

Manifolds and Temperature Control Units



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Company presentation



Wavin Italia SpA

Wavin Italia SpA is part of the European Wavin Group, a world leader in plastic piping systems for residential, non-residential and civil engineering works.

It was founded in 1993 through the acquisition of Plastistamp by the Wavin Group. In subsequent years, the company, based in Santa Maria Maddalena, in the province of Rovigo, experienced a period of great expansion.

In 2000 it acquired MCM, a company that produces the EMU line of siphons and, in June 2004, it acquired Chemidro, a brand specialising in the production of supply systems for the distribution of sanitary and heating water, with particular focus on radiant heating and home comfort (underfloor, ceiling and water heating and cooling in addition to air treatment with dehumidification and controlled mechanical ventilation).

Two years later, Wavin Italia completed the acquisition of AFA, the Italian distributor of the PB Acorn (today Hep2O) supply and heating system.

Today, Wavin Italia has over 200 employees and a total area of more than 70,000 m², 9,000 of which dedicated to production.

The Wavin group

The Wavin Group is headquartered in Zwolle, Netherlands, and has a direct presence in 25 European countries. With 40 manufacturing systems and a total of about 5,500 employees, the Group generates annual revenue of about € 1.2 billion and, outside Europe, operates through a global network of agents, licensees and distributors. In 2012, Wavin became part of Mexichem Group, a Latin American leader in the petrochemical and pipeline systems industry.

Wavin provides effective solutions for the basic needs of daily life: safe distribution of drinking water, sustainable management of rainwater and sewage and energy-efficient heating and cooling for buildings.

Wavin's leadership in Europe, its local roots, constant commit-

ment to innovation and technical assistance are big advantages for our customers. In fact, we guarantee full compliance with the highest standards of sustainability and reliability of supplies, allowing our partners to achieve their goals.

Market leader

Founded in 1955 based on an innovative idea by J.C. Keller, director of the company that managed the Dutch water supply, its more than 60 years of experience allows Wavin to connect the impossible to the possible.

Its innovations in plastic piping systems and water management solutions are the result of its on-going commitment and ability to bridge the gap between new challenges and known and traditional solutions.

The excellent performance and quality of its products guarantee that Wavin systems will have a long service life.



The activities and commitment of the Wavin Group are supported by four pillars:

Innovation

From the very beginning, Wavin has had a strong focus on innovation. In fact, the development of a new product or new solutions is the result of a dedicated team, able to transform ideas into reality. Wavin's challenge is to offer the market innovative technological solutions using plastic components, which is what the company is best at producing.

Sustainability

Wavin invests in research to offer real answers to the construction industry's future environmental challenges. In fact, climate change demands increasingly advanced and safe solutions for managing the storm water cycle, from collection to its natural reuse. Sustainability that the company guarantees not only through its products, but that also applies to its production processes in the Group's factories.

Social commitment

Since 2005, Wavin and UNICEF are active partners in providing essentials such as drinking water and sanitation to children around the world. Over the years, Wavin has supported several projects (in Mali, Papua New Guinea, Nepal and Bhutan), offering its products, but most of all providing money and expertise to bring drinking water to more than 200 schools and 60 health facilities, and to improve sanitation for over 96,000 people (especially children).

Comfort

Wavin devotes particular attention to solutions that ensure environmental comfort, where temperature, humidity and noise levels are the main factors that determine the state of well-being of the home environment. Soundproofed drain systems along with radiant heating and cooling systems are the ideal solutions for those who distinguish themselves in offering comfort.

It is precisely in this way that Wavin Italia distinguishes itself through the solutions of the Chemidro brand by offering a wide range of radiant heating and cooling systems articulated in numerous underfloor solutions that are ideal for any type of building and need, thermal insulation panels, dry solutions and low profile panels ideal for renovations and acoustic solutions.

Wavin offers innovative ceiling heating and cooling solutions that provide energy saving and environmental sustainability, such the CD-4 system, which allows realising radiating surfaces to measure, as a function of individual project, the CD- 10 system and the WD-10 and WW-10 wall systems.

Wavin by Chemidro offers its own CE-marked underfloor systems that, in addition to product quality, also provide the end user a guarantee of the thermal resistance characteristics of the insulating panel.

The solutions offered are the most technologically advanced, the production processes ensure reliability and Wavin technicians offer a wealth of knowledge with few equals in Europe. All this for the benefit of our customers who can thus compete more successfully in the market.



The training centre

wavin | academy

Wavin Italia's point of pride is the Wavin Academy Training Centre, an innovative facility launched in 2014 where industry professionals and employees discover Wavin's multiple solutions and keep up-to-date on new products and new technologies. Each week, it organises training courses developed to enhance the professionalism of plumbing distributors, installers, designers, heating and cooling engineers, architects and students, who can participate in dedicated courses based on the type of application and design.

The courses are taught by highly qualified Wavin instructors with specific areas of expertise, who are available to respond to the many requests of the participants to train personnel who can propose, design and install Wavin's many solutions and ensure complete customer satisfaction.

Contact us:

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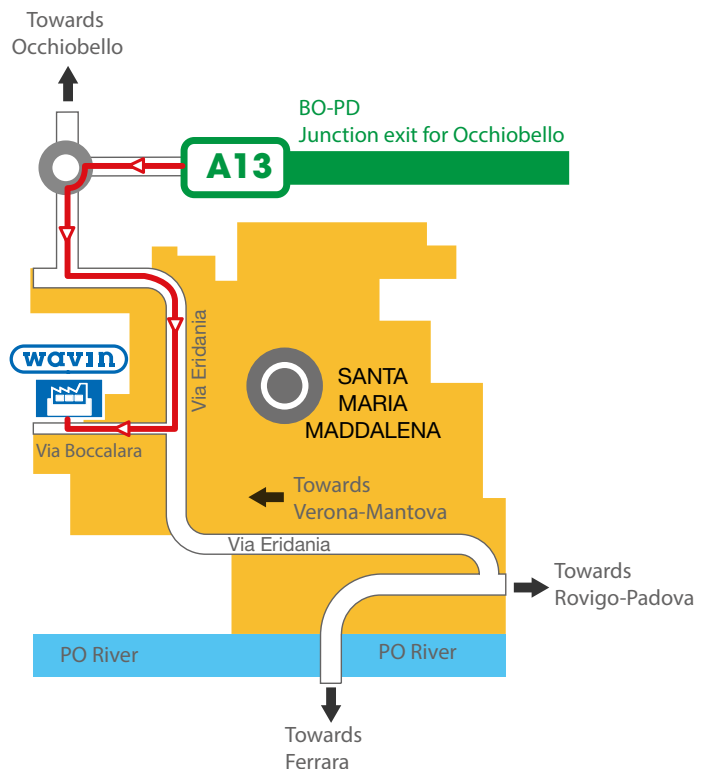
How to reach us:

Wavin Academy is located in our company, just 8 km from the old town centre of Ferrara and 1 km from the Occhiobello exit of the A 13 Bologna-Padua motorway.

Airport: Bologna Guglielmo Marconi (BLQ) 45 Km - Venezia Marco Polo (VCE) 104 Km

Motorway: A13 BOLOGNA-PADUA 1 Km

Ferrara - 8 km / Bologna - 50 Km
Rovigo - 25 Km / Padova - 60 Km





Manifolds and Temperature control units



1. Energy saving, temperature control units, legislation

In recent years, energy efficiency and saving questions have aroused ever more interest, on the part of all the players involved in this sector. The importance these matters have acquired is due, first of all, to the intent to reduce the consumption of fossil fuels and, secondly, the desire to lower emissions of CO₂ and other pollutants into the atmosphere.

In this context, efficient building and system design can provide fundamental leverage for acting in this regard.

Therefore, one can certainly state that temperature control of a radiant air conditioning system falls within the area of energy efficiency and saving of a building. In fact, it is necessary to see to it that a system only provides the heat needed, when and where it is needed, thereby limiting energy and economic waste. As regards, radiant systems, the reference standards are the following:

- **UNI/TS 11300** The reference technical standard on energy saving and energy certification of buildings. It is broken down into four parts, the first three of which are currently being revised.
- **UNI EN 1264-4** Water radiant heating and cooling systems that are built into the structures.
Part 4 - Installation
This lays down the need for radiant system distribution manifolds to be fitted with instruments that regulate the flow rate.
- **Technical Regulation UNI/TR 11619:2016 Low temperature radiant systems - Energy classification** The aim of which is to assist the designer when it comes to choosing and designing a radiant system that is also complete with adequate auxiliaries and suitable control. All of this is aimed at designing and building radiant air-conditioning systems that are as environment-friendly as possible.

We wish to deal specifically with the technical regulation (voluntary standard) in which the concept is introduced of “**Energy efficiency index for the radiant system RS_{EE}** ”. This represents the overall efficiency of a radiant system made up of piping on the ceiling, walls, or in the floor, connections, manifold, and control system.

$$RS_{EE} = \eta_e \times \eta_{rg} \times \eta_{bal} \times \eta_{circ}$$

The four aspects go together to make up the RS_{EE} index, are:

- Losses due to radiant system emissions η_e .
- Losses caused by the control system η_{rg} .
- More or less correct hydraulic balancing of the system η_{bal} .
- Efficiency of the circulator, η_{circ} .

Energy performance is taken to be the ratio between the quantity of energy required for an ideal heating system (which makes it possible to have a uniform temperature, equal on all the spaces), and the energy required under real conditions. According to UNI/TS 11300-2:2014 the energy performance of radiant panels, according to their position, is as follows:

- Ceiling $\eta_e = 0.97$
- Wall $\eta_e = 0.97$
- Floor $\eta_e = 0.99$

NOTE. Classification of radiant systems with a low temperature difference, covers floor, ceiling, and wall systems used in heating systems, without introducing distinctions in relation to the various types, such as dry, wet, or thin systems. Radiant systems therefore have to conform to UNI EN 1264 in terms of characteristics, types of materials, and components.

The **generation performance** is represented by the ratio between the heat required to heat the spaces, with theoretical temperature control, and the heat required to heat the same spaces, with real temperature control.

NOTE. A theoretical temperature control compensates for fluctuations in the thermal load, in real-time.

To calculate the RS_{EE} index, only the “panels built into the structures and detached thermally” are taken into consideration, as, according to UNI EN 1264-4, radiant systems must be equipped with an insulating layer that limits the outward flow of heat, in a given direction. The generation performance levels are indicated in UNI/TS 11300-2.

The **balancing performance** may have two values:

- $\eta_{rg} = 0.97$ for unbalanced systems.
- $\eta_{rg} = 1$ for balanced systems.

A system is balanced when there are suitable instruments in place to regulate the flow rate. Therefore, the distribution manifold must be fitted with micrometric regulation flow rate valves, for the individual circuits, as called for by UNI EN 1264.

When more than one manifold is used, there must also be control valves on the supply line.

The system is not balanced when it does not have any flow rate control instruments.

The **circulation performance** η_{circ} is obtained by comparing the electrical consumption of a circulation pump with a fixed number of rpm, with a circulation pump that is efficient for a variable regime for a given building.

According to the energy efficiency requirements, from 1 January 2015 the energy efficiency index for IEE circulators cannot exceed 0.23 according to the CE 641 2009 Regulation.

The lower the IEE value, the higher the efficiency of the circulator, and therefore of the system.

Circulators can be divided into two categories:

- With performance $\eta_{circ} = 1$ and $IEE \leq 0.23$
- With performance $\eta_{circ} = 0.98$ and $IEE \leq 0.23$

UNI/TR 11619 technical report - Extract from table 5 – Performance values

η_e	η_{rg}																η_{bal}		η_{circ}						
System	Control																Balancing		Circulator efficiency						
Types	Zone only					Individual room only				Zone + air-conditioning				Individual room + air-conditioning			Unbalanced system	Balanced system	/EE> 0.23	/EE≥ 0.23					
	On off	P prop. band 2°C	P prop. band 1°C	P prop. band 0.5°C	P or PID	On off	P prop. band 2°C	P prop. band 1°C	P prop. band 0.5°C	P or PID	On off	P prop. band 2°C	P prop. band 1°C	P prop. band 0.5°C	P or PID	On off					P prop. band 2°C	P prop. band 1°C	P prop. band 0.5°C	P or PID	
Panels embedded in the floor	0.99	0.91	0.92	0.95	0.96	0.97	0.92	0.93	0.96	0.97	0.98	0.94	0.95	0.96	0.97	0.98	0.95	0.96	0.97	0.98	0.99	0.97	1.00	0.98	1.00
Panels embedded in the ceiling	0.97	0.91	0.92	0.95	0.96	0.97	0.92	0.93	0.96	0.97	0.98	0.94	0.95	0.96	0.97	0.98	0.95	0.96	0.97	0.98	0.99	0.97	1.00	0.98	1.00
Wall panels	0.97	0.91	0.92	0.95	0.96	0.97	0.92	0.93	0.96	0.97	0.98	0.94	0.95	0.96	0.97	0.98	0.95	0.96	0.97	0.98	0.99	0.97	1.00	0.98	1.00

Based on the value of the RS_{EE} index obtained by the product, in relation to the four performance levels indicated, one can determine the energy class to which the system belongs, using the table below

**UNI /TR 11619 technical report
Extract from table 6 - Energy efficiency classes**

Classification	RS_{EE}
AAA classification	≥ 0.98
AA classification	0.94-0.98
A classification	0.92-0.94
B Classification	0.90-0.92
C Classification	0.88-0.90
D Classification	< 0.88

2. Types of temperature control units

Types of temperature control units

Wavin provides for two types of temperature control :

- Manifold control units
- Heating plant temperature control units

Manifold control units

The manifold mixing and distribution units are designed for heating and/or cooling systems of small / medium size, and are intended for uses in which a room cannot be set aside for a heating plant.

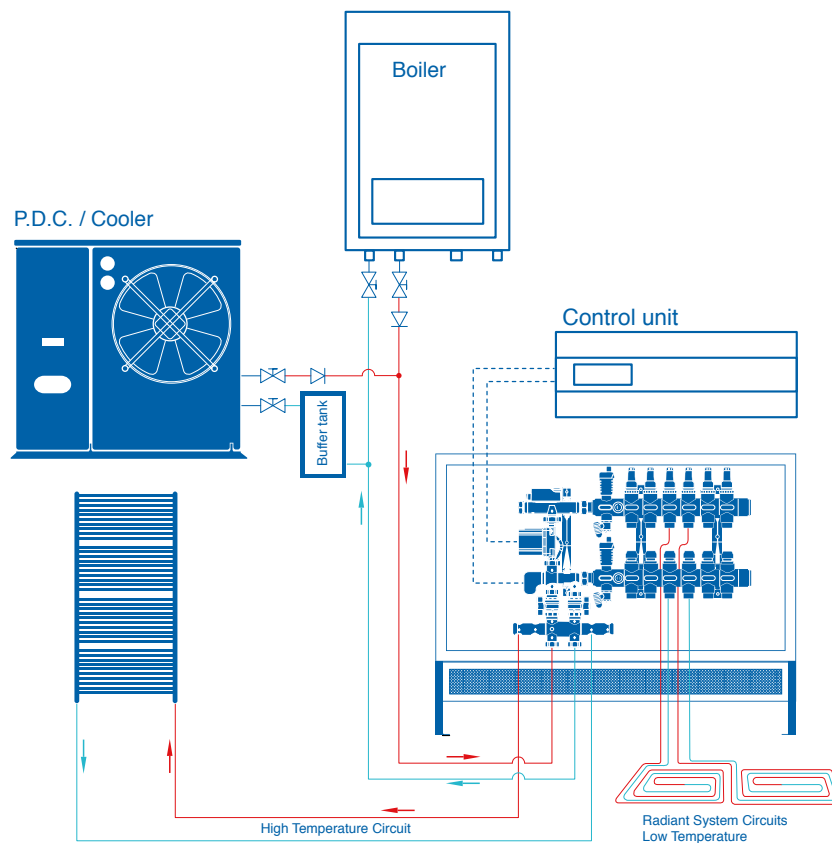
Their characteristic is that they have a mixing valve prepared for using a thermostatic head, rather than an electric servomotor. This therefore makes both independent installations, in case of fixed point heating systems, and control unit controlled installations, in the case of air-conditioning heating or cooling systems. They are also fitted with a Class A inverter circulator, and a safety thermostat.

They are designed for uses in which, despite a number of manifolds being envisaged for the radiant system and where better water temperature control is required than the generators are able to provide on their own, due to a lack of space, it is not possible to incorporate the necessary mixing units in a single position. This means that distribution of the manifolds is adopted to find installation points locally.

This also makes it possible to create as many mixed zones with different water temperatures as there are manifolds, which is especially useful in multi-floor buildings or, in general, where different zones are subject to very different loads.

The block diagram shows a radiant heating system, fed from a traditional high temperature boiler, and a heat pump (or cooler) . Thanks to the addition of supplementary high temperature connections, towel rails added to the bathrooms, was also connected up.

Block diagram



Heating plant thermal control units

The heating plant mixing and distribution units are designed for heating and/or cooling systems of medium / large size, and are intended for uses in which a room can be set aside for a heating plant.

Their characteristic is that they are made up of modules assembled in various configurations, that can be adapted in each case to the size and complexity of the system that has to be controlled.

THIS makes it possible to feed fixed point heating systems rather than air-conditioning or cooling systems, set up mixed zones with different water temperatures, feed numerous manifolds for radiant systems, rather than high temperature radiators to raise temperatures in bathrooms, or lines dedicated to machinery for air treatment, and to serve multi-user systems.

Finally, the use of Class A inverter circulators makes the best performance possible in terms of energy saving.

The configuration illustrated is particularly indicated when the circuits in a system need to be separated hydraulically.

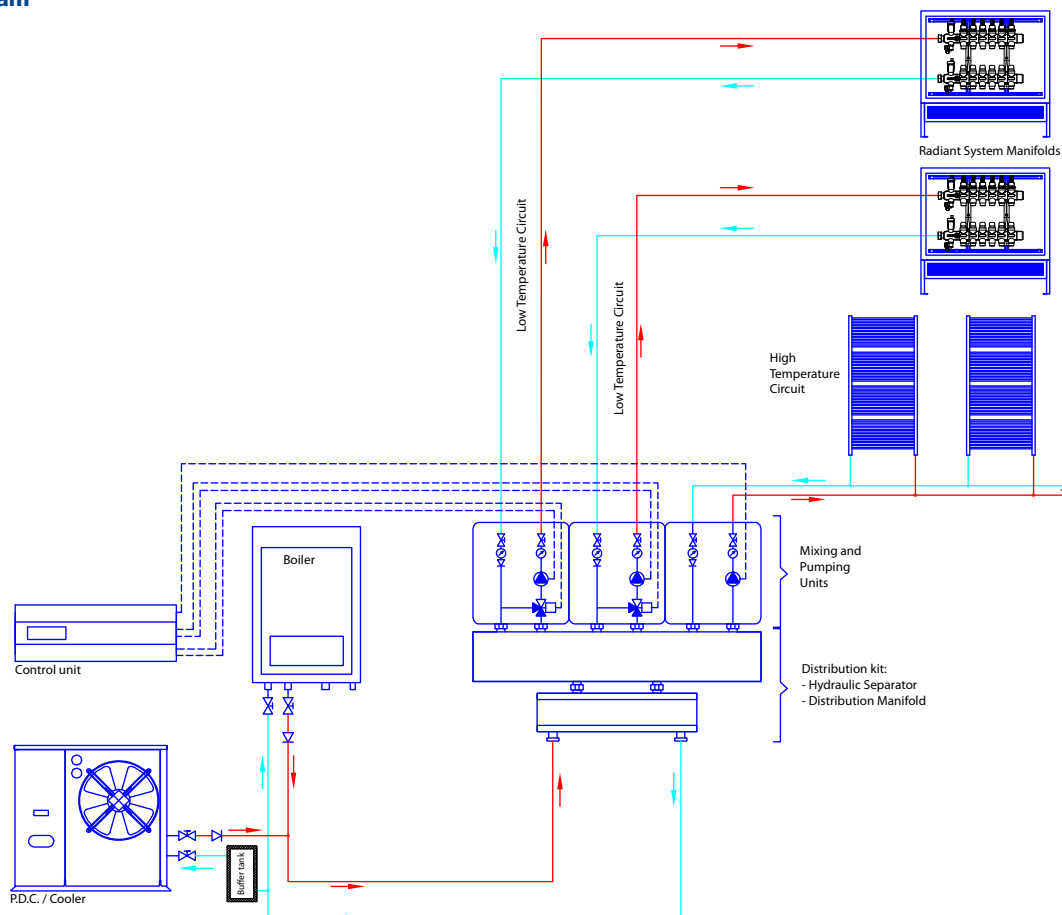
The hydraulic separator, which may or may not be fitted with a main distribution manifold, depending on the number of zones served, acts to separate the primary energy production circuit (boiler or refrigerator side) from the secondary usage circuit (heated / cooled zones).

In effect, the two circuits have different water flow rate needs, and in this way interference between the various circulators is avoided.

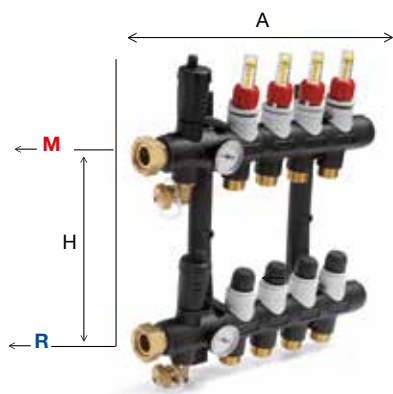
Various control units can be fitted on the main distribution manifold: a simple shunt unit serving a (high temperature) radiator system, or a mixing unit that serves a (low temperature) radiant system.

The mixing unit can be fitted with a thermostatic actuator, for fixed point operation, or a modulating actuator with its own electronic control unit, in order to mix the water on the basis of an air-conditioning curve.

Block diagram



3. Manifolds



TEMPOWER 2G manifold fitted

Code	N° of ports	Flow rate lit/min	User con- nections	Boiler con- nections	A mm	B mm	H mm
11 65 02	2	4	3/4" EK	1" F	245	82	210
11 65 03	3	4	3/4" EK	1" F	295	82	210
11 65 04	4	4	3/4" EK	1" F	345	82	210
11 65 05	5	4	3/4" EK	1" F	395	82	210
11 65 06	6	4	3/4" EK	1" F	445	82	210
11 65 07	7	4	3/4" EK	1" F	495	82	210
11 65 08	8	4	3/4" EK	1" F	545	82	210
11 65 09	9	4	3/4" EK	1" F	595	82	210
11 65 10	10	4	3/4" EK	1" F	645	82	210
11 65 11	11	4	3/4" EK	1" F	695	82	210
11 65 12	12	4	3/4" EK	1" F	745	82	210

Specifications

Composite manifold for radiant heating and cooling systems. The manifold is made up of a number of modules assembled together to make up two bodies, one flow and one return, with 2 to 12 circuits, and 3/4" eurocone connections. Each circuit has motorised shut-off valves on the return, with 4 lit / min flow rate gauges and a memory ring on the flow, complete with 1" F threaded nut connections and relevant gaskets, automatic air vent valves, fill / drain taps, and thermometers on the flow and return. It also includes snap-on brackets for assembly in a suitable box, labels for identifying the circuits, and assembly instructions.

Use

Modular Tempower composite manifold for supplying radiant heating and cooling systems.

The manifold is made up of pre-assembled modules, inlet head, one-port modules, three-port modules, and end cap, connected together by a 1" thread and O-ring seals. The modules, which are assembled in a flow and a return body, are supported by composite brackets, with a snap seal. The manifold made up in this way can be put inside the specific manifold housing boxes, or mounted on a wall. The flow modules are fitted with a flow rate gauge with a memory ring, for each circuit. This gauge can have a scale up to 4 lit / min, that best suits the typical flow rates of a floor system or up to 6 lit / min, which is more suited to the typical flow rates of ceiling and wall systems. The flow rate gauge cap, which bears an indication of the measurement scale, can be disassembled and washed if dirt makes it illegible. The return modules are fitted with spring valves that can be motorised. The particular design of the manifold allows for snap attachment to specific control heads, without using further adapters. All the modules come with a 3/4" eurocone thread, which allows maximum versatility of connection to various diameters or types of pipes. The two intake heads are fitted with a 3/4" automatic air vent valve, with an end cap that cannot be removed, 3/4" filling and draining valves, thermometers with a scale of up to 80°C, and 3/4" wells. Since all the connections have the same 3/4" thread, the manifold is also suitable for installation in a horizontal position, suitably moving the valves and thermometers.



TEMPOWER 2G manifold pack approach -Starter pack

Code	N° of ports	Flow rate	User con-	Boiler con-	A	B	H
		lit/min	nections	nections	mm	mm	mm
11 65 36	Starter	-	-	1" F	145	80	210

Specifications

Composite manifold starter pack for radiant heating and cooling systems. The starter pack is made up of inlet modules and end cap for the flow and return bodies, including 1" F threaded nut connections, automatic air vent valves, fill / drain taps, and flow and return thermometers. It also includes snap-on brackets for assembly in a suitable box, labels for identifying the circuits, and assembly instructions.

Use

The Tempower pack manifold facilitates stores management, as only three codes are required to make up all types of Tempower manifolds.



11 65 00



11 65 34

TEMPOWER 2G manifold pack approach - 1-port pack

Code	N° of ports	Flow rate	User con-	Boiler con-	A	B	H
		lit/min	nections	nections	mm	mm	mm
11 65 00	1	4	3/4" EK	-	50	80	210
11 65 34	1	6	3/4" EK	-	50	80	210

Specifications

Composite manifold pack approach- 1 port pack for radiant heating and cooling systems. The pack is made up of a flow and return module, both with 1 circuit with 3/4" eurocone connections. One module is fitted with a shut-off valve that can be motorised on the return, and the other with a flow rate gauge with a memory ring, on the flow.



11 65 33



11 65 35

TEMPOWER 2G manifold pack approach- 3 port pack

Code	N° of ports	Flow rate lit/min	User con- nections	Boiler con- nections	A mm	B mm	H mm
11 65 33	3	4	3/4" EK	-	150	80	210
11 65 35	3	6	3/4" EK	-	150	80	210

Specifications

Composite manifold pack approach – 3 port pack for radiant heating and cooling systems. The pack is made up of a flow and return module, both with 3 circuits with 3/4" eurocone connections. One module is fitted with shut-off valves that can be motorised on the return, and the other with flow rate gauges with a memory ring, on the flow.

TEMPOWER 2G manifold pack approach - additional bracket



Code	N° Max of modules between brackets	A mm	B mm	H mm
11 65 99	8	-	80	210

Specifications

Snap-on bracket for a Tempower manifold,. use one bracket for every 8 modules.



TEMPOWER 2G manifold thermometer/pressure gauge

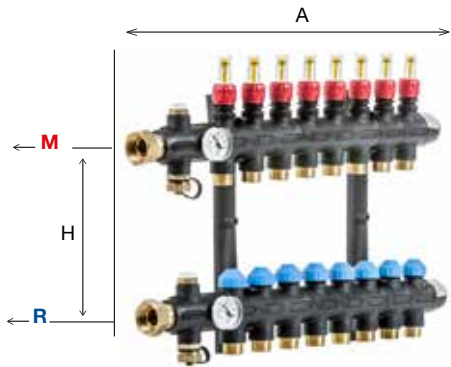
Code	User con- nections	Ø mm	Thk. mm
11 65 30	1/2"M	40	24

Specifications

Thermometer / pressure gauge for Tempower manifold

Use

Instrument used to measure the water temperature and pressure, suitable most of all for load test to be done before covering the systems up, but also for periodic maintenance checking of the system.



TEMPOWER 2G BASIC manifold fitted

Code	N° of ports	Flow rate lit/min	User con- nections	Boiler con- nections	A mm	B mm	H mm
11 67 02	2	4	3/4" EK	1" F	245	82	210
11 67 03	3	4	3/4" EK	1" F	295	82	210
11 67 04	4	4	3/4" EK	1" F	345	82	210
11 67 05	5	4	3/4" EK	1" F	395	82	210
11 67 06	6	4	3/4" EK	1" F	445	82	210
11 67 07	7	4	3/4" EK	1" F	495	82	210
11 67 08	8	4	3/4" EK	1" F	545	82	210
11 67 09	9	4	3/4" EK	1" F	595	82	210
11 67 10	10	4	3/4" EK	1" F	645	82	210
11 67 11	11	4	3/4" EK	1" F	695	82	210
11 67 12	12	4	3/4" EK	1" F	745	82	210

Specifications

Composite manifold for radiant heating and cooling systems. The manifold is made up of a number of modules assembled together to make up two bodies, one flow and one return, with 2 to 12 circuits, and 3/4" eurocone connections. Each circuit has motorised shut-off valves on the return, with 4 lit / min flow rate gauges and a memory ring on the flow, complete with 1" F threaded nut connections and relevant gaskets, automatic air vent valves, fill / drain taps, and thermometers on the flow and return. It also includes snap-on brackets for assembly in a suitable box, labels for identifying the circuits, and assembly instructions.

Use

The Tempower Basic manifold is a simplified version of the Tempower 2G manifold, the differences between the two being:

- No memory ring on the flow.
- Flow rate gauge only on the 4 lit/min version.
- Filling valve only, unlike the Tempower 2G that has a filling and draining valve.
- Manual vent valve only (not automatic as for the Tempower 2G version).
- VA10 adapter must be used for connecting the electro-thermal heads to the manifold. Adapters not included in the Basic manifold pack.
- Two mounting brackets to be positioned at 1/3 and 2/3 of the length of the manifold, and never further than 8 modules apart.



TEMPOWER 2G BASIC manifold - 1 port pack

Code	N° of ports	Flow rate lit/min	User con- nections	Boiler con- nections	A mm	B mm	H mm
11 65 32	1	4	3/4" EK	-	50	80	210

Specifications

Composite manifold pack approach – 1 port pack for radiant heating and cooling systems. The pack is made up of a flow and return module, both with 1 circuit with 3/4" eurocone connections. One module is fitted with a shut-off valve that can be motorised on the return, and the other with a flow rate gauge on the flow.



Pair of ball valves

Code	User con- nections	Boiler connections
12 66 00	1" M	1" F

Specifications

Pair of ball valves for Tempower manifold, Tempower manifold pack approach, and Tempower basic manifold.

Use

The valve is used to shut-off the fluid flowing into and out of the distribution manifold, and makes it possible to shut-off, open, or partialise the flow of water.

Technical characteristics

Material	Body	Polyamide 6.6 reinforced in fibre glass, stabilised for hydrolysis
	O-ring	EPDM peroxide
	Connectors	Brass CW614N
Fluid	Water	Maximum glycol 30%
Manifold connections		1" F threaded nut
ISO 10508:2006 application class		Class* 4 / 4 bar / 25 years
Minimum operating temperature		4°C
Maximum test pressure		8 bar
Maximum manifold flow rate		60 lit / min
Flow rate gauge scales		0.75-3.75 lit/min - 1.00-6.00 lit/min (**)
Kvs (flow coefficient) for single circuit (flow + return)		0.993

(*) Class 4 = 60°C/12.5 years + 40°C/10 years + 20°C/1.25 years + 70°C/1.25 years + 100°C/50 hours
(**) Not available for the Tempower Basic manifold

Manifold - box coupling

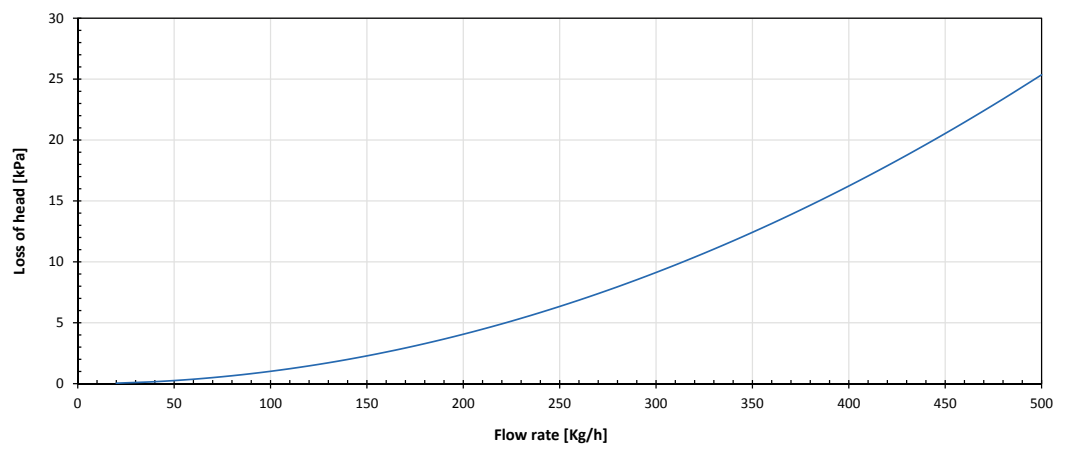
Box		Manifolds Tempower - Basic - Pack approach		
	Length	n° of ports	Net manifold length	Gross manifold length*
	mm	-	mm	mm
Standard	540	2-5	245-395	385-535
	700	6-8	445-545	585-685
	850	9-11	595-695	735-835
	1000	12-14	745-845	885-985
	1150	15-17	895-995	1035-1135
Basic	600	5-6	395-445	535-585
	700	7-8	495-545	635-685
	850	9-11	595-695	735-835
	1000	12-14	745-845	885-985

(*) Coupling is calculated taking about 140 mm of space between the longest manifold and the dimension of the box, about 70 mm of which is taken up by the ball valves.

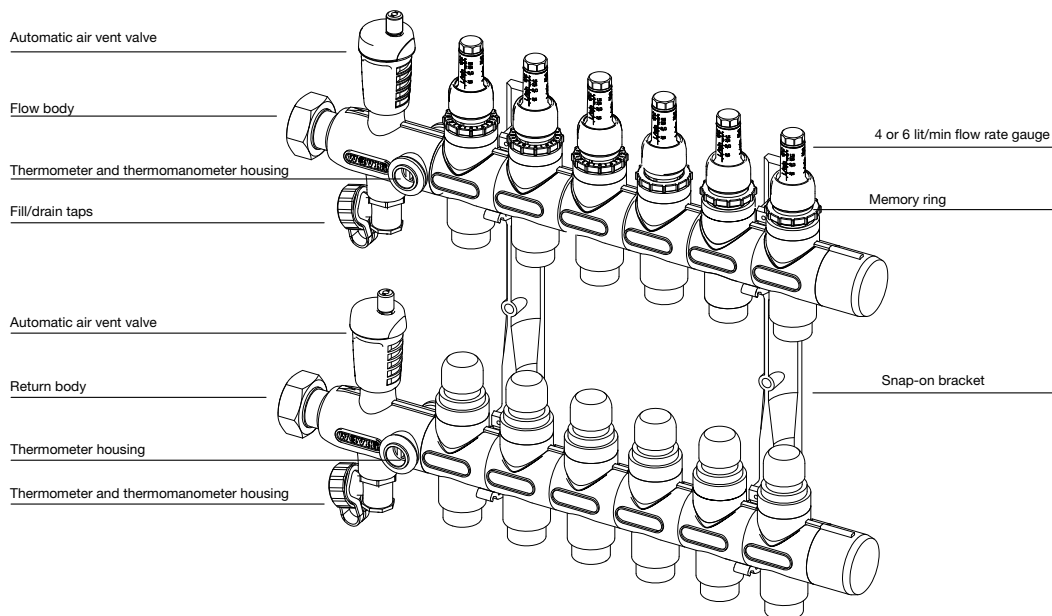
Pressure losses

The pressure loss for each individual circuit is given by the pressure loss due to the length of the circuit, plus the pressure loss caused by the manifold's inlet and outlet.

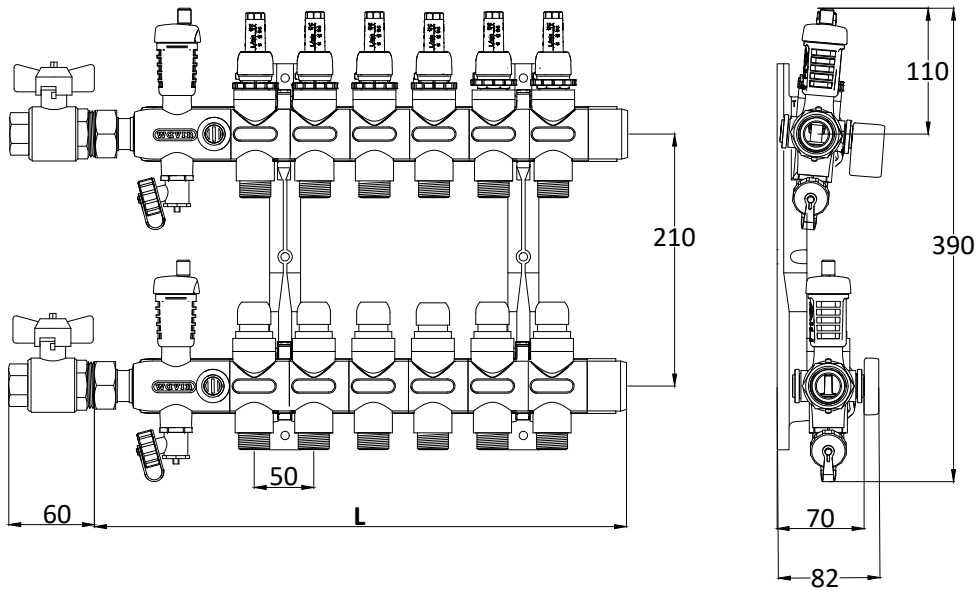
The inlet and outlet pressure losses are shown in the graph below:



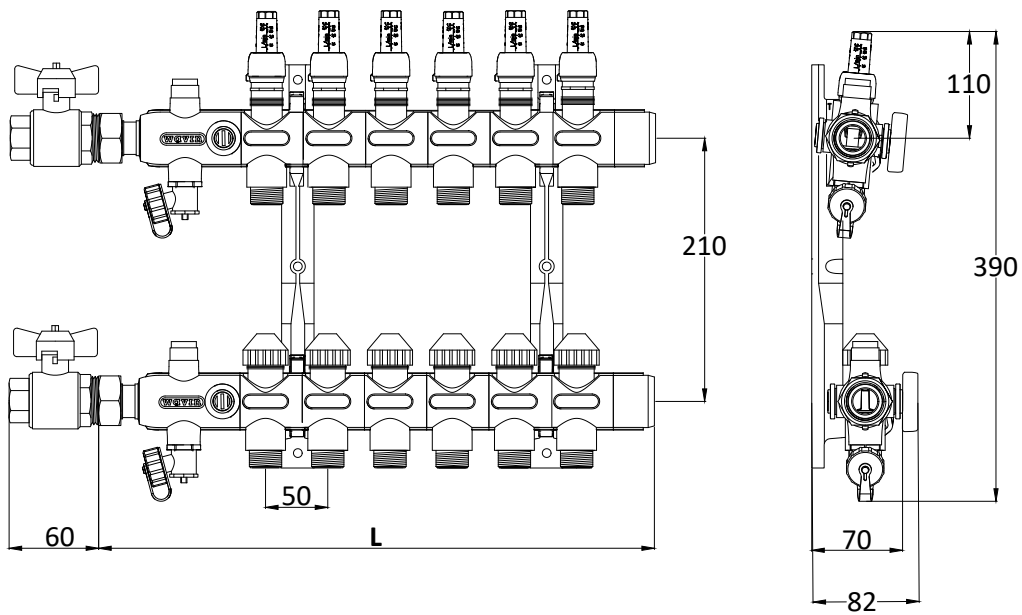
Tempower MANIFOLD



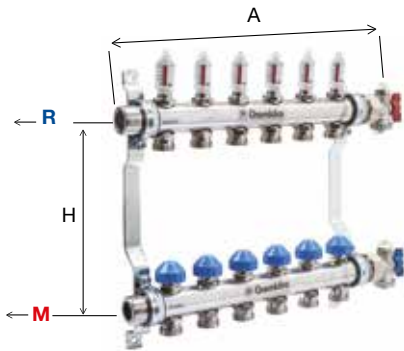
TEMPOWER 2G manifold dimensional drawing



TEMPOWER 2G BASIC manifold dimensional drawing



Codes	11 65 02	11 65 03	11 65 04	11 65 05	11 65 06	11 65 07	11 65 08	11 65 09	11 65 10	11 65 11	11 65 12
	11 67 02	11 67 03	11 67 04	11 67 05	11 67 06	11 67 07	11 67 08	11 67 09	11 67 10	11 67 11	11 67 12
L (mm)	245	295	345	395	445	495	545	595	645	695	745



INOX manifold fitted

Code	N° of ports	Flow rate lit/min	User con- nections	Boiler con- nections	A mm	B mm	H mm
12 67 02	2	6	3/4" EK	1" M	220	80	210
12 67 03	3	6	3/4" EK	1" M	270	80	210
12 67 04	4	6	3/4" EK	1" M	320	80	210
12 67 05	5	6	3/4" EK	1" M	370	80	210
12 67 06	6	6	3/4" EK	1" M	420	80	210
12 67 07	7	6	3/4" EK	1" M	470	80	210
12 67 08	8	6	3/4" EK	1" M	520	80	210
12 67 09	9	6	3/4" EK	1" M	570	80	210
12 67 10	10	6	3/4" EK	1" M	620	80	210
12 67 11	11	6	3/4" EK	1" M	670	80	210
12 67 12	12	6	3/4" EK	1" M	720	80	210

Specifications

INOX manifold complete, for each circuit, with shut-off and control valves that can be motorised on the return and 0-6 lit/min flow rate gauges on the flow, both with 3/4" eurocone connections. Including fill / drain tap, manual air vent valves, and mounting brackets. Manifold connection diameter 1" M.

Use

The manifold is made of stainless steel, and for each circuit it is complete with control and shut-off valves that can be motorised on the return, and 0-6 lit/min flow rate gauges on the flow. The manifold is complete with fill / drain taps, and manual air vent valves installed on the flow and the return, as well as mounting brackets. The manifold can be used to manage up to a maximum of 12 radiant circuits, with 1" M manifold connections to be connected to the various ball valves.

The manifold is complete with:

- 0-6 lit/min flow rate gauge
- Shut-off valve that can be motorised, on the return.
- Fill and drain taps.
- Manual vent valves.

The additional accessories for the INOX manifold are:

- 0-80°C thermometers
- Ball valves with thermometer
- Automatic vent valves

The INOX manifold can be put into a specific painted metal box, which makes inspection easy.



Pair of ball valves for INOX MANIFOLD

Code	User connections	Boiler connections
------	------------------	--------------------

12 67 00	1" F	1" F
----------	------	------

Specifications

Pair of ball valves for INOX Manifold

Use

The valve is used to shut-off the fluid flowing into and out of the distribution manifold, and makes it possible to shut-off, open, or partialise the flow of water. IT is fitted with a thermometer holder.



Thermometer for ball valve for INOX MANIFOLD

Code

12 67 01

Specifications

Thermometer for ball valves for INOX manifold

Use

Instrument used to measure the fluid temperature.



Single port pack for INOX MANIFOLD

Code	N° of ports	Flow rate lit/min	User connections	Boiler connections
------	-------------	----------------------	------------------	--------------------

12 67 20	1	6	3/4" EK	1" F
----------	---	---	---------	------

Specifications

Single port pack for INOX manifold

Use

This element can be fitted on the INOX manifold in order to add a port to the manifold itself.



Automatic non-return vent valve for INOX manifold

Code User connections

12 67 22 3/4"EK

Specifications

Automatic non-return vent valve for INOX Manifold

Use

A hydraulic device that is used to automatically expel the air from pressurised pipes, to ensure regularity of the water flow.



Thermometer with cuff for INOX manifold

Code Ø manifold

12 67 23 1"

Specifications

Thermometer with cuff for INOX Manifold

Use

If the ball valves for the INOX manifold are not used with the relevant thermometers, this thermometer can be used, fitting it on the manifold's two bodies.



Pair of nipples for INOX MANIFOLD on mixing units

Code User connections Boiler connections

12 67 21 1" F 1" F

Specifications

Pair of 1" F-F nipples for fitting the INOX manifold on Tempower or Inoxterm mixing units.

Use

Item required to fit the INOX manifold on manifold mixing units.

Technical characteristics

Material	Body	AISI 304 steel
	O-ring	EPDM peroxide
	Connectors	Brass CW614N
Fluid	Water	Maximum glycol 30%
Manifold connections		1" M without threaded nut
Minimum operating temperature		-10°C
Maximum operating temperature		80°C
Maximum test pressure (20°)		10 bar
Maximum operating pressure (80°)		6 bar
Maximum manifold flow rate		60 lit / min
Flow rate gauge scales		0.00 - 6.00 lit/min
Kvs (flow coefficient) for single circuit (flow + return)		1.200

Manifold - box coupling

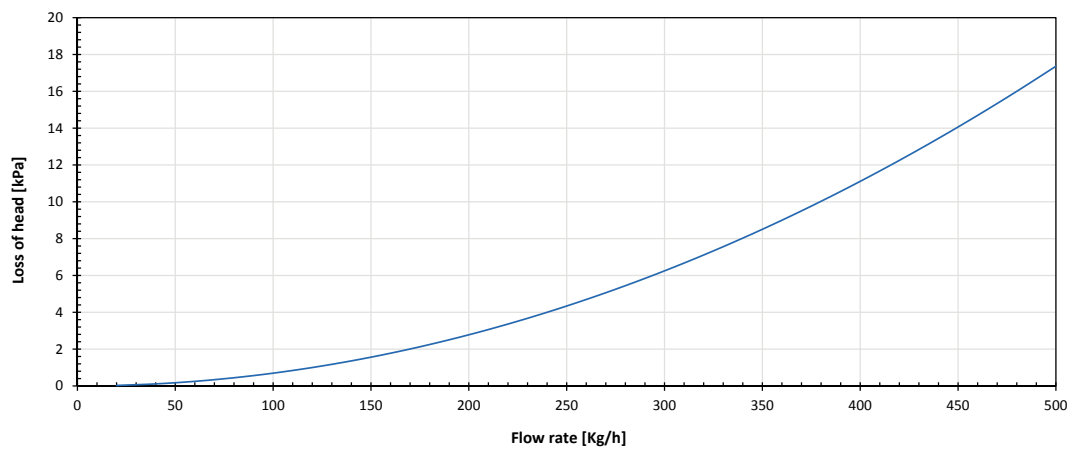
Box		INOX manifold Inox		
	Length	n° of ports	Net manifold length	Gross manifold length*
	mm	-	mm	mm
Standard	540	2-5	220-370	355-505
	700	6-8	420-520	555-655
	850	9-11	570-670	705-805
	1000	12-14	720-820	855-955
	1150	15-17	870-970	1005-1105
Basic	600	2-6	220-420	355-555
	700	7-8	470-520	605-655
	850	9-11	570-670	705-805
	1000	12-14	720-820	855-955

(*) Coupling is calculated taking about 135 mm of space between the longest manifold and the dimension of the box, about 70 mm of which is taken up by the ball valves.

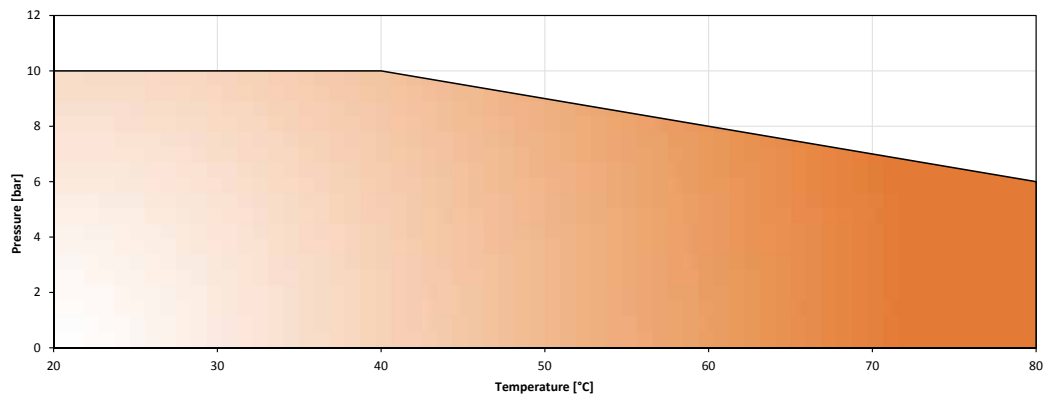
Pressure losses

The pressure loss for each individual circuit is given by the pressure loss due to the length of the circuit, plus the pressure loss caused by the manifold's inlet and outlet.

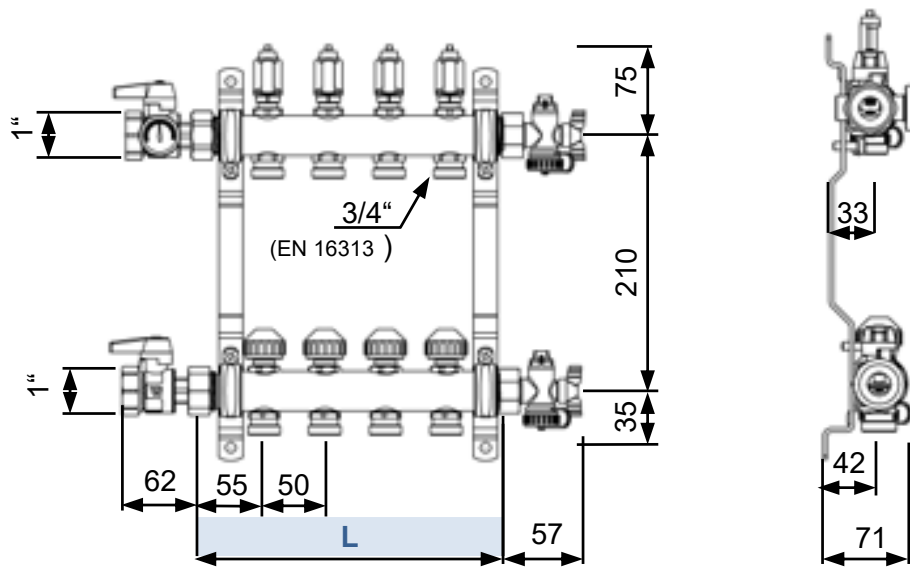
The inlet and outlet pressure losses are shown in the graph below:



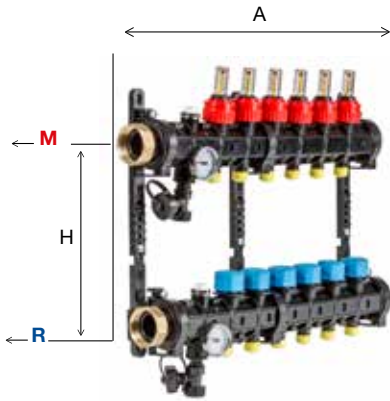
Working range - pressure / temperature



INOX Manifold DIMENSIONAL DRAWING



Codes	12 67 02	12 67 03	12 67 04	12 67 05	12 67 06	12 67 07	12 67 08	12 67 09	12 67 10	12 67 11	12 67 12
L (mm)	220	270	320	370	420	470	520	570	620	670	720



PLASTIC 1-1/4" manifold - Starter pack

Code	N° of ports	Flow rate lit/min	User con- nections	Boiler con- nections	A mm	B mm	H mm
12 65 01T	6	5	Coupling	1" 1/4 F	441	95	210

Specifications

Composite manifold starter pack 1"1/4 for radiant heating and cooling systems. The starter pack is made up of a pre-assembled 6-port manifold with quick coupling connections, including 1"1/4 F threaded nut connections, manual air vent valves, fill / drain taps, and flow and return thermometers. It also includes telescopic mounting brackets with screws and assembly instructions.

Use

The 1-1/4" Plastic manifold is used for systems with high flow rates. IT is made up starting with a 6-port manifold that acts as a starter pack (with inlet, instrument module - including fill and drain valve, manual vent valve, and thermometer - caps and three brackets), to which single port kits are added (with a single flow module and single return module), assembled until the required number of ports is reached. An intermediate bracket must be added for every 4 modules, including the inlet and instrument modules.



PLASTIC 1-1/4" manifold - 1 port pack

Code	N° of ports	Flow rate lit/min	User con- nections	Boiler con- nections	A mm	B mm	H mm
12 65 02T	1	5	Coupling	1" 1/4 F	50	95	210

Specifications

1"1/4 Composite manifold pack approach – 1 port pack for radiant heating and cooling systems. The pack is made up of a flow and return module, both with 1 circuit with quick coupling connections. One module is fitted with a shut-off valve that can be motorised on the return, and the other with a flow rate gauge on the flow.



PLASTIC 1-1/4" manifold - Additional telescopic bracket

Code	Max of modules between brackets	A	B	H
		mm	mm	mm
12 65 03T	4	-	95	210

Specifications

Additional telescopic bracket for 1"1/4 composite manifold , for radiant heating and cooling systems. Use one bracket for every 4 modules.



Pair of ball valves for plastic 1"1/4 MANIFOLD

Code	User connections	Boiler connections
12 65 00	1"1/4 F	1"1/4 F

Specifications

Pair of ball valves for Plastic 1" 1/4 Manifold including drain deposit filter.

Use

The valve is used to shut-off the fluid flowing into and out of the distribution manifold, and makes it possible to shut-off, open, or partialise the flow of water.



Plug-in coupling adapter

Code	Pipe	Manifold connections	Types of manifold	Ø
				mm
12 65 25	Plastic	Coupling	Plas. 1"1/4	25

Specifications

Plug-in quick coupling adapter for pipes and Plastic 1"1/4 manifolds.
For installation use the corresponding internal / external reamer

Use

Plug-in coupling to be used to connect pipes for radiant floor circuits to a distribution manifold with 1"1/4 connections.



EK 3/4" plug-in coupling

Code	Pipe	Manifold connections	Types of manifold	Ø
				mm
12 65 34	All	Coupling	Plas. 1"1/4	3/4" EK

Specifications

Plug-in quick coupling adapter for pipes and Plastic 1"1/4 manifolds.

Use

Plug-in coupling to be used to connect pipes for radiant floor circuits to a distribution manifold with 1"1/4 connections.

Technical characteristics

Material	Body	Polyamide 6.6 reinforced in fibre glass
	O-ring	EPDM peroxide
	Connectors	Polyamide 6.6 reinforced in fibre glass
Fluid	Water	Maximum glycol 30%
Manifold connections		1" 1/4 F with threaded nut
Minimum operating temperature		5°C
Maximum operating temperature		55°C
Maximum test pressure		8 bar
Maximum operating pressure		4 bar
Maximum manifold flow rate		80 lit / min
Flow rate gauge scales		0.00 - 5.00 lit/min
Kvs (flow coefficient) for single circuit (flow + return)		1.649

Manifold - box coupling

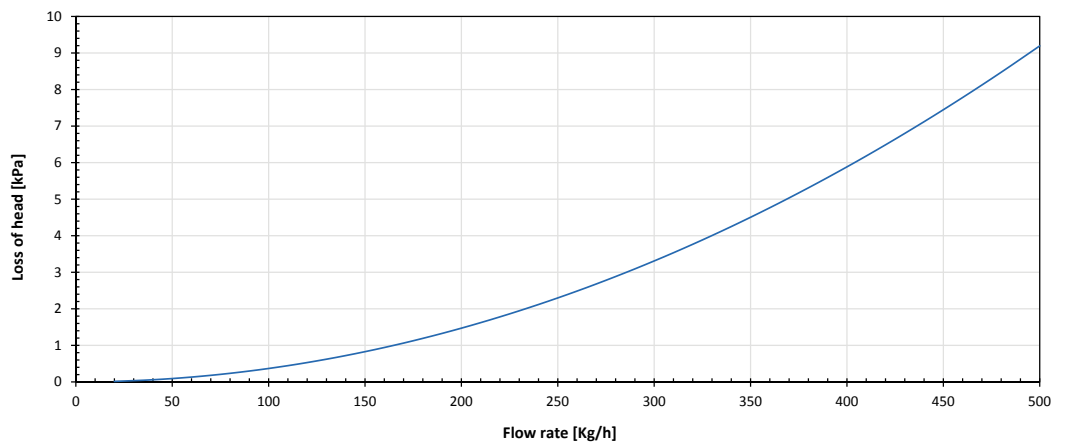
Box		Plastic 1" 1/4 manifold pack approach		
	Length	n° of ports	Net manifold length	Gross manifold length*
	mm	-	mm	mm
Standard	700	6-8	435-535	610-702
	850	9-11	585-685	748-840
	1000	12-14	735-835	886-978
	1150	15-17	885-985	1024-1116

(*) Coupling is calculated taking about 135 mm of space between the longest manifold and the dimension of the box, about 110 mm of which is taken up by the ball valves.

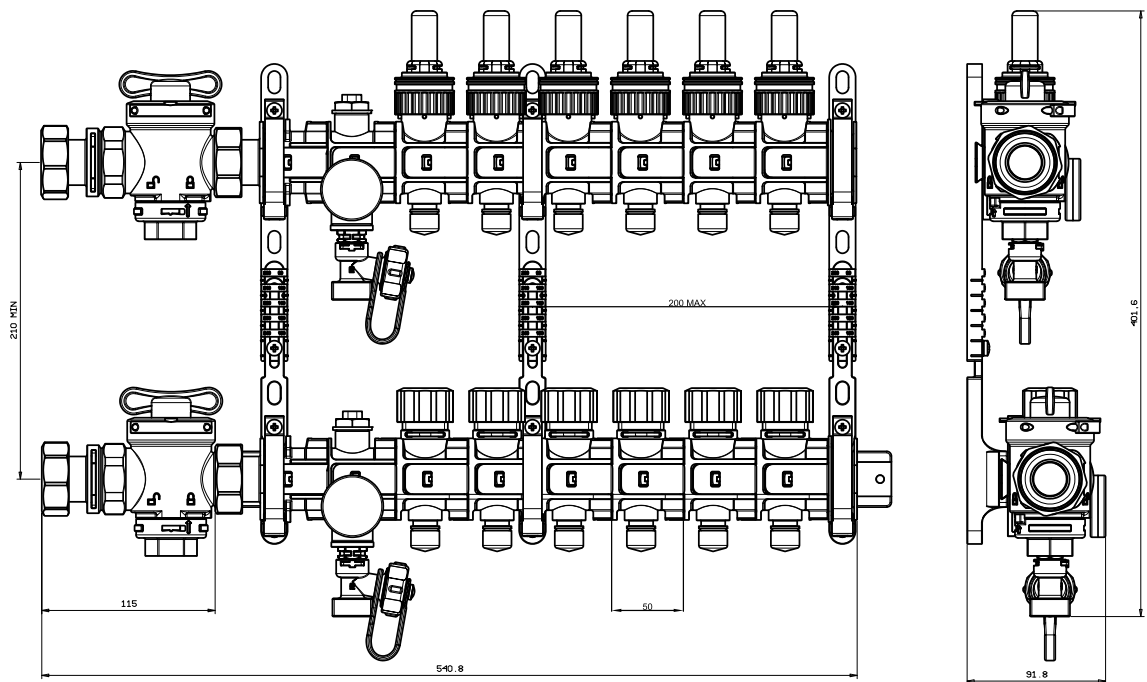
Pressure losses

The pressure loss for each individual circuit is given by the pressure loss due to the length of the circuit, plus the pressure loss caused by the manifold's inlet and outlet.

The inlet and outlet pressure losses are shown in the graph below:



PLASTIC 1-1/4" manifold - Starter pack dimensional drawing



4. Manifold accessories



10 67 52



10 67 54

Electro-thermal head

Code	Voltage	Micro	Manifold connections	Type of manifold
	V			
10 67 52	230	No	Coupling	Tempower
10 67 54	230	Yes	Coupling	Tempower
10 67 62	24	No	Coupling	Tempower
10 67 64	24	Yes	Coupling	Tempower

Specifications

Specific electro-thermal normally closed actuator for remote control of shut-off valves on manifolds, with first switch on function, and visual operating state indicator. Can include a "micro" contact for indicating that activation has occurred. Can be connected directly on the Tempower manifold, using suitable adapters (not included) for other types of manifolds.

Use

Electro-thermal actuator for automatic control of shut-off valves installed in distribution manifolds for radiant heating systems, used with thermostats or control units. For the version with "micro" this function makes it possible to switch the pump off if all the valves are closed.

The actuator has a moving cylinder in its upper section that makes it possible to check its operating status. More specifically, when a white band is showing, this means that the actuator is working, and therefore the corresponding circuit is open. Installing the valve is extremely simple, due to a particular function, termed "first open", which is a particular mechanical state the actuator is in when new, the purpose of which is to allow the actuator to be fixed to the valve while applying a significantly lower force. The first open function is deactivated automatically after the first 6 minutes of power supply, after which the actuator operates normally. To remove the actuator from the valve, push the central button all the way in, and pull gently. The electric head can be installed directly on a Tempower manifold, or using suitable adapters for other manifolds, or on high temperature sections of mixing units.

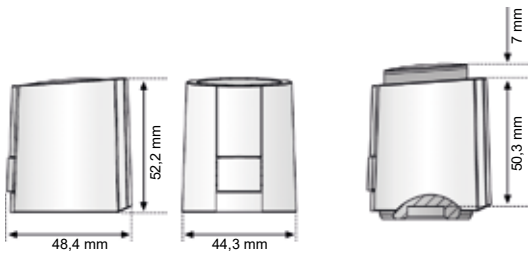
Technical characteristics

Properties	UoM	Heads without micro		Heads with micro	
Power supply	V	230	24	230	24
Width	mm	44.3	44.3	44.3	44.3
Depth	mm	48.4	48.4	48.4	48.4
Height	mm	50.3 ± 7	50.3 ± 7	50.3 ± 7	50.3 ± 7
Power supply voltage	V	230AC -50/60Hz	24AC/DC	230AC - 50/60Hz	24AC/DC
Maximum current at microswitch	A	-	-	5A with resistive load 1A with inductive load	3A with resistive load 1A with inductive load
Maximum breakaway starting current	mA	550	300	550	300
Absorbed power	W	1	1	1	1
Rest position	-	NC	NC	NC	NC
First opening time	min.	>6	>6	>6	>6
Closing / opening time	min.	~ 3.5	~ 3.5	~ 3.5	~ 3.5
Stroke	mm	4	4	4	4
Elastic reaction	N	100 ± 5%	100 ± 5%	100 ± 5%	100 ± 5%
Type of protection	-	IP 54/II	IP 54/III	IP 54/II	IP 54
Ambient temperature	°C	max 60	max 60	max 60	max 60
Weight without adapter	g	100	100	100	100
Container	-	Polyamide - Blue	Polyamide - Blue	Polyamide - Blue	Polyamide - Blue
Connection cable	-	2x0.75 mm ²	2x0.75 mm ²	4x0.75 mm ²	4x0.75 mm ²
Length of the supplied cable		1200	1200	1000	1000
Maximum length of the cable	m	N/A	L=k·A/n*	N.A.	L=k·A/n*
CE compliant		EN60730	EN60730	EN60730	EN60730

*L=length of cable in metres; k=269m/mm²; n=number of heads. Recommended cable sections 0,8÷1,5 mm²

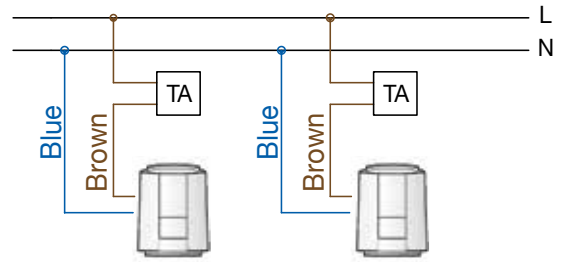
Dimensions

Head without micro 230V – 24 V

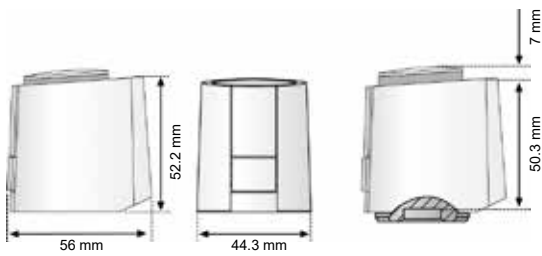


Wiring diagram

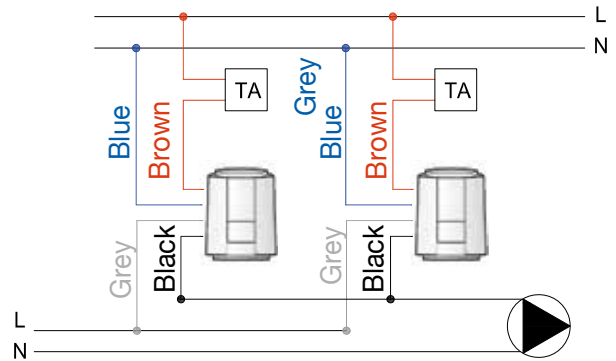
Head without micro 230V – 24 V



Head with micro 230V – 24 V



Head with micro 230V – 24 V





BASIC electro-thermal head

Code	Voltage	Micro	Manifold connections	Type of manifold
	V			
10 67 04	230	Yes	30x1.5	INOX

Specifications

Specific electro-thermal normally closed actuator for remote control of shut-off valves on INOX manifolds, fitted with a visual operating state indicator. Includes a "micro" contact for indicating that activation has occurred. Connects to the INOX manifold by means of a metal threaded coupling, which is part of the actuator itself.

Use

Electro-thermal actuator for automatic control of shut-off valves installed in distribution manifolds for radiant heating systems, used with thermostats or control units. For the version with "micro" this function makes it possible to switch the pump off if all the valves are closed.

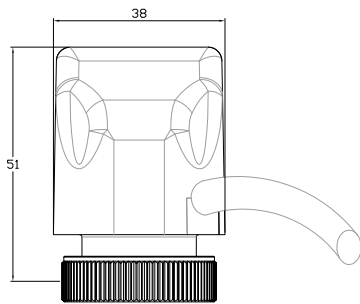
The actuator has a visual indicator for the operating status in its lower part. More specifically, a black lower window means that the actuator is working, and therefore the corresponding circuit is open. Installation on the manifold valve is done using a threaded metal fixing ring nut. To remove the actuator from the valve simply unscrew the ring nut that fixes it to the manifold. This electric head is made to be installed on 1" INOX manifolds.

Technical characteristics

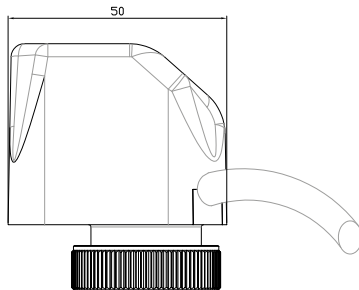
Properties	UoM	Heads with micro
Power supply	V	230
Width	mm	38
Depth	mm	50
Height	mm	51
Power supply voltage	V	230 AC
Operating current	mA	200
Absorbed power	W	2.5
Rest position	-	Closed
Closing / opening time	min.	3
Maximum actuator stroke	mm	3.5
Valve working stroke	mm	2.5
Elastic reaction	N	100
Type of protection	-	IP 44
Ambient temperature	°C	50
Weight without adapter	g	200
Colour	-	White
Connection cables	-	4x0.75 mm ²
Length of the supplied cable	mm	1000
Maximum length of the cable	m	N/A

Dimensional drawing

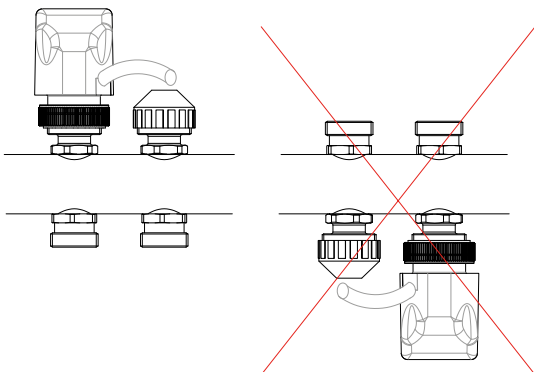
Front view



Side view



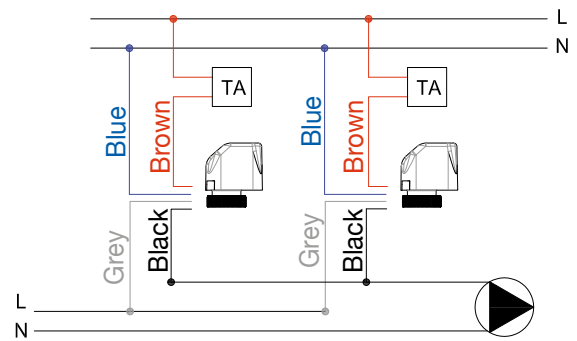
Fitting on manifold



The actuator must NOT be installed under the valve body

Wiring diagram

230V heads with micro





10 67 18



10 67 21

Head adapter

Code	Mod.	Colour	Manifold connections
10 67 18	VA10	Light grey	30x1.5
10 67 21	VA50	Dark grey	30x1.5

Head adapter correspondence

Specifications

Electro-thermal head adapter

Use

To be used to fit electro-thermal heads (not BASIC heads) to manifolds other than the Tempower manifold.

Manifolds	Code	Model	Colour
Tempower	-	-	-
Tempower Basic	10 67 18	VA10	Light grey
Stainless Steel	10 67 21	VA50	Dark grey
Plastic 1" 1/4	10 67 18	VA10	Light grey
High temperature section for mixing units			
Tempower	10 67 21	VA50	Dark grey



Screw-on couplings adapters

Code	Pipe	Manifold connections	Type of manifold	Ø mm
10 66 14	All	3/4" EK	Tempower/INOX	14x2.0
73 002	All	3/4" EK	Tempower/INOX	16x2.0
10 66 17	All	3/4" EK	Tempower/INOX	17x2.0
10 66 18	All	3/4" EK	Tempower/INOX	18x2.0
10 66 20	All	3/4" EK	Tempower/INOX	20x2.0
10 66 22	All	3/4" EK	Tempower/INOX	20x2.5

Specifications

Screw-on coupling adapter for pipes on manifolds with eurocone connections.

Use

Coupling used to connect radiant system piping to manifolds.



Pipe support bend

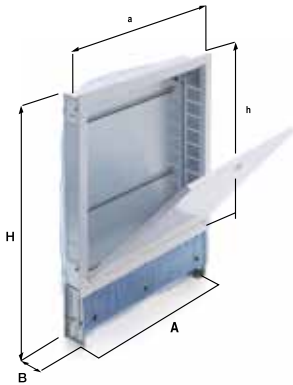
Code	Ø Pipe mm
10 90 18	16÷18
10 90 20	20
10 90 25	25

Specifications

Synthetic moulded bend for connections between floor pipes and the manifold.

Use

Plastic part used to facilitate bending of pipes for radiant circuits, near the connection to the distribution manifold.



Standard manifold box

Code	a	h	A	B	H
	mm	mm	mm	mm	mm
10 71 45	600	660	540	93÷120	750÷890
10 71 47	760	660	700	93÷120	750÷890
10 71 48	910	660	850	93÷120	750÷890
10 71 49	1060	660	1000	93÷120	750÷890
10 71 51	1210	660	1150	93÷120	750÷890
10 71 53	1360	660	1300	93÷120	750÷890

Specifications

Steel manifold box with horizontal supports, hot painted, adjustable height supports, with frame and front door, with lock. Minimum internal thickness 93 mm.

Use

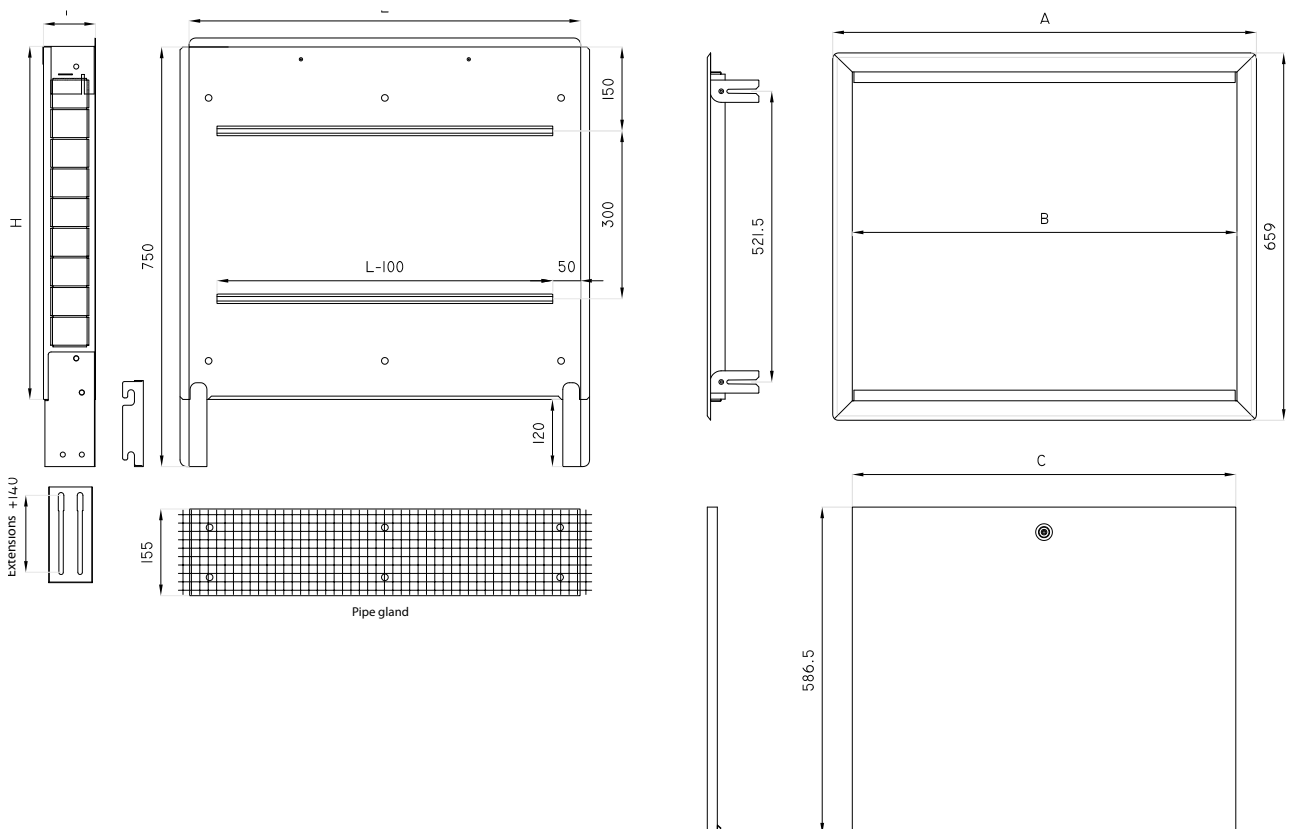
Manifold box used for installing manifolds recessed into walls. The slender thickness and plaster mesh on the back mean that this box can also be installed in partition walls built using 8 cm thick bricks.

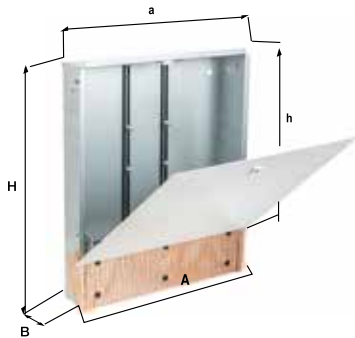
The height of the box is suitable for also installing manifolds fitted with mixing units, with high temperature sections, and the door is suitably sized to allow inspection. The horizontal guides can be used to easily change the fixing position of manifolds and any mixing units. They also make it possible to install as many support bars as you wish and as are useful, without further accessories.

Fitted with telescopic feet for adjustment to the correct height, and a door frame with a depth adjustment, thanks to the inner forks that can be folded closed. The galvanised steel structure and pipe gland strip attached to the box, ensure greater rigidity of the box. The pre-punched panels on the sides allow the utmost flexibility for making pipes enter from the side as well. The RAL 9003 white colour of the frame and door, make this item as non-invasive as possible.

Dimensional drawing

Box code	Box size			Frame-panel size		
	L	D	H	A	B	C
	mm	mm	mm	mm	mm	mm
107145	540	93÷120	630	600	535	528
107147	700	93÷120	630	760	695	688
107148	850	93÷120	630	910	845	838
107149	1000	93÷120	630	1060	995	988
107151	1150	93÷120	630	1210	1145	1138
107153	1300	93÷120	630	1360	1295	1288





Basic manifold box

Code	a	h	A	B	H
	mm	mm	mm	mm	mm
10 71 36	662	529	600	110	620÷760
10 71 37	762	529	700	110	620÷760
10 71 38	912	529	850	110	620÷760
10 71 39	1062	529	1000	110	620÷760

Specifications

Steel manifold box with vertical supports, hot painted, adjustable height supports, with front door and lock. Minimum internal thickness 110 mm.

Use

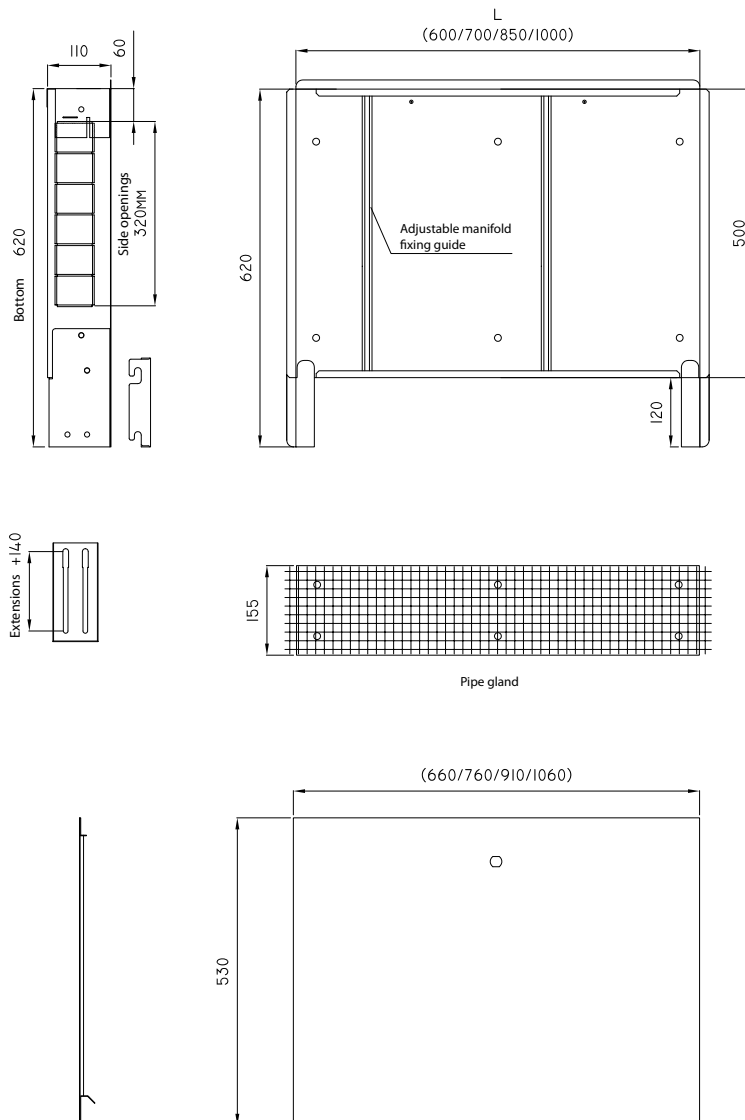
Manifold box used for installing manifolds recessed into perimeter walls more than 11 cm thick.

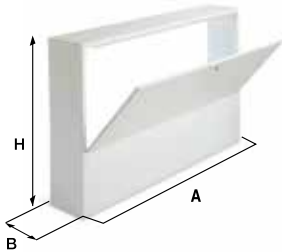
The two vertical guides make it possible to fix only manifolds with two mounting brackets.

Fitted with telescopic feet for adjusting the height, and a single-unit door (without frame) with depth adjustment. The galvanised steel structure and pipe gland strip attached to the box, ensure greater rigidity of the box. The pre-punched panels on the sides make it possible to make pipes enter from the side as well. The RAL 9003 white colour of the door, make this item as non-invasive as possible.

Dimensional drawing

Box code	Box size			Frame-panel size	
	L	D	H	A	B
	mm	mm	mm	mm	mm
107136	600	110	500	660	530
107137	700	110	500	760	530
107138	850	110	500	910	530
107139	1000	110	500	1060	530





Industrial manifold box

Code	A	B	H
	mm	mm	mm
10 70 58	800	220	760
10 70 62	1200	220	760

Specifications

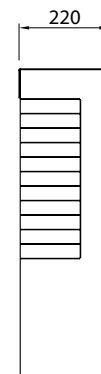
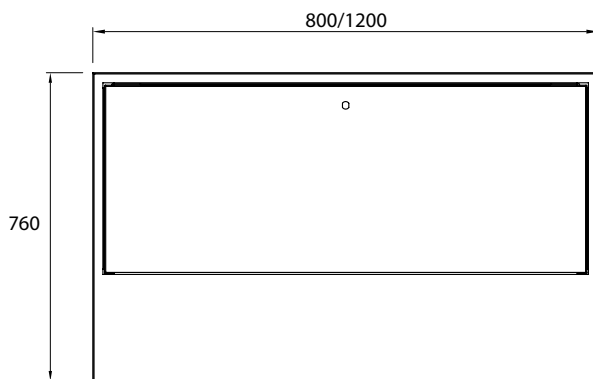
Industrial steel manifold box, hot painted, specifically for industrial installations surface mounted on walls, fitted with front door and lock.

Use

Manifold box used to protect manifolds surface mounted on walls. It therefore has no bottom plate and the manifolds are fixed to the wall directly, using the relevant brackets. The box is installed after the manifold has been installed, and it is fixed to the wall using anchors. The box has an inspection door on the front, with lock. Steel product, white epoxy powder coated.

Dimensional drawing

Box code	Box size			Door size	
	L	D	H	A	B
	mm	mm	mm	mm	mm
107058	800	220	760	1100	500
107062	1200	220	760	1100	500



Box - manifolds couplings

Box		Manifolds Tempower - Basic pack approach			INOX Manifold			Plastic 1" 1/4 manifold pack approach			
	Length	n° of ports	Net manifold length	Gross manifold length*	n° of ports	Net manifold length	Gross manifold length*	n° of ports	Net manifold length	Gross manifold length*	
	mm	-	mm	mm	-	mm	mm	-	mm	mm	
Standard	540	2-5	245-395	385-535	2-5	220-370	355-505	-	-	-	
	700	6-8	445-545	585-685	6-8	420-520	555-655	6-8	435-535	610-702	
	850	9-11	595-695	735-835	9-11	570-670	705-805	9-11	585-685	748-840	
	1000	12-14	745-845	885-985	12-14	720-820	855-955	12-14	735-835	886-978	
	1150	15-17	895-995	1035-1135	15-17	870-970	1005-1105	15-17	885-985	1024-1116	
Basic	600	2-6	395-445	535-585	2-6	220-420	355-555	-	-	-	
	700	7-8	495-545	635-685	7-8	470-520	605-655	-	-	-	
	850	9-11	595-695	735-835	9-11	570-670	705-805	-	-	-	
	1000	12-14	745-845	885-985	12-14	720-820	855-955	-	-	-	
Industrial	800	2-10	245-645	385-785	2-10	220-620	355-755	6-9	435-585	570-720	
	1200	11-17	695-995	835-1135	11-17	670-970	805-1105	10-17	635-985	770-1120	
				(*) Coupling is calculated taking about 140 mm of space between the longest manifold and the dimension of the box, about 70 mm of which is taken up by the ball valves.				(*) Coupling is calculated taking about 135 mm of space between the longest manifold and the dimension of the box, about 70 mm of which is taken up by the ball valves.			
				(*) Coupling is calculated taking about 135 mm of space between the longest manifold and the dimension of the box, about 70 mm of which is taken up by the ball valves.							(*) Coupling is calculated taking about 135 mm of space between the longest manifold and the dimension of the box, about 110 mm of which is taken up by the ball valves.

Box - manifolds - mixing units couplings

Box		Tempower Manifold + Pre-assembled Tempower System		
	Length mm	n° of ports	Net manifold + pre-assembled length mm	Gross manifold + pre-assembled length* mm
Standard	540	2-3	441-491	490-540
	700	4-6	541-641	590-690
	850	7-9	691-791	740-840
	1000	10-12	841-941	890-990
	1150	13-15	991-1091	1040-1140
	1300	16-17	1141-1191	1190-1240

(*) Coupling is calculated taking about 50 mm of space between the longest manifold and the dimension of the box.

Box		Tempower Manifold + Pre-assembled Tempower System with high temperature section		
	Length mm	n° of ports	Net manifold + pre-assembled length mm	Gross manifold + pre-assembled length* mm
Standard	540	2-3	465-515	490-540
	700	4-6	565-665	590-690
	850	7-9	715-815	740-840
	1000	10-12	865-965	890-990
	1150	13-15	1015-1115	1040-1140
	1300	16-17	1165-1215	1190-1240

(*) Coupling is calculated taking about 25 mm of space between the longest manifold and the dimension of the box.

Box		INOX Manifold + Pre-assembled Tempower System		
	Length mm	n° of ports -	Net manifold + pre-assembled length mm	Gross manifold + pre-assembled length* mm
Standard	540	2-3	416-466	465-515
	700	4-6	516-616	565-665
	850	7-9	666-766	715-815
	1000	10-12	816-916	865-965
	1150	13-15	966-1066	1015-1115
	1300	16-17	1116-1166	1165-1215

(*) Coupling is calculated taking about 50 mm of space between the longest manifold and the dimension of the box, about 70 mm of which is taken up by the nipples required to connect the INOX manifold to the Tempower mixing unit.

Box		INOX Manifold + Pre-assembled Tempower System with high temperature section		
	Length mm	n° of ports -	Net manifold + pre-assembled length mm	Gross manifold + pre-assembled length* mm
Standard	540	2-3	440-490	465-515
	700	4-6	540-640	565-665
	850	7-9	690-790	715-815
	1000	10-12	840-940	865-965
	1150	13-15	990-1090	1015-1115
	1300	16-17	1140-1190	1165-1215

(*) Coupling is calculated taking about 95 mm of space between the longest manifold and the dimension of the box, about 70 mm of which is taken up by the nipples required to connect the INOX manifold to the Tempower mixing unit.

Box		Tempower manifold + Inoxterm thermostat unit		
	Length	n° of ports	Net manifold + Inoxterm thermostat unit length	Gross manifold + pre-assembled length*
	mm	-	mm	mm
Standard	540	2-3	465	540
	700	4-6	515-615	590-690
	850	7-9	665-765	740-840
	1000	10-12	815-915	890-990
	1150	13-15	965-1065	1040-1140
	1300	16-17	1115-1215	1190-1290

(*) Coupling is calculated taking about 75 mm of space between the longest manifold and the dimension of the box.

Box		INOX manifold + Inoxterm thermostat unit		
	Length	n° of ports	Net manifold + Inoxterm thermostat unit length + manifold unit connection nipples	Gross manifold + Inoxterm thermostat unit length + manifold unit connection nipples*
	mm	-	mm	mm
Standard	540	2	515	515
	700	3-5	565-665	565-665
	850	6-8	715-815	715-815
	1000	9-11	865-965	865-965
	1150	12-14	1015-1115	1015-1115
	1300	15-17	1165-1265	1165-1265

(*) In this case the gross length for the coupling does not include empty spaces between the longest manifold and the dimension of the box.



Tempower mixing UNIT - Low temperature section

Code	Boiler connec- tions	User connections
------	-------------------------	------------------

10 79 10A	1" F	1" M
-----------	------	------

Specifications

Pre-assembled brass mixing system, complete with 3-way mixing valve with the possibility of thermostatic or motorised control. Fitted with an electronic circulator with EEI <0.20 and including contact safety thermostat, mounting bracket for the kit, non-return valve for the circulation section, 11 mm Ø well flow for the thermostatic head flow probe. Generator side connections, 1" F, left / right reversible. Can be used with TEMPOWER and INOX manifolds, minimum thickness required 92 mm.

PLEASE NOTE: Thermostatic head or servomotor for managing the 3-way valve, not included. This unit has a well for temperature probe for the thermostatic head, when using with a servomotor, this well must be changed.

Use

They are designed for uses in which, despite a number of manifolds being envisaged for the radiant system and where better water temperature control is required than the generators are able to provide on their own, due to a lack of space, it is not possible to incorporate the necessary mixing units in a single position. This means that distribution of the manifolds is adopted to find installation points locally.



Pair of nipples for INOX MANIFOLD on mixing units

Code	Boiler connec- tions	User connections
------	-------------------------	------------------

12 67 21	1" F	1" F
----------	------	------

Specifications

Pair of 1" F-F nipples for fitting the INOX manifold on Tempower or Inoxterm mixing units.

Use

Item required to fit the INOX manifold on manifold mixing units.

Technical characteristics

	UoM	Values
Wilo Yonos Para RS25/6 Circulator		
Pitch	mm	130
Connections	inches	1"1/2 M
Energy Efficiency Index (EEI)	-	<0.20
Maximum head	mH ₂ O	6.4
Power supply	V-Hz	230-50
Degree of Protection	-	IPX4D
Thermal class of electrical insulation	-	F
Absorbed power	W	1÷45
Absorbed current	A	0.028÷0.44
Mixing valve		
Stroke	mm	3
Actuator connection	mm	M30x1.5
Safety thermostat		
Adjustable		yes
Automatic reset		yes
High temperature section		
Connections	n°	2
Diameter	inches	3/4" M

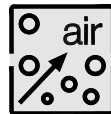
Circulator functions

All functions are activated or deactivated using the control button, while the LED indicator shows the circulator's operating status.



VARIABLE DIFFERENTIAL PRESSURE $Dp-v$

When the control knob is turned to the left, the pressure differential value is increased in a linear manner between 1/2 H and H of the flow rate range allowed, up to the maximum characteristic curve. Operating mode recommended when the system's (pipes) pressure losses are higher than those of the heating system. For example: radiator systems with thermostatic valves



VENT FUNCTION

When the control knob is turned to the central position, after a 3 second delay the vent function is activated. This will last for 10 minutes and is indicated by the green LED flashing quickly. During this time interval the pump operates alternately at high and low speed, pushing air bubbles towards the system's vent valve. NOTE: The vent function removes air that builds up in the pump's rotor housing, but does not affect the heating system.



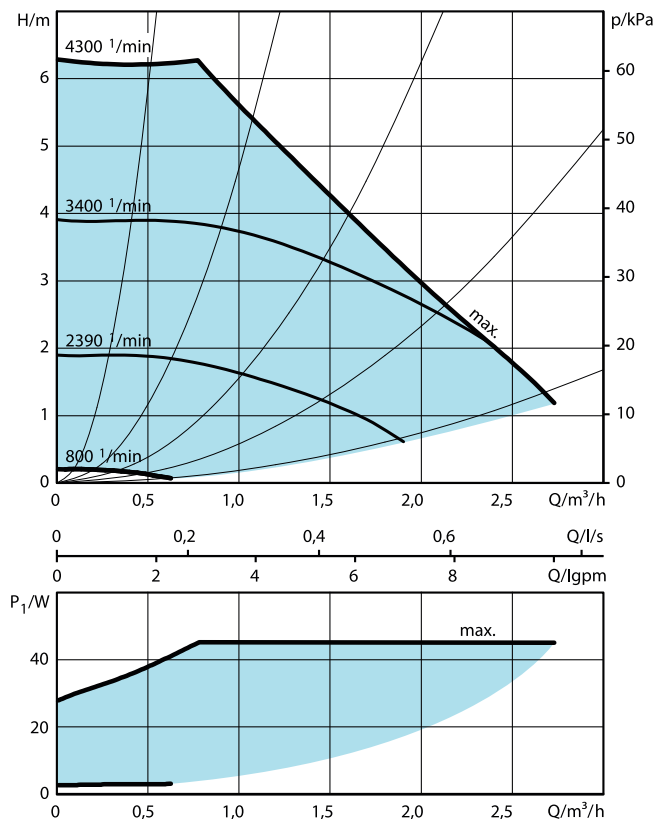
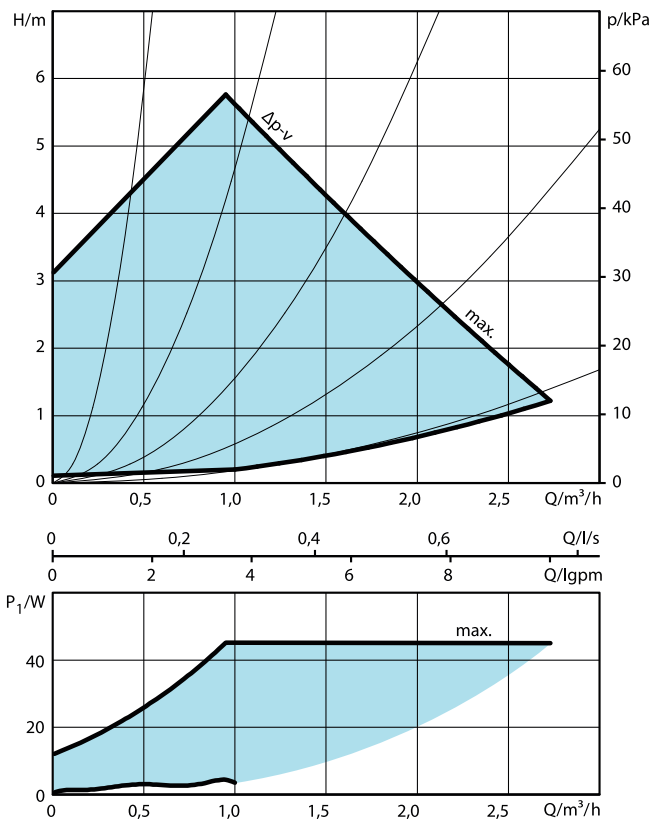
CONSTANT DIFFERENTIAL PRESSURE $Dp-c$

When the control knob is turned to the right, the pressure differential value is kept constant at the value set as the flow rate varies, up to the maximum characteristic curve. Operating mode recommended when the system's (pipes') pressure losses are much lower than those of the heating system. For example: Floor radiant panels and old systems with large diameter pipes.

Circulator performance

Variable pressure difference ($\Delta p-v$)

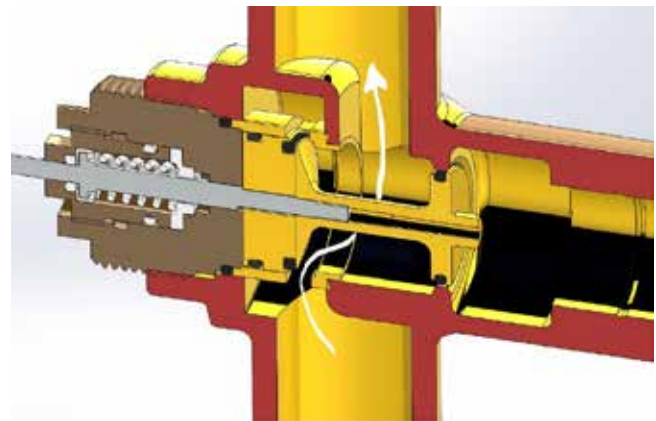
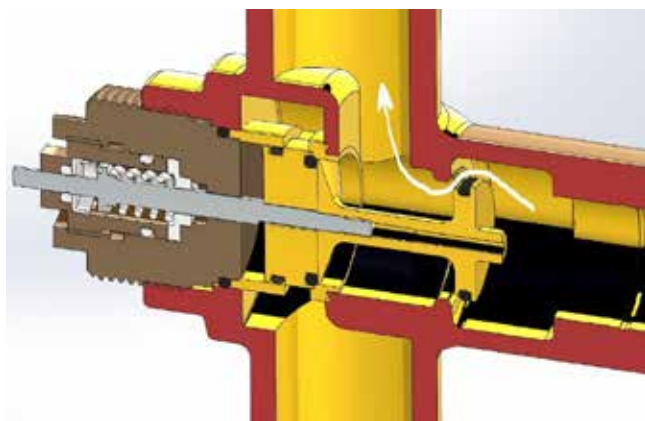
Constant pressure difference ($\Delta p-c$)



Mixing valve positions

Mixing valve flow 0%

Mixing valve flow 100%





Tempower mixing UNIT - High temperature section

Code	Boiler connections	User connections
------	--------------------	------------------

10 79 11	1" F	3/4" EK
----------	------	---------

Specifications

High temperature section of the Tempower mixing unit, made up of 2+2 3/4" M connections, fitted with lockshield valves in the flow side and shut-off valves that can be motorised on the return. Equipped with manual by-pass between the flow and return sections. Generator side connections 1" F.

Use

Element to be connected to the high temperature connections on the Tempower mixing unit, to provide two high temperature port packs from which the radiators are served, such as make-up radiators in bathrooms.



Head adapter

Code	Mod.	Colour	Manifold connections	Type of mixing unit
------	------	--------	----------------------	---------------------

10 67 21	VA50	Dark grey	30x1.5	High temp. sect. Tempower
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Specifications

Electro-thermal head adapter

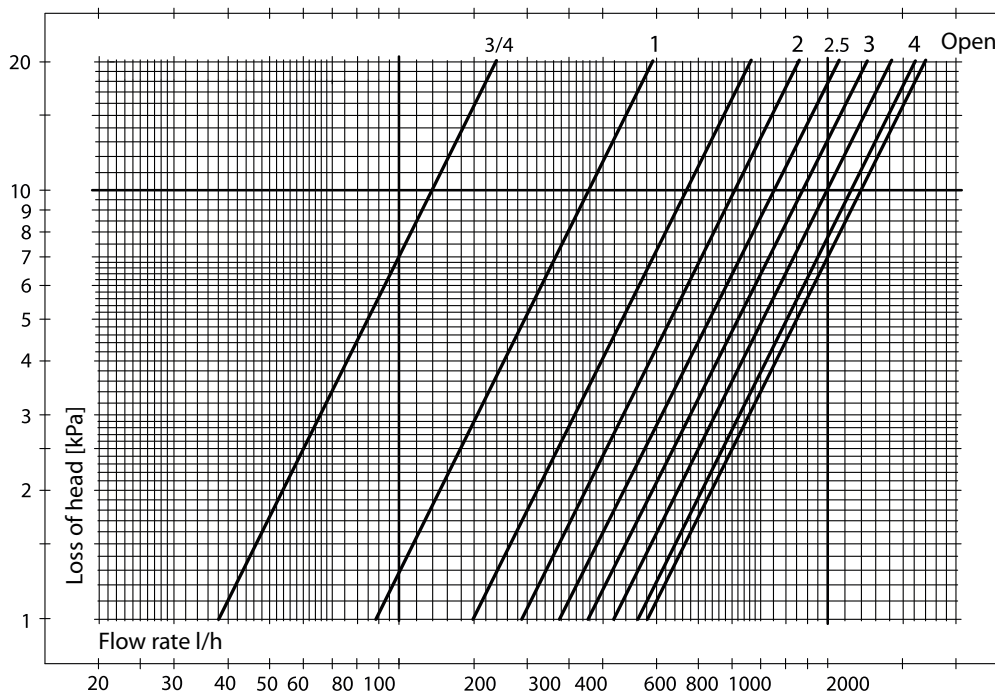
Use

Connection adapter for fitting electric heads on the high temperature port packs in the Tempower mixing unit.

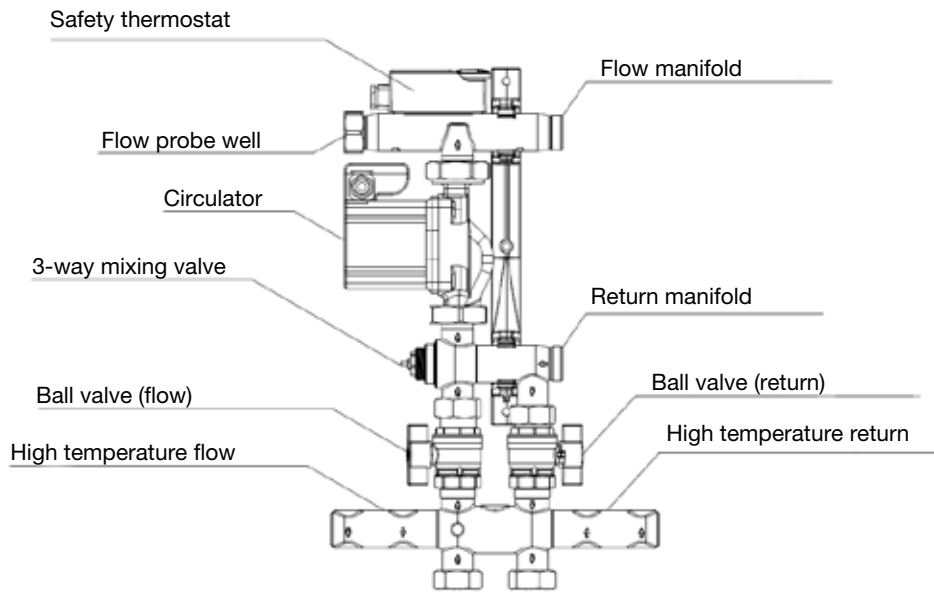
Technical data for the lockshield valve on the high temperature circuits

Technical characteristics	UoM	Values
Nominal flow rate	lit/h	1200
Differential pressure	H/m	1
Kvs	-	3.8
Maximum operating pressure	-	PN10
Maximum operating temperature	°C	120
Lockshield number of revolutions	Flow rate	Values
3/4	lit/h	120
1	lit/h	280
1 1/2	lit/h	470
2	lit/h	610
2 1/2	lit/h	750
3	lit/h	870
3 1/2	lit/h	1000
4	lit/h	1130
Open	lit/h	1200

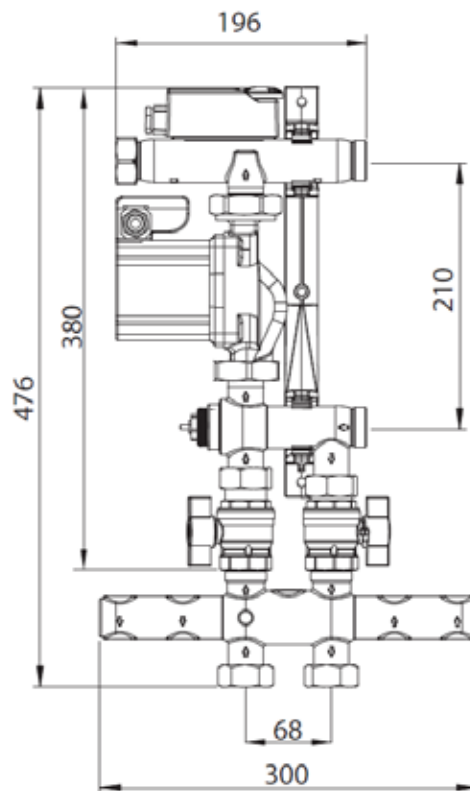
Pressure loss graphs for the high temperature circuits



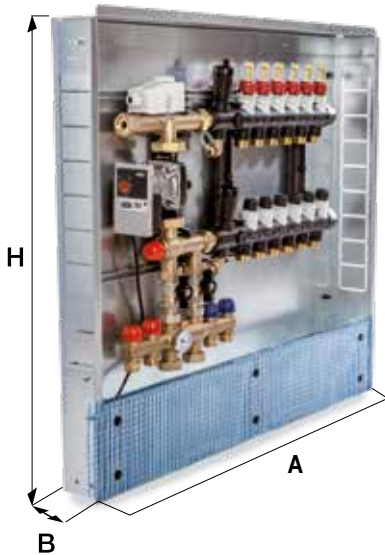
Description of TEMPOWER mixing unit with high temperature section



Dimensional drawing of TEMPOWER mixing unit with high temperature section



All measurements are expressed in mm



TEMPOWER kit in box

Code	N° of ports	Boiler connections	A	B	H
			mm	mm	mm
11 79 04A	4	1" F	840	93	750÷890
11 79 05A	5	1" F	840	93	750÷890
11 79 06A	6	1" F	840	93	750÷890
11 79 07A	7	1" F	990	93	750÷890
11 79 08A	8	1" F	990	93	750÷890
11 79 09A	9	1" F	990	93	750÷890
11 79 10A	10	1" F	1150	93	750÷890
11 79 11A	11	1" F	1150	93	750÷890
11 79 12A	12	1" F	1150	93	750÷890

Specifications

Mixing kit in a box, complete with mixing unit and Tempower manifold, fitted inside a manifold housing box. Mixing unit including high temperature section with 2+2 connections and primary by-pass, and low temperature section with 3-way mixing valve, that can be thermostatically controlled or motorised, with electronic circulator with EEI <0.20. Composite manifold with 4 to 12 circuits with 3/4" eurocone connections. Each circuit has shut-off valves that can be motorised on the return, and 4 lit/min flow rate gauges, with a locking ring on the flow. Minimum thickness required 92 mm.

PLEASE NOTE: Thermostatic head or servomotor for managing the 3-way valve, not included. This unit has a well for temperature probe for the thermostatic head, when using with a servomotor, this well must be changed.

Use

Specifically for radiant heating and cooling systems in which a compact solution in a box must be formed, which can house the radiant system's distribution manifold, the mixing unit, and a high temperature section, when applicable.



Head adapter

Code	Mod.	Colour	Manifold connections	Type of mixing unit
10 67 21	VA50	Dark grey	30x1.5	High temp. sect. Tempower

Specifications

Electro-thermal head adapter

Use

Connection adapter for fitting electric heads on the high temperature port packs in the Tempower mixing unit.

Technical characteristics

	UoM	Values
Wilo Yonos Para RS25/6 Circulator		
Pitch	mm	130
Connections	inches	1"1/2 M
Energy Efficiency Index (EEI)	-	<0.20
Maximum head	mH ₂ O	6.4
Power supply	V-Hz	230-50
Degree of Protection	-	IPX4D
Thermal class of electrical insulation	-	F
Absorbed power	W	1÷45
Absorbed current	A	0.028÷0.44
Mixing valve		
Stroke	mm	3
Actuator connection	mm	M30x1.5
Safety thermostat		
Adjustable		yes
Automatic reset		yes
High temperature section		
Connections	n°	2
Diameter	inches	3/4"M

Circulator functions

All functions are activated or deactivated using the control button, while the LED indicator shows the circulator's operating status.



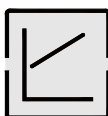
VARIABLE DIFFERENTIAL PRESSURE $Dp-v$

When the control knob is turned to the left, the pressure differential value is increased in a linear manner between 1/2 H and H of the flow rate range allowed, up to the maximum characteristic curve. Operating mode recommended when the system's (pipes) pressure losses are higher than those of the heating system. For example: radiator systems with thermostatic valves



VENT FUNCTION

When the control knob is turned to the central position, after a 3 second delay the vent function is activated. This will last for 10 minutes and is indicated by the green LED flashing quickly. During this time interval the pump operates alternately at high and low speed, pushing air bubbles towards the system's vent valve. NOTE: The vent function removes air that builds up in the pump's rotor housing, but does not affect the heating system.



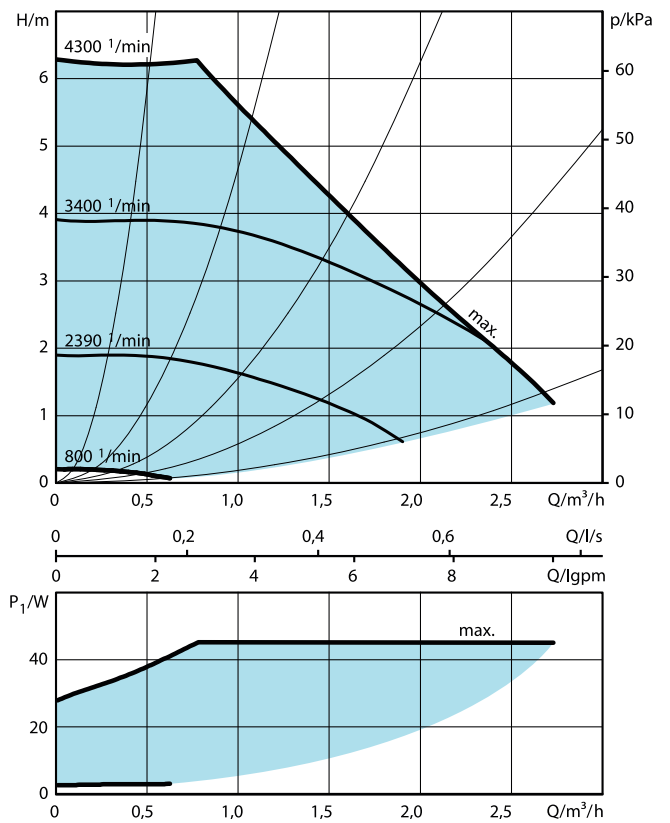
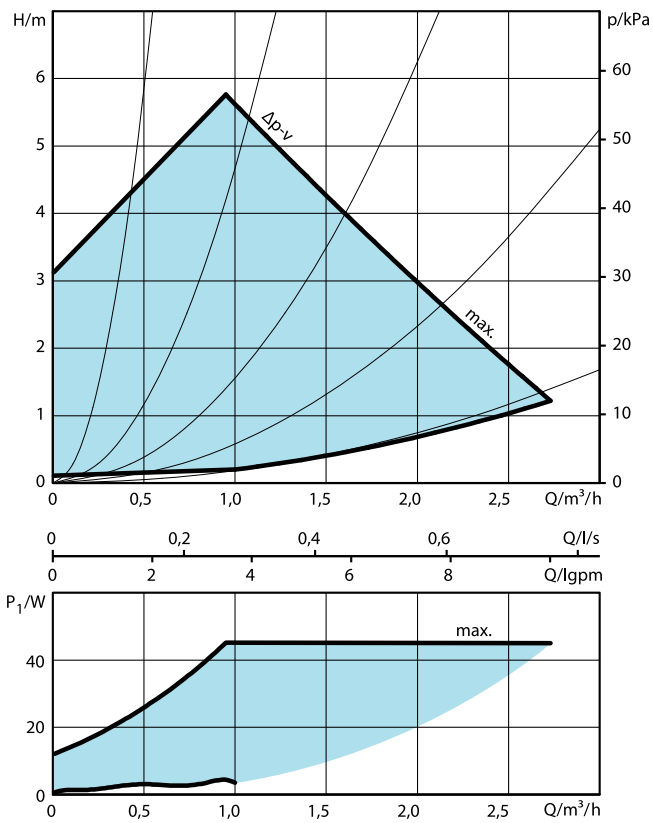
CONSTANT DIFFERENTIAL PRESSURE $Dp-c$

When the control knob is turned to the right, the pressure differential value is kept constant at the value set as the flow rate varies, up to the maximum characteristic curve. Operating mode recommended when the system's (pipes') pressure losses are much lower than those of the heating system. For example: Floor radiant panels and old systems with large diameter pipes.

Circulator performance

Variable pressure difference ($\Delta p-v$)

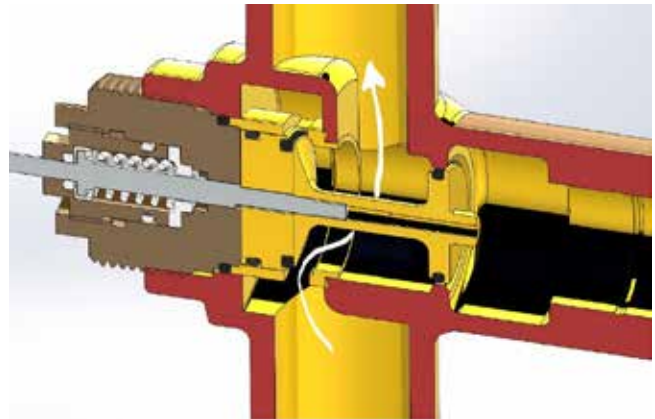
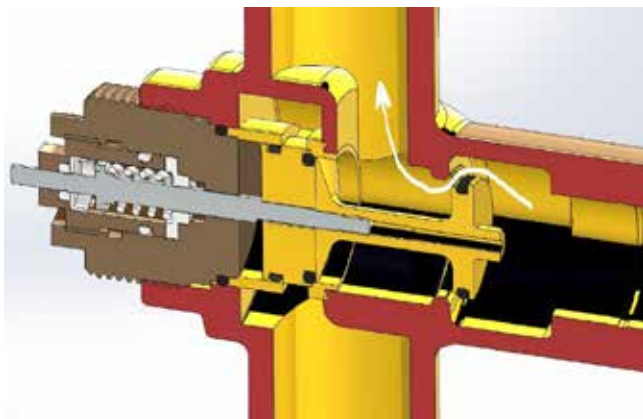
Constant pressure difference ($\Delta p-c$)



Mixing valve positions

Mixing valve flow 0%

Mixing valve flow 100%

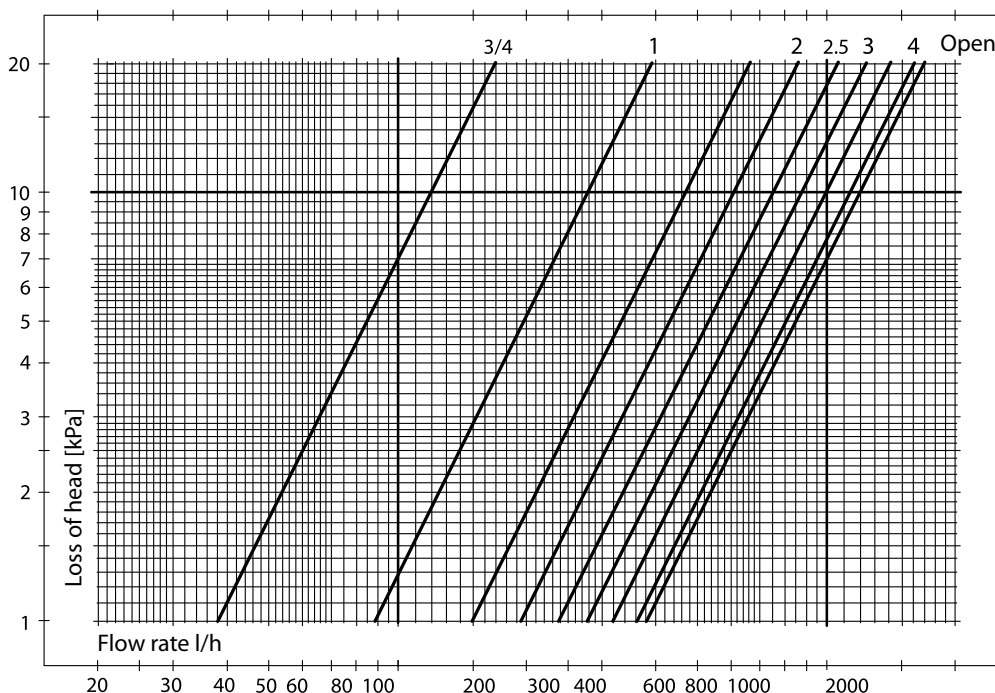


Technical data for the lockshield valve on the high temperature circuits

Technical characteristics	UoM	Values
Nominal flow rate	lit/h	1200
Differential pressure	H/m	1
Kvs	-	3.8
Maximum operating pressure	-	PN10
Maximum operating temperature	°C	120

Lockshield number of revolutions	Flow rate	Values
3/4	lit/h	120
1	lit/h	280
1 1/2	lit/h	470
2	lit/h	610
2 1/2	lit/h	750
3	lit/h	870
3 1/2	lit/h	1000
4	lit/h	1130
Open	lit/h	1200

Pressure loss graphs for the high temperature circuits





Servomotor 0-10V

Code	Mod.	Voltage V	Connections mixing unit mm
10 78 01	0-10V	24	30x1.5

Specifications

24V servomotor for Tempower mixing unit, can be combined with any 0-10V control unit for the mixing valve (e.g. WTC or RKB).

PLEASE NOTE: For correct use of the servomotor, a 6 mm Ø well must be used for a control unit delivery temperature probe, not included with the mixing unit, which instead includes an 11 mm Ø well for a thermostatic head probe.

Use

The servo control is used to motorise the mixing valve, which is controlled by means of a 0-10V signal.

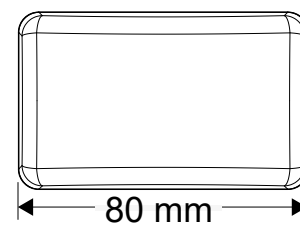
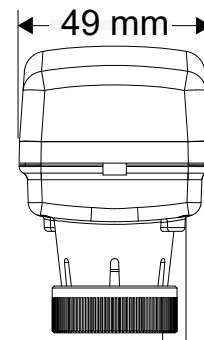
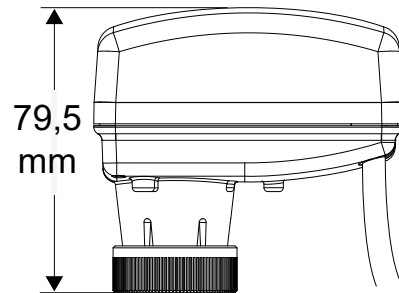
The servo control is fixed to the mixing valve in the pre-assembled system, using a ring nut. Due to its compact shape and small dimensions, it can be installed in a control system, thereby making regulation in very tight spaces possible.

When the input signal indicates the fully open or fully closed position, the motor runs for about 2 minutes every 2 hours, and then goes back to its position.

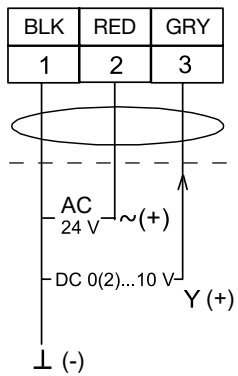
Technical characteristics

Servomotor	proportional 0-10V
Power supply	24V AC +/- 15%
Consumption when operating	2.5 VA - 1.5W
Maximum piston stroke	6mm
Operating force	120 N +30%, -20%
Connection	M30 x 1.5
Type of protection	IP 43
Electrical wiring	3 wires, cable length 1.5 m

Dimensional drawing



Connection wiring diagram





3-point servomotor

Code	Mod.	Voltage	Connections mixing unit
		V	mm
10 78 02	3 points	230	30x1.5

Specifications

230 V servomotor for the Tempower mixing unit. Can be combined with any control unit that has a three-point output signal, for controlling the mixing valve.

PLEASE NOTE: For correct use of the servomotor, a 6 mm Ø well must be used for a control unit delivery temperature probe, not included with the mixing unit, which instead includes an 11 mm Ø well for a thermostatic head probe.

Use

The servo control is used to motorise the mixing valve, which is controlled by means of a 3-point 230V signal.

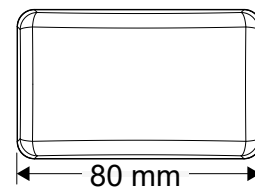
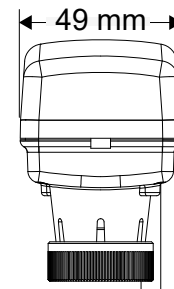
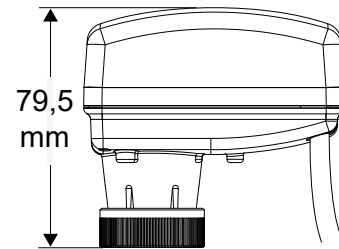
The servo control is fixed to the mixing valve in the pre-assembled system, using a ring nut. Due to its compact shape and small dimensions, it can be installed in a control system, thereby making regulation in very tight spaces possible.

When the operating limits are reached, the motor switches off, and so has no power to it.

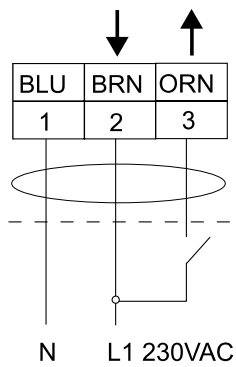
Technical characteristics

Servomotor	230 V, 3 points
Power supply	230V AC \pm 10%
Consumption when operating	6.5 VA - 2.2W
Maximum piston stroke	6mm
Operating force	120 N +30%, -20%
Connection	M30 x 1.5
Type of protection	IP 43
Electrical wiring	3 wires, cable length 1.5 m

Dimensional drawing



Connection wiring diagram





Thermostatic head

Code Connections
mixing unit

mm

10 78 03 30x1.5

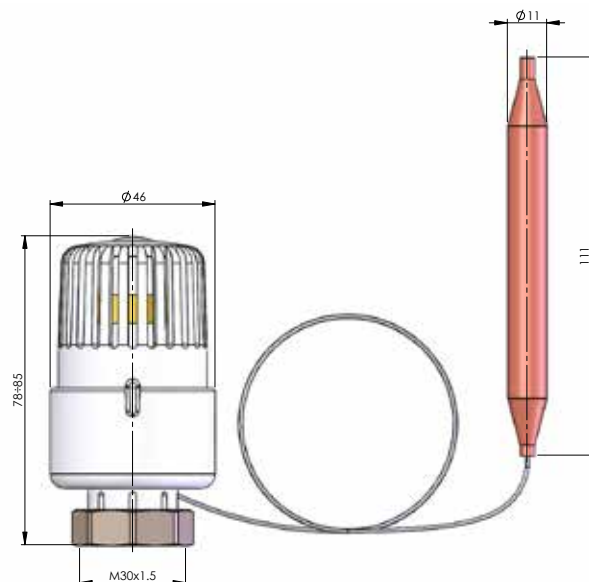
Specifications

Thermostatic head for Tempower mixing units, including a wire supply probe and delivery temperature setting in °C.

Use

The thermostatic head is used to manage the mixing valve. Once the head has been set to obtain the required delivery temperature, which is measured by the wire probe, the unit acts to keep the water temperature at the set value constantly. The servo control is fixed to the mixing valve in the pre-assembled system, using a ring nut. Due to its compact shape and small dimensions, it can be installed in a control system, thereby making regulation in very tight spaces possible.

Dimensional drawing





NTC probe well

Code	Internal Ø
	mm
10 79 01	6

Specifications

Ø 6 mm well for the Tempower mixing unit, to be used with a control unit flow probe.

Use

The Tempower mixing unit is fitted with a well for a thermostatic head probe that is 11 mm in diameter. When the unit is used with a servomotor, it is always along with a control unit and a delivery temperature probe, the diameter of which is unlikely to exceed 6 mm.

In order to ensure correct temperature measurement by the probe, in these cases the well supplied with this unit should be changed.

6. Hydraulic separator



Hydraulic separators

Code	Flow rate m ³ /h	Boiler connections	User connections	A mm	B mm	H mm
11 73 21	2	1" F	1" M	382	110	110
11 73 31	3	1"1/4 F	1"1/4 M	382	110	110

Specifications

Hydraulic separator in electro-welded, galvanised tube, compact and ready for assembly. Fitted with threaded male connection on the system side and threaded female connection on the boiler side. Equipped with 1/2" female lower connection for the boiler probe. Covered by heat insulating protective shell, clad in galvanised plating 0.55 mm thick. Maximum operating temperature 110°C, maximum operating pressure 6 bar, mounting brackets not included.

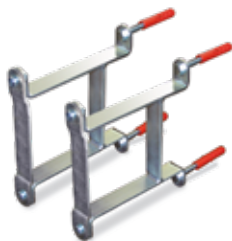
Use

This element has two very important functions:

- To hydraulically separate the primary from the secondary circuit.
- To allow a higher flow rate in the distribution manifold, compared to the volumetric circulation that occurs in the boiler.

Recommended for use with condensation boilers, along with correct boiler circulator regulation. The hydraulic separator ensures a low return temperature (always lower than 57°C, the condensation temperature of water vapour in methane gas), thereby increasing the system's performance.

Normally installed horizontally, and connected directly to the distribution manifold. Can only be used for single zone systems, connected directly to a single mixing / shunt unit.



Fixing brackets for separators

Code	Distance mm
11 73 18	100

Specifications

Wall mounting brackets for the hydraulic separator.

Use

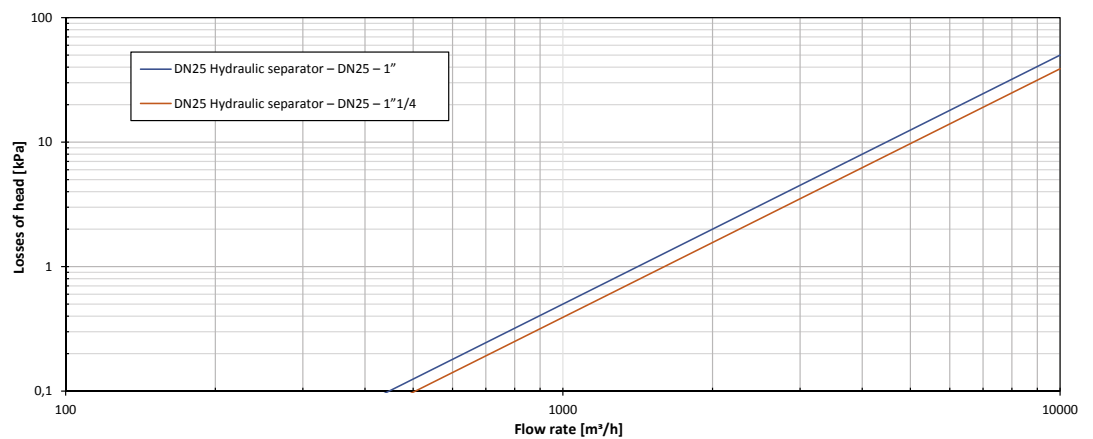
Brackets used to fix the hydraulic separator to the wall, if it is fitted without a distribution manifold.

Technical characteristics

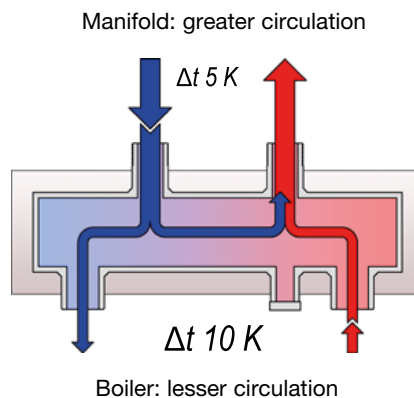
Hydraulic separator	UoM	Flow rates up to 2 m³/h	Flow rates up to 3 m³/h
Manifold connection	inches	1" M	1" 1/4 M
Manifold side centre distance	mm	125	125
Boiler connection	inches	1" F	1" 1/4 F
Boiler side centre distance	mm	250	250
Lower connection for boiler probe	inches	1/2"	1/2"
Recommended primary circuit flow rate	lit/h	2000	3000
Maximum primary circuit flow rate	lit/h	4000	5000
Total maximum secondary circuit flow rate	lit/h	4000	5000
Protection box	-	Galvanised steel	Galvanised steel
Thermal insulation	-	EPS	EPS
Insulation thickness	mm	25	25
Insulating box section	mm	110x110	110x110
Length	mm	380	380

Characteristic curves

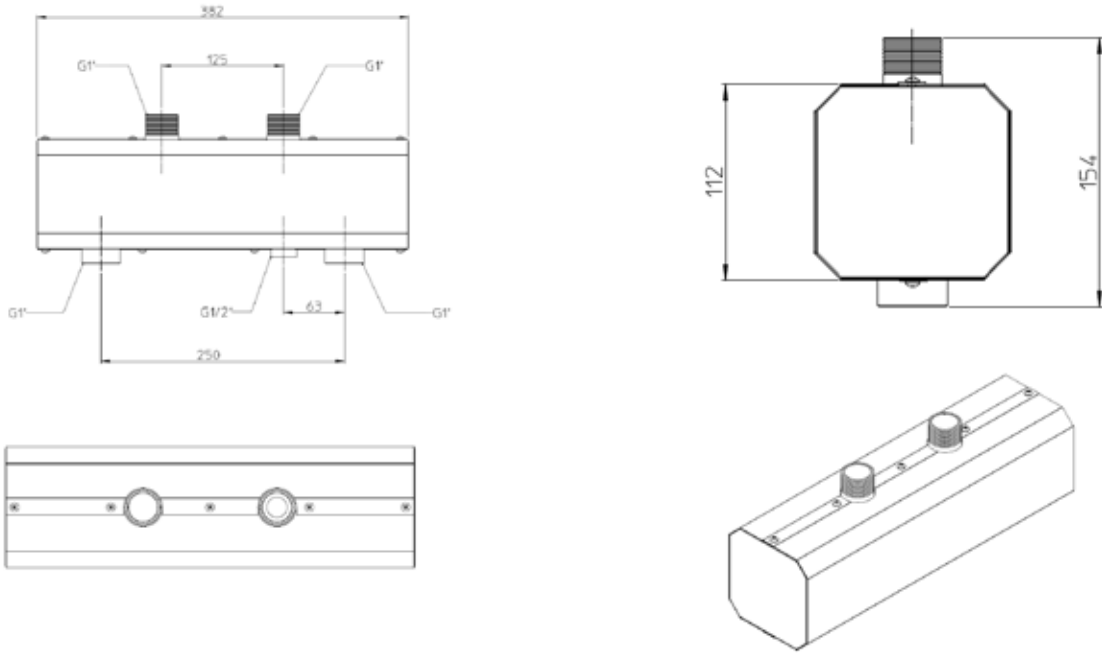
Flow rate - pressure losses



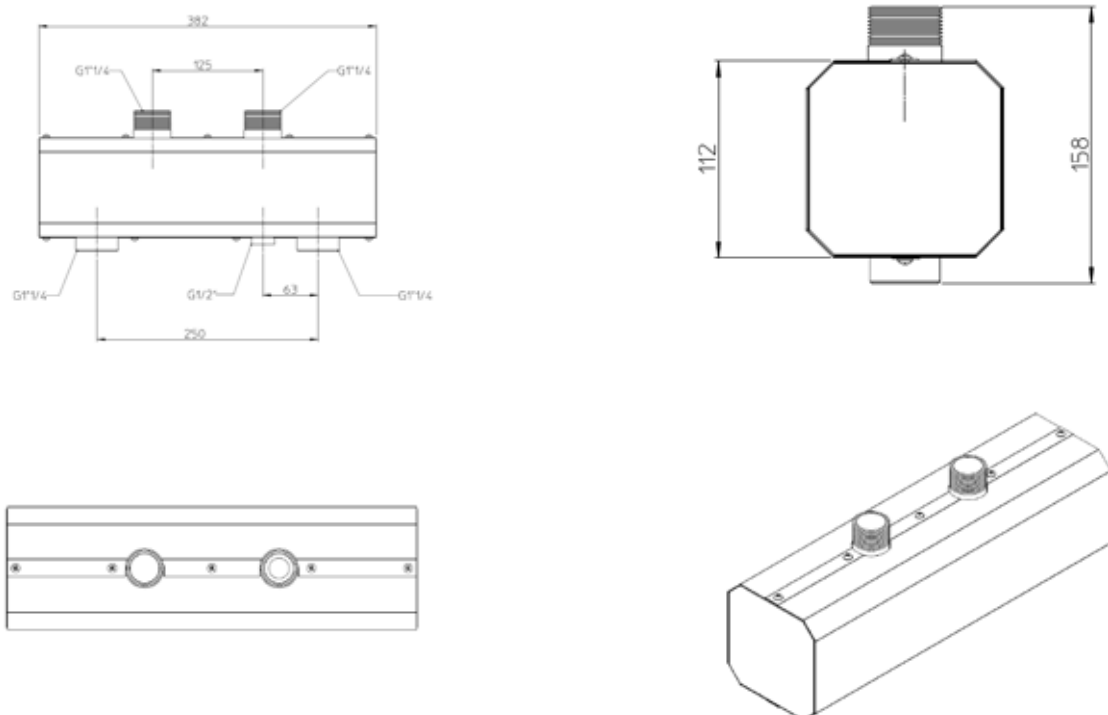
Operating principle



Dimensional drawing of hydraulic separator 2m³/h



Dimensional drawing of hydraulic separator 3m³/h



7. Distribution manifold



Distribution manifolds

Code	N° of ports	Flow rate m³/h	Boiler connec- tions	User connec- tions	A mm	B mm	H mm
11 73 22	2	2	1" F	1" M	508	110	110
11 73 23	3	2	1" F	1" M	758	110	110
11 73 34	4	3	1"1/4 F	1" M	1008	110	110

Specifications

Distribution manifold in electro-welded, galvanised tube, compact and ready for assembly (including mounting brackets). Fitted with threaded male connection on the system side and including a set of connection fittings with female nut on the boiler side and pre-arranged for connection with the hydraulic separator. Covered by heat insulating protective shell, clad in galvanised plating 0,55 mm thick. Maximum operating temperature 110°C, maximum operating pressure 6 bar, mounting brackets included.

Use

The heating plant distribution manifold is used to distribute and manage heating / cooling systems that serve a number of users, such as a mixing zone for a radiant system and a high temperature zone. When working with a single zone, this can be connected directly, using a single zone hydraulic separator.

The distribution manifold also allows better management of changes on flow rate and head, which may occur during winter / summer operation of the entire system.

Technical characteristics

Distribution manifold	UoM	Flow rates up to 2 m ³ /h	Flow rates up to 3 m ³ /h
Maximum power (with temperature diff. $\Delta T = 20K$ on the primary circuit)	kW	50	70
Maximum operating pressure	bar	6	6
Hydraulic separator connection	inches	1" M	1" 1/4 M
Centre distance	mm	125	125
Hydraulic modules connection	inches	1" M	1" 1/4 M
Centre distance	mm	125	125
Pitch	mm	250	250
Protection box	-	Galvanised steel	Galvanised steel
Thermal insulation	-	EPS	EPS
Insulation thickness	mm	25	25
Insulating box section	mm	110x110	110x110
Length - 2 connections	mm	508	508
Length - 3 connections	mm	758	758
Length - 4 connections	mm	-	1008

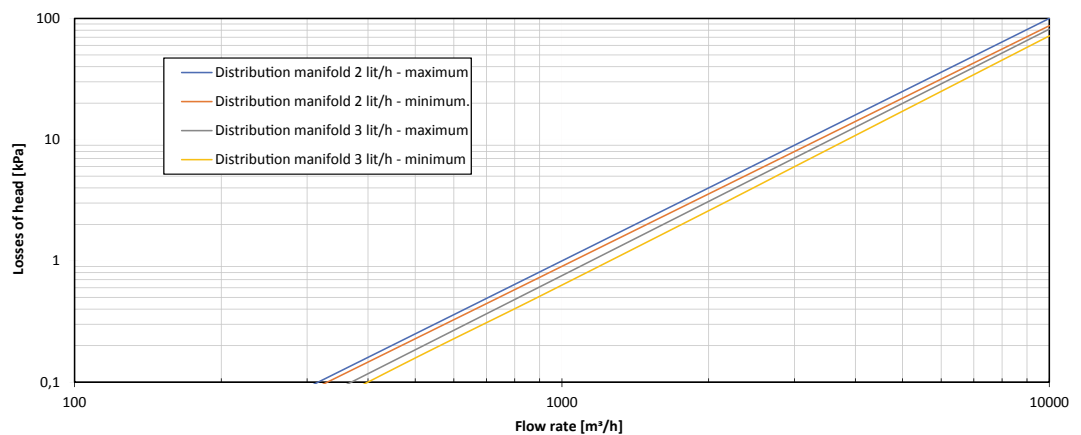
Characteristic curves

Depending on the type of system to be formed, various types of hydraulic modules can be installed (e.g. radiant systems, radiators, etc.), each for a given branch of the system. Therefore, the way the fluid passes through the distribution manifold depends greatly on the type of modules installed in the manifold itself, each with its own operating flow rates and temperatures. As a result, the manifold's pressure losses are difficult to quantify.

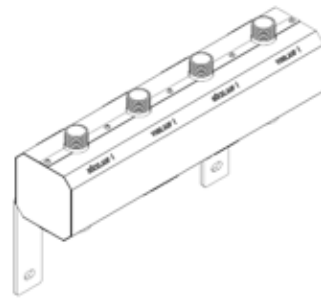
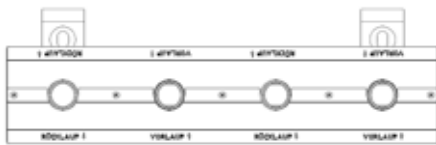
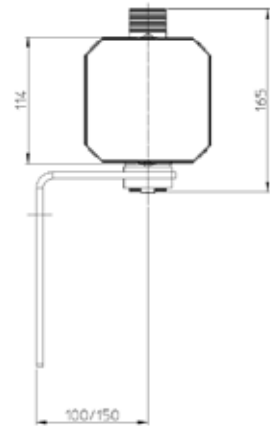
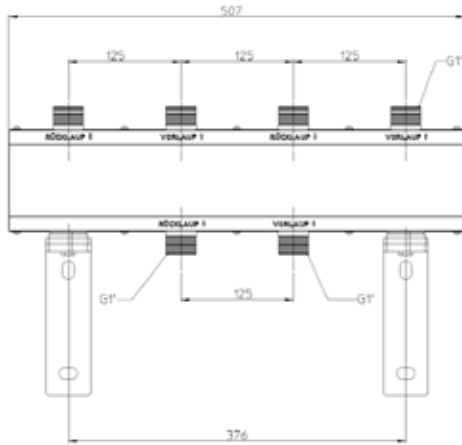
The diagram below is therefore only indicative.

The area included between the minimum and maximum curves indicatively represents the pressure loss range, which may be encountered in the various applications.

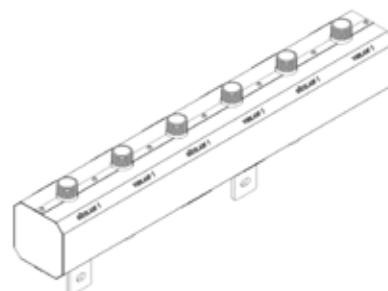
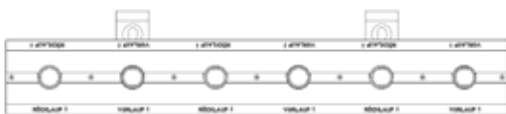
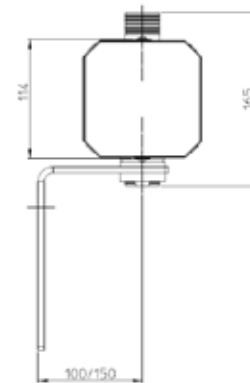
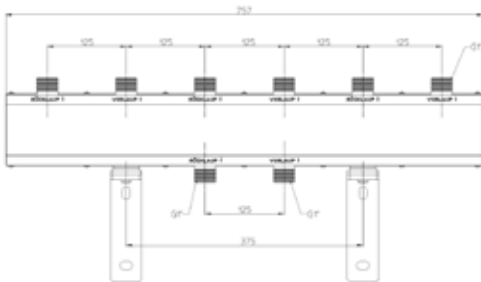
Maximum: The line indicates the maximum pressure loss for a single module, at the outermost positions in the manifold. Minimum: The line indicates the minimum pressure loss for a single module, at the innermost positions in the manifold.



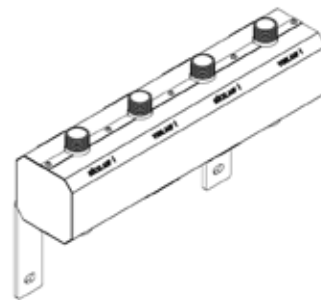
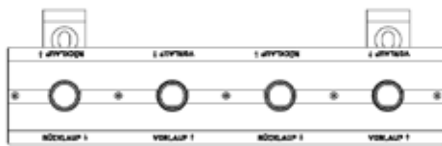
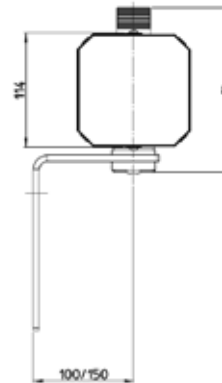
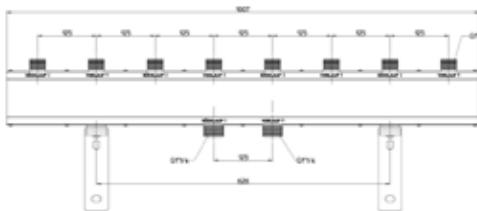
Dimensional drawing of distribution manifold 2 m³/h, 2 ports



Dimensional drawing of distribution manifold 2 m³/h, 3 ports



Dimensional drawing of distribution manifold 3 m³/h, 4 ports



8 Heating plant thermal control units



DN25 mixing unit

Code	Circul.	Flow rate	Boiler con- nections	User con- nections	A	B	H
		m ³ /h			mm	mm	mm
11 73 47	Wilco Para 25/6	1.5	1" F	1" F	250	390	190

Specifications

DN25 mixing unit for heating and/or cooling systems, compact and ready for assembly. Complete with 3-way mixing valve, prepared for rotating servo control, and electronic circulator with EEI <0.20. Equipped with a ball valve with a thermometer on the system's flow, ball valve with thermometer and releasable non-return valve on the system's return. Covered by a black EPP heat insulating shell. Maximum operating temperature 110°C (conform to the circulator's specifications). Maximum operating pressure 10 bar. Mounting brackets not included.

Use

The mixing unit is a control device for both heating and cooling, and combines a number of components that make it possible to control the delivery temperature entering a radiant panel circuit, when the latter is an integral part of a mixed heating system.

The temperature of the water entering the radiant circuit is controlled by a three-way mechanical valve, which can be fitted with a 0-10V, 24V or 3-point 230V servo control. This makes it possible to mix the water that comes from the boiler with the water returning from the radiant circuit, and obtain the required water temperature, calculated in real-time by a control unit.

The mixing unit can therefore be used to increase or lower the power supplied for heating or cooling, adapting it to the actual demand by the user.



Fixing brackets for DN25 units

Code	Distance from wall mm	Boiler connections	User connections
11 73 20	100	1"1/2M	1"1/2F

Specifications

Wall bracket to support DN25 units, with threaded nut couplings.

Use

Wall mounting bracket for DN25 units, required if the unit is assembled without a distribution manifold or a hydraulic separator. The threaded nut couplings connected to it replace the same couplings already on the boiler side of the unit.

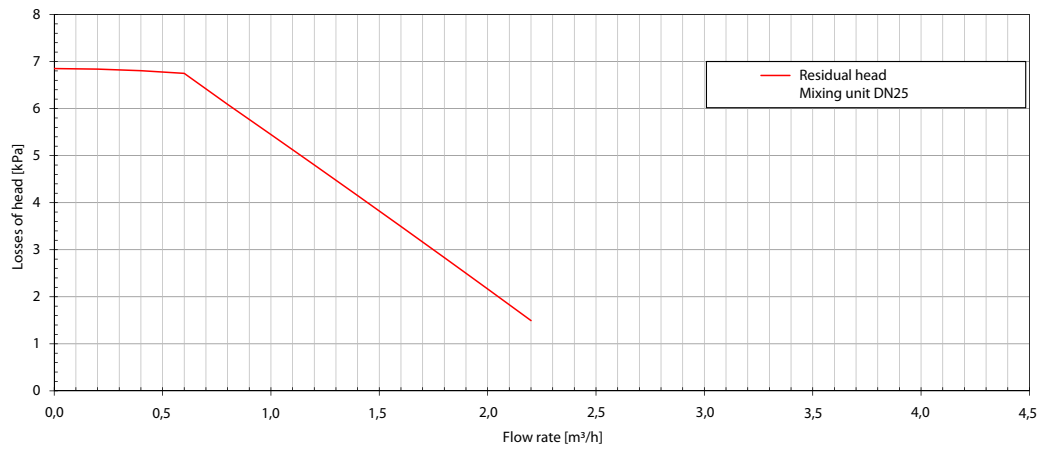
Technical characteristics

DN25 mixing unit	UoM	Values
Insulation box	-	EPP - Polypropylene foam
Dimensions	mm	250x390x190
Centre distance	mm	125
Connections	inches	1"
Nominal pressure	bar	10
Maximum temperature (unit without circulator)	°C	110
Thermostatic valve - working range	°C	20-45
Kvs*	m ³ /bar	6
Air delivery	Connection	3-way mixing valve
		Synchronous, high efficiency, pre-wired circulator
		Flanged ball valve with thermometer carrying handle.
		Thermometer with red ring - working range 0°C - 120°C
Return	Connection	T fitting for mixing valve
		Flanged ball valve with 20 mbar non-return valve (the valve can be cut out by turning the handle through 45°), with a thermometer holder.
		Thermometer with blue ring - working range 0°C - 120°C

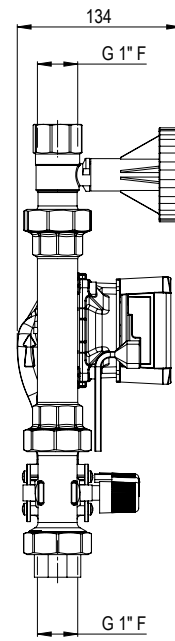
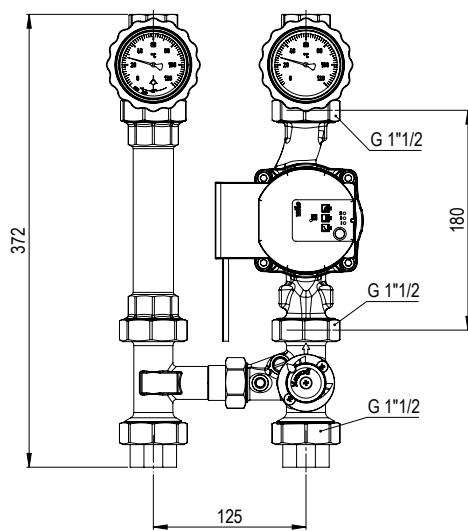
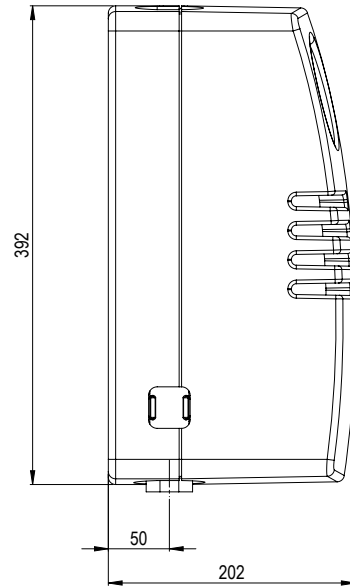
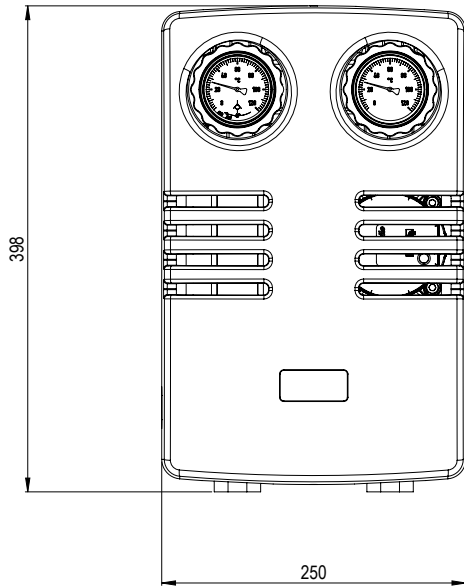
*Flow coefficient at maximum valve opening.

Circulator	UoM	Values
Model	-	Wilo Para 25-180/8-75/SC-9
Pitch	mm	180
Connections	inches	1"1/2 M
Fluids permitted	-	Water for heating and cooling Glycol water mixture, maximum ratio 1:1. Starting from 20% glycol, check flow rate data.
Energy Efficiency Index (EEI)	-	<0.20
Maximum head	mH ₂ O	6.7
Power supply	V - Hz	1~230V - 50/60 Hz
Degree of Protection	-	IPX4D
Thermal class of electrical insulation	-	F
Absorbed power	W	1÷43
Maximum breakaway starting current	A	<3

Characteristic curves



Dimensional drawing





DN32 mixing unit

Code	Circul.	Flow rate	Boiler connections	User connections	A	B	H
		m ³ /h			mm	mm	mm
11 73 46	Wilo Para 30/8	2.8	1"1/4F	1"1/4F	250	410	250

Specifications

DN32 mixing unit for heating and/or cooling systems, compact and ready for assembly. Complete with 3-way mixing valve, prepared for rotating servo control, and electronic circulator with EEI <0.23. Equipped with ball valves with a thermometer on the system's flow and return. Non-return valve on the system's return. Covered by a black EPP heat insulating shell. Maximum operating temperature 110°C (conform to the circulator's specifications). Maximum operating pressure 10 bar. Mounting brackets not included.

Use

The mixing unit is a control device for both heating and cooling, and combines a number of components that make it possible to control the delivery temperature entering a radiant panel circuit, when the latter is an integral part of a mixed heating system.

The temperature of the water entering the radiant circuit is controlled by a three-way mechanical valve, which can be fitted with a 0-10V, 24V or 3-point 230V servo control. This makes it possible to mix the water that comes from the boiler with the water returning from the radiant circuit, and obtain the required water temperature, calculated in real-time by a control unit.

The mixing unit can therefore be used to increase or lower the power supplied for heating or cooling, adapting it to the actual radiant demand, and obtaining the water temperature required and calculated in real-time by a control unit.



Pair of DN32 adapters for distribution manifold

Code	Boiler connections	User connections
11 73 17	1" F	2" F

Specifications

Set of fittings between DN32 units, with 2" connections, and distribution manifolds with 1" M connections.

Use

Set of fittings for DN32 units, required if the unit is fitted on a distribution manifold, with 1" M connections on the system side.



Fixing brackets for DN32 units

Code	Distance from wall mm	Boiler connections	User connections
11 73 30	160	2" M	2" F

Specifications

Wall bracket to support DN32 units, with threaded nut couplings.

Use

Wall mounting bracket for DN32 units, required if the unit is assembled without a distribution manifold or a hydraulic separator. The threaded nut couplings connected to it replace the same couplings already on the boiler side of the unit.

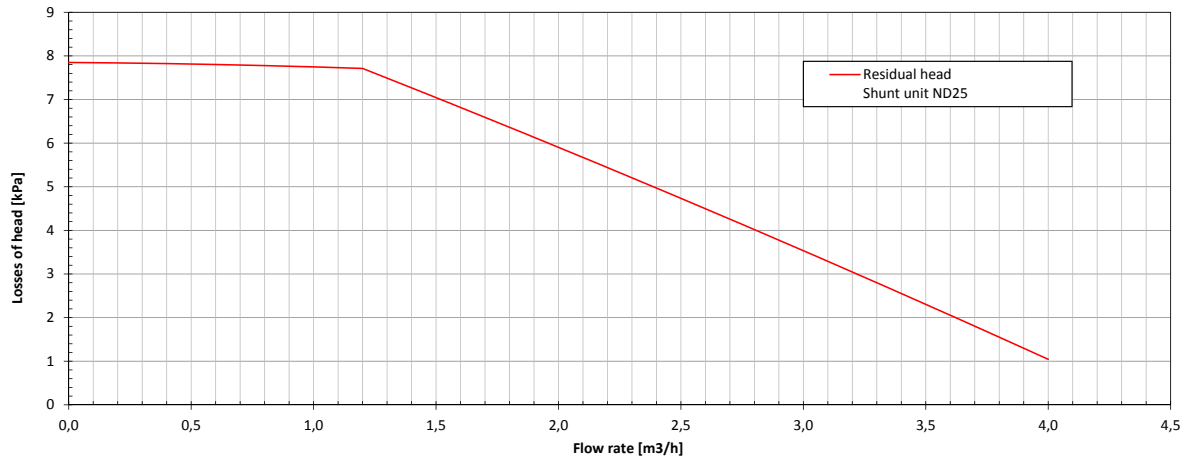
Technical characteristics

DN32 mixing unit	UoM	Values
Insulation box	-	EPP - Polypropylene foam
Dimensions	mm	250x400x170
Centre distance	mm	125
Connections	inches	1"1/4
Nominal pressure	bar	10
Maximum temperature (unit without circulator)	°C	110
Kvs*	m ³ /bar	13
Air delivery	Connection 3-way mixing valve Synchronous, high efficiency, pre-wired circulator Flanged ball valve with thermometer carrying handle. Thermometer with red ring - working range 0°C - 120°C	
Return	Connection T fitting for mixing valve Flanged ball valve with 20 mbar non-return valve (the valve can be cut out by turning the handle through 45°), with a thermometer holder. Thermometer with blue ring - working range 0°C - 120°C	

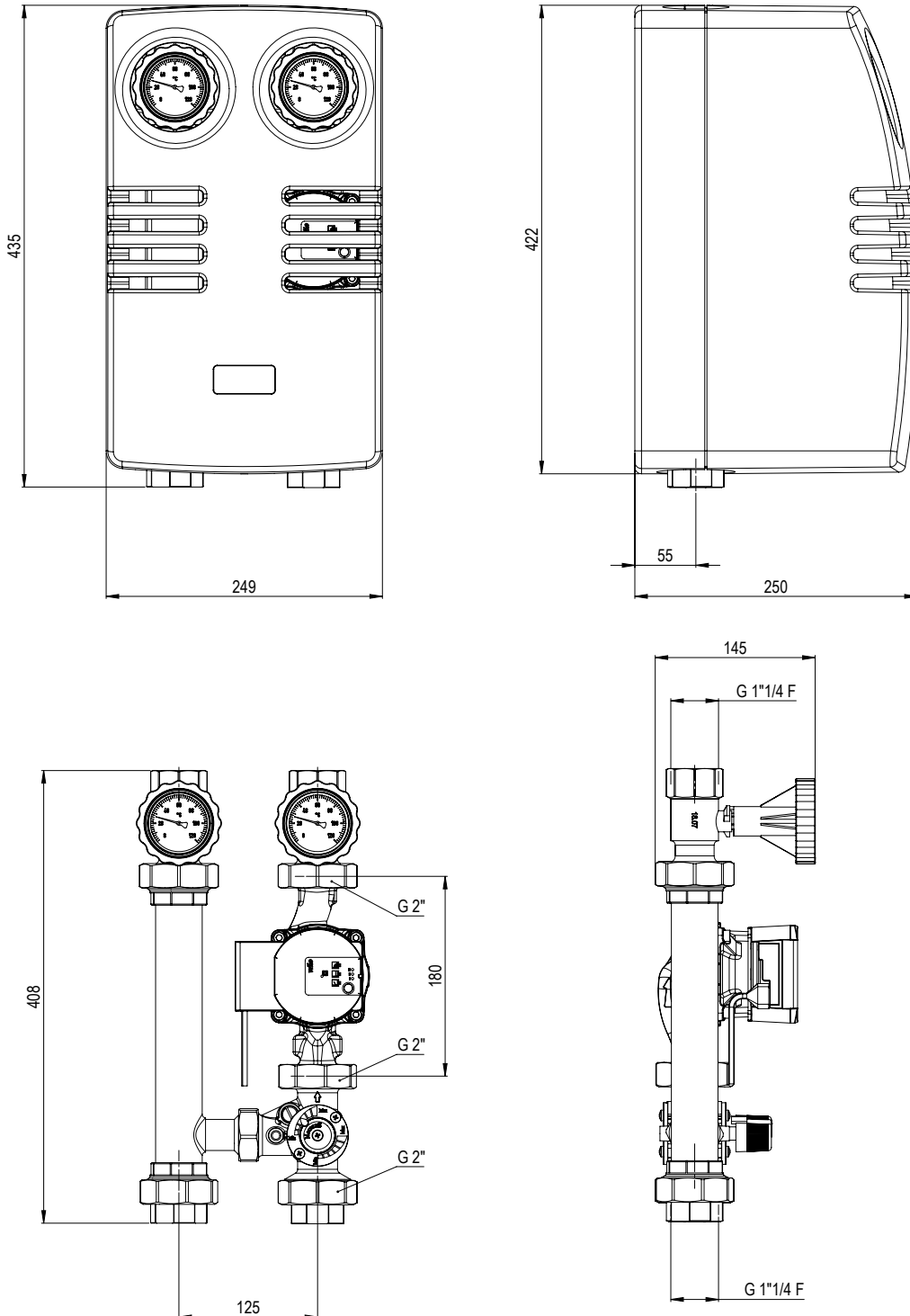
*Flow coefficient at maximum valve opening.

Circulator	UoM	Values
Model	-	Wilo Para 30/8
Pitch	mm	180
Connections	inches	2"M
Fluids permitted	-	Water for heating and cooling Glycol water mixture, maximum ratio 1:1. Starting from 20% glycol, check flow rate data.
Energy Efficiency Index (EEI)	-	<0.23
Maximum head	mH ₂ O	7
Power supply	V - Hz	1~230V - 50/60 Hz
Degree of Protection	-	IP44
Thermal class of electrical insulation	-	H
Absorbed power	W	5÷70
Absorbed current	A	0.06÷0.58

Characteristic curves



Dimensional drawing





Rotating servomotor

Code

Voltage

11 73 90

V

24

Specifications

Rotating servomotor for mixing valves fitted on mixing units, with a single central fixing point.

Use

Electronic actuator controlled by a proportional signal able to control rotor mixing valves for systems that require the temperature control of the carrying fluid.

Technical characteristics

Rotating Servomotor	UoM	Values
Twisting moment	Nm	5
Rotation angle	Degrees	90°
Rotation speed	sec	60/90/120
Power supply voltage	V	24 V AC/DC
Consumption	VA	5
Degree of Protection	-	IP42
Protection class	-	II
Dimensions	mm	84 x 101 x 85
Weight	g	650



Fixed point servomotor

Code

Voltage

11 73 41

V

230

Specifications

Servomotor for mixing valves with fixed point, electronic flow temperature control. Bidirectional, reversible with switch, adjustable temperature, adjustable direction of rotation, both opening and closing, heating/cooling mode and temperature reading via immersion probe or tube contact fixing kit.

Use

Electronic actuator controlled by a proportional signal able to control rotor mixing valves for systems that require the temperature control of the carrying fluid.

Technical characteristics

Rotating Servomotor	UoM	Values
Twisting moment	Nm	5
Rotation angle	Degrees	6°
Power supply voltage	V	230 V AC/DC
Consumption	VA	1.5
Degree of Protection	-	IP42
Protection class	-	I
Dimensions	mm	102 x 84 x 84 x 88
Weight	g	800



Thermostatic DN25 mixing unit

Code	Circul.	Flow rate	Boiler con- nections	User con- nections	A	B	H
		m ³ /h			mm	mm	mm
11 73 48	Wilco Para 25/8	1.5	1" F	1" F	250	390	190

Specifications

DN25 thermostatic mixing unit for heating and/or cooling systems, compact and ready for assembly. Complete with 3-way fixed point mixing valve with adjustable thermostatic head and electronic circulator with EEI <0.21. Equipped with a ball valve with a thermometer on the system's flow, ball valve with thermometer and releasable non-return valve on the system's return. Covered by a black EPP heat insulating shell. Maximum operating temperature 110°C (conform to the circulator's specifications). Maximum operating pressure 10 bar. Mounting brackets not included.

Use

The thermostatic mixing unit is a control device for heating only and combines a number of components that make it possible to keep the delivery temperature entering a radiant panel circuit constant, when the latter is an integral part of a mixed heating system.

The temperature of the water entering the radiant circuit is controlled by a pre-set micrometric valve that makes it possible to mix the water at a higher temperature, coming from the boiler, with the return water from the radiant circuit, obtaining the pre-set water temperature.

Therefore, this thermostatic mixing unit makes it possible to keep the heating water supplied to a user constant.



Fixing brackets for DN25 units

Code	Distance from wall	Boiler con- nections	User connec- tions
	mm		
11 73 20	100	1"1/2M	1"1/2F

Specifications

Wall bracket to support DN25 units, with threaded nut couplings.

Use

Wall mounting bracket for DN25 units, required if the unit is assembled without a distribution manifold or a hydraulic separator. The threaded nut couplings connected to it replace the same couplings already on the boiler side of the unit.

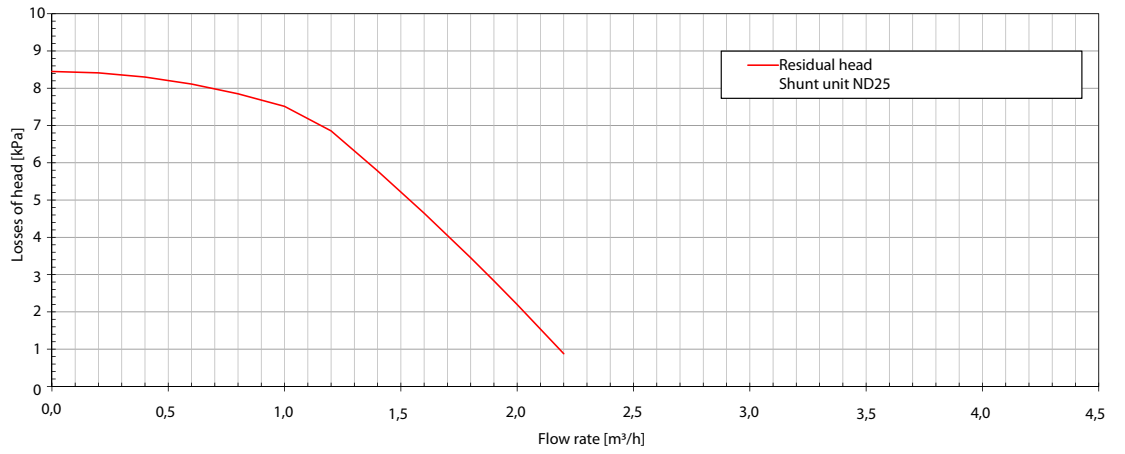
Technical characteristics

DN25 thermostatic unit	UoM	Values
Insulation box	-	EPP - Polypropylene foam
Dimensions	mm	250x380x170
Centre distance	mm	125
Connections	inches	1"
Nominal pressure	bar	10
Maximum temperature (unit without circulator)	°C	110
Thermostatic valve - working range	°C	20÷45
Kvs*	m ³ /bar	3.3
Air delivery	Connection	Thermostatic mixing valve Synchronous, high efficiency, pre-wired circulator Flanged ball valve with thermometer carrying handle. Thermometer with red ring - working range 0°C - 120°C
Return	Connection	T fitting for thermostatic valve Flanged ball valve with 20 mbar non-return valve (the valve can be cut out by turning the handle through 45°), with a thermometer holder. Thermometer with blue ring - working range 0°C - 120°C

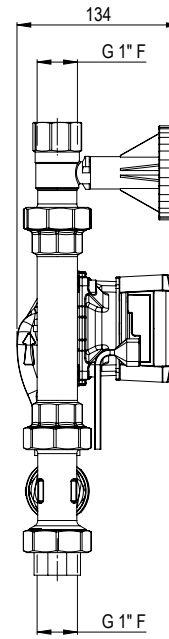
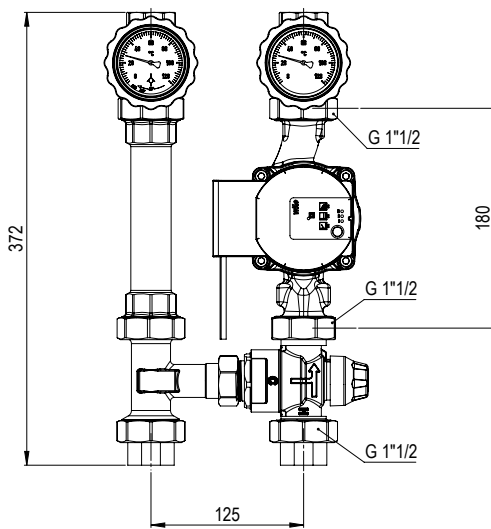
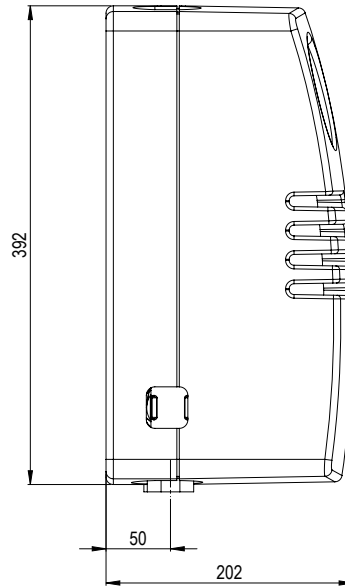
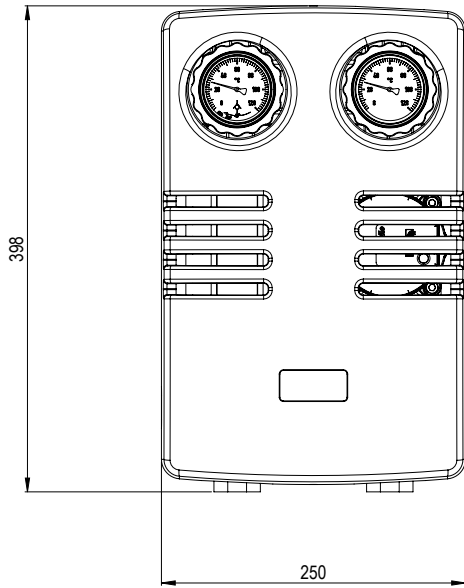
*Flow coefficient at maximum valve opening.

Circulator	UoM	Values
Model	-	Wilo Para 25-180/8-75/SC-9
Pitch	mm	180
Connections	inches	1"1/2M
Fluids permitted	-	Water for heating and cooling Glycol water mixture, maximum ratio 1:1. Starting from 20% glycol, check flow rate data.
Energy Efficiency Index (EEI)	-	<0.21
Maximum head	mH ₂ O	8.4
Power supply	V - Hz	1~230V - 50/60 Hz
Degree of Protection	-	IPX4D
Thermal class of electrical insulation	-	F
Absorbed power	W	1÷43
Maximum breakaway starting current	A	<3

Characteristic curves



Dimensional drawing





DN25 shunt unit

Code	Circul.	Flow rate	Boiler connections	User connections	A	B	H
		m ³ /h			mm	mm	mm
11 73 49	Wilco Para 25/6	2.15	1" F	1" F	250	390	190

Specifications

DN25 shunt unit for heating and/or cooling systems, compact and ready for assembly. Complete with class A electronic circulator (ErP ready 2015). Equipped with a ball valve with a thermometer on the system's flow, ball valve with thermometer and releasable non-return valve on the system's return. Covered by a black EPP heat insulating shell. Maximum operating temperature 110°C (conform to the circulator's specifications). Maximum operating pressure 10 bar. Mounting brackets not included.

Use

The shunt unit is an element that is suitable for managing high temperature circuits such as radiators, fan coils, and boiler output load circuits.



Fixing brackets for DN25 units

Code	Distance from wall	Boiler connections	User connections
	mm		
11 73 20	100	1"1/2M	1"1/2F

Specifications

Wall bracket to support DN25 units, with threaded nut couplings.

Use

Wall mounting bracket for DN25 units, required if the unit is assembled without a distribution manifold or a hydraulic separator. The threaded nut couplings connected to it replace the same couplings already on the boiler side of the unit.

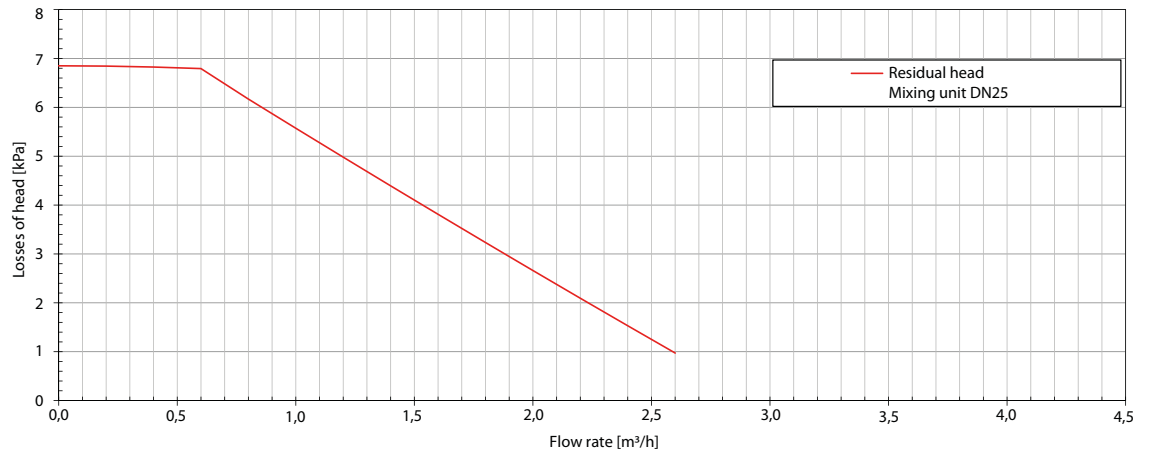
Technical characteristics

DN25 shunt unit	UoM	Values
Insulation box	-	EPP - Polypropylene foam
Dimensions	mm	250x380x170
Centre distance	mm	125
Connections	inches	1"
Nominal pressure	bar	10
Maximum temperature (unit without circulator)	°C	110
Kvs*	m ³ /bar	8
Air delivery	Connection Synchronous, high efficiency, pre-wired circulator Flanged ball valve with thermometer carrying handle. Thermometer with red ring - working range 0°C - 120°C	
Return	Connection Flanged ball valve with 20 mbar non-return valve (the valve can be cut out by turning the handle through 45°), with a thermometer holder. Thermometer with blue ring - working range 0°C - 120°C	

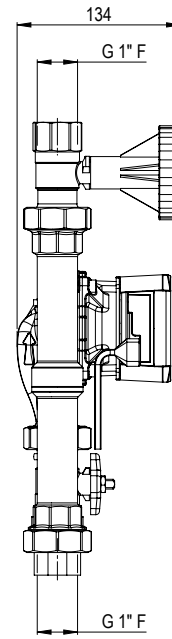
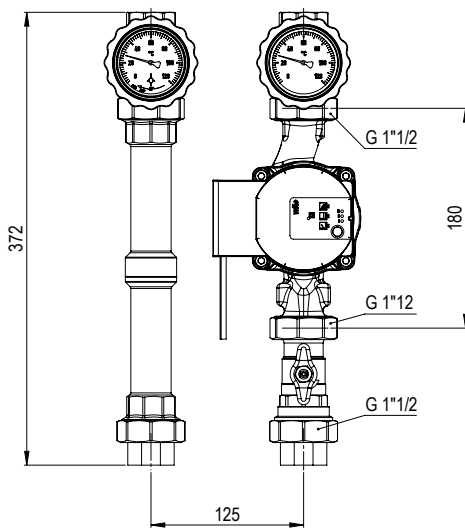
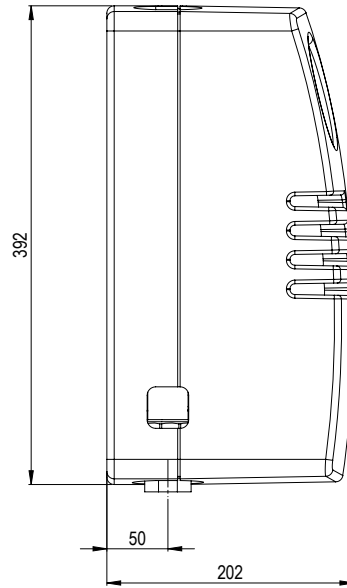
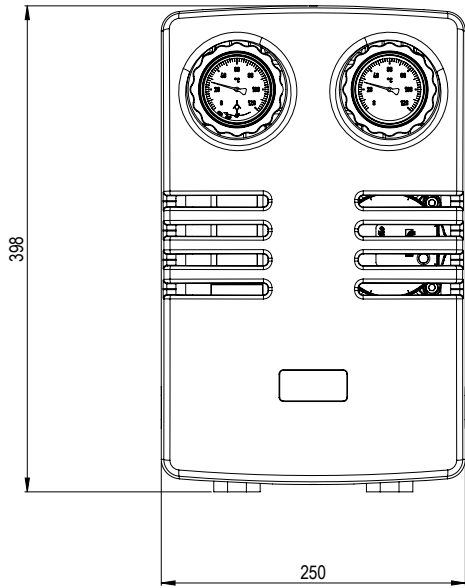
*Flow coefficient at maximum valve opening.

Circulator	UoM	Values
Model	-	Wilo Para 25-180/6.0-50/SC-9
Pitch	mm	180
Connections	inches	1"1/2M
Fluids permitted	-	Water for heating and cooling Glycol water mixture, maximum ratio 1:1. Starting from 20% glycol, check flow rate data.
Energy Efficiency Index (EEI)	-	<0.20
Maximum head	mH ₂ O	6.7
Power supply	V - Hz	1~230V - 50/60 Hz
Degree of Protection	-	IPX4D
Thermal class of electrical insulation	-	F
Absorbed power	W	1÷43
Maximum breakaway starting current	A	<3

Characteristic curves



Dimensional drawing





Additional bypass section

Code	Mod.	User connections	Pump connections
11 73 42	DN25 unit	1" F	1"-1/2F

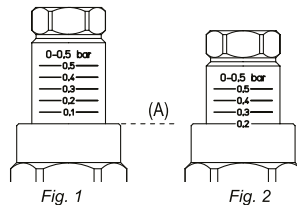
Specifications

Kit consisting of by-pass + two 3-way valves equipped with handle with thermometer-holder with red ring 0°C-120 °C (flow) and blue ring 0°C-120° C (return), respectively. In brass CW617N (CW614N). Yellow brass finish Caps and gaskets not included

Use

The by-pass section is used by systems that can work with significant flow variations, i.e. those that largely use thermostatic valves or motorised valves, so as to ensure recirculation with a flow proportional to the amount of valves which close, limiting the maximum value of the differential pressure generated by the circulator.

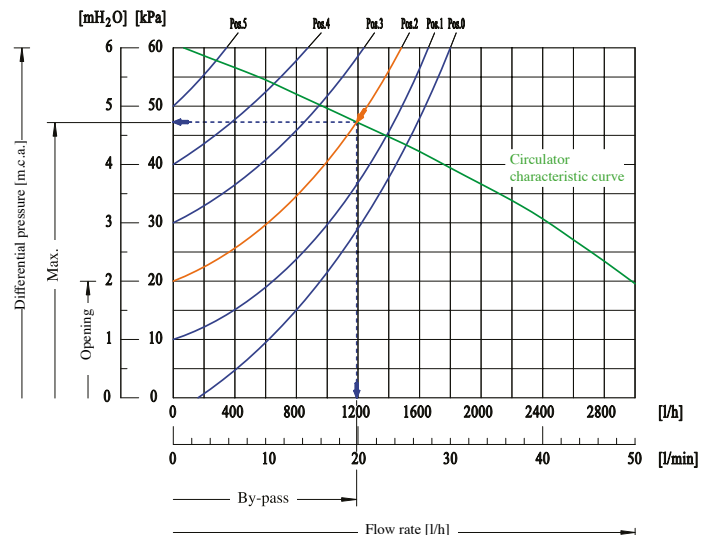
By-pass setting



To set the by-pass use the diagram above as a reference.

Figure 1 The reference for the setting scale is the cover surface /A)

Figure 2 By-pass setting example: pressure set at 0,2 bar



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