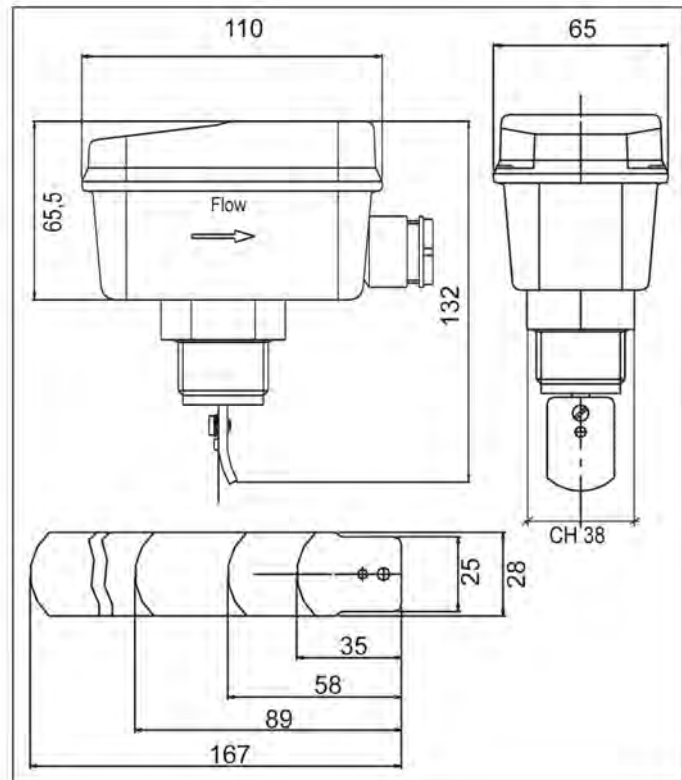


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LIQUID FLOW SWITCH



FS FF82:



FLOW SWITCHES FF82 FOR PIPES FROM G1 TO G8

- Casing in shock-proof thermoplastic AISI 301 stainless steel blades for pipes from G1" to G8"
- Direct fixing by threaded connection G1"

TYPE	PIPELINE DIAMETER	PADDLE mm	Minimum flow rate Value m ³ /h		Maximum flow rate Value m ³ /h	
			Decreasing	Increasing	Decreasing	Increasing
FF82	1"	35	0,5	1	1,9	2
	1" ¼	35	0,7	1,2	2,7	2,9
	1" ½	58	1	1,6	3,6	3,9
	2"	58	2,1	2,9	5,7	6,1
	2" ½	89	2,7	4	6,5	7
	3"	89	4,3	6,1	10,7	11,4
	4"	89	11,3	14,7	27,6	28,9
		* 167	6,1	7,9	17,3	18,4
	5"	89	22,8	28,3	53	55,5
		* 167	9,2	12,8	25	26,7
	6"	89	35,8	43	81,6	85
		* 167	12,2	16,8	30,5	32,5
8"	89	72,4	85	165,5	172,3	
	* 167	38,5	46,4	90,7	94	

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GENERAL CHARACTERISTICS

Flow switches are suitable to control and adjust air in conditioning. It acts in compliance with the technical regulations of the M.D. 1/12/1975 (Safety standards for the instruments containing hot liquids under pressure) and with the collection R file R.2.C.6. Into heating plants with closed expansion tank where the circulation is guaranteed by electropumps, the heat supply must be automatically interrupted in case of stop of the circulation pumps.

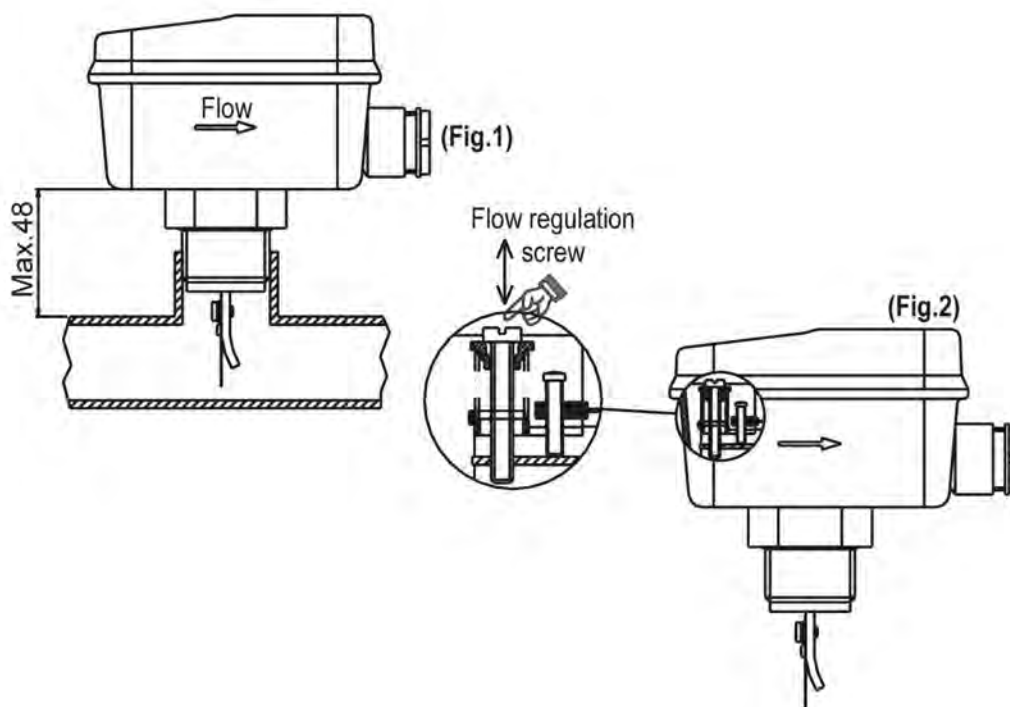
INSTALLATION

To be installed on sections of horizontal pipe, far from valves, elbows, irregular flows or discharges, the straight pipe must be at least 5 times of the long of the of the pipe. The flow direction must follow the arrow designed on the instrument.

- Respect installation distance as per (fig 1)
- Check the correct installation and the correct functioning, pushing the regulation screw to simulate flow (fig 2)

TECHNICAL CHARACTERISTICS

- Flow rate as per table
- Protection gade Ip65
- Max pressure 10 bars
- Working temperature: $-20 \pm 110^{\circ}\text{C}$
- Ambient temperature: 50°C
- Antishock thermoplastic material enclosure
- Paddles in inox AISI 301 for pipes from G1 to G8
- G1" connection
- Female 6,3mm electrical connection
- Sealed cable gland **Pg16**



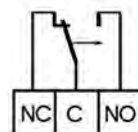
ELECTRICAL FEATURE

SPDT microswitch
Nominal tension: 250Vac
Continuous duty nominal current: 16 (6)A

According to CEI EN 60947-5-1
CEI EN 60529
Flow increases: open C-NC
Close C-NO

CALIBRATION

Device is supplied with lower flow rate calibration;
To modify it use use regulation screw as per fig 3



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Electrical Data

Max Voltage:
Current:
Electrical connection:
Protection class:
Certification Mark:

250 VAC
15 A
1/2" NPT threaded
NEMA type 5 (IP54)



Technical Characteristics

Connection size:
Maximum operating pressure:
Maximum temperature of the fluid:
Minimum temperature of the fluid:
Maximum ambient temperature:
Suitable for pipes:

1" NPT male
150 psig (10 bar)
250° F (120°C)
-20° F (-30°C)
130° F (55°C)
1" to 8" (25 to 200 mm)



Codice FS 626600 - Flow switch CALEFFI 1"

Function

The Caleffi Series 626 water flow switch detects the presence or absence of flow in piping of heating, air conditioning, cooling and water treatment systems as well as in pumping and process systems. In heating systems, the flow switch is normally used to shut off the burner of the boiler whenever there is no circulation of the carrier fluid in the boiler circuit. A lack of circulation can damage critical components and impair the operation of temperature sensitive safety and protection devices.

General Characteristics

A stainless steel bellows separates the electrical and hydronic sections, preventing the possibility of contact of the fluid with the electrical components. Stainless steel is used in the construction of many key parts, including the bellows which protects the switch from corrosion. With a protection classification of NEMA type 5 (IP54), the switch can be used in particularly humid and dusty environments. The cover is made of a special non-combustible plastic material. The normally open and normally closed contacts on the switch enable any electrical device to be switched on or off as required at the operating flow rate. The operating point can be easily adjusted with the calibration screw.



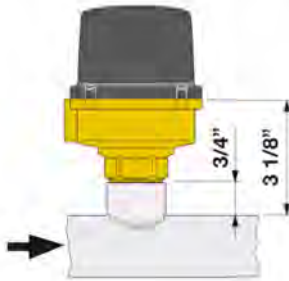
CAUTION: All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of systems in accordance with all applicable codes and ordinances.



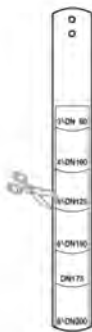
CAUTION: Over-tightening and breakage can occur with the use of PTFE pipe joint compounds. PTFE provides lubricity so that care must be exercised not to over-tighten joints. Failure to follow these instructions could result in property damage and /or personal injury.

Installations

To install the flow switch correctly follow these instructions:



- Select the blade marked with the diameter of the pipe in which the switch is to be installed;
- Remove any extra pre-fitted blades for larger diameter pipes by unscrewing the 2 blade attaching screws;
- With pipe diameters of 3" (DN 80) or above, all the pre-fitted blades must be attached in ascending order with the long blade being cut to the size corresponding to the desired pipe diameter;
- Fit the flow switch to the pipe, carefully observing the direction of flow indicated by the arrows stamped on the cover and on the switch mounting plate. When fitted, the distance between the upper surface of the pipe and upper surface of the switch mounting plate should be 3 1/8" (80 mm);



- The tee connection in the pipe can be formed by the direct welding of a threaded socket;
- This also applies to a 1" (DN 25) diameter pipe, as the blades are designed to be contained in these smaller dimensions.
- It is however advisable to check that the weld is free from burrs on the inside so that the blade can move freely in the tee connection;
- Whenever possible the flow switch should be installed in the vertical position to avoid deposits of impurities which may cause it to function incorrectly.



WARNING: Electrical shock hazard. Disconnect **ALL** power sources when installing or servicing this equipment to prevent electrical shock or equipment damage. Failure to follow these instructions could result in property damage and/or personal injury.

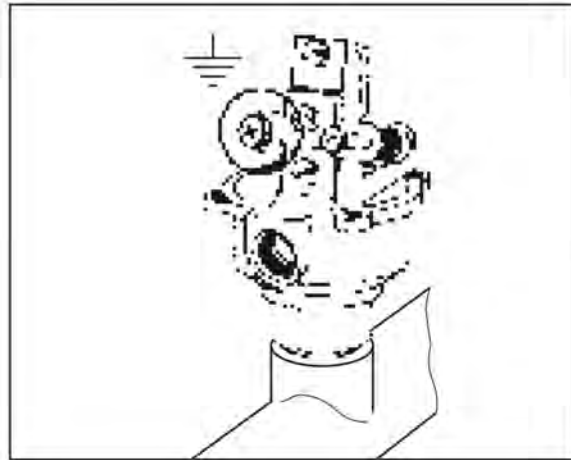
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Electrical Connections

Unscrew the four cover screws and lift off the outer cover.



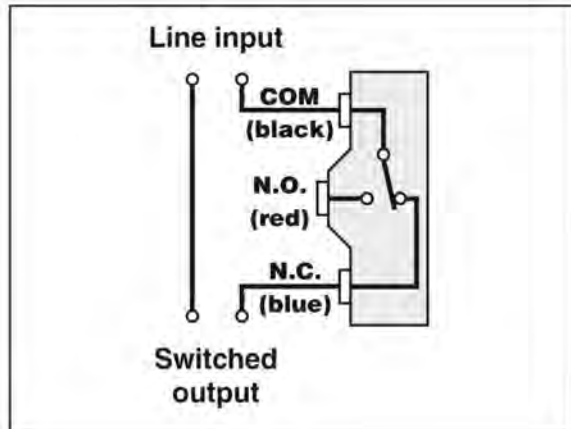
Make sure the wires do not obstruct the function of the switch mechanism.



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

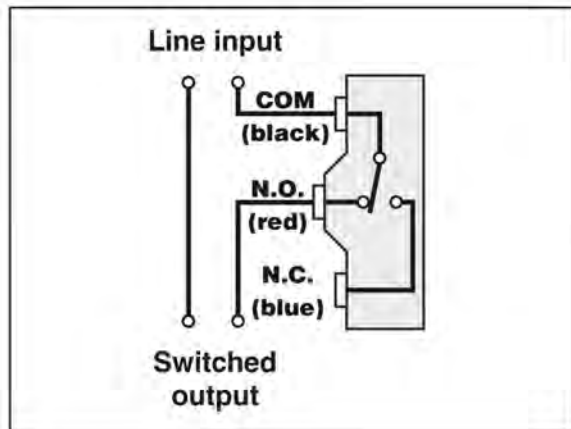
Flow switch is used to activate a device when flow starts.

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



Flow switch used to activate a device when flow stops.

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



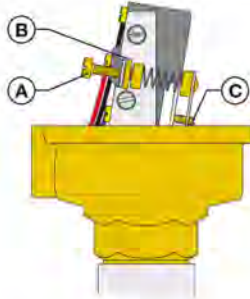
Electrical Rating

	125 V _{AC}		250 V _{AC}	
	N.C.	N.O.	N.C.	N.O.
Resistive Load	15 A	15 A	15 A	15 A
Inductive Load	15 A	15 A	15 A	15 A
Motor Load	5 A	2.5 A	3 A	1.5 A
Horsepower	1/8 HP	1/8 HP	1/4 HP	1/4 HP

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Calibration

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



Operating flow rates: gpm (lpm)

Diameter of pipe	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"
Minimum calibration Operating flow rate with increasing flow	5.7 (21.7)	7.5 (28.4)	11.4 (43.4)	13.2 (50.1)	22.0 (83.5)	29.9 (113)	44.0 (167)	61.1 (232)	72.6 (275)	162 (618)
Minimum calibration Operating flow rate with decreasing flow	4.0 (15.0)	5.5 (20.9)	8.4 (31.7)	9.7 (36.7)	16.3 (61.8)	22.9 (86.8)	37.4 (142)	51.5 (197)	63.8 (242)	145 (551)
Maximum calibration Operating flow rate with increasing flow	12.3 (46.8)	16.7 (63.5)	26.0 (98.5)	29.5 (112)	51.5 (195)	69.5 (264)	94.6 (359)	136 (518)	189 (718)	334 (1269)
Maximum calibration Operating flow rate with decreasing flow	11.9 (45.1)	16.3 (61.8)	25.5 (96.9)	29.0 (110)	50.6 (192)	68.6 (260)	92.4 (351)	127 (484)	158 (601)	308 (1169)



FLOW CONTROLS FOR CIRCULATOR AND CENTRIFUGAL ELECTRIC PUMP

Flow switches **FLOW/MATIC H** have been realized at the purpose to control fluids movimented by CIRCULATOR PUMP or by CENTRIFUGAL ELECTRIC PUMP. The force of working is very reduced, if compared to the normal constructions which work by means of the compression or dilation of a metallic casing.

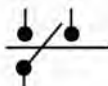
The electric contact is housed externally to the flow switch and is moved by a magnet located on the head of the switch built in reinforced polyamide glass loaded, which can be cut in according to the diameter of the pipe.

The valve high sensibility allows to control also passages of little quantity of liquids equal to 20 litres per minute.

The "H" series, produced in two different versions, foresees a brass threaded joint only G1 for piping from 1" up to 4" and over. The installation can be horizontal or vertical respect to the flow of the liquid controlled, with the possibility of 360° positioning respect to piping axis.

H 10 AR per comando teleruttori con ritardo della protezione marcia a secco
for the control of telebreakers with delay of dry running protection

Q. min / Min. flow	20 l/min
P.max / Max pressure	10 bar
Temperatura max / Max temperature	100° C
Alimentazione / Voltage rating	220v a.c.
Contatti elettrici a relay nc + no Relay electric contacts nc + no	10(4)A 250V a.c.
Dispositivo di ritardo partenza pompa regolabile Delayed pump start-up system regolable	0 - 10 sec
Led di segnalazione presenza rete Tasto di start / Start button	



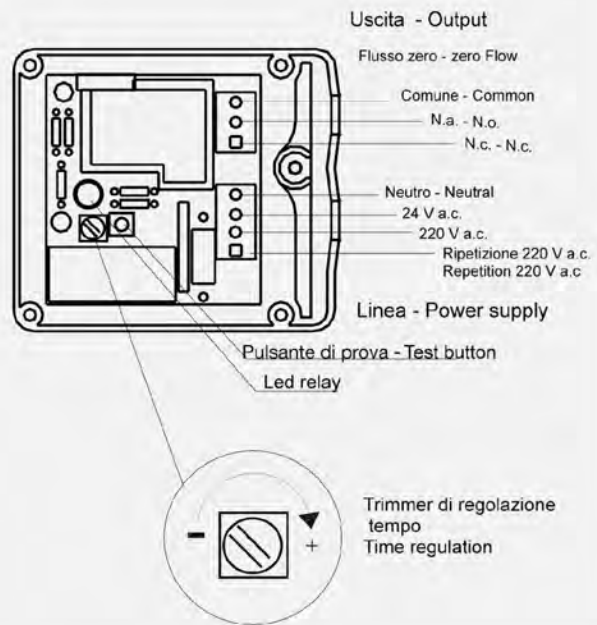
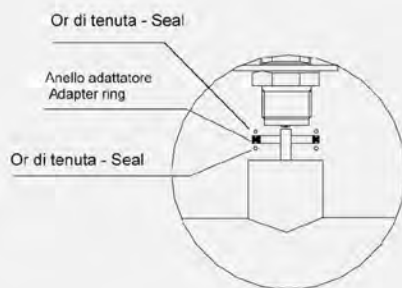
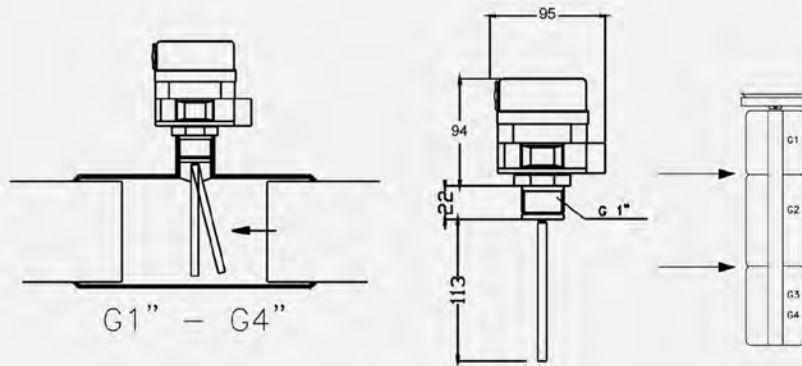
MT FLOW MATIC H 10 AR

The V-10AR version is equipped of a trimmer for the regulation of the delay, form 0 to 10 sec., and a test button. When the flow moves the stick from stand position, the relay, present on the electronic board, comes excited (changing the contact) for the time set. At the end of this time, if the flow is higher than the minimum sensibility, the contact remains excited. If instead the flow is lower to the minimum sensibility of the flowswitch, the contact comes disexcited and returns in the position of flow zero.

The exciting of the contact for the time set happens also when we cut and then re-give power supply to the device.

When the test button is punched, the relay of the electronic board remains excited for al the time set, independently by the flow present in the piping.

INSTALLAZIONE/INSTALLATION



APPLICAZIONE/APPLICATION



Acqua condotta - Irrigazione



Refrigerazione



Riscaldamento

FLOW CONTROLS FOR CIRCULATOR AND CENTRIFUGAL ELECTRIC PUMP



Flow switches **FLOW/MATIC V** have been realized at the purpose to control fluids movmented by **CIRCULATOR PUMP** or by **CENTRIFUGAL ELECTRIC PUMP**. The force of working is very reduced, if compared to the normal constructions which work by means of the compression or dilation of a metallic casing.

The electric contact is housed externally to the flow switch and is moved by a magnet located on the flow valve.

The valve high sensibility allows to control also passages of little quantity of liquids equal to 5 or 0,6l/min depending on the model.

The "V" series, produced in four different versions, for electric contact type and minimum working sensibility, foresees an threaded input/output joint G1. The installation can be effected in vertical in series to the liquid conduction piping, with the possibility of 360° positioning respect to the flow switch axis.

MT FLOW MATIC V 10 AR MT FLOW MATIC V PLC

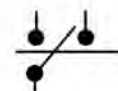
V PLC per comando di centraline elettroniche
for electronic panels control

Q. min / Min. flow	5 l/min - 0,6 l/min
P.max / Max pressure	10 bar
Temperatura max / Max temperature	85° C
contatti elettrici per dispositivi a bassa energia Electric contacts for low energy devices	<1mA <5 V



V 10 AR per comando teleruttori con ritardo della protezione marcia a secco
for the control of telebreakers with delay of dry running protection

Q. min / Min. flow	5 l/min - 0,6 l/min
P.max / Max pressure	10 bar
Temperatura max / Max temperature	85° C
Alimentazione / Voltage rating	220v a.c.
Contatti elettrici a relay nc + no Relay electric contacts nc + no	10(4)A 250V a.c.
Dispositivo di ritardo partenza pompa regolabile Delayed pump start-up system regolable	0 - 10 sec
Led di segnalazione presenza rete Tasto di start / Start button	



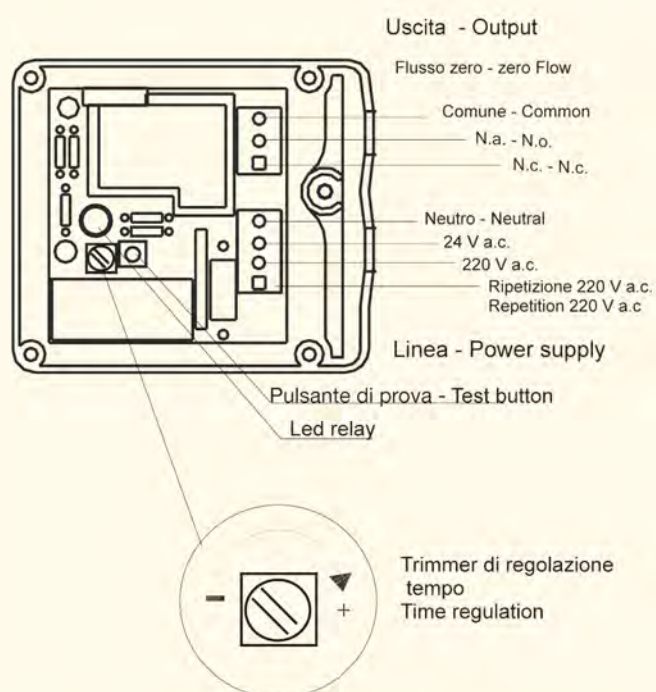
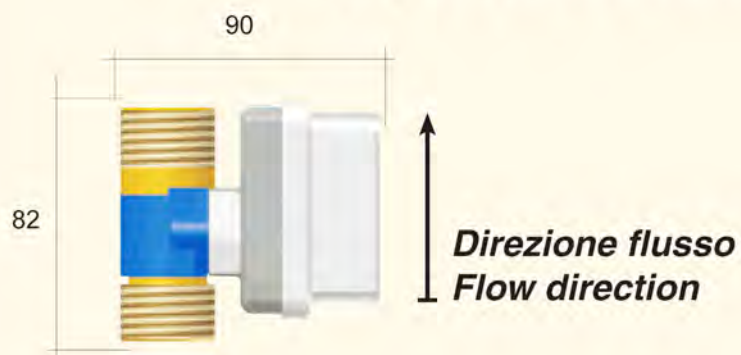
The V-10AR version is equipped of a trimmer for the regulation of the delay, form 0 to 10 sec., and a test button. When the flow moves the stick from stand position, the relay, present on the electronic board, comes excited (changing the contact) for the time set. At the end of this time, if the flow is higher than the minimum sensibility, the contact remains excited. If instead the flow is lower to the minimum sensibility of the flowswitch, the contact comes disexcited and returns in the position of flow zero.

The exciting of the contact for the time set happens also when we cut and then re-give power supply to the device.

When the test button is punched, the relay of the electronic board remains excited for al the time set, independently by the flow present in the piping.

INSTALLAZIONE - INSTALLATION V 10AR

Solo per installazione in verticale
Only for vertical Installation



APPLICAZIONE/APPLICATION



Acqua condotta - Irrigazione



Refrigerazione



Riscaldamento