

► **Important:** Refer to technical data sheet *TFP2300* for warnings pertaining to regulatory and health information.

Scan the QR code or enter the URL in a web browser to access the most up-to-date electronic version of this document. Data rates may apply.

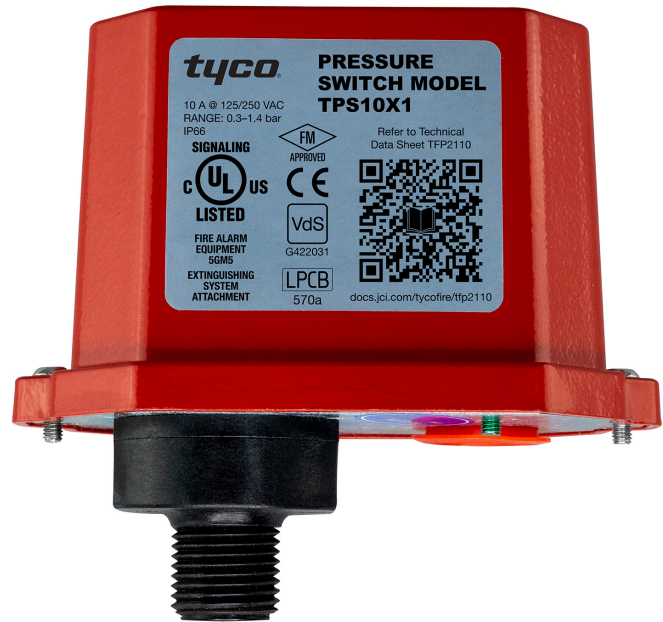


docs.jci.com/tycofire/tpf2110

NOTICE

The TYCO Model TPS Waterflow Condition Pressure Switch described herein must be installed and maintained in compliance with this document, in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair 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.



General description

The TYCO Model TPS Waterflow Condition Pressure Switch is a pressure actuated switch that detects a waterflow condition in an automatic fire sprinkler system. These systems including wet pipe systems with alarm check valves, dry pipe, preaction and deluge valves. The switch is adjustable across a pressure activation response range of 4 psi (0,28 bar) to 20 psi (1,38 bar). Options are available with one or two sets of single-pole, double-throw (SPDT) contacts.

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

Models

The switch is available in two model types:

- Standard: For non-hazardous locations.
- Explosion-proof: For hazardous locations.

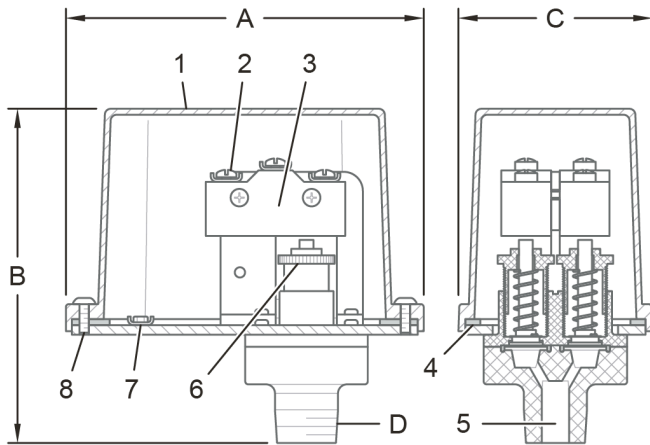
① Note:

There are two explosion-proof models: TPS10XEX and TPS40XEX.

For specific information about the models, see [Table 2](#). For approvals information, see [Table 3](#).

Assembly

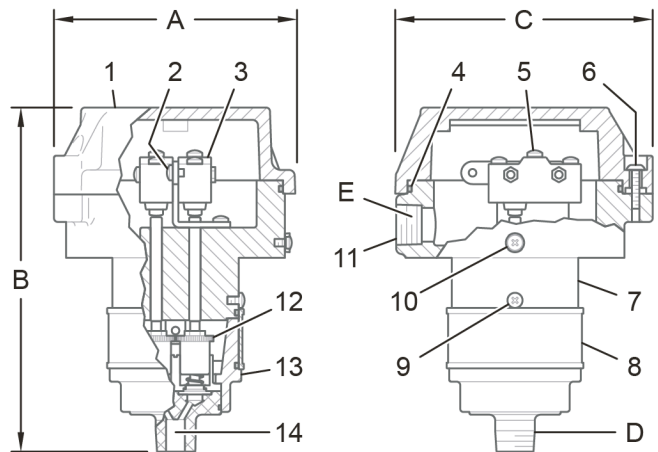
Figure 1: Standard models, components and dimensions



Callout	Component	Quantity
1	Cover	1
2	Electric signal terminal	1
3	Switch	1
4	Cover gasket	1
5	Inlet port	1
6	Adjustment wheel	1
7	Ground connection	1
8	Tamper resistant cover screw	1

Callout	Dimension
A	4.55 in. (116 mm)
B	2.36 in. (60 mm)
C	2.36 in. (60 mm)
D	1/2 in. NPT

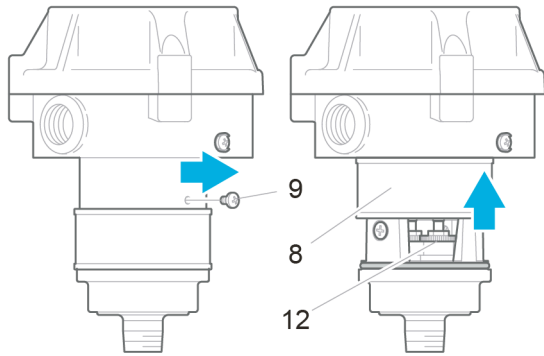
Figure 2: Explosion-proof models, components and dimensions



Callout	Component	Quantity
1	Cover	1
2	Internal ground connection	1
3	Switch	2
4	Cover gasket	1
5	Electric signal terminal	3
6	Cover screw	3
7	Upper housing	1
8	Lower housing cover	1
9	Lower housing cover screw	1
10	External ground connection	1
11	Conduit connection	1
12	Adjustment wheel	2
13	Lower housing	1
14	Inlet port	1

Callout	Dimension
A	5.0 in. (127 mm)
B	7.17 in. (182 mm)
C	5.0 in. (127 mm)
D	1/2 in. NPT male
E	1/2 in. NPT female

Figure 3: Explosion proof models, access adjustment wheels



Callout	Description	Quantity
8	Lower housing cover	1
9	Lower housing cover screw	1
12	Adjustment wheel	2

Technical data

Approvals

See [Table 3](#).

Maximum service pressure

300 psi (20,68 bar)

ⓘ **Note:** The TPSWF model is rated to 200 psi (13,79 bar).

Pressure range

See [Table 2](#).

Default settings

See [Table 2](#).

Approximate differential

See [Table 2](#).

Contact ratings

- 10 A at 125/250 VAC
- 2.5 A at 30 VDC Resistive

Pressure connection

½ in. NPT

Dimensions

See [Figure 1](#) and [Figure 2](#)

Operating temperature range


-40°F to +140°F (-40°C to +60°C)

IP rating

IP-66

Hazardous environment classification

Table 1: Models hazardous environment classification

Models	Hazardous environment classification
TPS10XEX	 II 2 G Ex db IIB T6 Gb and IP-66
TPS40XEX	

Operation

As pressure changes, a diaphragm in the switch actuates either one or two snap action switches. The switch pressure setting determines the switch actuation. For information about adjusting the pressure setting, see [Adjusting the default pressure setting](#).

Table 2: Operating specifications and default settings

Model	Default settings			Operating specifications		
	Fall (Low switch) psi (bar)	Nominal psi (bar)	Rise (Hi switch) psi (bar)	Pressure adjustment / 360° rotation psi (bar)	Pressure range psi (bar)	Approximate differential psi (bar)
TPS10X1	—	—	4 - 8 (0,28 - 0,55)	1.6 (0,11)	4 - 20 (0,28 - 1,38)	3 (0,21)
TPS10X2	—	—	4 - 8 (0,28 - 0,55)	1.6 (0,11)	4 - 20 (0,28 - 1,38)	3 (0,21)
TPS40X1	30 (2,07)	40 (2,76)	—	11 (0,76)	10 - 100 (0,69 - 6,89)	3 @10 (0,21 @0,69) 6 @100 (0,41 @6,89)
TPS40X2	30 (2,07)	40 (2,76)	50 (3,45)	11 (0,76)	10 - 100 (0,69 - 6,89)	3 @10 (0,21 @0,69) 6 @100 (0,41 @6,89)
TPS120X1	110 (7,58)	120 (8,27)	—	22 (1,52)	10 - 200 (0,69 - 13,8)	3 @10 (0,21 @0,69) 9 @100 (0,62 @6,89)
TPS120X2	110 (7,58)	120 (8,27)	130 (8,96)	22 (1,52)	10 - 200 (0,69 - 13,8)	3 @10 (0,21 @0,69) 9 @100 (0,62 @6,89)
TPS10XEX ¹	—	—	4 - 8 (0,28 - 0,55)	1.6 (0,11)	4 - 20 (0,28 - 1,38)	3 (0,21)
TPS40XEX ¹	110 (7,58)	120 (8,27)	130 (8,96)	11 (0,76)	10 - 200 (0,69 - 13,79)	3@10 (0,21@0,69) 9@200 (0,62@13,79)
TPSWF	—	—	5 - 8 (0,34 - 0,55)	Adjustment wheel settings: • 0: 0 secs • A: 8 - 20 secs • B: 15 - 30 secs • C: 25 - 45 secs • D: 35 - 65 secs	—	—

¹ TPS10XEX and TPS40XEX are explosion-proof models.

Table 3: Approvals

Model	UL/ULC	FM	LPCB	VdS	CE	ATEX	Eex
TPS10X1	•	•	•	•	•		
TPS10X2	•	•	•	•	•		
TPS40X1	•	•	•	•	•		
TPS40X2	•	•	•	•	•		
TPS120X1	•	•	•	•	•		
TPS120X2	•	•	•	•	•		
TPS10XEX ¹	•	•	•	•		•	•
TPS40XEX ¹	•	•	•	•		•	•
TPSWF	•	•	•	•	•		

1 The TPS10XEX and TPS40XEX explosion-proof models are certified as follows:

- Explosion-proof or hazardous location certified according to EN IEC 60079-0:2018, EN 60079-1:2014, CSA22.2 No.14-18, and UL508 (18th edition).
- Not certified according to UL Category UGYX.

Installation

The TYCO Model TPS Waterflow Condition Pressure Switch must be installed according to the instructions in this section.

Installation guidelines

General guidelines

When installing a switch, observe the following guidelines:

- The switch should be mounted in an upright position.
- For information about the switch dimensions, see [Figure 1](#) and [Figure 2](#).

Explosion-proof switches specific conditions of use


When installing an explosion-proof switch, observe the following guidelines:

- The threaded holes must be installed with suitably certified cable glands, stopping plug, or conduit fitting for the final installation.
 - ① **Note:** Before application, separate ATEX certified Ex db IIB Gb or/and Ex tb IIIC Db IP66 cable gland or plug should be incorporated.
- The final installation must comply with the Canadian Electrical Code (CEC), Part 1 or National Electrical Code (NEC) as applicable.
- The switch connects to a process system containing non-flammable or non-combustible fluid. If the temperature of process media is greater than 140°F (60°C), the heat conduction from the process media to the switch should be considered, and thermal insulation should be used to ensure that the maximum surface temperature of the flameproof enclosure is not greater than 176°F (80°C).
- The mechanical property class of fasteners that are relevant to the flameproof joint should be at least Grade 8.8 with a minimum yield stress 92.8 ksi (640 MPa).

- The flameproof joints are not intended to be repaired.

Installing the switch

Before you begin:

 **WARNING**

Warning for hazardous environment installations

To prevent ignition in explosive atmospheres, disconnect all electrical circuits before removing the switch cover. Keep the cover closed when circuits are live.

To install the switch, complete the following steps:

1. Install the switch in a location where vibration, shock, and mechanical loading are minimal.
2. Mount the switch using the 1/2 in. NPT connection.
 - ① **Note:** To create a tight seal, the use of TEFLON tape is recommended.
3. Apply a wrench to the wrench flats of the switch, and tighten the unit in place.
4. When the installation is complete, check and ensure there are no leaks.

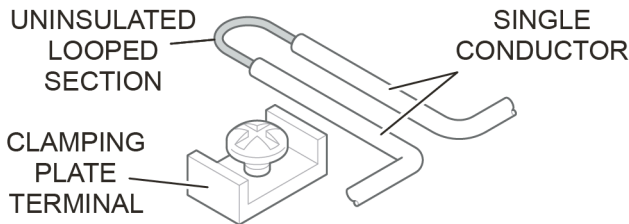
Wiring the switch

Before you begin:

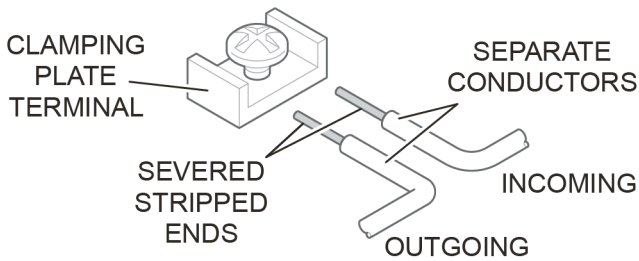
- The switch must be wired according to the instructions in this section.
- Observe the correct wiring practice as shown in [Figure 4](#).

① **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.

Figure 4: Correct wiring practice



IMPROPER CONNECTION METHOD



PROPER CONNECTION METHOD

To wire the switch, complete the following steps:

1. Remove the tamper resistant screw with a key.
 - ① **Note:** Do not leave the cover off for an extended period of time.
2. Route the wiring through an agency approved conduit connector and attach the connector to the pressure switch.
3. Connect the wiring to the appropriate terminals according to the intended use as shown in [Figure 5](#) and [Figure 6](#).
For information about waterflow, high pressure, and low pressure wiring configurations see [Table 4](#).

Table 4: Waterflow, high pressure, and low pressure wiring configurations

Model	Wiring configuration
TPS10	<ul style="list-style-type: none"> • For waterflow or high pressure, use the COM and NO connections. • For low pressure, use the COM and NC connections.
TPS40	<ul style="list-style-type: none"> • For high pressure, use the COM and NO connections. • For low pressure, use the COM and NC connections.

Figure 5: Typical wiring connections

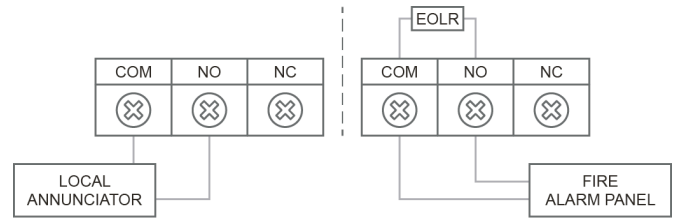
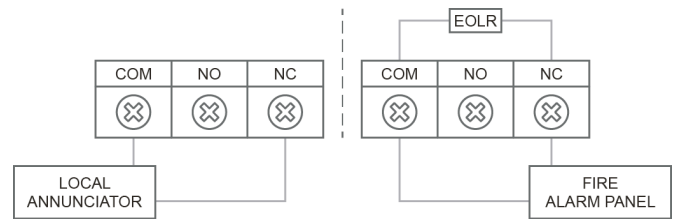


Figure 6: Optional wiring connections



Adjusting the default pressure setting

About this task:

The switch settings may be adjusted in the field from the default settings to change the pressure alarm response.

To adjust the default pressure setting, complete the following steps:

1. Install the switch according to the [Installing the switch](#) section and attach a test pressure source to the system.
2. Rotate the adjustment wheel to adjust the pressure as follows:
 - Clockwise to increase pressure
 - Anti-clockwise to decrease pressure

① **Note:** The adjustment wheel location on standard models is shown in [Figure 1](#), and on explosion-proof models in [Figure 2](#) and [Figure 3](#).

① **Note:** For pressure change data for a 360° rotation, see [Table 2](#).
3. Re-test the switch a minimum of three times to ensure the pressure setting is accurate.

Care and maintenance

The TYCO Model TPS Waterflow Condition Pressure Switch 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 fire 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 pressure switch periodically after installation in accordance with applicable NFPA codes and standards, and the AHJ. A quarterly schedule is recommended.

Limited Warranty

For warranty terms and conditions, visit <http://www.tyco-fire.com>.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name, and part number (PN).

Waterflow condition pressure switch

Specify: Model, Waterflow condition pressure switch, quantity, PN. See the following table.

Table 5: Switch part numbers

Model	Part number
TPS10X1	100101
TPS10X2	100102
TPS40X1	100401
TPS40X2	100402
TPS120X1	101201
TPS120X2	101202
TPS10XEX	100109
TPS40XEX	100409
TPSWF	100200