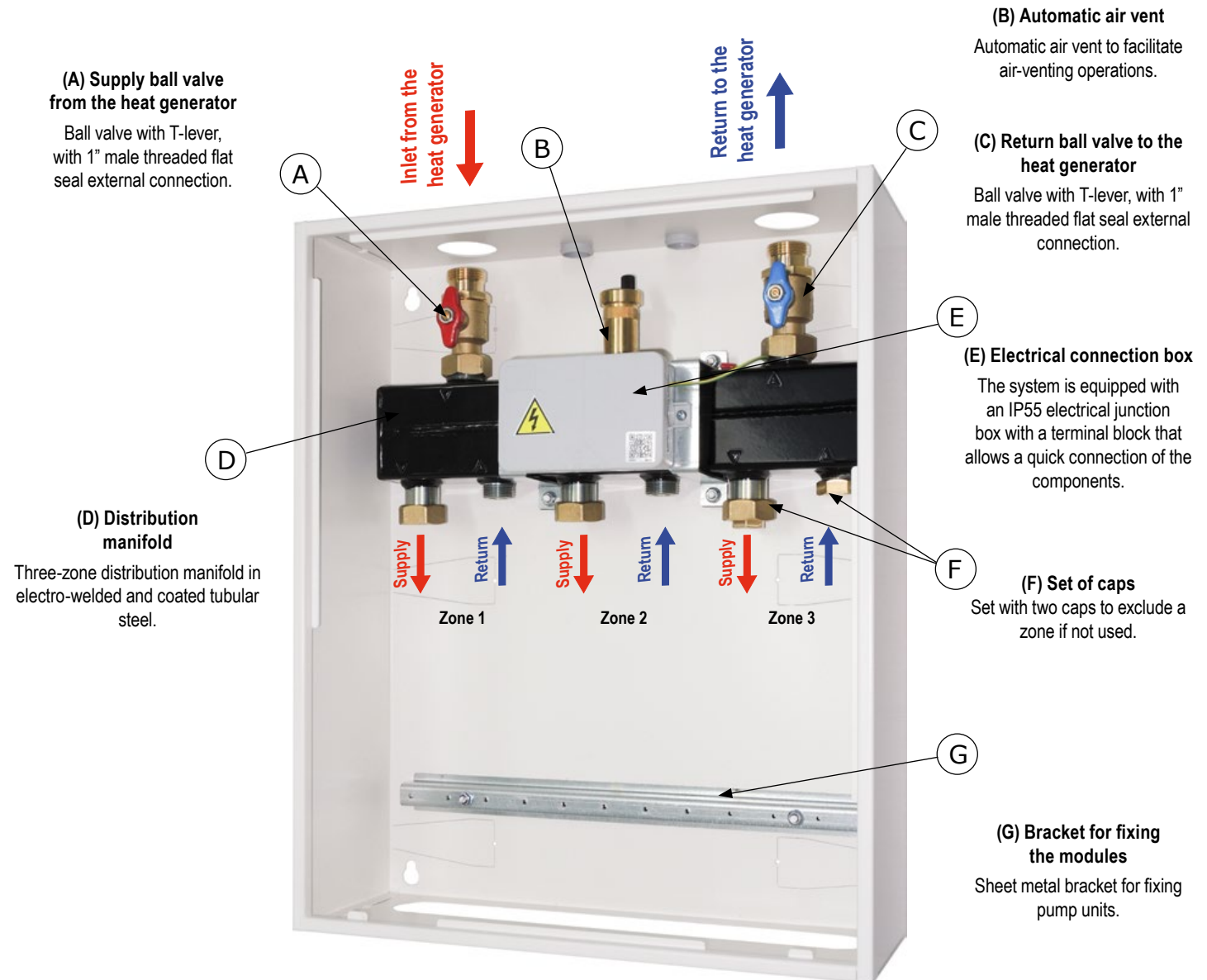




SAFETY: Please read carefully the mounting and the setting working instructions before starting the unit, in order to avoid accidents and failures caused by an incorrect use of the product. Please keep this manual for future consultations.

List and basic technical features of the main components



(A) Supply ball valve from the heat generator

Ball valve with T-lever, with 1" male threaded flat seal external connection.

(B) Automatic air vent
Automatic air vent to facilitate air-venting operations.

(C) Return ball valve to the heat generator

Ball valve with T-lever, with 1" male threaded flat seal external connection.

(E) Electrical connection box

The system is equipped with an IP55 electrical junction box with a terminal block that allows a quick connection of the components.

(D) Distribution manifold

Three-zone distribution manifold in electro-welded and coated tubular steel.

(F) Set of caps
Set with two caps to exclude a zone if not used.

(G) Bracket for fixing the modules

Sheet metal bracket for fixing pump units.



White RAL 9010 powder-coated sheet metal box. It can be wall-mounted, recessed, or inside a hanging cabinet.
Dimensions: (LxPxH) 450x160x550 mm.

The modular system allows the installation of three types of pump units: unmixed, mixed motorized, mixed fixed point. Pump units can be connected to the manifold at will, by number and position among those available, thus creating a configuration always appropriate to the context. On the right an example of configuration with unmixed, mixed and fixed point pump unit.



Example of configuration with zones: unmixed circuit, mixed circuit and fixed point

(A) High efficiency circulating pump
 Modules are provided with high efficiency synchronous circulating pump. Each zone is supplied with a Wilo Para 15-130/6 SC circulating pump. Cables included in the equipment.

(B) Three way motorized rotary mixing valve
 Modules with three way rotary mixing valves are provided with 3-point servomotor, 230 V.

(C) Thermostatic mixing valve
 The thermostatic mixing valve of fixed point modules has an adjustment range of 20=45°C.

(D) Ball valves
 Ball valves with thermometer, 0-120°C scale. The valves are equipped with clamps for fixing to the box and probe holder connection. Non-return valves built-in in return ball valves.

ATTENTION
 If the box is provided with internal insulation, the servomotor knob must be removed from the motorized mixing unit.

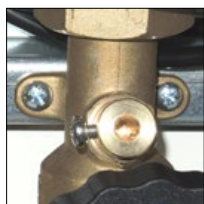
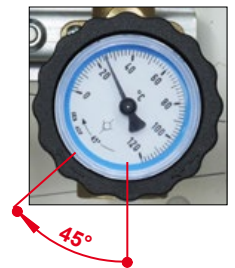
Supply ↓ Return ↑
 Unmixed Circuit

Supply ↓ Return ↑
 Mixed motorized circuit

Supply ↓ Return ↑
 Mixed fixed point circuit

20 mbar non-return valve

It is always present in the ball valve of the return line valves. It avoids the natural circulation of the fluid (thermosyphon effect). To exclude the non-return valve, turn the handle 45° clockwise from the open position.



Modules fixing

The ball valves of the pump units are equipped with clamps for the connection to the fixing bracket of the box, by means of the self-tapping screws included in the equipment.

Probe holder connection

It is present in all the ball valves of the pump units. It allows the connection of a ø6 mm temperature probe if the control-electronics requires it. *Probes not included.*



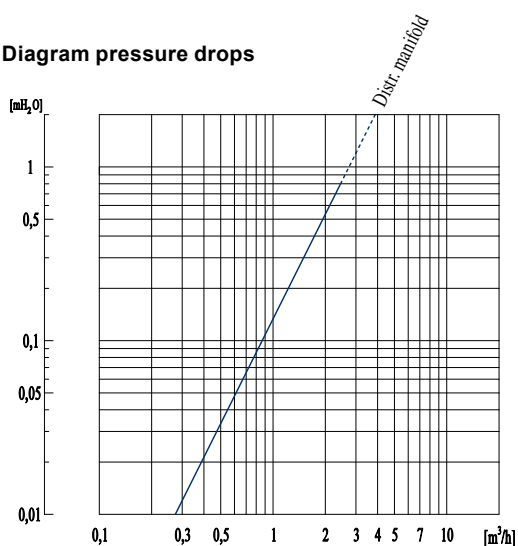
Technical data distribution box



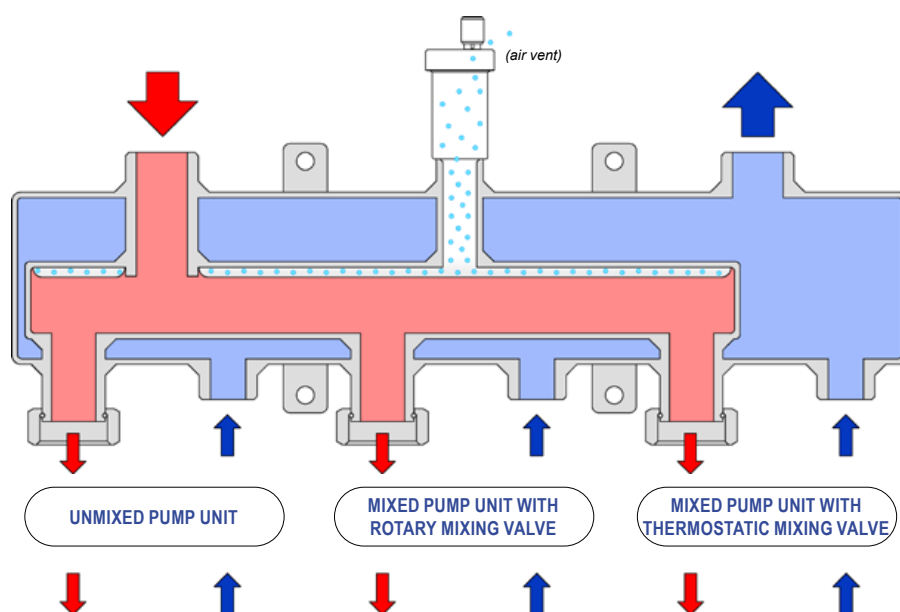
Box	
Material	Sheet metal, thickness 10/10
Finish	White color coating, RAL 9010
Installation mode	Wall mounted or recessed
Covering	Lid with lock
External dimensions	(LxPxH) 450x160x550 mm
Empty weight	23 Kg (with 3 pump units mounted)
Water content	3 L (with 3 pump units mounted)

Distribution manifold	
Material	Electro-welded tubular steel
Finish	Black coated
Connection to the generator	1" Male flat seal, DN20
Centre-to-centre generator connection	270 mm
Connection to the modules	Supply: 1" swivel nut Return: 3/4" male flat seal
Centre-to-centre modules connection	70 mm
Max power	50 kW (con $\Delta T=20$ K)
Nominal flow rate distributor	2000 L/h
Max flow rate distribution manifold	1700 L/h for each circuit
Pressure drop distribution manifold	0.3 mH ₂ O with 1500 L/h for each circuit
Water content	1.5 L
Air vent	Automatic
Max temperature	95°C
Max pressure	6 bar

Diagram pressure drops



Example of application of the distribution manifold



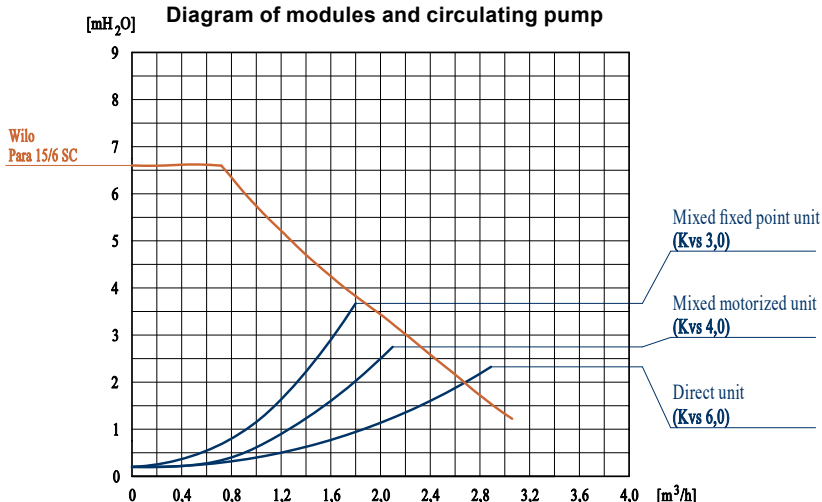
Technical data pump units (supplied separately)



	Unmixed circuit	Mixed motorized circuit	Mixed fixed point circuit
Control	-	3 point servomotor	Thermostatic control
Adjustment range	-	min. / max.	20÷45°C
Centre-to-centre manifold connection	70 mm		
Nominal power: (with $\Delta T=20$ K)	35 kW	30 kW	25 kW
Nominal flow rate	1500 L/h	1300 L/h	1100 L/h
Residual head at nominal flow rate	3.5 mH ₂ O	3.5 mH ₂ O	3.5 mH ₂ O
Kvs value	6.0	4.0	3.0
Connections to the manifold	Supply: male threaded flat seal ; Return: 3/4" swivel nut		
User connections	3/4" female		
Non-return valve	200 mmH ₂ O		
Valve with thermometer-handle	DN20 with Ø6 probe holder connection		
Max temperature	95°C		
Max pressure	PN10		

Circulating pump	
Type	Wilo Para 15-130/6 SC
Max head	6.7 m
Max flow rate	3 m ³ /h
EEL	≤ 0.2
Max temperature	95 °C
Max pressure	PN10
Power supply	230 VAC 50/60 Hz
Control	Δp const. / Δp var. / V. const. I, II, III
Power	3-43 W
Max current	0.39 A

Diagram of modules and circulating pump

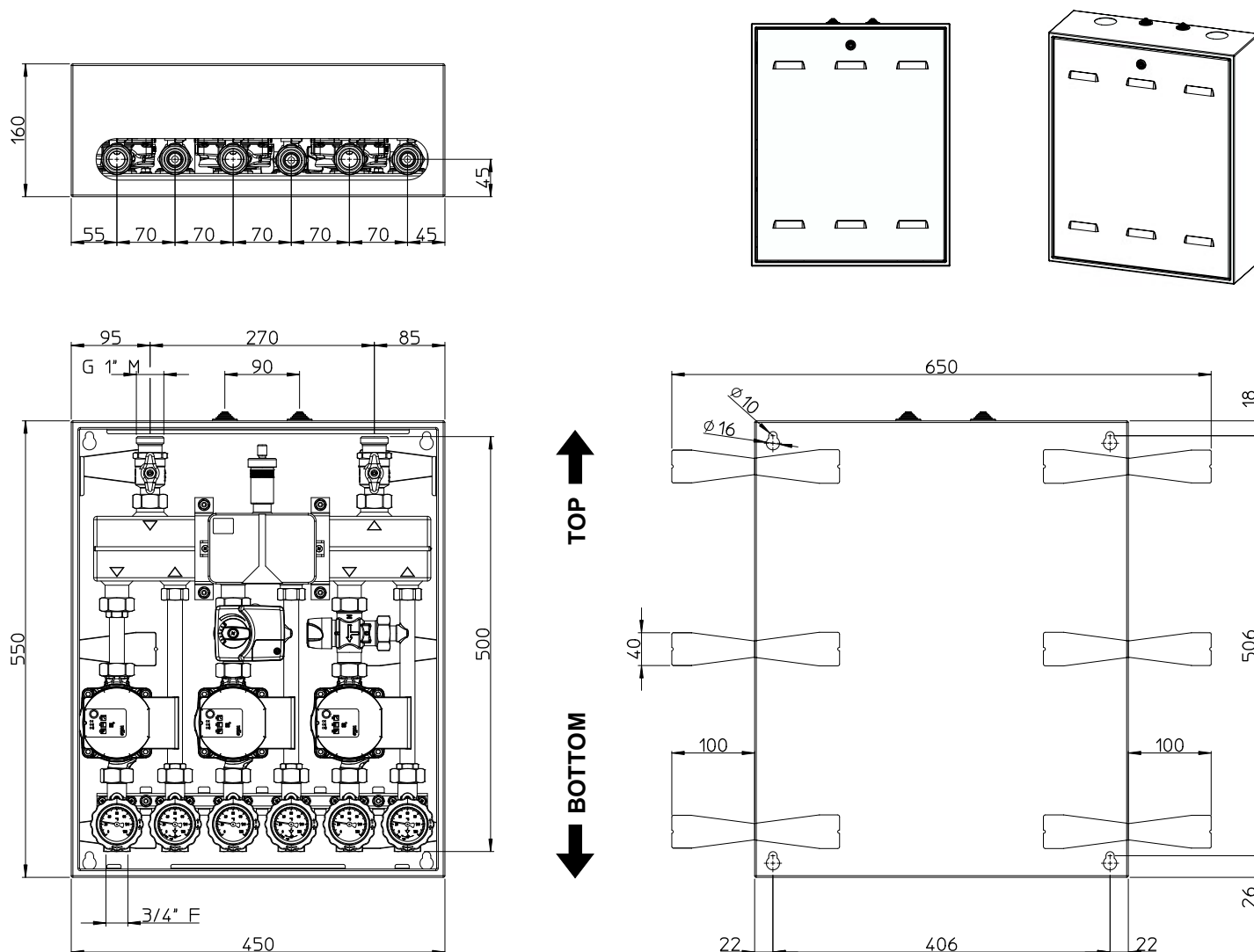


INSTALLATION OF THE PUMP UNITS IN THE BOX

It is advisable to install the pump units in the box before mounting it on the wall or recessing it.

- ✓ **Loosen the six nuts that fix the manifold and the bracket to the box, to facilitate the alignment of the pump units;**
- ✓ Connect the groups to the manifold by using the provided connections. We recommend mounting the unmixed module in zone 1, allocating zones 2 and 3 to the mixed circuits;
- ✓ Caps are included in the equipment to exclude a zone, if it is not used;
- ✓ Fix the units to the metal bracket in the lower part of the box, locking them in place using the special self-tapping screws included in the package. The fixing bracket is pre-drilled to allow correct positioning of the units.
- ✓ **Tighten all the nuts that fix the manifold and the bracket to the box, previously loosened;**
- ✓ Make sure all connections are tightened.

Overall dimensions and distance between centers



The box must be installed respecting the top / bottom orientation as indicated

WALL-MOUNT BOX INSTALLATION

The system must not be installed in positions exposed to atmospheric agents.

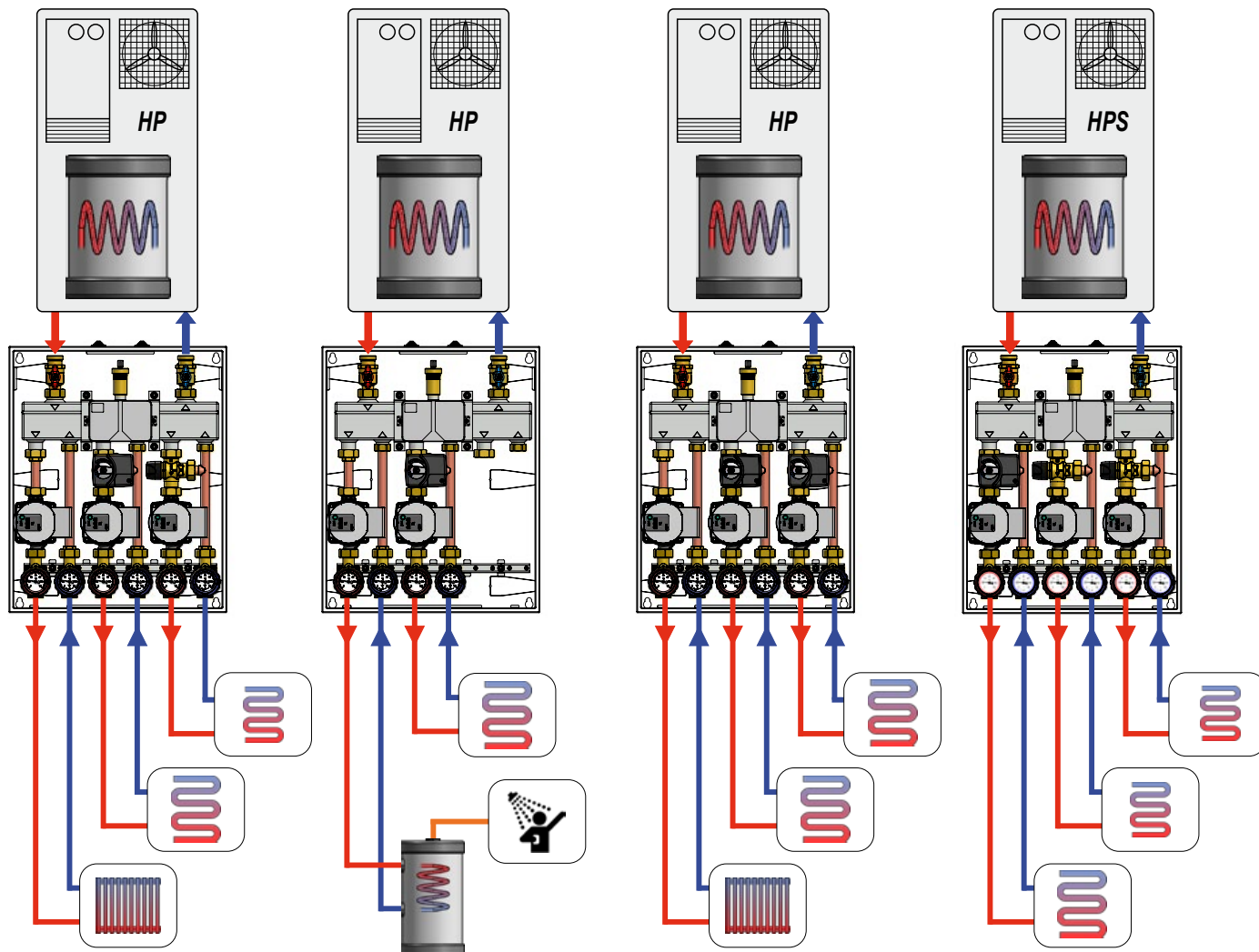
- ✓ Identify the fixing points on the installation wall, by using the dimensions shown above;
- ✓ Drill the wall (4 holes on 406x506 mm square) and insert the dowels;
- ✓ If the dowels supplied are not suitable for the type of masonry, procure as many with similar characteristics;
- ✓ Position the box and insert the fixing screws into the wall dowels, without tightening them in order to correct the leveling;
- ✓ Check the correct vertical support on the wall and that it is leveled;
- ✓ If the previous checks were successful, block the box by tightening the support screws.

RECESSED BOX INSTALLATION

- ✓ Open the fixing clamps. With the help of a drill, center on the holes of the clamps and drill until the tabs that hold the pre-cut are removed. Open the clamps by turning them towards the outside of the box and make sure there are no sharp edges;
- ✓ Prepare a space in the masonry by providing 2-3 cm of width around the box and the profile of the clamps;
- ✓ Place the box in position, make sure that it is correctly leveled both vertically and horizontally (possibly by using temporary shims between the house and the wall);
- ✓ Proceed with fixing by covering the clamps with the most appropriate building material for the wall.

Hydraulic connection

Schematic examples of possible configurations



Attention. The diagrams are purely indicative: there are no hydraulic safety components or devices required by specific standards or laws.

CONNECTION TO THE HEATING SYSTEM

Connect the pump units to a correctly sized heating system, with temperatures and working pressures compatible with the characteristics of the individual modules and the distributor. The system must also have the safety devices required by law.

- ✓ Make sure the circuits are free from impurity or dirt, if necessary run a piping wash;
- ✓ Make the connection to the heat generator: two shut-off ball valves are provided, to isolate the primary circuit during installation and any maintenance;
- ✓ An air vent with an automatic valve is positioned on the distributor to facilitate deaeration operations;
- ✓ Connect the secondary circuits to the user, also in this case use the ball valves to isolate the secondary circuits during installation and any maintenance;

Electrical wiring

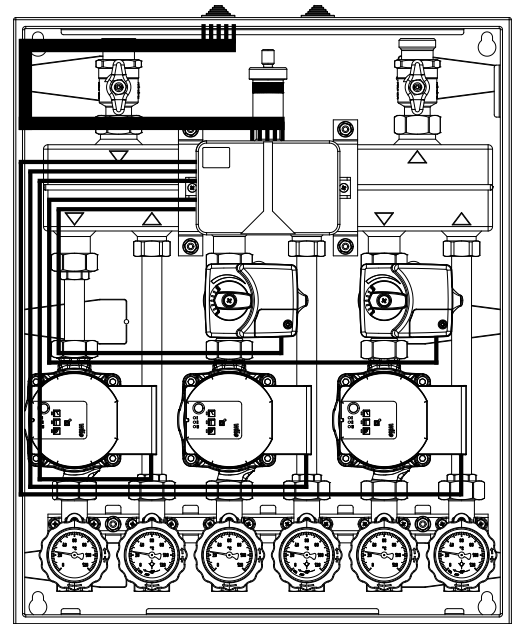
The system is equipped with an electrical junction box containing a terminal block to facilitate connections. Do not supply power to the circulators and servomotors until all electrical connections have been completed. To carry out these operations, rely only on qualified personnel who meet the legal requirements.

Proceed with installation according to what is listed below.

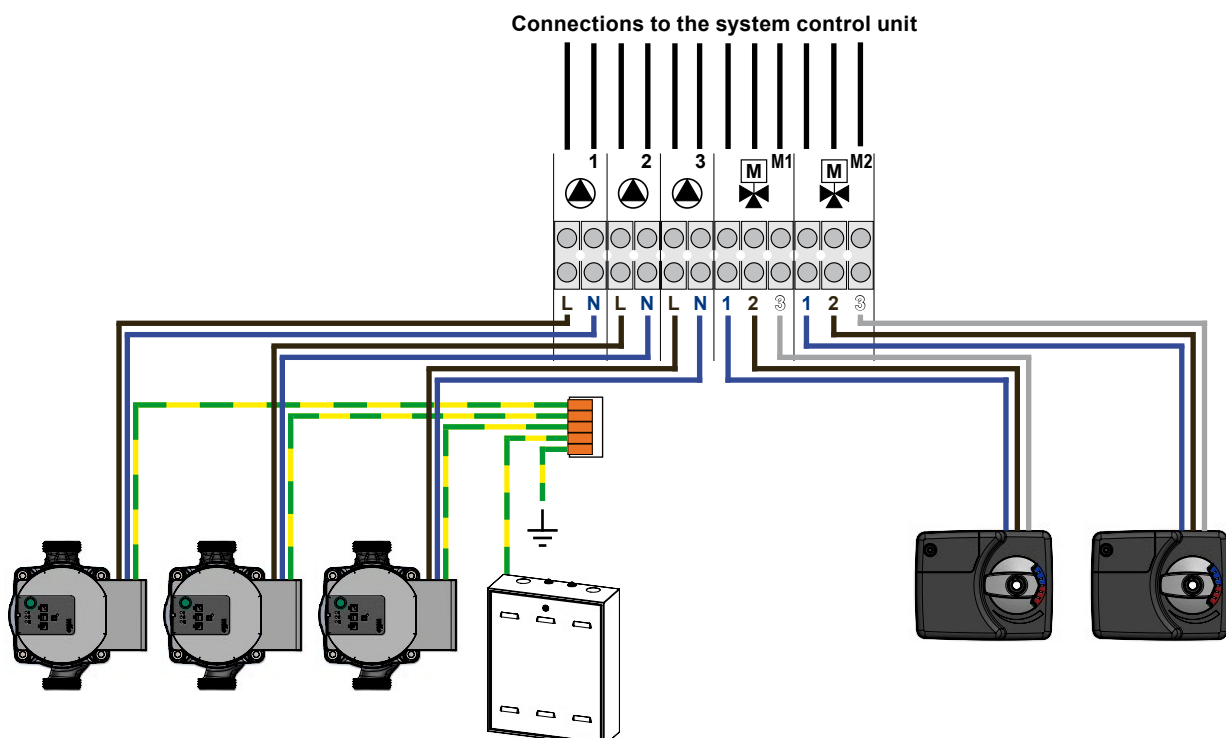
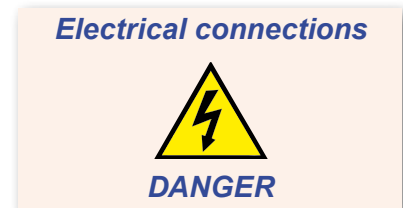
- ✓ Make sure there are no voltages in the wiring coming from the system control unit;
- ✓ Connect the power cables to circulating pumps with the appropriate connector;
- ✓ Cables must reach the junction box, preferably passing behind the hydraulic components. It is advisable to collect any extra cable length in the area between the rear sheet metal and the hydraulic part. Then go on with the cables along the left inner side of the box and enter the junction box as shown in the diagram aside;
- ✓ If modules with servomotor are present, the cable must always follow a similar path along the left inner side of the box;
- ✓ Wiring to the system control unit: it is advisable to use the passages on the upper side of the junction box and from there exit to the outside of the box through the rubber cable glands located on the upper side of the sheet metal. Reserve one of the two cable glands for the temperature probes, if the project requires them;
- ✓ Connect the various wirings to the terminal block supplied, as shown in the image below; the terminal block allows to connect up to three circulating pumps and two motorized mixing valves.
- ✓ Connect the ground wires of the devices to the ground terminal block as shown in the image below. Correct grounding is essential.

Leave an adequate abundance of cables length to allow the electrical junction box to be moved outside the box, to facilitate any maintenance without having to disconnect any wiring.

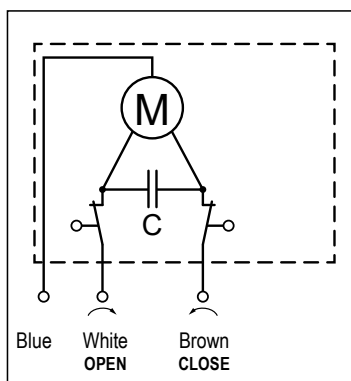
- ✓ Connect the temperature probes (not included) fixing them to the specific probe holders of the ball valves of the pump units in use.



Recommended wiring scheme



Motorized mixed pump units: servomotor wiring



Commissioning

For commissioning the system, rely only on qualified personnel who meet the legal requirements.

Attention: circulating pumps must never run dry.

- ✓ Make sure pipes are clean both on the primary circuit and on the circuits in use. If necessary perform washing operations, for the primary circuit follow the instructions of the heat generator manufacturer;
- ✓ Check the proper tightening of all the connections of the units and of the fittings to the pipes, to prevent any leaks from coming into contact with live components;
- ✓ Check that shut-off valves above the distributor are open;
- ✓ Proceed with filling the system, using water or liquid required by the project. If there are vent valves along the heating system, open them.
- ✓ Carry out a de-aeration cycle. Circulating pumps have a specific vent feature;
- ✓ At the end of the vent, check that the pressure is on the design values
- ✓ Proceed with the adjustment of circulating pumps and thermostatic valves, as shown in following instructions.

Fixed point pump units: thermostatic mixing valve adjustment

Thermostatic mixing valve for small and medium-sized user. It allows to keep constant the temperature of the mixed water delivered to the user when the supply conditions of the hot and cold inputs change. Reference positions are indicated on the knob: the corresponding temperature, indicated in the table below, is valid for the thermostatic mixing valve at the standard conditions shown below.

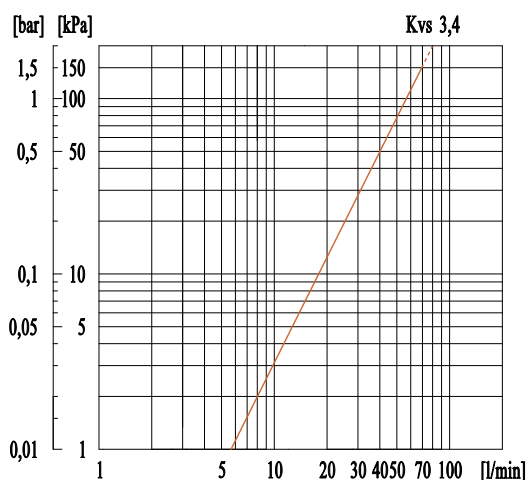
Technical features

Max static pressure:
Max differential pressure:
Max ratio between pressures:
Adjustment accuracy:
Max inlet temperature:
Fluid to be used:

10 bar
5 bar
2:1
±2 K within max performances
constant 100 °C (short time 120 °C for 20 s)
Water, solutions with glycol max 50%

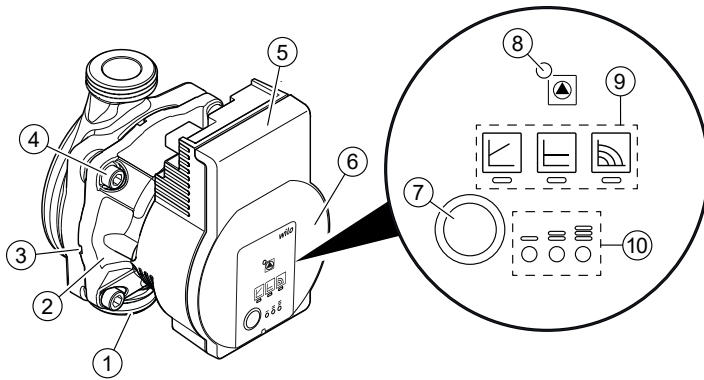
Knob corresponding temperature								
Mod.	T°	MIN	1	2	3	4	5	MAX
F3	20-45°C	(24°C)	24°C	29°C	34°C	39°C	44°C	45°C

Model	F3
Setting range	20÷45°C
Standard working conditions	
Hot temperature	55°C
Cold temperature	24°C
Mixed temperature	32°C
With Δp	1 bar
Delivered flow (*)	56 l/min
Max. performances	
Delivered flow	70 l/min
With Δp	1.5 bar



(*) Tests have been carried at our laboratory, at standard working conditions (without any connection part).

Wilo Para SC circulating pump



1. Pump housing with screwed connections
2. Glandless motor
3. Condensate drain openings (4x around circumference)
4. Housing screws
5. Control module
6. Rating plate
7. Operating button for pump adjustment
8. Run/fault signal LED
9. Display of selected control mode
10. Display of selected pump curve (I, II, III)

Indicator lights (LEDs)



- Signal display
- LED is lit up in green in normal operation
- LED lights up/flashes in case of fault



- Display of selected control mode Δp -v, Δp -c and constant speed



- Display of selected pump curve (I, II, III) within the control mode



- LED indicator combinations during pump venting function, manual restart and key lock



Operating button



Press

- Select control mode
- Select pump curve (I, II, III) within the control mode

Press and hold

- Activate the pump venting function (press for 3 seconds)
- Activate manual restart (press for 5 seconds)
- Lock/unlock button (press for 8 seconds)

Functions

Venting

The pump venting function is activated by pressing and holding the operating button (for 3 seconds) and automatically vents the pump.

The top and bottom LED rows flash in turn at 1 second intervals. To cancel, press and hold the operating button for 3 seconds.

The heating system is not vented.

Manual restart

A manual restart is initiated by pressing and holding the operating button (for 5 seconds) and unblocks the pump if required

(e.g. after long standstill period in summer).

Lock/unlock the button

The key lock is activated by pressing and holding the operating button (for 8 seconds) and locks the pump's current settings. It protects against undesired or unauthorised adjustment of the pump.

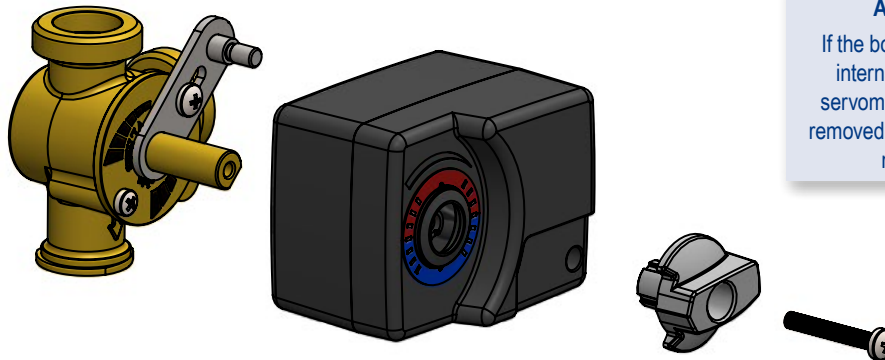
Control modes

- The LED selection of control modes and corresponding pump curves takes place in clockwise succession.
- Press the operating button briefly (approx. 1 second).
- LEDs display the set control mode and pump curve.

	LED display	Control mode	Pump curve
1		Constant speed	II
2		Constant speed	I
3		Variable differential pressure Δp -v	III
4		Variable differential pressure Δp -v	II

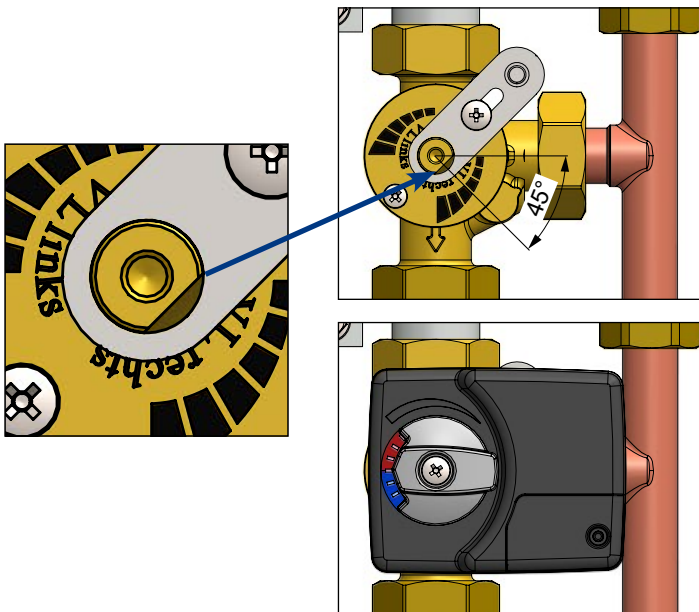
	LED display	Control mode	Pump curve
5		Variable differential pressure Δp -v	I
6		Constant differential pressure Δp -c	III
7		Constant differential pressure Δp -c	II
8		Constant differential pressure Δp -c	I
9		Constant speed	III

Motorized mixed pump units: servomotor replacement



ATTENTION

If the box is provided with internal insulation, the servomotor knob must be removed from the motorized mixing unit.



For a possible replacement of the servomotor:

- ✓ Remove the servomotor to be replaced;
- ✓ Make sure that the replacement servomotor has the red/blue ring oriented as in the images (cold/blue counter-clockwise, hot/red clockwise) and that the knob is half stroke as shown in the images;
- ✓ Place the rod of the mixing valve half stroke (45°) as shown in the images aside;
- ✓ Insert the servomotor without moving the orientation of the knob which must remain half stroke;
- ✓ Insert the servomotor on the rod, checking that it is correctly coupled with the anti-rotation pin inserted in the proper groove on the back of the motor box;
- ✓ Secure the motor with the appropriate screw and proceed with the electrical wiring.