

610

mixing valves and actuators



altecnic
CALEFFI group

610 mixing valves and actuators



Function

The Altecnic 610 mixing valves allow centralised heating systems to be regulated by mixing the hot from the heat source (boiler) with the return water from the heating system, in order to achieve the desired flow temperature to the heating system.

The valves can be motorised to regulate the hot water to the user according to the required thermal load, saving energy and improving thermal efficiency.

Product Range

Product Code	Size	Connection	Control
610	¾" to 2½"	screwed	manual
610	DN50 to DN125	flanged PN6	manual
61202	¾" to 2½"	screwed	motorised RH version
61201	¾" to 2½"	screwed	motorised LH version

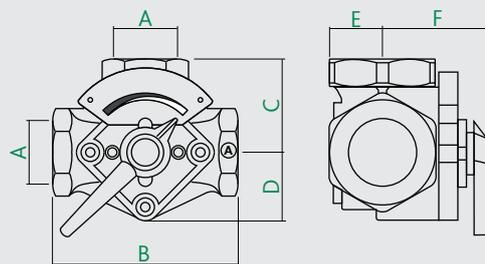
Construction Details

Component	Material	Grade
Body	Cast iron	BS EN 1561 EN-JL1030
Plug	Cast iron	BS EN 1561 EN-JL1030
Cover	Aluminium	
Bushing	Aluminium	
Lever	Nylon 66	PA66GF30
Seals	EPDM	

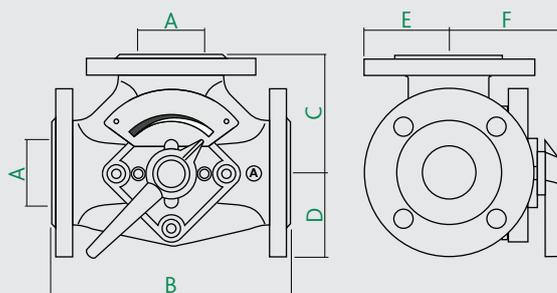
Technical Data

Medium:	water - glycol solution
Max. percentage of glycol:	30%
Working temperature range:	2 to 110°C
Max. working pressure:	6 bar
Plug rotation angle:	90°
Connections:	¾" & 2½" DN50 to DN125
	female screwed PN6 to BS EN 1092 -1

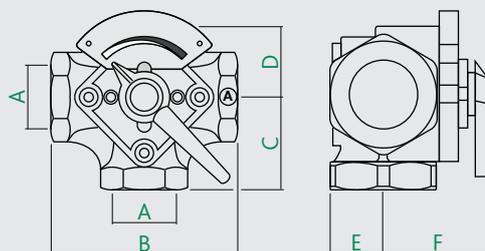
Dimensions



Code	A	B	C	D	E	F	kg
610005	G¾	130	65	23	52	32	2.8
610006	G1	130	65	29	52	32	2.8
610007	G1¼	140	70	23	52	32	3.1
610008	G1½	156	78	23	52	32	3.6
610009	G2	150	75	23	52	32	4.6
610020	G2½	200	100	23	66	32	8.8



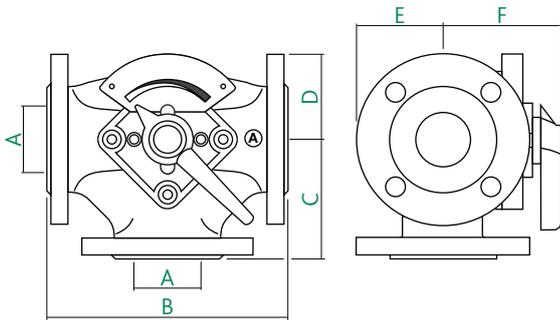
Code	A - DN	B	C	D	E	F	kg
610050	50	180	90	70	70	120	7.1
610060	65	200	100	80	80	130	9.8
610080	80	230	115	95	95	145	13.1
610100	100	260	130	105	105	155	20.2
610120	125	290	145	120	120	170	32.0



Code	A	B	C	D	E	F	kg
612005	G¾	130	65	23	52	32	2.8
612006	G1	130	65	29	52	32	2.8
612007	G1¼	140	70	23	52	32	3.1
612008	G1½	156	78	23	52	32	3.6
612009	G2	150	75	23	52	32	4.6
612020	G2½	200	100	23	66	32	8.8

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Dimensions Continued



Code	A - DN	B	C	D	E	F	kg
612050	50	180	90	70	70	120	8.0
612060	65	200	100	80	80	130	9.6
612080	80	230	115	95	95	145	13.2
612100	100	260	130	105	105	155	20.3
612120	125	290	145	120	120	170	26.0

Actuators

Product Codes and Technical Specifications

Type with 3 contacts, electric supply:

637002, 637012 & 637001: 230 V - 50 Hz
 637004, 637014 & 637003: 24 V - 50 Hz

Power consumption:

637002, 637004, 637001 & 637003: 3 VA
 637012 & 637014: 4.5 VA

Auxiliary microswitch contact rating:

637002, 637004, 637001 & 637003: 10 (2) A - 250 V ac
 637012 & 637014: 16 (4) A - 250 V ac

Protection class: IP42

Operating time:

637002, 637004, 637001 & 637003: 60 seconds
 637012 & 637014: 180 seconds

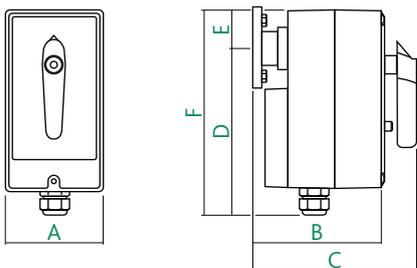
Torque:

637002, 637004, 637001 & 637003: 15 Nm
 637012 & 637014: 35 Nm

Maximum ambient temperature

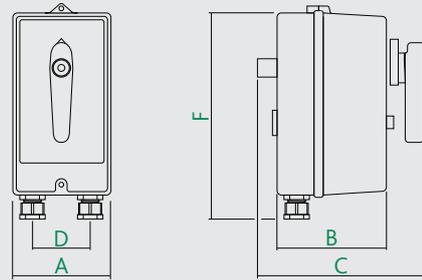
With adaptor: 55 °C

Dimensions



Code	A	B	C	D	E	F	kg
63700	25	90	112	100	25	125	0.72

Dimensions Continued



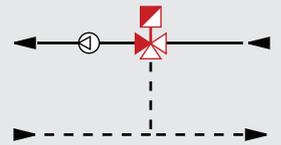
Code	A	B	C	D	E	F	kg
63701	79	83	130	44	-	162	1.3

Operating Principle

The Altecnic 610 and 612 series valves are three-way, respectively butterfly and sector types.

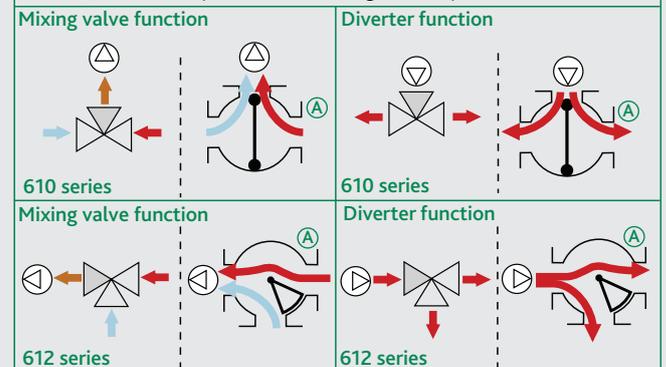
The 610 and 612 series valves can be used both as mixing valve or as a diverter.

The three-way mixing valve allows simultaneous control of the primary circuit medium and of the system return medium. In particular the two mediums are mixed directly inside the valve.

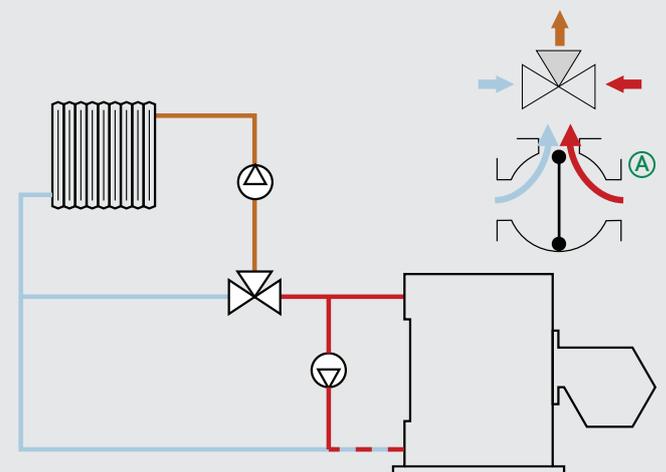


Legend

- Boiler flow
- Boiler return
- System flow
- System return
- Ⓐ Boiler inlet (with valve in mixing function)



Typical installation of 610 series 3-way butterfly with mixing function



610 mixing valves and actuators

Changing the Inlet Position - "customised installation"

The 610 and 612 series can be used customizing the ports use:

- 1 for the 610 series it is possible to change the hot water inlet port from the boiler (marked with the label A) with the cold water inlet port returning from the system, placed on line.

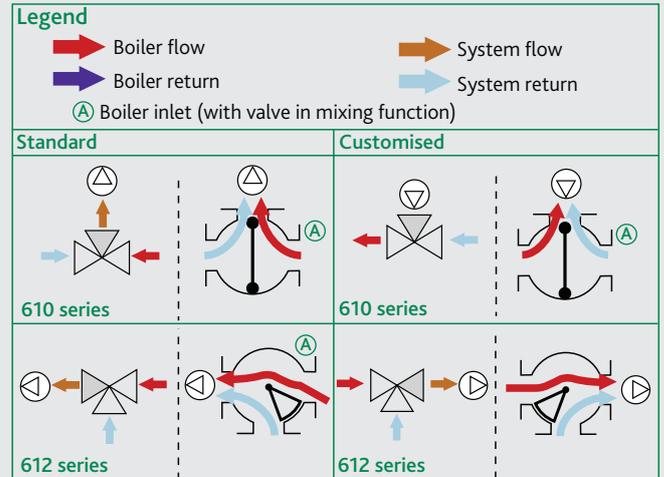
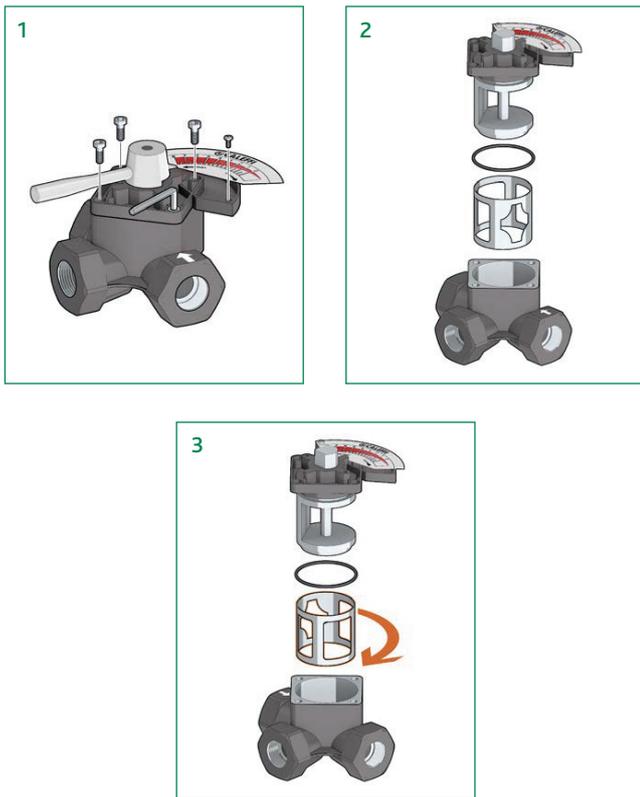
The mixed water outlet port remains the same in both configurations, i.e. the one positioned at 90° below the graduated plate.

- 2 for the 612 series it is possible to exchange the hot water inlet port from the boiler (marked with the label A) with the mixed water inlet port flowing to the system, placed on line.

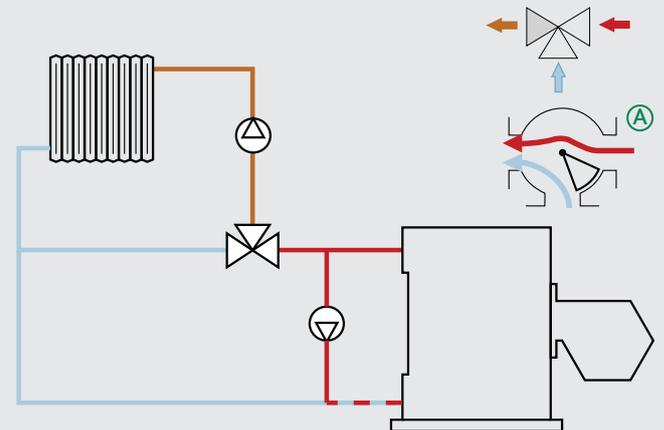
The cold water inlet port returning from the system remains the same in both configurations, i.e. the one positioned at 90° on the opposite of the graduated plate.

In this case it is necessary to access inside the valve body unscrewing the four hexagonal screws (fig.1), and rotating 180° the rotor shaped bushing (fig.2 & 3).

When customizing the ports we recommend removing the label A and marking them according to the new diagram in order to facilitate future maintenance.



Typical installation of 612 series 3-way sector with mixing function



Construction Details

Use at high temperature

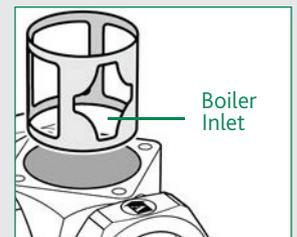
The valve material, internal devices and EPDM seals make it possible to use the Altecnic 610 and 612 series mixing valves in heating systems with temperatures up to 110°C.

Anti-friction coating

Inside the valves, between the plug and the body, there is a coating of anti-friction material that absorbs the volume variations, caused by the thermal expansion of the parts that make up the valve and ensures ease of rotation throughout the temperature range.

612 series linear characteristic

Thanks to the profile and size of the flow passage through the plug, the regulating characteristic is linear, which is the optimum condition to guarantee the best management of the variable thermal loads on the system.



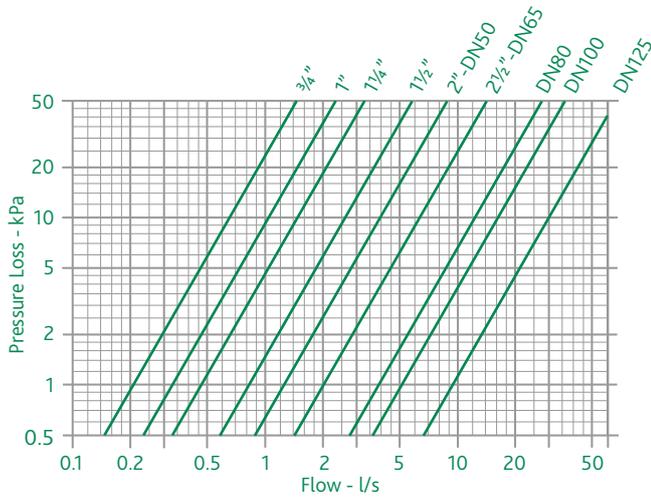
Actuation

The Altecnic 610 and 612 series mixing valves are supplied with manual control but they can be motorized using the 6370 series actuators.

610 mixing valves and actuators

Flow Chart and Kv Values

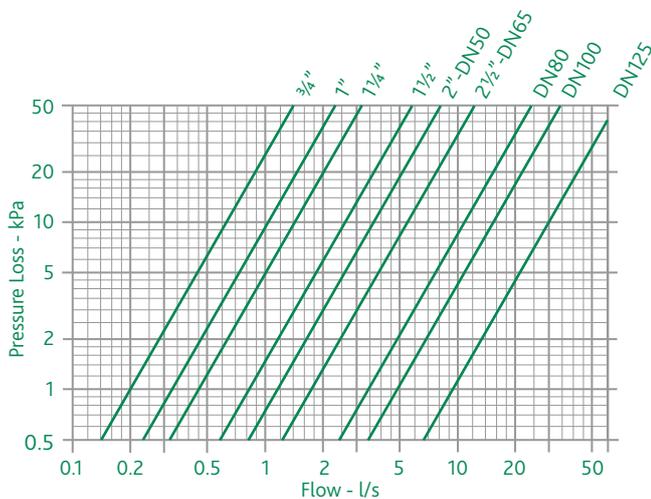
610 Series



Size	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"
Kv - m ³ /hr	7.5	11.9	16.8	30	45	72

Size	DN50	DN65	DN80	DN100	DN125
Kv - m ³ /hr	45	72	140	183	340

612 Series



Size	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"
Kv - m ³ /hr	7.2	11.9	16.5	30	42	62

Size	DN50	DN65	DN80	DN100	DN125
Kv - m ³ /hr	42	62	123	172	340

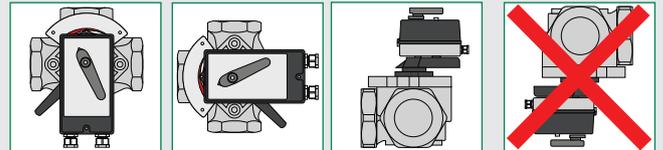
Installation

Valve installation

The 610 and 612 series mixing valves should be installed with rotor axis horizontal.

It can be turned in any position with the actuator cable glands pointing downwards or sideways.

If instead they are installed with rotor axis vertical, the actuator must be above the valve.



Actuator Mounting

When Assembling the 6370 series actuators to the valve, refer to the instruction sheet supplied with the actuator.

Sizing Method

To select the most appropriate size of Altecnic 610 and 612 series mixing valves it is necessary to know two parameters:

- the medium flow rate passing through the mixing valve
- the head loss to be attributed to the valve. Generally a pressure loss of between 5 to 15% of the head loss of the circuit assigned to the mixing valves.

Example

Flow rate requirement: 2 l/s
 Pipe diameter: 2"
 Head loss of the circuit: 30 kPa
 Mixing valve selected: 610 series

The mixing valve head loss Δp_V must be between 5% (Δp_{VA} , point A) and 15% (Δp_{VB} , point B) of the head loss of the circuit.

$$\Delta p_{VA} = \Delta p \text{ 5\% of 30 kPa (point A) = 1.5 kPa}$$

$$\Delta p_{VB} = \Delta p \text{ 15\% of 30 kPa (point B) = 4.5 kPa}$$



Using the 610 series flow chart, with a flow rate of 2 l/s, moving up vertically the A and B points are identified, which are obtained at the intersection with the respective pressure loss values.

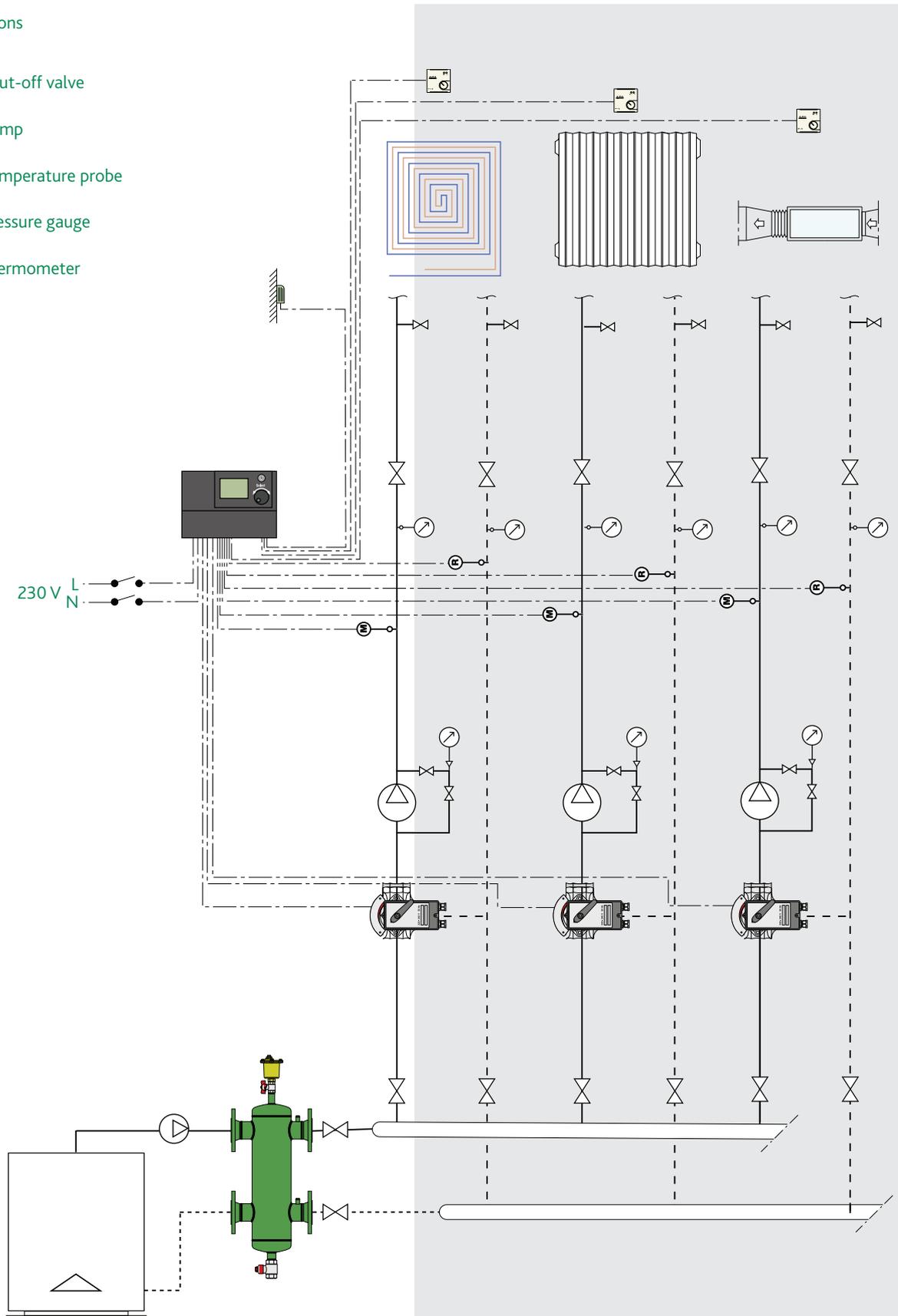
The line joining points A and B intersects the pressure loss line of the 2" valve, which will therefore be installed on the system.

In most cases, a correct sizing leads to a valve with smaller diameter than that of the pipe in which it is to be installed.

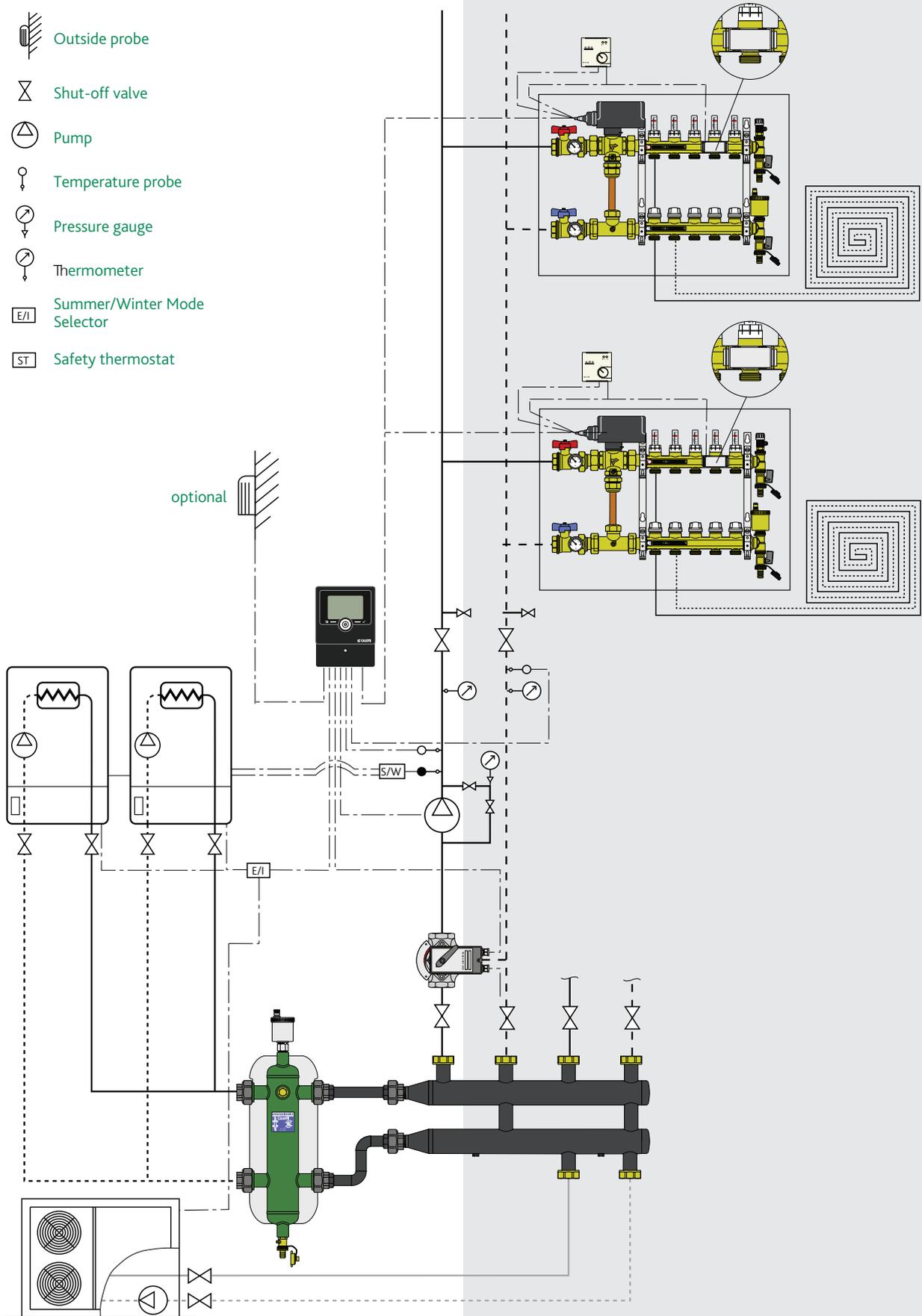
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Typical Installations

- ⊗ Shut-off valve
- ⊙ Pump
- ⊙ Temperature probe
- ⊙ Pressure gauge
- ⊙ Thermometer



Typical Installations Continued



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