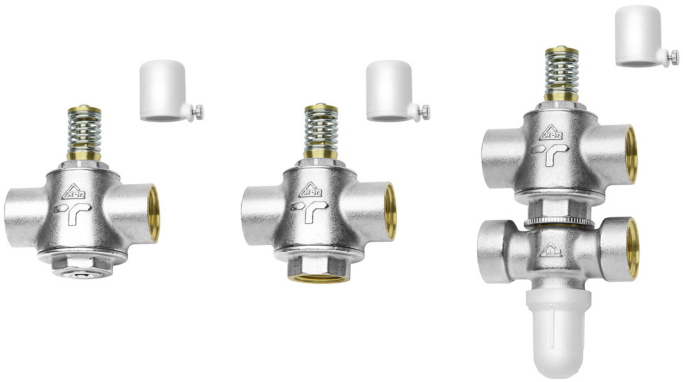


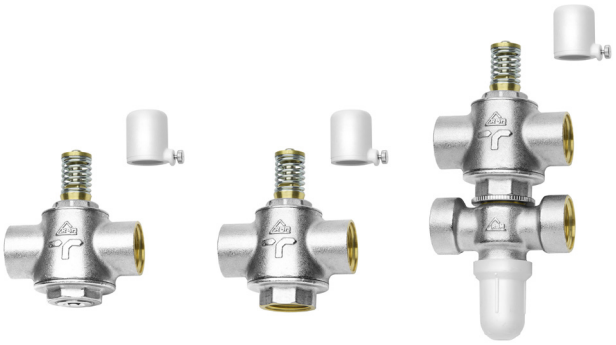
Rev. 05/2017

2-3-4 WAY MOTORISED ZONE VALVES

Rev. 05/2017

2-3-4 WAY MOTORISED ZONE VALVES

Piston-operated



Zone 2 Zone 3 Zone 4

PRODUCTION RANGE

VALVE BODY					
DN [mm]	Inches	2-way valves Code	3-way valves Code	4-way valves Code	4-way valves with extension lead Code
15	1/2"	**112.04.70**	**113.04.70**	-	-
20	3/4"	**112.05.70**	**113.05.70**	**114.05.70**	**114.05.20**
25	1"	**112.06.70**	**113.06.70**	**114.06.70**	**114.06.20**

	ON-OFF VALVE ACTUATOR		
	Code	Power supply	Description
	**360.00.10 / 30**	230 V AC	Thermo-electric actuator
	360.00.20 / 40	24 V AC	Thermo-electric actuator
	**373.00.50**	230 V AC	Electromechanical actuator
	373.00.60	24 V AC	Electromechanical actuator

DESCRIPTION

The **zone valve** is a device that allows shutting-off or deviating (manual or automatic) the flow in transit.

Available in versions with two, three and four ways it is standard supplied with knob for the manual opening and closing control; it can be easily automatised by coupling it directly with a thermo-electric or electromechanical actuator.

USE

It is particularly indicated in the following cases:

- shut-off of utilities in general;
- automatic shut-off of thermal zones (with possible combination with coplanar manifolds);
- independent heating for the division of living and sleeping areas

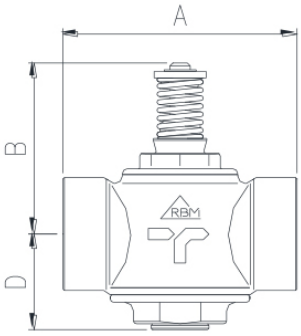
THE CHOICE

There are no particular requirements to be followed when selecting the **zone valve**. In particular:

- The connection diameter must be chosen according to the diameter of the components or pipe to which the valve is to be coupled and according to the hydraulic characteristics and pressure drops of the valve itself; for further specifications, please refer to the section "FLUID-DYNAMIC FEATURES" of this data sheet.
- As for all the rod-shutter valves, particular attention must be given to the differential pressure generated by the valve when the fluid passes. To guarantee the correct operation of the thermo-electric or electromechanical actuator it is necessary to verify that the differential pressure across the valve does not exceed the value indicated in this technical data sheet.

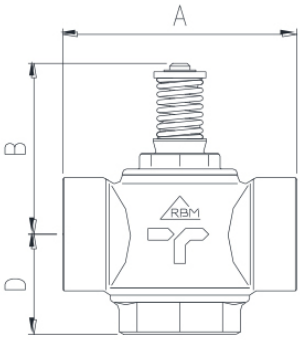
DIMENSIONAL FEATURES

Valve without coupled actuator



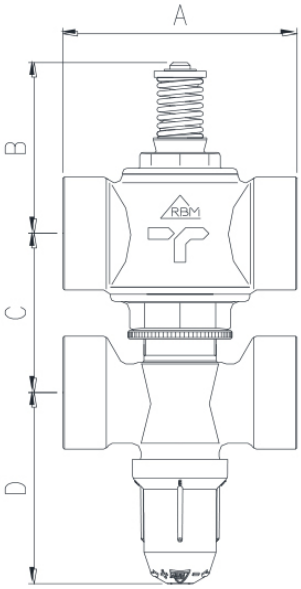
SERIES 112 - 2-WAY ZONE VALVES

Code	DN	Size	A [mm]	B [mm]	C [mm]	D [mm]
112.04.70	**15**	1/2"	77	59	-	33
112.05.70	**20**	3/4"	77	59	-	33
112.06.70	**25**	1"	81	59	-	33



113 SERIES - 3-WAY ZONE VALVES

Code	DN	Size	A [mm]	B [mm]	C [mm]	D [mm]
113.04.70	**15**	1/2"	77	59	-	34.5
113.05.70	**20**	3/4"	77	59	-	34.5
113.06.70	**25**	1"	81	59	-	34.5



114 SERIES - 4-WAY ZONE VALVES

Code	DN	Size	A [mm]	B [mm]	C [mm]	D [mm]
114.05.70	**20**	3/4"	77	59	50÷55	64
114.06.70	**25**	1"	81	59	55-55	66

114 SERIES - 4-WAY ZONE VALVES WITH EXTENSION LEAD

Code	DN	Size	A [mm]	B [mm]	C [mm]	D [mm]
114.05.20	**20**	3/4"	77	59	114-119	64
114.06.20	**25**	1"	81	59	114-119	66

CONSTRUCTION FEATURES

Body	Nickel-plated brass
Shutter and seal	NBR
Rod seals	Ethylene-propylene
Spring	Silicon steel UNI3823
Manual opening cap	ABS
Threaded in-line connections	FF UNI-EN-ISO 228

TECHNICAL FEATURES

Indicated fluid	clean water water + glycol 50%
Fluid temperature	+5 - +95 °C
Max. operating pressure	10 bar (1000 kPa)
Differential pressure max.	1 bar (100 kPa)

Set up for thermo-electric actuator with or without auxiliary switch code 360.00.X0 and for electromechanical actuator complete with built-in auxiliary micro switch code 373.00.X0. With mounted actuator and electrically NOT POWERED the straight way of the zone valve is CLOSED.

OPERATING PRINCIPLE

RBM 2-3-4-way **zone valves** are normally closed regulating devices that operate in conjunction with an electromechanical or thermo-electric actuator controlled by a time programmer, chronothermostat or simple room thermostat.

Due to the special arrangement of the shutter with respect to the fluid direction, the **equipment is able to dampen the surges during the start-up phase of the pump, thereby mitigating the water hammer caused by the rapid closing of the shut-off valves.**

The poppet stem is hydraulically sealed by means of an O-ring. With the subsequent wear of this sealing ring, the mechanical system implemented allows it to be removed very easily as shown in the figure.

1. **Seeger ring**
2. **Ring nut**
3. **Spring**
4. **Stuffing box**
5. **O.R. gasket.**

OPERATING CONDITIONS OF THE VALVE (WAY OPENING AND CLOSING):

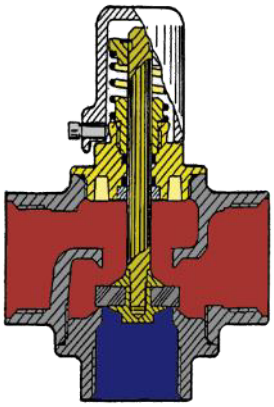
The actuator coupled to the valve keeps the shutter in the closed position in the absence of power supply.

With mounted actuator and electrically not powered the straight way of the zone valve is closed.

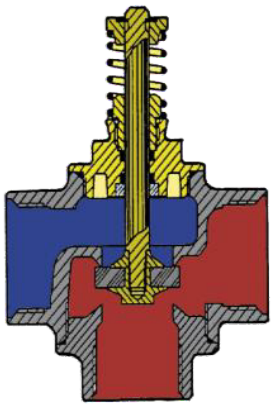
Tripping of the actuator, upon specific command of a thermostat/ chronothermostat, causes the rod to move and consequently the valve to open.

The emergency opening of the valve, in the momentary absence of the automatic actuator, is performed by applying the cap supplied with the equipment.

The sections below show the zone valve passages in the open and closed condition.



Zone valve **OPEN** on the straight way. Condition guaranteed **with cap** attached or with **coupled actuator powered**.



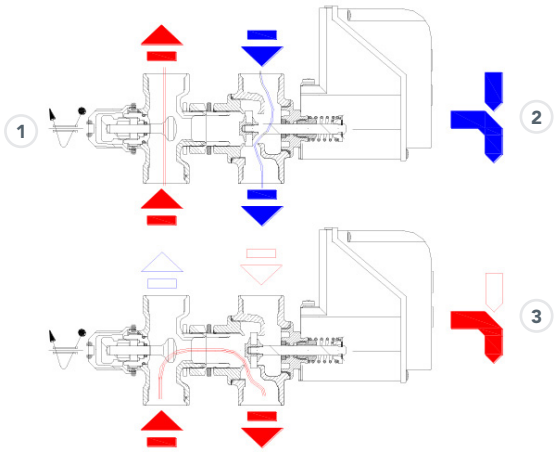
Zone valve **CLOSED** on the straight way. Condition guaranteed **without cap** or with **coupled actuator not powered**.

HYDRAULIC VALVE OPERATING PRINCIPLE:

2-way zone valve: It performs the function of shutting off the fluid.

3-way zone valve: It performs the function of shutting off the fluid on the primary zone and at the same time diverting it to a branch system.

4-way zone valve: It performs the function of shutting off the fluid on the primary zone and at the same time diverting it to a branch system; in addition, it is equipped with a by-pass for hydraulic balancing in multi-zone systems. To adjust the by-pass, remove the cap, and using the cap rotate the lockshield valve to the desired position.

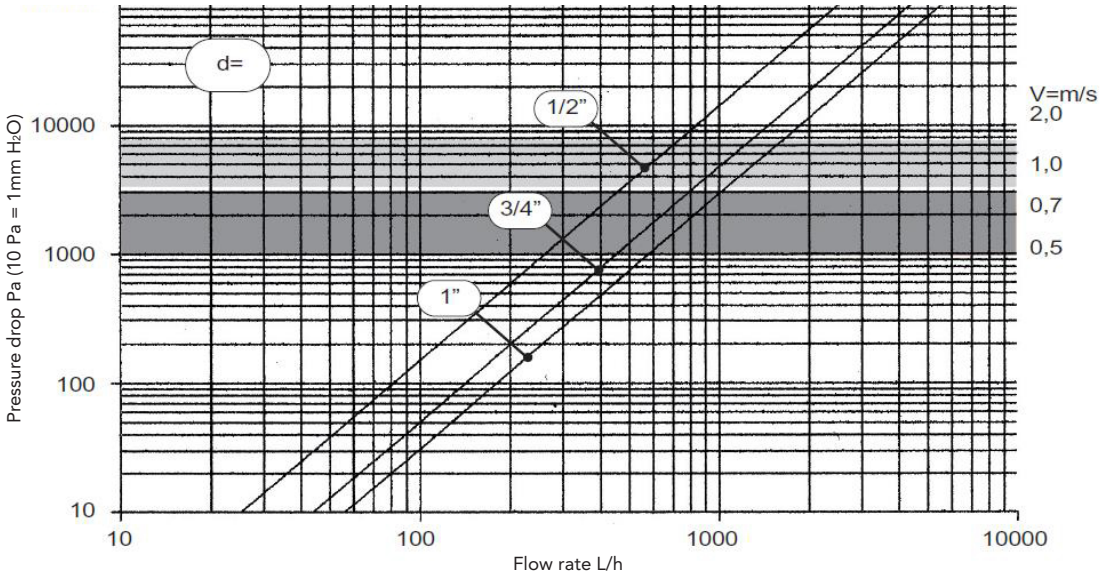


1 **By-pass adjustment hand wheel**

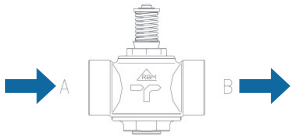
2 **Valve OPEN on the straight way**

3 **Valve CLOSED on straight way**

2 - 3-WAY ZONE VALVE FLUID-DYNAMIC FEATURES

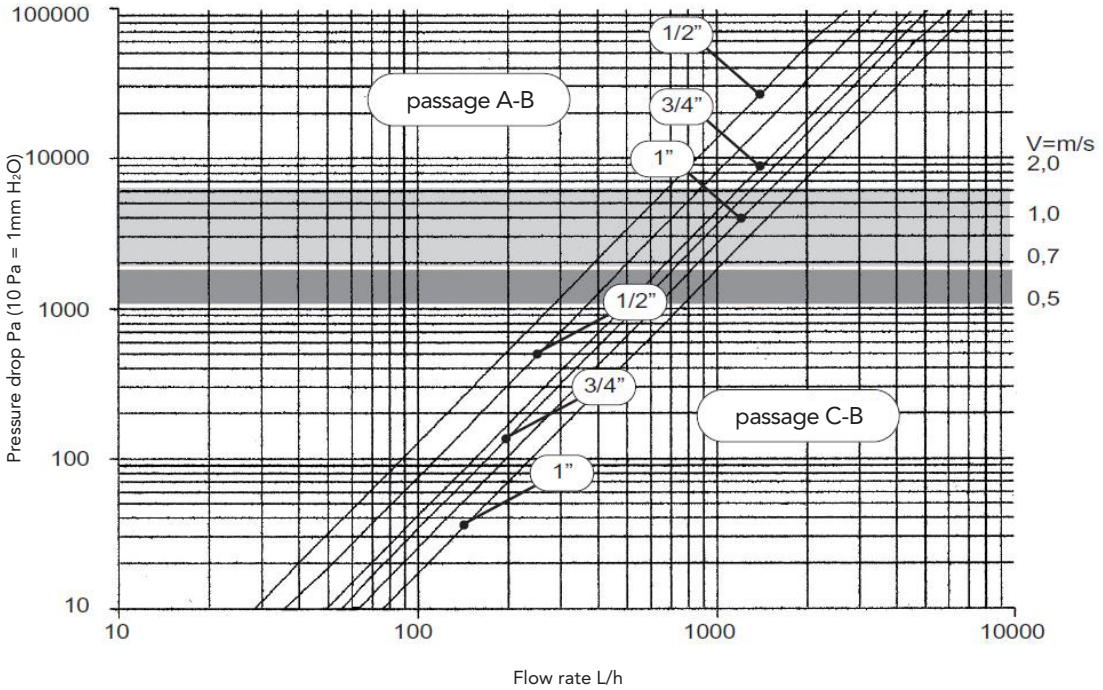


2-way zone valve

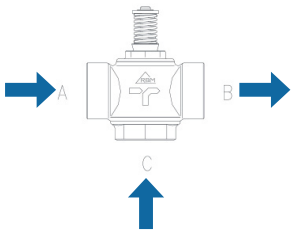


Passage A-B

D	Kvs m³/h
1/2"	2.7
3/4"	4.7
1”	6.0



3-way zone valve



Passage A-B

D	Kvs m³/h
1/2"	2.7
3/4"	4.7
1”	6.0

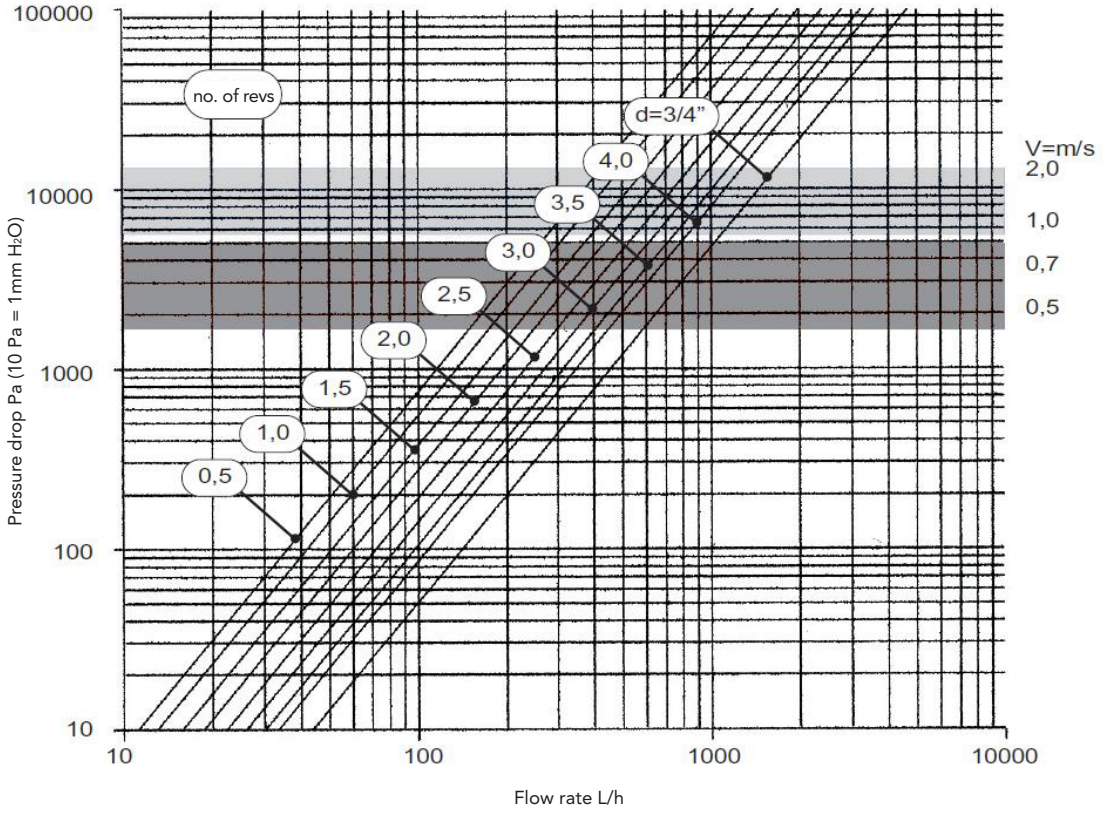
Passage C-B

D	Kvs m³/h
1/2"	3.3
3/4"	5.0
1”	7.0

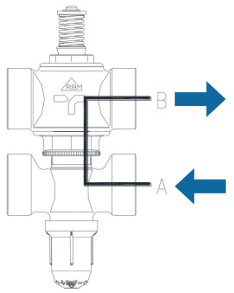
DHW operating range

Heating operating range

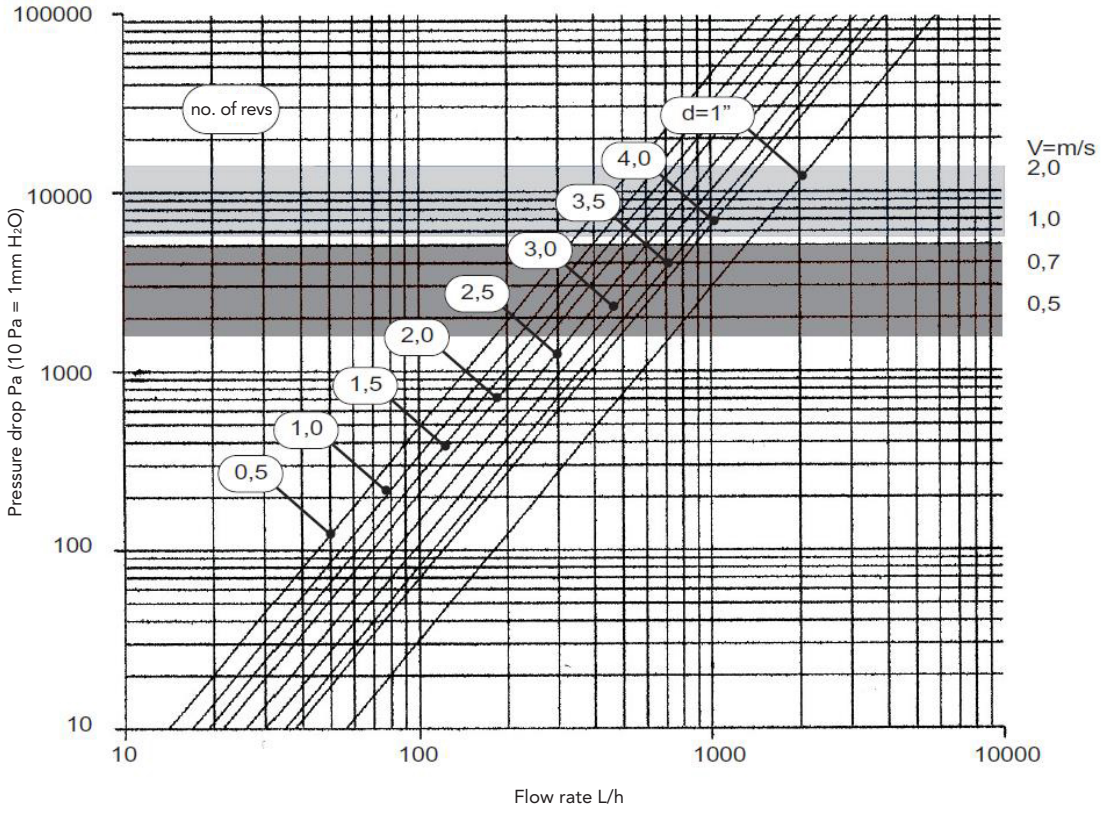
4-WAY ZONE VALVE FLUID-DYNAMIC FEATURES



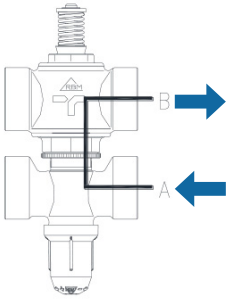
4-way 3/4" zone valve



D	Kvs m³/h
3/4" no. revs	4.7 Kvs
0.5	1.2
1	1.4
1.5	1.7
2	2.0
2.5	2.4
3	2.8
3.5	3.3
4	3.6



4-way 1" zone valve



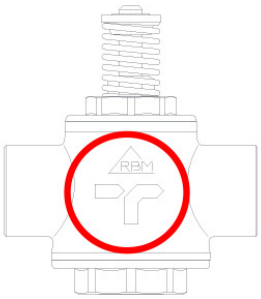
D	Kvs m³/h
1" no. revs	6.0 Kvs
0.5	1.5
1	1.8
1.5	2.1
2	2.3
2.5	2.8
3	3.2
3.5	3.7
4	4.2

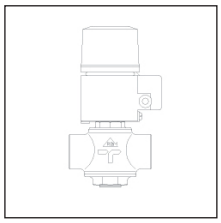
DHW operating range

Heating operating range

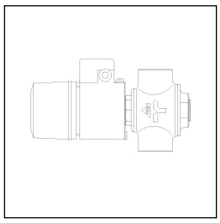
INSTALLATION TIPS

• The zone valves must be installed respecting the flow direction indicated by the arrows on the body of the valve itself.





YES



YES

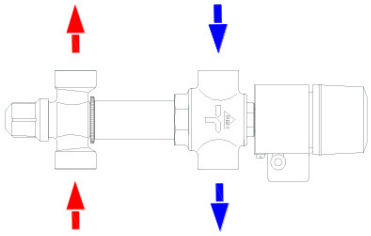
NO

• Zone valves must be installed with the thermo-electric or electro-mechanical controlled actuator facing upwards or in a horizontal position, never upside down, so as to prevent any condensation from damaging the control itself.

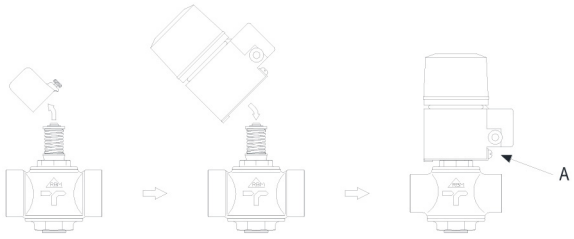
• The 2-way zone valve can be installed either on the delivery piping or on the return piping.

• The 3-way zone valve must be installed only on the return pipe.

• The 4-way zone valve must be installed only on the return pipe. It is also characterised by the possibility of varying its centre distance from 50...55 mm and 114...119 mm (two different models) while maintaining the hydraulic seal.



ASSEMBLY DIAGRAM VALVE - ACTUATOR *



The **zone valves** are supplied, as standard, with the knob for the manual opening and closing control. To automate the valves themselves, simply follow the steps below:

• remove the protective plastic handwheel / manual override mounted on the valve spring;

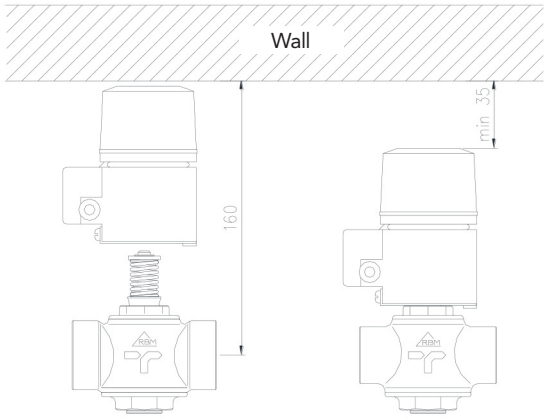
• position the actuator on the valve cover, orienting it to the desired position;

• screw in the appropriate screw A of the guillotine coupling to lock the position;

• connect the cable as shown in the wiring diagrams below.

ATTENTION: Do not supply power to the actuator if it is not coupled to the valve body. Once the actuator has been coupled to the valve body, to ensure that the valve closes tightly, run a cycle by powering the actuator for a few minutes.

OVERALL ASSEMBLY DIMENSIONS VALVE - ACTUATOR *



If installing the valves in any zone boxes, according to the type of assembly, leave sufficient space (**35 mm**) at the side or above the actuator to allow the replacement of the same.

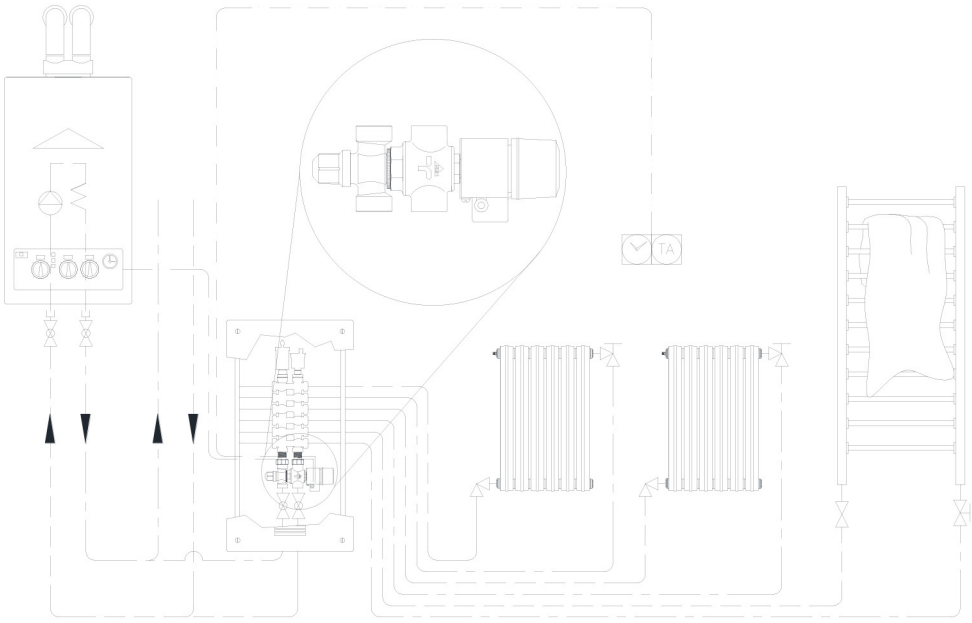
* Representative images of the thermo-electric version actuator (360 series). Instructions also valid for electromechanical actuator (373 series).

>> more

TYPICAL APPLICATIONS

Figure 1

Application of the **4-way zone valve** in combination with a coplanar distribution manifold. It IS the most classic application and allows to shut off of two or more thermal zones fed by a common pumping station.



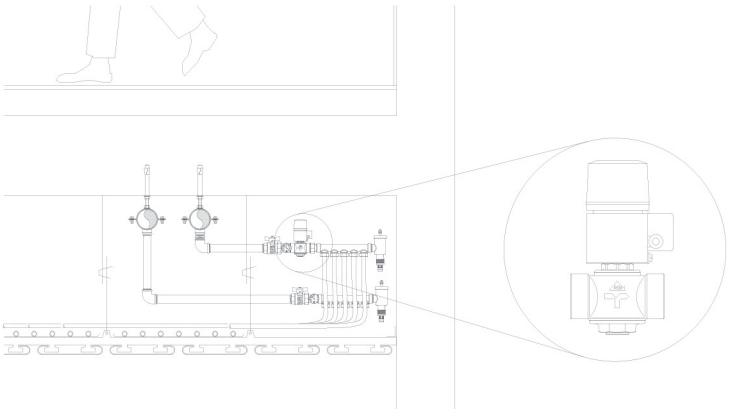
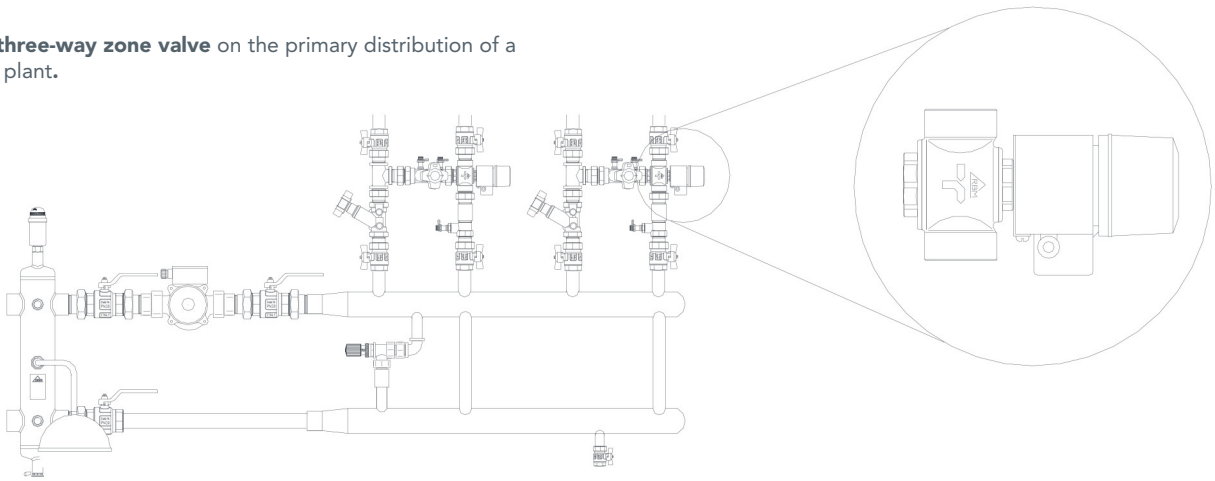


Figure 2

Application of the **two- or three-way zone valve**in combination with a simple distribution manifold. This IS an application that is normally used to shut off ceiling and/or wall radiant systems. The 2-way valve is recommended in combination with variable flow circuits.

Figure 3

Application of **three-way zone valve** on the primary distribution of a central heating plant**.**



SPECIFICATIONS

SERIES 112

2-way motorised zone valve. Normally closed with actuator mounted, not powered. Nickel plated brass body, shutter and seal in NBR, rod seals in ethylene-propylene, silicon steel springs, anti-water hammer function, cap for manual opening in ABS. Designed for RBM thermo-electric or electromechanical motors. FF threaded in-line connections UNI-EN-ISO 228. Max. temperature 5...95 °C. Max operating pressure 10 bar. Differential pressure max. 1 bar. Available sizes 1/2" - 1".

SERIES 113

3-way motorised zone valve. Normally closed on straight way with actuator mounted, not powered. Nickel plated brass body, shutter and seal in NBR, rod seals in ethylene-propylene, silicon steel springs, anti-water hammer function, cap for manual opening in ABS. Designed for RBM thermo-electric or electromechanical motors. FF threaded in-line connections UNI-EN-ISO 228. Max. temperature 5...95 °C. Max operating pressure 10 bar. Differential pressure max. 1 bar. Available sizes 1/2" - 1".

SERIES 114

4-way motorised zone valve. Normally closed on straight way with actuator mounted, not powered. Can be coupled to Monoblock coplanar manifolds and complete with adjustable micrometric bypass. Nickel plated brass body, shutter and seal in NBR, rod seals in ethylene-propylene, silicon steel springs, anti-water hammer function, cap for manual opening in ABS. Designed for RBM thermo-electric or electromechanical motors. Adjustable centre distance 50-55 mm. FF threaded in-line connections UNI-EN-ISO 228. Max. temperature 5...95 °C. Max operating pressure 10 bar. Differential pressure max. 1 bar. Available sizes 3/4" - 1".

SERIES 114

4-way motorised zone valve. Normally closed on straight way with actuator mounted, not powered. Can be coupled to Monoblock coplanar manifolds and complete with adjustable micrometric bypass and extension lead. Nickel plated brass body, shutter and seal in NBR, rod seals in ethylene-propylene, silicon steel springs, anti-water hammer function, cap for manual opening in ABS. Designed for RBM thermo-electric or electromechanical motors. Adjustable centre distance 114-119 mm. FF threaded in-line connections UNI-EN-ISO 228. Max. temperature 5...95 °C. Max operating pressure 10 bar. Differential pressure max. 1 bar. Available sizes 3/4" - 1".

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