



FLOW SWITCHES & COMBINATION CONTROLS

- Pressure switches & air switches:
- Float level switches, Vertical & horizontal models for OEM applications:

See catalogue No.5

See catalogue No.7

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Summary



Flow switches

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Paddle types, reed switch contact

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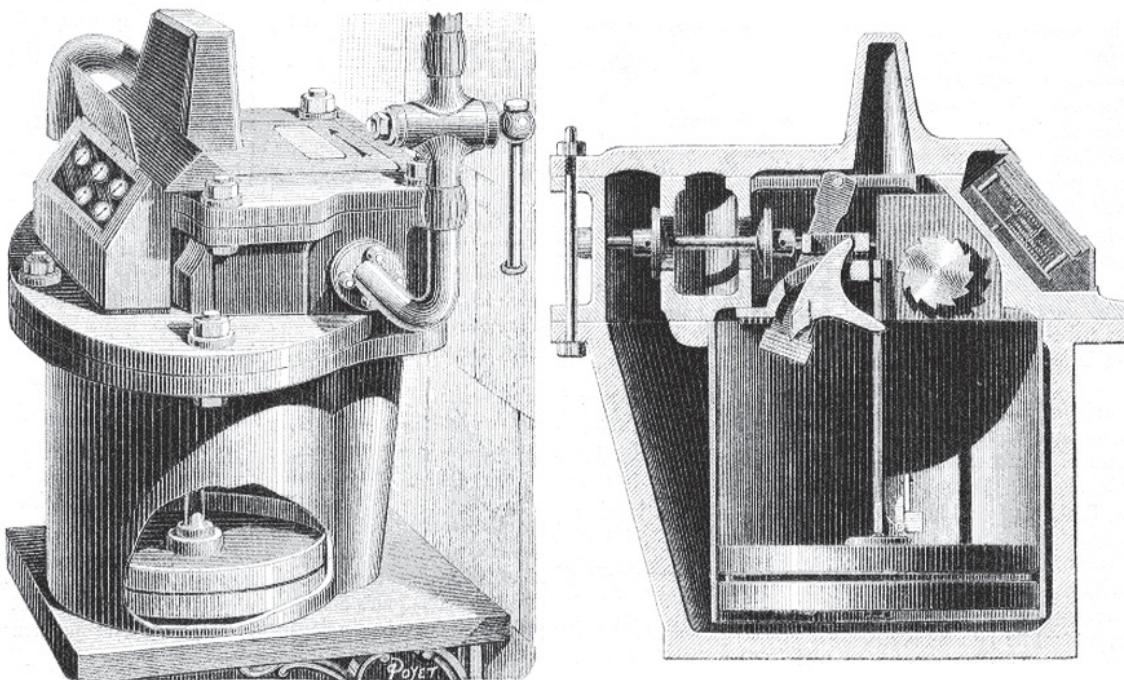
Flow switches historical and technical foreword



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

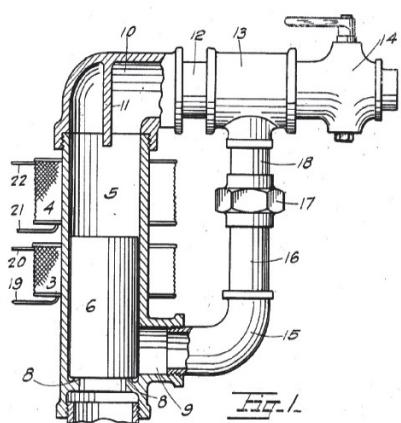
Flow switches historical and technical foreword

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.

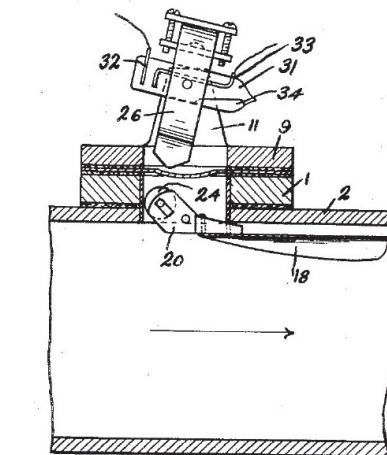


1881, in the Paris first water meters, the measurement is performed by a piston (Jacquet's system)

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.

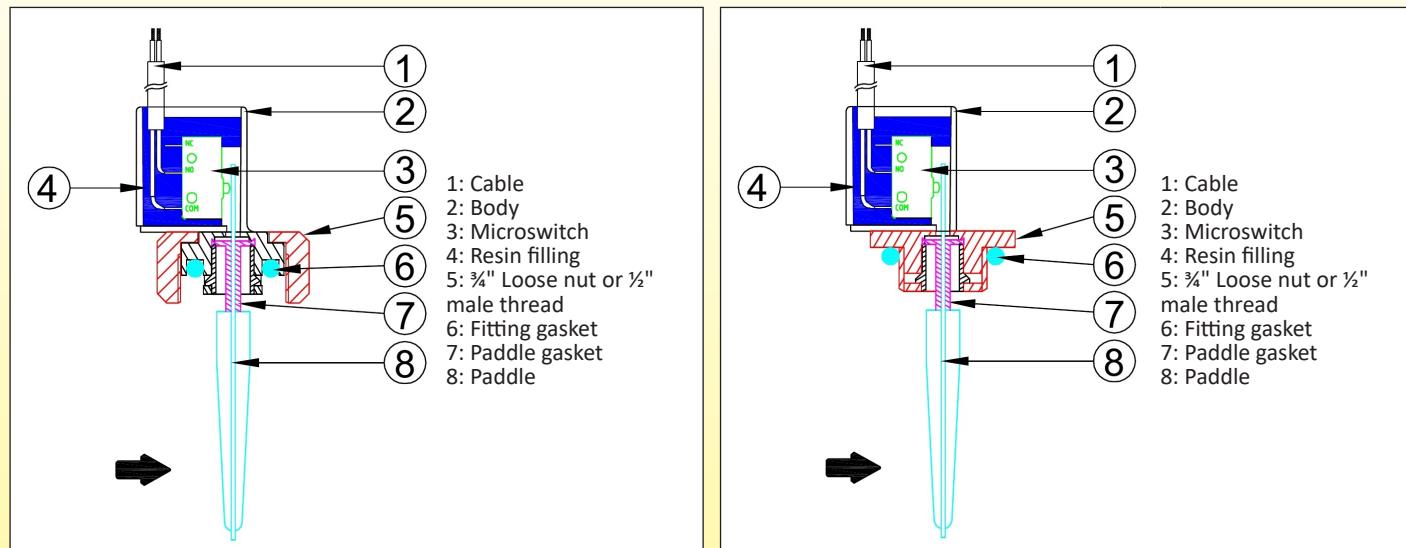


Flow switches historical and technical foreword

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 $\frac{3}{4}$ " union nut mounting, or clips and O-ring assembly (type Ultimheat Snap-in), which allow easy orientation adjustment, unlike models with fixed thread.

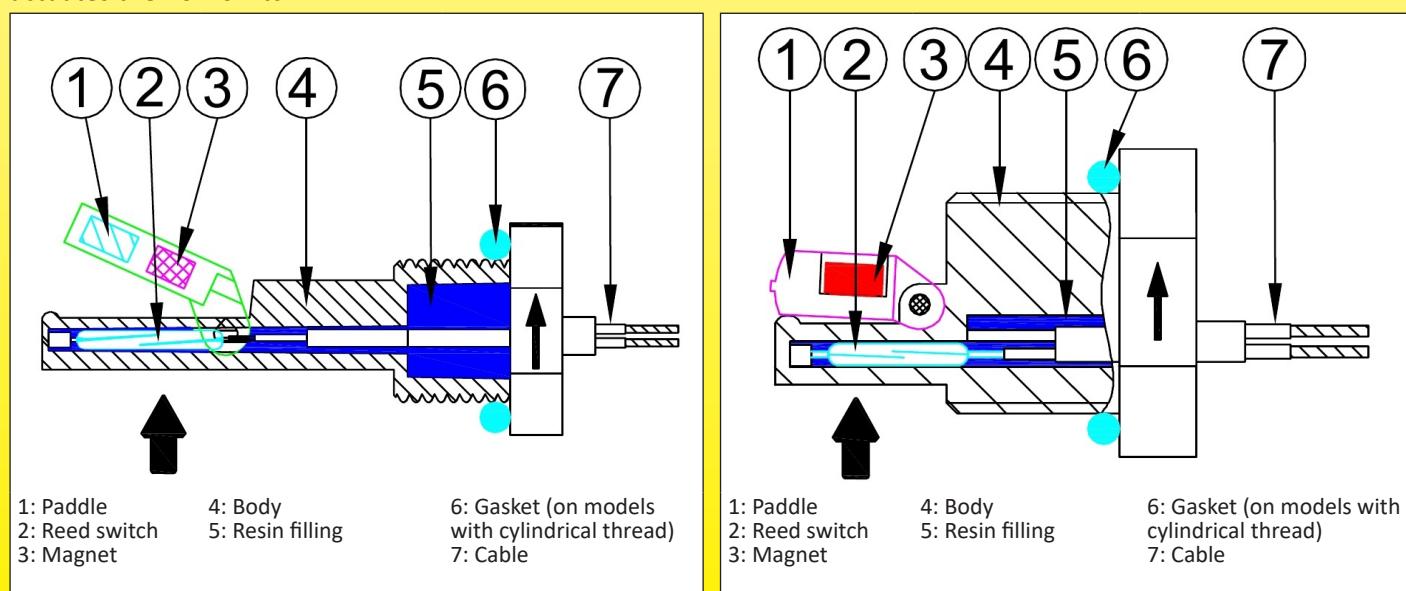
The temperature and pressure withstanding values, as well as resistance to chemical products are limited by the paddle gasket material.

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 $\frac{1}{2}$ " 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



Flow switches historical and technical foreword

Operating Principle

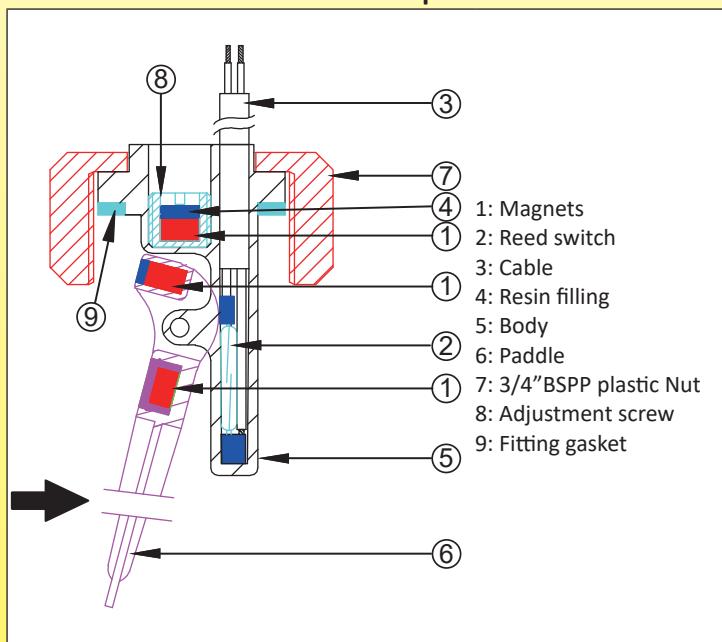
In the gravity pull-back paddle flow switches, when the upstream flow pushes against the paddle, the paddle swings away. This changes the position of the magnet in relation to the reed contact and thus activates the contact. As soon as the flow decreases or is interrupted, the paddle moves back to its 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 used 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 bromisation 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.

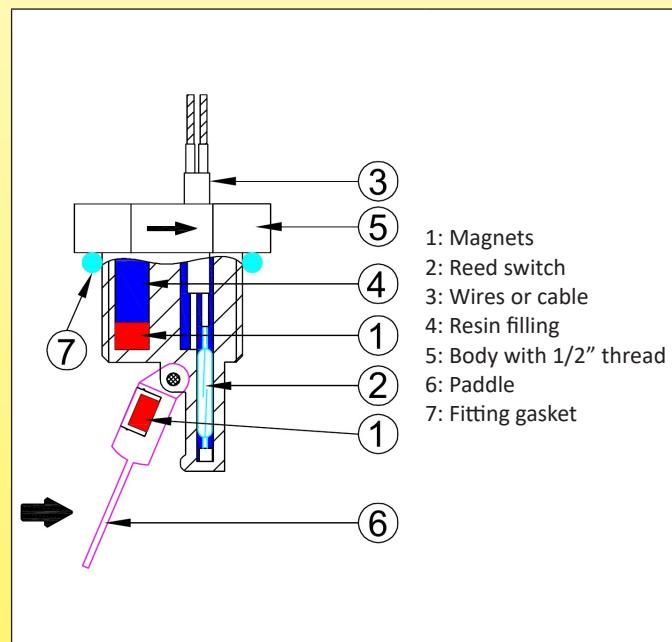
Paddle and reed switch types, magnetic pull-force, slim design

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 decrease 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 chlorination or bromisation 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)

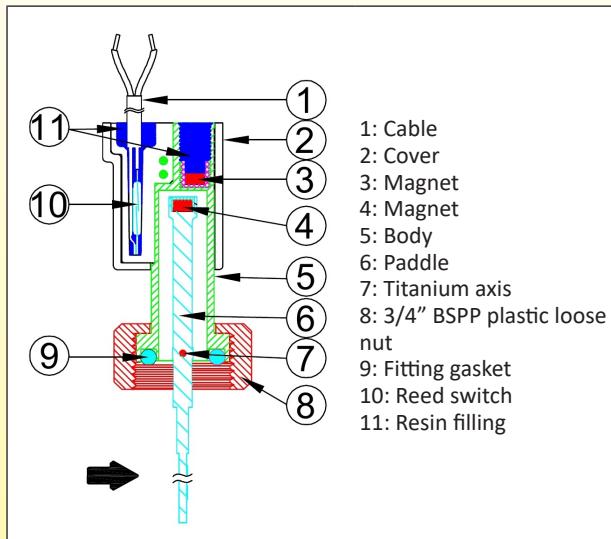
During assembly it is important to check that the paddle is correctly oriented in the flow direction and that no friction or obstacle hinders its movement. Therefore it is better to focus on devices with 3/4" union nut mounting, or clips and O-ring assembly (type Ultimheat Snap-in), which allow easy 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

Flow switches historical and technical foreword

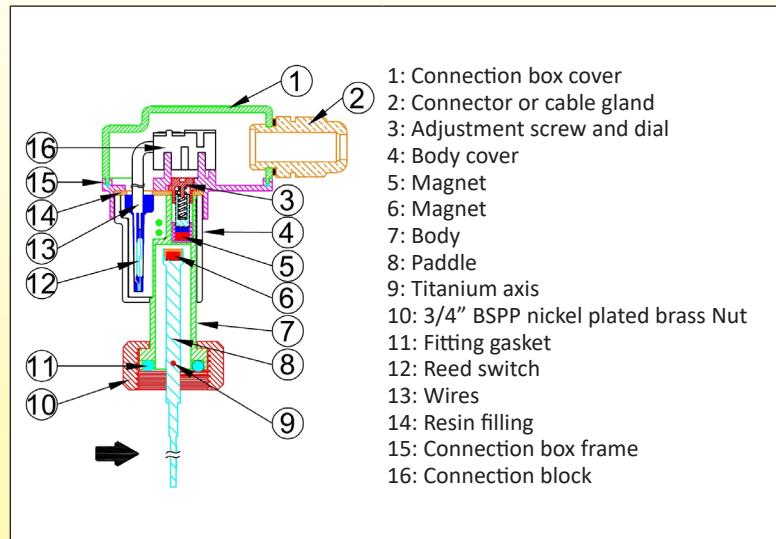
Paddle and reed switch types, magnetic back-force, long design

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

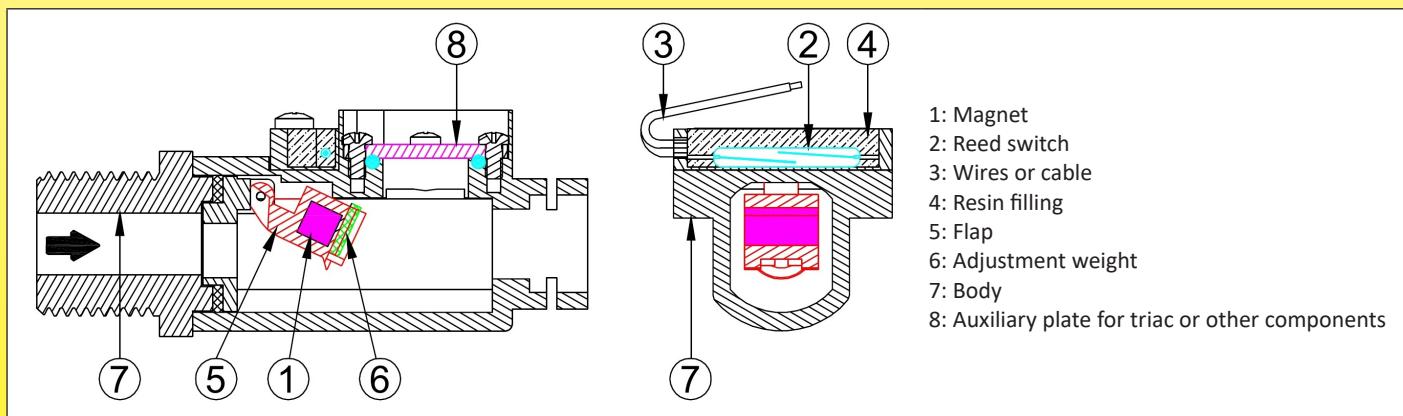


Operating Principle

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 chlorination or bromisation 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

Hinged flap and reed switch types

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



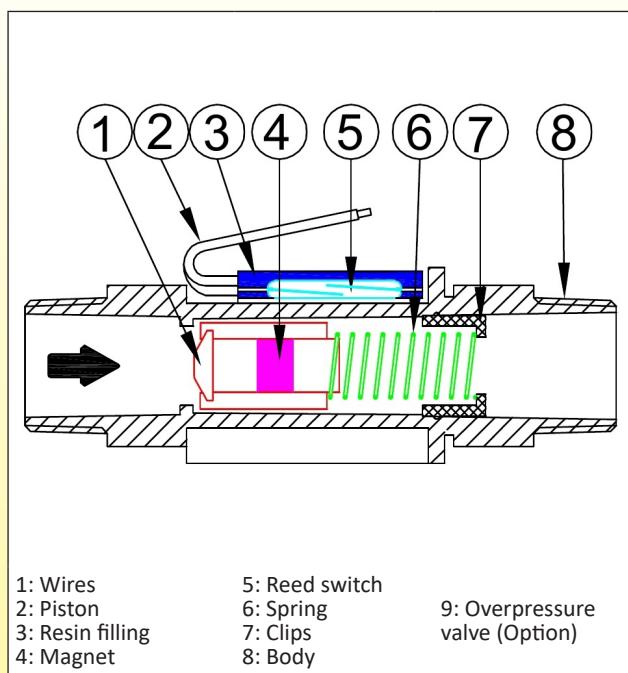
Operating Principle

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.

Flow switches historical and technical foreword

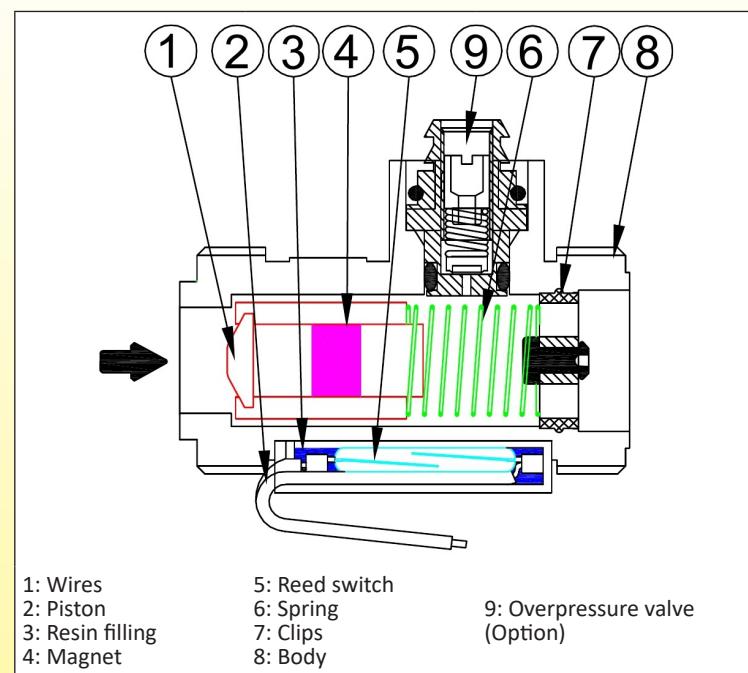
Piston and reed switch types

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.



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 float volume. 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

Flow switches historical and technical foreword

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: $C = I^2/10$ Resistor value (E = power supply voltage): $R = E / (10 \cdot I^{(1+50/E)})$</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 0.5mm². 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 and 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

Metallic parts inside magnetic devices

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

Ingress 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.

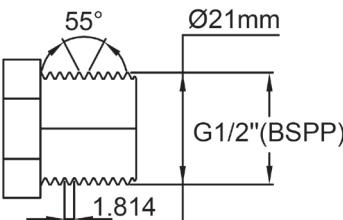
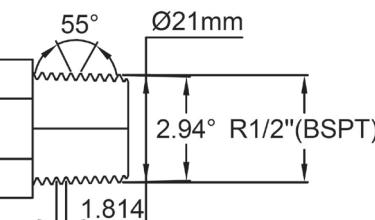
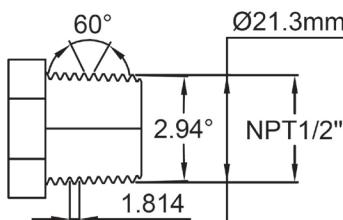
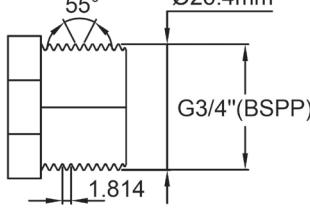
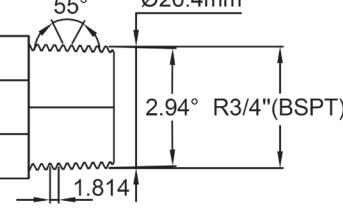
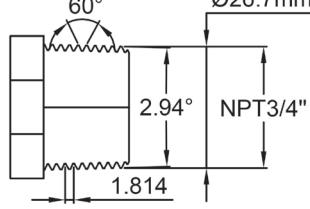
Overmolded reed switches do not have potential sources of ignition. On special request, they can be subjected to an ignition hazard assessment according to DIN EN 13463-1: 2002. They could be, therefore, not subject to directive 94/9/EC, and used as a simple electrical device for connection to a certified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

Flow switches historical and technical foreword

Threads and threaded pipe connections

	G	R	NPT
$\frac{1}{2}$			
$\frac{3}{4}$			

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:

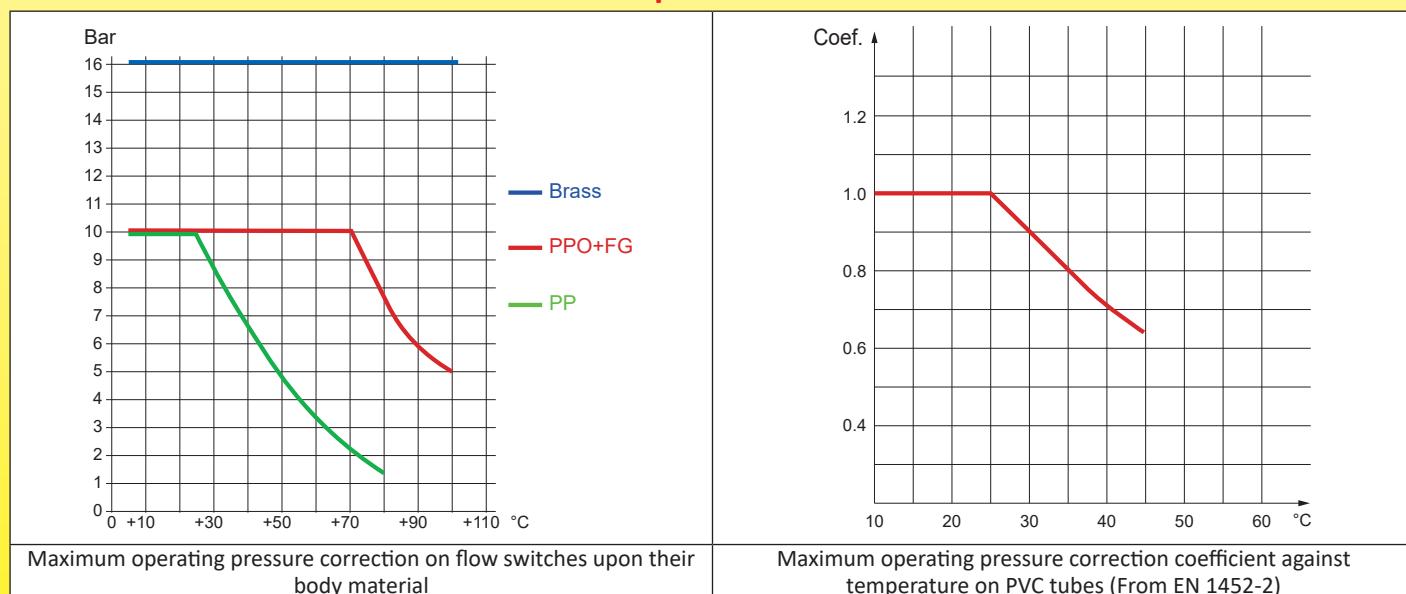
- $\frac{1}{2}$ " NPT: tapered thread, American standard ANSI B1.20.1
- $\frac{1}{2}$ " BSPT: tapered thread, meet ISO-7-1, DIN2999, BS21, often called "conical gas thread" or "conical gas", but they may also be described in documents under the abbreviation "Rp", "R" and in France "conical 15-21" (for $\frac{1}{2}$ "), and "conical 20-27" (for the $\frac{3}{4}$ ").
- $\frac{1}{2}$ " BSPP and $\frac{3}{4}$ " 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 $\frac{1}{2}$ "), and "cylindrical 20-27" (for the $\frac{3}{4}$ ").

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 $\frac{1}{2}$ " and $\frac{3}{4}$ ". 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, $\frac{1}{2}$ " NPT male will fit quite correctly in a BSPP female thread.

PN and temperature resistance



Maximum operating pressure correction on flow switches upon their body material

Maximum operating pressure correction coefficient against temperature on PVC tubes (From EN 1452-2)

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.





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Reference list



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| References list |
|------------------|------------------|------------------|------------------|------------------|
| 6R1C1234B | R1E622768F25P050 | R1Q623348S15P200 | R1X6E6680G35N00D | R21B680200000430 |
| 6R1P1213S | R1E622768F25P100 | R1Q623348S15P300 | R1X6E6680G35N00L | R21B680250000430 |
| 6R1P3419B | R1E622768F25P200 | R1Q643348S15P050 | R1X6E6680G35N050 | R21B680300000430 |
| 6R1P3419S | R1F6D4766F25P050 | R1Q643348S15P100 | R1X6E6680G35N200 | R22B670200500430 |
| 6R1S1525C | R1F6D4766F25P100 | R1Q643348S15P200 | R1X6E6680G35N300 | R22B670250500430 |
| 6R1S1525S | R1G611534F25P050 | R1Q643348S15P300 | R1Y622768F45P050 | R22B670300500430 |
| 6R1SF12100 | R1G611534F25P100 | R1RH05079F43N00C | R1Y622768F45P100 | R22B680200500430 |
| 6R1SF1240 | R1G611534F25P200 | R1RH05079F43N050 | R1Y622768F45P200 | R22B680250500430 |
| 6R1SF1250 | R1F6D4766F25P200 | R1RH05079F43N100 | R1Z286680G35N050 | R22B680300500430 |
| 6R1SF1263 | R1L611536F45P050 | R1RH05079F43N200 | R1Z286680G35N200 | R23B670208000430 |
| 6R1SM34100 | R1L611536F45P100 | R1S6D4771F45P050 | R1Z286680G35N300 | R23B670258000430 |
| 6R1SM3440 | R1L611536F45P200 | R1S6D4771F45P100 | R1Z296680G35N050 | R23B670308000430 |
| 6R1SM3450 | R1P616884G35P050 | R1S6D4771F45P200 | R1Z296680G35N200 | R23B680208000430 |
| 6R1SM3463 | R1P616884G35P100 | R1V636680G35N00C | R1Z296680G35N300 | R23B680258000430 |
| 6R1TB3434 | R1P616884G35P200 | R1V636680G35N00D | R1Z2B6680G35N050 | R23B680380000430 |
| 6R1TP3425 | R1P616884S15P050 | R1V636680G35N00L | R1Z2B6680G35N200 | R34B610100000330 |
| R15KU23STH3C4000 | R1P616884S15P100 | R1V676680G35N00C | R1Z2B6680G35N300 | R34B610150000330 |
| R15KV23STH3C4000 | R1P616884S15P200 | R1V676680G35N00D | R1Z2E6680G35N050 | R34B610180000330 |
| R15KW23STH3C4000 | R1P626884G35P050 | R1V676680G35N00L | R1Z2E6680G35N200 | R34B610300000330 |
| R1BH01235M33N00C | R1P626884G35P100 | R1V6E6680G35N00C | R1Z2E6680G35N300 | R35B600100000330 |
| R1BH01235M33N050 | R1P626884G35P200 | R1V6E6680G35N00D | R1Z2J6680G35N050 | R35B600150000330 |
| R1BH01235M33N100 | R1P626884S15P050 | R1V6E6680G35N00L | R1Z2J6680G35N200 | R35B600180000330 |
| R1BH01235M33N200 | R1P626884S15P100 | R1X636680G35N00C | R1Z2J6680G35N300 | R35B600300000330 |
| R1BH05073M33N00C | R1P626884S15P200 | R1X636680G35N00D | R1Z2S6680G35N050 | R36B630240150330 |
| R1BH05073M33N050 | R1P646884G35P050 | R1X636680G35N00L | R1Z2S6680G35N200 | R36B630300150330 |
| R1BH05073M33N100 | R1P646884G35P100 | R1X636680G35N050 | R1Z2S6680G35N300 | R36B630350150330 |
| R1BH05073M33N200 | R1P646884G35P200 | R1X636680G35N200 | R20B670200000430 | R3FA670400150330 |
| R1BH05073S13N00C | R1P646884S15P050 | R1X636680G35N300 | R20B670250000430 | R3FA670600150330 |
| R1BH05073S13N050 | R1P646884S15P100 | R1X676680G35N00C | R20B670300000430 | R3FA670800150330 |
| R1BH05073S13N100 | R1P646884S15P200 | R1X676680G35N00D | R20B680200000430 | RAX635680G31N68E |
| R1BH05073S13N200 | R1Q613348S15P050 | R1X676680G35N00L | R20B680250000430 | RAX675680G31N68E |
| R1DH05079F43N00C | R1Q613348S15P100 | R1X676680G35N050 | R20B680300000430 | RAX6E5680G31N68E |
| R1DH05079F43N050 | R1Q613348S15P300 | R1X676680G35N200 | R21B670200000430 | |
| R1DH05079F43N100 | R1Q623348S15P050 | R1X676680G35N300 | R21B670250000430 | |
| R1DH05079F43N200 | R1Q623348S15P100 | R1X6E6680G35N00C | R21B670300000430 | |



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Paddle flow switches

(Micro-switch types)



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Paddle flow switches, micro-switch contact, $\frac{3}{4}$ " BSPP union nut. Type: R1B



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Size and pressure	Flow sensing: Cleavable paddle	Mounting: $\frac{3}{4}$ " BSPP Union nut	Contact: Microswitch	Electrical rating	Mounting position	Type
PN10 DN \geq 15				3A 250V~		R1B

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

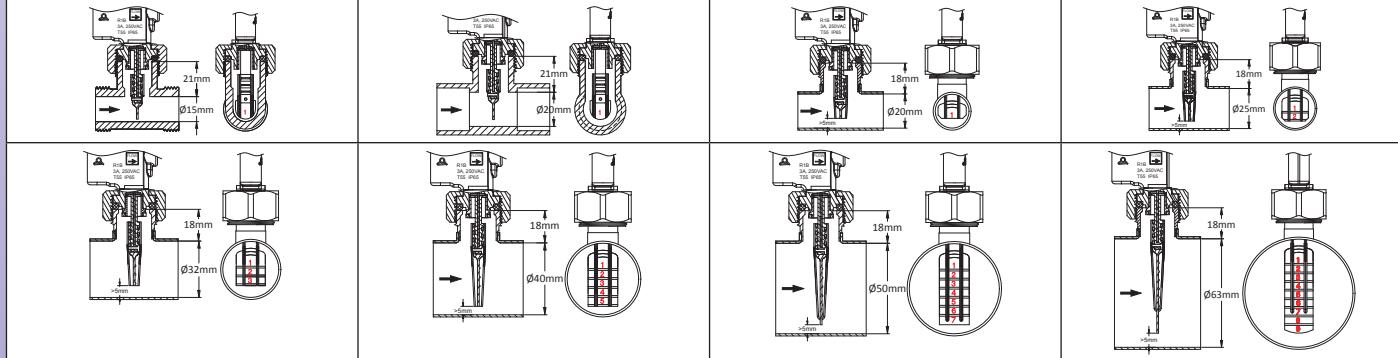
Electrical rating: 3A resistive, 250V AC

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

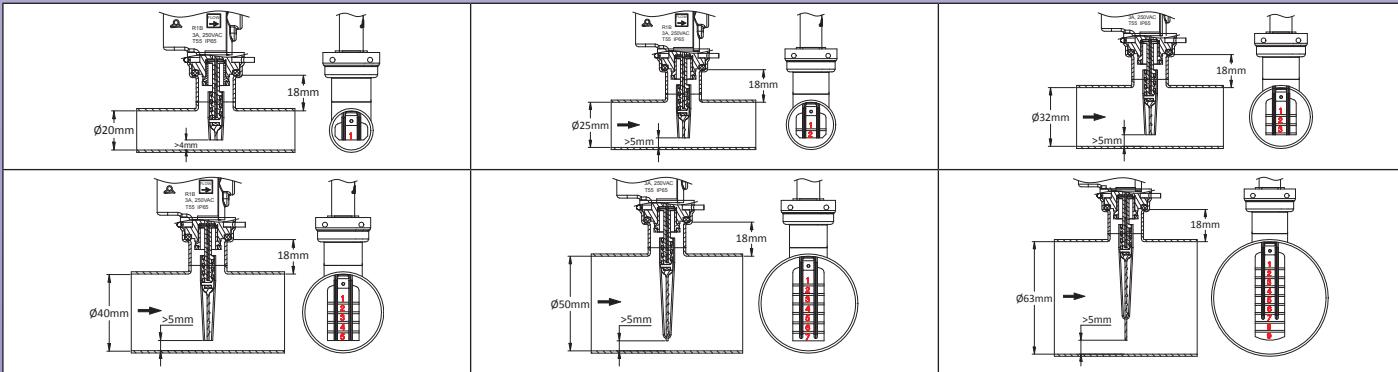
Liquids compatibility: For use with clean water and liquids without chemical incompatibility with PPO and Santoprene

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

Assembly on pipes with $\frac{3}{4}$ " union nut



Assembly on pipes with snap-in fitting



Paddle flow switches, micro-switch contact, $\frac{3}{4}$ " 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 $\pm 30\%$

***: With $\frac{3}{4}$ " DN15 brass tee (see accessories) and type B non cleavable paddle

Nominal diameter: Can be used on 15 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 PA66 G $\frac{3}{4}$ "(BSPP) union nut and NBR gasket. Must be used on a BSPP $\frac{3}{4}$ 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 mm² cable, PVC insulation, T80°, style H05VVF. 2 ways connection block on models with enclosure.

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 $\frac{3}{4}$ " 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 pallet

Accessories: $\frac{3}{4}$ " PVC saddles for DN40 to DN100 (OD) PVC pipes, and other fittings: see section 8 of this catalogue.

Options:

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

Main references

	Cable length			
	500mm	1m	2m	With enclosure
Type A cleavable paddle, $\frac{3}{4}$ " nut	R1BH05073M33N050	R1BH05073M33N100	R1BH05073M33N200	R1BH05073M33N00C
Type A cleavable paddle, snap-in mounting	R1BH05073S13N050	R1BH05073S13N100	R1BH05073S13N200	R1BH05073S13N00C
Type B non-cleavable paddle for DN15 x $\frac{3}{4}$ " Tee, $\frac{3}{4}$ " nut	R1BH01235M33N050	R1BH01235M33N100	R1BH01235M33N200	R1BH01235M33N00C

Paddle flow switches, micro-switch contact, $\frac{1}{2}$ " BSPP male thread. Type: R1D



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Size and pressure	Flow sensing: Cleavable paddle	Mounting: $\frac{1}{2}$ " BSPP thread	Contact: Microswitch	Electrical rating	Mounting position	Type
PN10 DN \geq 25				3A 250V~		R1D

1: Paddle 2: Body 3: Cable

Versions with connection box

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

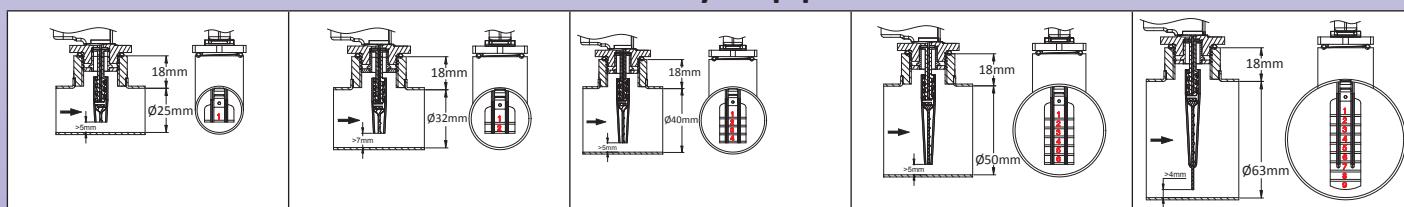
Electrical rating: 3A resistive, 250V AC

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 $\pm 30\%$.

Paddle flow switches, micro-switch contact, $\frac{1}{2}$ " BSPP male thread, Type: R1D



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 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 $\frac{1}{2}$ "(BSPP) and NBR gasket. Must be used on a BSPP $\frac{1}{2}$ " 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 mm² cable, PVC insulation, style H05VVF. 2 ways connection block on models with enclosure.

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 $\frac{3}{4}$ " 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 pallet

Accessories: $\frac{1}{2}$ " female PVC saddles for DN40 to DN100 (OD) PVC pipes, and other fittings: see section 8 of this catalogue.

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

Main references

Reference	Cable length			With enclosure
	500mm	1m	2m	
R1DH05079F43N050	R1DH05079F43N100	R1DH05079F43N200		R1DH05079F43N00C

Paddle flow switches, micro-switch contact, $\frac{1}{2}$ " BSPP male thread, and Pt100 temperature sensor. Type: R1R



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Size and pressure	Flow sensing: Cleavable paddle	Mounting: $\frac{1}{2}$ " BSPP thread	Contact: Microswitch	Electrical rating	Mounting position	Type
PN10 DN \geq 25				3A 250V~		R1R
						Versions with connection box

Main uses: Water flow detection on water pipes, with simultaneous water temperature measurement

Functional principle: Balanced paddle, perpendicular to the main flow, actuating a micro-switch. Flexible elastomeric gasket between paddle and electric switch. Temperature measurement is made by a plastic pocket located under the $\frac{1}{2}$ " thread

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

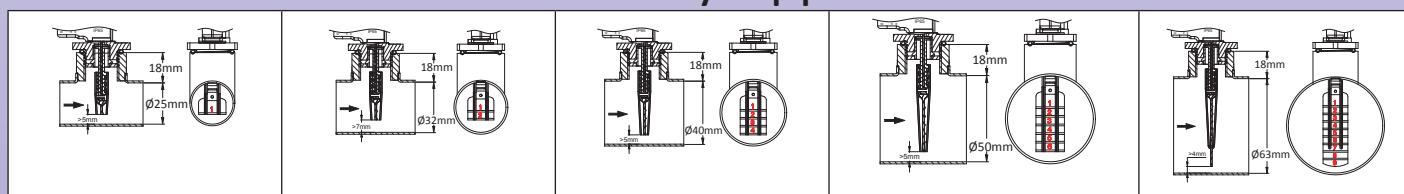
Electrical rating: 3A resistive, 250V AC

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 $\pm 30\%$.

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 9 every 5mm.

Paddle flow switches, micro-switch contact, ½" BSPP male thread, and Pt100 temperature sensor. Type: R1R



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 ½"(BSPP) and NBR gasket. Must be used on a BSPP ½" 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:

Flow switch contact: 3 x 0.75 mm² cable, PVC insulation, style H05VVF. 2 ways connection block on models with enclosure.

Temperature sensor:

- **Pt100 temperature sensor:** 3 x 0.22mm² cable, nickel plated braided FEP insulation

Flow and temperature connection cables length is the same

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 ¾" 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 pallet

Accessories: ½" female PVC saddles for DN40 to DN100 (OD) PVC pipes, and other fittings: see section 8 of this catalogue.

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

Main references

Reference	Cable length			With enclosure
	500mm	1m	2m	
R1RH05079F43N050	R1RH05079F43N100	R1RH05079F43N200		R1RH05079F43N00C



All stainless steel paddle flow switch, 16A snap action switch, ¾" male thread

Size and pressure	Flow sensing: Removable paddle	Mounting: ¾" BSPP male thread	Contact: Microswitch	Electrical rating	Mounting position	Type
PN10 DN≥32				16A 250V~		R15

1: Removable paddles kit A, B, C, D, E
 2: Stainless steel body and enclosure
 3: Microswitch
 4: Operating force calibration screw
 5: Stainless steel bellow
 6: Centering pin and force measurement point
 7: Nylstop screw

Main uses: Water flow detection on water pipes

Functional principle: Balanced paddle, perpendicular to the main flow, actuating a micro-switch. Flexible stainless steel bellow between paddle and electric switch.

Enclosure: stainless steel 304, IP69K, IK7.

Mechanism: 100% stainless steel.

Paddle material: Stainless steel .

Electrical rating: 16A resistive, 4A inductive, 230V alt. 50.000 cycles.

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

Compatible liquids: Use in clean water, drinking water and liquids compatible with stainless steel.

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

Nominal diameter: Can be used on 32mm internal diameter pipes and above.

The paddle has 5 parts of different lengths allowing to use it on various pipe diameters. Tightening is made by a vibration resistant Nylstop nut.

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

Water pipe connection: Male thread ¾"(BSPP) and NBR gasket. Must be used on a BSPP ¾" female fitting perpendicular to the main pipe.

Recommended torque: 14N.m

Liquid temperature range: 5 to 95°C.

Ambient temperature range: 5 to 85°C.

Installation instructions:

- Check carefully the paddle orientation: The arrow on housing must be exactly parallel to the pipe.
- A 4 to 5mm minimum gap must be respected between end of the paddle and tube wall opposite to the ¾" 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 32mm, to avoid blocking of the paddle.

Accessories: ¾" female PVC saddles for DN40 to DN100 (OD) PVC pipes, and other fittings: see section 8 of this catalogue.

Options: Special paddles and calibration at specified values.

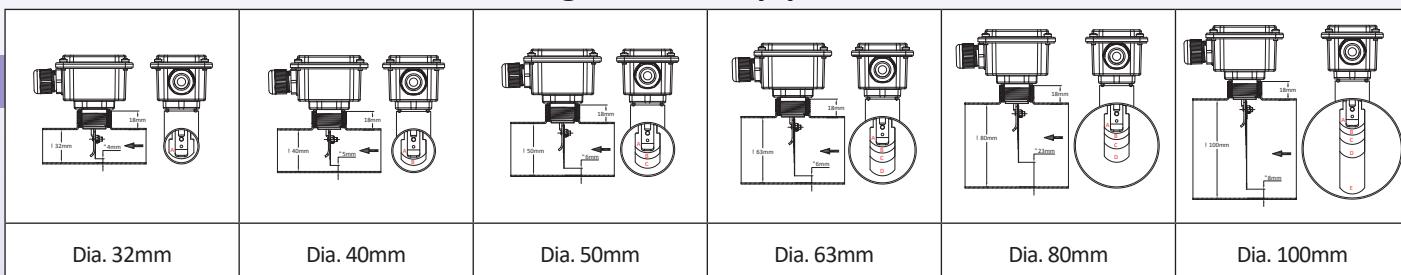
Note: In case of modification of the paddle set by the user, it is important to tighten correctly, with a minimum torque of 1.2 Nm, the paddle holding M4 Nylstop nut.

All stainless steel paddle flow switch, 16A snap action switch, ¾" male thread



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Mounting on various pipe diameters



Minimum flow detection values versus pipe internal diameter and selected paddles

(Liters per minute, in water at 25°C)

Selected paddles	Calibration force (gr)	Internal dia. 32 mm		Internal dia. 40 mm		Internal dia. 50 mm		Internal dia. 63 mm		Internal dia. 80 mm		Internal dia. 100 mm	
		*Close	**Open	*Close	**Open								
A	35			20	40								
	40			22	41								
	45	21	22	23	44								
A+B	35			20	27	30	63						
	40			22	30	34	67						
	45			23	31	36	75						
A+B+C	35					27	49	34	63				
	40					29	55	38	66				
	45					35	57	40	68				
B+C+D	35							33	46	60	71	45	81
	40							37	54	62	95	56	93
	45							39	56	65	127	85	120
B+D+E	35											70	140
	40											75	165
	45											81	180

* 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%.

Main references (with a set of 5 paddles)

Calibration	References
35 gr	R15KU23STH3C4000
40 gr	R15KV23STH3C4000
45 gr	R15KW23STH3C4000



Paddle types, reed switch contact



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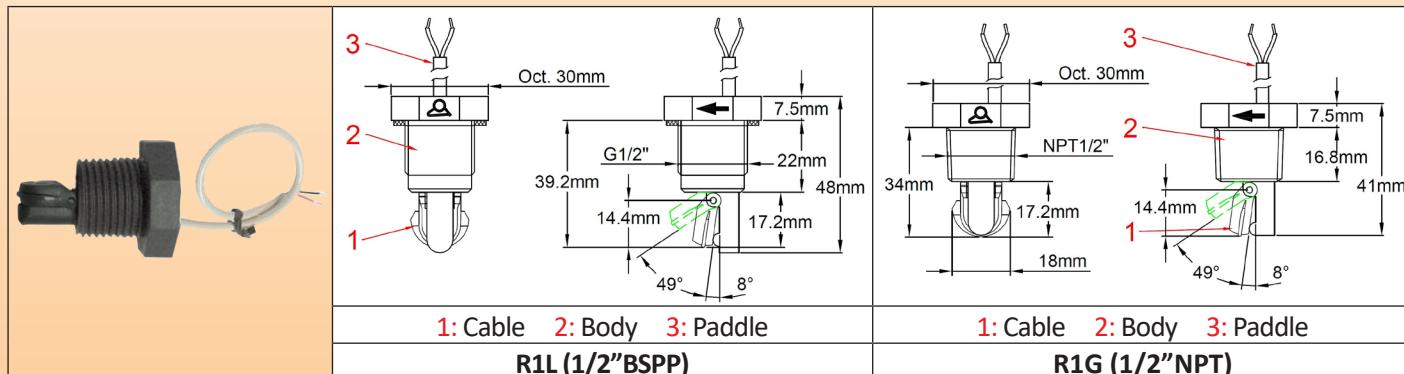
Paddle flow switches, reed switch contact, 1/2" male thread

Types: R1L and R1G



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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~		R1L (BSPP) R1G (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 pallet mounted perpendicular to the flow and activating a reed switch through the wall. The return of the pallet 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 be used for water containing magnetic particles or high viscosity liquids, which block the movement of the pallet.

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 live

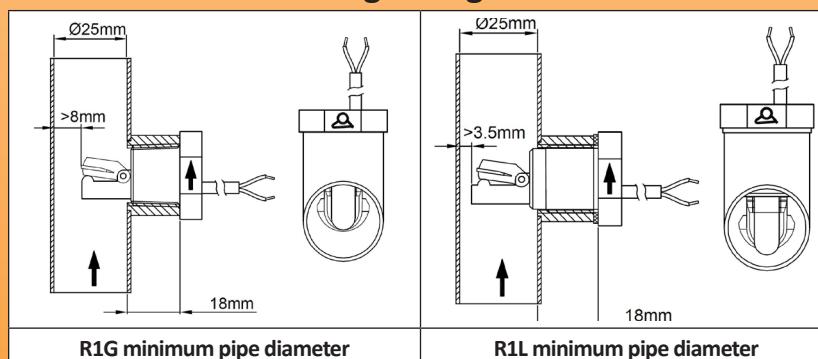
Electrical rating: Max 1A, Max 70W, Max 250V, resistive load. Use on inductive circuits reduces electrical rating. We recommend to protect the reed switch with contact protection device when used in inductive loads

Electric contact type: Normally 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



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

Paddle length	Pipe ID (mm)									
	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%

Paddle flow switches, reed switch contact, ½" male thread

Types: R1L and R1G



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 ½" 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 × 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 pallet

Accessories: ½" PVC saddles for DN40 to DN100 (OD) PVC pipes, and other fittings: see section 8 of this catalogue.

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

Main references

Thread	Cable length		
	500mm	1m	2m
½" BSPP	R1L611536F45P050	R1L611536F45P100	R1L611536F45P200
½" NPT	R1G611534F25P050	R1G611534F25P100	R1G611534F25P200

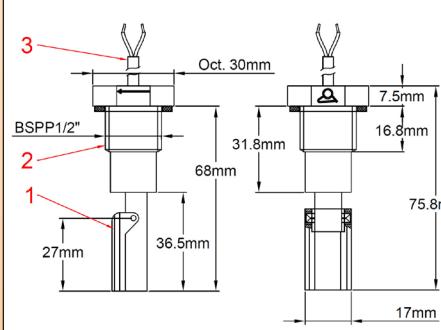
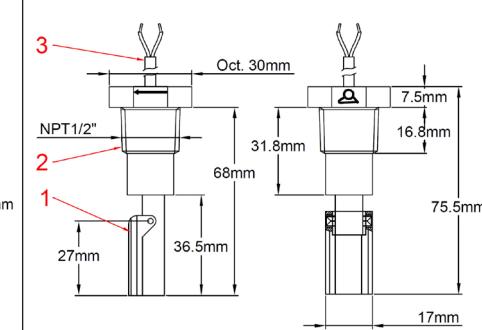
Paddle flow switches, reed switch contact, $\frac{1}{2}$ " male thread, extended paddle arm. Types: R1Y and R1E



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

Pressure and size	Flow sensing: Gravity pull back paddle	Mounting: $\frac{1}{2}$ " male thread	Contact: Reed switch, Open on flow rise	Electrical rating	Mounting position	Type
PN10 DN63				$\leq 1A$ $\leq 70W$ $\leq 250V_{\text{AC}}$		R1Y (BSPP) R1E (NPT)



1: Paddle 2: Body 3: Cable
R1Y (1/2"BSPP) **R1E (1/2"NPT)**

Main uses: Cost effective simple flow switch developed for swimming pool application. For water flow detection on **vertical dia 63mm** water pipes, upstream flow

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 gravity, without spring. No seal or liquid can pass between the piping system and the electrical contact. No metal parts (shaft, spring) in contact with the liquid. Suitable for corrosive water pools and spas and salination chlorination and bromination systems. Not be used for water containing magnetic particles or high viscosity liquids, which block the movement of the pallet.

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

Paddle: Polypropylene, 17 mm width

Paddle shaft: Polypropylene

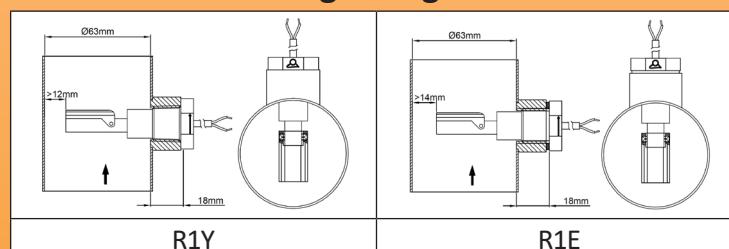
Electrical rating: Max 1A, Max 70W, Max 250V, resistive load. Use on inductive circuits reduces electrical rating. We recommend to protect the reed switch with contact protection device when used in inductive loads

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



Average Flow detection values

Paddle length	Pipe ID (mm)											
	20		25		32		40		50		63	
	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open
1											33	38

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

** Open by flow rise (L/min) of contact **close** at no flow position.

Paddle flow switches, reed switch contact, $\frac{1}{2}$ " male thread, extended paddle arm. Types: R1Y and R1E



Nominal diameter: Can be used on 55 to 63 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 $\frac{1}{2}$ " 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 (0.2mm²) 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 pallet

Accessories: $\frac{1}{2}$ " PVC saddles for DN40 to DN100 (OD) PVC pipes, and other fittings: see section 8 of this catalogue.

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

Main references

Thread	Cable length		
	500mm	1m	2m
$\frac{1}{2}$ " BSPP	R1Y622768F45P050	R1Y622768F45P100	R1Y622768F45P200
$\frac{1}{2}$ " NPT	R1E622768F25P050	R1E622768F25P100	R1E622768F25P200

Paddle flow switches, reed switch contact, $\frac{1}{2}$ " male thread, long paddle. Types: R1S and R1F



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Pressure and size	Flow sensing: Cleavable magnetic pull back paddle	Mounting: $\frac{1}{2}$ " male thread	Contact: Reed switch, close on flow rise	Electrical rating	Mounting position	Type
PN10 DN \geq 25				$\leq 1A$ $\leq 70W$ $\leq 250V_{\sim}$		R1S (BSPP) R1F (NPT)

1: Paddle 2: Body 3: Cable
R1S ($\frac{1}{2}$ " BSPP)

1: Paddle 2: Body 3: Cable
R1F ($\frac{1}{2}$ " NPT)

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 63mm water pipes

Functional principle:

Balanced magnetic pallet mounted perpendicular to the flow and activating a reed switch through the wall. The return of the pallet is 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 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

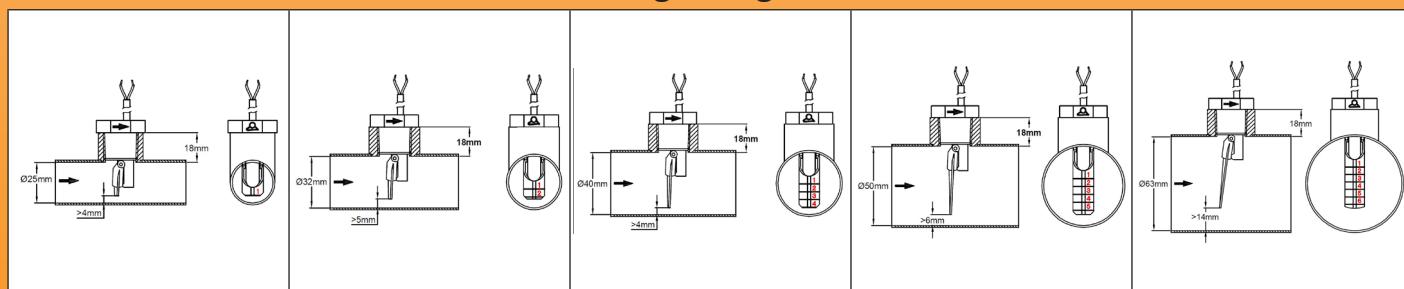
Electrical rating: Max 1A, Max 70W, Max 250V, resistive load. Use on inductive circuits reduces electrical rating. We recommend to protect the reed switch with contact protection device when used in inductive loads

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



Paddle flow switches, reed switch contact, $\frac{1}{2}$ " male thread, long paddle. Types: R1S and R1F



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 $\pm 30\%$.

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 $\frac{1}{2}$ " 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 (0.2mm²) 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 pallet

Accessories: $\frac{1}{2}$ " PVC saddles for DN40 to DN100 (OD) PVC pipes, and other fittings: see section 8 of this catalogue.

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

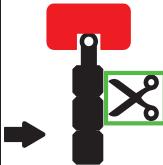
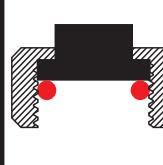
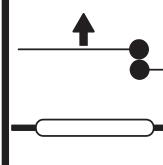
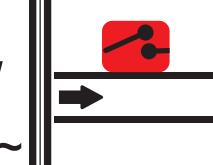
Main references

Thread	Cable length		
	500mm	1m	2m
$\frac{1}{2}$ " BSPP	R1S6D4771F45P050	R1S6D4771F45P100	R1S6D4771F45P200
$\frac{1}{2}$ " NPT	R1F6D4766F25P050	R1F6D4766F25P100	R1F6D4766F25P200

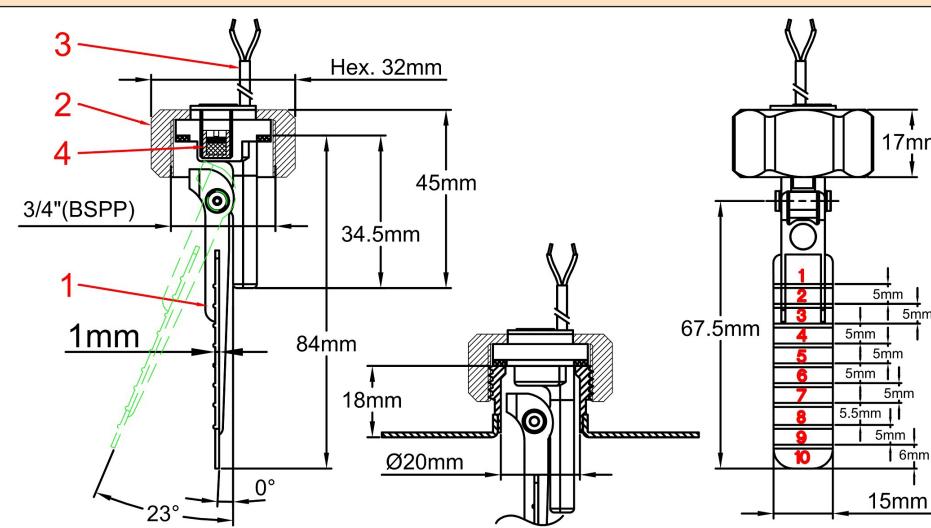
Paddle flow switches, reed switch contact, $\frac{3}{4}$ "union nut, slim design.

Type: R1P

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

Pressure and size	Flow sensing: Cleavable magnetic pull back paddle	Mounting: $\frac{3}{4}$ " BSPP plastic union nut	Contact: Reed switch, close on flow rise	Electrical rating	Mounting position	Type
PN10 DN \geq 20				$\leq 1A$ $\leq 70W$ $\leq 250V_{\text{AC}}$		R1P





1: Cleavable paddle
3: Connection cable
2: $\frac{3}{4}$ " BSPP plastic union nut
4: Adjustment screw

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 100mm** water pipes

Functional principle:

Balanced magnetic pallet mounted perpendicular to the flow and activating a reed switch through the wall. The return of the pallet is 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: there is 2 adjustment ways on this model

- By cleaving the paddle
- 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.

Union nut material: High mechanical strength fiber glass reinforced PA66.

The type without nut is designed for snap-in assembly on plastic and stainless steel fittings. (see section 8 of this catalogue)

Paddle: Polypropylene, 15 mm width

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

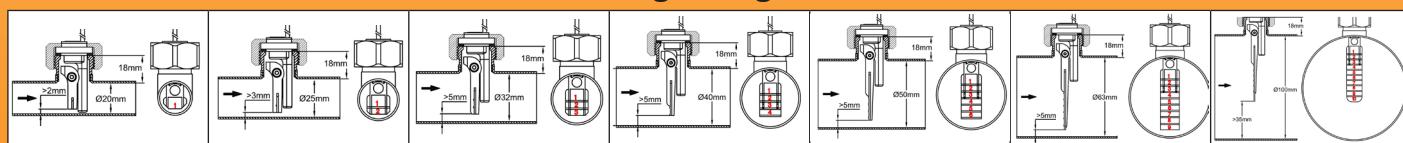
Electrical rating: Max 1A, Max 70W, Max 250V, resistive load. Use on inductive circuits reduces electrical rating. We recommend to protect the reed switch with contact protection device when used in inductive loads

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: 1MPa (PN10).

Mounting configurations



Paddle flow switches, reed switch contact, $\frac{3}{4}$ "union nut, slim design. Type: R1P



Average Flow detection values

Paddle length	Pipe ID (mm)													
	20		25		32		40		50		63		100	
	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open
1	(2,5) 3,7 (5,3)	(2,1) 3,3 (4,8)	(5,8) 7,7 (16)	(4,7) 7,2 (14)	(13) 18 (27)	(11) 16 (25)	(23) 28 (53)	(20) 25 (43)	(49) 65 (78)	(35) 53 (65)	(113) 138 (237)	(75) 93 (142)	(217) 258 (420)	(187) 217 (330)
1+2					(8,1) 11 (19)	(6,5) 10 (18)	(18) 21(35)	(16) 18 (32)	(30) 37 (65)	(26) 33 (53)	(63) 95 (175)	(52) 78 (100)	(158) 208 (350)	(140) 183 (280)
1~3					(5,7) 9 (16)	(4,8) 8 (14)	(13) 16 (28)	(10) 13 (25)	(21) 28 (42)	(18) 25 (30)	(47) 70(125)	(37) 52 (92)	(123) 157 (262)	(109) 135 (237)
1~4							(7,2) 13 (22)	(5) 10 (19)	(17) 22 (35)	(14) 19 (32)	(38) 48 (87)	(32) 38 (67)	(108) 130 (223)	(93) 108 (197)
1~5									(13) 18 (28)	(4,6) 15 (26)	(28) 40 (62)	(25) 33 (50)	(83) 98 (183)	(73) 87 (163)
1~6									(9,2) 15 (24)	(7,8) 12 (22)	(21) 30 (53)	(18) 25 (43)	(73) 80 (150)	(63) 73 (137)
1~7									(7,1) 11 (23)	(5,4) 8 (18)	(17) 22 (41)	(13) 18 (37)	(58) 73 (130)	(53) 68 (120)
1~8											(13) 19 (35)	(10) 14 (32)	(49) 63 (98)	(43) 55 (88)
1~9											(10) 15 (28)	(7) 12 (25)	(43) 56 (90)	(38) 48 (85)
1~10													(42) 48 (84)	(37) 42 (73)

* 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 $\pm 30\%$
Values upon (low span end), middle span and (high span end) calibration.

Nominal diameter: Can be used on 25 to 100 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 10 every 5mm.

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

Water pipe connection: On male $\frac{3}{4}$ " fitting. NBR gasket is supplied with the product.

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 (0.2mm²) 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 pallet

Accessories: $\frac{3}{4}$ " male PVC saddles for DN40 to DN100 (OD) PVC pipes, and other fittings: see section 8 of this catalogue.

Options: cable with connector or terminals, other cable length, nickel plated $\frac{3}{4}$ " BSPP union nut.

Main references

Calibration	Mounting	Cable length		
		500mm	1m	2m
Low span end (1gr)	$\frac{3}{4}$ " BSPP Union nut	R1P616884G35P050	R1P616884G35P100	R1P616884G35P200
Low span end (1gr)	No nut, for snap-in mounting	R1P616884S15P050	R1P616884S15P100	R1P616884S15P200
Middle span (2grs)	$\frac{3}{4}$ " BSPP Union nut	R1P626884G35P050	R1P626884G35P100	R1P626884G35P200
Middle span (2grs)	No nut, for snap-in mounting	R1P626884S15P050	R1P626884S15P100	R1P626884S15P200
High span end (4grs)	$\frac{3}{4}$ " BSPP Union nut	R1P646884G35P050	R1P646884G35P100	R1P646884G35P200
High span end (4grs)	No nut, for snap-in mounting	R1P646884S15P050	R1P646884S15P100	R1P646884S15P200

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



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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
3: Connection cable
5: Air bleed outlet

2: Snap-on mounting
4: Adjustment screw

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 $\pm 30\%$.

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



Liquids temperature range: 5 to 45°C

Ambient temperature range: 5 to 45°C

Ingress protection: IP65

Electrical connection: 2 x AWG24 (0.2mm²) 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.

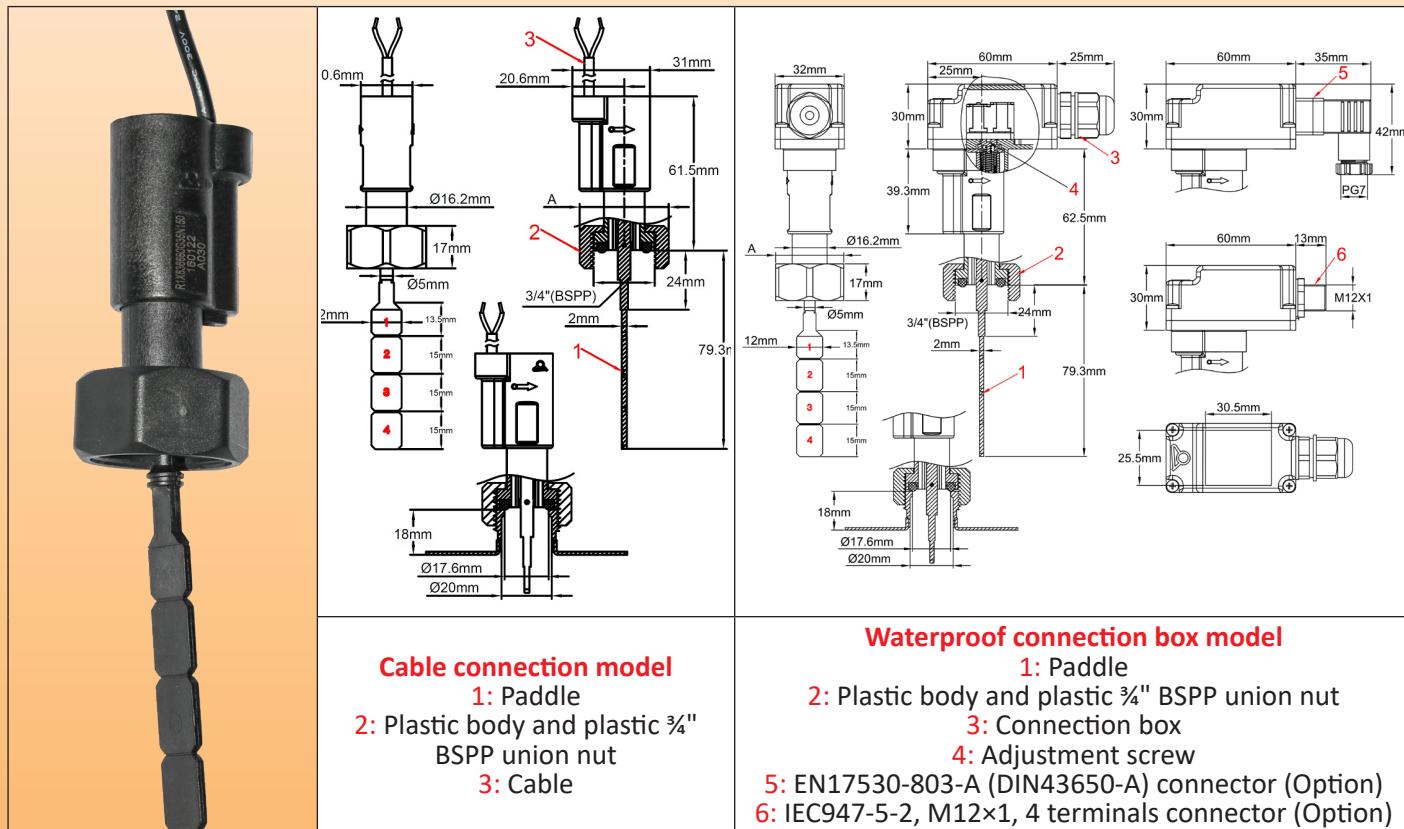
References

Calibration	Cable length			
	500mm	1m	2m	3m
Low span end (1gr)	R1Q613348S15P050	R1Q613348S15P100	R1Q623348S15P200	R1Q613348S15P300
Middle span (2grs)	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
PN10 DN≥15				≤1A ≤70W ≤250V~		R1X



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 100mm water pipes

Functional principle:

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:

- 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.

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.

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 $\frac{3}{4}$ " BSPP mounting on $\frac{3}{4}$ " BSPP male fitting with

Pipe mounting: Fiber glass reinforced union nut, $\frac{3}{4}$ BSPP, mounting on $\frac{3}{4}$ BSPP male fitting with gasket.

Recommended Torque: $7 \pm 1 \text{ Nm}$

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
Hydro-mechanical: For use with clean water

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)

Paddle flow switches, reed switch contact, external body.

Type: R1X



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:

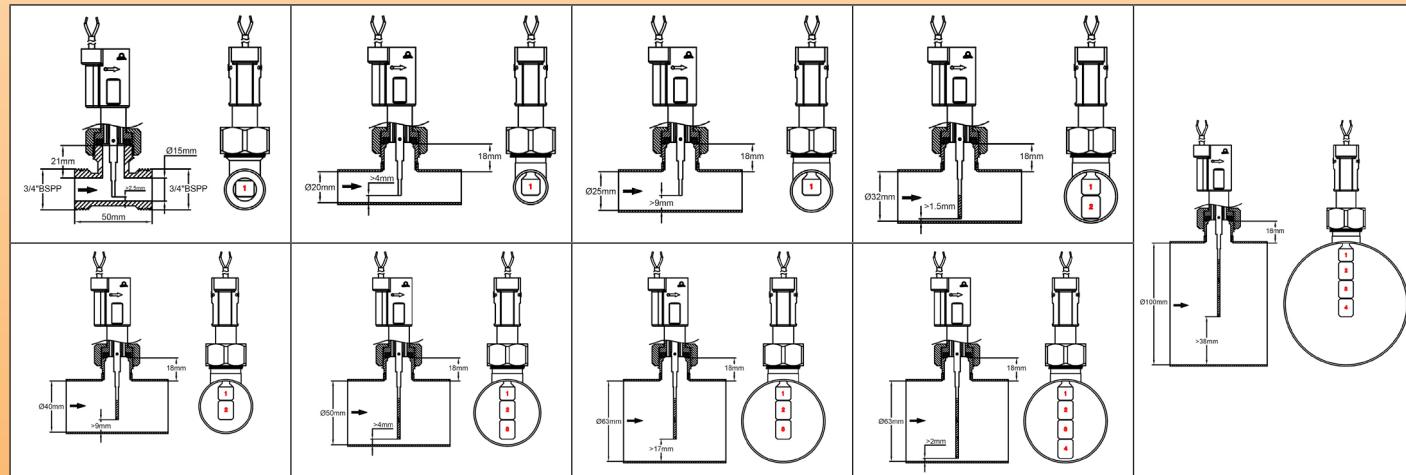
- Check carefully the paddle orientation: The arrow on housing must be exactly parallel to the pipe
- A 5 mm minimum gap must be respected between end of the paddle and tube wall opposite to the fitting.
- We recommend the use of nozzles of length less than or equal to 18mm between the gasket seat and 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: 3/4" male PVC saddles for DN40 to DN100 (OD) PVC pipes, and other fittings: see section 8 of this catalogue.

Options (MOQ apply): cable with connector or terminals, other cable length, nickel plated 3/4" 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.

Pipe mounting configurations



Average flow detection values (Liters/min)

Paddle length	Pipe ID (mm)															
	15		20		25		32		40		50		63		100	
1-m	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open
	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 $\pm 15\%$.

Paddle flow switches, reed switch contact, external body. Type: R1X



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

Main references (With type A cleavable paddle)

Calibration (Calibration force ±15%, measured at end of paddle N°1)	Electrical connection					
	500 mm cable	2 m Cable	3m Cable	Waterproof connection box with M16x1.5 cable gland	Waterproof connection box with 4 pins, M12x1	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: 14gr	R1X6E6680G35N050	R1X6E6680G35N200	R1X6E6680G35N300	R1X6E6680G35N00C	R1X6E6680G35N00L	R1X6E6680G35N00D

Other paddles (Non cleavable models)

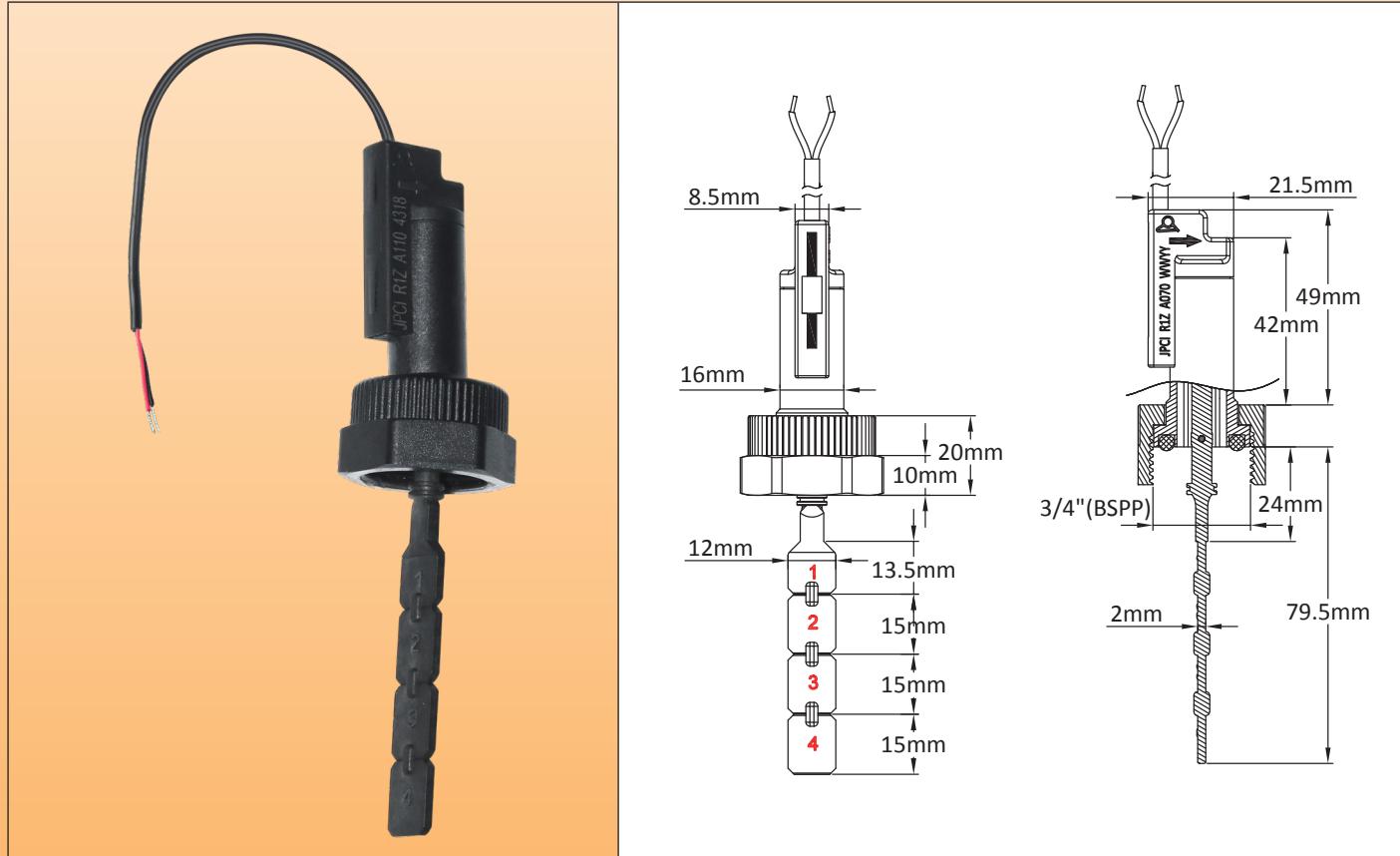
Paddle type B Replace 6680 in reference by 1234	Paddle type C Replace 6680 in reference by 1549	Paddle type D Replace 6680 in reference by 1564	Paddle type E Replace 6680 in reference by 1579

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

Paddle flow switches, reed switch contact, low voltage simplified model. Type: R1Z2



Size and pressure	Flow sensing : Cleavable paddle	Mounting: ¾" BSPP Union nut	Contact: Reed switch, close on flow rise	Electrical rating	Mounting position	Type
PN6 DN≥15				≤ 0.5A ≤ 10VA ≤ 80V~		R1Z2



Main uses: [Large quantities applications](#) in flow detection in low voltage electronic circuits. The most economical model. Recommended mounting position is on horizontal pipes. Can be mounted in any position with a small drift in the calibration because of the paddle weight. Can be used on **15 to 100mm diameter** water pipes.

Functional principle:

Balanced magnetic pallet mounted perpendicular to the flow and activating a reed switch through the wall. The return of the paddle is 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 paddle.

Adjustment: By cleaving the paddle. These flow switches are available with 6 factory setting calibrations, corresponding to operating forces of 0.08N (8gr), 0.09N (9gr), 0.11N (11gr), 0.14N (14gr), 0.18N (18gr), 0.29N (29gr). Values are measured at the end of paddle N°1.

Paddle shaft: **Titanium (Patented)**, provides an outstanding corrosion resistance (contrary to stainless steel), does not break (contrary to ceramic shafts models), 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±1Nm.

Gasket: NBR. (A special silicone gasket, available on request, has been developed for water with metallic particles to limit their access to magnetic parts).

Electrical rating: Max 0.5A, Max 10VA, Max 80V, 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.

Paddle flow switches, reed switch contact, low voltage simplified model. Type: R1Z2



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

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

Nominal pressure at 20°C: 0.6MPa (PN6).

Liquid temperature range: 5 to 95°C.

Ambient temperature range: 5 to 80°C.

Ingress protection: IP65.

Calibration tolerances: +/-15%

Electrical connection: 2 x AWG26 (0.15mm²) cable, PVC insulation, T80°C.

Installation instructions:

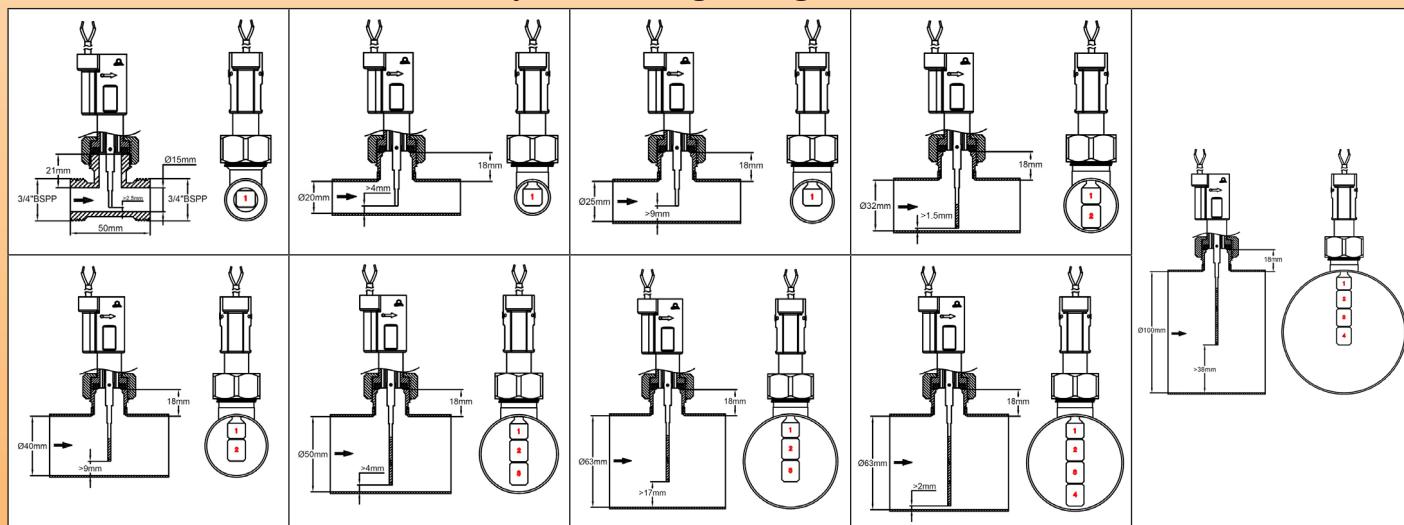
- Check carefully the paddle orientation: The arrow on housing must be exactly parallel to the pipe.
- A 4 to 5 mm minimum gap must be respected between end of the paddle and tube wall opposite to the fitting.
- We recommend the use of nozzles of length less than or equal to 18mm between the gasket seat 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: 3/4" male PVC saddles for DN40 to DN100 (Outside diameter) PVC pipes, and other fittings: see section 8 of this catalogue.

Options (MOQ apply): cable with connector or terminals, other cable length,

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 value data are for tubes whose internal diameter corresponds to DN.

Pipe mounting configurations



Average flow detection values (Liters/min)

Operating force (g)	Paddle number	Pipe ID (mm)									
		15		20		25		32		40	
		*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open
8	1	5.1	4	8.3	7.3	17 L/min	15	32	29		
9	1	5.8	4.1	10	8.3	18	17	36	35		
11	1	6.3	4.4	11.5	9.5	20	18	42	36		
14	1	7.3	4.8	12.5	10	22	21	46	40		
18	1	8.1	5.4	14	11	24	23	50	44		
29	1	8.8	5.6	15.5	12	27	26	57	48		
8	1+2									30	26
9	1+2									32	29
11	1+2									36	32
14	1+2									38	34
18	1+2									46	35
29	1+2									50	43

* 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 $\pm 15\%$

Paddle flow switches, reed switch contact, low voltage simplified model. Type: R1Z2



Operating force (g)	Paddle number	Pipe ID (mm)							
		50		63		80		100	
		*Close	**Open	*Close	**Open	*Close	**Open	*Close	**Open
8	1+2+3	42.2	33.4	56.9	37.4				
9	1+2+3	48.6	37	66.85	40.45				
11	1+2+3	53.75	44.5	73.8	46.8				
14	1+2+3	57.7	44.5	79.3	48.5				
18	1+2+3	61.4	50.4	85.5	57.9				
29	1+2+3	66.8	58.4	95.1	66.1				
8	1+2+3+4					98.2	40.8	156.7	53.5
9	1+2+3+4					111.85	46.2	181.55	51.9
11	1+2+3+4					118.8	46.4	191.4	58.5
14	1+2+3+4					144.45	59.1	211.2	60.4
18	1+2+3+4					150.6	60.2	223.95	64.9
29	1+2+3+4					162.3	66.4	235.1	74.2

* 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

Calibration (Calibration force ±15%, measured at end of paddle N°1)	500mm cable	2m cable	3m cable
8 gr	R1Z286680G35N050	R1Z286680G35N200	R1Z286680G35N300
9 gr	R1Z296680G35N050	R1Z296680G35N200	R1Z296680G35N300
11 gr	R1Z2B6680G35N050	R1Z2B6680G35N200	R1Z2B6680G35N300
14 gr	R1Z2E6680G35N050	R1Z2E6680G35N200	R1Z2E6680G35N300
19 gr	R1Z2J6680G35N050	R1Z2J6680G35N200	R1Z2J6680G35N300
29 gr	R1Z2S6680G35N050	R1Z2S6680G35N200	R1Z2S6680G35N300

OEM paddles can be made on order (MOQ apply).

Paddle flow switches, reed switch contact, external brass body. Type: R1V



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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 100mm 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 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. Usable for industrial applications in non-corrosive liquids. Must not 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±1Nm

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)

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

Type: R1V



Ambient temperature range: 5 to 80°C

Ingress protection: IP55

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

Electrical connection:

Standard:

IP54 connection box, with screw terminals 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

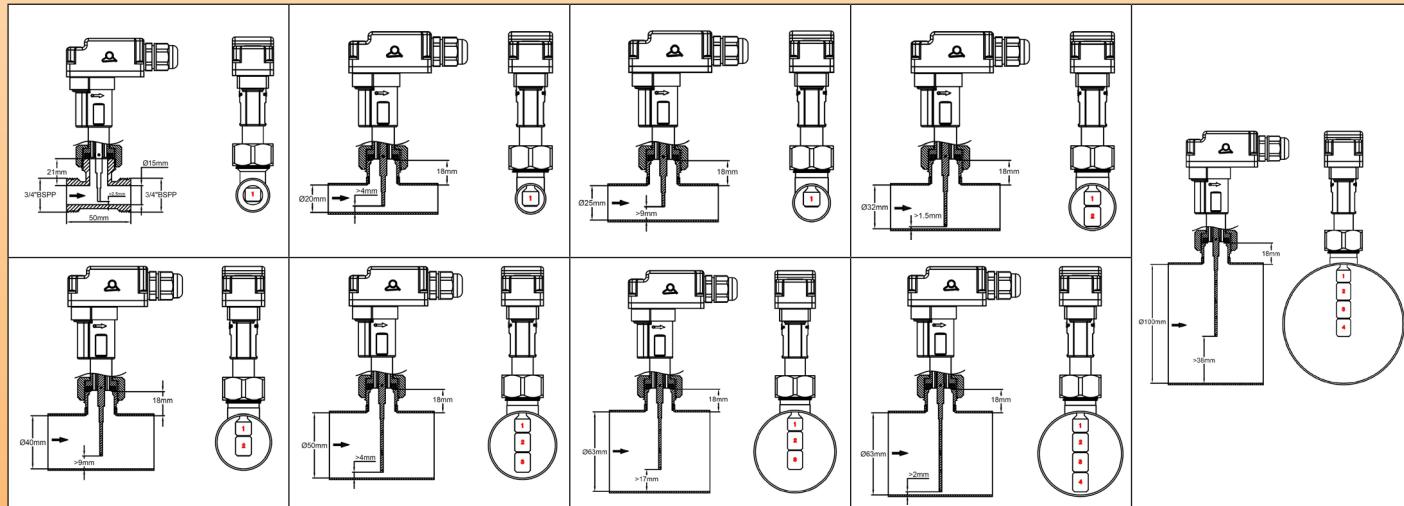
Installation instructions:

- 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 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 pallet

Accessories: 1/4" male PVC saddles for DN40 to DN100 (OD) PVC pipes, and other fittings: see section 8 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.

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 $\pm 15\%$

Paddle flow switches, reed switch contact, external brass body. Type: R1V



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Main references (With type A cleavable paddle)

Calibration (Calibration force $\pm 15\%$, measured at end of paddle N°1)	Electrical connection		
	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: 14gr	R1V6E6680G35N00C	R1V6E6680G35N00L	R1V6E6680G35N00D

Other paddles (Non cleavable models)

Paddle type B Replace 6680 in reference by 1234	Paddle type C Replace 6680 in reference by 1549	Paddle type D Replace 6680 in reference by 1564	Paddle type E Replace 6680 in reference by 1579

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

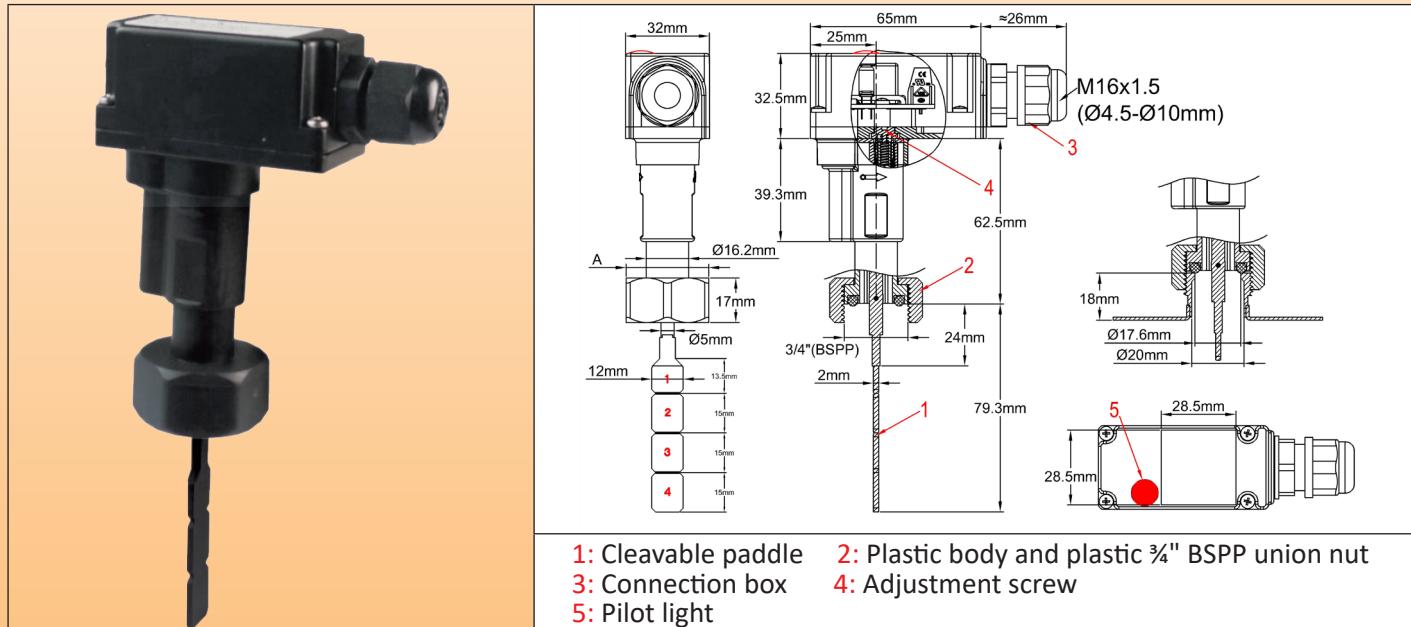
Update 2025/07/09

Paddle flow switches, reed switch contact, built-in 16A SPDT relay

Type: RAX



Size and pressure	Flow sensing : Cleavable paddle	Mounting: ¾" BSPP Union nut	Contact: Reed switch + relay, SPDT	Electrical rating	Mounting position	Type
PN25 DN≥15				≤15A Res. ≤250V~		RAX



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 100mm water pipes. **The built-in relay with SPDT contact can be used on resistive loads up to 15A 250V. The pilot light shows the contact position.**

Functional principle:

Balanced magnetic paddle mounted perpendicular to the flow and activating a reed switch through the wall. The return of the paddle is 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 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±1Nm.

Gasket: NBR

Electrical rating: 15A, 250V, resistive load. Use on inductive circuits reduces electrical rating.

Electric contact type: SPDT

Liquid 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)

Liquid temperature ranges: 5 to 100°C (cannot be used in water freezing pipes).

Ambient temperature range: 5 to 80°C

Ingress protection: IP55

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

Electrical connection: 2.5mm² connection block with screw terminals M16 cable gland output.

Installation instructions:

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

Paddle flow switches, reed switch contact, built-in 16A SPDT relay

Type: RAX



- 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 below or equal to 18mm between the gasket seat and the inside of the tube and with an inner diameter above or equal to 13.5 mm, to avoid blocking of the paddle.

Accessories: $\frac{3}{4}$ " male PVC saddles for DN40 to DN100 (OD) PVC pipes, and other fittings: see section 8 of this catalogue.

Options (MOQ apply): nickel plated $\frac{3}{4}$ " 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.

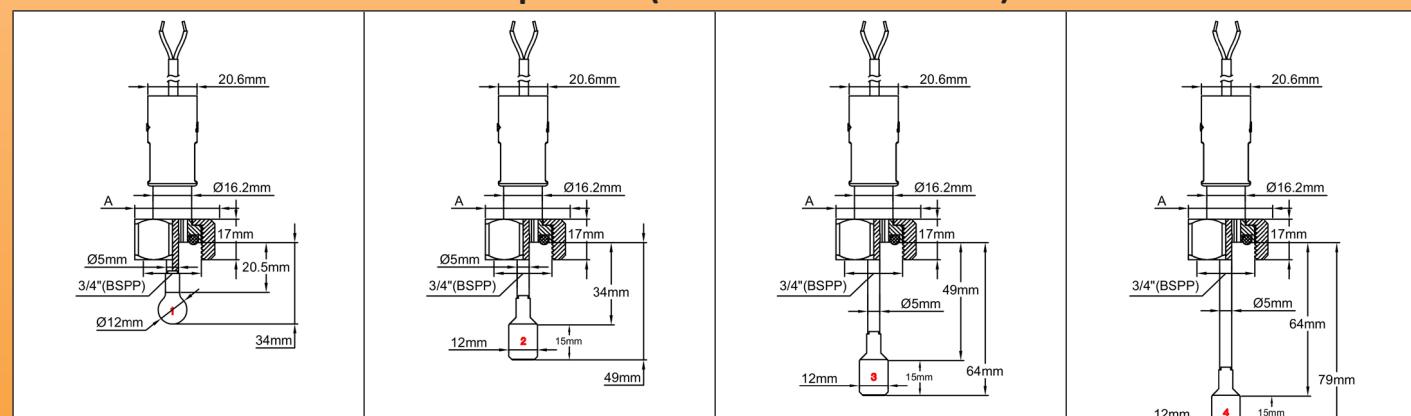
Average flow detection values (Liters/min)

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 $\pm 15\%$												

Main references (With type A cleavable paddle)

Calibration (Calibration force $\pm 15\%$, measured at end of paddle N°1)		
Low span end: 3gr	Middle span: 7gr	High span end: 14gr
RAX635680G31N68E	RAX675680G31N68E	RAX6E5680G31N68E

Other paddles (Non cleavable models)



Paddle type B

Replace 6680 in reference by 1234

Paddle type C

Replace 6680 in reference by 1549

Paddle type D

Replace 6680 in reference by 1564

Paddle type E

Replace 6680 in reference by 1579

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



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Flap type, in line mounting



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Flap flow switches, reed switch contact, $\frac{1}{2}$ " BSPP male thread, Type: R20



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Pressure and size	Flow sensing: magnetic flap	Mounting: $\frac{1}{2}$ " 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
						<p>1: Water Inlet thread 2: Flow detection flap 3: Water outlet 4: Anti rotation lugs</p>

Main applications: Product developed for miniature instantaneous water heaters for showers. The mobile flap system provides compactness. Water inlet is done directly by the $\frac{1}{2}$ " 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 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 pallet.

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 $\frac{1}{2}$ " 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 (0.2mm²), PVC insulation, T80°, standard length 300 mm.

Accessories: brass terminations for brazing or soldering on other pipes diameters: see section 8 of this catalogue.

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

Flap flow switches, reed switch contact, $\frac{1}{2}$ " BSPP male thread, Type: R20



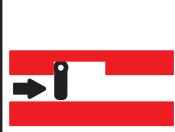
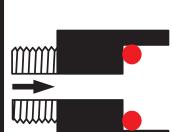
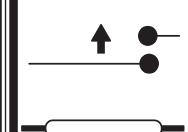
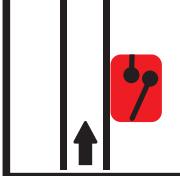
Important note: Standard copper tubes diameter for building applications (Water and gas) are given by the EN1057 standard, which defines the nominal diameter (DN) as the inside diameter. Copper tubes for applications in air conditioning and refrigeration are described in EN 12735-1 and those for vacuum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

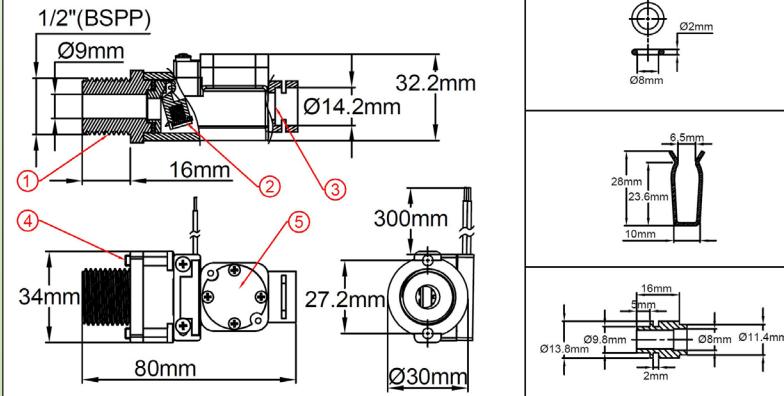
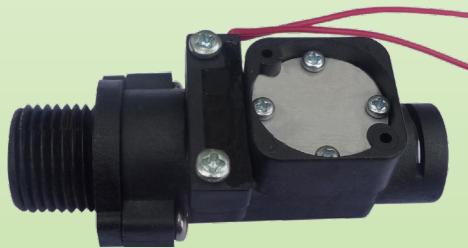
Main references (with 300 mm wires)

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, $\frac{1}{2}$ " BSPP male thread, with triac cooler. Type: R21

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

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



Main applications: Product developed for miniature instantaneous water heaters for showers. The mobile flap system provides compactness. Water inlet is done directly by the $\frac{1}{2}$ " 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 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 pallet.

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 $\frac{1}{2}$ " 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 (0.2mm²), PVC insulation, T80°, standard length 300 mm.

Accessories: brass terminations for brazing or soldering on other pipes diameters: see section 8 of this catalogue.

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

Flap flow switches, reed switch contact, $\frac{1}{2}$ " BSPP male thread, with triac cooler. Type: R21



Important note: Standard copper tubes diameter 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 and vacuum 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)

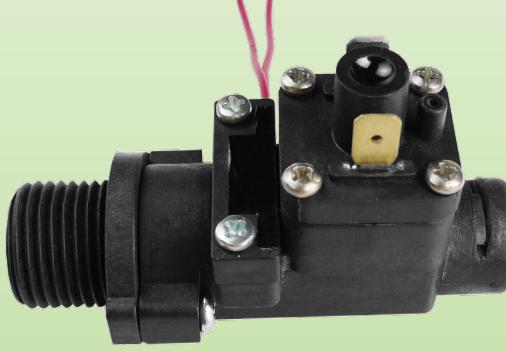
Outlet for copper tube dia.10 x 8 mm			Outlet for copper tube dia.12 x 10 mm		
References	Close on flow rise (L/min)	Open on flow decrease (L/min)	References	Close on flow rise (L/min)	Open on flow decrease (L/min)
R21B670200000430	2±0.2	1,6±0.2	R21B680200000430	2±0.2	1,6±0.2
R21B670250000430	2,5±0.25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

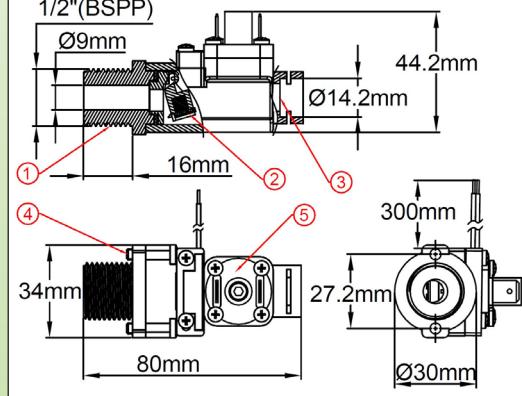
Flap flow switches, reed switch contact, 1/2" BSPP male thread, with water input pressure control. Type: R23

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



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				$\leq 1A$ $\leq 70W$ $\leq 250V\sim$		R23





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 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 pallet.

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 0.8mm 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.

Flap flow switches, reed switch contact, $\frac{1}{2}$ " BSPP male thread, with water input pressure control. Type: R23



Liquids temperature range: 5 to 80°C

Ambient temperature range: 5 to 50°C

Ingress protection: IP65

Electrical connection: 2 x AWG24 wires (0.2mm²), PVC insulation, T80°, standard length 300 mm.

Accessories: brass terminations for brazing or soldering on other pipes diameters: see section 8 of this catalogue.

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

Important note: Standard copper tubes diameter 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 and vacuum 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)

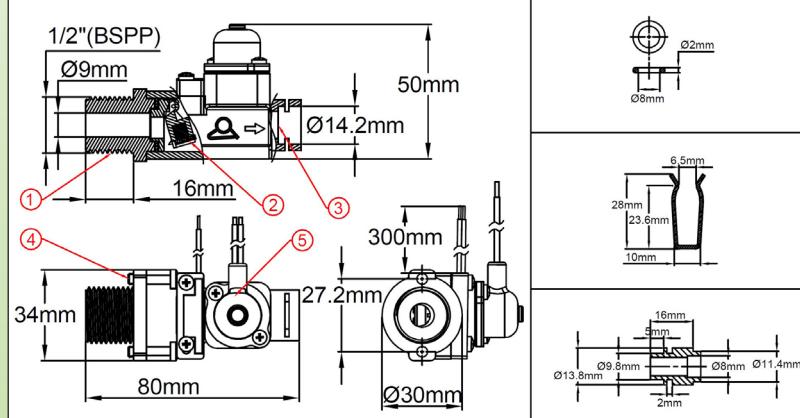
Outlet for copper tube dia.10 × 8 mm			Outlet for copper tube dia.12 × 10 mm		
References	Close on flow rise (L/min)	Open on flow decrease (L/min)	References	Close on flow rise (L/min)	Open on flow decrease (L/min)
R23B670208000430	2±0.2	1,6±0.2	R23B680208000430	2±0.2	1,6±0.2
R23B670258000430	2,5±0.25	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

Flap flow switches, reed switch contact, $\frac{1}{2}$ " BSPP male thread, with water input temperature control. Type: R22

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

Pressure and size	Flow sensing: magnetic flap	Mounting: $\frac{1}{2}$ " male thread and snap-in dia. 8mm	Contact: Reed switch, close on flow rise	Electrical rating	Mounting position	Type
PN10 DN8				$\leq 1A$ $\leq 70W$ $\leq 250V\sim$		R22





1: Water Inlet thread
2: Flow detection flap
3: Water outlet
4: Anti rotation lugs
5: O-ring
6: Snap-on spring
7: Tube end fitting
8: 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 $\frac{1}{2}$ " 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 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 pallet.

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 $50^\circ C \pm 3^\circ C$. Switch on when the inlet temperature drops below $42^\circ C \pm 4^\circ C$. Electrical connection protected by silicone cap, protection, two $1.5mm^2$ 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 $\frac{1}{2}$ " fitting with gasket with 2 anti-rotation lugs. Recommended torque 5N.m

Flap flow switches, reed switch contact, $\frac{1}{2}$ " BSPP male thread, with water input temperature control. Type: R22



- 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 (0.2mm²), PVC insulation, T80°, standard length 300 mm.

Accessories: brass terminations for brazing or soldering on other pipes diameters: see section 8 of this catalogue.

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

Important note: Standard copper tubes diameter 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 and vacuum 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
R22B670300500430	3±0.3	2,5±0.3	R22B680300500430	3±0.3	2,5±0.3



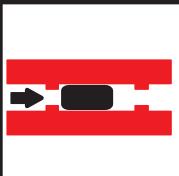
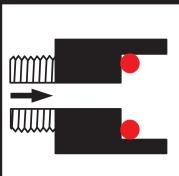
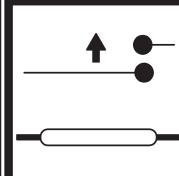
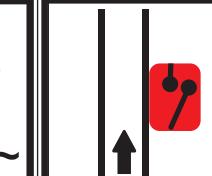
Piston type



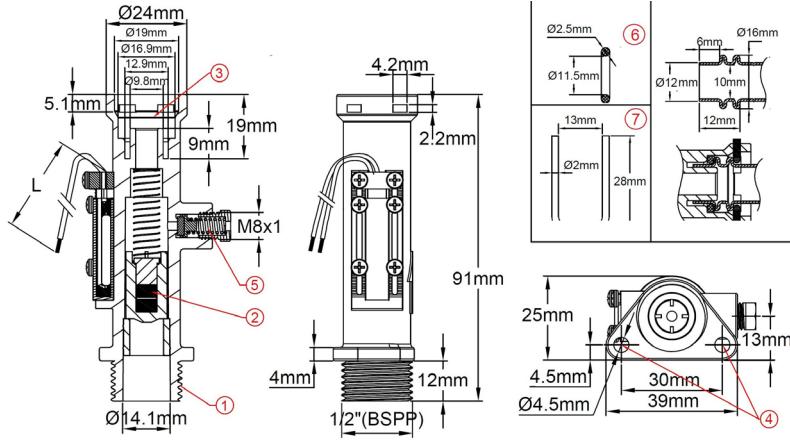
Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice

Piston flow switches, reed switch contact, $\frac{1}{2}$ " BSPP male thread, and snap-on connection for DN10 or 12.7 OD copper tube. Type: R3F

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

Pressure and size	Flow sensing: magnetic piston	Mounting: $\frac{1}{2}$ " male thread and snap-in dia. 10 mm	Contact: Reed switch, close on flow rise	Electrical rating	Mounting position	Type
PN10 DN8				$\leq 1A$ $\leq 70W$ $\leq 250V\sim$		R3F





1: $\frac{1}{2}$ " 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

Main applications: Product developed for electrical or gas instantaneous water heaters. Water inlet is done directly by the $\frac{1}{2}$ " BSPP male thread. Mandatory vertical mounting, with water inlet from the bottom. Connection to internal copper piping DN10 with quick coupling. **Built-in overpressure 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 made by 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 piston.

Adjustment: Can be factory set by adjusting the spring force and/ or changing the piston diameter

Body material: PPO compatible with drinking water.

Piston: PPO

Spring: 304 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: 4 to 12 L/min

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

Nominal diameter: DN8-DN10

Mandatory mounting position: on vertical pipes, upstream flow

Water pipe connection:

- Water inlet: on male $\frac{1}{2}$ " fitting with gasket with 2 anti-rotation lugs. Recommended torque 5N.m
- Water outlet: fast-on connection with O-ring and clips on DN10 beaded copper tubes. OD 12 to 12.7mm

Liquids temperature range: 5 to 80°C

Piston flow switches, reed switch contact, $\frac{1}{2}$ " BSPP male thread, and snap-on connection for DN10 or 12.7 OD copper tube. Type: R3F

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 (0.2mm²), PVC insulation, T80°, standard length 300 mm.

Options (MOQ apply): cable with connector or terminals, other cable length, other calibration values. On request it is possible to produce these models with upside water inlet

Important note: Standard copper tubes diameter 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 and vacuum 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)

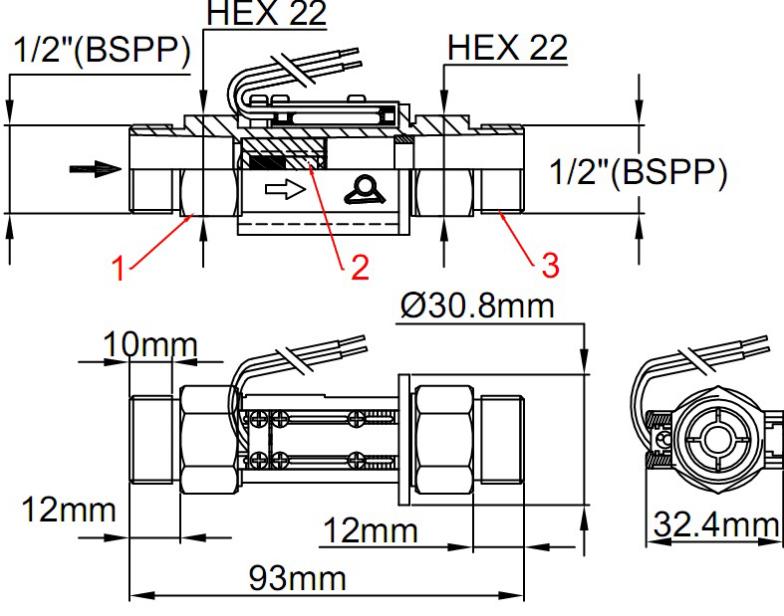
References	Close on flow rise (L/min)	Open on flow decrease (L/min)
R3FA670400150330	4 ±0.2	1,6±0.2
R3FA670600150330	6±0.25	2±0.25
R3FA670800150330	8±0.3	2,5±0.3

Other calibration on request.

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



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

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				$\leq 1A$ $\leq 70W$ $\leq 250V_{\text{AC}}$		R35
DN15				$\leq 1A$ $\leq 70W$ $\leq 250V_{\text{AC}}$		R35
						

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 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

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

Ingress protection: IP65

Electrical connection: 2 x AWG24 wires (0.2mm²), PVC insulation, T80°, standard length 300 mm.

Piston flow switches, reed switch contact, inlet and outlet ½" BSPP male, Type: R35



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)

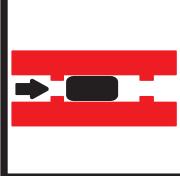
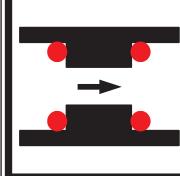
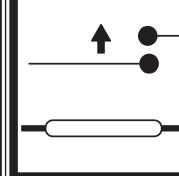
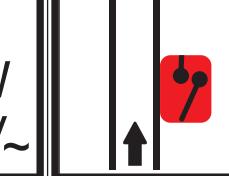
Main references (with 300 mm wires)

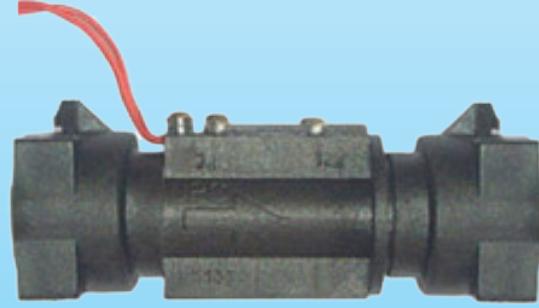
References	Close on flow rise (L/min)	Open on flow decrease (L/min)
R35B600100000330	1±0,2	0,7±0,2
R35B600150000330	1,5±0,2	1,2±0,2
R35B600180000330	1,8±0,2	1,4±0,2
R35B600300000330	3±0,3	2,6±0,3

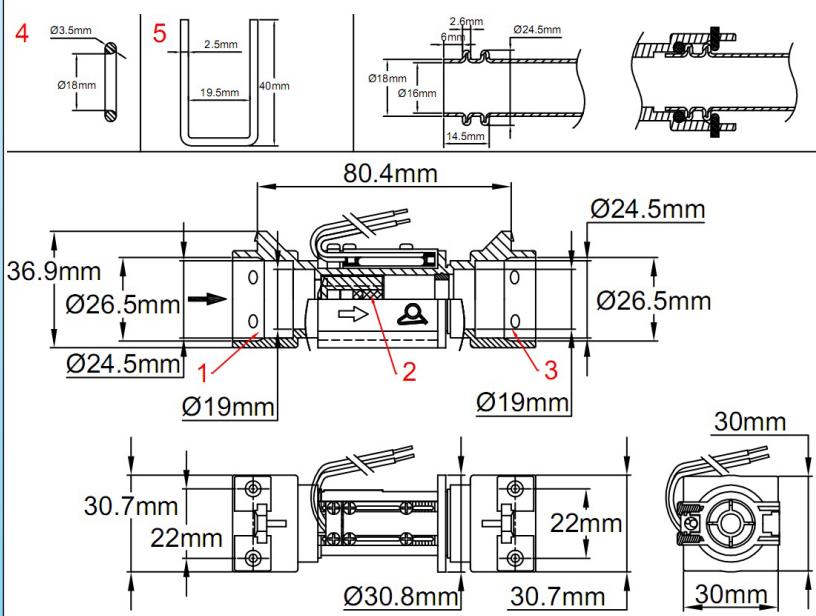
Other calibration on request.

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

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

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





1: Snap-in water inlet
2: Flow detection piston
3: Snap-in water outlet
4: O-ring
5: Snap in spring

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 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 18mm

Liquids temperature range: 5 to 80°C

Ambient temperature range: 5 to 50°C

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

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

Ingress protection: IP65

Electrical connection: 2 × AWG24 wires (0.2mm²), 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)

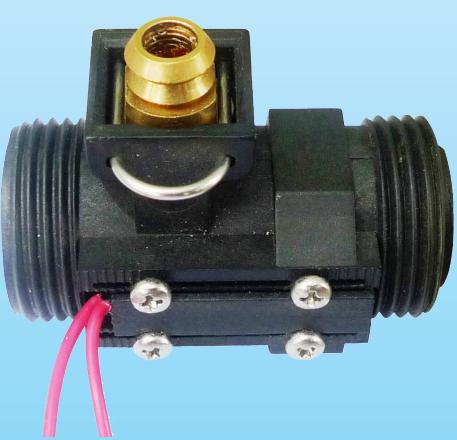
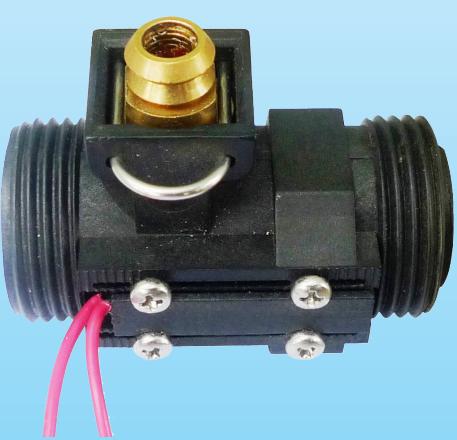
References	Close on flow rise (L/min)	Open on flow decrease (L/min)
R34B610100000330	1±0,2	0,7±0,2
R34B610150000330	1,5±0,2	1,2±0,2
R34B610180000330	1,8±0,2	1,4±0,2
R34B610300000330	3±0,3	2,6±0,3

Other calibration on request.

Piston flow switches, reed switch contact, inlet and outlet $\frac{3}{4}$ " BSPP male, Type: R36



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Pressure and size	Flow sensing: magnetic piston	Mounting: $\frac{3}{4}$ " male inlet and outlet	Contact: Reed switch, close on flow rise	Electrical rating	Mounting position	Type
PN10 DN20				$\leq 1A$ $\leq 70W$ $\leq 250V_{\text{AC}}$		R36
						
				<p>1: $\frac{3}{4}$" BSPP Water inlet 3: $\frac{3}{4}$" BSPP Water outlet</p> <p>2: Flow detection piston 4: Over-pressure valve</p>		

Main applications: Product developed for electrical or gas instantaneous water heaters. $\frac{3}{4}$ " 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 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: $\frac{3}{4}$ " BSPP male fitting (Needs gasket). Recommended torque: 7N.m

Liquids temperature range: 5 to 80°C

Ambient temperature range: 5 to 50°C

Piston flow switches, reed switch contact, inlet and outlet ¾" BSPP male, Type: R36



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

Ingress protection: IP65

Electrical connection: 2 x AWG24 wires (0.2mm²), 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.



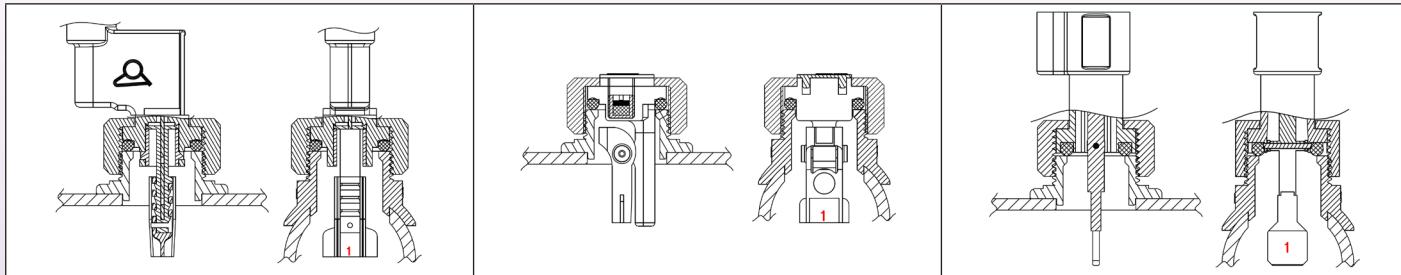
Accessories



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Accessories for paddle switches

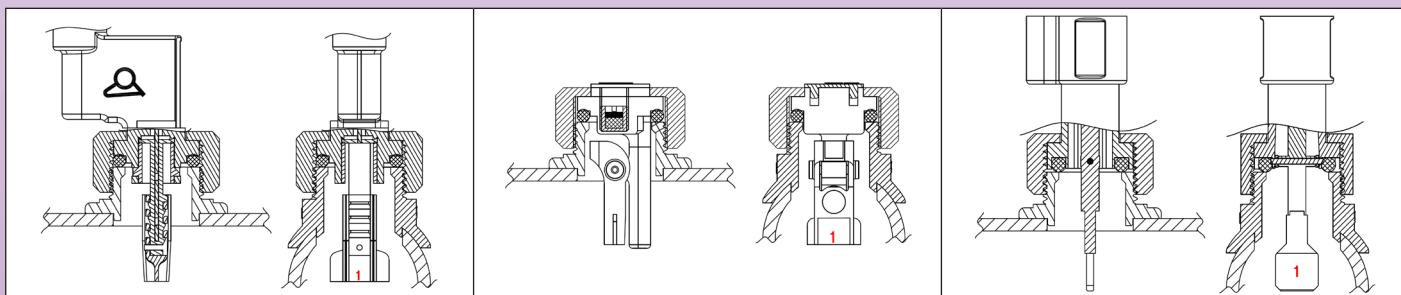
1/2"BSPP female PVC saddles for bonding, fit dia. 24 to 25 mm hole drill in the pipe



Compatibles with R1D, R1R, R1L, R1S

		For pipe dia. 40mm O.D. Reference 6R1SF1240			For pipe dia. 63mm O.D. Reference 6R1SF1263
		For pipe dia. 50mm O.D. Reference 6R1SF1250			For pipe dia. 100mm O.D. Reference 6R1SF12100

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

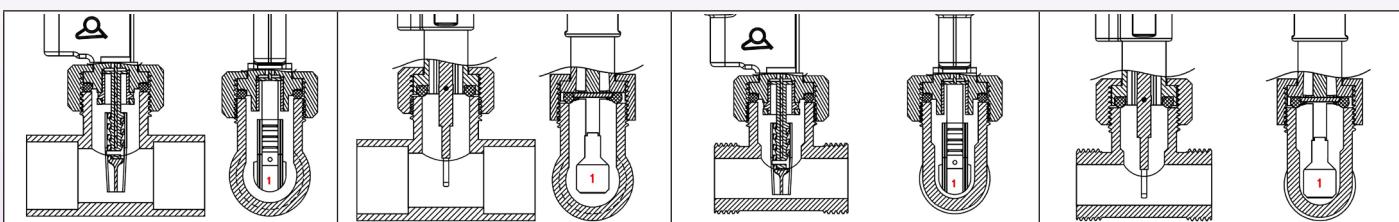


Compatibles with R1B, R1P, R1X, R1V

		For pipe dia. 40mm O.D. Reference 6R1SM3440			For pipe dia. 63mm O.D. Reference 6R1SM3463
		For pipe dia. 50mm O.D. Reference 6R1SM3450			For pipe dia. 100mm O.D. Reference 6R1SM34100

Accessories for paddle switches

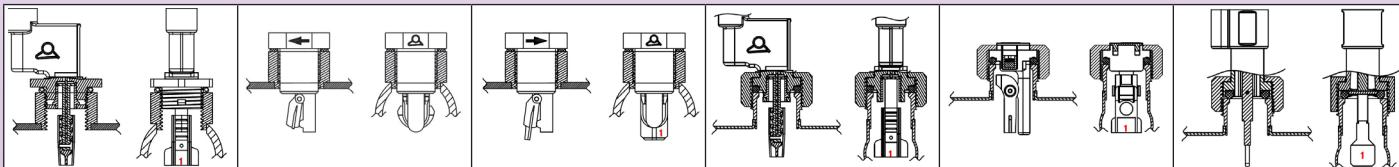
Tees



Fits types R1D, R1X, R1V



Fits types R1D, R1X, R1V

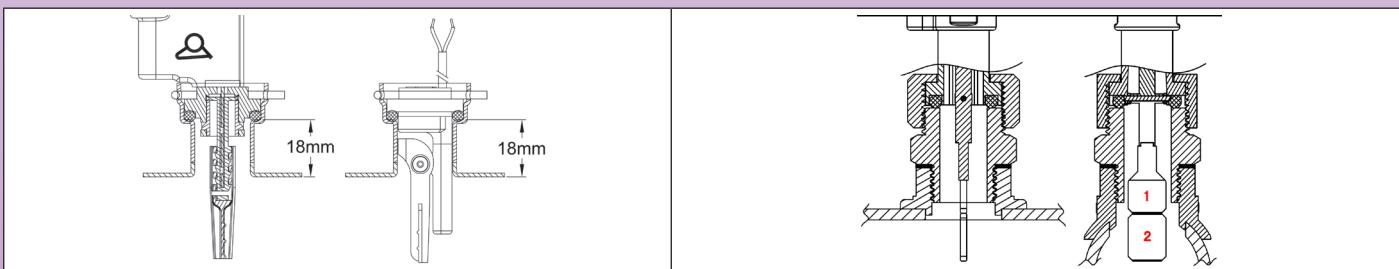


Male and female fittings

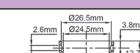
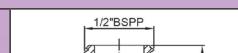
Fits R1D, R1R, R1L, R1S



Fits types R1D, R1X, R1V



Other fittings

Fits R1B and R1P	Fits R1X and R1V					
 <div style="display: flex; align-items: center; justify-content: space-between;"> <div style="flex: 1;">  <p>DN15 Snap-in fitting, stainless steel for welding, or copper for brazing (includes spring).</p> <table border="1" data-bbox="509 1691 754 1744"> <tr> <td>Reference in copper</td> <td>6R1S1525C</td> </tr> <tr> <td>Reference in 304L</td> <td>6R1S1525S</td> </tr> </table> </div> <div style="flex: 1;">   <p>3/4" BSPP x 1/2" BSPP Conversion fitting, brass</p> <table border="1" data-bbox="1236 1691 1350 1744"> <tr> <td>Reference</td> <td>6R1C1234B</td> </tr> </table> </div> </div>	Reference in copper	6R1S1525C	Reference in 304L	6R1S1525S	Reference	6R1C1234B
Reference in copper	6R1S1525C					
Reference in 304L	6R1S1525S					
Reference	6R1C1234B					

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Tables

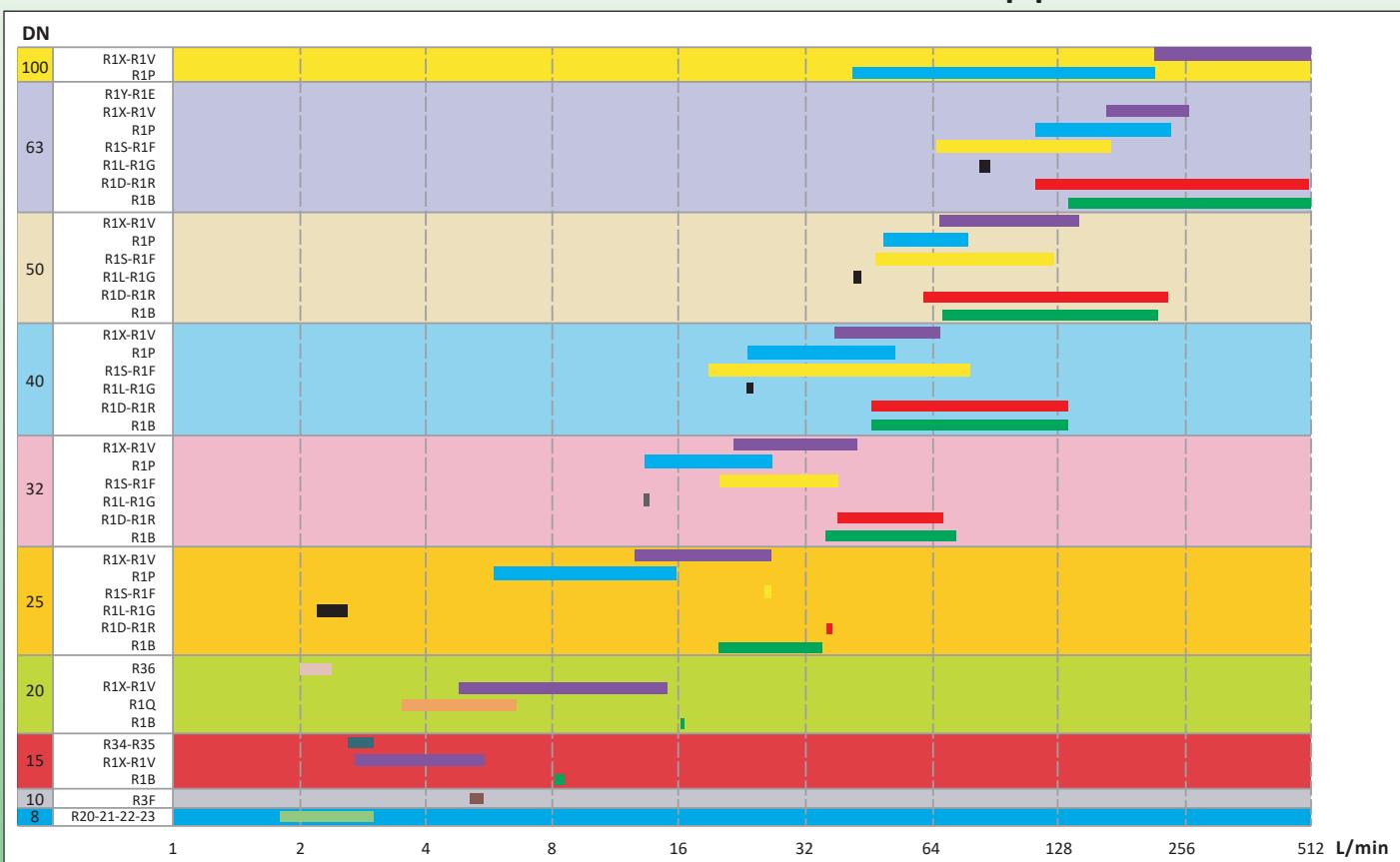


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Tables



Flow switches detection limits versus flow and pipe I.D.



Conversion table

Liter /min and liter/hour converted 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/min	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



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