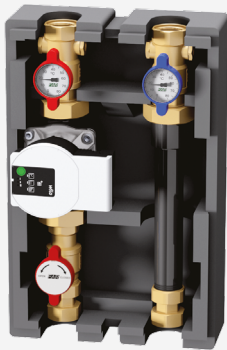


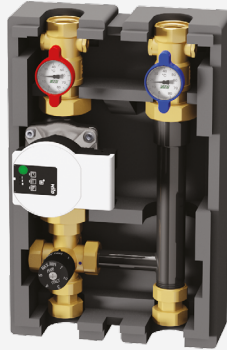
ART.2166



Booster unit for high temperature complete with:

- High efficiency pump
- Shut-off valves
- No.2 temperature gauges
- PPE insulation
- Connections centre distance: 125mm

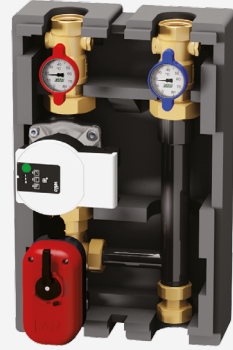
ART.2167



Set point booster unit complete with:

- Set point thermostatic mixer with 18 ÷ 55°C scale
- High efficiency pump
- Shut-off valves
- No.2 temperature gauges
- PPE insulation
- Connections centre distance: 125mm

ART.2168



Booster unit complete with:

- Reversible mixing valve
- 3-point actuator 230V 50Hz
- High efficiency pump
- Shut-off valves
- No.2 temperature gauges
- PPE insulation
- Connections centre distance: 125mm

For the 1 1/4 (DN32) booster units view the technical sheet ST.01.53

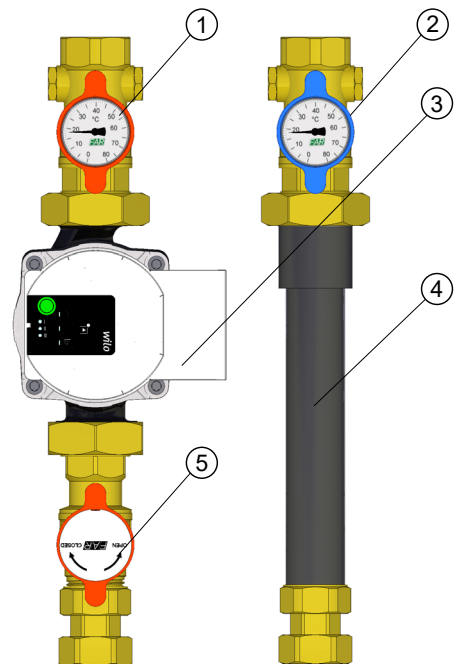
1 DESCRIPTION

The booster units – temperature regulating units – are suitable for temperature control and water distribution. They are usually installed in central heating plant, after the boiler and the hydraulic separator, and can be incorporated into distribution manifolds supplying high and low water temperature system. The following is an example of the three units installation in the three configurations into a heating (or cooling) system where, from a distribution manifold placed after the hydraulic separator, they leave the connections to the units which will then send the water to the zones to be heated / cooled.

2 BOOSTER UNITS FOR HIGH WATER TEMPERATURE SYSTEMS

The booster unit **art.2166** controls the water distribution at the same temperature as the supply from the boiler or chiller.

1. 1" ball valve with 0÷80°C temperature gauge and red handle, for connection to supply pipeline.
2. 1" ball valve with 0÷80°C temperature gauge and blue handle, for connection to return pipeline.
3. High efficiency pump with 1 1/2 unions. Pump centre distance: 130mm (or 180mm*).
4. Steel extension with built-in non-return valve for possible pump displacement.
5. 1" ball valve.



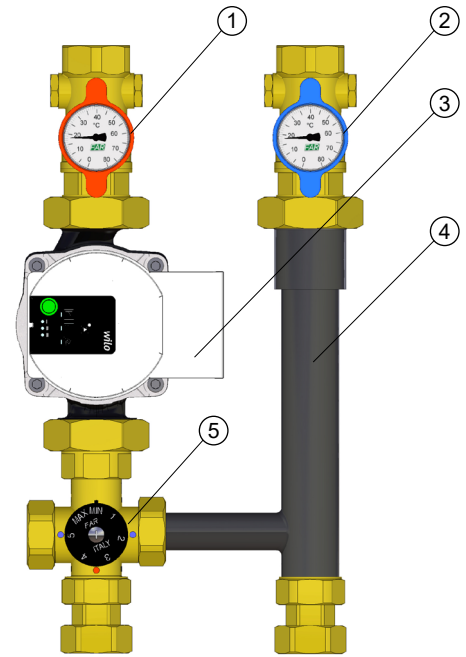
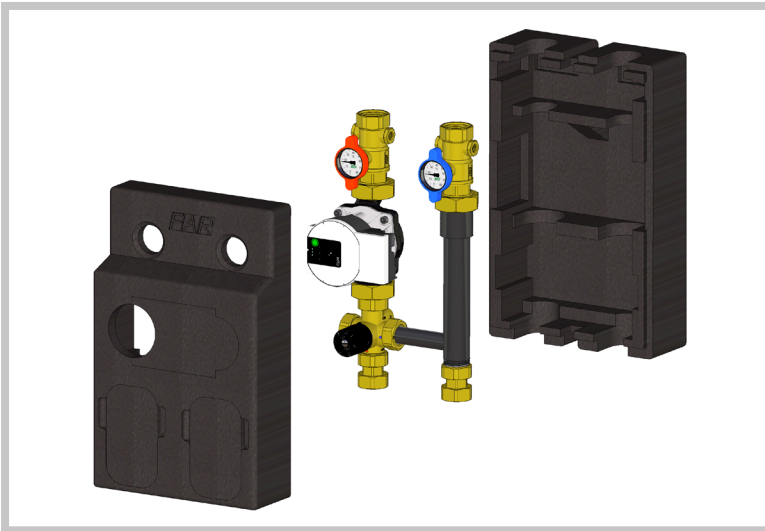
*Pump centre distance 180mm for articles: 2166 1180E6 - 2166 1180EA

The regulating unit is supplied with insulation comprising front and back shells and a reversible plug for pump.

3 FIXED POINT BOOSTER UNIT WITH THERMOSTATIC MIXER FOR LOW WATER TEMPERATURE SYSTEMS

The booster unit **art.2167** permits a fixed point regulation by means of a thermostatic mixer, ideal for adjusting the distribution temperature to underfloor heating systems.

1. 1" ball valve with 0÷80°C temperature gauge and red handle, for connection to supply pipeline.
2. 1" ball valve with 0÷80°C temperature gauge and blue handle, for connection to return pipeline.
3. High efficiency pump with 1"1/2 unions. Pump centre distance: 130mm (or 180mm*).
4. Steel extension with built-in non-return valve for possible pump displacement.
5. Thermostatic mixer with graduated handle.



***Pump centre distance 180mm for articles: 2166 1180E6 - 2166 1180EA**

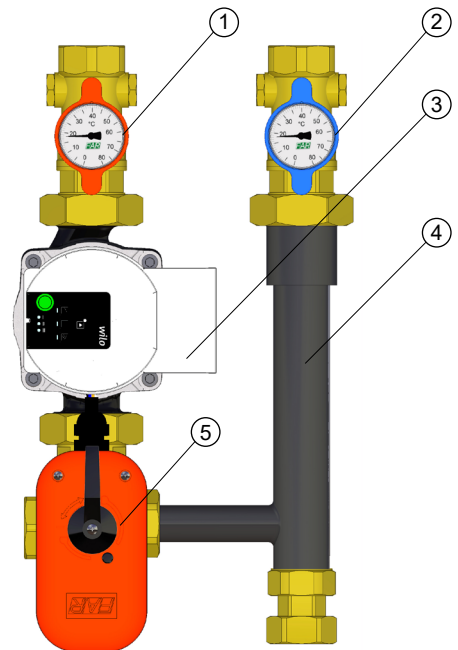
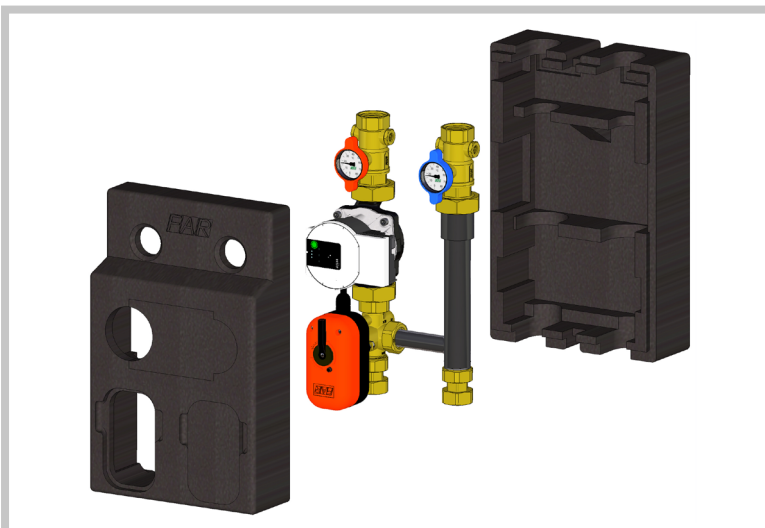
The regulating unit is supplied with insulation comprising front and back shells and a reversible plug for pump.

4 BOOSTER UNIT WITH MODULATING MIXING VALVE FOR LOW WATER TEMPERATURE SYSTEMS

The booster unit **art.2168** controls the water distribution through two different types of regulation:

- **fixed point functioning:** with constant temperature, using the control unit **art.9612** complete with supply probe and seat.
- **temperature control:** with variable temperature, using the control unit **art.9611** or **art.9614** (hot/cold systems) complete with supply and external probe.

1. 1" ball valve with 0÷80°C temperature gauge and red handle, for connection to supply pipeline.
2. 1" ball valve with 0÷80°C temperature gauge and blue handle, for connection to return pipeline.
3. High efficiency pump with 1"1/2 unions. Pump centre distance: 130mm (or 180mm*).
4. Steel extension with built-in non-return valve for possible pump displacement.
5. Mixing valve with 1" connections and modulating actuator for automatic regulation.



***Pump centre distance 180mm for articles: 2166 1180E6 - 2166 1180EA**

The regulating unit is supplied with insulation comprising front and back shells and a reversible plug for pump.

The version with mixing valve needs an electronic control unit:

Set point operation:

Art.9612 Complete with control unit and delivery probe.



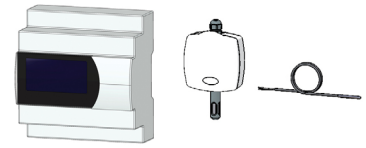
Temperature control (Hot)

Art.9611 Complete with control unit, delivery probe and external probe.



Temperature control (Hot/Cold)

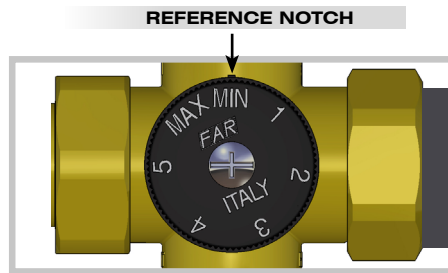
Art.9614 - Complete with control unit, delivery probe and external probe.



THERMOSTATIC MIXER

The thermostatic mixer is designed to keep constant temperature in the system. Temperature setting must be carried out when system is operating and in relation to the design heads. An approximate setting can be effected by considering the following correspondence between the numbering on the mixer and the outgoing water temperature.

POSITION	t [°C]
MIN	18 ± 2
1	20 ± 2
2	22 ± 2
3	30 ± 2
4	40 ± 2
5	50 ± 2
MAX	55 ± 2



Once the mixer handle position has been set, the system is calibrated. The values indicated in the table above can vary (±2°C tolerance), depending on the characteristics of the system where the unit is installed. Final adjustment can be made by referring to the value indicated on the ball valve temperature gauge.

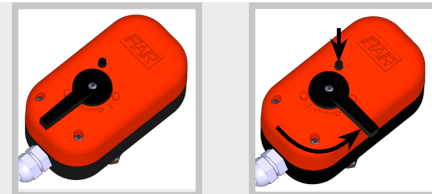
3 POINTS ACTUATOR FOR MIXING VALVE

ARTICLE	VOLTAGE FREQUENCY	ABSORBED POWER	ROTATION ANGLE	ROTATION TIME	TORQUE	ROOM TEMPERATURE	DEGREE OF PROTECTION	COLOUR
3010 40	230 V-50Hz	4,5 VA	90°	180 S	10 Nm	-10° + 50°C	IP54	RED/BLACK

The actuator, incorporating an appropriate servomotor, permits automatic operation of a mixing valve. It operates in response to a signal coming from a temperature control unit.

MANUAL RELEASE USE

In order to manually open or close the actuator, push the red key and simultaneously turn the position indicator counter-clockwise through 90°. Normal functioning will return automatically.



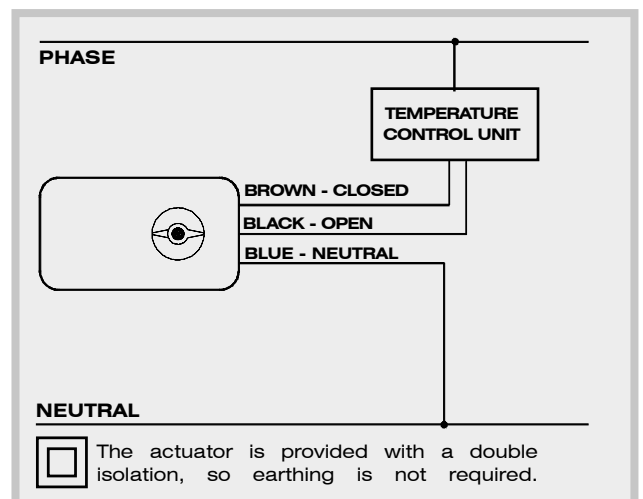
ELECTRICAL CONNECTION

Before connecting the actuator ensure that the selected model is compatible with the available network voltage. All connections must be made by qualified personnel, with respect for overall electrical system and taking care that the electricity supply is switched off. Incorrect connection may damage both person and equipment. All FAR actuators have been designed with an additional auxiliary microswitch, an exchange contact without voltage, for low-tension signals (max 230 V) and/or to supply applications with low electrical input (max 2A).

N°	COLOUR	CONNECTION	DESCRIPTION
1	GREY	MICROSWITCH COMMON CONTACT	CONNECTED TO THE COMMON CONTACT OF THE MICROSWITCH
2	WHITE	N.O. OF THE MICROSWITCH	CONNECTED TO THE NORMALLY OPEN CONTACT OF THE MICROSWITCH
3		SIGNAL INDICATOR	WITH OPEN VALVE PRESENCE OF PHASE ON TERMINAL
N	BLUE	NEUTRAL	CONNECTION TO THE NEUTRAL OF SYSTEM
5	BROWN	PHASE - CLOSE	VALVE CLOSING
6	BLACK	PHASE - OPEN	VALVE OPENING
7		SIGNAL INDICATOR	WITH CLOSED VALVE PRESENCE OF PHASE ON TERMINAL

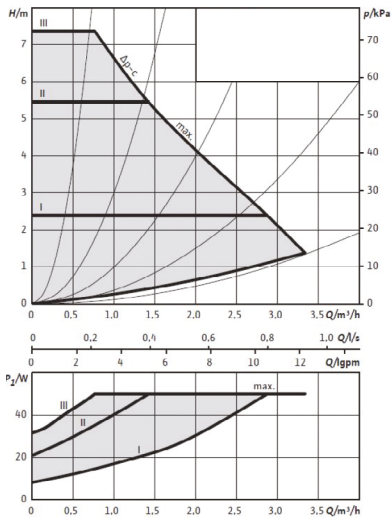
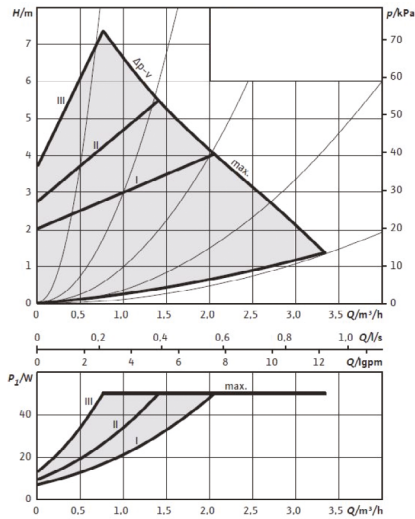
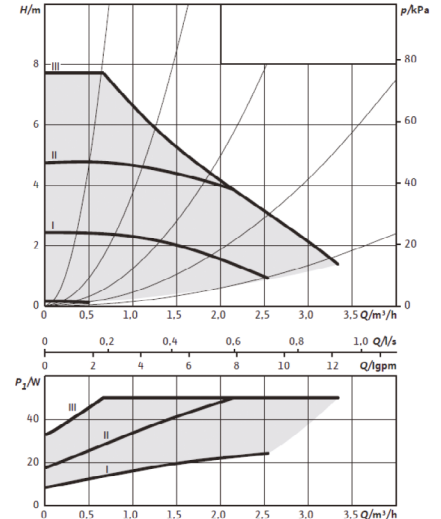
3-WIRINGS CONNECTIONS: ACTUATOR WITH TEMPERATURE CONTROL UNIT

To control opening and closing of a zone valve via an actuator, connect the blue wire to the neutral one, the brown and the black to the temperature control unit. The valve opens in presence of phase on the black wire, while with phase on the brown the valve closes.



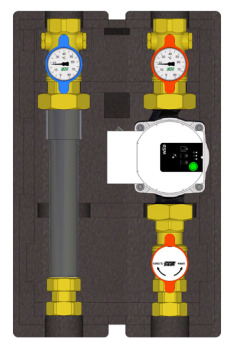
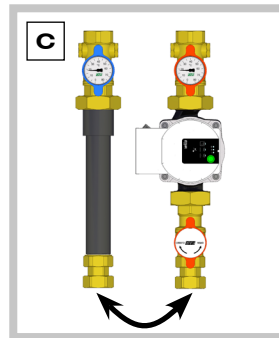
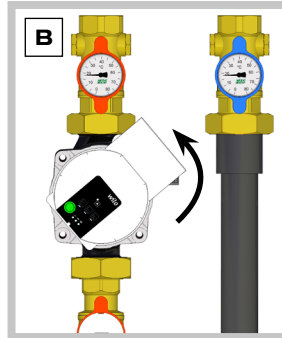
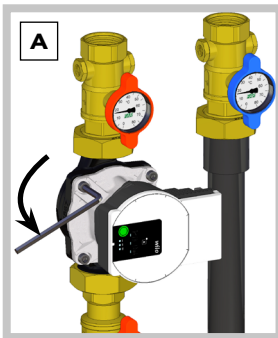
Electronical high-efficiency pump - Delivery head 1 - 7 m


- Approved fluids:**
- Heating water (in accordance with VDI 2035)
 - Water-glycol mixtures (max: 50% water - 50% glycol)
- Max. delivery head:** 7.7 m
- Temp. range for applications:**
- Flow temperature 0°C - 95°C
 - Ambient temperature 0°C - 70°C
- Max. volume flow:** 3.5 m³/h

Fluid-dynamic features with proportional delivery $\Delta p-v$

Fluid-dynamic features with constant delivery $\Delta p-c$

Constant speed features with I, II e III pump curves

*** Booster units can be supplied with other two different pumps:**

- pump with delivery head 1-6m (interaxis 180mm) • Max. delivery head 6.7 m • Max. volume flow 3.2 m³/h
- pump with delivery head 1-8m (interaxis 180mm) • Max. delivery head 8 m • Max. volume flow 8.8 m³/h

For further technical specifications consult the technical data sheet dedicated to circulators

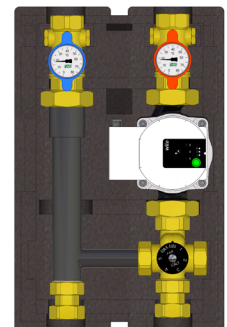
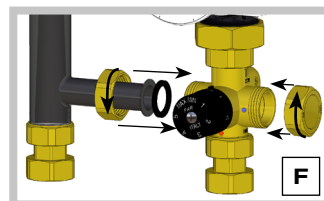
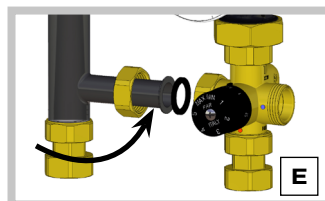
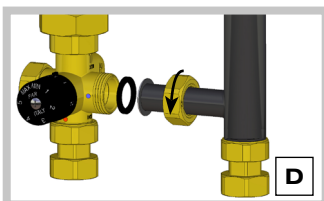
PUMP CONFIGURATION WITH RIGHT-HAND SIDE SUPPLY


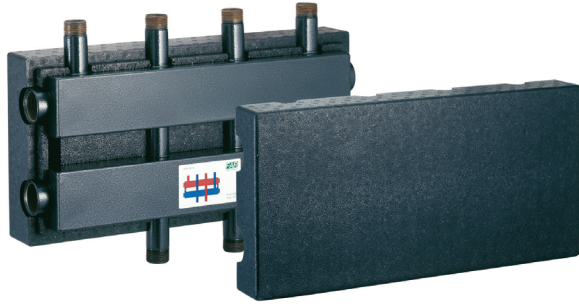
When the pump is installed on the right side, it is also necessary to rotate the electronic part. In order to achieve this arrangement please proceed as follows:

- A-** Unscrew the 4 locking screws.
- B-** Rotate the electronic part of the pump through 180° and tighten the locking screws again.
- C-** Reverse the supply and the return pipelines.

If it is necessary to install the booster units **art. 2167-2168** on the right side, the mixing unit must also be rotated:

- D-** Unscrew the central nut in order to separate the supply from the return line.
- E-** Move the supply to the right side and rotate the central extension piece through 180°.
- F-** Remove the plug and screw it on the right side of the mixing unit and connect the central extension piece.



7 MANIFOLDS FOR CENTRAL HEATING


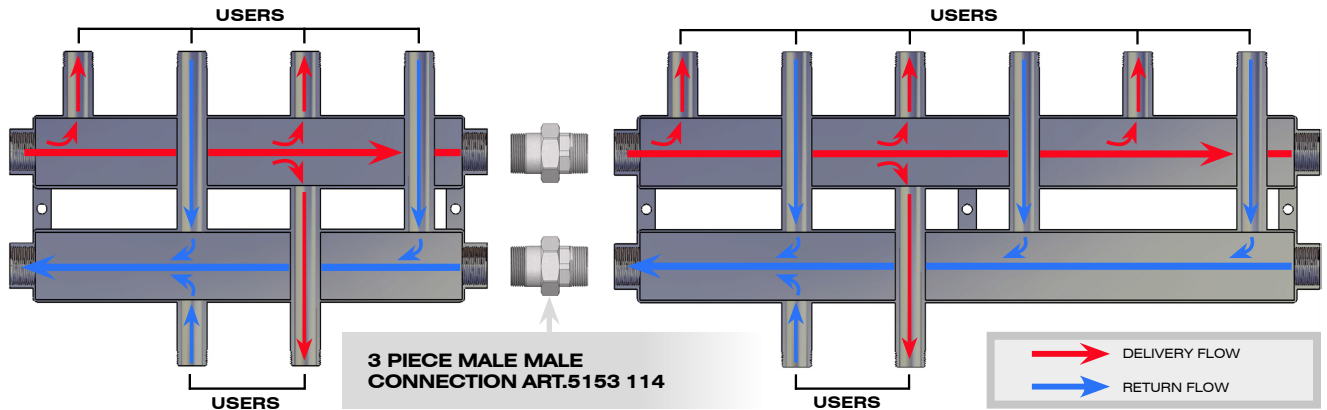
To install booster units in a central heating system, FAR offers a range of painted steel manifolds **Art.2191**

Central heating manifolds make it possible to have supply and return pipes at the same level, making it easier to integrate a booster unit into the heating system, thus reducing overall dimensions. They comprise two rectangular sections: one for flow and the other for the return. They are thermally insulated by means of insulation shells.

Insulation shells are supplied with the manifolds: they are in PPE guaranteeing both thermal insulation and excellent resistance stem.

7.1 FLOWS IN A MANIFOLD

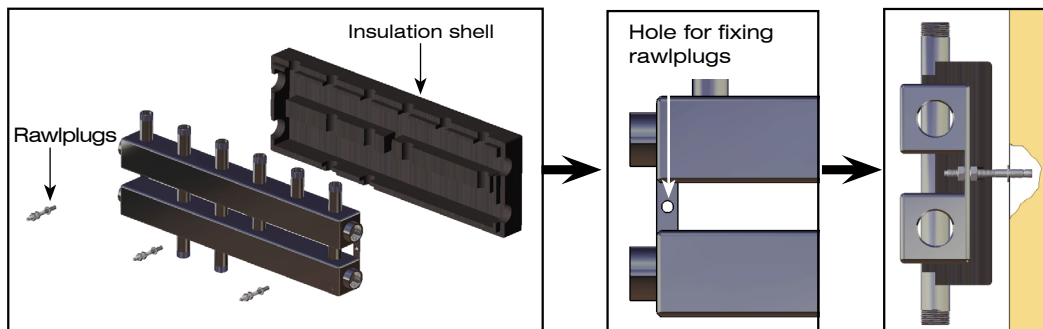
The scheme below shows the flows inside the manifolds.


7.2 INSTALLATION

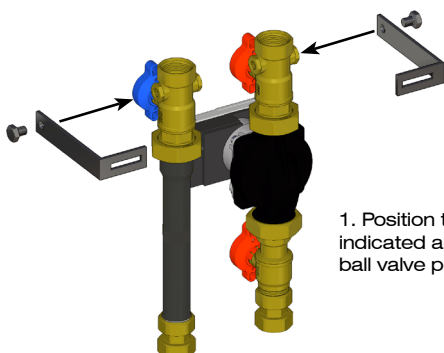
Manifolds must be installed on the wall by means of rawplugs and placed as illustrated below.

A hydraulic separator should be placed between the boiler and the manifold, thus creating independent circuits, in such a way as to avoid interferences to pumps installed in the system. The manifold features side connections, which permit positioning of an expansion tank, in order to absorb an increase in volume as the water heats up.

Manifolds must be installed on the wall by means of rawplugs (NOT SUPPLIED) located directly on the manifold brackets. Before this is done, the insulation shell should be positioned on the manifold, so as to sit between manifold and the wall.


8 WALL INSTALLATION

Brackets complete with screws, **art.7478** can be used for wall installation.



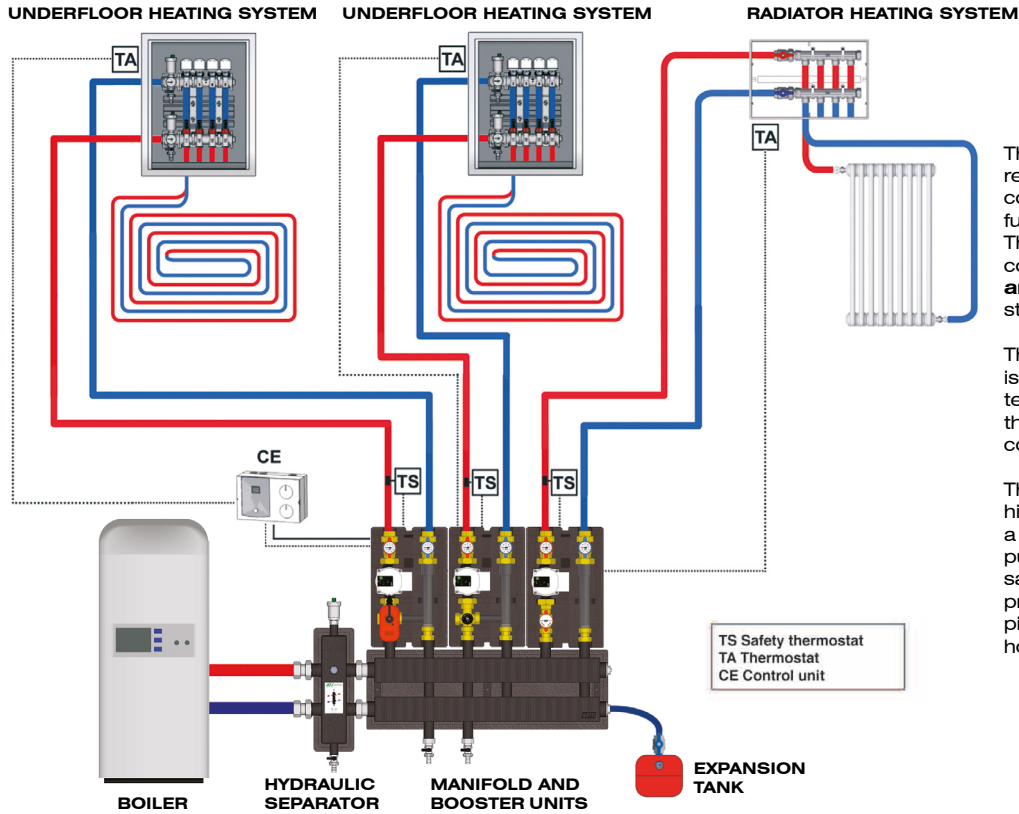
1. Position the bracket as indicated and screw it on the ball valve plug.



2. To insert the brackets in the insulation, cut along the splits on the back shell and fix using two rawplugs.

8.1 WIRING SCHEME

The wiring scheme indicates an installation overview of components for central heating.

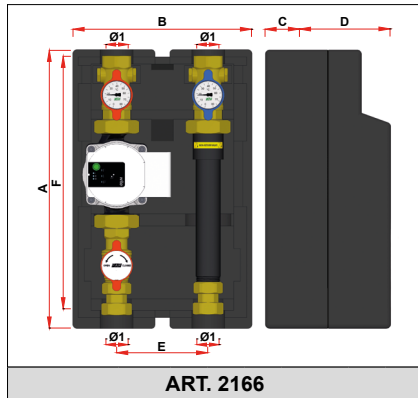


The unit with mixing valve can be regulated through an electronic controller - CE - with fixed point functioning or climatic operation. The room thermostat must be connected to the control unit **art.9611**, which controls pump start-up.

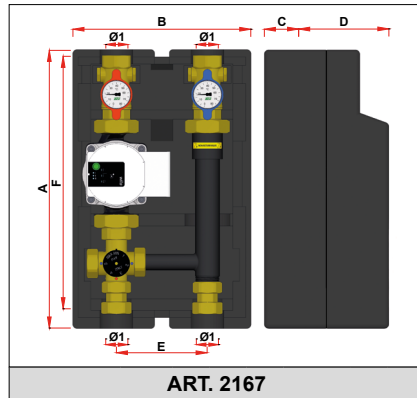
The unit with thermostatic mixer is suitable for fixed point low temperature systems, where the room thermostat shall be connected to the pump.

The first unit on the right is for high temperature systems, where a room thermostat controls the pump. We recommend that a safety thermostat with contact probe is installed on the supply pipeline to prevent excessively hot water entering the system.

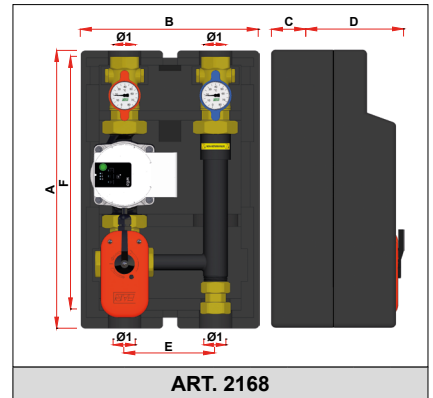
TS Safety thermostat
TA Thermostat
CE Control unit

9 TECHNICAL AND DIMENSIONAL FEATURES

ART. 2166

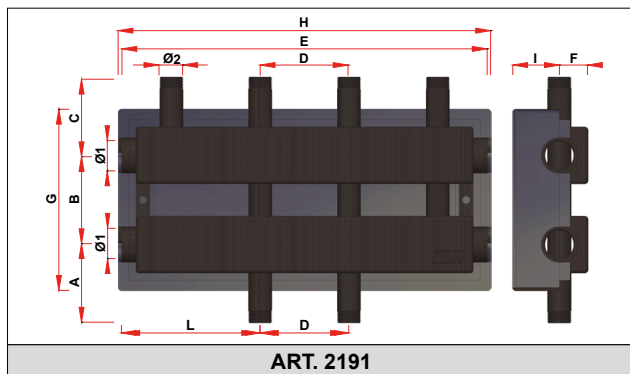
CODE	Ø1	A	B	C	D	E	F
2166 1130EA	1"	384	245	55	115	125	347
2166 1180xx	1"	434	245	67	115/154	125	397


ART. 2167

CODE	Ø1	A	B	C	D	E	F
2167 1130EA	1"	384	245	55	115	125	347
2167 1180xx	1"	434	245	67	115/154	125	397


ART. 2168

CODE	Ø1	A	B	C	D	E	F
2168 1130EA	1"	384	245	55	128	125	347
2168 1180xx	1"	434	245	67	128/154	125	397


ART. 2191

CODE	Ø1	Ø2	A	B	C	D	E	F	G	H	I	L
2191 11402	1" 1/4	1"	110	125	110	125	515	40	255	525	65	195
2191 11403	1" 1/4	1"	110	125	110	125	765	40	255	775	65	195

Technical features:

Nominal pressure: 10 bar
Max. temperature: 95°C
Compatible media: water, water with glycol
Temperature gauge scale: 0÷80°C

Materials:

Insulation shell: PPE
Fixing brackets: zinc-coated steel
Mixing valve: CB753S brass
Ball valves and T gauge holder: CW617N brass
Extension with non-return valve: steel