

# Universal flow switch



## 626 series



01052/15 NA  
Replaces 01052/09 NA



### Function

The flow switch detects whether there is any flow in the piping and opens or closes an electrical contact. It is normally used in heating, air-conditioning, refrigeration, water treatment, additive pumping and process systems in general. The flow switch can control devices such as pumps, burners, compressors, refrigerators, motorized valves; to turn on indicator and alarm devices and regulate equipment for dosing water additives.

In heating systems, the flow switch will switch the burner off in case of a lack of fluid circulation in heating circuit. A lack of fluid circulation would otherwise impair the operation of the temperature-sensitive safety and protection devices.



### Product range

Code 626600A Flow switch \_\_\_\_\_ Size 1" NPT male  
Code 626009 Replacement paddles (blades) assembly \_\_\_\_\_ for pipe diameters 1" to 8"

### Technical specifications

#### Materials

Body: brass  
Cover: self-extinguishing polycarbonate  
Microswitch protection casing: self-extinguishing polycarbonate  
Bellows rod and bellows: stainless steel  
Paddle (Blades) for pipes: stainless steel  
Microswitch spring: stainless steel  
O-Ring seals: EPDM

#### Performance

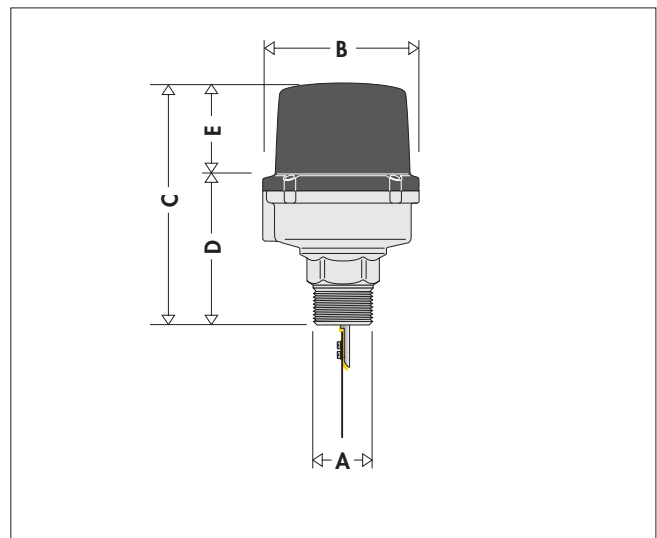
Suitable fluids: water and glycol solutions  
Max. percentage of glycol: 50%  
Max. working pressure: 150 psi (10 bar)  
Fluid temperature range: -20–250°F (-30–120°C)  
Max. ambient temperature: 130°F (55°C)

Pipe connection: 1" NPT male  
Pipe adjustability: from 1" to 8"

#### Electric specifications

Voltage: 250 V  
Electrical connection: 1/2" NPT female  
Current: 15 (5) A  
Protection class: NEMA Type 5  
IP 54  
Certification: CE, C-UL

### Dimensions

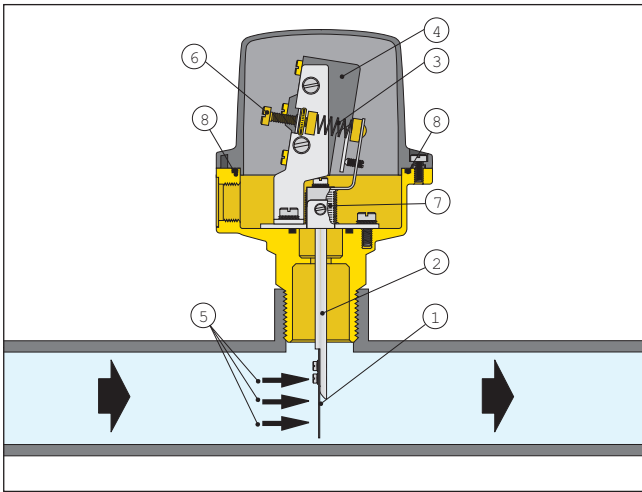


Code	A	B	C	D	E	Weight (lb)
626600A	1"	3 7/16"	5 5/16"	2 15/16"	2 3/8"	2.30

## Operating principle

The flow switch is composed of a paddle (blade) (1) integral with a control rod (2) connected, at the top, to an adjustable counter spring (3). The assembly, by turning around a pin under the action of the water flow, operates a microswitch contained in a protective casing (4). At rest, the counter spring keeps the microswitch contact open. When the increasing flow rate of the medium within the piping becomes equal or greater than the trip flow rate, the thrust (5) on the blade applied (1) by the flow overcomes the opposing force applied by the adjustable spring (3) thus making the microswitch contact close. With a decreasing flow rate, on reaching the trip flow rate values, the flow thrust on the blade is not enough to overcome the opposing force applied by the adjustable spring, so the blade returns to the rest position and the microswitch contact opens.

The trip values for closing (increasing flow) and opening (decreasing flow) the microswitch contact can be modified with the adjusting screw (6).



## Construction details

### Electric component protection

A metal bellows (7) separates the electric and the hydraulic parts. Since this is the most stressed part that must prevent any contact between the medium and the electric components, it is made of stainless steel. Stainless steel is also used in the construction of other mechanical components corrosion resistance.

### Insulating protective cover

The O-Ring seal (8) between the body and the cover, with a protection class of NEMA type 5 (IP 54), ensures operation in particularly damp and dusty places. The insulating protective casing (4) on the microswitch avoids the risk of accidental contact when calibrating. Both the microswitch protection and the cover are made of self-extinguishing V-0 class plastic.

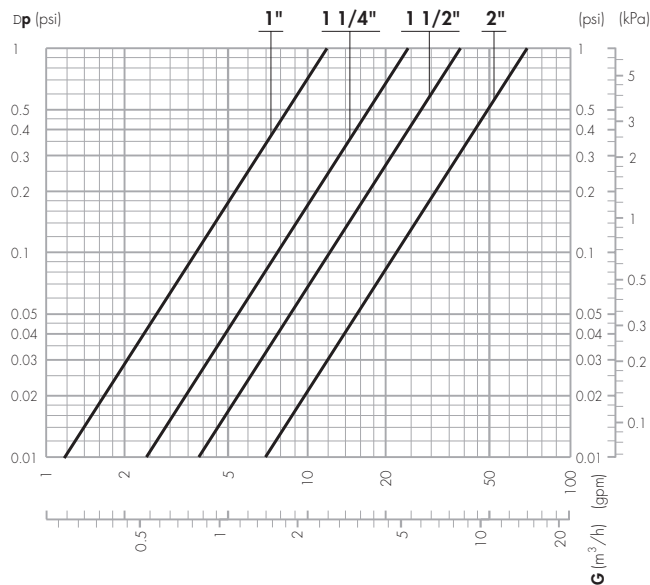
### Electric switchover contact

The electric switchover contact indistinctly permits turning on or off any electric device at the trip flow rate.

### Setting screw

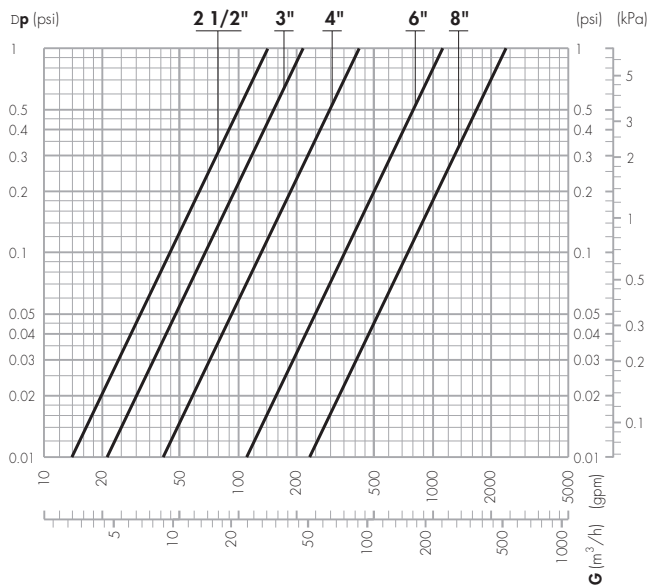
The setting screw (6) allows easy adjustment of the trip flow rate as desired.

## Hydraulic characteristics



Cv = flow in gal/min for a pressure loss of 1 psi

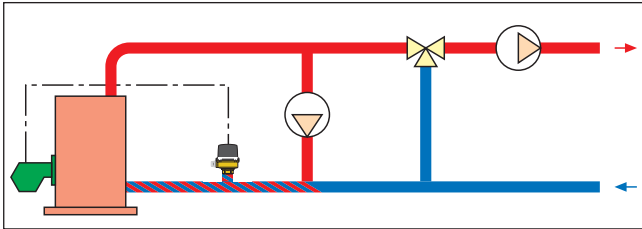
The stated Cv (Kv) values refer to the head loss within the pipes with diameters from 1" to 8" and standard length of 39 in (1 m), in which flow switches, equipped with a paddle (blade) of adequate size, are installed.



## Reference standards

In heating systems with a closed expansion tank, where circulation is ensured by motor pumps, the flow switch is used to stop the heat supply to the generator when the pumps stop and there is no circulation.

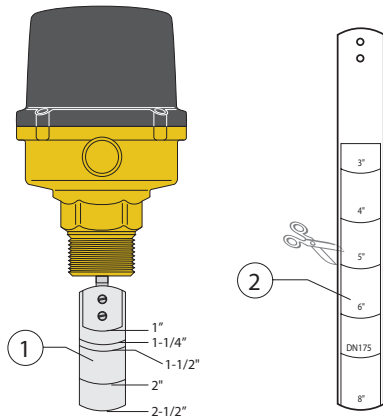
Water circulation is indeed essential for safety and temperature-sensitive protection devices such as thermostats, thermal discharge valves and fuel shut-off valves to work properly.



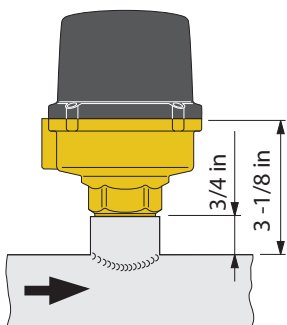
## Installation

The unit is equipped with a set of paddles (blades) (1), to be used for different pipe diameters, particularly sized to allow easy installation and minimal head losses.

For diameters equal to or greater than 3" (DN 80), it is necessary to add to the preassembled blades in increasing order on the long blade (2) (supplied in the package), just cutting it to the size corresponding to the desired diameter. Replacement paddle, or blade, assemblies are available, order part number 626009.

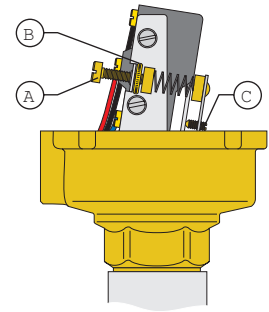


The flow switch should preferably be installed on the pipe with the control rod upright, following the flow direction indicated by the arrow on the cover and on the body exterior. For blade proper operation it is necessary to install the flow switch by following the distance shown on the drawing, using a sleeve welded for total passage. It will not install into a copper pipe tee.



## Flow rate adjustment

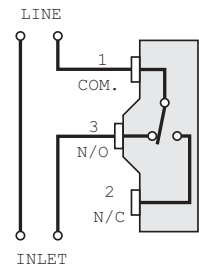
The minimum and maximum operating flow rates are given in the table below. Adjustments should be carried out as follows: turn the adjusting screw (A) in a clockwise direction for the contacts to close at higher flow rates or in a counterclockwise direction for lower flow rates. When the adjustment has been made lock the screw (A) with the locking ring nut (B). **Avoid all contact with the presetting screw (C).** An incorrect setting would seriously impair the operation of the switch.



## Diagrams showing the internal connections of the micro-switch with:

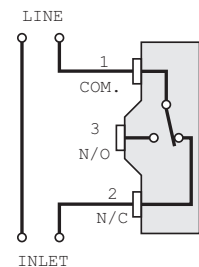
Flow switch is used to activate a device when flow starts.

When flow starts and the increasing operating flow is reached or exceeded, the common (black wire) and normally open (red wire) contacts are closed, while the common (black wire) and the normally closed (blue wire) are open.



Flow switch used to activate a device when flow stops.

When the decreasing operating flow is reached or stops the common (black wire) contacts and the normally open (red wire) contacts open, while the common (black wire) and the normally closed (blue wire) contacts close.



## Operating flow rates: gpm (l/s)

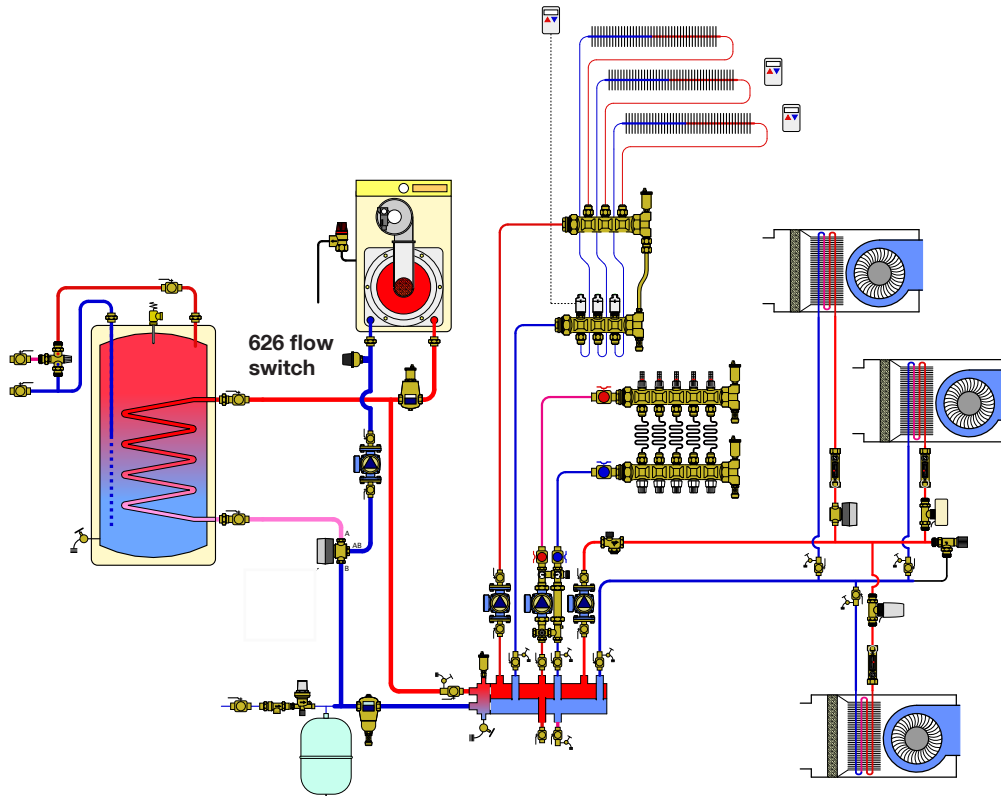
Pipe diameter	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"
<b>Minimum calibration operating trip flow rate with increasing flow*</b>	5.7 (0.36)	7.5 (0.47)	11.4 (0.72)	13.2 (0.83)	22.0 (1.38)	29.9 (1.89)	44.0 (2.78)	61.1 (3.85)	72.6 (4.58)	162 (10.2)
<b>Minimum calibration operating trip flow rate with decreasing flow*</b>	4.0 (0.25)	5.5 (0.35)	8.4 (0.53)	9.7 (0.61)	16.3 (1.03)	22.9 (1.44)	37.4 (2.36)	51.5 (3.25)	63.8 (4.03)	145 (9.15)
<b>Maximum calibration operating trip flow rate with increasing flow</b>	12.3 (0.78)	16.7 (1.05)	26.0 (1.64)	29.5 (1.86)	51.5 (3.25)	69.5 (4.38)	94.6 (5.97)	136 (8.6)	189 (11.9)	334 (21.1)
<b>Maximum calibration operating trip flow rate with decreasing flow</b>	11.9 (0.75)	16.3 (1.03)	25.5 (1.61)	29.0 (1.83)	50.6 (3.19)	68.6 (4.33)	92.4 (5.83)	127 (8.01)	158 (9.97)	308 (19.4)

\*factory setting.

## Application diagrams

### Example of using the flow switch in a hydronic system

The flow switch is used to protect flow sensitive equipment in hydronic systems, such as the boiler in the below system. An insufficient flow rate causes the switch to turn off the boiler before any equipment could be damaged.

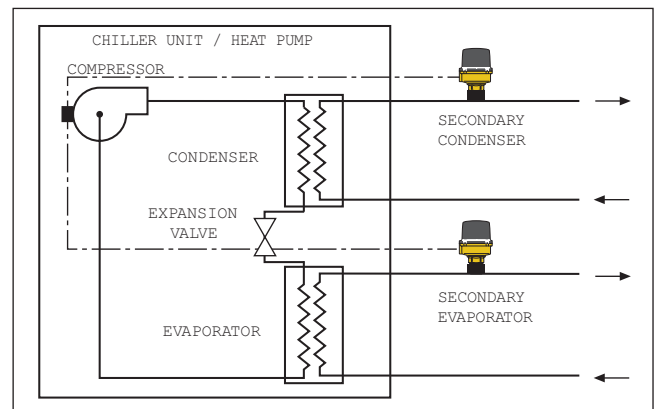


### Example of flow switch use in a refrigerating system or heat pump

The flow switch is useful on machinery in general where water circulation is considered essential for the equipment to work properly. A typical example is the chiller unit shown in the figure.

If one of the following conditions occurs, the respective flow switch will trip to stop the compressor from working:

- insufficient or no flow of cooling water in the condenser (danger of overheating)
- insufficient or no flow of refrigerated water (danger of ice forming on the evaporator and liquid returning to the compressor suction side).



## SPECIFICATION SUMMARIES

### 626 series

Universal flow switch suitable for 1" to 8" pipe with 1" NPT male pipe connection and 1/2" NPT female conduit connection. UL certificate number E307420. Brass body. Self-extinguishing polycarbonate cover and microswitch protection casing. Stainless steel bellows and bellows rod, paddles for pipes and microswitch spring. EPDM O-Ring seals. Maximum working pressure 150 psi (10 bar). Medium temperature range -20–250°F (-30–120°C). Maximum ambient temperature 130°F (55°C). Suitable fluids: water and glycol solutions; Maximum percentage of glycol 50%. Voltage 250 V. Current 15 (5) A. Protection class NEMA type 5 (IP 54).

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