

6

# ULTIMHEAT®



# FLOW SWITCHES AND COMBINATION CONTROLS

The professional solution: an extended, rational, and consistent range of products

Technical catalogue for R&D department

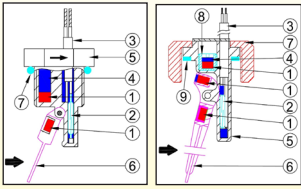
Edition 28/05/2013



E-Mail: [info@ultimheat.com](mailto:info@ultimheat.com) Web: [www.ultimheat.com](http://www.ultimheat.com)



## Flow switches



Summary	1-2
Flow switches historical and technical foreword	3
Technical information	4-8

### Paddle types, microswitch contact


	R1B	PN10 DN≥15	Plastic paddle, 3/4" BSPP loose nut, fixed setting.	11-12
	R1D	PN10 DN≥25	Plastic paddle, 1/2" BSPP male thread , fixed setting, with built in Pt100 temperature sensor	13
	R1R	PN10 DN≥25	Plastic paddle, 1/2" BSPP male thread , fixed setting, with built in Pt100 temperature sensor	14

### Paddle types, reed switch contact

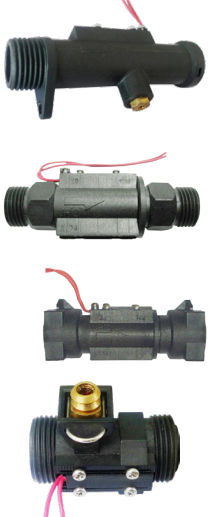
	R1L (R1G)	PN10 DN≥25	Short plastic paddle, 1/2" BSPP male thread, gravity pull-back, fixed setting. (Also exists with 1/2" NPT male thread = type R1G)	17
	R1Y (R1E)	PN10 DN63	Extended paddle arm, 1/2" BSPP male thread, gravity pull-back, fixed setting. (Also exists with 1/2"NPT male thread = type R1E)	18
	R1S (R1F)	PN10 DN≥25	Long trimmable plastic paddle, 1/2" BSPP thread, magnetic spring, fixed setting. (Also exists with 1/2" NPT male thread = type R1F)	19
	R1P	PN10 DN≥20	Long trimmable plastic paddle, 3/4" BSPP loose nut , magnetic spring, adjustable setting, <b>slim design</b> .	20
	R1Q	PN3 DN20	Tee equipped with paddle flow switch, for spa applications, mounting on 1" (20 to 21mm ID) soft PVC tubes, adjustable setting.	21
	R1X	PN10 DN≥15	Long trimmable plastic paddle, 3/4" BSPP loose nut, magnetic spring, adjustable setting.	22-23
	R1V	PN25 DN≥15	Long trimmable plastic paddle, 3/4" BSPP loose nut, brass body, and brass nut, IP65 connection box, magnetic spring, adjustable setting.	24-25

# Summary


## Flap type, in line mounting

	R20	PN10 DN8	½" BSPP male water inlet. Snap outlet for dia. 8 mm copper tube. For small size instant water heater.	27
	R21	PN10 DN8	½" BSPP male water inlet. Snap outlet for dia. 8 mm copper tube. For small size instant water heater. Built-in triac cooling plate.	28
	R23	PN10 DN8	½" BSPP water inlet. Outlet for dia. 8 mm copper tube. Built-in water pressure switch. For miniature Instant water heater.	29
	R22	PN10 DN8	½" BSPP water inlet. Outlet for dia. 8 mm copper tube. Built-in disc thermostat. For miniature Instant water heater with inlet temperature control.	30

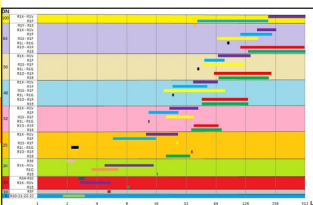
## Piston type

	R3F	PN10 DN10	½" BSPP male water inlet, Snap outlet for 10 mm dia. copper tubes. For instant water heater. Built-in over-pressure valve.	33
	R35	PN10 DN15	½" BSPP water inlet and outlet	34
	R34	PN10 DN15	Water inlet and outlet for copper pipes with O.D. 18 mm.	35
	R36	PN10 DN20	¾" Water inlet and outlet , with built in 15 bar pressure valve.	36

## Accessories

	6R	Fittings, saddles and other parts for paddle switch pipe mountings.		39
--	----	---	--	----

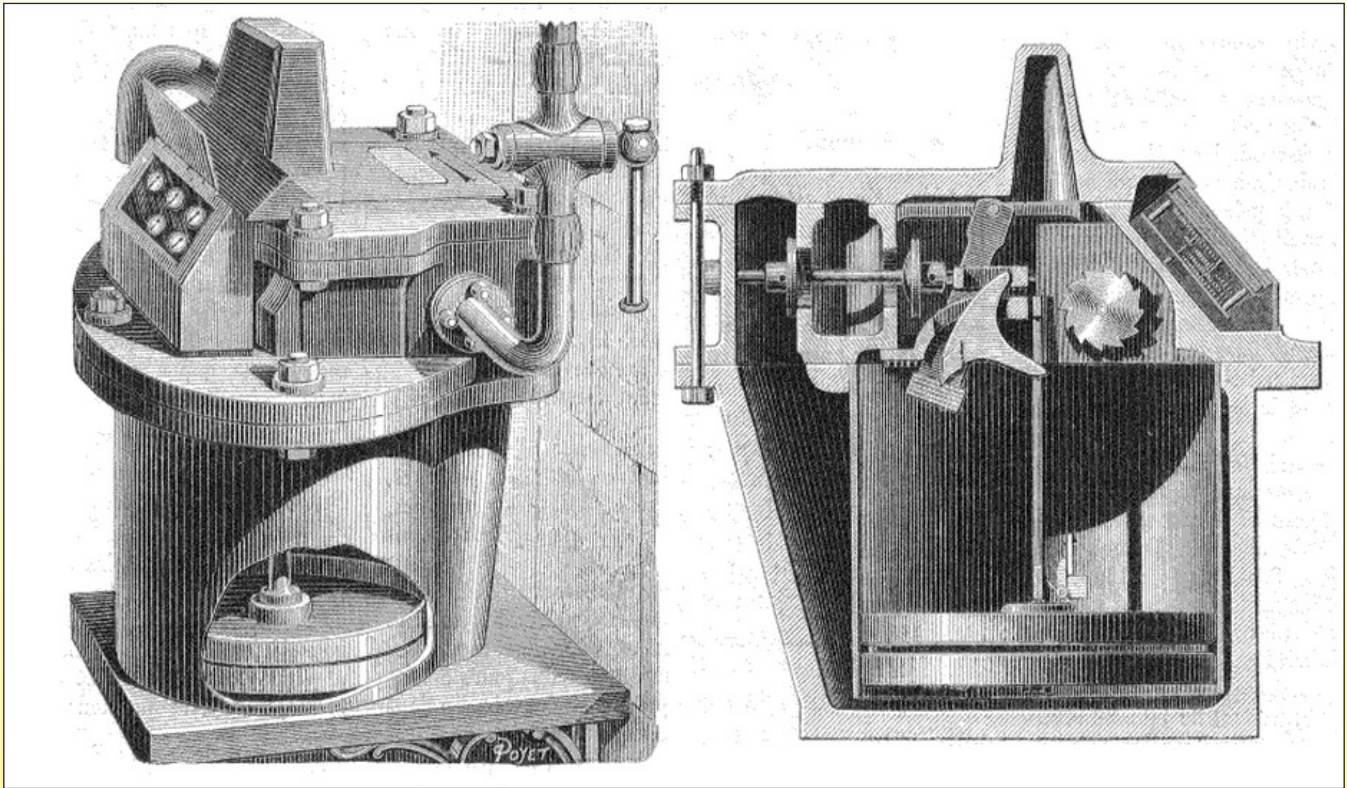
## Lists and tables

	Flow switch selection table upon flow and diameter			40
	Alphabetical list and reference list			41



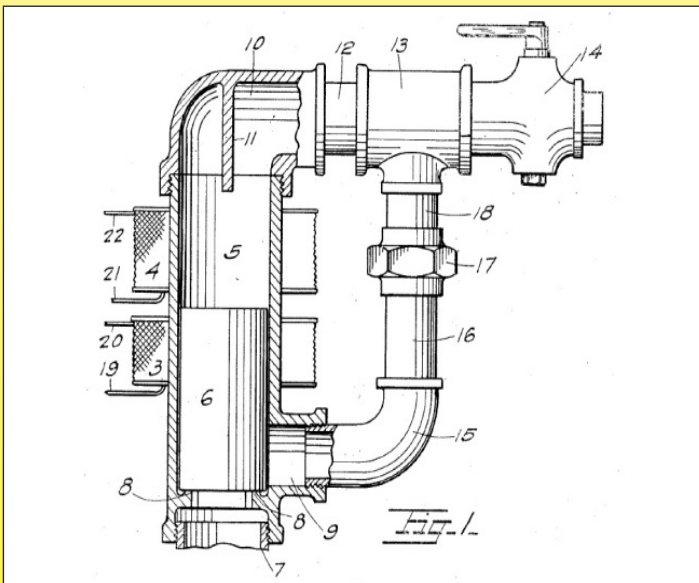
# Flow switches historical and technical foreword

In antiquity, the flow measurement was one of the first means of time measurement. But it was not until the steam engines development and the need to control their water supply, that measuring devices were developed. The gas and potable water distribution network development, brought the city of Paris to mandate individual water meters in January 1881. These meters were operated by a piston system, whereas in England and Belgium, pioneer countries in this field, turbine systems were chosen.

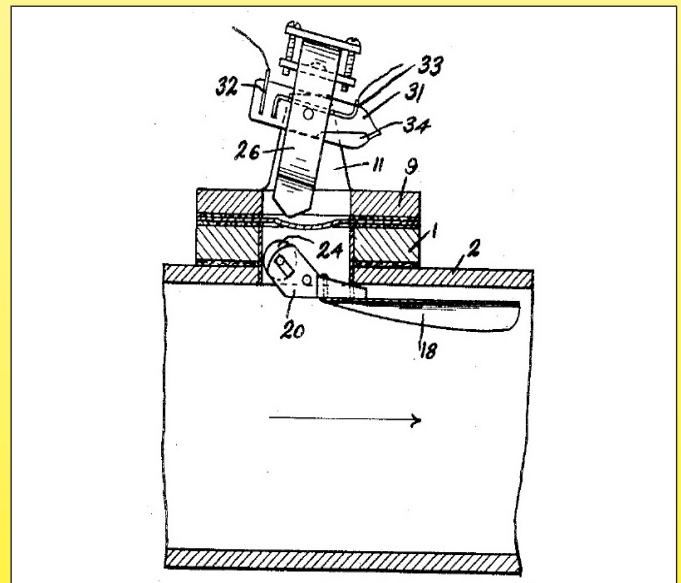


1881, in the Paris first water meters, the measurement is performed by a piston (Jacquet's system)

The development of electric and gas instant water heaters in the 1920/1930 brought the necessity of a security system to avoid heating when there is no flow. The use of paddles operating a switch had a major issue: avoid the leaks of the passage through the wall between the water circulating and the electrical switch. Gasket and were not efficient and were reducing the flow measurement sensitivity, especially for small dimension appliances. The first flow switch using a piston, without connection passage between water and electrical section, appears to be the Walker type, where the metallic piston displacement is measured by two electromagnetic coils located outside the pipe.



1930 Walker magnetic flow sensor for water heater: the metal piston (6) moves between two magnetic coils (3 and 4) US Patent 1962795.



In 1931, the first paddle switch with a magnetic action is invented by Louis E. Richmond (US Patent 1888737). A paddle with a metallic roller actuates a balanced magnet with a mercury switch located outside.

It was not until 1936 and the reed switch invention by the American engineer W. B. Ellwood of the Bell Telephone Laboratories (U.S. Patent 3,310,863) that freed paddle, piston or turbine flow sensors from gaskets and seals and allowed them to miniaturize.

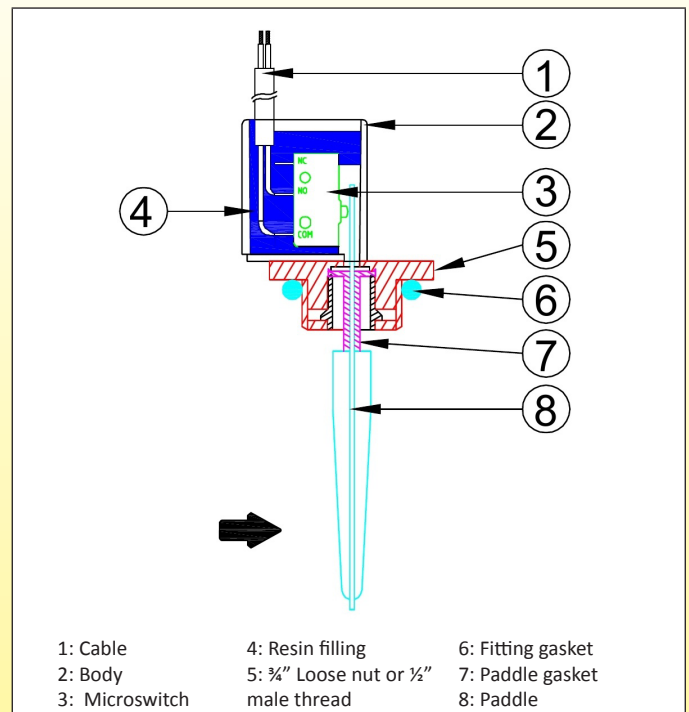
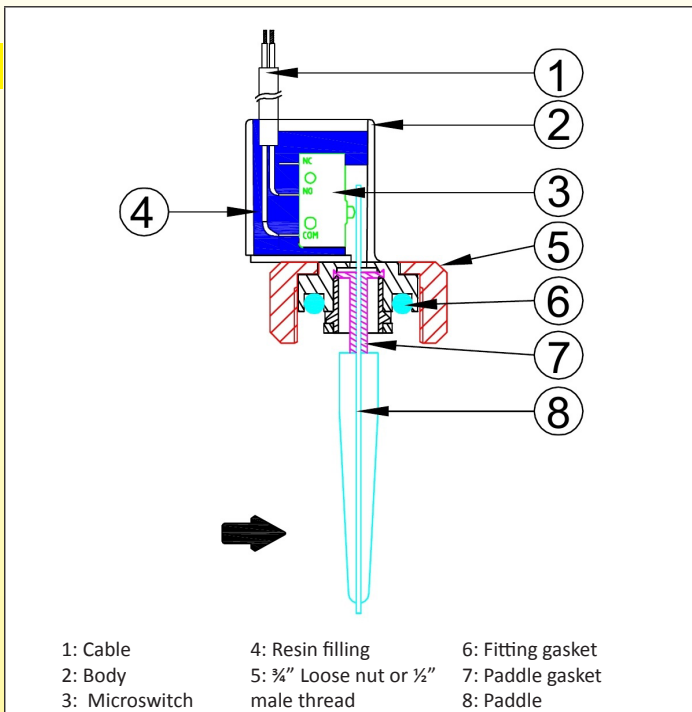
The reed switches are now used in thousands of different applications, and the annual world production is counted in hundreds of millions of pieces.



## Operation

### Paddle and micro-switch types

In the "in line" types, only a part of the flow, function of the ratio between the pipe section and the paddle surface actuates the flow switch



#### Operating Principle

In the paddle and switch flowswitches, the paddle is pushed by the water flow and actuates a microswitch. The seal between the paddle and the electric part is made by a Santoprene elastomeric gasket. Set point calibration value is given mainly by the paddle length and its the surface, the microswitch actuating force , the pipe diameter. As in all paddle flow switches, due to the weight of the paddle, the setting will vary slightly according to the mounting position (horizontal or vertical, and in the latter case, flow inlet direction from top to bottom or from bottom to top).

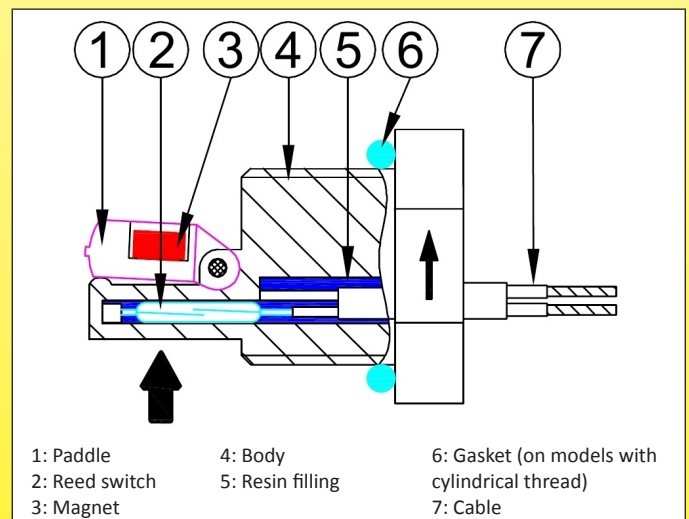
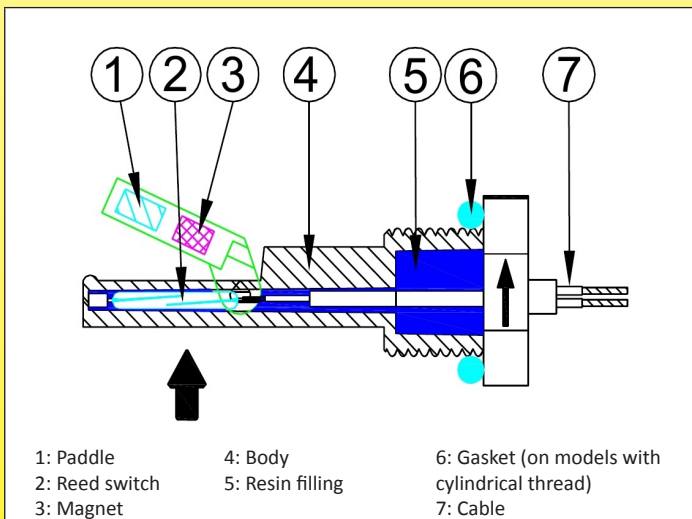
During assembly it is important to check that the paddle is correctly oriented in the flow direction and that no friction or obstacle hinders its movement. Therefore it is better to focus on devices with 3/4" union nut mounting, or clips and O-ring assembly (type Ultimheat Snap-in), which allow easy aorientation djustment , unlike models with fixed thread. The temperature and pressure withstanding values, as well as resistance to chemical products are limited by the paddle gasket material.

These models have the advantage of high electrical rating, and do not contain magnets, allowing them for use with liquids that may contain magnetic particles.

In the 1/2" fixed thread types, it is possible to include a built-in temperature sensor: NTC, thermocouple, or Pt100, thus allowing the liquid temperature measurement.

### Paddle and reed switch types, gravity back-force

In the "in line" types, only a part of the flow, function of the ratio between the pipe section and the paddle surface actuates the flow switch



#### Operating Principle

In the gravity pull-back paddle flow switches, when the upstream flow pushes against the paddle, the paddle swings away. This changes the position of the magnet in relation to the reed contact and thus activates the contact. As soon as the flow decreases or is interrupted, the paddle moves back to its starting position, and reed switch comes back to its starting contact position. The force necessary to push the paddle is provided by the magnets repelling each other. Our fixed setting paddle switches use only two magnets, and our adjustable setting types have one extra magnet use for repelling force adjustment. This system has no communication or gasket between the paddle and the electrical part. No metal parts are in contact with the liquid, with the exception of some models with a titanium axis. Therefore they are particularly suitable for applications on aggressive liquids, swimming pool water, sea water, or chlorination or bromination equipment. Most models can be used on pipes from 20 to 100 mm diameter, by using an adapted length paddle. Set point calibration value is given mainly by the paddle length and surface, the diameter of the pipe, and, in adjustable versions by the position of the magnet position adjusting screw. As in all paddle flow switch range, due to the weight of the paddle, the setting will vary slightly according to the mounting position (horizontal or vertical, and in the latter case, flow inlet direction from top to bottom or from bottom to top).

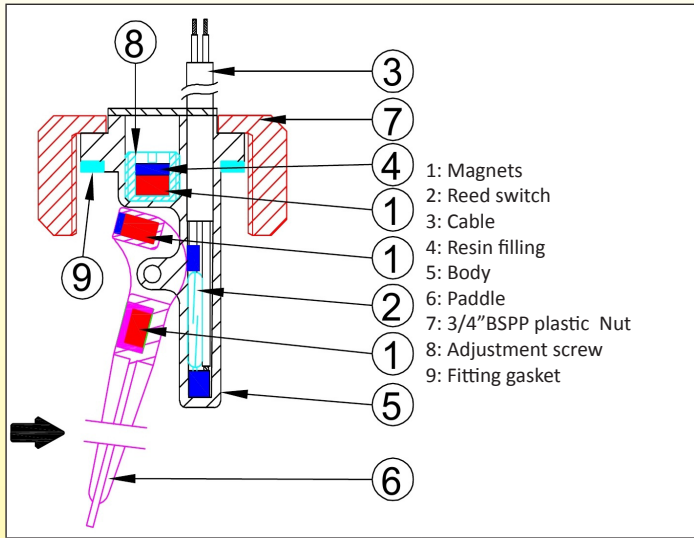
During assembly it is important to check that the paddle is correctly oriented in the flow direction and that no friction or obstacle hinders its movement. As the paddle is magnetic, the circuit must be free of all magnetic particles. The low electrical ratings of the reed switches limit their use in pilot circuits or electronic circuits.

# Flow switches historical and technical foreword

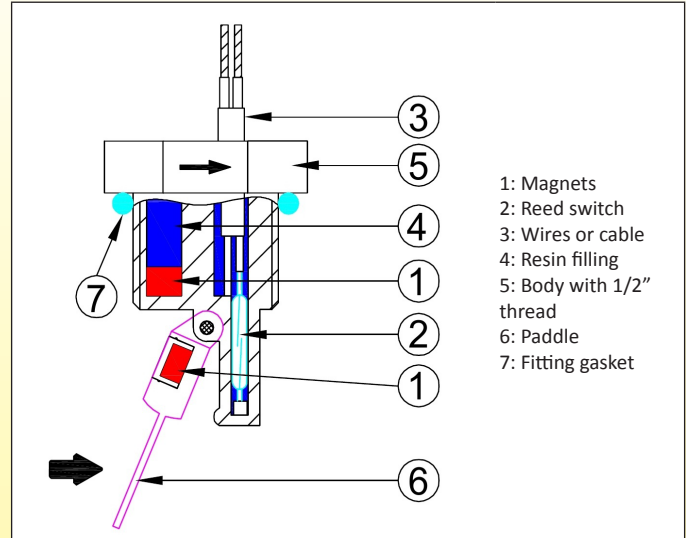
## Paddle and reed switch types, magnetic pull-force, slim design

In the paddle types, only a part of the flow, function of the ratio between the pipe section and the paddle surface, actuates the flow switch

3 magnets, factory adjustable set point type, smallest external foot print



2 magnets fixed setting, the lowest foot print



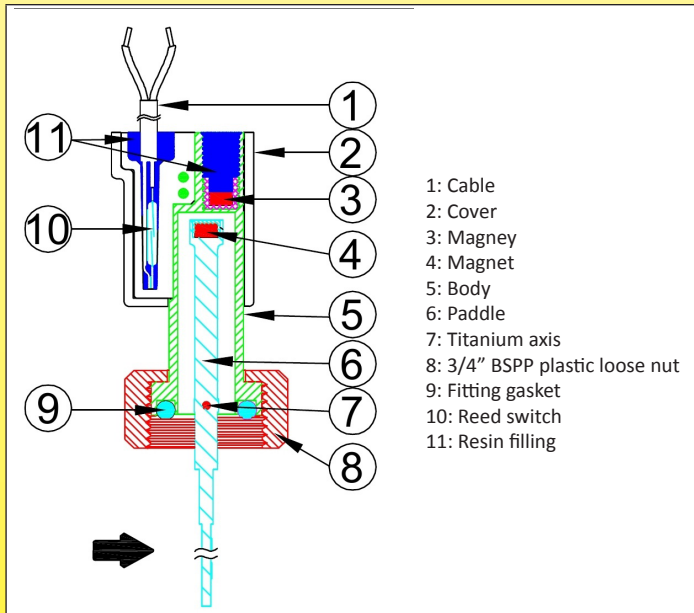
### Operating Principle

In the paddle and reed switch types, with magnetic pull-force and slim design, the flow pushes against the paddle, the paddle swings away and the reed switch contact closes. As soon as the flow decreases or is interrupted, the paddle is pulled back by the magnet to its starting position, and reed switch contact opens. The fixed setting paddle switches with slim design use only two magnets, but the adjustable setting types have one extra magnet used for force adjustment. This system has no communication or gasket between the paddle and the electrical part. No metal parts are in contact with the liquid, with the exception of some models with a titanium axis. Therefore they are particularly suitable for applications on aggressive liquids, swimming pool water, sea water, or chloration or bromination equipment. Most models can be used on pipes from 20 to 100 mm diameter, by using an adapted length paddle. Set point calibration value is given mainly by the paddle length and surface, the diameter of the pipe, and, in adjustable versions by the position of the adjusting screw. As in all paddle flow switch range, due to the weight of the paddle, the setting will vary slightly according to the mounting position (horizontal or vertical, and in the latter case, flow inlet direction from top to bottom or from bottom to top). During assembly it is important to check that the paddle is correctly oriented in the flow direction and that no friction or obstacle hinders its movement. Therefore it is better to focus on devices with 3/4" union nut mounting, or clips and O-ring assembly (type Ultimheat Snap-in), which allow easy orientation adjustment, unlike models with fixed thread. As the paddle is magnetic, the circuit must be free of all magnetic particles. The low power ratings of the reed switches limit their use in pilot or electronic circuits

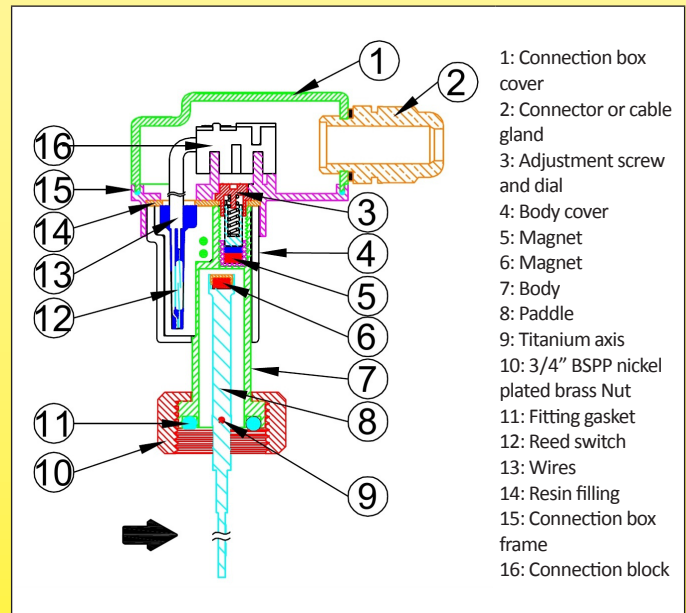
## Paddle and reed switch types, magnetic back-force, long design

In the paddle types, only a part of the flow, function of the ratio between the pipe section and the paddle surface, actuates the flow switch

2 magnets fixed setting, external mechanism



2 magnets adjustable setting, external mechanism



### Operating Principle

In the paddle and reed switch types, with magnetic pull-force and long design, the flow pushes against the paddle, the paddle swings away and the reed switch contact closes. As soon as the flow decreases or is interrupted, the paddle is pulled back by the magnet to its starting position, and reed switch contact opens. This system has no communication or gasket between the paddle and the electrical part. No metal parts are in contact with the liquid, with the exception of some models with a titanium axis. Therefore they are particularly suitable for applications on aggressive liquids, swimming pool water, sea water, or chloration or bromination equipment. Most models can be used on pipes from 20 to 100 mm diameter, by using an adapted paddle length. Set point calibration value is given mainly by the paddle length and surface, the diameter of the pipe, and, in adjustable versions, by the position of the adjusting screw. As in all paddle flow switch range, due to the weight of the paddle, the setting will vary slightly according to the mounting position (horizontal or vertical, and in the latter case, flow inlet direction from top to bottom or from bottom to top). During assembly it is important to check that the paddle is correctly oriented in the flow direction and that no friction or obstacle hinders its movement. As the paddle is magnetic, the circuit must be free of all magnetic particles. The low power ratings of the reed switches limit their use in pilot or electronic circuits

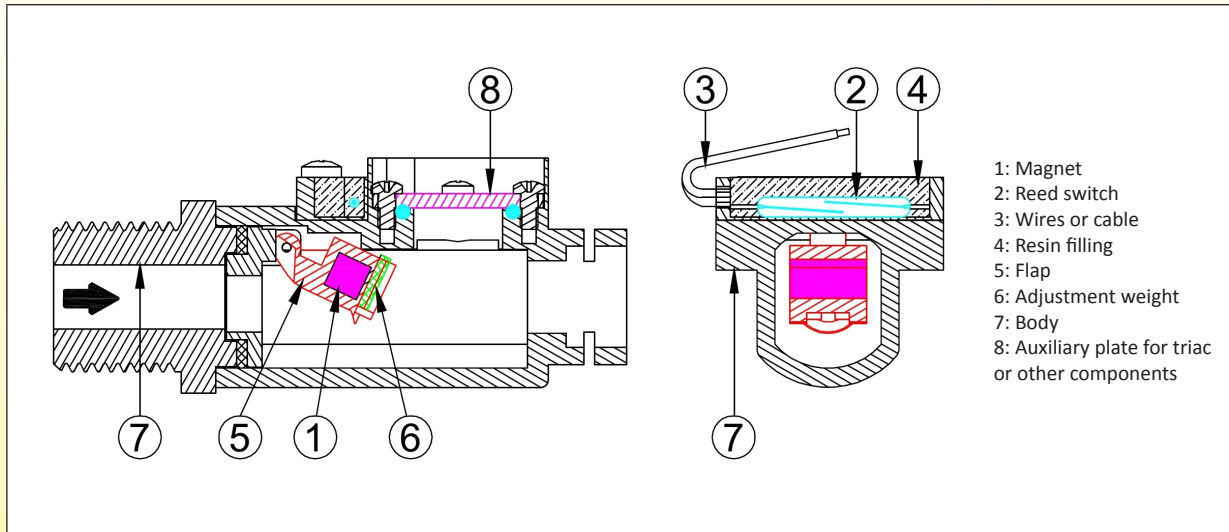




# Flow switches historical and technical foreword

## Hinged flap and reed switch type

In the hinged flap types, 100% of the flow goes through the flow switch

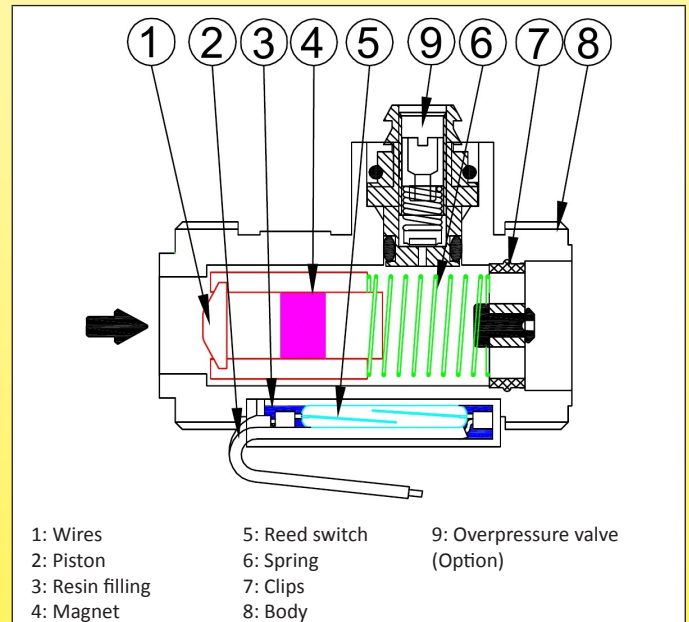
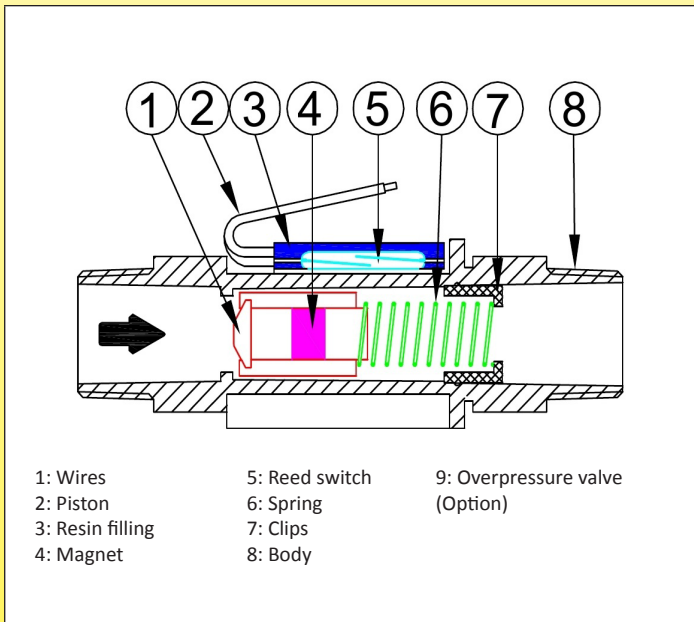


### Operating Principle

In "In line" flap reed flow switches, the hinged flap is moved by the water flow and closes a reed switch contact. There is no sealing problem between the liquid and electrical side, because both are completely separated. When the flow stops or decreases, the magnetic flap returns to its original position by its own weight (vertical position and bottom water inlet are required). The detection set point value is given by a variable mass lodged in the flap. This solution is suitable for small diameter pipes and wall mounting instant water heaters. As the flap is magnetized, the circuit must be free of all magnetic particles. These devices include a location for mounting an auxiliary system: water cooled triac heat exchanger, pressure switch, disc thermostat or temperature sensor. The low power ratings of the reed switches limit their use in pilot or electronic circuits.

## Piston and reed switch types

Piston type flow switches place a piston directly in 100% of the flow path



### Operating Principle

Inside "in line" piston and reed type flow switch, the piston, when displaced by the pressure differential from fluid flow, magnetically actuates a reed switch. There is no sealing problem between the liquid and electrical part because both are completely separated. When the flow stops or decreases, the magnetic piston comes back to its original position by its own weight (vertical installation, water inlet downside), or by a spring (vertical, water inlet upside). The detection set point value is given mainly by the piston shape, its mass and eventually by the spring pull back force. This solution is suitable for small diameter pipes. The piston being magnetized, the circuit must be free of all magnetic particles. The low power ratings of the reed switches limit their use in pilot or electronic circuits.

# Flow switches historical and technical foreword

## Description of the different parts

### The electrical contact system: reed switch or micro-switch.

A certain force is required to actuate the electrical contact device. It can range from a few tenths of grams for systems with reed contacts with a power rating of 10 to 20VA (0.5Amp), to 50 grams for snap action micro-switches with a 5Amp 250V rating. In general, the force required to operate an electrical contact increases with its electrical rating, and the power available on the detector depends on the paddle, piston or flap characteristics. Most flow switches in this catalog use reed switches because they are used for detection level in low voltage and low current electronic circuits. This makes possible to design compact devices.

### Reed switches

Reed switches are small glass bulbs with a flexible reed strip contact with a breaking capacity of 10 to 70VA, which has the particularity to close in the presence of a magnetic field. These glass bulbs are sealed and filled with argon or under vacuum, therefore they are protected from oxidation.

#### Reed switch applications in flow switches

Suitable	Not suitable
Computer circuits	Small electrical motors , including small DC motors
Programmable logic controller (PLC's) circuits	Power contactor coil circuits (Unless protected by an arc suppression circuit)
Small relays	Solenoid valves (Unless protected by an arc suppression circuit)
Solid state relay (SSR) trigger circuits	Incandescent lamps

#### Reed switches contact protection

Switching no load or loads where the voltage is less than 5 Volts @ 10 mA or less, the contacts undergo little or no wear and life times in excess of billions of operations are expected. In the 10 Volt range, higher contact wear will take place. Switching 10 Volts @ 10 mA, life times of 50 million to 200 million operations can be expected. When switching inductive loads such as relays, solenoids and transformers, reed switch contacts require protection in order to insure long, dependable life. When current is interrupted, the inductance or electrical inertia of the load generates a large high frequency voltage, which appears across the switch contacts. If the voltage is large enough, it can break down the medium in the gap between them, making a conductive path. This phenomenon is called arcing. Arcing can cause the contacts to burn, weld together or stick. The purpose of protection circuits is to prevent arcing, by shorting this voltage through an alternate path.

DC load contact protection circuit with diode	AC load contact protection circuit with R/C circuit
<p>A 1N4004 diode is connected cathode-to-positive. The diode does not conduct when the load is energized, but conducts and shorts out the peak transient generated voltage when the switch opens. A resistor can be added in series with the diode.</p>	<p>A resistor (R) and capacitor (C) are connected in parallel with the switch. The capacitor has high impedance at 50/ 60 hertz, and is essentially a short circuit to high frequencies of generated voltages. Capacitor value: <math>C = I^2/10</math> Resistor value (<math>E</math> = power supply voltage): <math>R = E / (10 \cdot I^{(1+50/E)})</math></p>
DC load protection contact with Back to Back Zener diode	AC load protection contact with Varistor
<p>The peak transient voltage that occurs when the switch opens is decreased to a value equal to the back to back Zener diode voltage. The Zener diode should be sized for a voltage somewhat higher than the circuit source voltage</p>	<p>The varistor resistance decreases sharply when voltage reaches its trigger value, and shorts out the peak transient generated voltage when the switch opens. Varistor should be sized for a voltage somewhat higher than the circuit source voltage</p>

#### Magnet displacement and reed switch operation in flow switches

Piston types	Paddle and flap types
<p>When magnet located inside the piston arrives at the center of the reed switch, the contact closes. Therefore, piston movement is limited to achieve requested operation mode.</p>	<p>A magnet is located inside the paddle or inside the flap. When it arrives near the reed switch, the contact closes.</p>

### Snap action switches

On snap action switches, contact opening speed is around 1m per second. The contact spacing reaches the distance to extinguish the arcing in less than 1/1000 sec. Therefore there is no radio interference, and the contact does not deteriorate. Mechanically, this type of contact, also called "energy storing contact" is much more complicated, expensive, and does not allow such a great control than reed switches.

The snap action microswitch is particularly suitable for devices operating at 240 or 400 V and when high electrical rating is required.

#### Microswitches vs reed switches in flowswitches

Disadvantages	Advantages
Microswitches are more expensive than reed switches	Microswitches have higher electrical ratings, in 110VAC and 230VAC
Microswitches have a higher operating force, so they need larger paddles	Microswitches are easily made with SPNC, SPNO or change over contacts
Micro-switches have large differential travels, providing large flow differentials between contact opening and close	Snap action contact switches generate very low EMC



# Flow switches historical and technical foreword

## Magnets (In reed switch devices)

Selecting a magnet for a flow switch application must take into account the characteristics of the liquid in which it will be immersed, of the temperature at which it will be subjected, of its corrosion resistance, of the magnetic field required to operate the switch and its distance to the reed switches. Ferrite magnets have a good resistance to corrosion, but a very low magnetic power. Neodymium-Iron-Boron magnets contain 60-75% iron (amount is dependent on grade) and are therefore prone to corrosion, but a very big magnetic power. So these magnets are nickel plated and plastic overmolded. Both these magnets have a good temperature resistance up to 100°C

## Electrical wiring

For reed switch systems, the most common electrical connection is by wires or cable. Given the low electrical rating of reed switches, conductor cross section is generally less than or equal to 0.5 mm<sup>2</sup>. If there is no thermal stress or environmental conditions, wires and cables are PVC insulated. Silicone insulation, FEP and Teflon are not recommended because they do not provide hermetic sealing with resin filling and may let water or moisture inside the product. Tabs or connector outputs are recommended for large quantities.

## Resin filling (For reed switch types)

The resin filling provides two functions

- Mechanically securing the reed in the body, and provide its resistance to tearing (Standards impose a tearing resistance equal to or greater than 10N)
- Main electrical insulation of the electrical contact and wiring. This requires a UL94-VO resin. In some customer applications the insulation class I is insufficient, and the contact system must receive an additional insulation to comply to the requirements of insulation class II

## Mechanical stop of measuring device

The mechanical displacement of the piston or paddle must be limited to remain within the limits of the magnet position detection by the reed switch.

## Mechanism body and mounting system

### Choice of material:

The body of the mechanism provides several functions:

- Device protection against electric shock, water ingress, pressure value, and chemicals.

Plastics used for the body are always UL94-VO rated

- The use in potable water systems:

Models intended for use in drinking water are made of plastic and metal parts in contact with water that meets the specifications of the WRC (Water Research Council)

- The flow switch mounting:

This mounting can be secured by NPT or BSPT (Tapered) threads, or BSPP cylindrical threads or metric threads. Tapered threads require sealing on the threads, and the cylindrical threads require sealing by a flat gasket or O-ring

## Ingress protection

On flow switches using a magnetic mechanism, liquids containing magnetic particles such as iron filings must be avoided, because these particles will accumulate on the magnet. It is possible to use a magnetic trap upstream if it is not possible to avoid magnetic flow switches in the final application

## External environment protection

This protection can have several functions:

- Ingress protection against attacks from the outside environment (rain, dust, shock). Most of our flow switches have their electrical components potted inside an electrical insulation and waterproof resin. Some of them can also be provided with waterproof protection box
  - Protection against the conditions in which the product will be installed in its application.
- In most cases, level switches will be integrated by an OEM into a machine or equipment. Then it is this machine or equipment that will ensure protection against water, dust, shock and other contaminants.

- Protection against gas and dust explosive atmospheres: flow switches were not initially designed for use in these environments and therefore may not meet the applicable standards in this field of application.

Overmolded reed switches do not have potential sources of ignition. On special request, they can be subjected to an ignition hazard assessment according to DIN EN 13463-1: 2002. They could be, therefore, not subject to directive 94/9/EC, and used as a simple electrical device for connection to a certified intrinsically safe circuit in accordance with DIN EN 60079-11: 2007.

## Compliance with the European directive 2006-42 (Machinery directive):

These flow switches are not a safety component as described in this directive. Their operational safety is only guaranteed when they are used for flow monitoring of liquids, inside the limits given by their data sheets and instruction manual.

## Threads and threaded pipe connections

	G	R	NPT
1/2			
3/4			

The correspondences between the threads, and they may have different names in different countries and often it is difficult to understand catalogs and plans.

The threads used in flow sensors can be:

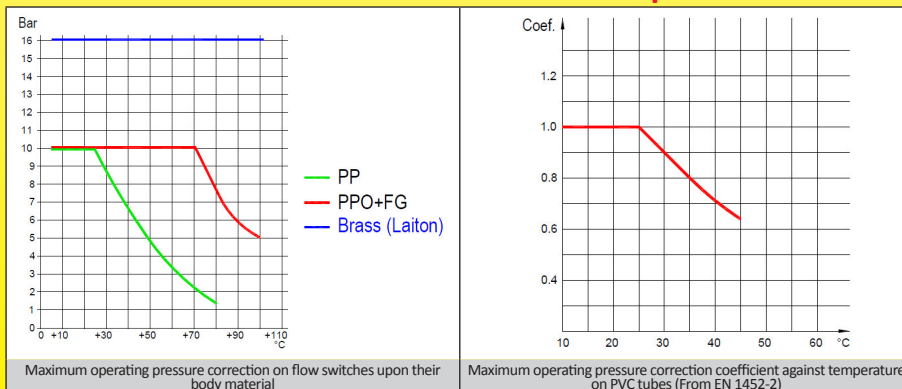
- 1/2" NPT: tapered thread, American standard ANSI B1-20-1
- 1/2" BSPT: tapered thread, meet ISO 7-1, DIN2999, BS21, often called "conical gas thread" or "conical gas", but they may also be described in documents under the abbreviation "Rp", "R" and in France "conical 15-21" (for 1/2"), and "conical 20-27" (for the 3/4")
- 1/2" BSPP and 3/4" BSPP: cylindrical thread, described in ISO 228, DIN259, often called "cylindrical gas thread" or "BSP", as described on the documents under the abbreviation "G", and in France "cylindrical 15-21" (for 1/2"), and "cylindrical 20-27" (for the 3/4").

Male cylindrical threads are mounted in cylindrical female thread, with a flat gasket or an O-ring seal on a flat seal seat.

The tapered male threads are mounted in cylindrical female threads with a sealant on the pitch.

In tapered threads, there is a strong resemblance between BSPT and NPT in sizes 1/2" and 3/4". For these dimensions only, they have the same pitch, diameters very close, and a slight pitch angle difference (55° and 60°), and this explains why in some cases, and for plastic threads, 1/2" NPT male will fit quite correctly in a BSPP female thread.

## PN and temperature resistance



The Nominal pressure (PN) is the pressure which is often used in the design of a pipeline. This value is expressed in bar, as the pressure at the temperature of 25 °C for which the equipment is able to withstand pressure without failure and with adequate security during a given time. At 25 °C the nominal pressure corresponds to the maximum operating pressure (PFA). This pressure varies with temperature and the characteristics of the material used, so great care must be taken when this concept is used. The main standard is EN 1452-2 for drinking water supply pipes in PVC. This standard provides the correction coefficient of the maximum operating pressure between 20 and 45 °C for PVC.



---

# Paddle flow switches

(Micro-switch types)

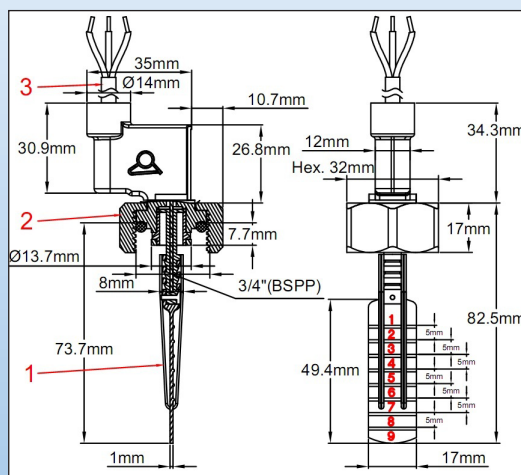
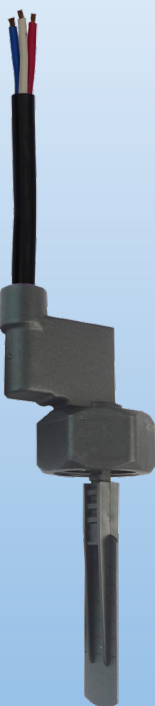






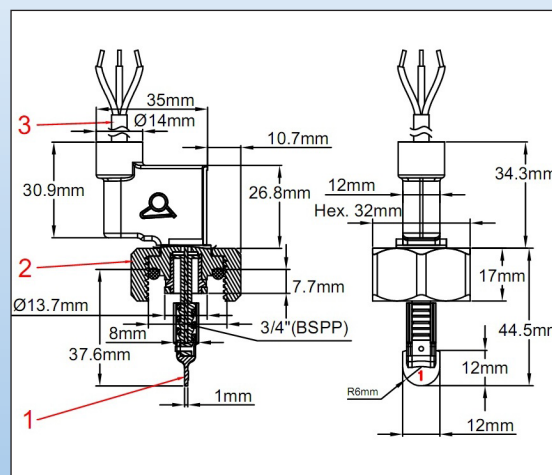
# Paddle flow switches, micro-switch contact, 3/4" BSPP union nut Type: R1B

Size and pressure	Flow sensing: Cleavable paddle	Mounting: 3/4" BSPP Union nut	Contact: Microswitch	Electrical rating	Mounting position	Type
PN10 DN≥15				5A 250V~		R1B



Type A Standard cleavable paddle

1: Paddle 2: Body 3: Cable



Type B Paddle for DN15 tee

1: Paddle 2: Body 3: Cable

**Main uses:** Water flow detection on water pipes

**Functional principle:** Balanced paddle, perpendicular to the main flow, actuating a micro-switch. Flexible elastomeric gasket between paddle and electric switch

**Main housing material:** PPO, fiber glass reinforced, usable with potable water.

**Paddle material:** Polypropylene, resistant to ozone and water disinfection products

**Paddle gasket:** Santoprene, resistant to ozone and water disinfection products

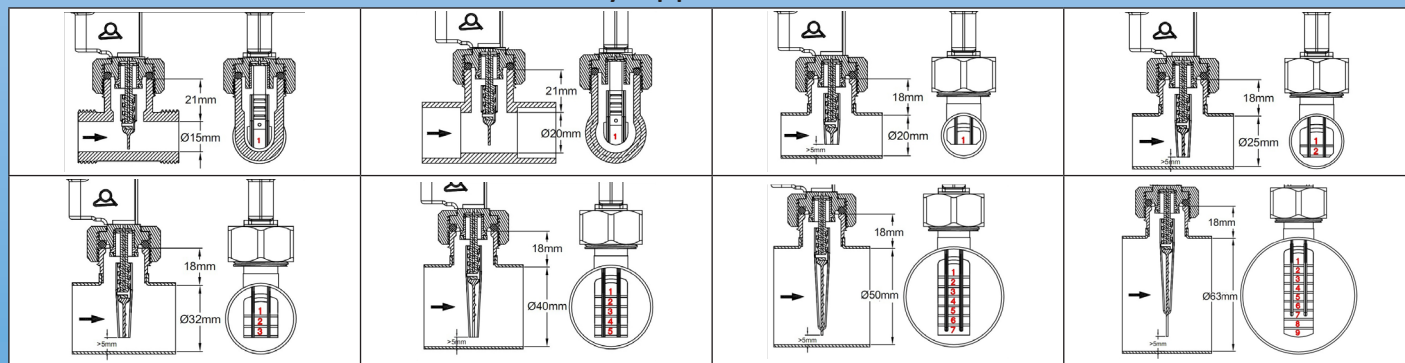
**Electrical rating:** 5A resistive, 230V AC

**Electric contact type:** SPDT, open or close by flow rise

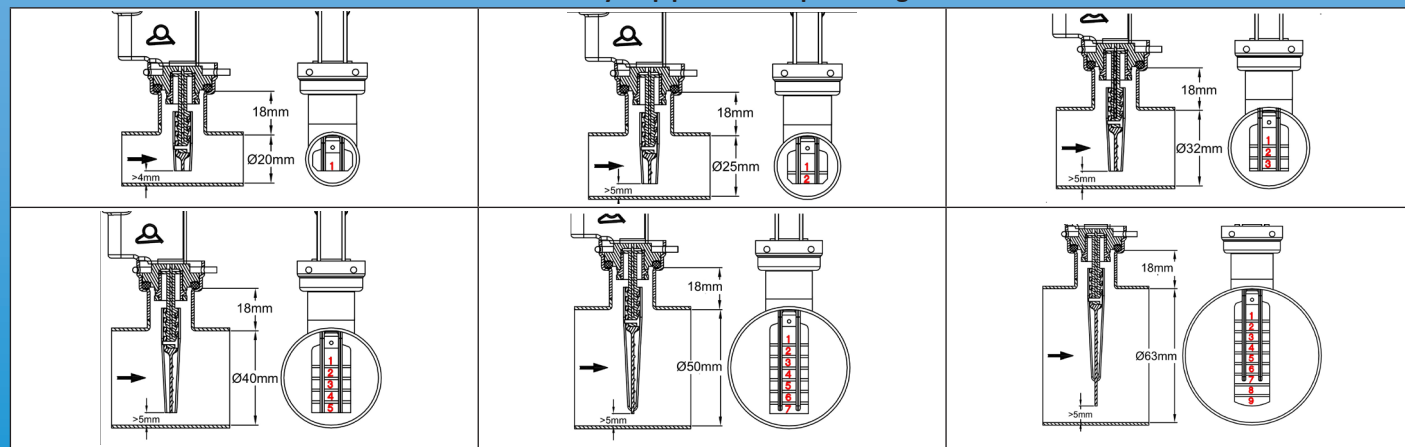
**Liquids compatibility:** For use with clean water and liquids without chemical incompatibility with PPO and Santoprene

**Nominal pressure at 20°C:** 1MPa (PN10)

## Assembly on pipes with 3/4" union nut



## Assembly on pipes with snap-in fitting



# Paddle flow switches, micro-switch contact, 3/4" BSPP union nut

## Type: R1B

Average Flow detection values vs pipe I.D. and paddle length (Liters/min)

Paddle length	Pipe ID (mm)***													
	15***		20		25		32		40		50		63	
	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open
1	8.3	7,2	16,3	11,6	37	36	77	68	157	128	260	202	598	412
1+2					24	18	53	50	108	97	183	160	421	327
1+2+3							43	38	88	82	168	140	386	286
1+2+3+4									70	68	130	118	299	241
1~5									52	50	110	98	253	200
1~6											90	88	217	170
1~7											78	77	178	158
1~8													150	135
1~9													135	122

\* Close by flow rise (L/min) of contact open at no flow position \*\* Open by flow decrease (L/min) of contact open at no flow position. Average values for indication only. Standard tolerances ±30% \*\*\* With 3/4 DN15 brass tee (see accessories) and type B non cleavable paddle

**Nominal diameter:** Can be used on 20 to 63 mm internal diameter pipes

The paddle is cleavable and can be cut at various lengths upon pipe diameter. There are cutting lines numbered 1 to 9 every 5mm.

**Recommended mounting position:** Vertical, with paddle downside. Other positions are possible with a change in the calibration value related to the paddle weight. .

**Water pipe connection:** Supplied with a fiber glass reinforced PA66G3/4" (BSPP) union nut and NBR gasket. Must be used on a BSPP3/4 male fitting perpendicular to the main pipe.

**Recommended torque:** 7Nm.

Version for snap-in mounting (see accessories) has no nut

**Liquids temperature range:** 5 to 80°C

**Ambient temperature range:** 5 to 50°C

**Ingress protection:** IP65

**Electrical connection:** 3 x 0.75 mm<sup>2</sup> cable, PVC insulation, T80°, style H05VVF.

**Installation instructions:**

- Check carefully the paddle orientation: The arrow on housing must be exactly parallel to the pipe

- A 5 mm minimum gap must be respected between end of the paddle and tube wall opposite to the 3/4" fitting.

- We recommend the use of nozzles of length less than or equal to 18mm between the gasket seat and the inside of the tube and with an inner diameter greater than or equal to 14mm, to avoid blocking of the paddle.

**Accessories:** 3/4" PVC saddles for DN40 to DN100 (OD) PVC pipes, and other fittings: see last section of this catalogue

**Options:**

- Cable with connector or terminals, other cable length, nickel plated brass nut.

### Main references

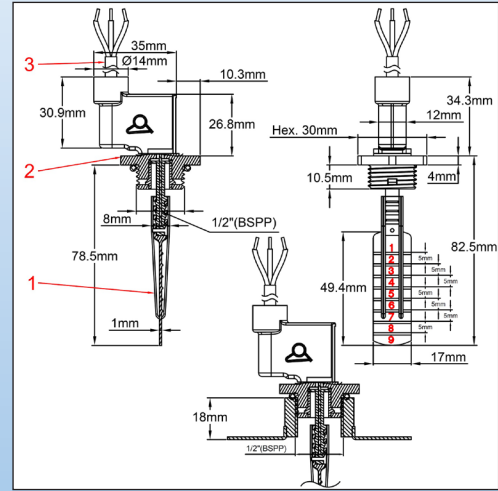
	Cable length		
	500mm	1m	2m
Type A cleavable paddle, 3/4" nut	R1BH05073M33N050	R1BH05073M33N100	R1BH05073M33N200
Type A cleavable paddle, snap-in mounting	R1BH05073S13N050	R1BH05073S13N100	R1BH05073S13N200
Type B non-cleavable paddle for DN15 x ¾ Tee, 3/4" nut	R1BH01235M33N050	R1BH01235M33N100	R1BH01235M33N200

Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice



# Paddle flow switches, micro-switch contact, 1/2" BSPP male thread Type: R1D

Size and pressure	Flow sensing: Cleavable paddle	Mounting: 1/2" BSPP thread	Contact: Microswitch	Electrical rating	Mounting position	Type
PN10 DN≥25				5A 250V~		R1D



1: Paddle 2: Body 3: Cable

**Main uses:** Water flow detection on water pipes

**Functional principle:** Balanced paddle, perpendicular to the main flow, actuating a micro-switch. Flexible elastomeric gasket between paddle and electric switch

**Main housing material:** PPO, fiber glass reinforced, usable with potable water.

**Paddle material:** Polypropylene, resistant to ozone and water disinfection products

**Paddle gasket:** Santoprene, resistant to ozone and water disinfection products

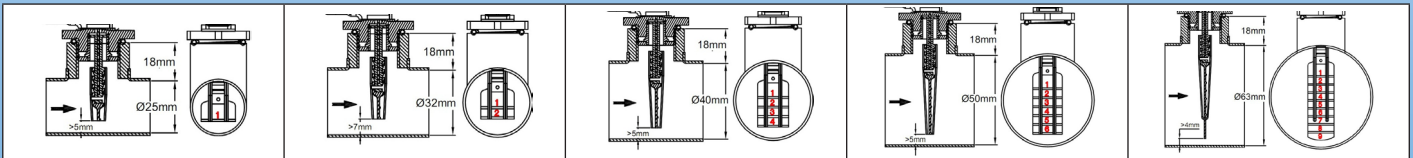
**Electrical rating:** 5A resistive, 230V AC

**Electric contact type:** SPDT, open or close by flow rise

**Liquids compatibility:** For use with clean water and liquids without chemical incompatibility with PPO and Santoprene

**Nominal pressure at 20°C:** 1MPa (PN10)

## Assembly on pipes



Average Flow detection values vs pipe I.D. and paddle length (Liters/min)

Paddle length	Pipe ID (mm)											
	20		25		32		40		50		63	
	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open
1			34	32	67	63	123	113	225	200	506	424
1+2			23	19	50	48	98	93	173	153	389	324
1+2+3					40	38	76	73	143	128	321	271
1+2+3+4							61	58	110	106	220	200
1~5							49	46	89	84	200	178
1~6									73	68	165	150
1~7									62	58	152	138
1~8											133	123
1~9											113	108

\* Close by flow rise (L/min) of contact open at no flow position \*\* Open by flow decrease (L/min) of contact open at no flow position. Average values for indication only. Standard tolerances ±30%

**Nominal diameter:** Can be used on 32 to 63 mm internal diameter pipes

The paddle is cleavable and can be cut at various lengths upon pipe diameter. There are cutting lines numbered 1 to 9 every 5mm.

**Recommended mounting position:** Vertical, with paddle downside. Other positions are possible with a change in the calibration value related to the paddle weight.

**Water pipe connection:** Male thread 1/2" (BSPP) and NBR gasket. Must be used on a BSPP 1/2" female fitting perpendicular to the main pipe.

**Recommended torque:** 7Nm

**Liquids temperature range:** 5 to 80°C

**Ambient temperature range:** 5 to 50°C

**Ingress protection:** IP65

**Electrical connection:** 3 x 0.75 mm<sup>2</sup> cable, PVC insulation, style H05VVF.

**Installation instructions:**

- Check carefully the paddle orientation: The arrow on housing must be exactly parallel to the pipe

- A 5 mm minimum gap must be respected between end of the paddle and tube wall opposite to the 3/4" fitting.

- We recommend the use of nozzles of length less than or equal to 18mm between the gasket seat and the inside of the tube and with an inner diameter greater than or equal to 20mm, to avoid blocking of the paddle.

**Accessories:** 1/2" female PVC saddles for DN40 to DN100 (OD) PVC pipes, and other fittings: see last section of this catalogue

**Options:** cable with connector or terminals, other cable length, paddle type B (see type R1B)

## Main references

Reference	Cable length		
	500mm	1m	2m
	R1DH05079F43N050	R1DH05079F43N100	R1DH05079F43N200





---

# Paddle flow switches

(Reed switch types)



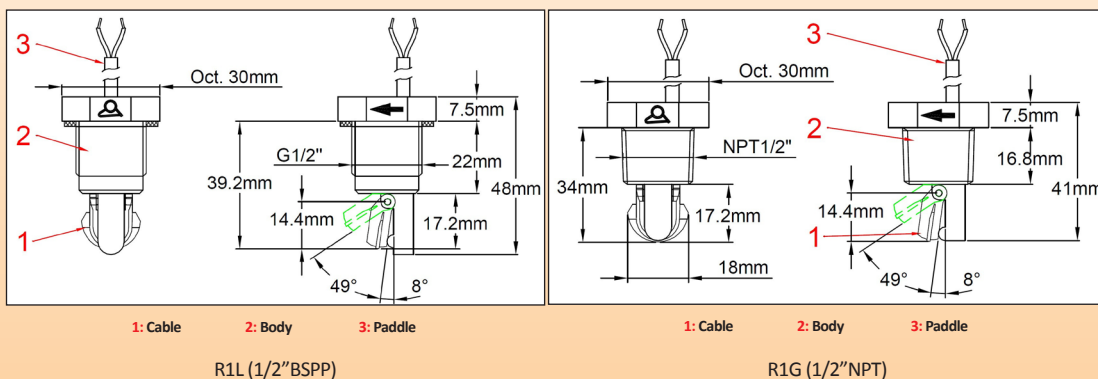




# Paddle flow switches, reed switch contact, 1/2" male thread

## Types: R1L and R1G

Pressure and size	Flow sensing: Gravity pull back paddle	Mounting: 1/2" male thread	Contact: Reed switch, Open on flow rise	Electrical rating	Mounting position	Type
PN10 DN≥25				≤1A ≤70W ≤250V~		<b>R1L</b> (BSPP) <b>R1G</b> (NPT)



**Main uses:** The most simple and price effective flow switch of the range. Used for water flow detection on **small size** water pipes. **CONTACT OPENS BY FLOW RISE.**

### Functional principle:

Balanced magnetic paddle mounted perpendicular to the flow and activating a reed switch through the wall. The return of the paddle is by gravity, without spring. No seal or liquid can pass between the piping system and the electrical contact. Suitable for corrosive water pools and spas and salination chlorination and bromination systems. Not to be used for water containing magnetic particles or high viscosity liquids, which block the movement of the paddle.

**Main housing material:** Polypropylene, resistant to ozone and water disinfection products, usable with potable water.

**Paddle:** Polypropylene, 18mm width

**Paddle shaft:** Titanium, providing an outstanding corrosion resistance, and improved mechanical life

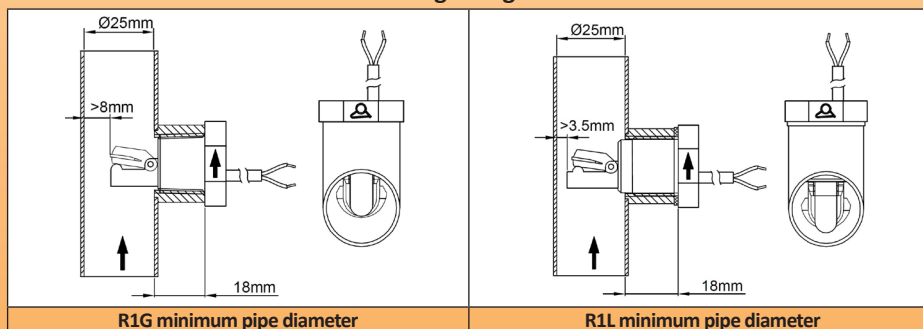
**Electrical rating:** Max 1A, Max 70W, Max 250V, resistive load. Use on inductive circuits reduces electrical rating. We recommend to protect the reed switch with contact protection device when used in inductive loads

**Electric contact type:** Normally close, **open** by flow rise

**Liquids compatibility:** For use with clean water and liquids without magnetic particles and without chemical incompatibility with polypropylene

**Nominal pressure at 20°C:** 1MPa (PN10)

### Mounting configurations



Paddle length	25		32		40		50		63	
	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open
1	12,7	10,8	17	13,5	28	23	46	42	93	83

\*\* Open by flow rise (L/min) of contact **close** at no flow position \* Close by flow decrease (L/min) of contact **close** at no flow position. Average values for indication only. Standard tolerances ±30%

**Nominal diameter:** Usually used on 25 to 32 mm internal diameter pipes. The paddle is not cleavable.

**Mandatory mounting position:** On vertical pipes, with horizontal flow switch axis, and paddle upside. Upstream flow **only**.

**Water pipe connection:** On female 1/2" fitting.

On the type with BSPP thread, a NBR gasket is supplied with the product. On the type with NPT thread, thread sealant must be used. Recommended torque: 7Nm

**Liquids temperature range:** 5 to 80°C

**Ambient temperature range:** 5 to 50°C

**Ingress protection:** IP65

**Electrical connection:** 2 x AWG24 (0.2mm<sup>2</sup>) cable, PVC insulation, T80°, style UL2464.

### Installation instructions:

- Check carefully the paddle orientation: The arrow on housing must be exactly parallel to the pipe
- A 5 mm minimum gap must be respected between end of the paddle and tube wall opposite to the fitting.
- We recommend the use of nozzles of length less than or equal to 18mm between the gasket seat and the inside of the tube and with an inner diameter greater than or equal to 20 mm, to avoid blocking of the paddle.

**Accessories:** 1/2" PVC saddles for DN40 to DN100 (OD) PVC pipes, and other fittings: see last section of this catalogue

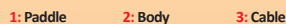
**Options:** cable with connector or terminals, other cable length

### Main references

Thread	Cable length		
	500mm	1m	2m
1/2" BSPP	R1L611536F45P050	R1L611536F45P100	R1L611536F45P200
1/2" NPT	R1G611534F25P050	R1G611534F25P100	R1G611534F25P200



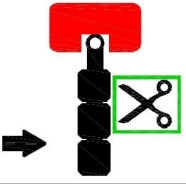
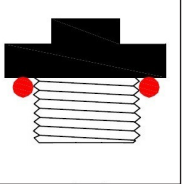
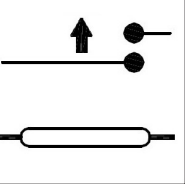
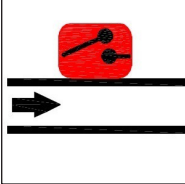
Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice

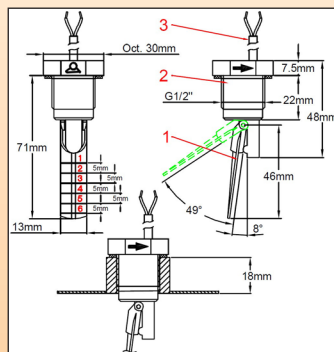


**1: Paddle**      **2: Body**      **3: Cable**

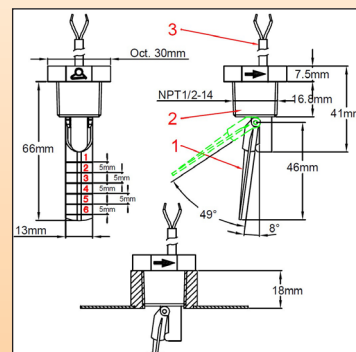
E-Mail: [info@ultimheat.com](mailto:info@ultimheat.com) Web: [www.ultimheat.com](http://www.ultimheat.com)

# Paddle flow switches, reed switch contact, 1/2" male thread, long paddle, Types: R1S and R1F

Pressure and size	Flow sensing: Cleavable magnetic pull back paddle	Mounting: 1/2" male thread	Contact: Reed switch, close on flow rise	Electrical rating	Mounting position	Type
PN10 DN≥25				≤1A ≤70W ≤250V~		<b>R1S</b> (BSPP) <b>R1F</b> (NPT)



1: Paddle 2: Body R1S (1/2" BSPP) 3: Cable



1: Paddle 2: Body R1F (1/2" NPT) 3: Cable

**Main uses:** The most simple flow switch with magnetic pull-back. Recommended mounting position is on horizontal pipes, but can be mounted in any position. For water flow detection on dia. 25 to 63 mm water pipes.

## Functional principle:

Balanced magnetic paddle mounted perpendicular to the flow and activating a reed switch through the wall. The return of the paddle is by made by magnetic action, without spring. No seal or liquid can pass between the piping system and the electrical contact. Suitable for corrosive water pools and spas and salination chlorination and bromination systems. Must not to be used for water containing magnetic particles or high viscosity liquids, which block the movement of the paddle.

Adjustment: Can be adjusted by cleaving the paddle

**Main housing material:** Polypropylene, resistant to ozone and water disinfection products, usable with potable water.

**Paddle:** Polypropylene, 13 mm width

**Paddle shaft:** Titanium, providing an outstanding corrosion resistance, and improved mechanical live

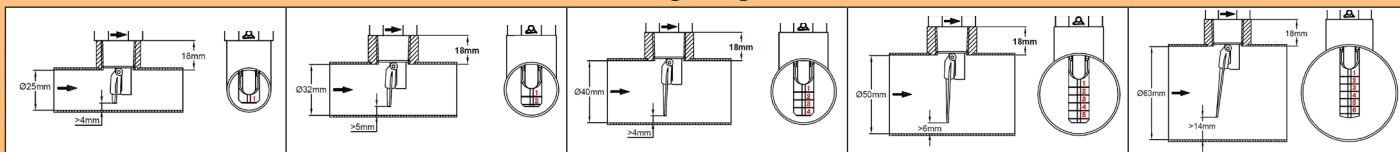
**Electrical rating:** Max 1A, Max 70W, Max 250V, resistive load. Use on inductive circuits reduces electrical rating. We recommend to protect the reed switch with contact protection device when used in inductive loads

**Electric contact type:** Normally open, closes by flow rise

**Liquids compatibility:** For use with clean water and liquids without magnetic particles and without chemical incompatibility with polypropylene and titanium

**Nominal pressure at 20°C:** 1MPa (PN10)

## Mounting configurations



## Average Flow detection values

Paddle length	Pipe ID (mm)											
	20		25 Not suitable for R1S (BSPP)		32		40		50		63	
	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open
1			26	6	38	15	79	30	127	58	172	108
1+2					28	11	63	18	83	37	143	73
1+2+3					20	7	49	10	63	27	105	53
1+2+3+4							19	7	57	22	93	47
1~5									48	15	72	31
1~6									48	9	66	23

\* Close by flow rise (L/min) of contact open at no flow position \*\* Open by flow decrease (L/min) of contact open at no flow position. Average values for indication only. Standard tolerances±30%

**Nominal diameter:** Can be used on 25 to 63 mm internal diameter pipes.

The paddle is cleavable and can be cut at various lengths upon pipe diameter. There are cutting lines numbered 1 to 6 every 5mm.

**Recommended mounting position:** On horizontal pipes. Mounting in other positions slightly modify the calibration

**Water pipe connection:** On female 1/2" fitting. On the type with BSPP thread, a NBR gasket is supplied with the product. On the type with NPT thread, thread sealant must be used.

**Recommended torque:** 7 Nm

**Liquids temperature range:** 5 to 80°C

**Ambient temperature range:** 5 to 50°C

**Ingress protection:** IP65

**Electrical connection:** 2 x AWG24 (0.2mm²) cable, PVC insulation, T80°, style UL2464.

## Installation instructions:

- Check carefully the paddle orientation: The arrow on housing must be exactly parallel to the pipe

- A 5 mm minimum gap must be respected between end of the paddle and tube wall opposite to the fitting.

- We recommend the use of nozzles of length less than or equal to 18mm between the gasket seat and the inside of the tube and with an inner diameter greater than or equal to 20 mm, to avoid blocking of the paddle.

**Accessories:** 1/2" PVC saddles for DN40 to DN100 (OD) PVC pipes, and other fittings: see last section of this catalogue

**Options:** cable with connector or terminals, other cable length

## Main references


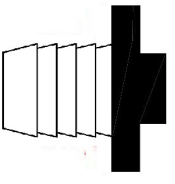
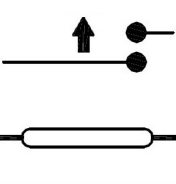
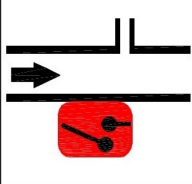
Thread	Cable length		
	500mm	1m	2m
1/2" BSPP	R1S6D4771F45P050	R1S6D4771F45P100	R1S6D4771F45P200
1/2" NPT	R1F6D4766F25P050	R1F6D4766F25P100	R1F6D4766F25P200

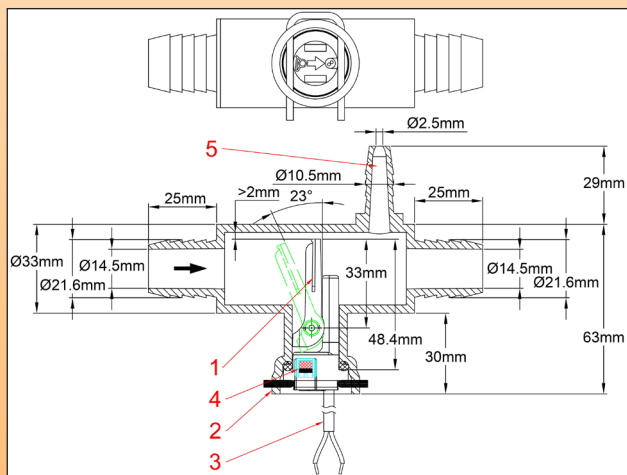






# Paddle flow switches, reed switch contact, inside barbed tee for 1" soft tube, Type: R1Q

Pressure and size	Flow sensing: Magnetic pull back paddle	Mounting: 1" barbed for soft tube	Contact: Reed switch, close on flow rise	Electrical rating	Mounting position	Type
PN3 DN20				$\leq 1A$ $\leq 70W$ $\leq 250V_{\sim}$		R1Q



- 1: Paddle  
2: Snap-on mounting  
3: Connection cable  
4: Adjustment screw  
5: Air bleed outlet

**Main uses:** Tee equipped with paddle flow switch, for spas and swimming pools applications, mounting on 1" (20 to 21mm ID) soft PVC tubes, adjustable setting. Used on water circulation circuits to detect the passage of water or filter clogging and avoid dry running. Recommended mounting position is on horizontal pipes, but can be mounted in any position allowing an efficient air bleed.

**Functional principle:** Balanced magnetic pallet mounted perpendicular to the flow and activating a reed switch through the wall. The return of the pallet is by made by magnetic action, without spring. No seal or liquid can pass between the piping system and the electrical contact. Suitable for corrosive water pools and spas and salination chlorination and bromination systems. Must not be used for water containing magnetic particles or high viscosity liquids, which block the movement of the pallet.

**Adjustment:** By means of the adjustment screw located under the protective cover. This setting must be carried out only by professional, qualified and trained personnel, as a too low setting can produce an insufficient pull-back force and malfunction. This adjustment is designed for single use and can be sealed.

**Main housing material:** Polypropylene, resistant to ozone and water disinfection products, usable with potable water.

**Tee material:** PVC

**Paddle:** Polypropylene, 15 mm width

**Paddle shaft:** Titanium, providing an outstanding corrosion resistance, and improved mechanical live

**Electrical rating:** Max 1A, Max 70W, Max 250V, resistive load. Use on inductive circuits reduces electrical rating. We recommend to protect the reed switch with contact protection device when used in inductive loads

**Electric contact type:** Normally open, closes by flow rise

**Liquids compatibility:** For use with clean water and liquids without magnetic particles and without chemical incompatibility with polypropylene and titanium

**Nominal pressure at 20°C:** 0.3MPa (PN3)

## Average flow detection values (Liters/min)

Calibration	*Close	**Open
Low span end (1gr)	4,3	3,7
Middle span (2grs)	5,7	4,8
High span end (4grs)	7,4	6,9

\* Close by flow rise (L/min) of contact open at no flow position \*\* Open by flow decrease (L/min) of contact open at no flow position. Average values for indication only. Standard tolerances  $\pm 30\%$

**Liquids temperature range:** 5 to 45°C

**Ambient temperature range:** 5 to 45°C

**Ingress protection:** IP65

**Electrical connection:** 2 x AWG24 (0.2mm<sup>2</sup>) cable, PVC insulation, T80°, style UL2464.

**Installation instructions:** Water circuit in spas and pools can contain air bubbles, it is important to prevent them stagnate in the unit of measure and originate false flow measurement. Therefore the air bleeding orifice must be located above and connected

**Options:** cable with connector or terminals, other cable length.

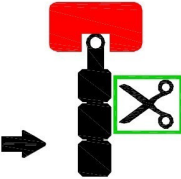
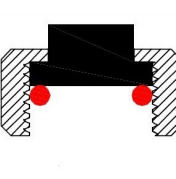
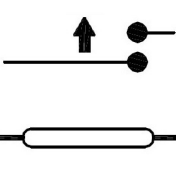
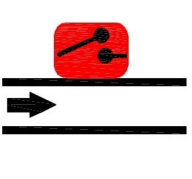
## References

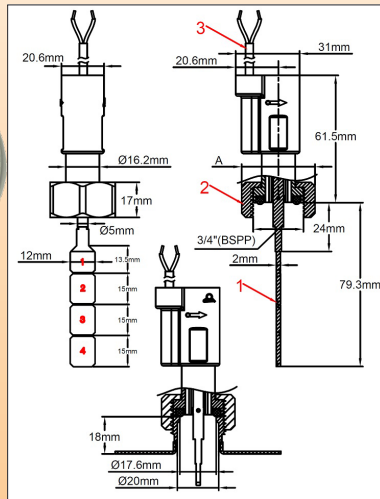
Calibration	Cable length			
	500mm	1m	2m	3m
Low span end (1gr)	R1Q613348S15P050	R1Q613348S15P100	R1Q623348S15P200	R1Q613348S15P300
Middle span (2 grs)	R1Q623348S15P050	R1Q623348S15P100	R1Q623348S15P200	R1Q623348S15P300
High span end (4grs)	R1Q643348S15P050	R1Q643348S15P100	R1Q643348S15P200	R1Q643348S15P300



# Paddle flow switches, reed switch contact, external body

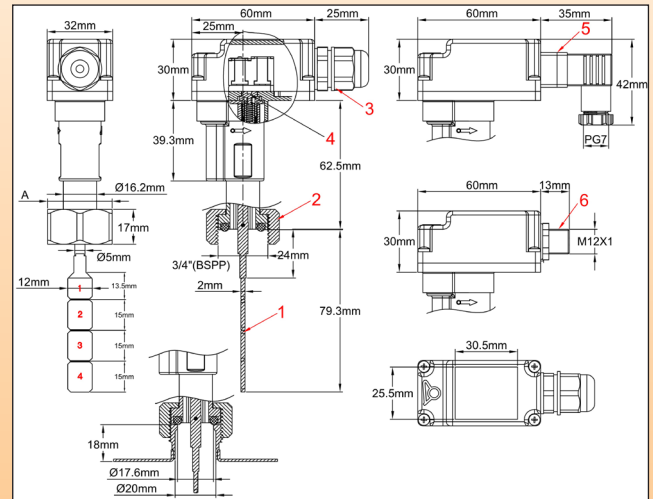
## Type: R1X

Size and pressure	Flow sensing: Cleavable paddle	Mounting: ¾" BSPP Union nut	Contact: Reed switch, close on flow rise	Electrical rating	Mounting position	Type
<b>PN10</b> <b>DN≥15</b>				$\leq 1A$ $\leq 70W$ $\leq 250V\sim$		<b>R1X</b>



Cable connection model

- 1: Paddle
- 2: Plastic body and plastic ¾" BSPP union nut
- 3: Cable



Waterproof connection box model

- 1: Paddle
- 2: Plastic body and plastic ¾" BSPP union nut
- 3: Connection box
- 4: Adjustment screw
- 5: EN17530-803-A (DIN43650-A) connector (Option)
- 6: IEC947-5-2, M12x1, 4 terminals connector (Option)

**Main uses:** General application in flow detection. . Recommended mounting position is on horizontal pipes, but can be mounted in any position. For water flow detection on dia. 15 to 100 mm water pipes

### Functional principle:

Balanced magnetic paddle mounted perpendicular to the flow and activating a reed switch through the wall. The return of the paddle is by made by magnetic action, without spring. No seal or liquid can pass between the piping system and the electrical contact. Suitable for corrosive water pools and spas and salination chlorination and bromination systems. Must not to be used for water containing magnetic particles or high viscosity liquids, which block the movement of the paddle.

### Adjustment:

- By cleaving the paddle
- Fine adjustment by screw driver on internal dial (on models with connection box only)

**Paddle shaft:** Titanium, providing an outstanding corrosion resistance, and improved mechanical live. Suitable for corrosive water pools and spas and salination chlorination and bromination systems

**Main housing material:** PPO, fiber glass reinforced for improved pressure resistance, usable with potable water.

**Paddle:** PPO, 12 mm width, can be cleaved into 4 sections numbered 1 to 4 for pipe diameter adjustment

**Pipe mounting:** Fiber glass reinforced union nut,¾" BSPP, mounting on ¾" BSPP male fitting with gasket. Recommended torque: 7±1 Nm

**Gasket:** NBR

**Electrical rating:** Max 1A, Max 70W, Max 250V, resistive load. Use on inductive circuits reduces electrical rating. We recommend to protect the reed switch with contact protection device when used in inductive loads

**Electric contact type:** Normally open, closes by flow rise

**Liquids compatibility:** For use with clean water and liquids without magnetic particles and without chemical incompatibility with PPO and titanium

**Nominal pressure at 20°C:** 1MPa (PN10)

**Liquids temperature range:** 5 to 100°C

**Ambient temperature range:** 5 to 80°C

**Ingress protection:** IP65

**Calibration tolerances:** +/-15% (on paddle operating force at end of paddle 1)

### Electrical connection:

4 possible models:

- 2 x AWG24 (0.2mm²) cable, PVC insulation, T80°, style UL2464.
- Waterproof connection box with 2.5mm² connection block, M16x1.5 cable gland
- Waterproof connection box with EN17530-803-A (DIN43650-A) connector (MOQ apply for this model)
- Waterproof connection box with IEC947-5-2, M12x1, 4 terminals connector(MOQ apply for this model)

### Installation instructions:

- Check carefully the paddle orientation: The arrow on housing must be exactly parallel to the pipe
- A 5 mm minimum gap must be respected between end of the paddle and tube wall opposite to the fitting.
- We recommend the use of nozzles of length less than or equal to 18mm between the gasket seat and the inside of the tube and with an inner diameter greater than or equal to 13.5 mm, to avoid blocking of the paddle.

**Accessories:** ¾" male PVC saddles for DN40 to DN100 (OD) PVC pipes, and other fittings: see last section of this catalogue

**Options(MOQ apply):** cable with connector or terminals, other cable length, nickel plated ¾" BSPP union nut

**Important notice:** In the case of plastic pipes (PVC, PE), the DN (nominal diameter) corresponds to the **outside diameter** and wall thickness is variable depending on the application. This must be taken into account to avoid blocking the paddle. In the case of metal pipes, the **inner diameter** corresponds to the DN. Flow values data are for tubes whose internal diameter corresponds to DN.

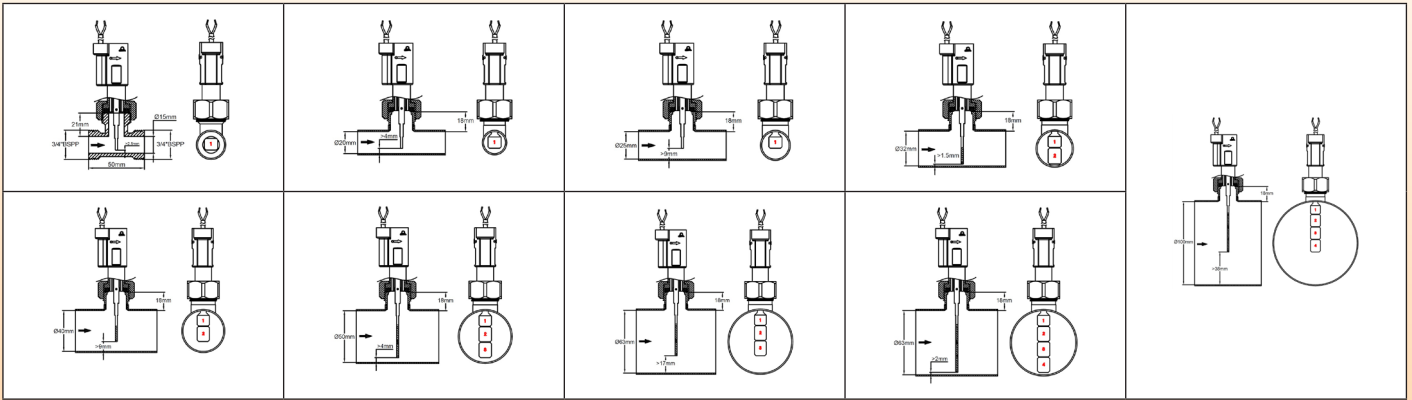
Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice



# Paddle flow switches, reed switch contact, external body

## Type: R1X

### Pipe mounting configurations



### Average flow detection values (Liters/min)

Paddle length	Pipe ID (mm)															
	15		20		25		32		40		50		63		100	
	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open
1-m	2,7	2,3	4,8	4,5	13	11	22	20	38	35	67	47	167	112	472	317
1-H	4,3	3,3	7,3	6,5	18	17	29	27	53	48	83	72	218	142	616	401
1-M	5,5	3,2	14	12	25	22	38	35	67	60	132	108	262	202	740	571
1+2-m									20	18	37	32	68	52	192	155
1+2-H									30	28	53	43	88	72	248	203
1+2-M									40	37	67	63	123	115	347	324
1~3-m											22	20	37	33	125	108
1~3-H											34	32	63	50	176	165
1~3-M											46	43	77	73	233	217
1~4-m													27	24	88	72
1~4-H													43	40	140	132
1~4-M													58	55	180	167

m= calibration at min span  
H= calibration at Half span  
M= calibration at Max span

\* Close by flow rise (L/min) of contact open at no flow position  
\*\* Open by flow decrease (L/min) of contact open at no flow position. Average values for indication only. Standard tolerances ±15%

### Main references (With type A cleavable paddle)

Calibration (Calibration force ±15%, measured at end of paddle N°1)	500 mm cable	2 mm cable	3 mm cable	Waterproof connection box with M16x1.5 cable gland	Waterproof connection box with 4 pins, M12x1 IEC947-5-2 connector	Waterproof connection box with DIN 43650-A connector
Low span end: 3gr	R1X636680G35N050	R1X636680G35N200	R1X636680G35N300	R1X636680G35N00C	R1X636680G35N00L	R1X636680G35N00D
Middle span: 7gr	R1X676680G35N050	R1X676680G35N200	R1X676680G35N300	R1X676680G35N00C	R1X676680G35N00L	R1X676680G35N00D
High span end: 14 gr	R1X6E6680G35N050	R1X6E6680G35N200	R1X6E6680G35N300	R1X6E6680G35N00C	R1X6E6680G35N00L	R1X6E6680G35N00D

### Other paddles (Non cleavable models)

<b>Paddle type B</b> Replace 6680 in reference by 1234	<b>Paddle type C</b> Replace 6680 in reference by 1549	<b>Paddle type D</b> Replace 6680 in reference by 1564	<b>Paddle type E</b> Replace 6680 in reference by 1579

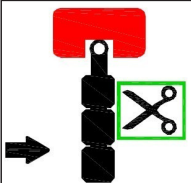
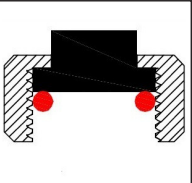
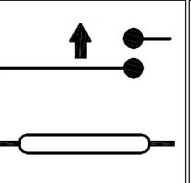
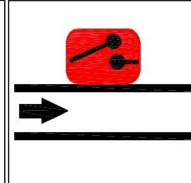
Consult us for flow detection values with these paddles. OEM paddles can be made on order (MOQ apply)

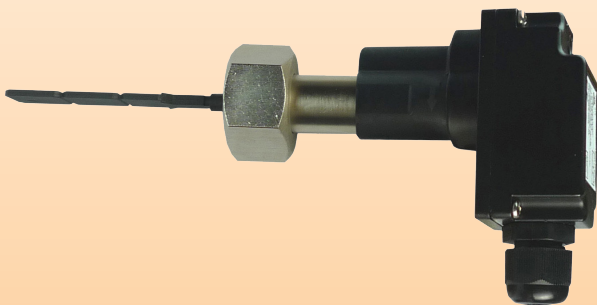




# Paddle flow switches, reed switch contact, external brass body

## Type: R1V

Size and pressure	Flow sensing: Cleavable paddle	Mounting: ¾" BSPP brass union nut	Contact: Reed switch, close on flow rise	Electrical rating	Mounting position	Type
PN25 DN≥15				≤1A ≤70W ≤250V~		R1V



**Main uses:** General application in flow detection. Recommended mounting position is on horizontal pipes, but can be mounted in any position. For liquids flow detection on dia. 15 to 100 mm pipes. Body and union nut in brass for improved mechanical strength and pressure resistance. Connection box with terminal block or connectors, and detection point adjustment screw

**Functional principle:** Balanced magnetic paddle mounted perpendicular to the flow and activating a reed switch through the wall. The return of the paddle is by made by magnetic action, without spring. No seal or liquid can pass between the piping system and the electrical contact. Usable for industrial applications in non-corrosive liquids. Must not to be used for liquids containing magnetic particles or high viscosity liquids, which block the movement of the pallet.

#### Adjustment:

- By cleaving the paddle
- Fine adjustment by screw driver on internal dial

**Paddle shaft:** Titanium, providing an outstanding corrosion resistance, and improved mechanical live

**Main housing material:** Brass

**Paddle:** Polypropylene, 15 mm width, with 4 sections, numbered 1 to 4, can be cleaved for adjustment to pipe size

**Pipe mounting:** Nickel plated brass union nut, ¾ BSPP, mounting on ¾ BSPP male thread with gasket. **Recommended torque:** 10±1 Nm

**Gasket:** NBR

**Electrical rating:** Max 1A, Max 70W, Max 250V, resistive load. Use on inductive circuits reduces electrical rating. We recommend to protect the reed switch with contact protection device when used in inductive loads

**Electric contact type:** Normally open, closes by flow rise

**Liquids compatibility:** For use with clean water and liquids without magnetic particles and without chemical incompatibility with brass, PPO and titanium

**Nominal pressure at 20°C:** 2,5 MPa (PN25)

**Liquids temperature range:** 5 to 100°C (Do not withstand water freezing inside pipe)

**Ambient temperature range:** 5 to 80°C

**Ingress protection:** IP65

**Calibration tolerances:** +/-15% (on paddle operating force at end of paddle 1)

#### Electrical connection:

**Standard:**

IP64 connection box, with screw terminal connection block, M16x1.5 ISO cable gland

#### Options:

- Connection box with EN17530-803-A (DIN43650-A) connector

- Connection box with IEC947-5-2 M12x1 4 pins connector

**Installation instructions:**

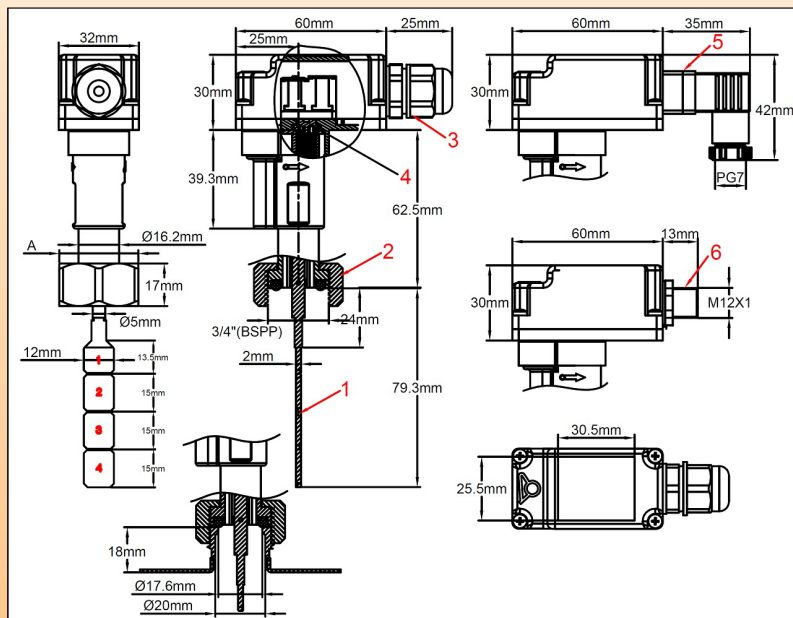
- Check carefully the paddle orientation: The arrow on housing must be exactly parallel to the pipe

- A 5 mm minimum gap must be respected between end of the paddle and tube wall opposite to the fitting.

- We recommend the use of nozzles of length less than or equal to 18 mm between the gasket seat and the inside of the tube and with an inner diameter greater than or equal to 13.5 mm, to avoid blocking of the paddle.

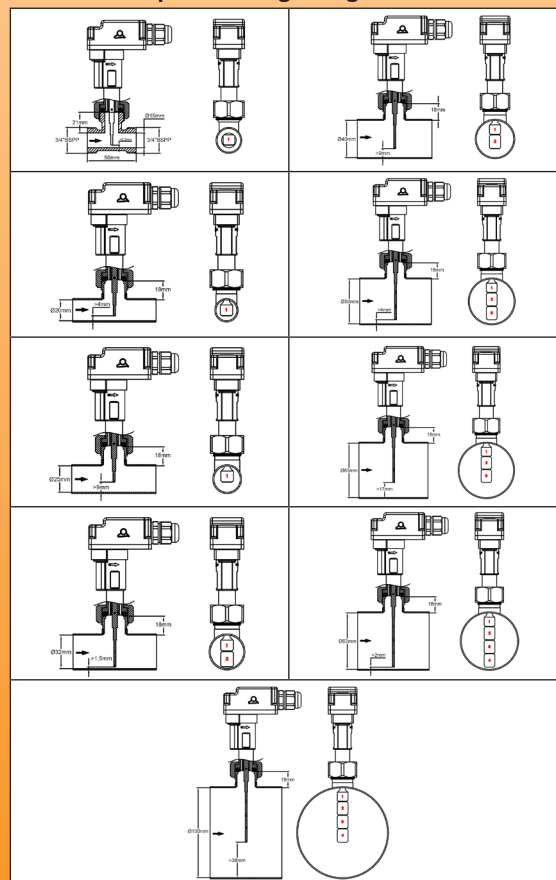
**Accessories:** ¾" male PVC saddles for DN40 to DN100 (OD) PVC pipes, and other fittings: see last section of this catalogue

**Important notice:** In the case of plastic pipes (PVC, PE), the DN (nominal diameter) corresponds to the outside diameter and wall thickness is variable depending on the application. This must be taken into account to avoid blocking the paddle. In the case of metal pipes, the inner diameter corresponds to the DN. Flow values data are for tubes whose internal diameter corresponds to DN.



- 1: Paddle
- 2: ¾" BSPP Brass union nut and brass body
- 3: Connection box
- 4: Adjustment screw
- 5: EN17530-803-A (DIN43650-A) connector (Option)
- 6: IEC947-5-2, M12x1, 4 terminals connector (Option)

#### Pipe mounting configurations



### Average flow detection values (Liters/min)

Paddle length	Pipe ID (mm)															
	15		20		25		32		40		50		63		100	
	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open
1-m	2,7	2,3	4,8	4,5	13	11	22	20	38	35	67	47	167	112	472	317
1-H	4,3	3,3	7,3	6,5	18	17	29	27	53	48	83	72	218	142	616	401
1-M	5,5	3,2	14	12	25	22	38	35	67	60	132	108	262	202	740	571
1+2-m									20	18	37	32	68	52	192	155
1+2-H									30	28	53	43	88	72	248	203
1+2-M									40	37	67	63	123	115	347	324
1~3-m											22	20	37	33	125	108
1~3-H											34	32	63	50	176	165
1~3-M											46	43	77	73	233	217
1~4-m													27	24	88	72
1~4-H													43	40	140	132
1~4-M													58	55	180	167
m= calibration at min span H= calibration at Half span M= calibration at Max span		* Close by flow rise (L/min) of contact open at no flow position ** Open by flow decrease (L/min) of contact open at no flow position. Average values for indication only. Standard tolerances ±15%														

### Main references (With type A cleavable paddle)

Calibration (Calibration force ±15%, measured at end of paddle N°1)	Waterproof connection box with M16x1.5 cable gland	Waterproof connection box with 4 pins, M12x1 IEC947-5-2 connector	Waterproof connection box with DIN 43650-A connector
Low span end: 3gr	R1V636680G35N00C	R1V636680G35N00L	R1V636680G35N00D
Middle span: 7gr	R1V676680G35N00C	R1V676680G35N00L	R1V676680G35N00D
High span end: 14 gr	R1V6E6680G35N00C	R1V6E6680G35N00L	R1V6E6680G35N00D

### Other paddles (Non cleavable models)

<b>Paddle type B</b> Replace 6680 in reference by 1234	<b>Paddle type C</b> Replace 6680 in reference by 1549	<b>Paddle type D</b> Replace 6680 in reference by 1564	<b>Paddle type E</b> Replace 6680 in reference by 1579

Consult us for flow detection values with these paddles. OEM paddles can be made on order (MOQ apply)



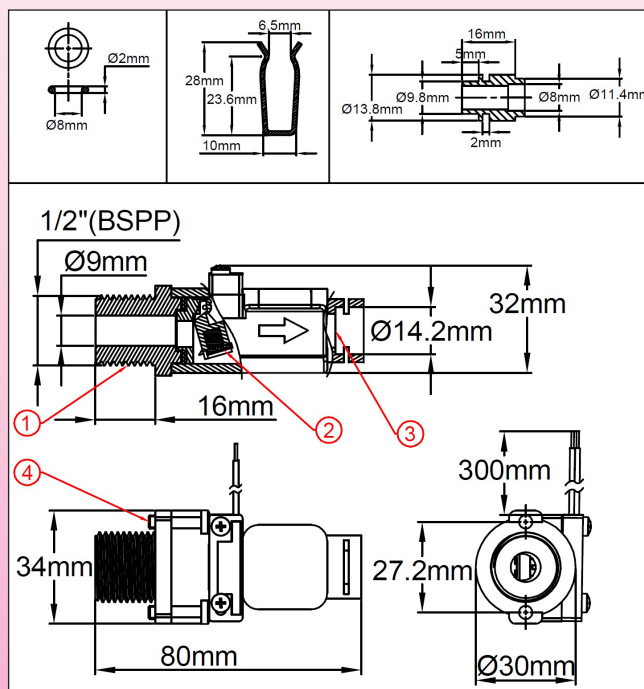
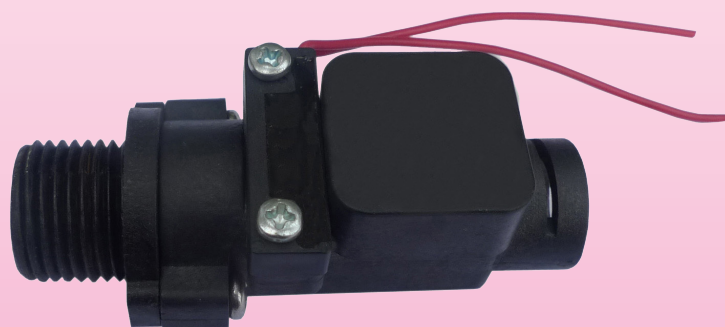
---

# Flap flow switches

Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice

# Flap flow switches, reed switch contact, 1/2" BSPP male thread, Type: R20

Pressure and size	Flow sensing: Magnetic flap	Mounting: 1/2" male thread and snap-in dia. 8mm	Contact: Reed switch, close on flow rise	Electrical rating	Mounting position	Type
PN10 DN8				$\leq 1A$ $\leq 70W$ $\leq 250V\sim$		R20



- 1: Water inlet thread  
2: Flow detection flap  
3: Water outlet  
4: Anti rotation lugs

**Main applications:** Product developed for miniature instantaneous water heaters for showers. The mobile flap system provides compactness. Water inlet is done directly by the 1/2" BSPP male thread. Mandatory vertical mounting, with water inlet from the bottom. Connection to internal copper piping DN8 and DN10 with quick coupling

## Functional principle:

Magnetic flap mounted perpendicular to the flow and activating a reed switch through the wall. The return of the flap is by made by gravity, without spring. No seal or liquid can pass between the piping system and the electrical contact. Suitable for potable water. Must not be used for water containing magnetic particles or high viscosity liquids, which block the movement of the flap.

**Adjustment:** Can be factory set by adjusting the counterweight mounted in the flap

**Body material:** PPO compatible with drinking water.

**Flap:** PPO

**Paddle shaft:** stainless steel

**Electrical rating:** Max 1A, Max 70W, Max 250V, resistive load. Use on inductive circuits reduces electrical rating. We recommend to protect the reed switch with contact protection device when used in inductive loads

**Electric contact type:** Normally open, closes by flow rise

**Liquids compatibility:** For use with clean water and liquids without magnetic particles and without chemical incompatibility with PPO and stainless steel

**Nominal pressure at 20°C:** 1MPa (PN10)

**Flow detection set point factory setting limits:**

Close by flow rise: 1.8 to 3 L/min

Open by flow decrease: About 0.4 to 0.5L/min lower than close value

**Nominal diameter:** DN8-DN10

**Mandatory mounting position:** on vertical pipes, upstream flow

**Water pipe connection:**

- Water inlet: on male 1/2" fitting with gasket with 2 anti-rotation lugs. recommended torque 5N.m

- Water outlet: fast-on connection with O-ring and clips on DN8 or DN10 copper tubes with brazed or welded brass termination.

**Liquids temperature range:** 5 to 80°C

**Ambient temperature range:** 5 to 50°C

**Ingress protection:** IP65

**Electrical connection:** 2 x AWG24 wires (0.2mm<sup>2</sup>), PVC insulation, T80°, standard length 300 mm.

**Accessories:** brass terminations for brazing or soldering on other pipe diameters : see last section of this catalogue

**Options (MOQ apply):** cable with connector or terminals, other cable length, other calibration values.

**Important note:** Standard copper tube diameters for building applications (Water and gas) are given by the EN1057 standard, which defines the nominal diameter (DN) as the inside diameter. Copper tubes for applications in air conditioning and refrigeration are described in EN 12735-1 and those for vacuum and medical gases are described in EN 13348. The EN127357 standard defines the copper tubes for refrigeration with diameters in inches. Copper tubes are often described in France by the outside diameter followed by the thickness in mm.

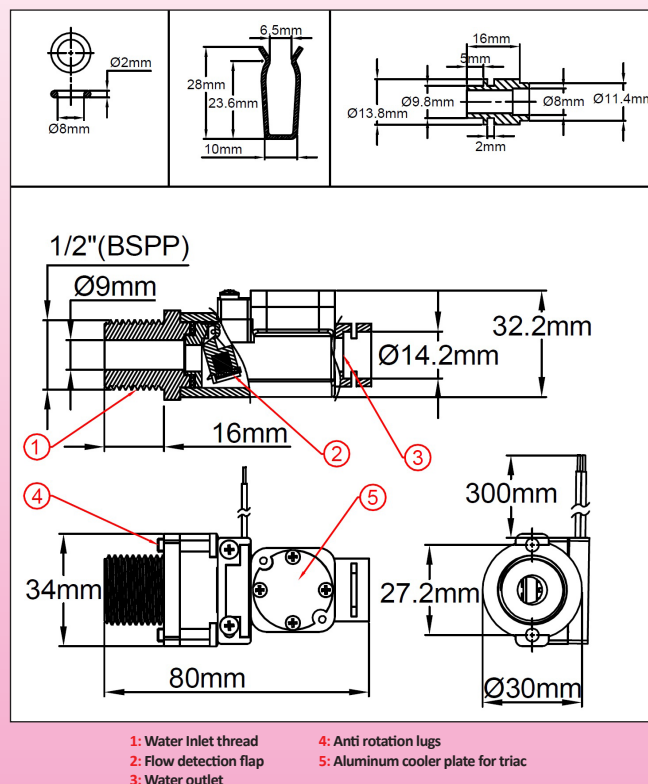
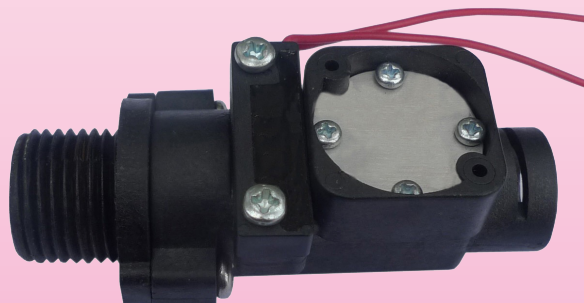
## Main references (with 300 mm wires)

Outlet for copper tube dia. 10 x 8 mm			Outlet for copper tube dia. 12 x 10 mm		
References	Close on flow rise (L/min)	Open on flow decrease (L/min)	References	Close on flow rise (L/min)	Open on flow decrease (L/min)
R20B670200000430	2 ±0.2	1,6±0.2	R20B680200000430	2 ±0.2	1,6±0.2
R20B670250000430	2,5±0.25	2±0.25	R20B680250000430	2,5±0.25	2±0.25
R20B670300000430	3±0.3	2,5±0.3	R20B680300000430	3±0.3	2,5±0.3



# Flap flow switches, reed switch contact, 1/2" BSPP male thread, with triac cooler, Type: R21

Pressure and size	Flow sensing: Magnetic flap	Mounting: 1/2" male thread and snap-in dia. 8 mm	Contact: Reed switch, close on flow rise	Electrical rating	Mounting position	Type
PN10 DN8				$\leq 1A$ $\leq 70W$ $\leq 250V\sim$		<b>R21</b>



**Main applications:** Product developed for miniature instantaneous water heaters for showers. The mobile flap system provides compactness. Water inlet is done directly by the 1/2" BSPP male thread. Mandatory vertical mounting, with water inlet from the bottom. Connection to internal copper piping DN8 and DN10 with quick coupling. **A built in aluminum heat exchanger, in contact with the cold water input is provided to cool a triac.**

## Functional principle:

Magnetic flap mounted perpendicular to the flow and activating a reed switch through the wall. The return of the flap is by made by gravity, without spring. No seal or liquid can pass between the piping system and the electrical contact. Suitable for potable water. Must not be used for water containing magnetic particles or high viscosity liquids, which block the movement of the flap.

**Adjustment:** Can be factory set by adjusting the counterweight mounted in the flap

**Body material:** PPO compatible with drinking water.

**Flap:** PPO

**Paddle shaft:** stainless steel

**Electrical rating:** Max 1A, Max 70W, Max 250V, resistive load. Use on inductive circuits reduces electrical rating. We recommend to protect the reed switch with contact protection device when used in inductive loads

**Electric contact type:** Normally open, closes by flow rise

**Liquids compatibility:** For use with clean water and liquids without magnetic particles and without chemical incompatibility with PPO and stainless steel

**Nominal pressure at 20°C:** 1MPa (PN10)

**Flow detection set point factory setting limits:**

Close by flow rise: 1.8 to 3 L/min

Open by flow decrease: About 0.4 to 0.5L/min lower than close value

**Nominal diameter:** DN8-DN10

**Mandatory mounting position:** on vertical pipes, upstream flow

**Water pipe connection:**

- Water inlet: on male 1/2" fitting with gasket with 2 anti-rotation lugs. recommended torque 5N.m

- Water outlet: fast-on connection with O-ring and clips on DN8 or DN10 copper tubes with brazed or welded brass termination.

**Liquids temperature range:** 5 to 80°C

**Ambient temperature range:** 5 to 50°C

**Ingress protection:** IP65

**Electrical connection:** 2 x AWG24 wires (0.2mm<sup>2</sup>), PVC insulation, T80°, standard length 300 mm.

**Accessories:** brass terminations for brazing or soldering on other pipe diameters : see last section of this catalogue

**Options (MOQ apply):** cable with connector or terminals, other cable length, other calibration values.

**Important note:** Standard copper tube diameters for building applications (Water and gas) are given by the EN1057 standard, which defines the nominal diameter (DN) as the inside diameter. Copper tubes for applications in air conditioning and refrigeration are described in EN 12735-1 and those for vacuum and medical gases are described in EN 13348. The EN127357 standard defines the copper tubes for refrigeration with diameters in inches.

Copper tubes are often described in France by the outside diameter followed by the thickness in mm.

## Main references (with 300 mm wires)

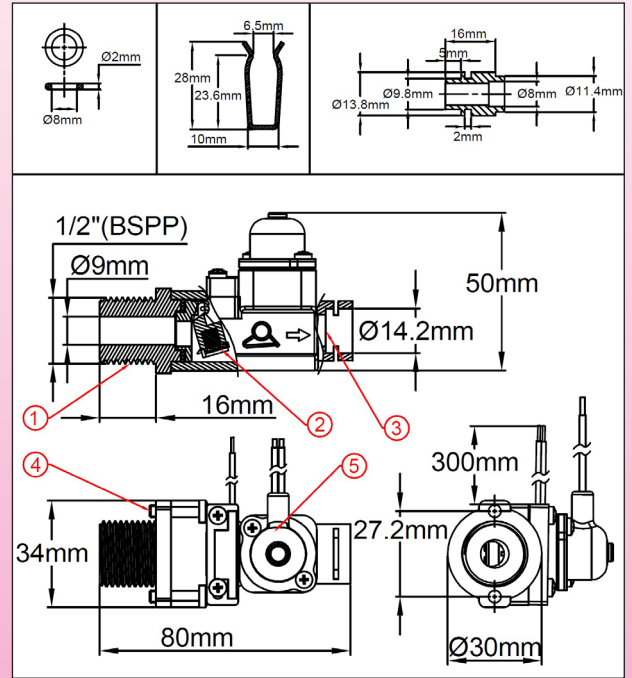
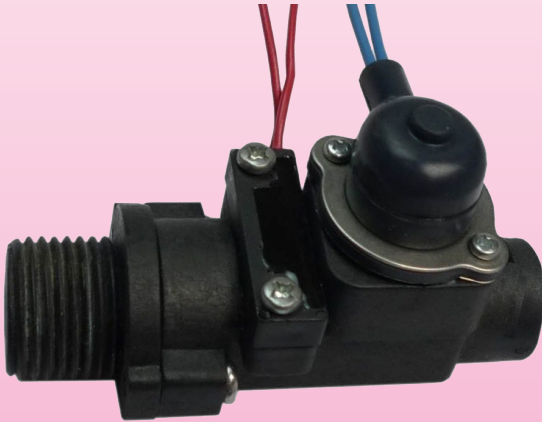
Outlet for copper tube dia. 10 x 8 mm			Outlet for copper tube dia. 12 x 10 mm		
References	Close on flow rise (L/min)	Open on flow decrease (L/min)	References	Close on flow rise (L/min)	Open on flow decrease (L/min)
R21B670200000430	2 ±0.2	1,6±0.2	R21B680200000430	2 ±0.2	1,6±0.2
R21B670250000430	2,5±0.25	2±0.25	R21B680250000430	2,5±0.25	2±0.25
R21B670300000430	3±0.3	2,5±0.3	R21B680300000430	3±0.3	2,5±0.3





# Flap flow switches, reed switch contact, 1/2" BSPP male thread, with water input temperature control, Type: R22

Pressure and size	Flow sensing: Magnetic flap	Mounting: 1/2" male thread and snap-in dia. 8 mm	Contact: Reed switch, close on flow rise	Electrical rating	Mounting position	Type
PN10 DN8				≤1A ≤70W ≤250V~		R22



- 1: Water Inlet thread  
2: Flow detection flap  
3: Water outlet  
4: Anti rotation lugs  
5: Water input thermostat

**Main applications:** Product developed for miniature instantaneous water heaters for showers in circuits where the water can be preheated by solar energy equipment or heat pump. The mobile flap system provides compactness. Water inlet is done directly by the 1/2" BSPP male thread. Mandatory vertical mounting, with water inlet from the bottom. Connection to internal copper piping DN8 and DN10 with quick coupling. A built in disc thermostat, in contact with the cold water input, will automatically stop water heating when the water input is higher than 50°C

## Functional principle:

Magnetic flap mounted perpendicular to the flow and activating a reed switch through the wall. The return of the flap is by made by gravity, without spring. No seal or liquid can pass between the piping system and the electrical contact. Suitable for potable water. Must not be used for water containing magnetic particles or high viscosity liquids, which block the movement of the flap.

**Adjustment:** Can be factory set by adjusting the counterweight mounted in the flap

**Body material:** PPO compatible with drinking water.

**Flap:** PPO

**Paddle shaft:** stainless steel

**Flow detection switch electrical rating:** Max 1A, Max 70W, Max 250V, resistive load. Use on inductive circuits reduces electrical rating. We recommend to protect the reed switch with contact protection device when used in inductive loads

**Flow detection electrical contact type:** Normally open, closes by flow rise

## Characteristics of the water inlet thermostat:

16A 250V disc thermostat, switches off the electrical heater when the inlet temperature exceeds 50°C ±3° C. Switch on when the inlet temperature drops below 42° C ±4° C. Electrical connection protected by silicone cap, protection, two 1.5mm<sup>2</sup> wires output, T80°C PVC insulation, 300 mm standard length.

**Liquids compatibility:** For use with clean water and liquids without magnetic particles and without chemical incompatibility with PPO and stainless steel

**Nominal pressure at 20°C:** 1MPa (PN10)

## Flow detection set point factory setting limits:

Close by flow rise: 1.8 to 3 L/min

Open by flow decrease: About 0.4 to 0.5L/min lower than close value

**Nominal diameter:** DN8-DN10

**Mandatory mounting position:** on vertical pipes, upstream flow

**Water pipe connection:**

- Water inlet: on male 1/2" fitting with gasket with 2 anti-rotation lugs. recommended torque 5N.m

- Water outlet: fast-on connection with O-ring and clips on DN8 or DN10 copper tubes with brazed or welded brass termination.

**Liquids temperature range:** 5 to 80°C

**Ambient temperature range:** 5 to 50°C

**Ingress protection:** IP65

**Electrical connection:** 2 x AWG24 wires (0.2mm<sup>2</sup>), PVC insulation, T80°, standard length 300 mm.

**Accessories:** brass terminations for brazing or soldering on other pipe diameters : see last section of this catalogue

**Options (MOQ apply):** cable with connector or terminals, other cable length, other flow or temperature calibration values.

**Important note:** Standard copper tube diameters for building applications (Water and gas) are given by the EN1057 standard, which defines the nominal diameter (DN) as the inside diameter. Copper tubes for applications in air conditioning and refrigeration are described in EN 12735-1 and those for vacuum and medical gases are described in EN 13348. The EN127357 standard defines the copper tubes for refrigeration with diameters in inches.

Copper tubes are often described in France by the outside diameter followed by the thickness in mm.

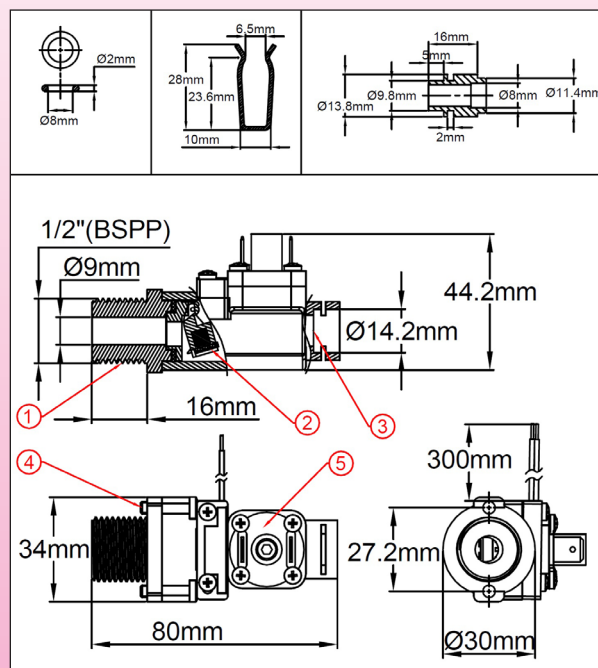
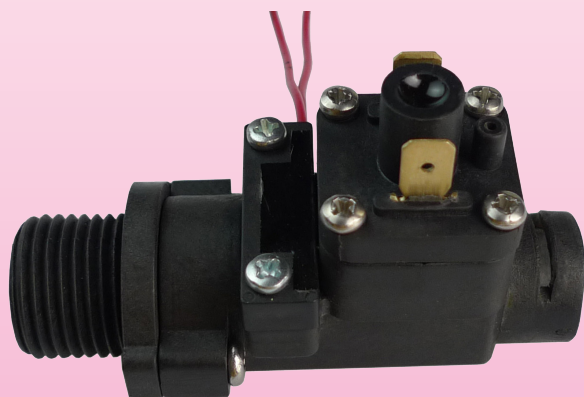
## Main references (with 300 mm wires)

Outlet for copper tube dia. 10 x 8 mm			Outlet for copper tube dia. 12 x 10 mm		
References	Close on flow rise (L/min)	Open on flow decrease (L/min)	References	Close on flow rise (L/min)	Open on flow decrease (L/min)
R22B670200500430	2 ±0.2	1,6±0.2	R22B680200500430	2 ±0.2	1,6±0.2
R22B670250500430	2,5±0.25	2±0.25	R22B680250500430	2,5±0.25	2±0.25
R22B67030500430	3±0.3	2,5±0.3	R22B680300500430	3±0.3	2,5±0.3



# Flap flow switches, reed switch contact, 1/2" BSPP male thread, with water input pressure control, Type: R23

Pressure and size	Flow sensing: Magnetic flap	Mounting: 1/2" male thread and snap-in dia. 8 mm	Contact: Reed switch, close on flow rise	Electrical rating	Mounting position	Type
PN10 DN8				$\leq 1A$ $\leq 70W$ $\leq 250V\sim$		<b>R23</b>



- 1: Water Inlet thread  
2: Flow detection flap  
3: Water outlet  
4: Anti rotation lugs  
5: Water input pressure switch

**Main applications:** Product developed for miniature instantaneous water heaters for showers in circuits where the water input pressure can be variable. The mobile flap system provides compactness. Water inlet is done directly by the 1/2" BSPP male thread. Mandatory vertical mounting, with water inlet from the bottom. Connection to internal copper piping DN8 and DN10 with quick coupling. A built in pressure switch will automatically stop water heating when the water input pressure is lower than 800 millibar.

## Functional principle:

Magnetic flap mounted perpendicular to the flow and activating a reed switch through the wall. The return of the flap is by made by gravity, without spring. No seal or liquid can pass between the piping system and the electrical contact. Suitable for potable water. Must not be used for water containing magnetic particles or high viscosity liquids, which block the movement of the flap.

**Adjustment:** Can be factory set by adjusting the counterweight mounted in the flap

**Body material:** PPO compatible with drinking water.

**Flap:** PPO

**Paddle shaft:** stainless steel

**Flow detection switch electrical rating:** Max 1A, Max 70W, Max 250V, resistive load. Use on inductive circuits reduces electrical rating. We recommend to protect the reed switch with contact protection device when used in inductive loads

**Flow detection electrical contact type:** Normally open, closes by flow rise

## Characteristics of the water inlet pressure switch:

1A 250V pressure switch, switches off the electrical heater when the inlet pressure decreases below 800 millibars, and switches on when the pressure is higher than this value. Electrical connection by two 6.3 x 0.8 mm fast on terminals.

**Liquids compatibility:** For use with clean water and liquids without magnetic particles and without chemical incompatibility with PPO, stainless steel, and NBR pressure switch membrane

**Nominal pressure at 20°C:** 1MPa (PN10)

## Flow detection set point factory setting limits:

Close by flow rise: 1.8 to 3 L/min

Open by flow decrease: About 0.4 to 0.5L/min lower than close value

**Nominal diameter:** DN8-DN10

**Mandatory mounting position:** on vertical pipes, upstream flow

## Water pipe connection:

- Water inlet: on male 1/2" fitting with gasket with 2 anti-rotation lugs. recommended torque 5N.m

- Water outlet: fast-on connection with O-ring and clips on DN8 or DN10 copper tubes with brazed or welded brass termination.

**Liquids temperature range:** 5 to 80°C

**Ambient temperature range:** 5 to 50°C

**Ingress protection:** IP65

**Electrical connection:** 2 x AWG24 wires (0.2 mm<sup>2</sup>), PVC insulation, T80°, standard length 300 mm.

**Accessories:** brass terminations for brazing or soldering on other pipe diameters : see last section of this catalogue

**Options (MOQ apply):** cable with connector or terminals, other cable length, other flow or temperature calibration values.

**Important note:** Standard copper tube diameters for building applications (Water and gas) are given by the EN1057 standard, which defines the nominal diameter (DN) as the inside diameter. Copper tubes for applications in air conditioning and refrigeration are described in EN 12735-1 and those for vacuum and medical gases are described in EN 13348. The EN127357 standard defines the copper tubes for refrigeration with diameters in inches.

Copper tubes are often described in France by the outside diameter followed by the thickness in mm.

## Main references (with 300 mm wires)

Outlet for copper tube dia. 10 x 8 mm			Outlet for copper tube dia. 12 x 10 mm		
References	Close on flow rise (L/min)	Open on flow decrease (L/min)	References	Close on flow rise (L/min)	Open on flow decrease (L/min)
R23B670208000430	2 ±0.2	1,6±0.2	R23B6802008000430	2 ±0.2	1,6±0.2
R23B670258000430	2,5±0.25	2±0.25	R23B680258000430	2,5±0.25	2±0.25
R23B670308000430	3±0.3	2,5±0.3	R23B680380000430	3±0.3	2,5±0.3





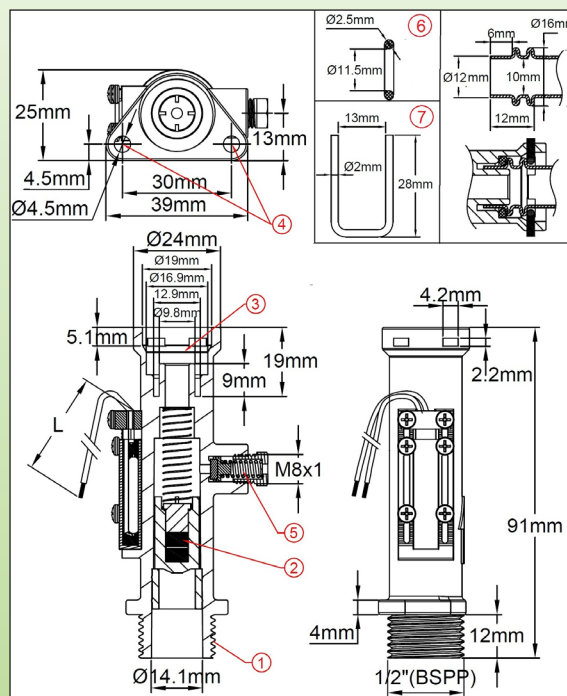
---

# Piston flow switches





Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice

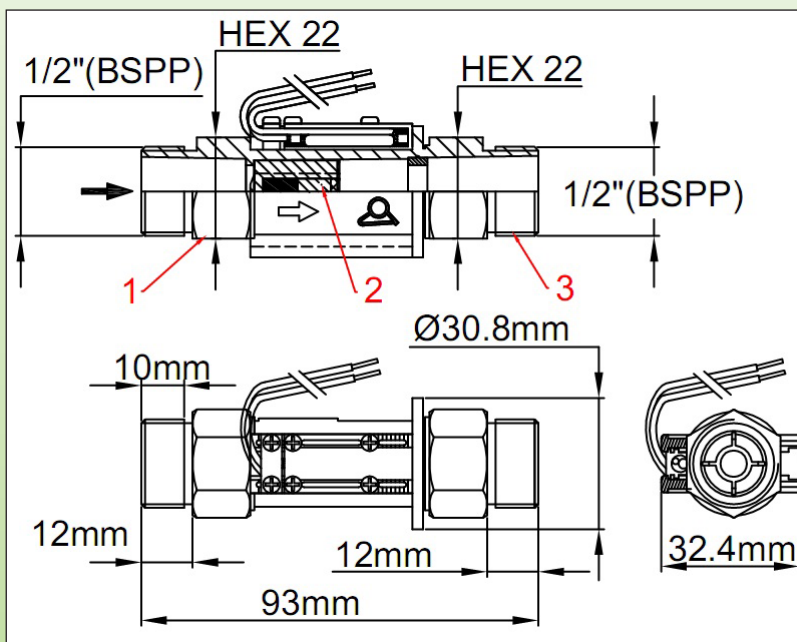


- 1: 1/2" BSPP Water inlet  
2: Flow detection piston  
3: DN10 Water outlet  
4: Mounting bracket  
5: Over pressure valve  
6: O-ring  
7: Snap-on spring

33

# Piston flow switches, reed switch contact, inlet and outlet 1/2" BSPP male, Type: R35

Pressure and size	Flow sensing: Magnetic piston	Mounting: 1/2" male inlet and outlet	Contact: Reed switch, close on flow rise	Electrical rating	Mounting position	Type
PN10 DN15				$\leq 1A$ $\leq 70W$ $\leq 250V\sim$		<b>R35</b>



1: 1/2" BSPP Water inlet 2: Flow detection piston 3: 1/2" BSPP Water outlet

**Main applications:** Product developed for electrical or gas instantaneous water heaters. 1/2" BSPP male water inlet and outlet. Mandatory vertical mounting, with water inlet from the bottom.

**Functional principle:** Magnetic piston mounted in line with the flow and activating a reed switch through the wall. The return of the piston is by made by gravity. No seal or liquid can pass between the piping system and the electrical contact. Suitable for potable water. Must not be used for water containing magnetic particles or high viscosity liquids, which block the movement of the piston.

**Adjustment:** Can be factory set by adjusting the piston diameter and piston weight

**Body material:** PPO compatible with drinking water.

**Piston:** PPO

**Electrical rating:** Max 1A, Max 70W, Max 250V, resistive load. Use on inductive circuits reduces electrical rating. We recommend to protect the reed switch with contact protection device when used in inductive loads

**Electric contact type:** Normally open, closes by flow rise

**Liquids compatibility:** For use with clean water and liquids without magnetic particles and without chemical incompatibility with PPO

**Nominal pressure at 20°C:** 1MPa (PN10)

**Flow detection set point factory setting limits:**

Close by flow rise: 1 to 12 L/min

Open by flow decrease: About 0.4 to 0.5L/min lower than close value

**Nominal diameter:** DN15

**Mandatory mounting position:** on vertical pipes, upstream flow

**Water pipe connection:** Water inlet and outlet: 1/2" BSPP male fitting (Needs gasket)

**Liquids temperature range:** 5 to 80°C

**Ambient temperature range:** 5 to 50°C

**Ingress protection:** IP65

**Electrical connection:** 2 x AWG24 wires (0.2mm<sup>2</sup>), PVC insulation, T80°, standard length 300 mm.

**Options (MOQ apply):**

- Wires with connector or terminals,
- Other wire lengths,
- Other calibration values
- Two contacts
- Upside water inlet, ( by adding an internal stainless steel piston spring)

## Main references (with 300 mm wires)

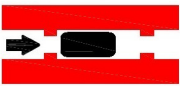
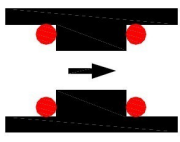
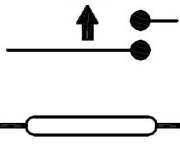

References	Close on flow rise (L/min)	Open on flow decrease (L/min)
R35B600100000330	1±0,2	0,7±0,2
R35B600150000330	1,5±0,2	1,2±0,2
R35B600180000330	1,8±0,2	1,4±0,2
R35B600300000330	3±0,3	2.6±0,3

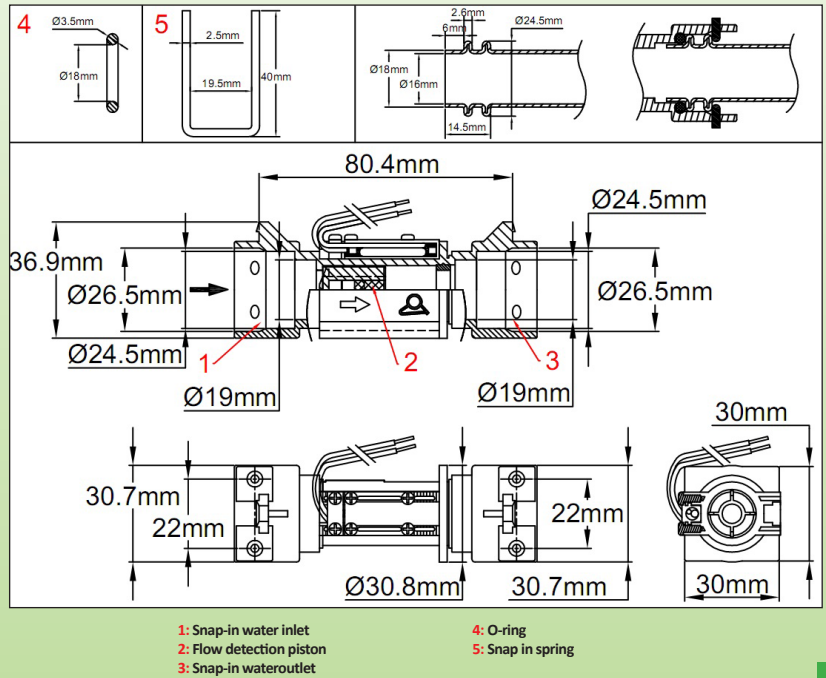
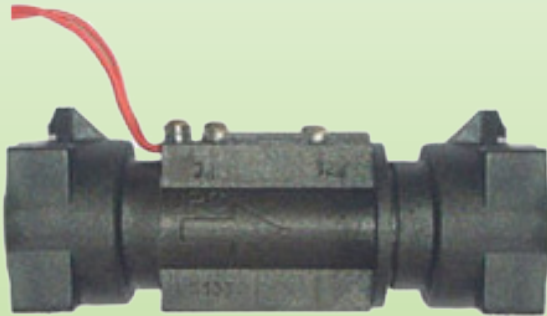
Other calibration on request

Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice



# Piston flow switches, reed switch contact, snap in inlet and outlet for copper tube, Type: R34

Pressure and size	Flow sensing: Magnetic piston	Mounting: Fast on inlet and outlet	Contact: Reed switch, close on flow rise	Electrical rating	Mounting position	Type
PN10 DN15				$\leq 1A$ $\leq 70W$ $\leq 250V\sim$		R34



**Main applications:** Product developed for electrical or gas instantaneous water heaters. Snap in water inlet and outlet for copper tubes. Mandatory vertical mounting, with water inlet from the bottom.

**Functional principle:** Magnetic piston mounted in line with the flow and activating a reed switch through the wall. The return of the piston is by made by gravity. No seal or liquid can pass between the piping system and the electrical contact. Suitable for potable water. Must not be used for water containing magnetic particles or high viscosity liquids, which block the movement of the piston.

**Adjustment:** Can be factory set by adjusting the piston diameter and piston weight

**Body material:** PPO compatible with drinking water.

**Piston:** PPO

**Electrical rating:** Max 1A, Max 70W, Max 250V, resistive load. Use on inductive circuits reduces electrical rating. We recommend to protect the reed switch with contact protection device when used in inductive loads

**Electric contact type:** Normally open, closes by flow rise

**Liquids compatibility:** For use with clean water and liquids without magnetic particles and without chemical incompatibility with PPO Nominal pressure at 20°C: 1MPa (PN10)

**Flow detection set point factory setting limits:**  
Close by flow rise: 1 to 12 L/min  
Open by flow decrease: About 0.4 to 0.5L/min lower than close value

**Nominal diameter:** DN15

**Mandatory mounting position:** on vertical pipes, upstream flow

**Water pipe connection:** Fast-on connection with O-ring and clips on DN20 beaded copper tubes. OD 18 mm

**Liquids temperature range:** 5 to 80°C

**Ambient temperature range:** 5 to 50°C

**Ingress protection:** IP65

**Electrical connection:** 2 x AWG24 wires (0.2mm<sup>2</sup>), PVC insulation, T80°, standard length 300 mm.

**Options (MOQ apply):**

- Wires with connector or terminals,
- Other wire lengths,
- Other calibration values
- Two contacts
- Upside water inlet, ( by adding an internal stainless steel piston spring)

## Main references (with 300 mm wires)

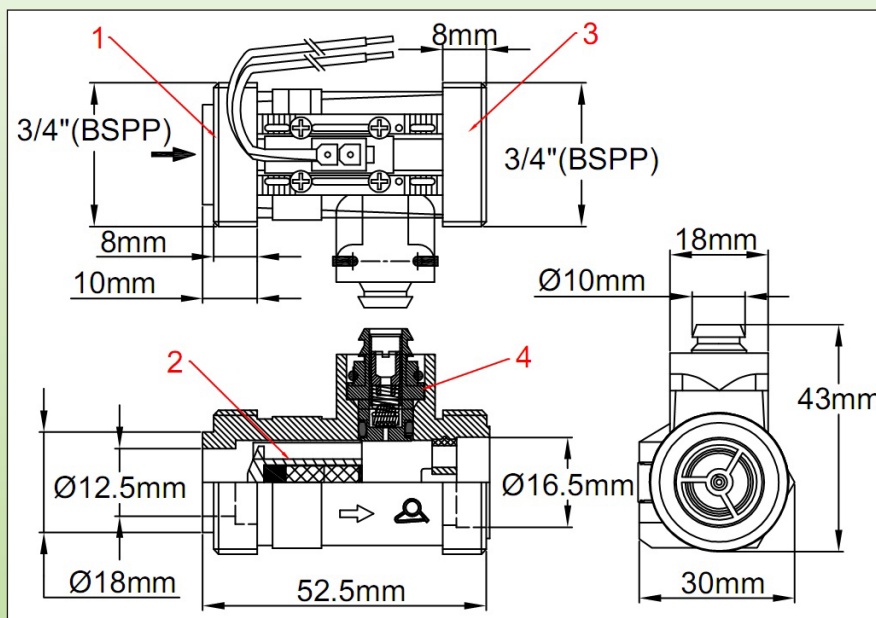
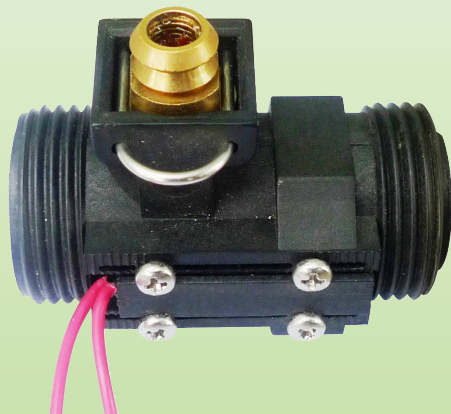
References	Close on flow rise (L/min)	Open on flow decrease (L/min)
R34B610100000330	1±0,2	0,7±0,2
R34B610150000330	1,5±0,2	1,2±0,2
R34B610180000330	1,8±0,2	1,4±0,2
R34B610300000330	3±0,3	2.6±0,3

Other calibration on request



# Piston flow switches, reed switch contact, inlet and outlet 3/4" BSPP male, Type: R36

Pressure and size	Flow sensing: Magnetic piston	Mounting: 3/4" male inlet and outlet	Contact: Reed switch, close on flow rise	Electrical rating	Mounting position	Type
PN10 DN20				$\leq 1A$ $\leq 70W$ $\leq 250V\sim$		<b>R36</b>



- 1: 3/4" BSPP Water inlet  
2: Flow detection piston  
3: 3/4" BSPP Water outlet  
4: Over-pressure valve

**Main applications:** Product developed for electrical or gas instantaneous water heaters. 3/4 " BSPP male water inlet and outlet. Mandatory vertical mounting, with water inlet from the bottom. **Built-in over-pressure valve**

**Functional principle:** Magnetic piston mounted in line with the flow and activating a reed switch through the wall. The return of the piston is by made by gravity. No seal or liquid can pass between the piping system and the electrical contact. Suitable for potable water. Must not be used for water containing magnetic particles or high viscosity liquids, which block the movement of the piston.

**Adjustment:** Can be factory set by adjusting the piston diameter and piston weight

**Body material:** PPO compatible with drinking water.

**Piston:** PPO

**Electrical rating:** Max 1A, Max 70W, Max 250V, resistive load. Use on inductive circuits reduces electrical rating. We recommend to protect the reed switch with contact protection device when used in inductive loads

**Electric contact type:** Normally open, closes by flow rise

**Liquids compatibility:** For use with clean water and liquids without magnetic particles and without chemical incompatibility with PPO Nominal pressure at 20°C: 1MPa (PN10)

**Flow detection set point factory setting limits:**

Close by flow rise: 2,4 to 8 L/min

Open by flow decrease: About 0.4 to 0.5L/min lower than close value

**Nominal diameter:** DN20

**Mandatory mounting position:** on vertical pipes, upstream flow

**Water pipe connection:** Water inlet and outlet: 3/4" BSPP male fitting (Needs gasket). Recommended torque: 7N.m

**Liquids temperature range:** 5 to 80°C

**Ambient temperature range:** 5 to 50°C

**Overpressure valve calibration value:** 1.5 MPa +0.5, -0

**Ingress protection:** IP65

**Electrical connection:** 2 x AWG24 wires (0.2mm<sup>2</sup>), PVC insulation, T80°, standard length 300 mm.

**Options (MOQ apply):**

- Wires with connector or terminals,
- Other wire lengths,
- Other calibration values
- Upside water inlet, (by adding an internal stainless steel piston spring)

## Main references (with 300 mm wires)

References	Close on flow rise (L/min)	Open on flow decrease (L/min)
R36B630240150330	2,4±0,3	1,8±0,3
R36B630300150330	3±0,3	2.6±0,3
R36B630350150330	3,5±0,3	2.9±0,3

Other calibration on request





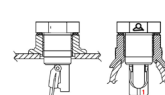
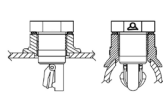
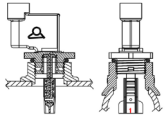
# **Accessories For flow switches**



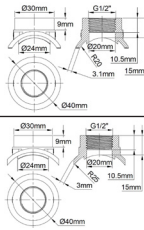


# Accessories for paddle switches

## 1/2" BSPP female PVC saddles for bonding, fit dia. 24 to 25 mm hole drill in the pipe

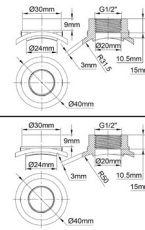


### Compatibles with R1D, R1R, R1L, R1S



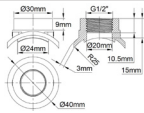
For pipe dia. 40 mm O.D.

**Reference**  
6R1SF1240



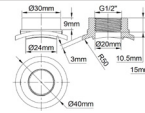
For pipe dia. 63mm O.D.

**Reference**  
6R1SF1263



For pipe dia. 50 mm O.D.

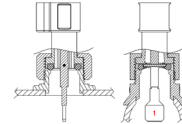
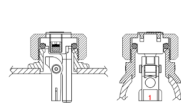
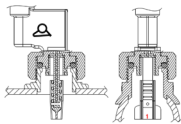
**Reference**  
6R1SF1250



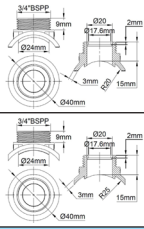
For pipe dia. 100 mm O.D.

**Reference**  
6R1SF12100

## 3/4" BSPP male PVC saddles for bonding, fit dia. 24 to 25 mm hole drill in the pipe

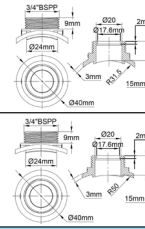


### Compatibles with R1B, R1P, R1X, R1V



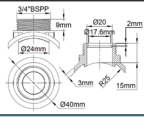
For pipe dia. 40 mm O.D.

**Reference**  
6R1SM3440



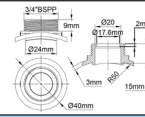
For pipe dia. 63mm O.D.

**Reference**  
6R1SM3463



For pipe dia. 50 mm O.D.

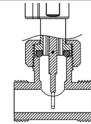
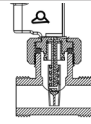
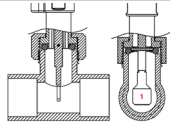
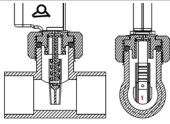
**Reference**  
6R1SM3450



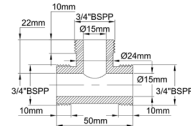
For pipe dia. 100 mm O.D.

**Reference**  
6R1SM34100

## Tees



### Fits types R1D, R1X, R1V

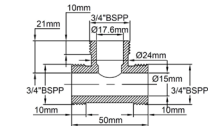


1/2" BSPP male PVC Tee for bonding on DN25 PVC pipe

**Reference**  
6R1TP3425



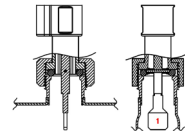
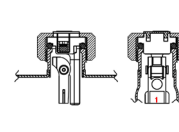
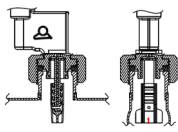
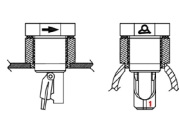
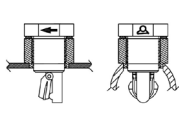
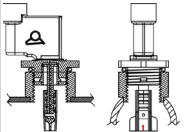
### Fits types R1D, R1X, R1V



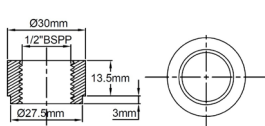
3/4" BSPP male Tee, brass, DN15-PN25

**Reference**  
6R1TB3434

## Male and female fittings



### Fits R1D, R1R, R1L, R1S

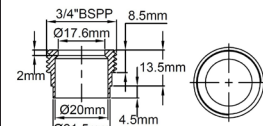


1/2" BSPP female fitting, 304L stainless steel, for welding on 27.6mm hole

**Reference**  
6R1P1213S



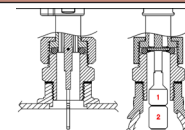
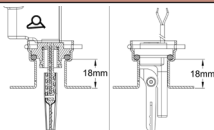
### Fits types R1D, R1X, R1V



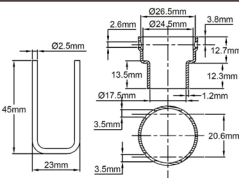
3/4" BSPP male fitting, for brazing on ID 15 mm tube

**Reference in Brass**  
6R1P3419B  
**Reference in 304L**  
6R1P3419S

## Other fittings



### Fits R1B and R1P

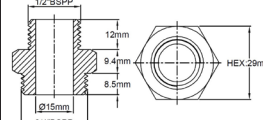


DN15 Snap-in fitting, stainless steel for welding, or copper for brazing (includes spring).

**Reference in copper**  
6R1S1525C  
**Reference in 304L**  
6R1S1525S



### Fits R1X and R1V

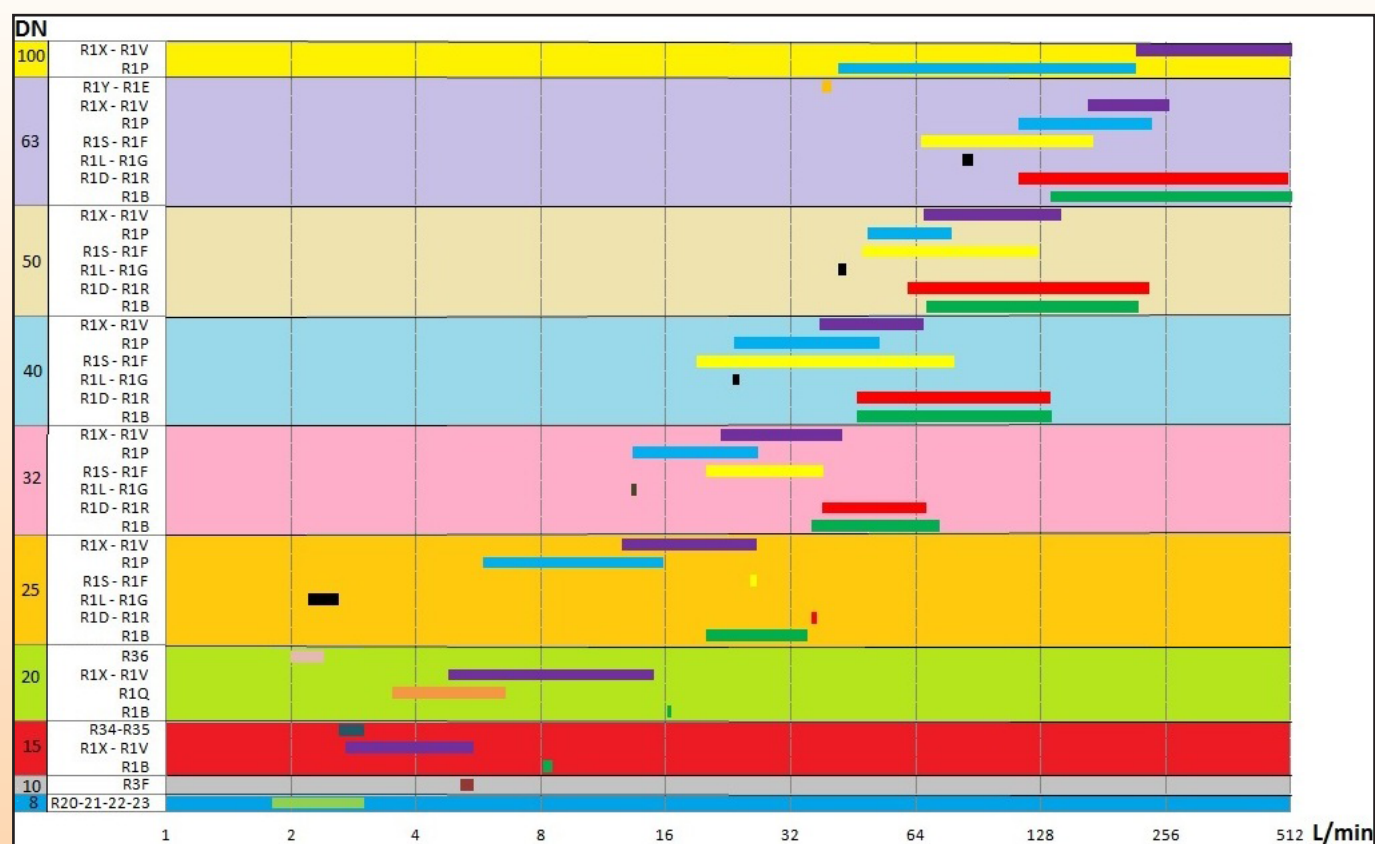


3/4" BSPP x 1/2" BSPP Conversion fitting, brass

**Reference**  
6R1C1234B



# Flow switches detection limits versus flow and pipe diameter



## Conversion table

Liter /min and liter/hour into US gallon/min and US gallon/ hour

L/Min	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9
L/h	6	12	18	24	30	36	42	48	54
US Gal/mn	0,026	0,053	0,079	0,106	0,132	0,159	0,185	0,211	0,238
US Gal/h	1,59	3,17	4,76	6,34	7,93	9,51	11,10	12,68	14,27

L/Min	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0
L/h	60	90	120	150	180	210	240	270	300
US Gal/min	0,26	0,40	0,53	0,66	0,79	0,92	1,06	1,19	1,32
US Gal/h	15,85	23,78	31,70	39,63	47,56	55,48	63,41	71,33	79,26

L/Min	5,5	6,0	6,5	7,0	7,5	8,0	8,5	9,0	9,5
L/h	330	360	390	420	450	480	510	540	570
US Gal/min	1,45	1,59	1,72	1,85	1,98	2,11	2,25	2,38	2,51
US Gal/h	87,2	95,1	103,0	111,0	118,9	126,8	134,7	142,7	150,6

L/Min	10	12,5	15,0	17,5	20	22,5	25,0	27,5	30
L/h	600	750	900	1050	1200	1350	1500	1650	1800
US Gal/min	2,64	3,30	3,96	4,62	5,28	5,94	6,61	7,27	7,93
US Gal/h	158,5	198,2	237,8	277,4	317,0	356,7	396,3	435,9	475,6

L/Min	32,5	35,0	37,5	40	42,5	45	47,5	50	100
L/h	1950	2100	2250	2400	2550	2700	2850	3000	6000
US Gal/min	8,59	9,25	9,91	10,57	11,23	11,89	12,55	13,21	26,42
US Gal/h	515	555	594	634	674	713	753	793	1585

# Alphabetical list and references list

## Alphabetical list

Reference	Page
½"BSPP female PVC saddles for bonding	39
¾" BSPP male fitting, for brazing on ID 15 mm tube hole	39
¾" BSPP x ½" BSPP Conversion fitting	39
½"BSPP female fitting, 304L stainless steel, for welding on 27.6mm hole	39
¾"BSPP male PVC saddles for bonding	39
Accessories for flow switches	37
Brass tee	39
City of Paris, gas and potable water distribution network development	3
Compliance with the European directive 2006-42 (Machinery directive	8
DN15 Snap-in fitting in copper for brazing	39
DN15 Snap-in fitting in stainless steel for welding	39
Electrical contact system: reed switch or micro-switch.	7
Flap flow switches, reed switch contact, 1/2" BSPP male thread,	27
Flap flow switches, reed switch contact, 1/2" BSPP male thread, with water input temperature control	29
Flap flow switches, reed switch contact, 1/2" BSPP male thread, with water input pressure control	30
Flap flow switches, reed switch contact, 1/2" BSPP male thread, with triac cooler	28
Flow switch selection table upon flow and diameter	40
Flow switches historical and technical foreword	3
Magnet displacement and reed switch operation in flow switches	7
Magnets (In reed switch devices)	8
Mechanical stop of measuring device	8
Mechanism body and mounting system	8
Metallic parts inside magnetic devices	8
Operating Principle, Paddle and micro-switch types	4
Operating Principle, Hinged flap and reed switch types	6
Operating Principle, Paddle and reed switch types, gravity back-force	4
Operating Principle, Paddle and reed switch types, magnetic pull-force	5
Operating Principle, Piston and reed switch types	6
Paddle flow switches, micro-switch contact, 1/2" BSPP male thread	12


Reference	Page
Paddle flow switches, micro-switch contact, 1/2" BSPP male thread, and Pt100 temperature sensor	13
Paddle flow switches, micro-switch contact, 3/4" BSPP union nut	11
Paddle flow switches, reed switch contact, 1/2" male thread	17
Paddle flow switches, reed switch contact, 1/2" male thread, extended paddle arm	18
Paddle flow switches, reed switch contact, 1/2" male thread, long paddle	19
Paddle flow switches, reed switch contact, 3/4" union nut, slim design	20
Paddle flow switches, reed switch contact, external body	22
Paddle flow switches, reed switch contact, external brass body	24
Paddle flow switches, reed switch contact, inside barbed tee for 1" soft tube	21
Piston flow switches, reed switch contact, 1/2" BSPP male thread, and snap-on connection for DN10 or 12.7 OD copper tube	33
Piston flow switches, reed switch contact, inlet and outlet 1/2" BSPP male	34
Piston flow switches, reed switch contact, inlet and outlet 3/4" BSPP male	36
Piston flow switches, reed switch contact, snap in inlet and outlet for copper tube	35
Piston water meters	3
PN and temperature resistance	8
Protection against gas and dust explosive atmospheres	8
PVC tee, ¾" BSPP x DN25	39
Reed switch invention by W. B. Ellwood	3
Reed switches applications in flow switches	7
Reed switches contact protection	7
Resin filling (For reed switch types)	8
Snap action switches	7
Steam engines water supply	3
Louis E. Richmond's first magnetic paddle flow switch	3
Threads and threaded pipe connections	8
Turbine water meters	3
Walker's piston flow switch	4


## References list

Reference	Page	Reference	Page	Reference	Page	Reference	Page	Reference	Page
6R1C1234B	39	R1P626884S15P200	20	R1V671579G35N00L	24	R1X671234G35N00L	23	R1X6E1579G35N300	23
6R1P1213S	39	R1P646884G35P050	20	R1V676680G35N00C	24	R1X671234G35N050	23	R1X6E6680G35N00C	23
6R1P3419B	39	R1P646884G35P100	20	R1V676680G35N00D	24	R1X671234G35N200	23	R1X6E6680G35N00D	23
6R1P3419S	39	R1P646884G35P200	20	R1V676680G35N00L	24	R1X671234G35N300	23	R1X6E6680G35N00L	23
6R1S1525C	39	R1P646884S15P050	20	R1V6E1234G35N00C	24	R1X671549G35N00C	23	R1X6E6680G35N050	23
6R1S1525S	39	R1P646884S15P100	20	R1V6E1234G35N00D	24	R1X671549G35N00D	23	R1X6E6680G35N200	23
6R1SF12100	39	R1P646884S15P200	20	R1V6E1234G35N00L	24	R1X671549G35N00L	23	R1X6E6680G35N300	23
6R1SF1240	39	R1Q613348S15P050	21	R1V6E1549G35N00C	24	R1X671549G35N050	23	R1Y622768F45P050	18
6R1SF1250	39	R1Q613348S15P100	21	R1V6E1549G35N00D	24	R1X671549G35N200	23	R1Y622768F45P100	18
6R1SF1263	39	R1Q613348S15P300	21	R1V6E1549G35N00L	24	R1X671549G35N300	23	R1Y622768F45P200	18
6R1SM34100	39	R1Q623348S15P050	21	R1V6E1564G35N00C	24	R1X671564G35N00C	23	R20B670200000430	27
6R1SM3440	39	R1Q623348S15P100	21	R1V6E1564G35N00D	24	R1X671564G35N00D	23	R20B670250000430	27
6R1SM3450	39	R1Q623348S15P200	21	R1V6E1564G35N00L	24	R1X671564G35N00L	23	R20B670300000430	27
6R1SM3463	39	R1Q623348S15P200	21	R1V6E1579G35N00C	24	R1X671564G35N050	23	R20B680200000430	27
6R1TB3434	39	R1Q623348S15P300	21	R1V6E1579G35N00D	24	R1X671564G35N200	23	R20B680250000430	27
6R1TP3425	39	R1Q643348S15P050	21	R1V6E1579G35N00L	24	R1X671564G35N300	23	R20B680300000430	27
R1BH01235M33N050	12	R1Q643348S15P100	21	R1V6E6680G35N00C	24	R1X671579G35N00C	23	R21B670200000430	28
R1BH01235M33N100	12	R1Q643348S15P200	21	R1V6E6680G35N00D	24	R1X671579G35N00D	23	R21B670250000430	28
R1BH01235M33N200	12	R1Q643348S15P300	21	R1V6E6680G35N00L	24	R1X671579G35N00L	23	R21B670300000430	28
R1BH05073M33N050	12	R1QH05079F43N050	14	R1X631234G35N00C	23	R1X671579G35N050	23	R21B680200000430	28
R1BH05073M33N100	12	R1QH05079F43N100	14	R1X631234G35N00D	23	R1X671579G35N200	23	R21B680250000430	28
R1BH05073M33N200	12	R1QH05079F43N200	14	R1X631234G35N00L	23	R1X671579G35N300	23	R21B680300000430	28
R1BH05073S13N050	12	R1S6D4771F45P050	19	R1X631234G35N050	23	R1X676680G35N00C	23	R22B670200500430	29
R1BH05073S13N100	12	R1S6D4771F45P100	19	R1X631234G35N200	23	R1X676680G35N00D	23	R22B670250500430	29
R1BH05073S13N200	12	R1S6D4771F45P200	19	R1X631234G35N300	23	R1X676680G35N00L	23	R22B670305000430	29
R1DH05079F43N050	13	R1V631234G35N00C	24	R1X631549G35N00C	23	R1X676680G35N050	23	R22B680200500430	29
R1DH05079F43N100	13	R1V631234G35N00D	24	R1X631549G35N200	23	R1X676680G35N200	23	R22B680250500430	29
R1DH05079F43N200	13	R1V631234G35N00L	24	R1X631549G35N300	23	R1X676680G35N300	23	R22B680300500430	29
R1E622768F25P050	18	R1V631549G35N00C	24	R1X631549G35N050	23	R1X6E1234G35N00C	23	R23B670208000430	30
R1E622768F25P100	18	R1V631549G35N00D	24	R1X631549G35N200	23	R1X6E1234G35N00D	23	R23B670258000430	30
R1E622768F25P200	18	R1V631549G35N00L	24	R1X631549G35N300	23	R1X6E1234G35N00L	23	R23B670308000430	30
R1F6D4766F25P050	19	R1V631564G35N00C	24	R1X631564G35N00C	23	R1X6E1234G35N050	23	R23B6802008000430	30
R1F6D4766F25P100	19	R1V631564G35N00D	24	R1X631564G35N00D	23	R1X6E1234G35N200	23	R23B680258000430	30
R1G611534F25P050	17	R1V631564G35N00L	24	R1X631564G35N050	23	R1X6E1234G35N300	23	R23B680380000430	30
R1G611534F25P100	17	R1V631579G35N00C	24	R1X631564G35N200	23	R1X6E1549G35N00C	23	R34B610100000330	35
R1G611534F25P200	17	R1V631579G35N00D	24	R1X631564G35N300	23	R1X6E1549G35N00D	23	R34B610150000330	35
R1G6D4766F25P200	19	R1V631579G35N00L	24	R1X631564G35N00C	23	R1X6E1549G35N050	23	R34B610180000330	35
R1L611536F45P050	17	R1V636680G35N00C	24	R1X631579G35N00C	23	R1X6E1549G35N200	23	R34B610300000330	35
R1L611536F45P100	17	R1V636680G35N00D	24	R1X631579G35N00D	23	R1X6E1549G35N300	23	R35B600100000330	34
R1L611536F45P200	17	R1V636680G35N00L	24	R1X631579G35N050	23	R1X6E1549G35N00C	23	R35B600150000330	34
R1P616884G35P050	20	R1V671234G35N00C	24	R1X631579G35N200	23	R1X6E1564G35N00C	23	R35B600180000330	34
R1P616884G35P100	20	R1V671234G35N00D	24	R1X631579G35N300	23	R1X6E1564G35N00D	23	R35B600300000330	34
R1P616884G35P200	20	R1V671234G35N00L	24	R1X631579G35N00C	23	R1X6E1564G35N050	23	R36B630240150330	36
R1P616884S15P050	20	R1V671549G35N00C	24	R1X636680G35N00C	23	R1X6E1564G35N200	23	R36B630300150330	36
R1P616884S15P100	20	R1V671549G35N00D	24	R1X636680G35N00D	23	R1X6E1564G35N300	23	R36B630350150330	36
R1P616884S15P200	20	R1V671564G35N00L	24	R1X636680G35N050	23	R1X6E1564G35N00L	23	R3FA670400150330	33
R1P626884G35P050	20	R1V671564G35N00C	24	R1X636680G35N200	23	R1X6E1579G35N00C	23	R3FA670600150330	33
R1P626884G35P100	20	R1V671564G35N00D	24	R1X636680G35N300	23	R1X6E1579G35N00D	23	R3FA670800150330	33
R1P626884G35P200	20	R1V671564G35N00L	24	R1X636680G35N00C	23	R1X6E1579G35N050	23		
R1P626884S15P050	20	R1V671579G35N00C	24	R1X671234G35N00C	23	R1X6E1579G35N200	23		
R1P626884S15P100	20	R1V671579G35N00D	24	R1X671234G35N00D	23				



# Other catalogues

 **ULTIMHEAT®** 1




**ELECTROMECHANICAL AND ELECTRONIC THERMOSTATS RANGE**  
for incorporation


For these thermostats incorporated inside various boxes, housing and cabinets: See catalogues N°2 and 3  
Explosion proof versions: See catalogue N°4

The professional solution: an extended, rational, and consistent range of products

Technical catalogue for R&D department  
Edition 20/10/2012

E-Mail: [info@ultimheat.com](mailto:info@ultimheat.com) Web: [www.ultimheat.com](http://www.ultimheat.com)

 **ULTIMHEAT®** 2



**THERMOSTATS WITH INGRESS PROTECTION HOUSINGS**  
and connection boxes for heating elements

The professional solution: an extended, rational, and consistent range of products

Technical catalogue for R&D department  
Edition 02/04/2013

E-Mail: [info@ultimheat.com](mailto:info@ultimheat.com) Web: [www.ultimheat.com](http://www.ultimheat.com)

 **ULTIMHEAT®** 3




**INDUSTRIAL ELECTRONIC AND THERMOSTAT CONTROLS**  
electronic controllers, thermostatic control boxes, sub-assemblies and accessories for temperature control in electro-thermal equipment Y6-Y7-Y8 series


For:  
Heat tracing, Immersion heaters, Air heaters, Flexible surface heating elements, HVAC

The professional solution: an extended, rational, and consistent range of products

Technical catalogue for R&D department  
Edition 25/01/2013

E-Mail: [info@ultimheat.com](mailto:info@ultimheat.com) Web: [www.ultimheat.com](http://www.ultimheat.com)

 **ULTIMHEAT®** 4




**EXPLOSION PROOF THERMOSTATS**  
Types Y9


For industrial and high end applications in non-hazardous area: See our catalogue 3  
For standard applications with ingress protection housing, in non-hazardous area: see our catalogue 2  
For incorporation in non-hazardous area see our catalogue 1

The professional solution: an extended, rational, and consistent range of products

Technical catalogue for R&D department  
Edition 15/11/2012

E-Mail: [info@ultimheat.com](mailto:info@ultimheat.com) Web: [www.ultimheat.com](http://www.ultimheat.com)

 **ULTIMHEAT®** 5



**PRESSURE SWITCHES**  
Air switches  
Positive Pressure switches  
Vacuum pressure switches  
Differential pressure switches

Elastomer membrane types, medium pressure range (20 to 1500 mbar)

The professional solution: an extended, rational, and consistent range of products

Technical catalogue for R&D department  
Edition 15/11/2012

E-Mail: [info@ultimheat.com](mailto:info@ultimheat.com) Web: [www.ultimheat.com](http://www.ultimheat.com)

 **ULTIMHEAT®** 7




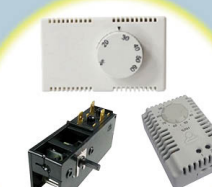
**FLOAT LEVEL SWITCHES**  
Vertical and horizontal models  
For OEM applications

The professional solution: an extended, rational, and consistent range of products

Technical catalogue for R&D department  
Edition 15/11/2012

E-Mail: [info@ultimheat.com](mailto:info@ultimheat.com) Web: [www.ultimheat.com](http://www.ultimheat.com)

 **ULTIMHEAT®** 8



**HUMIDISTATS**  
and Electronic humidity controls

The professional solution: an extended, rational, and consistent range of products

Technical catalogue for R&D department  
Edition 15/11/2012

E-Mail: [info@ultimheat.com](mailto:info@ultimheat.com) Web: [www.ultimheat.com](http://www.ultimheat.com)

 **ULTIMHEAT®** 9





**FIRE DETECTION FUSIBLE LINKS**  
A fusible link is a mechanical part that breaks at a preset temperature, they are used in fire detection system to open or close door, dampers, vents etc..., if ambient temperature rise upon a certain value.

The professional solution: an extended, rational, and consistent range of products

Technical catalogue for R&D department  
Edition 15/11/2012

E-Mail: [info@ultimheat.com](mailto:info@ultimheat.com) Web: [www.ultimheat.com](http://www.ultimheat.com)

 **ULTIMHEAT®** 10



**CERAMIC CONNECTION BLOCKS**  
and Special connectors

The professional solution: an extended, rational, and consistent range of products

Technical catalogue for R&D department  
Edition 15/11/2012

E-Mail: [info@ultimheat.com](mailto:info@ultimheat.com) Web: [www.ultimheat.com](http://www.ultimheat.com)

E-Mail : [info@ultimheat.com](mailto:info@ultimheat.com) Web: [www.ultimheat.com](http://www.ultimheat.com)

Distributor:

NT3ENTSG06U2A MAJ20130528