TECHNICAL CATALOGUE

SET POINT REGULATING UNIT

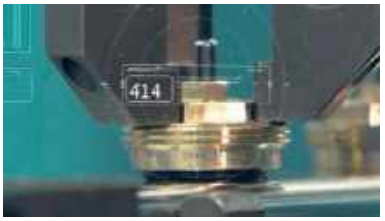
ITAP AT A GLANCE

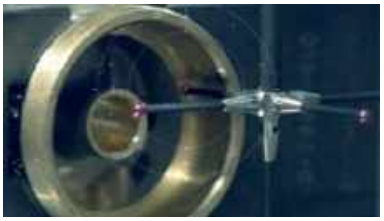
THE COMPANY

ITAP SpA, 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.

Thanks to fully automated production processes, with 87 transfer machines and 70 assembly lines, we are able to produce 400,000 pieces per day.

Our innate pursuit for innovation and observance of technical regulations is supported by the company certification ISO 9001. The company has always considered its focus on quality as the main tool to obtain significant business results: today ITAP SpA is proud to offer products bearing the approval of numerous international certifying bodies.





ITAP products have obtained approvals by more than 30 certification bodies from all over the world.

949 Set point regulating unit

The set point regulating unit is used for underfloor heating systems and installed directly on the manifold in the box, thanks to its small overall dimensions.
The minimum depth of the metal box required for the installation of the regulation unit is 90 mm.
The regulation consists of lowering and keeping constant the temperature of the medium fluid using a 3-way mixing valve equipped with an adjustable thermostatic head with a built-in sensor.
A circulation pump (supplied on request) allows the fluid to circulate through the pipes, while a safety thermostat limits the maximum flow temperature to 55°.
The regulating unit is assembled on the manifold using swivelling nuts. This makes it easy to remove for maintenance or other requirements.
SET POINT REGULATING UNIT

SIZE	PRESSURE	CODE	PACKING
1"	6bar/87psi	9490100200CPF	1/2
1"	6bar/87psi	9490100200SPF	1/4

CERTIFICATIONS

TECHNICAL SPECIFICATIONS

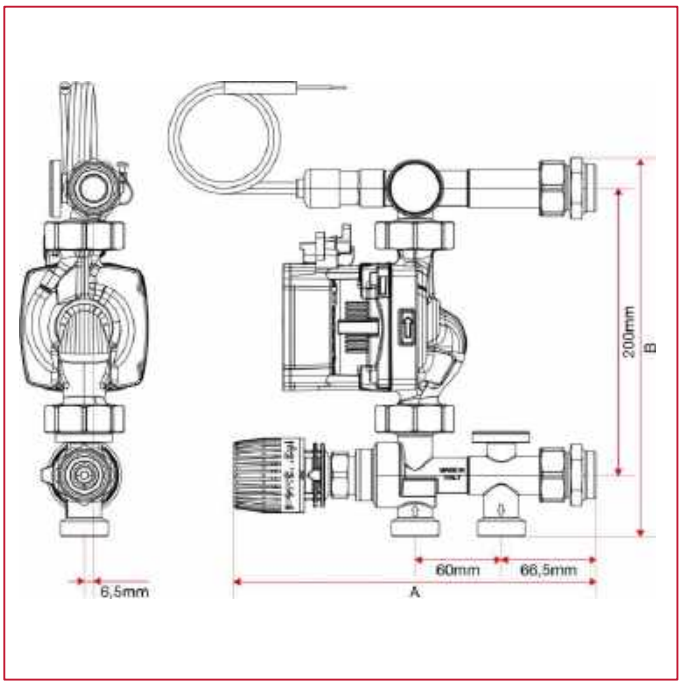
Consisting of:
- 3-way mixing valve
- Thermostatic head with built-in sensor
- Safety cutoff (factory set at 55°C)
- Thermometer (scale 0°-80°C) fitted to the flow and return pipes
- Low energy consumption pump (on demand)

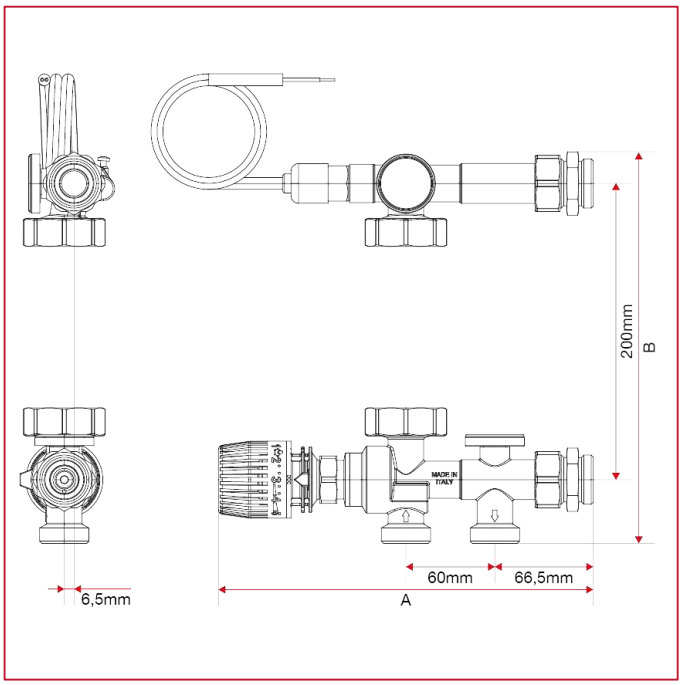
Technical specifications:
- Medium fluid: water, glycolate solutions max. 30%
- Temperature setting: 20°C – 55°C
- Maximum working pressure: 6 bar
- Body and fittings: nickel-plated brass
- Available size: 1”
- ISO 228 threads (equivalent to DIN EN ISO 228 and BS EN ISO 228)

Supplied with low energy consumption pump (9490100200CPF) or without low energy consumption pump (9490100200SPF).
For a right installation of the set point regulating unit we suggest to use one of the following mounting brackets:
- Art. 498STK with centres distance mm 200 and offset mm 12.
- Art. 949ST.

SET POINT REGULATING UNIT

OVERALL DIMENSIONS

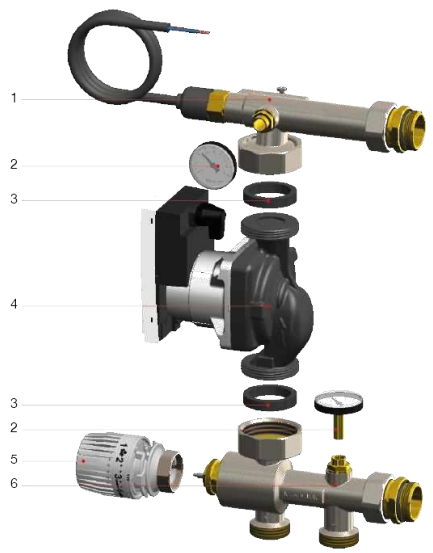




	1"	1"
A	253	253
B	264	264
Kg/cm2 bar	6	6
LBS - psi	87	87

SET POINT REGULATING UNIT

MATERIALS



POS.	DESCRIPTION	N.	MATERIAL
1	1" DN20 flow body	1	Nickel-plated brass
2	Thermometer 40mm 9x27 0-80°C	2	-
3	GP EPDM 44x34x08	2	EPDM
4	Variable speed circulator	1	-
5	Thermostatic head 20-70°C	1	-
6	Set point regulating unit body 1" DN20	1	Nickel-plated brass

SET POINT REGULATING UNIT

REGULATING UNIT

WARNINGS
The following instructions must be read and understood before installation, commissioning and maintenance of the manifold.

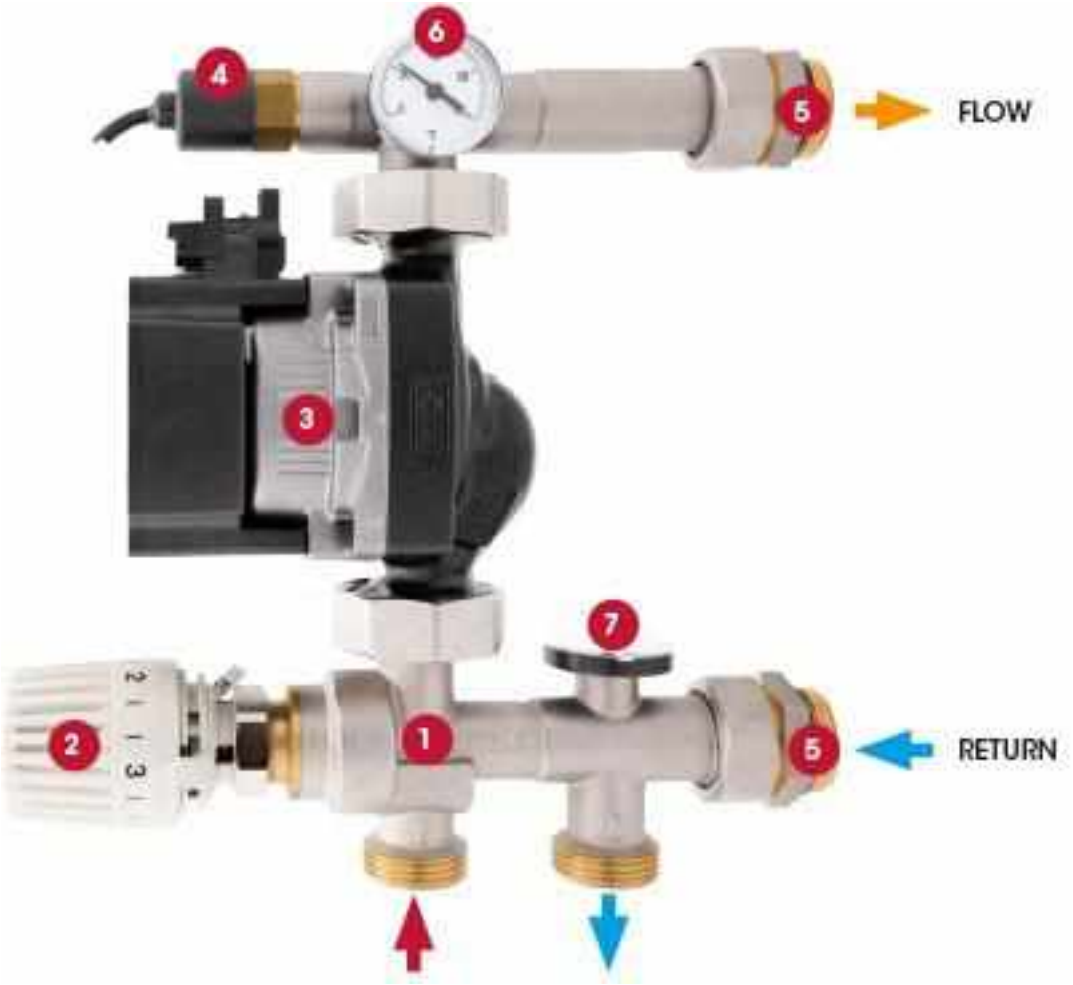
CAUTION
Failure to follow these instructions may result in a safety hazard.

FUNCTION
The regulation unit functions to lower and maintain the temperature of the heat transfer fluid through a 3-way mixing valve. The reduced footprint of only 88 mm in depth allows it to accommodate directly on board the manifold, in low-thickness walls.

INSTALLATION
The regulation unit must be installed by a qualified installer in accordance with national regulations and/or local requirements. If the control units are not installed, put into service, and maintained properly according to the instructions in this manual, they may not work properly and may put the user at risk.
Make sure that all connection fittings are hydraulically sealed. When making hydraulic connections, be careful not to over-raise the threads mechanically. Over time, breaks may occur with hydraulic leaks to damage to things and/or people.
Water temperatures above 50 ° C can cause severe burns. During installation, commissioning and maintenance of the control units, take the necessary steps to ensure that such temperatures do not endanger people.

COMPONENTS:
1. 3-way mixing valve
2. Thermostatic head with contact probe
3. Variable speed circulator
4. Safety thermostat 55 °C normally closed
5. 1” swivel fittings
6. Flow temperature gauge
7. Return temperature gauge

SET POINT REGULATING UNIT



Regulation of the flow temperature:
The thermostatic head adjusts the flow water temperature in the low temperature circuit. To set the temperature, simply rotate the head to the desired value, matching the adjustment scale with the thermostatic head indicator.
Once the temperature has been set, check with the thermometer on the supply circuit that the temperature corresponds to the desired value.

Circulator characteristics:
The circulator can be set to operate in proportional pressure (PP), constant pressure (CP) or constant curve (CC) mode. For underfloor heating circuits, the recommended mode is constant pressure (CP), so that the available head is kept constant regardless of the heat demand of the system. For each mode, 3 different speed levels are available: lower (1), intermediate (2) and higher (3). Using the AUTOADAPT (AA) function, the circulator adapts its performance automatically based on the size of

the system and the varying conditions over time.
To set up the product, use the button on the control panel. Each time the button is pressed, the pump setting changes. The LEDs will indicate the selected control mode, according to the following diagram:

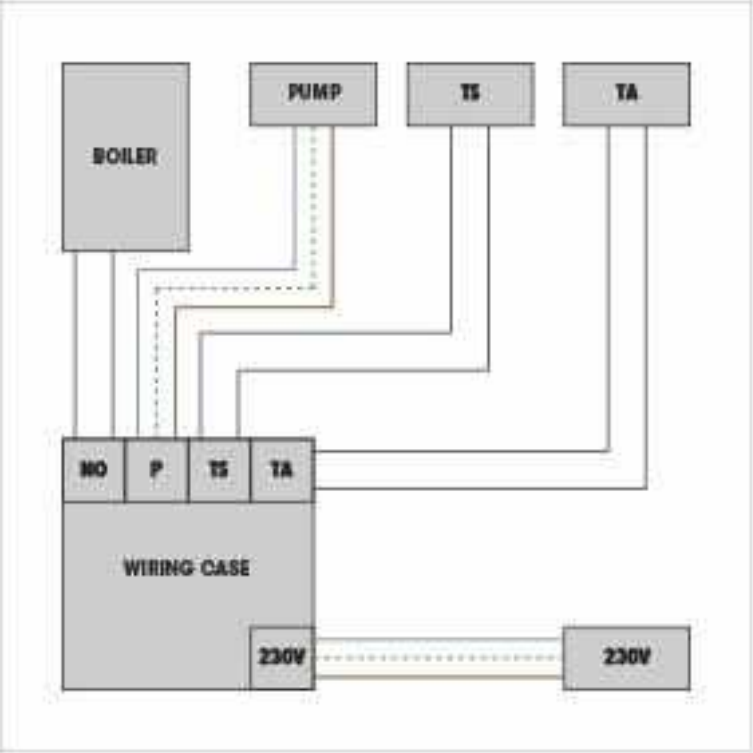
Mode	LED 1	LED 2	LED 3	LED 4	LED 5
PP AUTO ADAPT	●				
CP AUTO ADAPT		●			
PP 1	●		●		
PP 2	●		●	●	
PP 3	●		●	●	●
CP 1		●	●		
CP 2		●	●	●	
CP 3		●	●	●	●
CC 1			●		
CC 2			●	●	
CC 3			●	●	

The wiring case has all the connections required for the regulation unit: boiler enable signal (NO), room thermostat (TA), safety thermostat (TS) and pump power (POMPA). It has to be powered at 230V.

- EXAMPLE OF SINGLE-ZONE INSTALLATION

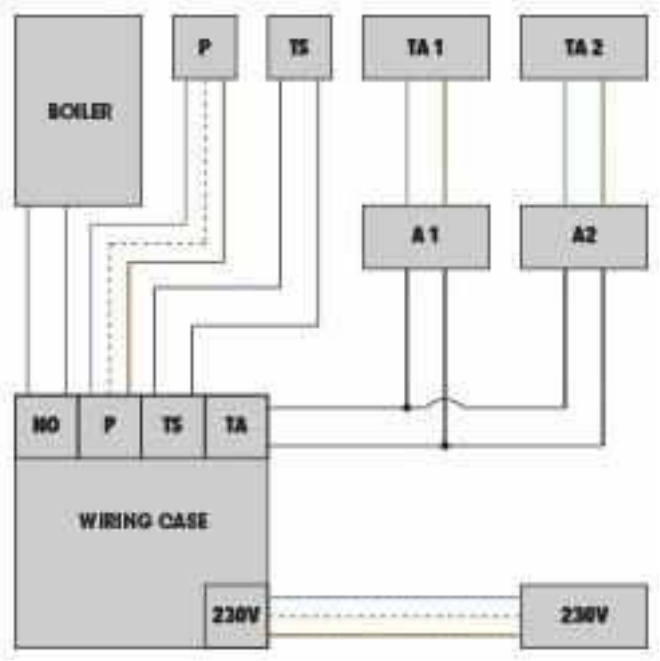
For single-zone systems, simply wire the components to the wiring case - no other cabling is required. When the room thermostat's ON-OFF contact closes (i.e. the room temperature is below the setpoint) it sends the enable signal to the boiler (NO contact) thus turning on the mixing unit circulation pump.

SET POINT REGULATING UNIT



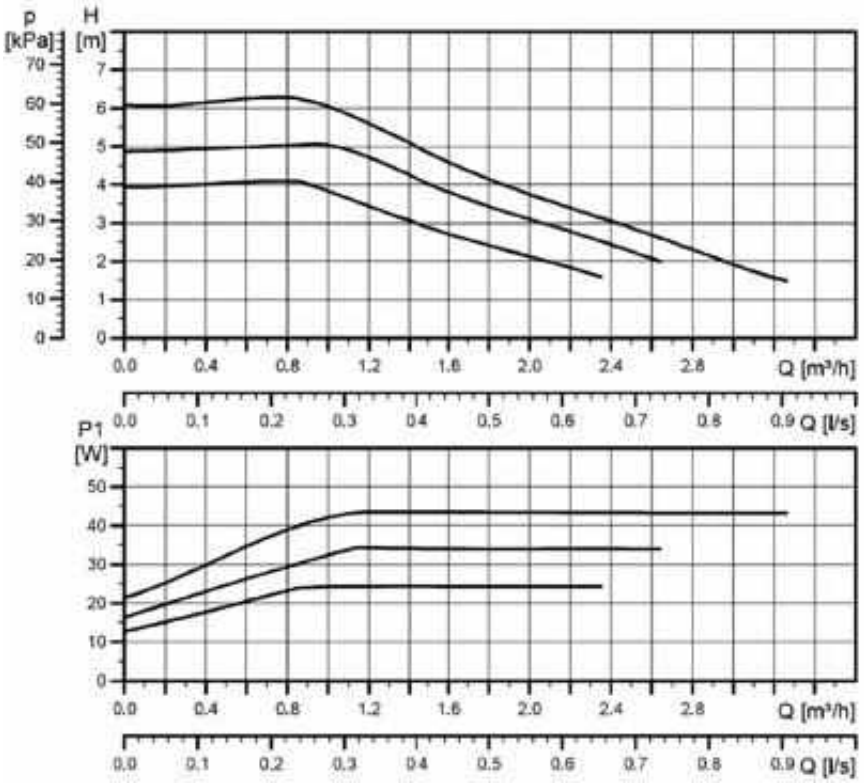
- EXAMPLE OF MULTI-ZONE INSTALLATION

Multi-zone systems require the use of thermo-electric actuators with auxiliary micro-switch (not included) and a room thermostat for each zone. The room thermostat's ON-OFF contact must be connected to the power cable wires (blue and brown) of each thermo-electric actuator, while the auxiliary micro-switch wires of all actuators in all zones must be connected to the TA contact. This means that the room thermostat contact will open the actuators connected to it which, once they are completely open, send the enable signal to the boiler and to the mixing unit's circulation pump.

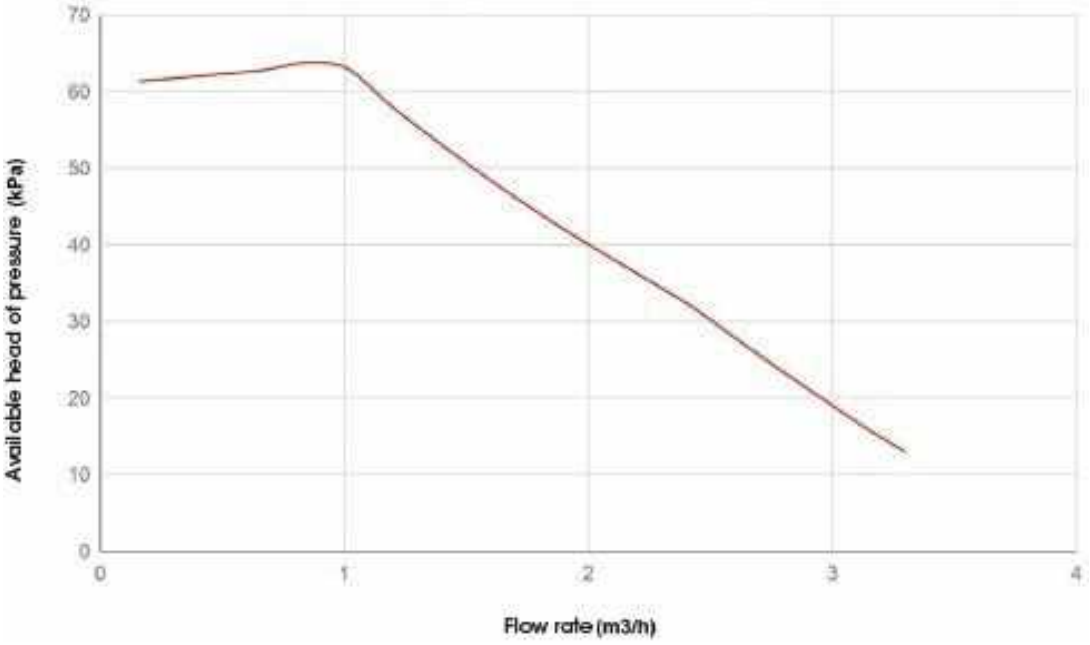


AVAILABLE HEAD OF PRESSURE AT MIXING UNIT CONNECTIONS

SET POINT REGULATING UNIT

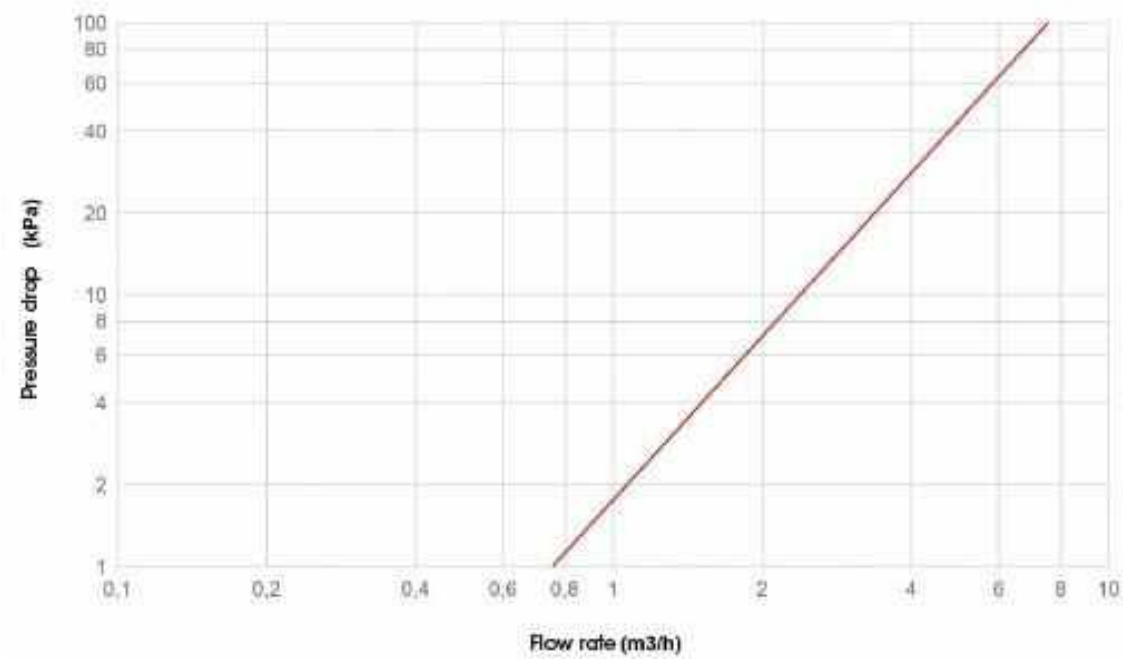


CIRCULATOR GRAPH

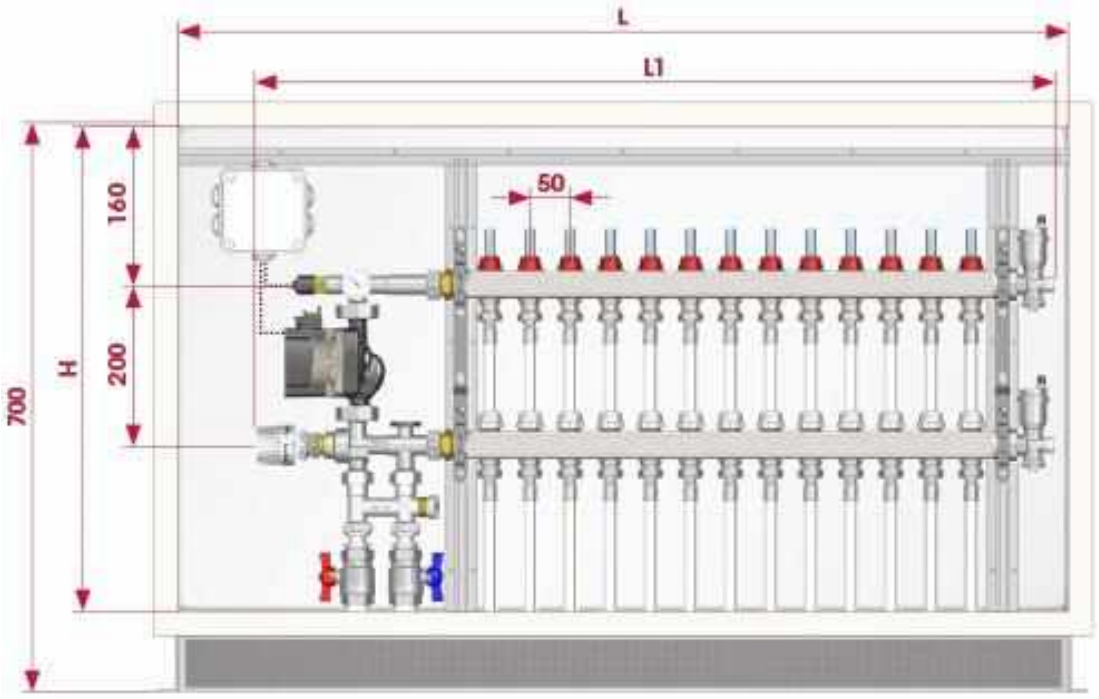


REGULATING UNIT PRESSURE DROP

SET POINT REGULATING UNIT



POSITIONING THE REGULATING UNIT INTO THE METAL BOX

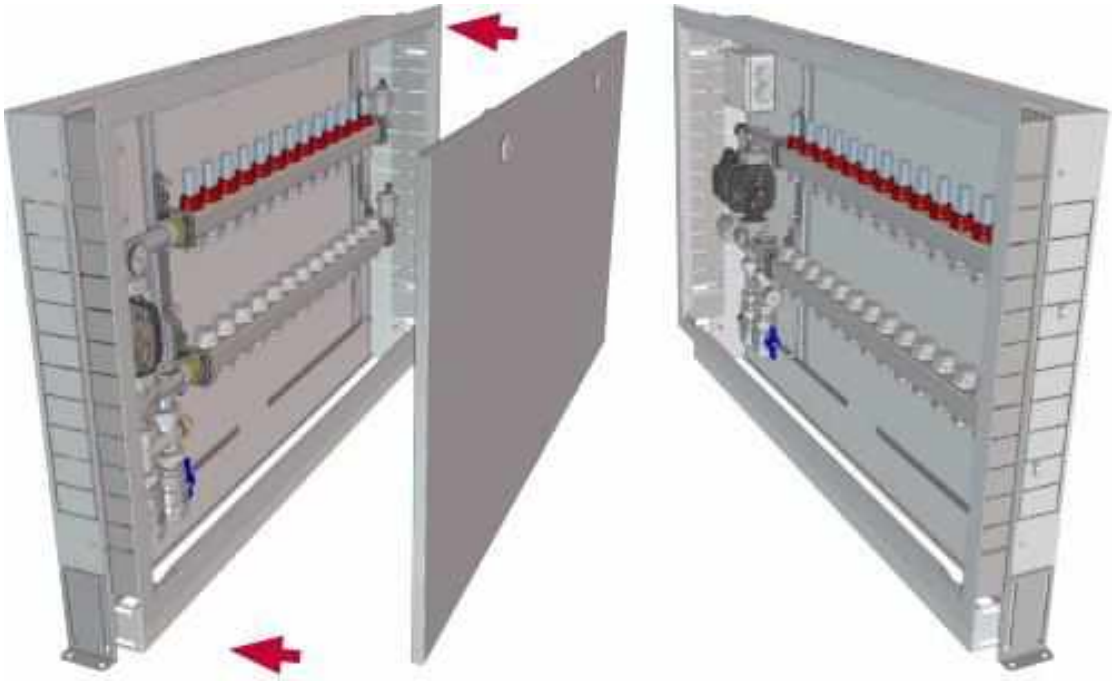


CODE	498.600.600	498.700.600	498.800.600	498.1000.600	498.1100.600
LxH (mm)	600x600	700x600	800x600	1000x600	1100x600
N. ways	2-3	4-5	6-7	8-9-10	11-12-13
MANIFOLD			1"		
L1	498	598	698	848	998

CONSTRUCTION

The regulating unit is housed in a galvanised steel box (depth 90 mm), which makes it ideal for installation in thin walls. To protect the contents of the enclosure and facilitate the necessary masonry work, it is fitted with a galvanised steel cover, which

mounts to the front of the enclosure with four screws. The cover has a 1 cm rim, which acts as a plastering guide. Both the front and back of the enclosure are fitted with mesh to prevent the plaster retracting and cracking. Once the enclosure has been installed and plastered over, remove the cover and fit the frame and door with the four screws. These are made of galvanised steel with a white (RAL9010) coating and protective film which is removed at the end of the installation process. The base of the enclosure is adjustable vertically by 100 mm, while its door can be adjusted inwards or outwards by 50 mm. The roof of the enclosure has holes for routing the electrical cables.



The 3-way mixing valve has 20 mm inside diameter. This large diameter means that the medium can be heated up to the desired temperature quicker than with units with smaller diameter ports. The result is that the circulator pump runs for less time throughout the day, which considerably reduces its power consumption. An additional saving is represented by the use of variable speed circulator pumps compliant with Directive ErP 2015 (starting from january 1st 2013), which considerably reduces power consumption and promote the new concept of eco-design.

INSTALLATION OF REGULATING UNIT

1. The control unit is supplied with the connection of the main pipes down, with the outlet on the left and the return on the right.
2. Using the swivel fittings, connect the unit to the secondary pipes or distributor manifolds, paying attention to connecting the supply circuit to the outlet at the top and the return circuit on the bottom one.
3. Connect the primary circuit bypass (optional) and the ball valves (optional), paying attention to connecting the supply circuit to the left and the return circuit to the right.
4. Connect the main pipes.

PRIMARY CIRCUIT BY-PASS

The by-pass for the primary circuit (optional) allows the hydraulic separation between the primary and secondary circuit. This hydraulic separation optimizes the operation of the secondary circuit and prevents changes in the flow rate of the primary from affecting the secondary circuit. The flow rate that passes through the respective circuits depends exclusively on the flow rate characteristics of the pumps, avoiding the mutual influence due to their coupling in series.
An adjustable differential valve is placed on the by-pass, whose intervention value can be changed using the appropriate knob. If the secondary circuit is closed, the differential valve opens to allow the water to returnto the boiler.

SET POINT REGULATING UNIT

GENERAL INFORMATION

This appliance may be used only for its intended application. Any other use is improper and dangerous. This appliance is designed for heating water to a temperature below boiling point at atmospheric pressure.

The appliance is designed only for installation indoors, in the room or suitably equipped rooms. It may not be installed or operated outdoors. Installing the unit outdoors may cause malfunction and hazards. For outdoors installations, we recommend the use of equipment designed specifically for such applications.

Before wiring the unit, have all circuit pipes flushed by a professionally qualified technician to remove any residue or impurities capable of compromising the operation of the boiler.

The appliance must be installed in conformity with the instructions given in this manual. The installation must be done by a professional technician, liable for the observance of all applicable local and national legislation published in the official gazette, as well as applicable technical regulations.

Install the appliance only to a closed wall made of non-flammable material, which is flat and vertical and provides the minimum clearances necessary for installation and maintenance.

The installation must be done in compliance with the standards, regulations and instructions given in this manual, which constitute a non-exhaustive list of applicable regulations which are subject to change with developments in good practice. The installation technician is responsible for ensuring compliance with applicable regulations.

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Do not leave the packaging materials within the reach of children as they are potentially hazardous. The manufacturer is not liable for any damage or injury to property, persons or animals resulting from failure to comply with the above instructions.

This manual is an integral and essential part of the product and is supplied with every regulation unit sold. Keep it for reference.

Please read the information in this manual carefully; it provides important information for the use and maintenance of the product. Before cleaning or servicing the product, disconnect it from its power supply with the system's master power switch or circuit breakers. If the unit fails or malfunctions, switch it off immediately; do not attempt to repair it or work on it in any way. It may only be repaired by a legally authorised technician.

CAUTION

Leave this manual for use and service of the user.

The installation and wiring must be done by a qualified technician.

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.

SET POINT REGULATING UNIT

949CEF Wiring case for pump connection

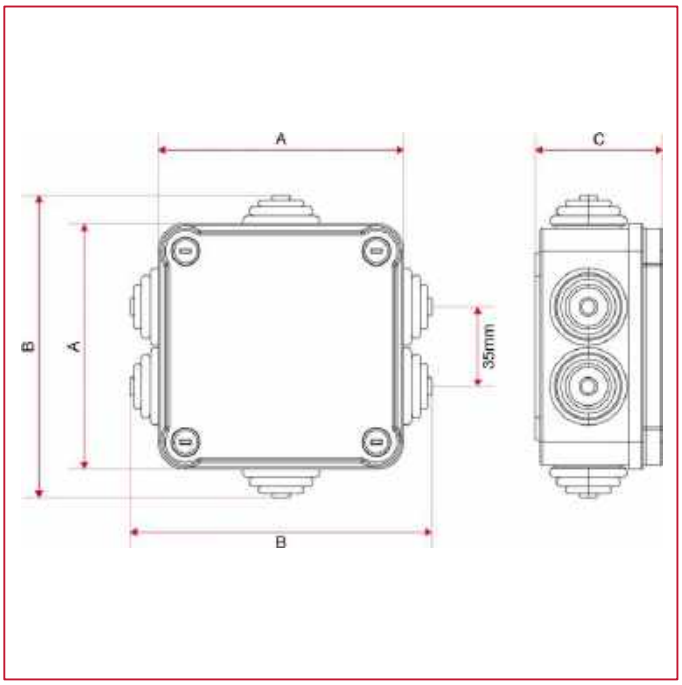
CODE	PACKING
949CEF	1/4

TECHNICAL SPECIFICATIONS

Including all the connections required for the correct operation of art. 949 regulating unit:
- boiler enablement (NO)
- room thermostat (RT)
- safety cutoff (ST)
- circulator power supply (PUMP)

It has to be powered at 230V.

OVERALL DIMENSIONS

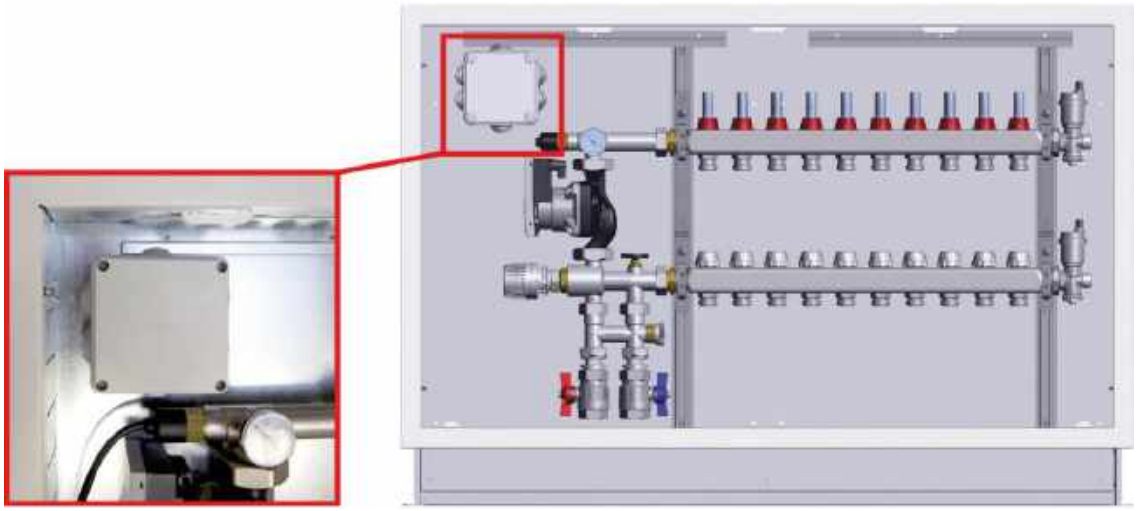


A	108
B	133
C	56

SET POINT REGULATING UNIT

INSTRUCTIONS

The electrical wiring case has all the contacts required for the unit to operate, such as the boiler enable signal and connection to one or more ON-OFF room thermostats.

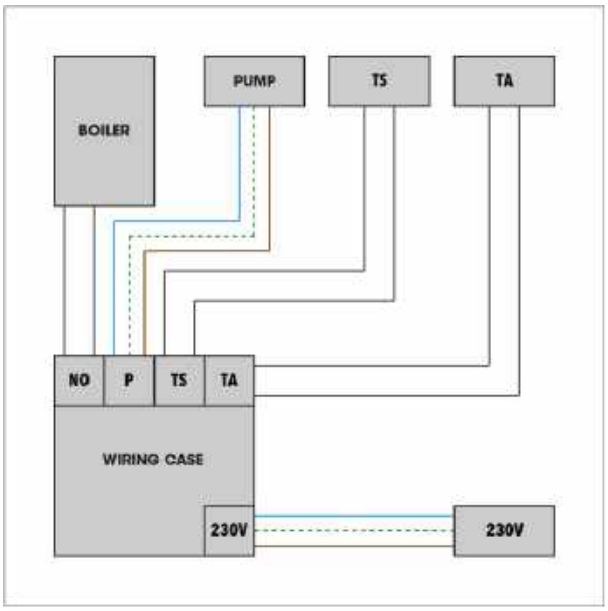


The wiring case has all the connections required for the regulation unit: boiler enable signal (NO), room thermostat (TA), safety thermostat (TS) and pump power (POMPA).
It has to be powered at 230V.

INSTALLATION:

- EXAMPLE OF SINGLE-ZONE INSTALLATION

For single-zone systems, simply wire the components to the wiring case - no other cabling is required. When the room thermostat's ON-OFF contact closes (i.e. the room temperature is below the setpoint) it sends the enable signal to the boiler (NO contact) thus turning on the mixing unit circulation pump.



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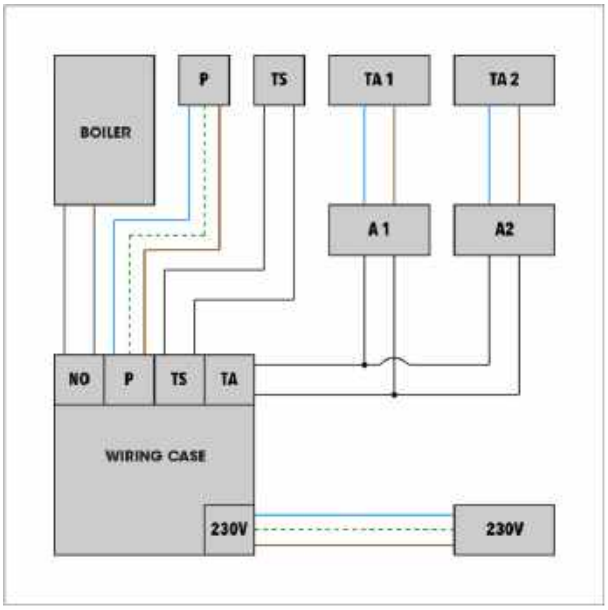
SET POINT REGULATING UNIT



SET POINT REGULATING UNIT

949BY Primary circuit by-pass kit

SIZE	PRESSURE	CODE	PACKING
1"	6bar/87psi	949BY100	1/12

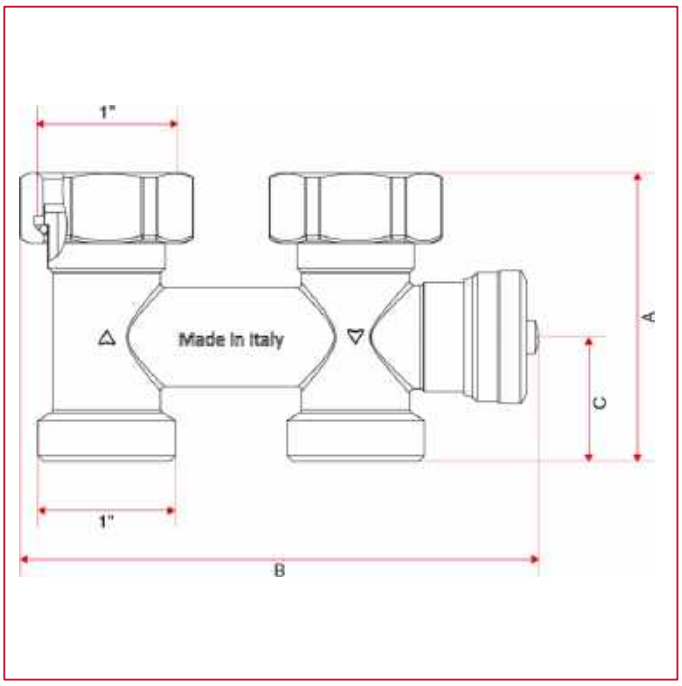
CERTIFICATIONS

TECHNICAL SPECIFICATIONS

To be installed before art. 949 regulating unit.
It allows the flow circulation in the primary circuit.
Adjustable for differential pressure between 10 and 30 kPa.
Maximum operating temperature: 100°C (without steam).
Maximum operating pressure: 6 bar.
Available size: 1”.
Threads: ISO 228 (equivalent to DIN EN ISO 228 and BS EN ISO 228).
Supplied with a pair of flat EPDM washer.

SET POINT REGULATING UNIT

OVERALL DIMENSIONS



	1"
A	69,6
B	125
C	30
Kg/cm2 bar	6
LBS - psi	87

SET POINT REGULATING UNIT

MATERIALS

POS.	DESCRIPTION	N.	MATERIAL
1	GP EPDM 30 X 20 X 2	2	EPDM
2	NICKEL-PLATED NUT 1" H=17MM	2	CW617N
3	ELASTIC RING 28,5 X 2	2	AISI 304
4	BY-PASS BODY 1"	1	CW617N
5	GP EPDM 16 X 06 X 04	1	EPDM
6	BY-PASS SHUTTER	1	CW614N
7	SPRING 10 X 4 X 0.8 L=33	1	AISI 304
8	BY-PASS STEM M22X1	1	CW614N
9	OR EPDM 18.00 X 02.00	1	EPDM
10	ELASTIC RING FOR D. 23 HOLE	1	AISI 304
11	By-pass handle	1	CW614N
12	SCREW M4 X 7	1	STEEL

SET POINT REGULATING UNIT

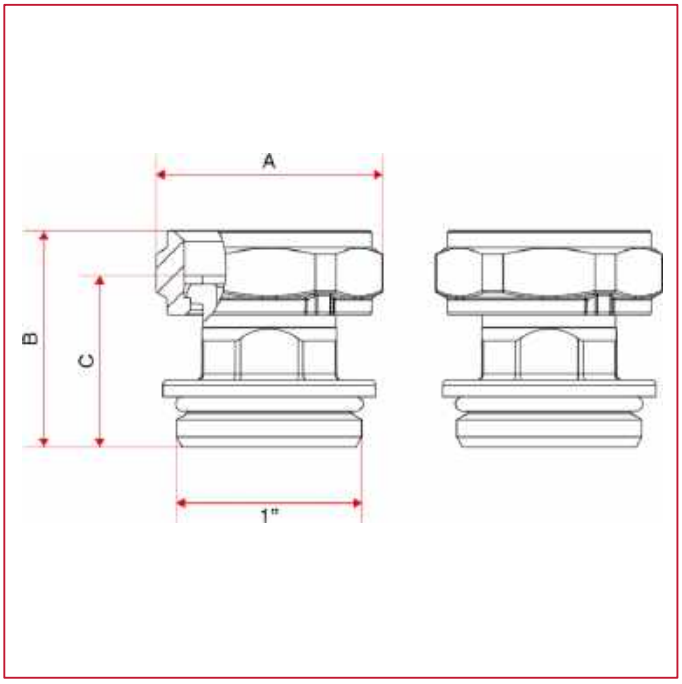
894K Pair of union connections, flat seat

SIZE	PRESSURE	CODE	PACKING
1"	10bar/145psi	894DC100MPK	1/100

TECHNICAL SPECIFICATIONS

These are required for connecting art. 092K ball valve kit to art. 949 regulating unit.
Body in nickel-plated brass.
O-ring in EPDM.
Maximum operating temperature: 100°C (without steam).
Maximum working pressure: 10 bar.
Available size: 1”M x 1”F.
Supplied with a pair of fibre washer.

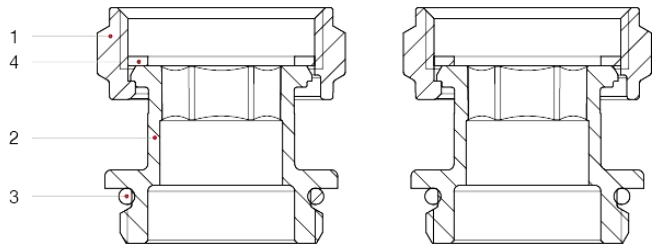
OVERALL DIMENSIONS



	1"
A	40,5
B	38,5
C	30,5
Kg/cm2 bar	10
LBS - psi	145

SET POINT REGULATING UNIT

MATERIALS



POS.	DESCRIPTION	N.	MATERIAL
1	Nut	2	Nickel-plated brass CW617N
2	Union	2	Nickel-plated brass CW617N
3	O-ring	2	EPDM
4	Washer	2	FASIT OMNIA

SET POINT REGULATING UNIT

092K Ball valves kit

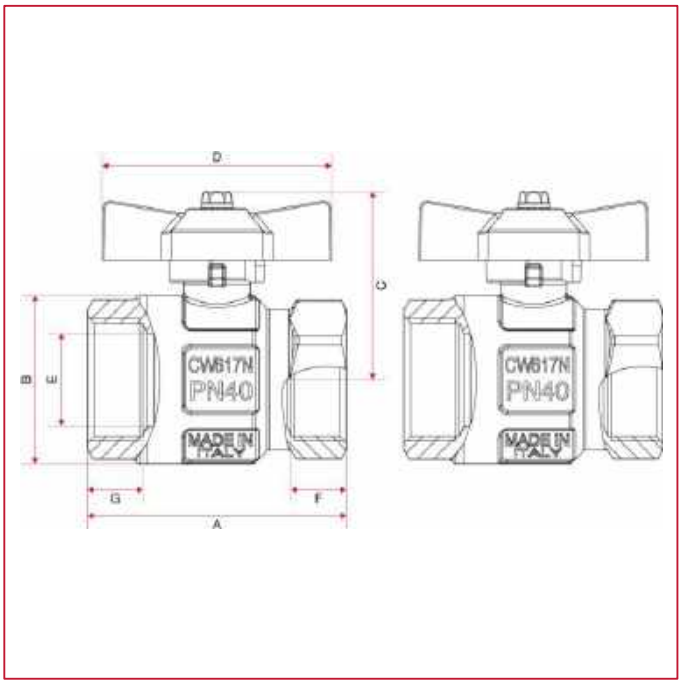
SIZE	PRESSURE	CODE	PACKING
1"	40bar/580psi	0920100K	1/26

CERTIFICATIONS

TECHNICAL SPECIFICATIONS

Female/female threads.
T handle in aluminium.
Body in nickel-plated brass.
Minimum and maximum working temperatures: -20°C, 150°C in absence of steam.
Threads: ISO 228 (equivalent to DIN EN ISO 228 and BS EN ISO 228).

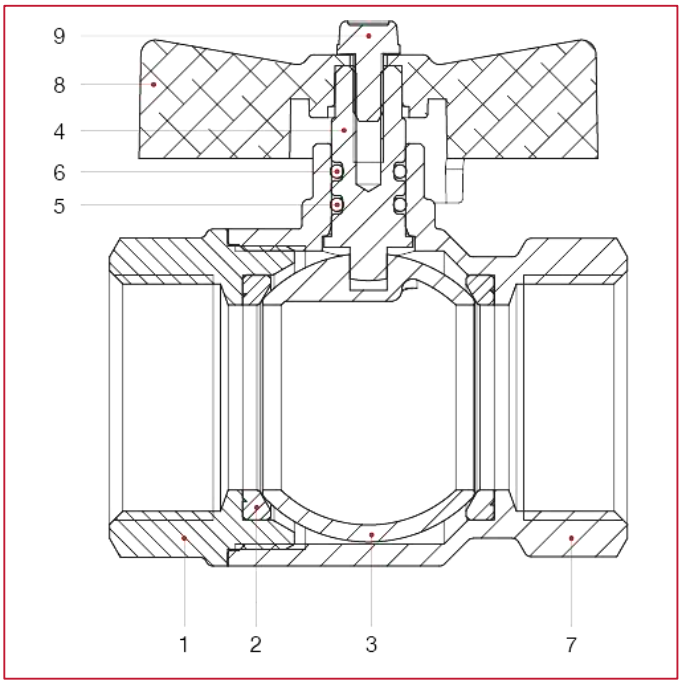
OVERALL DIMENSIONS



SET POINT REGULATING UNIT

	1"
DN	25
A	70
B	45,5
C	51
D	62
E	25
F	15
G	15
Kg/cm2 bar	40
LBS - psi	580

MATERIALS



POS.	DESCRIPTION	N.	MATERIAL
1	Female end adapter	1	Nickel-plated brass CW617N
2	Seat	2	P.T.F.E.
3	Ball	1	Chrome-plated brass CW617N
4	Stem	1	Brass CW614N
5	O-ring	1	NBR
6	O-ring	1	Viton®
7	Body	1	Nickel-plated brass CW617N
8	T handle	1	Varnished aluminium
9	Screw	1	Zinc-plated steel C4C

498 Metal box for manifolds

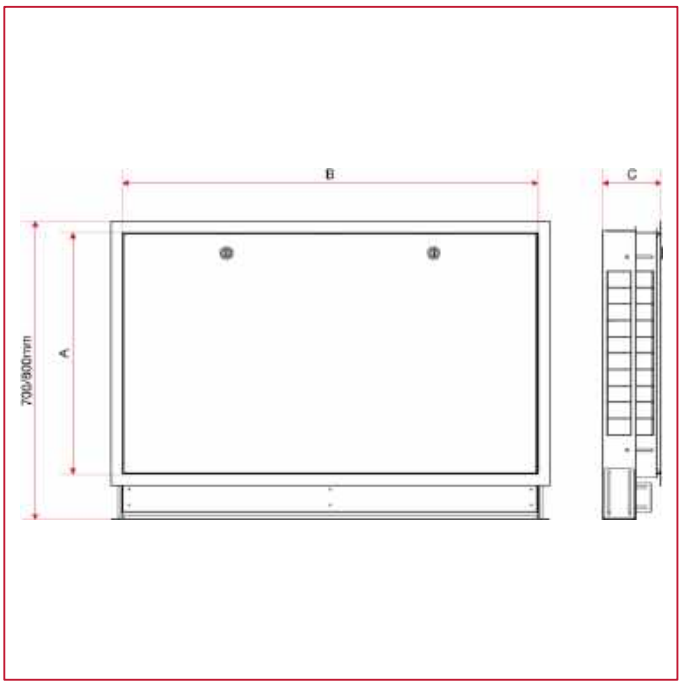
Complete with basement and support for floor installation.
Equipped with plaster protection.

SIZE	CODE	PACKING
600x600x(80-130)	498600600	1/1
700x600x(80-130)	498700600	1/1
800x600x(80-130)	498800600	1/1
1000x600x(80-130)	4981000600	1/1
1100x600x(80-130)	4981100600	1/1

TECHNICAL SPECIFICATIONS

Enclosure, telescopic door frame and door in zincplated steel.
The telescopic door frame and the door are painted.
Adjustable depth: from mm. 80 to mm. 130.
Minimum depth for Itap manifolds installation: mm. 90.
Adjustable height: from mm. 700 to mm. 800.

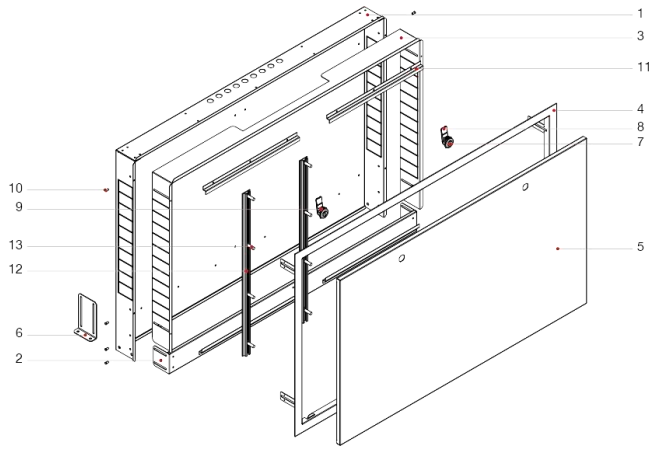
OVERALL DIMENSIONS



	600x600x (80-130)	700x600x (80-130)	800x600x (80-130)	1000x600 x(80-130)	1100x600 x(80-130)
A	600	600	600	600	600
B	600	700	800	1000	1100
C	80 -130	80 -130	80 -130	80 -130	80 -130

SET POINT REGULATING UNIT

MATERIALS



POS.	DESCRIPTION	N.	MATERIAL
1	Outside framework	1	Zinc-plated steel EN 10346 DX51+Z140
2	Bottom framework	1	Zinc-plated steel EN 10346 DX51+Z140
3	Inside framework	1	Zinc-plated steel EN 10346 DX51+Z140
4	Frame	1	Zinc-plated steel EN 10346 DX51+Z140
5	Cover	1	Zinc-plated steel EN 10346 DX51+Z140
6	Bracket	2	Zinc-plated steel EN 10346 DX51+Z140
7	Sleeve	2	Polymer
8	Lever	2	Polymer
9	Lever locker	2	Polymer
10	Pin	8	Steel 8.8
11	Guide	4	Zinc-plated steel EN 10346 DX51+Z140
12	Stick	2	EN AW-6061
13	Screw	8	Steel 8.8
-	Daubing mesh	1	Polypropylene

SET POINT REGULATING UNIT

498R Metal box for manifolds - compact model

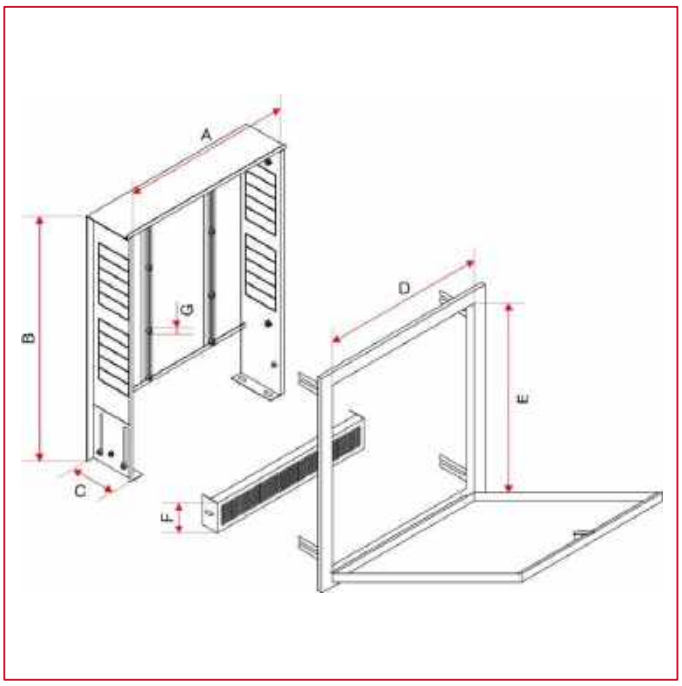
Complete with basement and support for floor installation.
Equipped with plaster protection.

SIZE	CODE	PACKING
500x450x(90-130)	498500450	1/1
600x450x(90-130)	498600450	1/1
700x450x(90-130)	498700450	1/1
850x450x(90-130)	498850450	1/1
1000x450x(90-130)	4981000450	1/1
1100x450x(90-130)	4981100450	1/1

TECHNICAL SPECIFICATIONS

Zincplated steel enclosure, telescopic, door frame and door.
The telescopic door frame and the door are painted.
Adjustable depth: mm. 90 to mm. 130.
Minimum depth for Itap manifolds installation: mm. 90.
Overall height: mm. 575.

OVERALL DIMENSIONS



SET POINT REGULATING UNIT

	500x450x (90-130)	600x450x (90-130)	700x450x (90-130)	850x450x (90-130)	1000x450 x(90-130)	1100x450 x(90-130)
A	500	600	700	850	1000	1100
B	575	575	575	575	575	575
C	90 -130	90 -130	90 -130	90 -130	90 -130	90 -130
D	487	587	687	837	987	1087
E	450	450	450	450	450	450
F	70	70	70	70	70	70
G	M6	M6	M6	M6	M6	M6

SET POINT REGULATING UNIT

498ST Mounting brackets in steel for metal boxes art. 498 and 498R

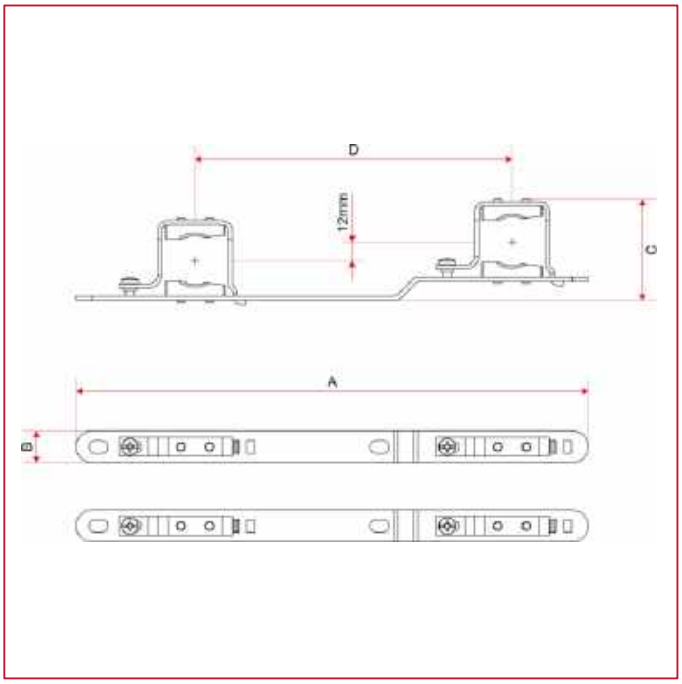
498STK

SIZE	CODE	PACKING
1"	498ST100K	1/20

TECHNICAL SPECIFICATIONS

The set includes a pair of brackets with screws and fixings.
For installation in box art. 498 - 498R:
- 498STK: Standard version: centres distance mm. 200, offset: 12mm. Suitable for outlets pipe up to 20mm.

OVERALL DIMENSIONS art.498STK

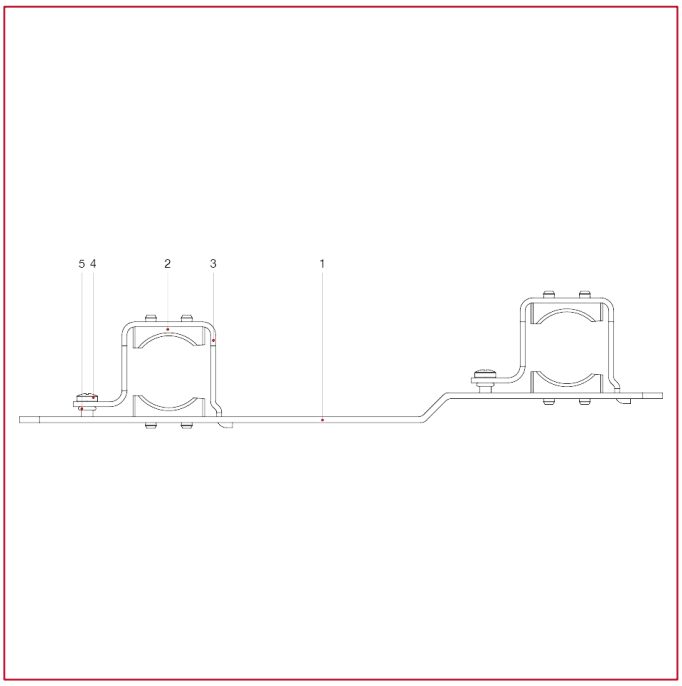


498STK

	1"
A	323
B	20
C	66
D	200

SET POINT REGULATING UNIT

MATERIALS art.498STK size 1"



POS.	DESCRIPTION	N.	MATERIAL
1	Bracket	2	Steel-P11
2	Dowel	8	TPE - 95 SHORE A
3	Collar	4	Steel-P11
4	Screw	4	Zinc-plated steel C4C
5	O-ring	4	NBR

SET POINT REGULATING UNIT

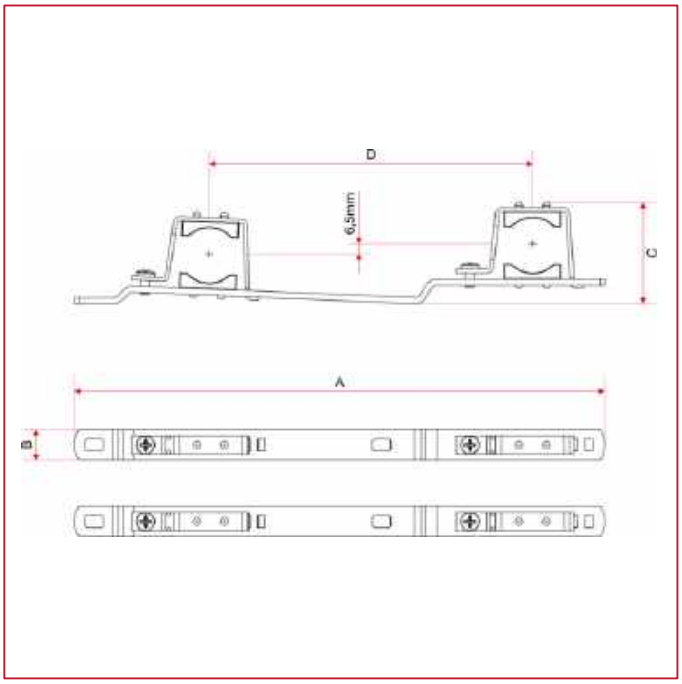
949ST Mounting brackets in steel for metal boxes art. 498 and 498R

SIZE	CODE	PACKING
1"	949ST211K	1/20

TECHNICAL SPECIFICATIONS

The set includes a pair of brackets with screws and fixings.
4 spacers included.
- 949ST: centres distance mm. 211, offset: 6,5mm.

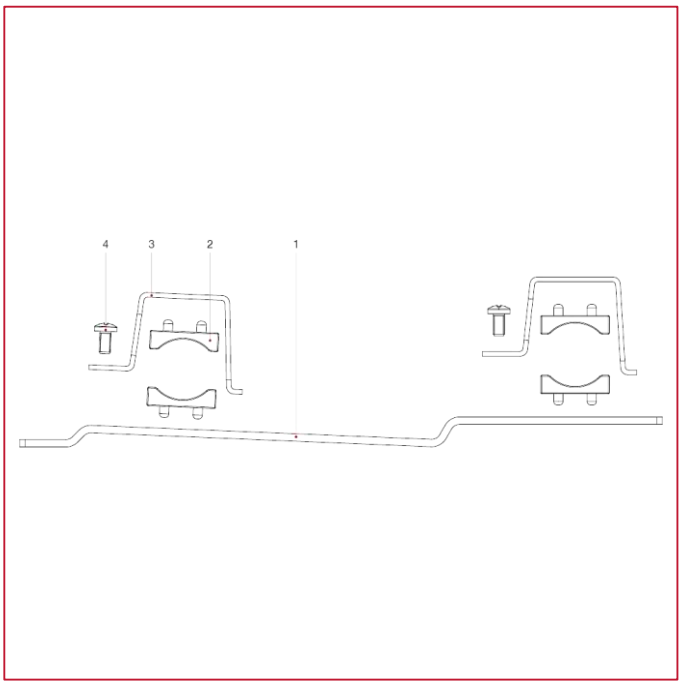
OVERALL DIMENSIONS



	1"
A	346
B	20
C	66
D	211

SET POINT REGULATING UNIT

MATERIALS



POS.	DESCRIPTION	N.	MATERIAL
1	Bracket	2	Steel-P11
2	Dowel	8	MOPLEN
3	Collar	4	Steel-P11
4	Screw	4	Zinc-plated steel Fe

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