll the pneumatic vane into the hole in the opposite direction of the waterflow as shown in figure 1; do not bend or crease it. Seat the gasket against the saddle and mount the vane into the pipe. Insert the vane so the arrow on the saddle points in the direction of the waterflow. The busing should fit inside the hole in the pipe as shown in figure 1.
5. Install the U-bolt and tighten the nuts alternatively to ensure a uniform seal. For torque value information, see table 2.
6. Check that the vane does not rub or bind in any way. If the vane rubs, remove the detector and correct the issue before re-installing. If removing the detector, hold the vane and start to curl it. While curling the vane, slowly pull it out of the pipe. Do not pull out the vane only by the saddle.

FIGURE 3: Mounting hole location



CORRECT LOCATION

INCORRECT LOCATION

WIRING THE SWITCH

Before you begin:

- The switch must be wired according to the instructions in this section.
- The installation must comply with local electrical codes.
- Do not remove the cover for an extended period of time.

Note: an uninsulated section of a single conductor is not permitted to be looped around the terminal and serve as two separate connections. The wire must be severed to serve as two separate connections, thereby providing supervision of the connection in the event that the wire becomes dislodged from the terminal.

To wire the switch, complete the following steps:

1. Remove the tamper resistant cover screw with the special tamper resistant key.
2. Route the wiring through an agency approved conduit connector and attach the connector to the switch.
   If a second conduit entry is required, remove the knockout plug. To remove the knockout plug, place a screwdriver on the inside edge of the knockout. Do not place the screwdriver in the center.
3. Connect the wiring to the appropriate terminals according to the correct wiring practice as shown in figure 4 and the required configuration as described in figure 5.
   A ground screw is provided with each switch. When grounding is required, clamp the grounding wire between two conduit entrance holes with the ground screw,

FIGURE 4: Correct wiring practice

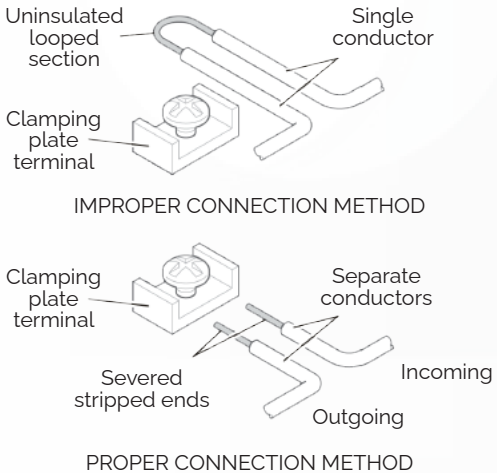
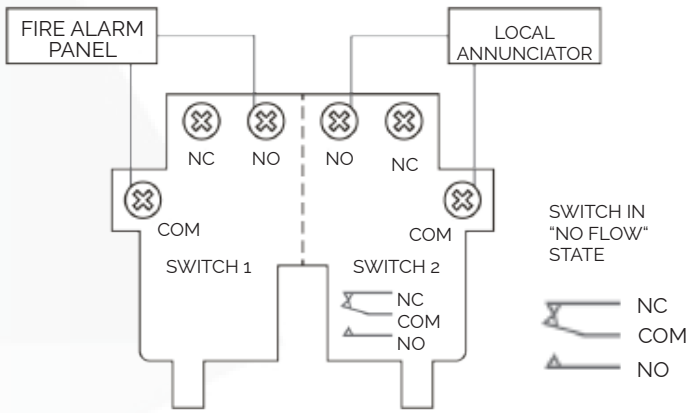


FIGURE 5: Typical wiring connections



ADJUSTING THE RETARD DELAY SETTING

About this task:

The switch retard delay setting may be adjusted in the field from the default setting in order to change the retard delay. Figure 6 shows the location of the retard adjustment wheel for adjusting the retard delay.

FIGURE 6: Waterflow switch retard delay adjustment wheel

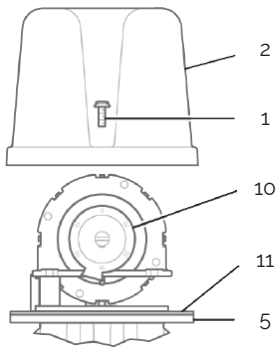


TABLE 3: Components.

Callout	Description
1	Tamper resistant cover screw
2	Cover
5	Saddle connection
10	Retard delay adjustment wheel
11	Cover gasket

1. Rotate the retard adjustment wheel as follows to adjust the retard delay:
   - > Clockwise to increase the retard delay.
   - > Anti-clockwise to decrease the retard delay.

   The retard delay should be set at the minimum delay required to prevent false alarms.
2. Re-test the switch to ensure the retard delay is accurate.

CARE AND MAINTENANCE

The model TF Vane Type Waterflow must be maintained and serviced in accordance with this section, in addition to any specific requirements of the NFPA and any impairment must be immediately corrected. The inspection procedure must be performed as described.

Before closing a fire protection system control valve for inspection or maintenance work on the fire protection system that it controls, permission to shut down the affected fire protection system must first be obtained from the proper authorities and all personnel who may be affected by this action must be notified. After placing a fire protection system in service, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.

The owner is responsible for the inspection, testing and maintenance of their protection system and devices in compliance with this document, as well as with the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION such as NFPA 25, in addition to the standards of any authority having jurisdiction (AHJ). Contact the installing contractor or product manufacturer with any questions.

It is recommended that automatic sprinkler systems be inspected, tested and maintained by a qualified inspection service.

INSPECTING THE SWITCH

About this task:

The inspection procedure must be performed as specified, in addition to any specific requirements of the NFPA and any impairment must be immediately corrected.

Test the switch periodically after installation in accordance with applicable NFPA codes and standards and the authority having jurisdiction (AHJ). A quarterly schedule is recommended.

Inspect the switch for leaks monthly. If a leak id found, replace the switch.