

## ZONE VALVES



### 1. DESCRIPTION

The FAR zone valve is designed to create independent central heating systems for both new and refurbished buildings. They are suitable for use with horizontal distribution circuits and can also be used to extend control of existing installations.

The FAR zone valve, which is controlled by an actuator connected to an ON-OFF room thermostat, permits regulation of the temperature in more than one room. FAR manufactures both 24V and 230V actuators, with or without manual release. All models feature an auxiliary micro-switch. In practice zone valves can be used to control the temperature of both

the whole building and individual areas within it. Thus a single boiler can be used to generate hot water to heat living room, dining room, bedrooms, study, etc.

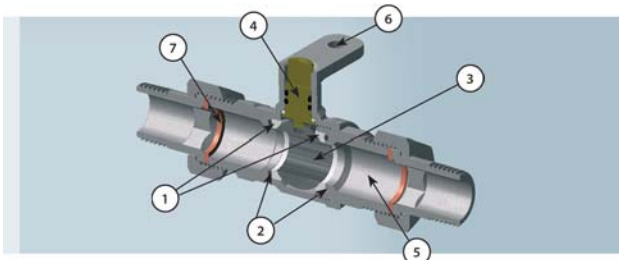
The 2-Way valve, the 3-Way valve and the 3-Way valve with by-pass are Full Bore valves, i.e. with no internal deviations in the flow path, or sudden changes in cross-section. Flow resistance is, therefore, very low.

### 1.1 ANTI-BLOCKAGE SYSTEM

The zone valve features a special internal anti-blockage system, which prevents the valve blocking in even the worst operating conditions. The system comprises two PTFE seats

located on two O-rings, which operate as "shock absorbers" so that ball rotation is guaranteed - even if it has not been used for a long period.

### 1.2 CONSTRUCTION FEATURES

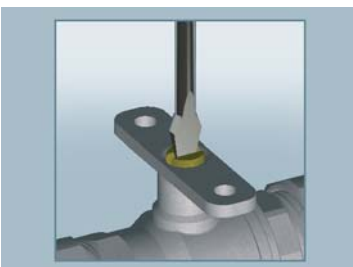


1. Seats in P.T.F.E.
2. Sealing O-rings in EPDM
3. Ball in CW617N brass
4. Control stem in CW617N brass with O-rings in EPDM
5. Valve body in CW617N brass
6. Holes for screws for actuator
7. Gasket in Gold Gasket®

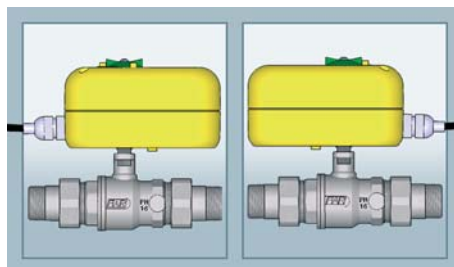
### 2. 2-WAY VALVE WITH 1/2", 3/4", 1" and 1 1/4" SIZES

The two way full bore valve, Art.3015, is a universal valve, suitable for all types of application. It is available with male-male, male-female and female-female connections. The actuator opens or closes off the flow of fluid in response to signals received from the thermostat.

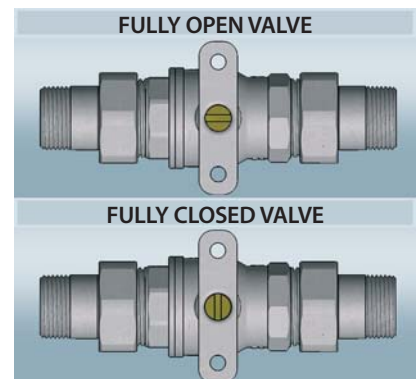
The picture on the right shows the **Art. 300115**: 2-way valve (Art.3015) and Small actuator (Art3001)



The zone valve stem must be adjusted by means of a screwdriver, as shown above.



The actuator can be installed on the valve in either two positions with no impact on operation, as the 90° movement transmitted to the valve remains the same.



### 3. 3-WAY DIVERTER ZONE VALVE WITH 1/2", 3/4", 1" and 1 1/4" SIZES

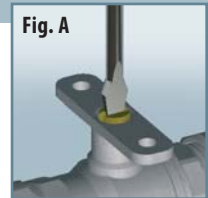
This is used to divert the flow from one circuit to another. It can be used in traditional heating systems, to divert the water back in case of thermostatic operation, or for switching in summer and winter to use circuit to heat or cool the room. This valve can also be used in systems with both boiler and real fire fireplace. It is available with male-male, male-female and female-female side connections. The picture on the right shows the **Art. 300120**: 3-way valve (Art.3020) and Small actuator (Art.3001).



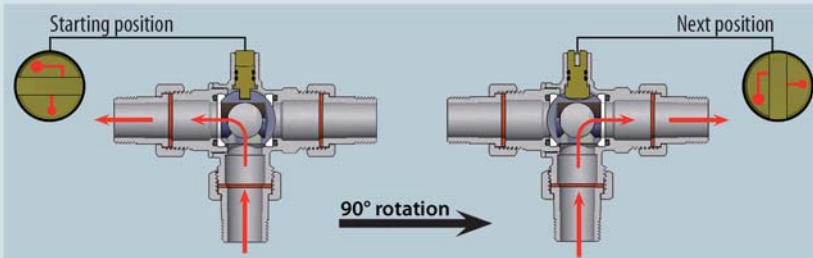
#### 3.1 INSTALLATION

Stem positioning is carried out by means of a screwdriver, with which it is possible to rotate the flow indicator into the correct position (**Fig. A**).

The actuator can be installed on the valve in either two positions with no impact on operation, as the 90° movement transmitted to the valve remains the same. Before installing the actuator, it is essential to check that the flow aperture in the ball of the valve is orientated in the desired direction.



**Fig. 1** 3-Way diverter zone valve with fluid inlet from below and fluid delivery to the distribution pipework to either right or left according to the actuator position.



**Fig. 2** 3-Way diverter zone valve with fluid delivery towards the centre and inlet from right or left according to the actuator position.

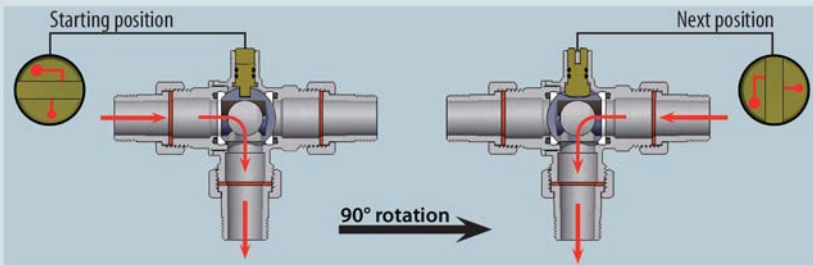


Illustration **Fig. B**, shows how the position of the ball permits the inlet of fluid from below and then diverts it to the left. In the same position it can also permit fluid to enter from the left and then divert it downwards.

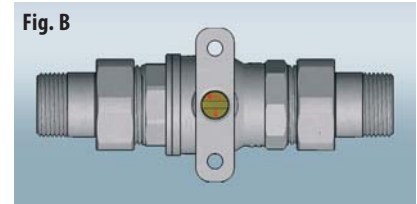
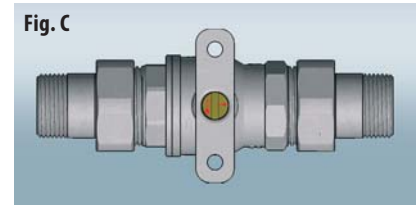
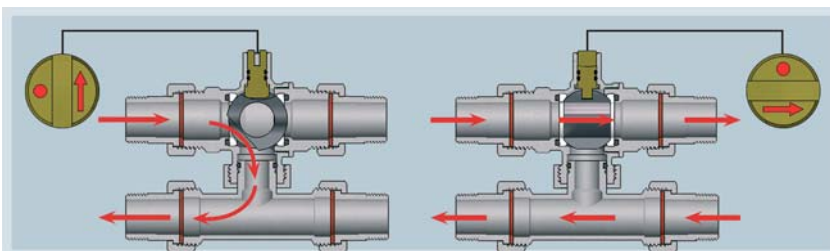


Illustration **Fig. C**, shows how the position of the ball permits the inlet of fluid from below and then diverts it to the right. In the same position it can also permit fluid to enter from the right and then divert it downwards.



### 4. 3-WAY 3/4" AND 1" VALVE WITH BY-PASS TEE

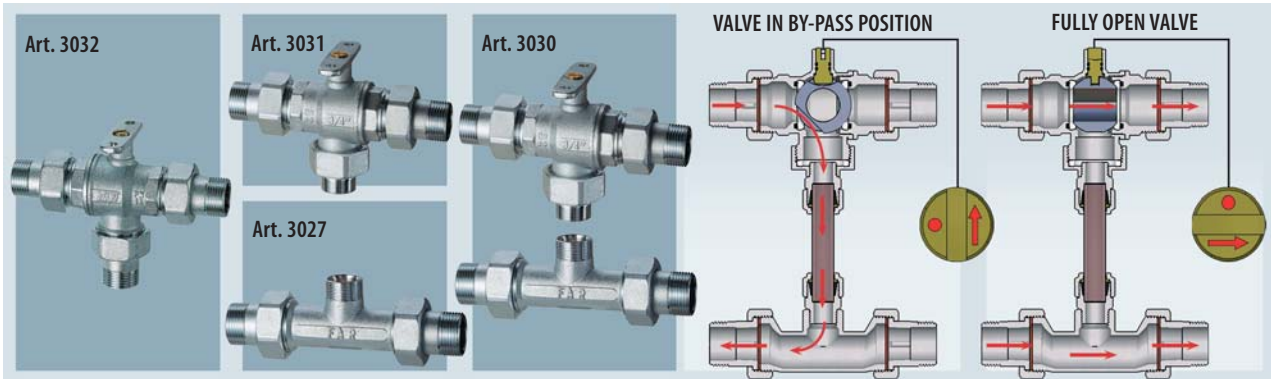
The FAR 3-way valve with by-pass is suitable for use in association with coplanar manifolds with no need for differential pressure valves to maintain system design heads. The interaxis of the by-pass Tee connection increases from 52mm to 63mm compared with the valve body for easy compatibility with most manifolds on the market – ensuring good flow and return connections in the zone pipework. This valve is available with male-male, male-female and female-female connections. The picture on the right shows the valve **Art. 300125**: 3-way valve (Art.3025) and Small actuator (Art.3001)



The figure on the left shows the by-pass orifice when the valve is closed. In this case the flow is sent back to the boiler, thus maintaining the design system head. In this way the pump is not overstressed by high pressure surges. The figure on the right shows the flow of fluid when the valve is fully open.

## 4.1 FUNCTIONING

Thanks to the FAR 24x19 central connection, the zone valves Art.3030, 3031 and 3027 permit to connect copper, plastic and multilayer pipes, so as to modify the interaxis between delivery and return, according to the requirements. The valve Art.3032 shows three connections with male union.




## 5. ACTUATORS FOR 1/2", 3/4", 1" AND 1 1/4" ZONE VALVES

Actuators permit automatic operation of the zone valves. To meet varying system requirements, they are available in a number of versions: with 230V or 24V, with 8s or 40s opening time and with or without manual release. Actuators can be installed on all FAR zone valves, by simply screwing two nuts. The actuators are powered in such a way as to generate a torque up to 10 Nm, thus guaranteeing proper functioning in even the most critical conditions, i.e. in case of valves which have been installed for a long time and have calcareous deposits.

Rotation is carried out by means of two servomotors, one for opening and the other for closing. In this way wear on gears and servomotors can be reduced. Each actuator is equipped with an auxiliary micro-switch, which makes it possible to achieve parallel connections of zone valves and links to control pumps and boilers.


### Actuator for ball zone valves complete with relay and auxiliary micro-switch




Art.3001 - 3002 - Rotation time: 40 s

- External connection cable length: 1 m.
- Feed voltage  
**Art. 3001:** 230V (50Hz)  
**Art. 3002:** 24V (50Hz)
- Rotation time: 40s
- Rotation angle: 90°
- Absorbed power: 4,5 VA
- Torque: 10 Nm
- Max room temperature: from -10°C up to +50°C
- Protection level: IP54


**OPENED  
VALVE POSITION**



**CLOSED  
VALVE POSITION**

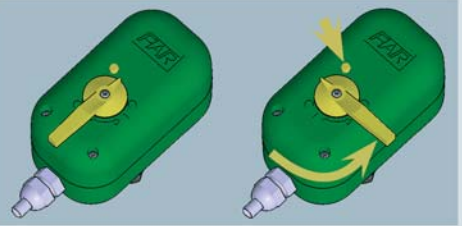


### Actuator with manual release for ball zone valves complete with relay and auxiliary micro-switch



Art.3005 - 3006 - Rotation time: 40 s

- External connection cable length: 1 m.
- Feed voltage  
**Art. 3005 Art. 3007:** 230V (50Hz)  
**Art. 3006 Art. 3008:** 24V (50Hz)
- Rotation angle: 90°
- Absorbed power: 4,5 VA
- Torque: 10 Nm (40s), 4Nm (8s)
- Max room temperature: from -10°C up to +50°C
- Protection level: IP54



**Art.3007 - 3008 - Rotation time: 8 s**

The Art.3007-3008 cannot be installed on 1 1/4" zone valves

The Actuators Art.3005-3006 and Art.3007-3008 are equipped with a manual release, which allows manual opening or closing of the zone valve in the event of power failure. In order to carry out the opening or closing, push the release button for a few seconds and then turn the lever, as shown in the illustration above.

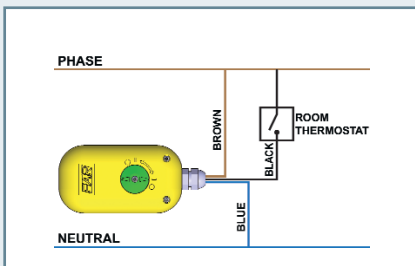
## 5.1 ANTI-CONDENSATION INSULATION Art.3009

Anti-condensation insulation, 4 cm or 10 cm thick, can be installed in cooling systems in which zone valves are used. It is suitable for all kinds of actuator and prevents the formation of condensation, which could cause short circuits. It can be used with all actuators in the range: 3001, 3002, 3005, 3006, 3007 and 3008, up to 1 1/4" size.

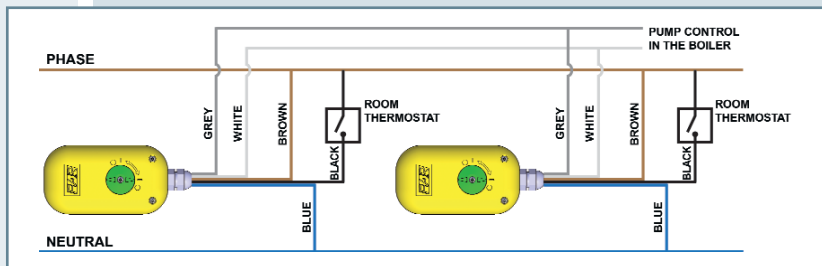


## 5.2 ELECTRICAL CONNECTIONS

### Connection to thermostat



### Parallel connection



Shown above is an example of an actuator connection to a terminal. The brown wire must be connected directly to phase, the blue to neutral, and the black to the thermostat

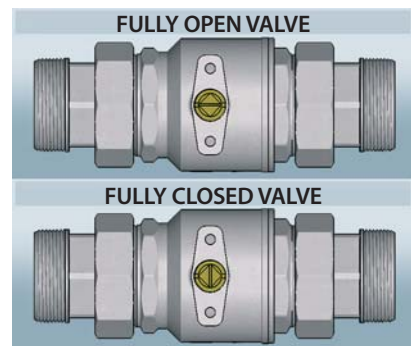
For parallel connection to several actuators, in addition to the brown, black and blue wires which are connected in this way to terminal, it is necessary to connect the grey and the white wires to the pump control in the boiler.

## 6. 2-WAY 1 1/2 AND 2" VALVE



**Art. 303915 (230V) and Art. 304015 (24V)**  
 Chrome-plated 2-way ball zone valve complete with actuator with manual release. It is available with male-male, male-female and female-female connections.

Function and installation characteristics are the same as those of the zone valves previously described, except for the stem positioning, which must be carried out by means of a 11mm wrench. (Fig. A).



## 7. 1 1/2 AND 2" DIVERTER VALVE



**Art. 303920 and Art. 304020**  
 Chrome-plated 3-way ball zone valve complete with unions, nuts and actuator with manual release. It is available with male-male, male-female and female-female connections.  
 Functioning and installation modalities are the same of the zone valves previously described, except for the stem positioning, to be carried out by means of a 11mm wrench. (Fig.A)

Illustration Fig. B, shows how the position of the ball permits the inlet of fluid from below and then diverts it to the left. In the same position it can also permit fluid to enter from the left and then divert it downwards.

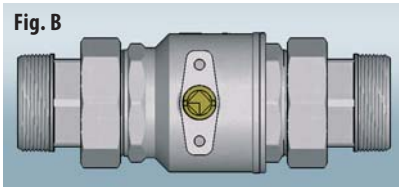
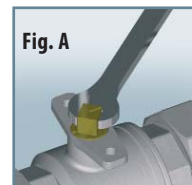
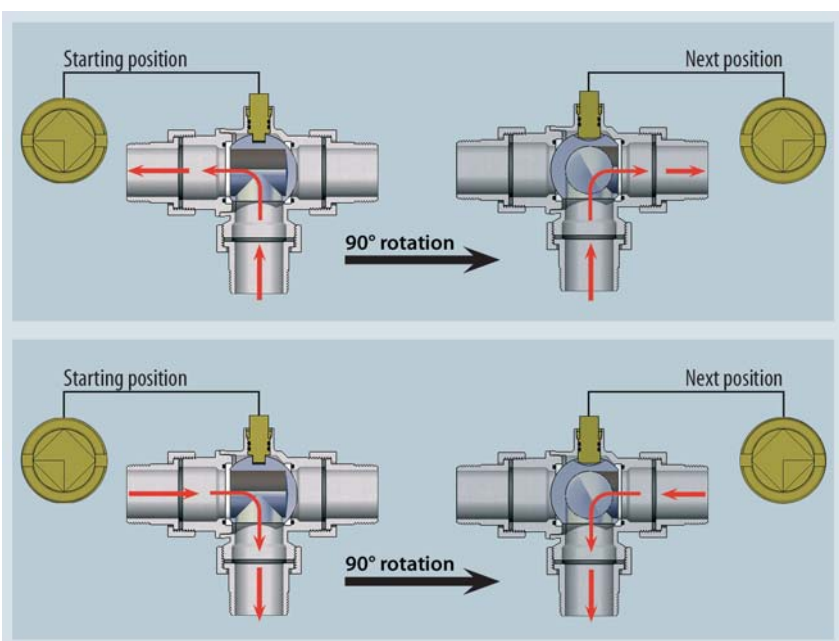
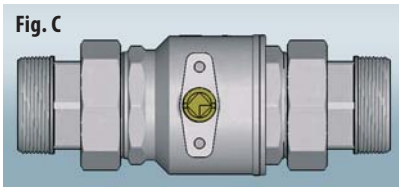


Illustration Fig. C, shows how the position of the ball permits the inlet of fluid from below and then diverts it to the right. In the same position it can also permit fluid to enter from the right and then divert it downwards.

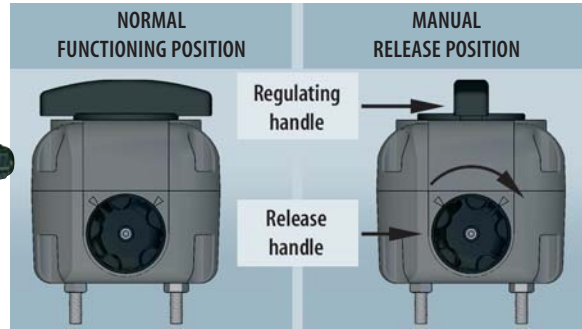


## 8. ACTUATORS FOR 1"1/2 AND 2" ZONE VALVES

- Feed voltage: 230V – 24v
- Torque: 35 Nm (80s) – 20 Nm (30s)
- Rotation time: 30s – 80s
- Rotation angle: 90°
- Absorbed power: 6,5 VA
- Max room temperature: from -10°C up to +70°C
- Protection level: IP65 (dust and water jets)
- Flange: ISO5211 (F3 and F5)
- Galvanized gearbox
- Screw for earthing: M4
- Transmission by means of heat treated metal gears
- Mechanical stop (0°...90°) produced in the actuator
- Safety double o-ring for terminal shaft
- Synchronous actuator with low consumption with bronzine and duty cycle of 100%
- Contact rating aux (opening and closing) 1A resistive



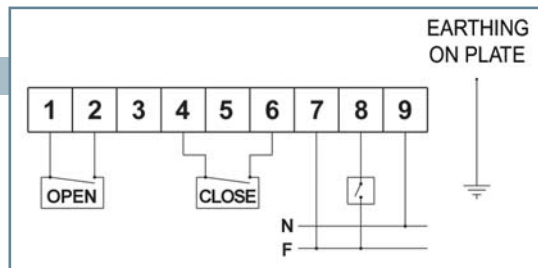
Art. 3039-3040



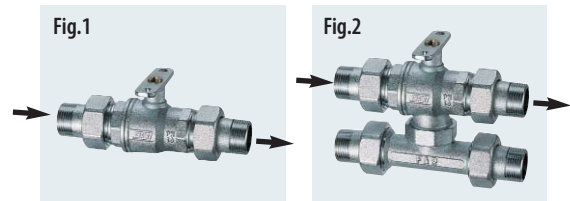
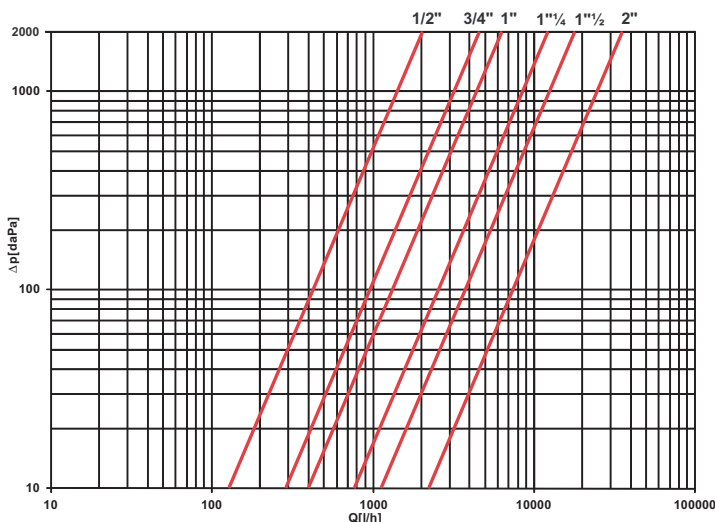
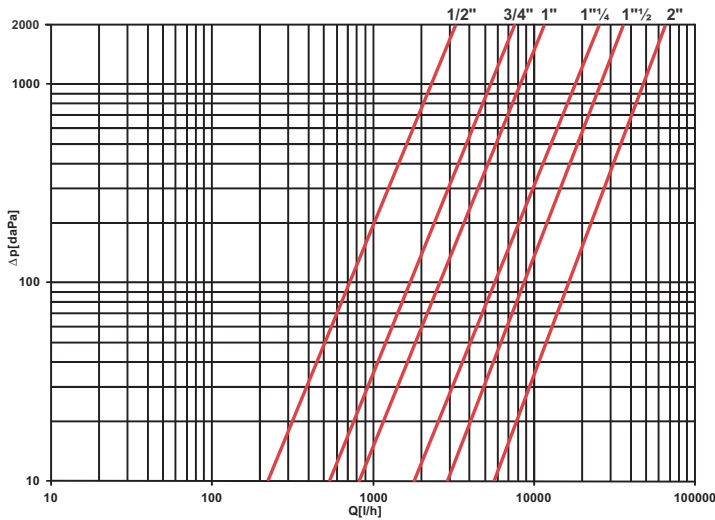
The manual release system of the electric actuator Arts. 3039-3040 is carried out by turning the handle clockwise until it reaches the position shown (position of manual release). Once this position has been reached, you can rotate - by means of the regulation handle - the valve on which the actuator is installed.

## 8.1 ELECTRICAL CONNECTIONS

The electrical connections for Art. 3001 are exactly the same as those for Arts.3039- 3040: connect the brown wire to terminal 7, the black wire to terminal 8 and the blue wire to number 9. To connect the micro-switches, use terminals 1-2 and 4-6.



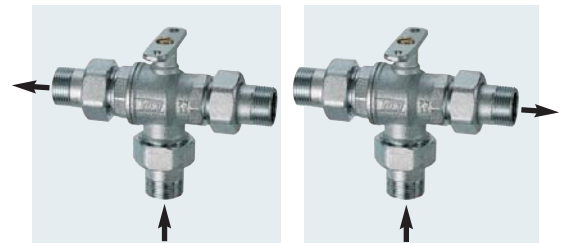
## 9. FLUID DYNAMIC FEATURES



The diagram on the left shows the flow resistance of the 2-way zone valves Arts. 3015- 3016-3017 with 1/2", 3/4", 1", 1"1/4, 1"1/2 and 2" sizes (Fig.1).

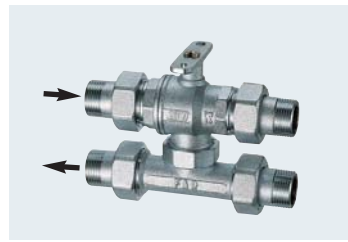
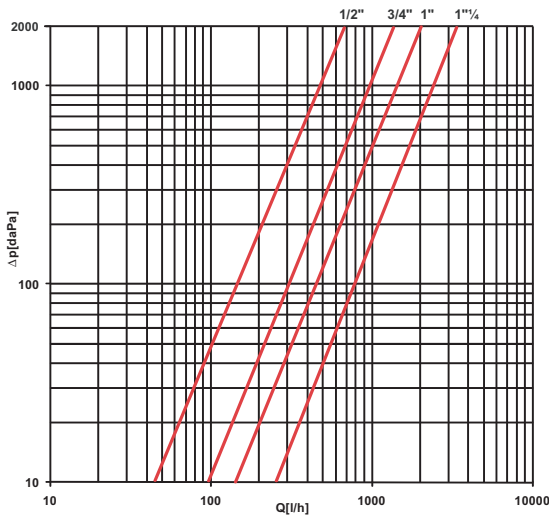
These diagrams are the same also for zone valves Arts.3025-3030-3031-3032 with 1/2", 3/4" 1" and 1"1/4 sizes and full bore flow (Fig.2).

SIZE	1/2"	3/4"	1"	1" 1/4	1" 1/2	2"
Kv [m³/h]	7,1	16,8	25,6	55,2	79,43	136,22



The diagram on the left shows the flow resistance of the 3-way diverter zone valves with L passage Art.3020 - 3021 - 3022

SIZE	1/2"	3/4"	1"	1" 1/4	1" 1/2	2"
Kv [m³/h]	4,5	9,9	13,7	25,5	40,84	64,86



The diagram on the left shows the flow resistance of the zone valves with by-pass  
Art. 3025 - 3030 - 3031 - 3032.

SIZE	1/2"	3/4"	1"	1 1/4"
Kv [m <sup>3</sup> /h]	1,54	3,23	4,83	7,87

## 10. TECHNICAL AND DIMENSIONAL FEATURES

### Technical Features

**Valve and ball body:** CW617N and CB753S brass  
**Sealing gasket:** anti-blockage system with O-ring in EPDM and seats in PTFE  
**Control stem:** CW614N brass

**Nominal working pressure:** 16 bar

**Max differential pressure:** 5 bar

**Flow temperature range:** -5 °C (with antifreeze) +100 °C

**Compatible media:** water, water with glycol

### Dimensional features

