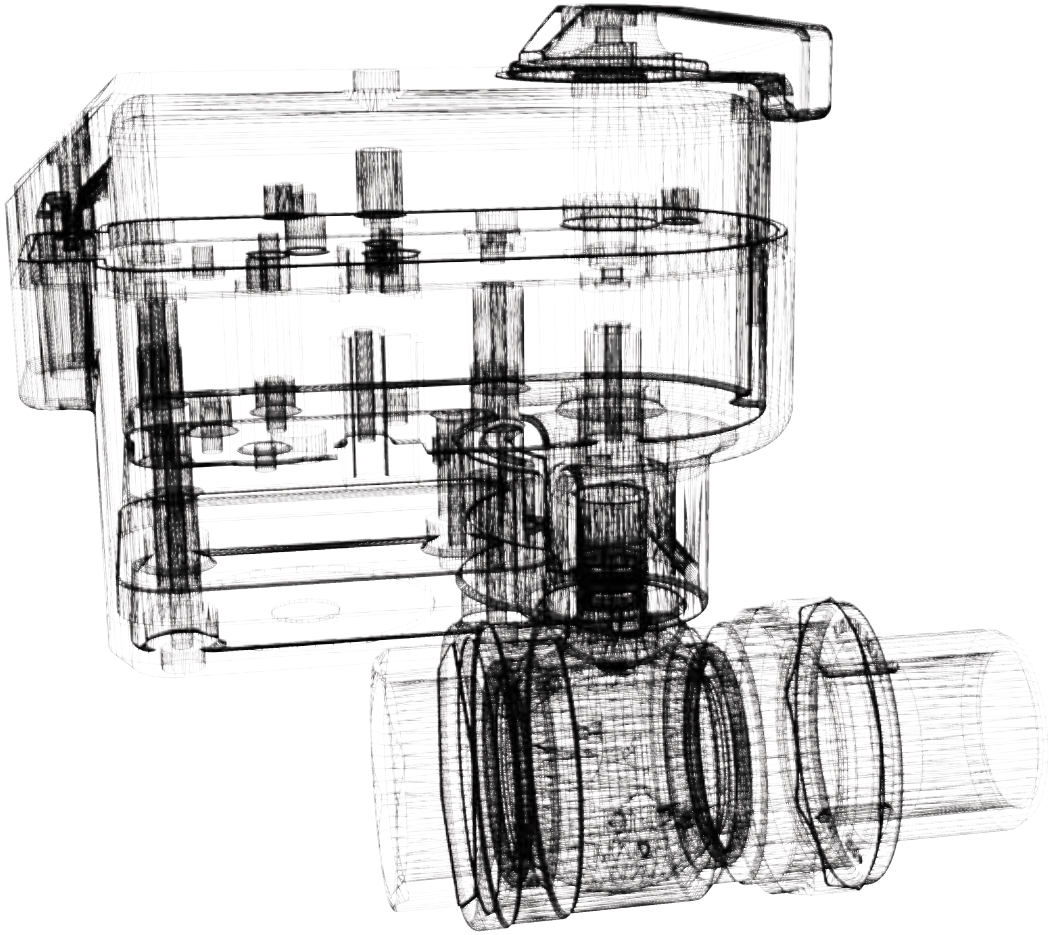


TECHNICAL CATALOGUE

ZONE BALL VALVES WITH BIDIRECTIONAL ACTUATORS

ITAP, founded in Lumezzane (Brescia) in 1972, is currently one of the leading production companies in Italy of valves, fittings and distribution manifolds for plumbing and heating systems. The completely automated production process, which is composed of 63 transfer machines and 25 assembly lines, enables production of 150,000 pieces per day. Our innate pursuit for innovation and observance of technical regulations is supported by company certification ISO 9001: 2008. The company has always considered its focus on quality as the decisive factor to obtain significant business results: ITAP boasts product approvals issued by certification bodies around the world.







PN16

The motorised zone valves are used to intercept fluid inside the mechanical systems. These can be for heating/air conditioning systems of a building or for sanitary water (hot and cold) distribution. These valves have the function of closing or deviating the fluid passage inside piping. They are especially useful in the following systems:

- **Heating and air conditioning systems**, in order to interrupt the heat carrier fluid entry in the distribution manifold, once the temperature set on the environment thermostat is reached
- **Sanitary water distribution systems**, in order to stop the flow of water when it is not necessary
- **Solar heat plants,** in case the integration of a boiler is needed to use sanitary hot water

The motorised zone valves have an ON/OFF type operation: they cannot be used as mixing valves.

The advantages of the zone ball valves are the following:

- High capacity (they are in fact total passage valves)
- High working pressure (up to 16 bar)
- High differential pressure (up to 10 bar)
- Quick manoeuvre times (25 seconds or 50 seconds)

The actuators proposed by ITAP SpA are available in two models:

- Art. 990 Bidirectional actuator with microswitch and relay: it controls opening and closing of valves only if connected to a control (for example, an environment thermostat)
- Art. 991 Bidirectional actuator with microswitch and relay: it controls opening and closing of valves, not only if connected to a control (for example, an environment thermostat), but also without electrical power. It is in fact equipped with a manual release lever, through which the ball is activated directly by means of the manoeuvre stem

980
2-way zone ball valve
Available sizes: 3/4", 1" and 1"1/4

981
2-way zone ball valve with double union connection
Available sizes: 3/4", 1" and 1"1/4

982
3-way diverter zone ball valve
Available sizes: 3/4" and 1".

984
3-way zone ball valve
Available sizes: 3/4" and 1".

986
4-way zone ball valve
Available sizes: 3/4" and 1".

988
By-pass kit for zone ball valves
Available sizes: 3/4" and 1".

990
Electric actuator for zone ball valves
Available with 230V 25 seconds
and 230V 50 seconds power supply

991
Electric actuator for zone ball valves
with manual unlocking device
Available with 230V 25 seconds, 230V 50 seconds
and 24V 50 seconds power supply.

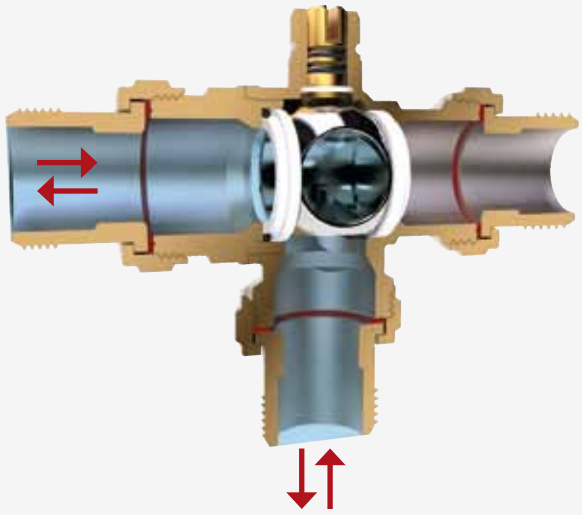
ZONE BALL VALVES

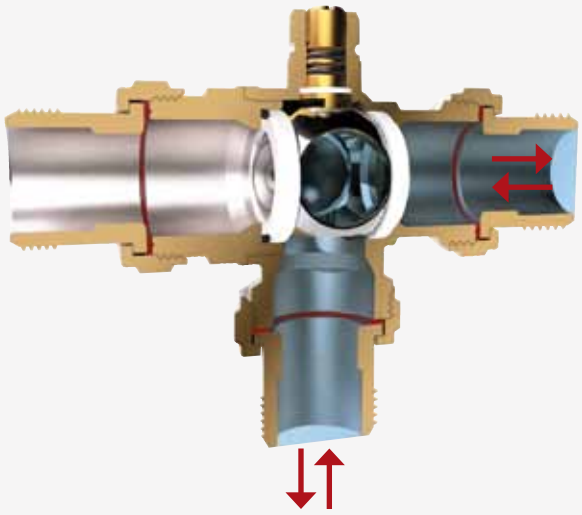
- Nickel-plated brass body
- Chrome-plated brass ball, full flow
- PTFE ball seat
- EPDM O-ring
- Maximum working pressure: 16 bar
- Maximum differential pressure: 10 bar
- Minimum and maximum working temperatures: -10°C (with antifreeze solution), 100°C
- Threaded connections ISO 228 (equivalent to DIN EN ISO 228 and BS EN ISO 228)
- Fluid of use: water (maximum glycol percentage: 50%)

ACTUATORS

- Bidirectional synchronous motor
- Rotation angle: 90°
- Power supply: 230V, 24V
- Absorbed power: 4 VA
- Inrush current: 21 mA
- Auxiliary microswitch capacity: 2 A
- Protection degree: IP 54
- Operating temperature: -5°C, 70°C
- Rotation time: 25 seconds, 50 seconds
- Starting torque: 5 Nm for 25 second version, 10 Nm for 50 second version

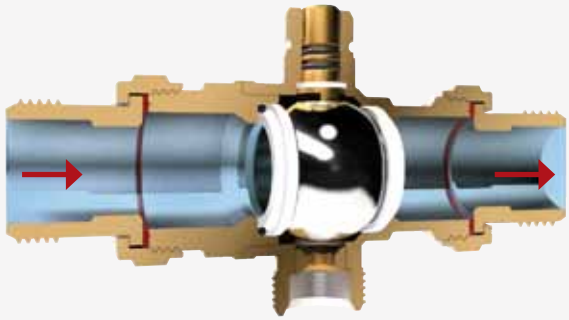
- 3-way diverter zone ball valve art. 982



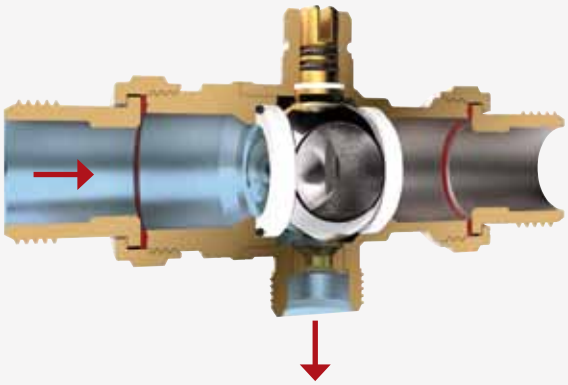


- 3-way zone ball valve art. 984

Open operation

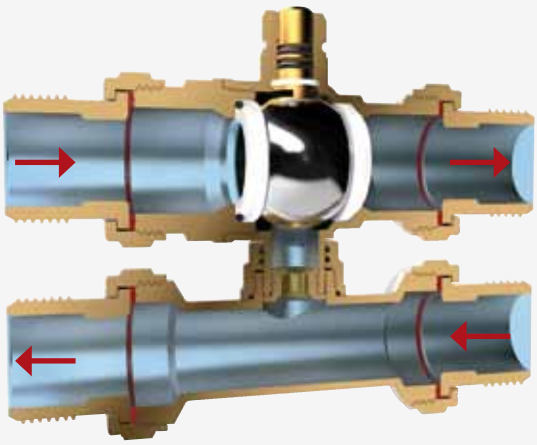


Bypass operation

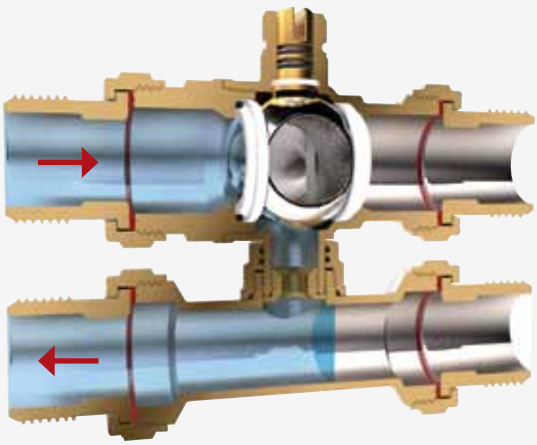


- 4-way zone ball valve art. 986

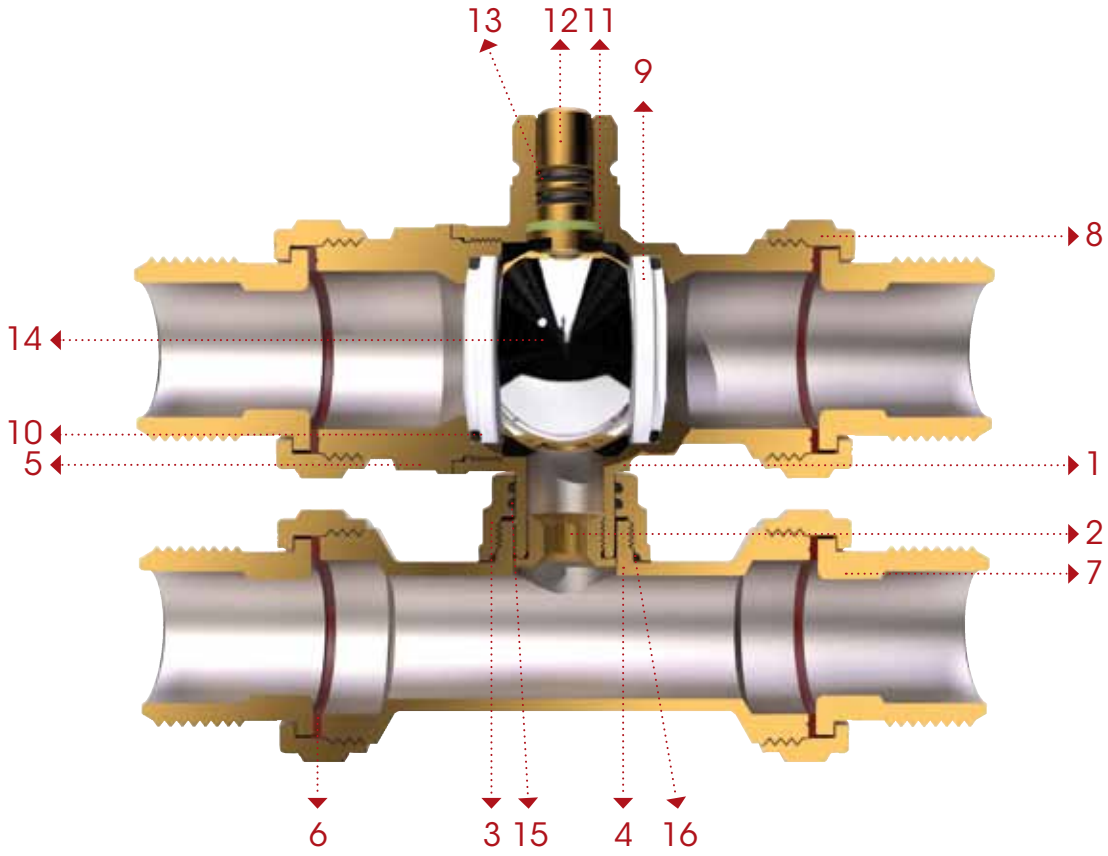
Open operation



Bypass operation



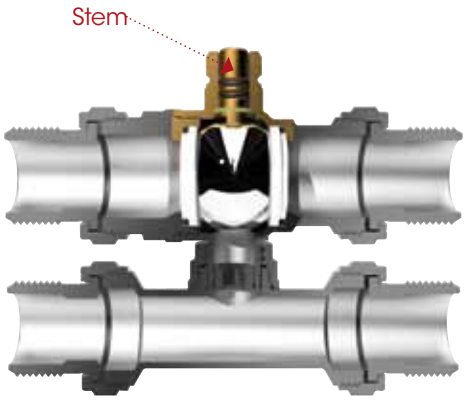
COMPONENTS



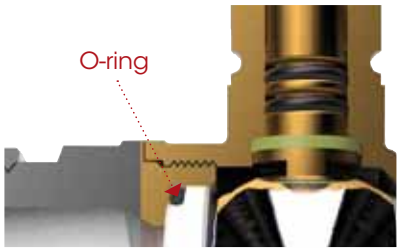
1	Body	Nickel-plated brass CW617N
2	Nozzle	Brass CW614N
3	Nut	Nickel-plated brass CW614N
4	By-pass body	Nickel-plated brass CW617N
5	End adapter	Nickel-plated brass CW617N
6	Washer	Fibre
7	Union	Nickel-plated brass CW617N
8	Nut	Nickel-plated brass CW617N
9	Seat	PTFE
10	O-ring	EPDM
11	Ring	PTFE
12	Stem	Brass
13	O-ring	EPDM
14	Ball	Chrome-plated brass CW617N
15	O-ring	EPDM
16	O-ring	EPDM

TECHNICAL BENEFITS

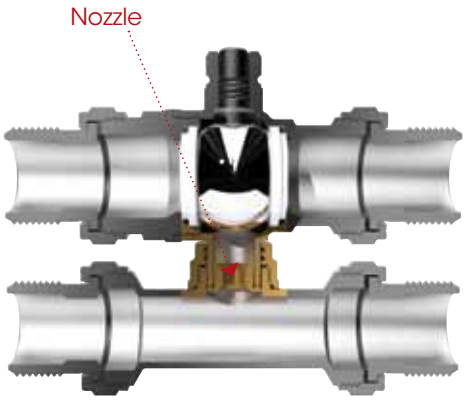
The ITAP SpA zone ball valves are characterised by some technical benefits. The following are special constructive details of these valves.



The manoeuvre stem is mounted from the inside, according to the "blow-out proof stem" technique. This is to avoid that, in case of high working pressure, the stem is expelled from its seat, resulting in water leaking out. This practice is commonly applied in assembling the ball valves intended for use with combustible gas, where maximum safety of used components is needed.
To improve manoeuvring in time, a PTFE ring is placed between the stem and the valve body to reduce static and dynamic friction to a minimum between the stem and the seat.

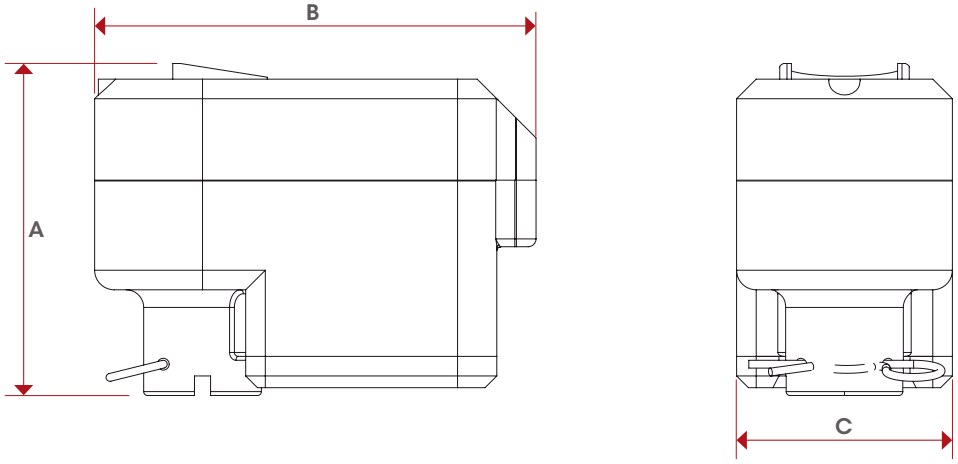


The use of an O-ring coupled with the PTFE seats avoids the possibility that after a long idle time of the valve, the ball could remain blocked, even when the actuator receives consent for a manoeuvre.



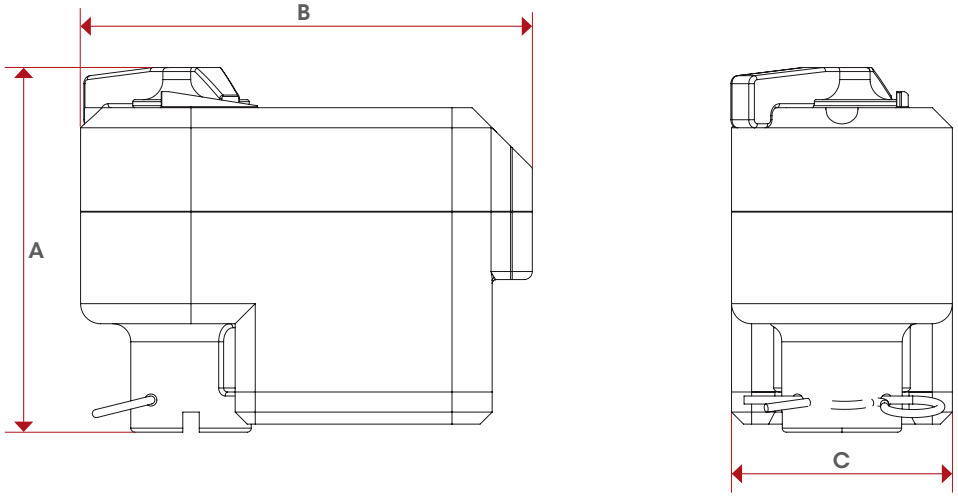
The zone ball valves with bypass (Art. 984 and 986) are used when the flow in the piping must be diverted and not totally closed. This possibility is especially requested in centralised plants, in which any negative effect due to hydraulic misbalancing must be avoided. Especially when the ball activated by the actuator is placed in closing position, a small bypass hole opens up, diverting the flow directly along the return path of the plant. In order to keep the value of the loss of load attributed to the zone valves constant, a fixed calibration nozzle is placed inside the bypass duct. When the water is transiting through the nozzle, a loss of load similar to that of the plant controlled by the zone valve is generated.

990



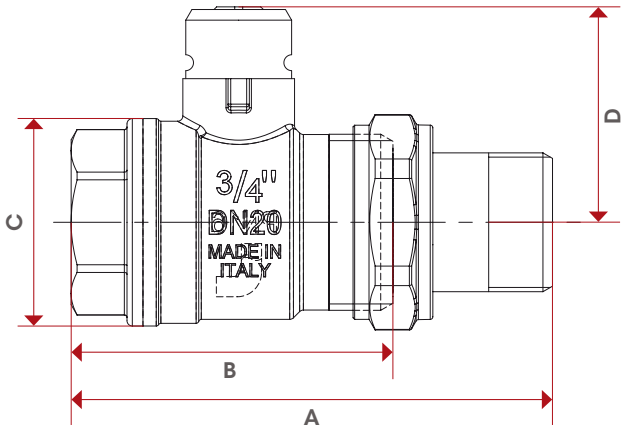
	/
A	85
B	112,5
C	55

991



	/
A	91
B	120
C	55

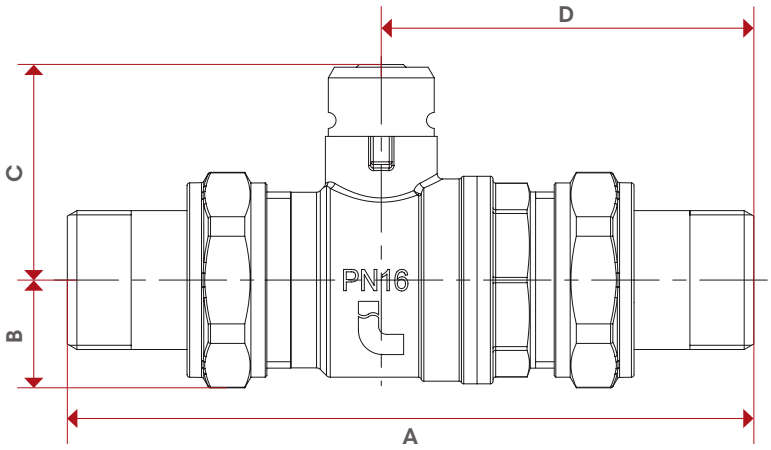
980



	3/4"	1"	1"1/4
DN	20	25	32
A	90,5	103	116,5
B	60,5	68,5	78
C	40,5	44,5	49,5
D	39	47,5	58
Kg/cm² bar	16	16	16
LBS - psi	232	232	232

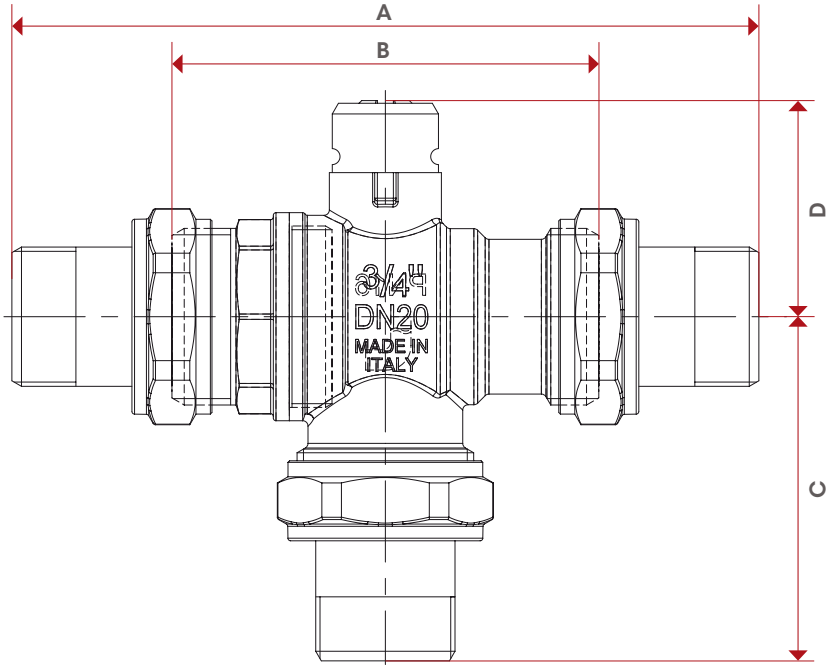
981

	3/4"	1"	1"1/4
DN	20	25	32
A	129	148,5	163
B	20,25	24,5	27,5
C	40,5	44,5	49,5
D	70	81,5	87,5
Kg/cm² bar	16	16	16
LBS - psi	232	232	232



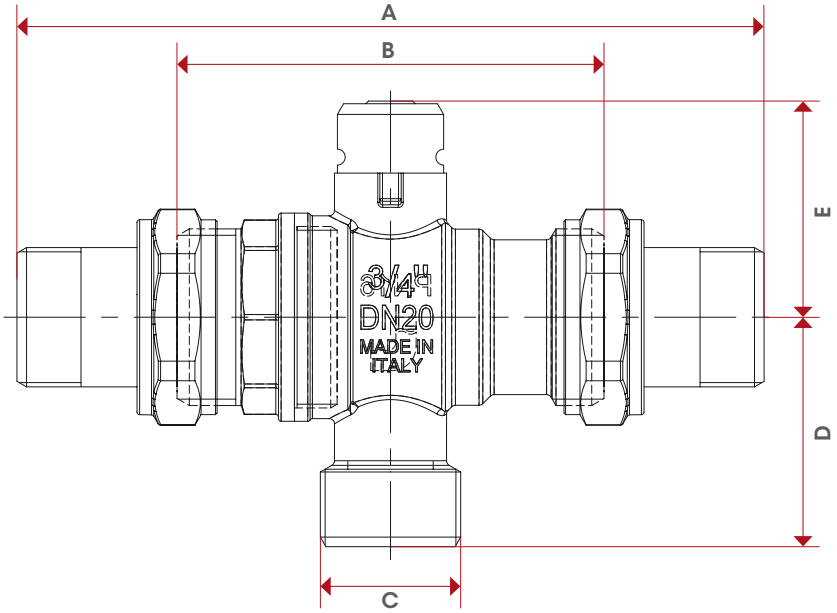
982

	3/4"	1"
DN	20	25
A	140	163
B	80	94
C	64,5	75,5
D	40,5	44,5
Kg/cm² bar	16	16
LBS - psi	232	232

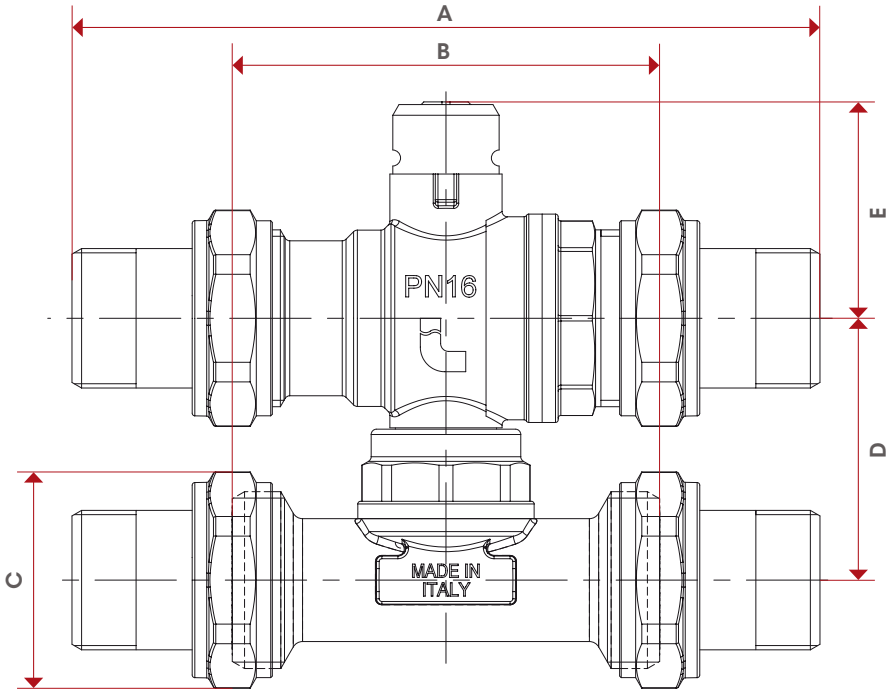


984

	3/4"	1"
DN	20	25
A	140	163
B	80	94
C	G 3/4"	G 3/4"
D	43	39,75
E	40,5	44,5
Kg/cm² bar	16	16
LBS - psi	232	232

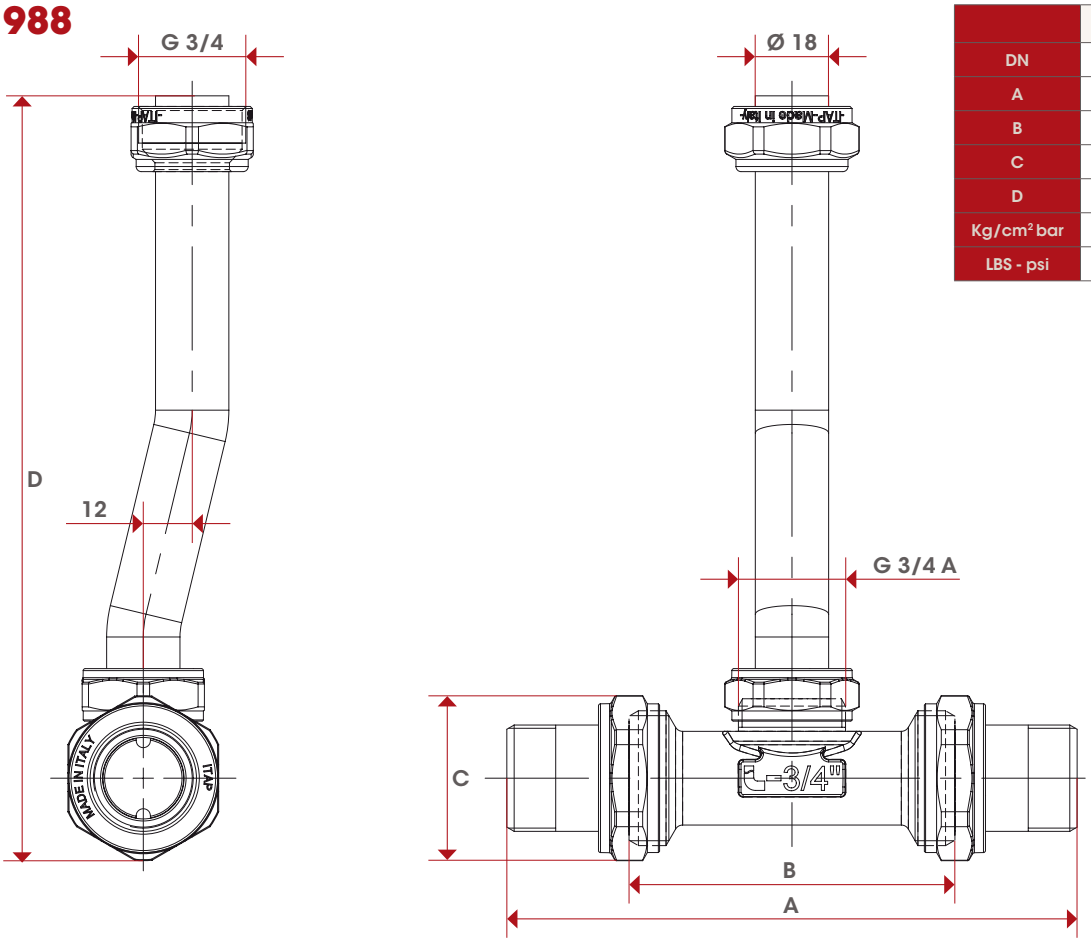


986



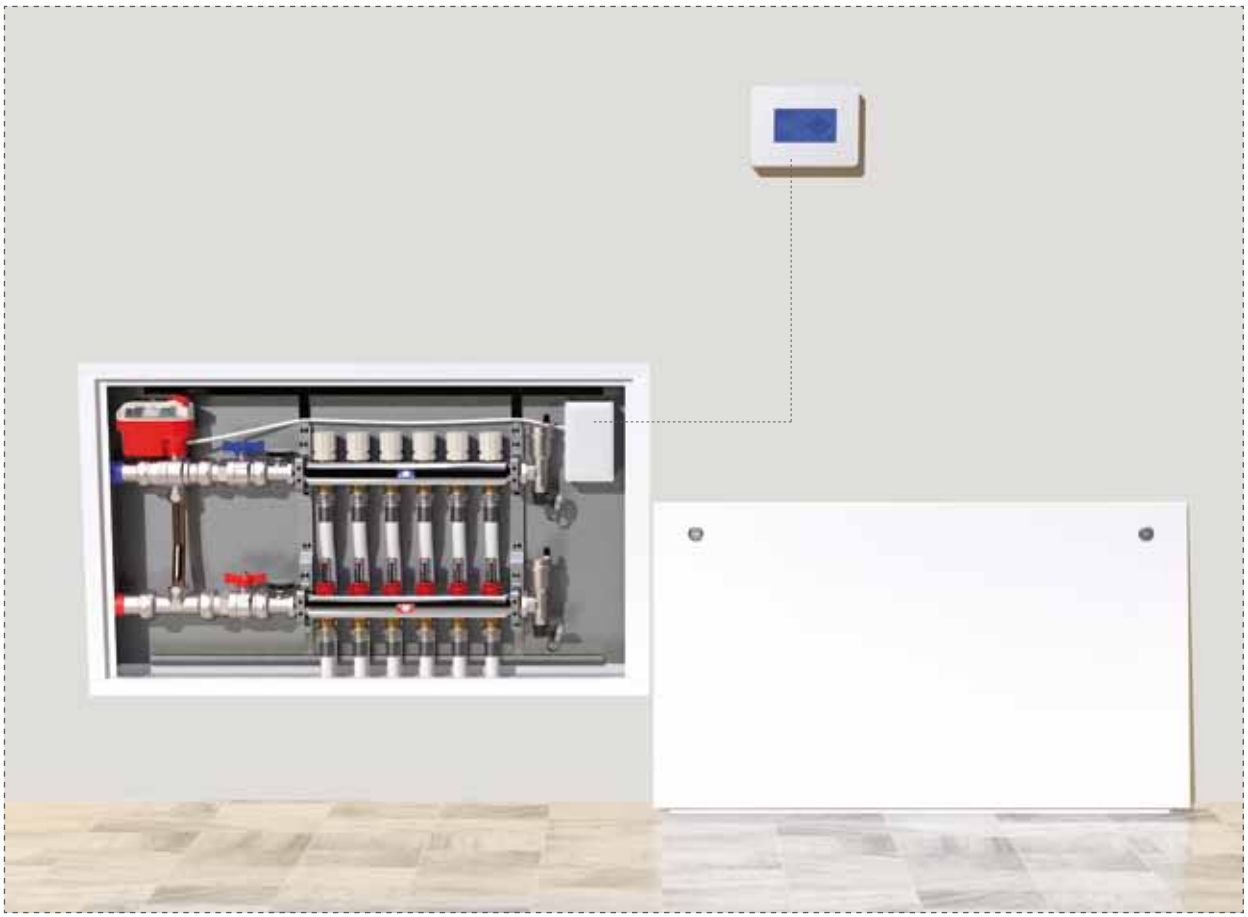
	3/4"	1"
DN	20	25
A	140	163
B	80	94
C	40,5	49
D	49 - 63	55 - 63
E	40,5	44,5
Kg/cm² bar	16	16
LBS - psi	232	232

988

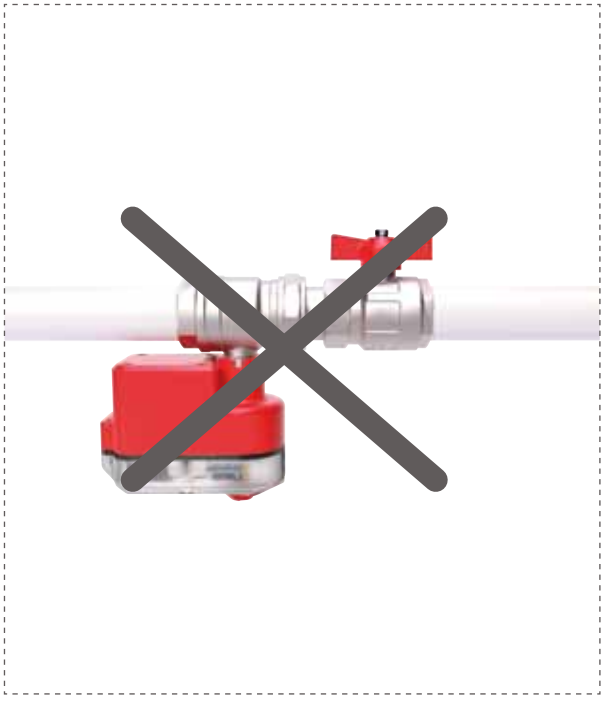


	3/4"	1"
DN	20	25
A	140	163
B	80	94
C	41	50
D	188	195
Kg/cm² bar	10	10
LBS - psi	145	145

Installation



The zone ball valves are particularly useful in the context of radiator and radiant floor heating systems. In order to control the temperature of one zone, the electric actuator must be connected to an environment thermostat: once the set temperature is reached, the valve will close automatically, activated by its own actuator.



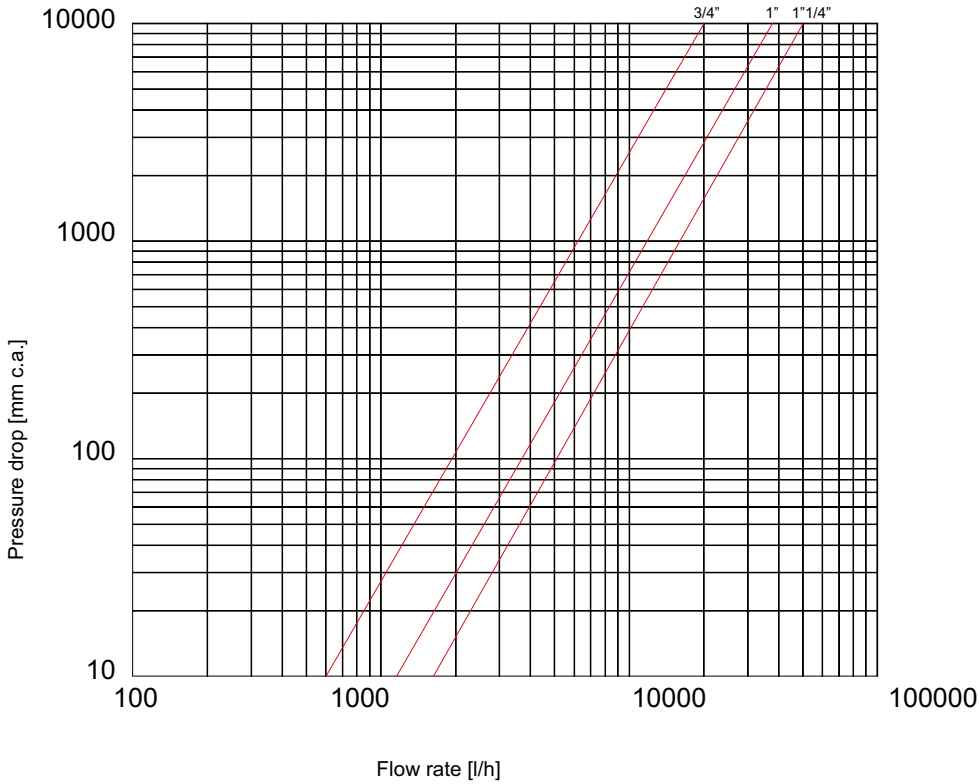
To avoid any technical problem in case of use in plants with the detected presence of condensate, it is advised not to install the electric actuator upside down.

ATTENTION:
OPENING THE COVER COMPROMISE THE PRODUCT GUARANTEE.

PRESSURE DROP CHART

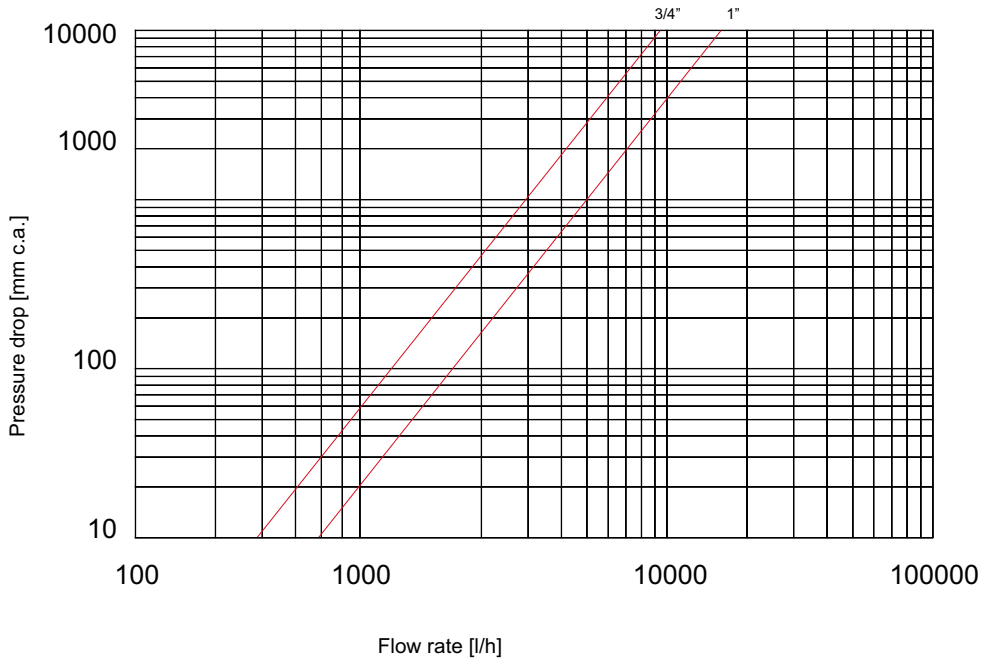
The pressure drop chart relative to the following items are reported as follows:
980 - 981 - 3/4", 1" and 1"1/4
982 - 3/4" and 1"
984 - 986 Bypass - 3/4" and 1"
984 - 986 - 3/4" and 1"

Art. 980 - 981 - 3/4", 1" and 1"1/4



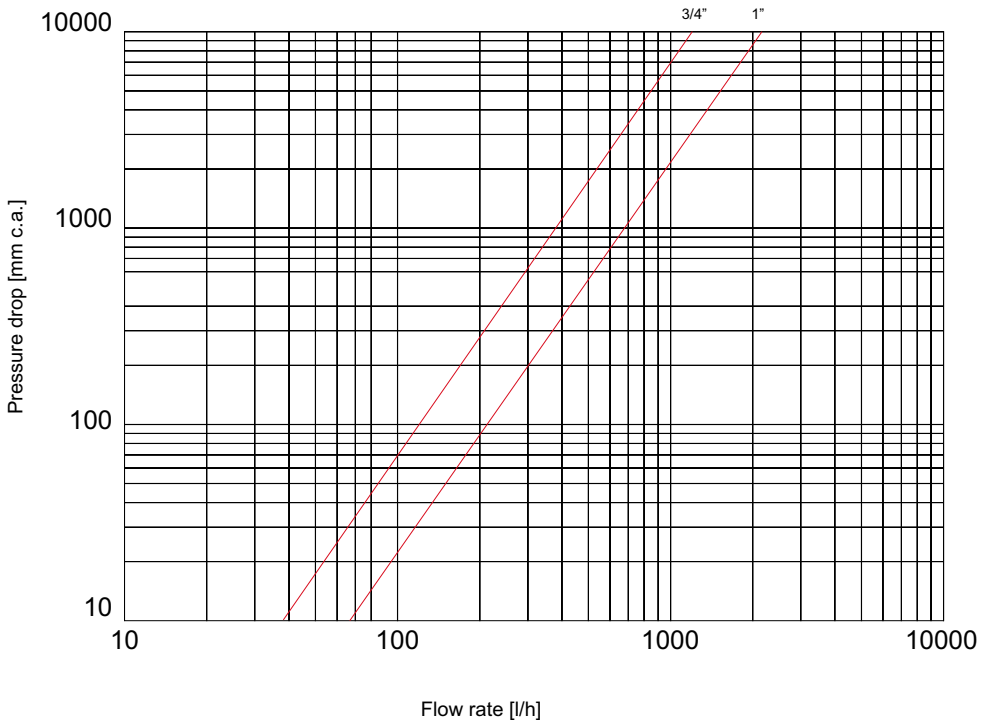
Art. 980 - 981	3/4"	1"	1"1/4
Kv [m3/h]	20,2	37,3	51,5

Art. 982 - 3/4" - 1"



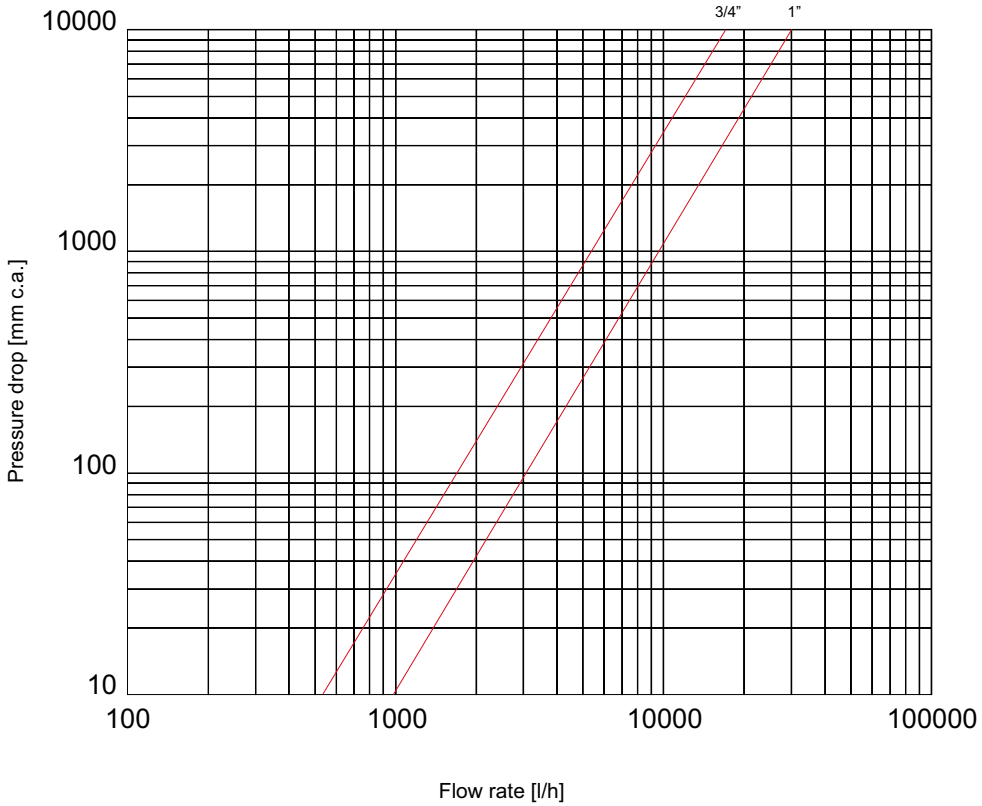
Art. 982	3/4"	1"
Kv [m3/h]	9,44	16,07

Art. 984 - 986 - By-pass - 3/4", 1"



Art. 984-986 By-pass	3/4"	1"
Kv [m3/h]	1,2	2,15

Art. 984 - 986 - 3/4" - 1"



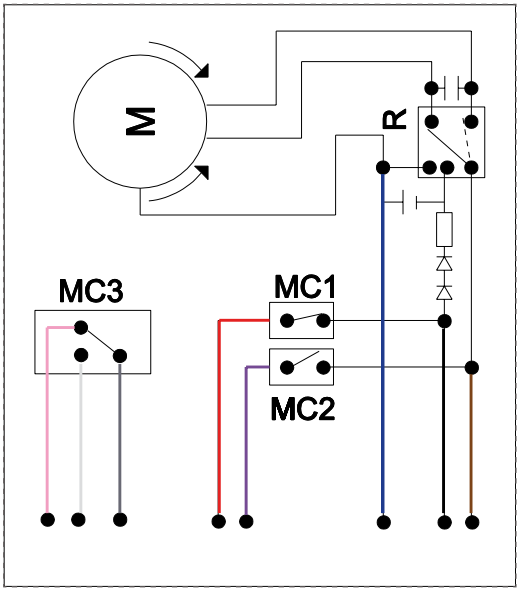
Art. 984-986	3/4"	1"
Kv [m3/h]	17,1	30,6

INTERNAL DIAGRAM

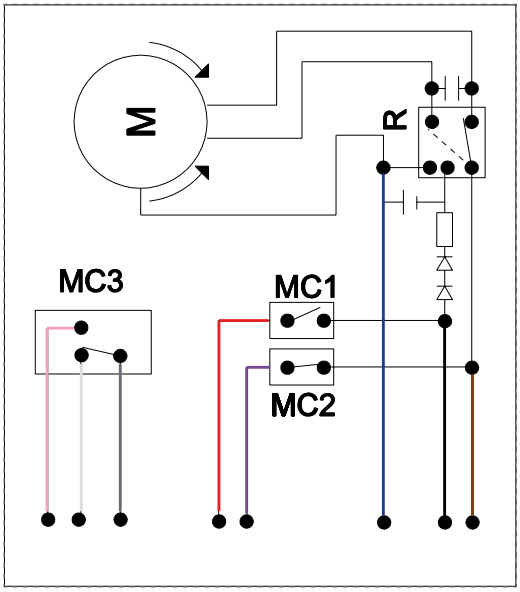
- R relay
- MC1 opening limit microswitch
- MC2 closing limit microswitch
- MC3 auxiliary free microswitch with normally closed and normally open contact

1) Brown wire always connected to phase
2) Blue wire always connected to neutral
3) Black wire for command connection
4) Purple wire closed valve phase output
5) Red wire open valve phase output
6) Grey wire common auxiliary microswitch
7) White wire N.C. auxiliary microswitch
8) Pink wire N.A. auxiliary microswitch

Valve opening

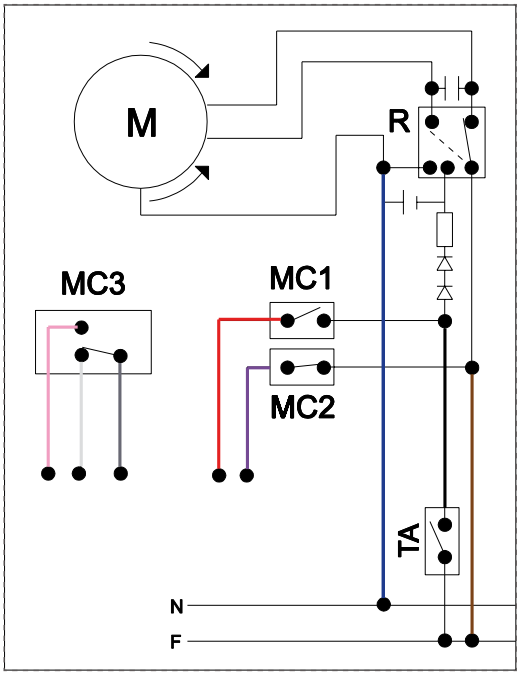


Valve closing



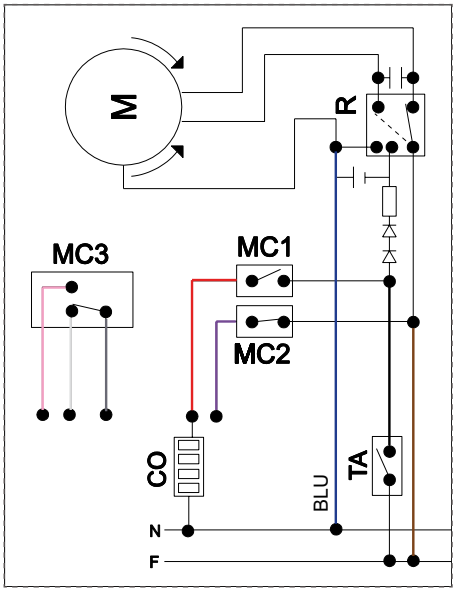
ENVIRONMENT THERMOSTAT (TA - ET) CONNECTION AND ELECTRICAL POWER SUPPLY DIAGRAM

The thermostat works by means of the zone valve, which opens or closes the distribution circuit of the interested zone based on environment needs.
The Figure illustrates the electrical connection of the actuator with the environment thermostat.



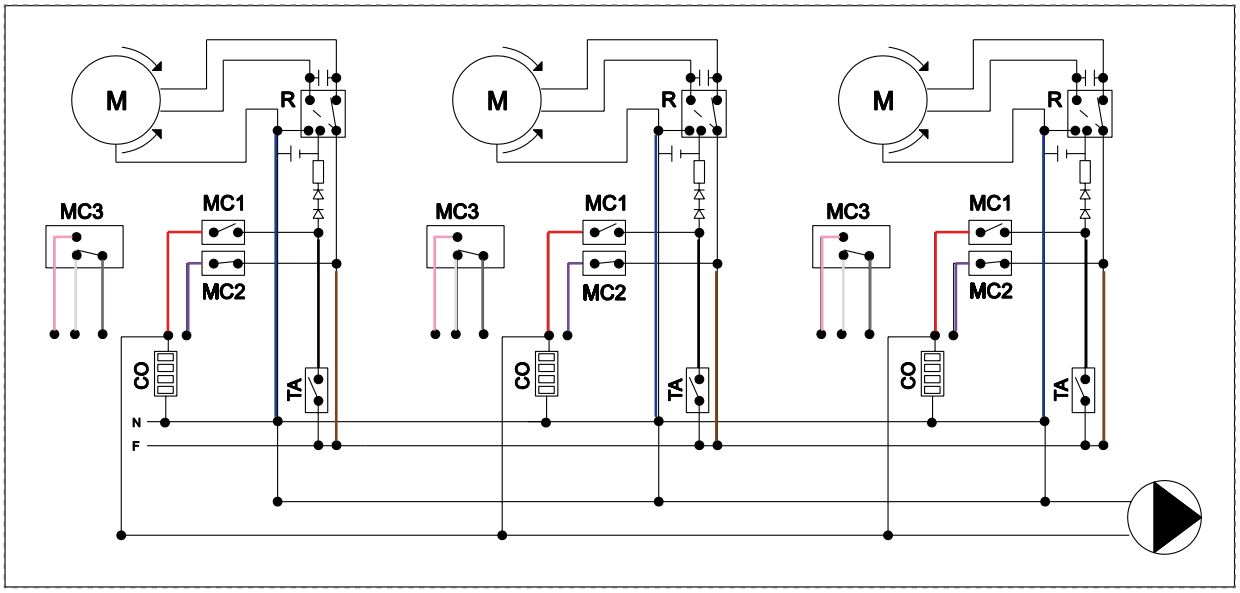
HOUR COUNTER (CO - HC) ENVIRONMENT THERMOSTAT (TA - ET) AND ELECTRICAL POWER CONNECTION DIAGRAM

The count is carried out by means of an hour counter, totalling the valve opening times.
The Figure illustrated the electrical connection of the actuator with the hour counter.

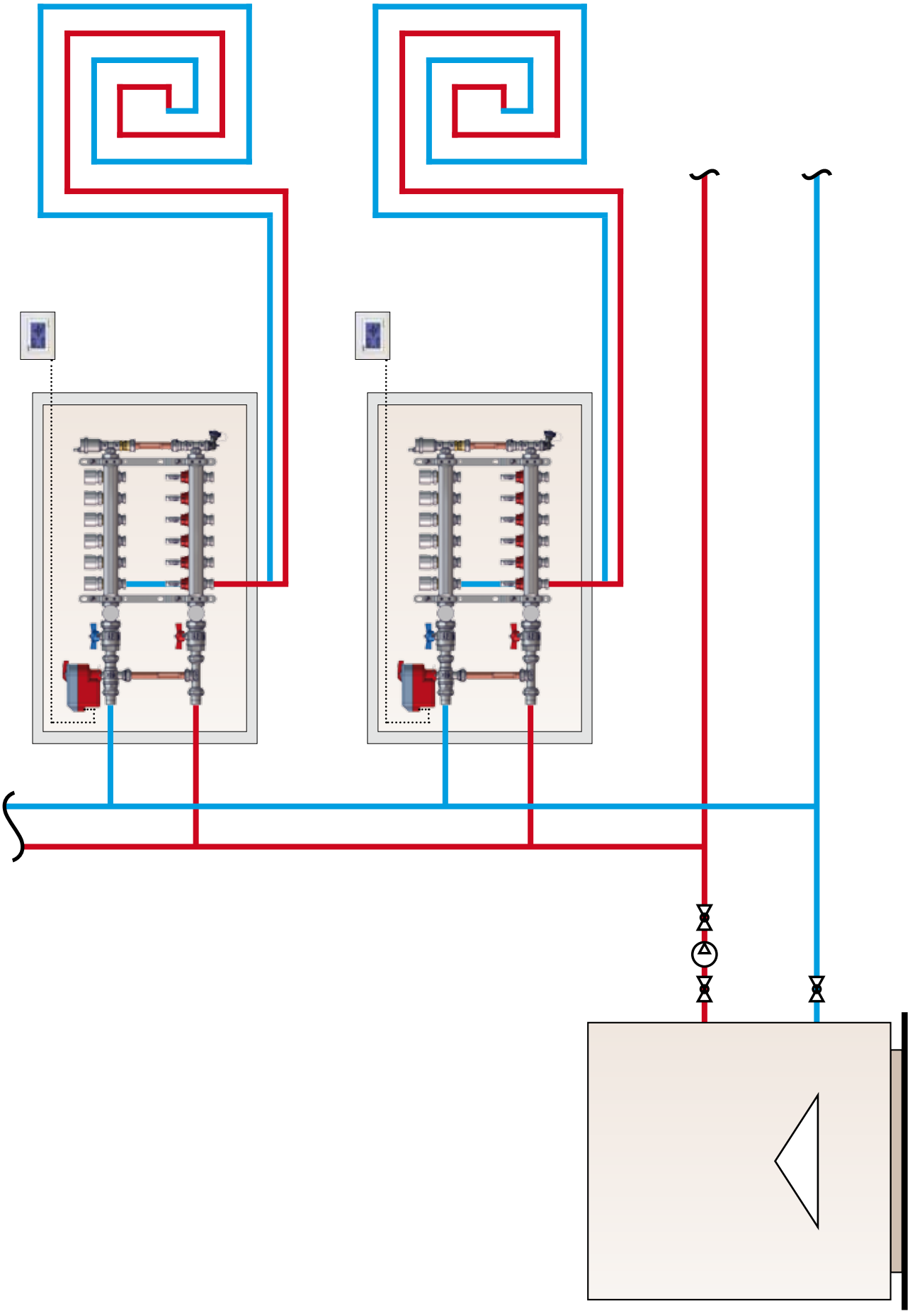


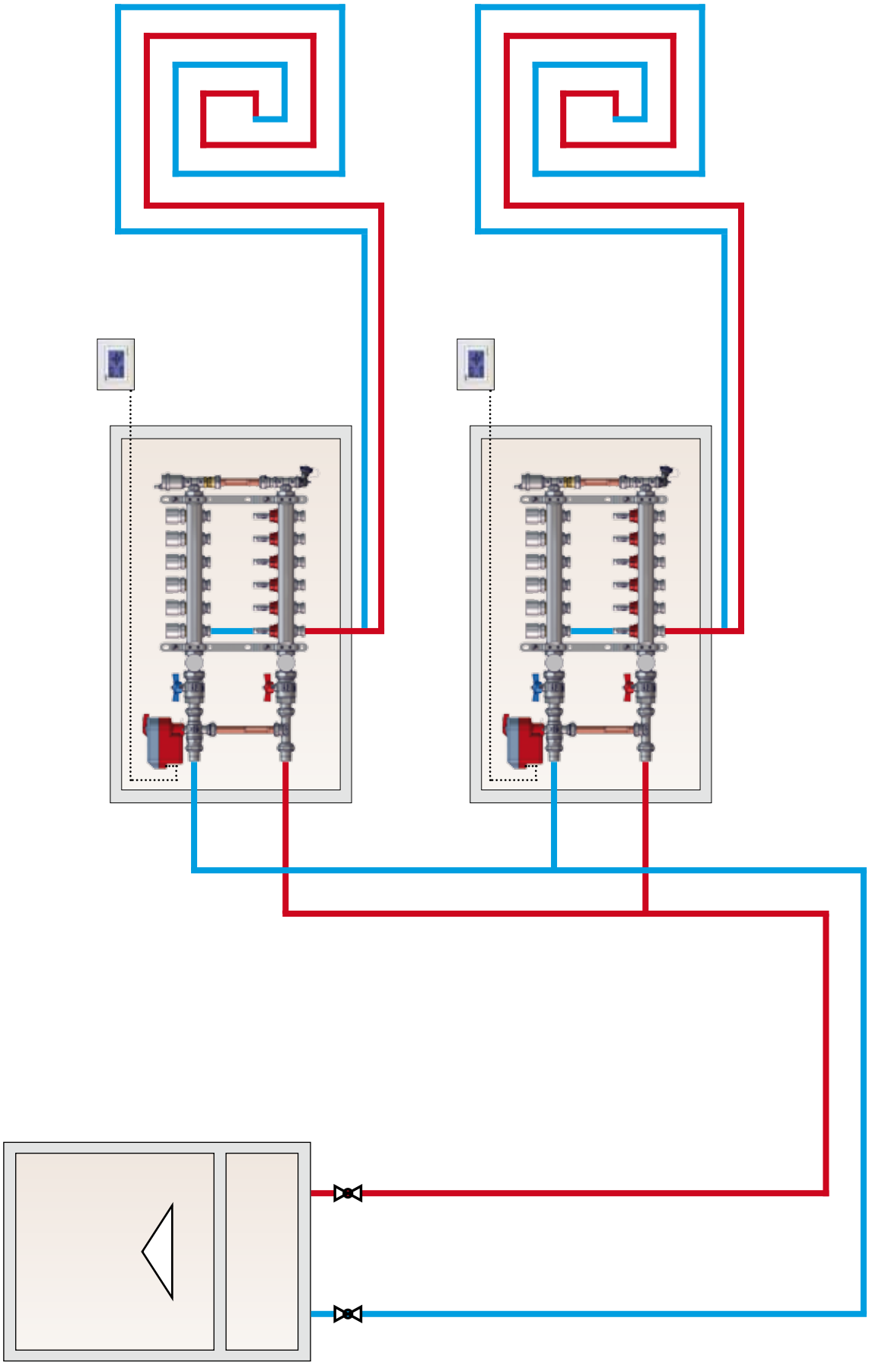
PUMP MANAGEMENT DIAGRAM

The figure illustrates the connection of different actuators with the environment thermostat, the hour counter and the pump. In this diagram, the pump is fed by the phase available on the red wire. The special flexibility of the internal actuator wiring model allows you to have different plant solutions.

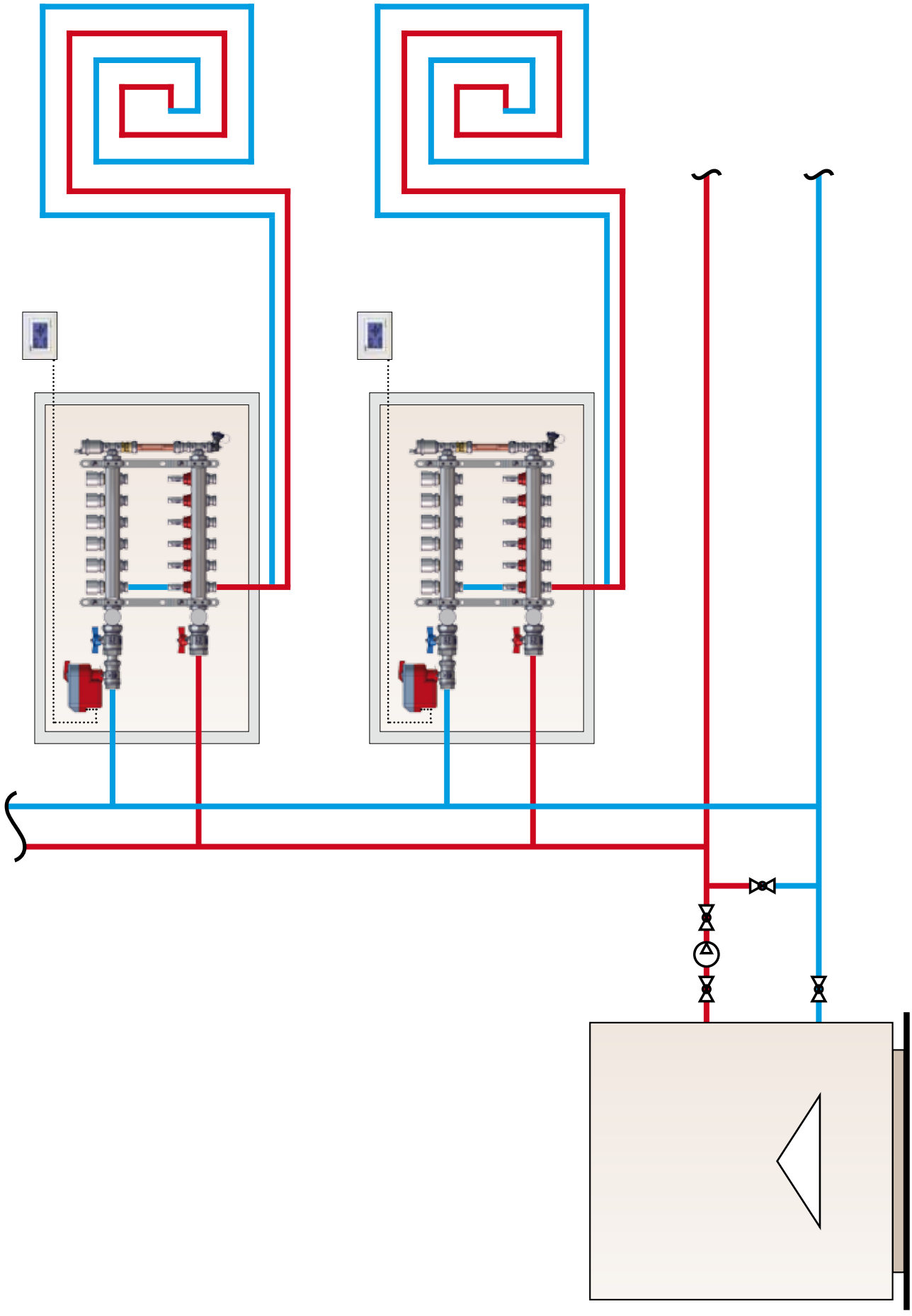


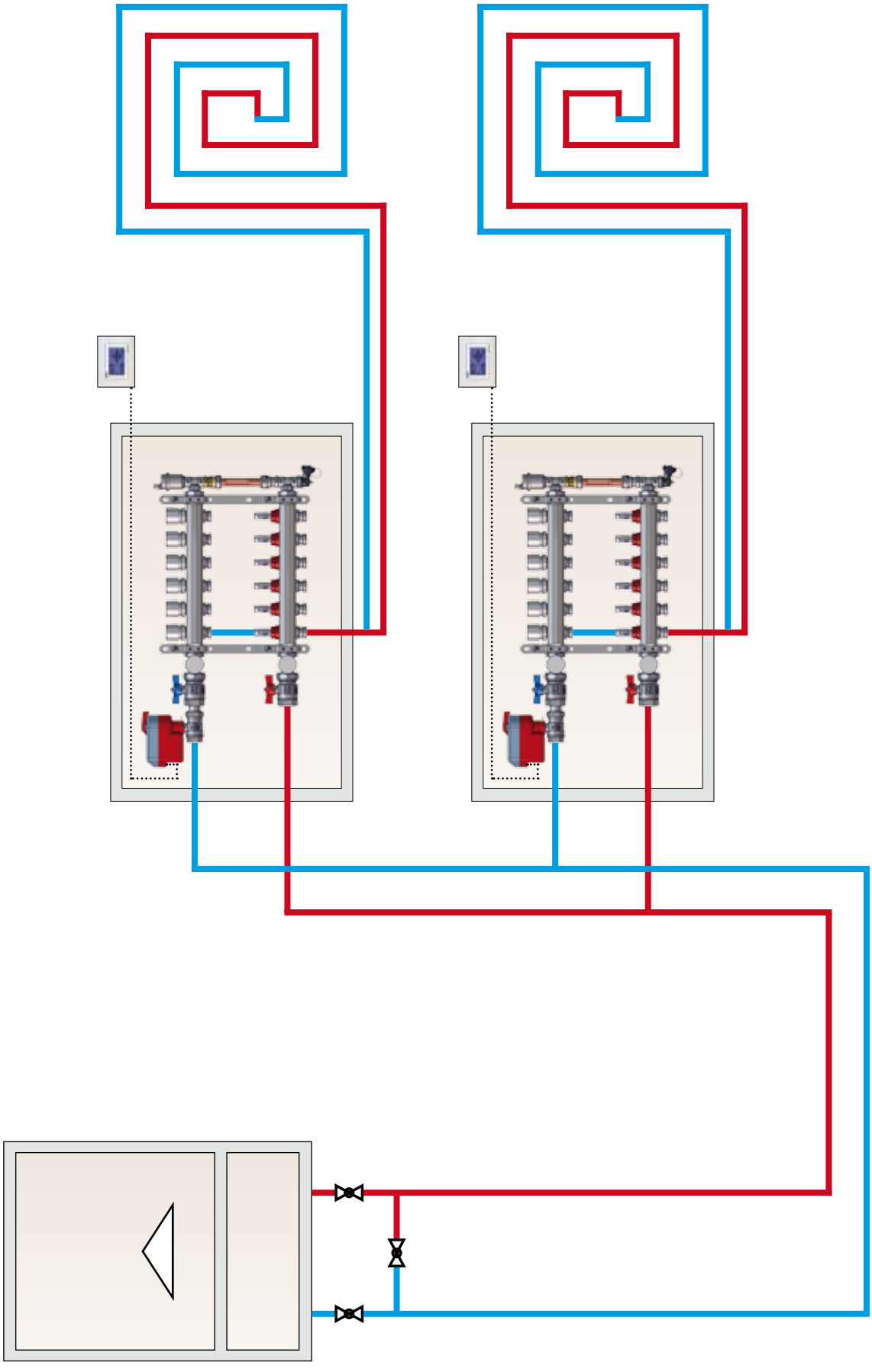
OPERATION DIAGRAMS





OPERATION DIAGRAMS





NOTES

We reserve the right to make improvements and changes to the products described herein and to the relative technical data, at any time and without forewarning.

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