Translation from Romanian

DATA SHEET

NEOTER WILO 130 MM MIX KIT

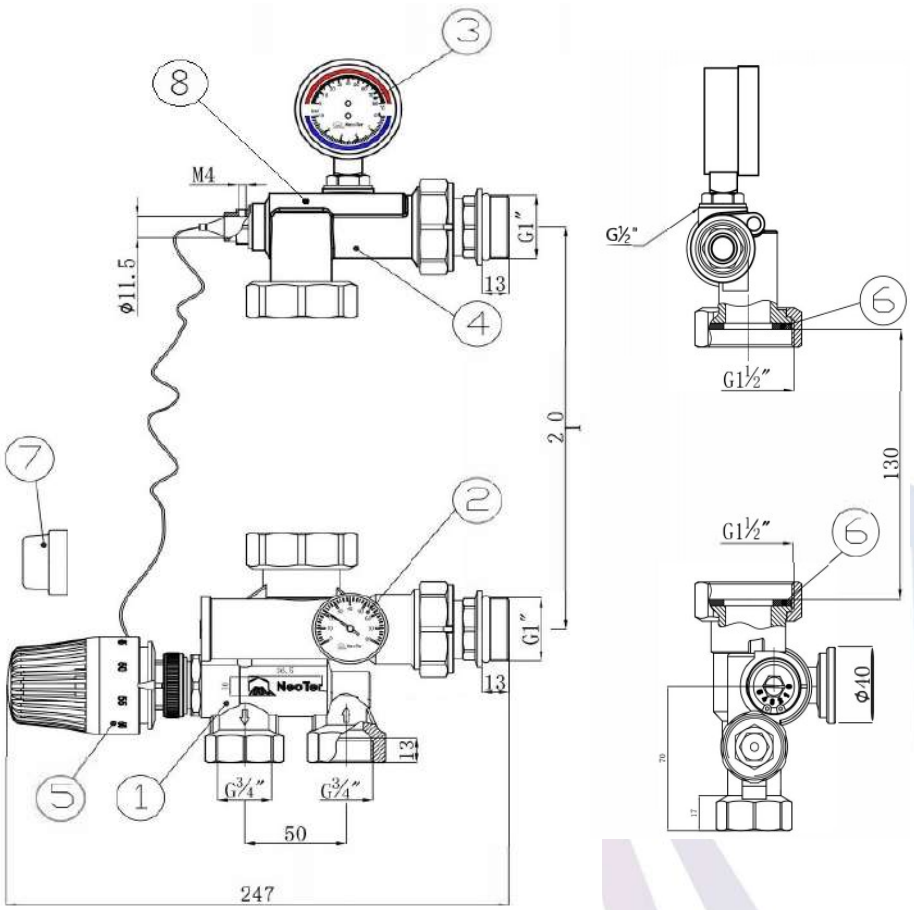
Internal code: NEOKITW

1. DESCRIPTION AND USE

The mix kit is used in underfloor heating systems, and it can also be used in combined systems (underfloor heating/radiators). It mainly acts to regulate the temperature and also allows the temperature adjustment in the 20 °C - 70 °C range.

2. TECHNICAL CHARACTERISTICS

2.1 Mixing valve



1. Mixing valve body with M30x1.5 thread for securing the thermostatic head
2. 0 °C - 80 °C thermometer
3. 0 °C - 120 °C/0 bar-10 bar temperature and pressure gauge
4. Body for the insertion of the immersion sensor of the thermostatic head
5. Thermostatic head with remote immersion sensor.
6. Pump quick coupling
7. Protective cover
8. Additional sleeve for the insertion of the safety thermostat sensor

Figure 1

Primary circuit maximum temperature:	90 °C	Climate control:	11.5 kW
Maximum pressure:	10bar	Mixing valve pressure drop (thermostatic control):	Kv3
Primary circuit ΔP max:	1 bar		
Secondary control range: (thermostatic control)	20 °C - 70 °C	Pressure drops with open bypass valve (thermostatic control):	Kvmax4.8
		Thermometer scale	0 °C - 80 °C
Heating capacity changeable to ΔT 7˚C, ΔP available 0.25 bar		Mix kit distributor-manifold input connections:	1”
Thermostatic control :	10 kW bypass pos. 0	Heat carrier outlet connections (primary)	3/4”
Thermostatic control:	12.5 kW bypass	Connections to the pump	1 ½”

2.2 Wilo pump

Operating data

Pumped fluid: Water + 100%

Pumped fluid temperature: 20.00 °C

Maximum flow: 3,2 m3/h

Maximum head height: 8 m

Pumped fluid temperature: -10...95 °C

Ambient temperature: -10...70 °C

Maximum working pressure: 10 bar

Minimum inlet height at 50 °C: 0.5 m

Minimum inlet height at 95 °C: 4.5 m

Motor technical data

Power supply: 1~ 230 V/50 Hz

Allowable voltage tolerance: +10/-15 %

P2 rated power: 0.03 KW

P2 absorbed power: 0.05 KW

Energy Efficiency Index (EEI): ≤ 0.2

Motor protection: integrated

Disturbance generation: EN 61000-6-3, EN 61000-6-4

Resistance to disturbances: EN 61000-6-2, EN 61000-6-1

Absorbed power: 75 W

Min. speed: 2580 1/min

Max. speed: 4700 1/min

Motor protection rating: IPX4D

Cable gland

Materials

Pump housing: 5.1301, EN-GJL-250 coated with KTL

Hydraulic rotor: PP-GF40

Shaft: 1.4122

Material storage: Graphited coal

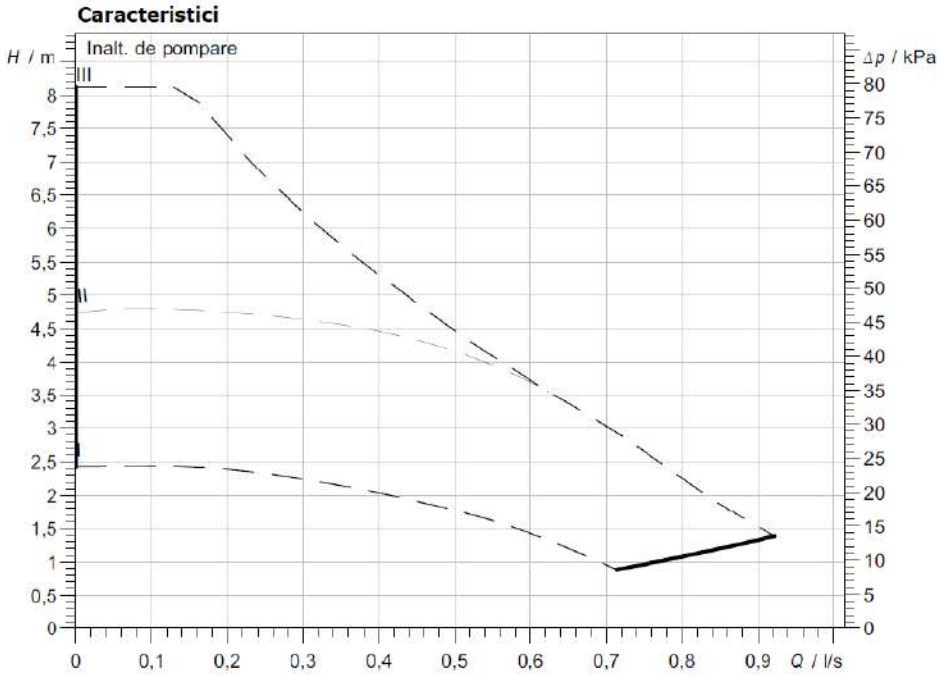
Installation dimensions

Suction pipe connection: G 1½, PN 10

Discharge pipe connection: G 1½, PN 10

Constructive length: 130 mm

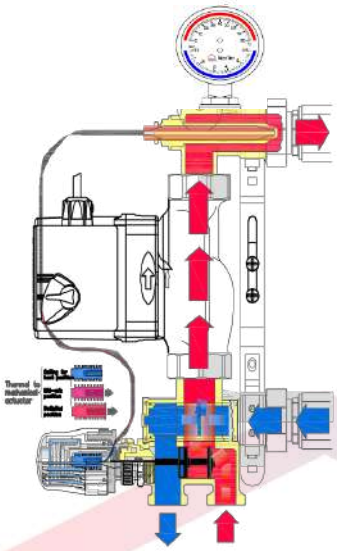
Weight: 1.8 kg

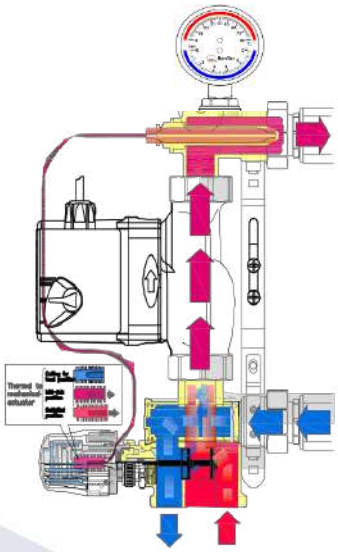


3. OPERATION

3.1 Mixing valve

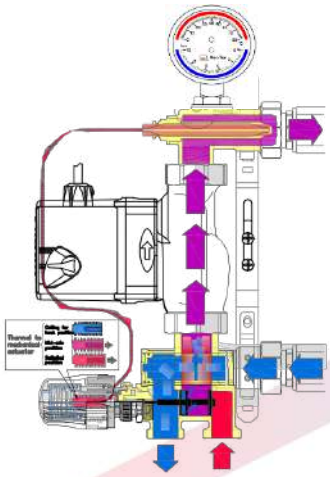
The control group is built around a mixing valve, ensuring precise temperature control for underfloor heating. Due to the unique design of the internal components of the mixing valve, the hot water from the heat source and the return water from the floor circuit are mixed together in the valve body to produce a temperature range of 20 °C to 70 °C. This temperature range suits the entire field of underfloor heating applications, from the commissioning of new floor screeds to very thick floor screeds in commercial applications. The pictures below show how the mixing valve works via the thermostatic head with remote detection of the temperature:

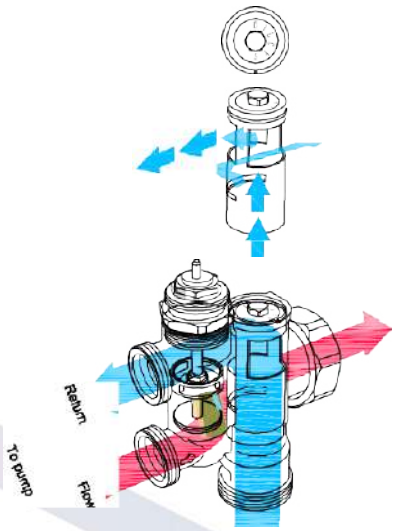




At first, the cold fluid in the remote immersion sensor area allows almost the entire amount of primary hot water from the heat source to pass through the valve. Gradually, the temperature of the probe rises as the floor circuits begin to heat up.

Depending on the set temperature of the thermostatic head, as the temperature rises in the immersion sensor area, the mixing valve starts to shut off the hot primary water, allowing the return water temperature to maintain its temperature set on the head of up to 70 °C if required.

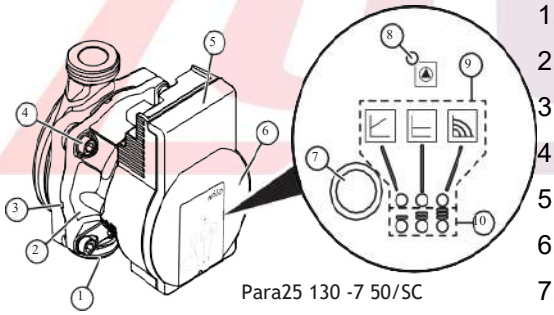




After the probe reaches the temperature set on the head, the slide valve balances out the right amount of primary hot water and secondary return water to maintain this temperature. According to the thermostat setting, the hot water could be almost completely shut off, allowing very low temperatures suitable for screed commissioning down to 20 °C if required.

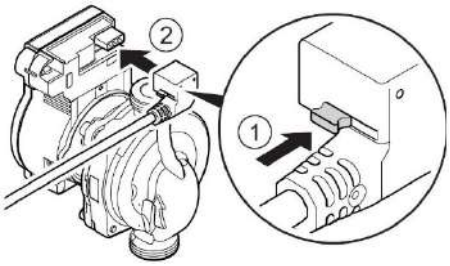
The thermostatic mixing valve is provided with a flow increase valve that allows the return water to flow directly into the mixed water intake. This cools the remotely sensed mixing water temperature and causes the mixing valve to open, allowing more primary hot water to enter through the mixing chamber and raising the temperature to the one set on the head

3.2 Wilo pump

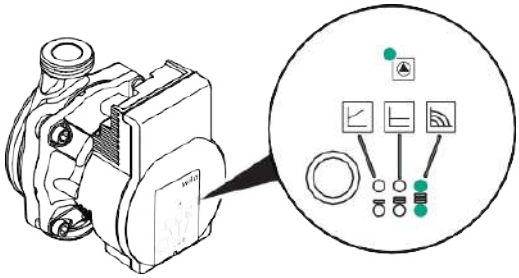


1. Pump housing with threaded connections
2. Glandless motor
3. Condensate drain openings (around the circumference)
4. Housing screws
5. Control mode
6. Identification plate
7. Green pushbutton
8. Fault indicator LED
9. Display for control mode (Δp-v, Δp-c, constant N)
10. Speed setting display (I, II, III)

Electrical connection

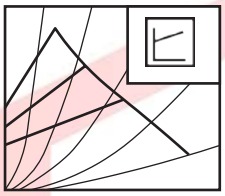


Standard factory setting



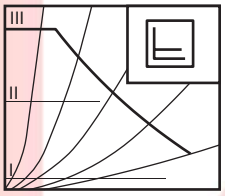
Pump setting

Variable differential pressure Δp-v (I, II, III)



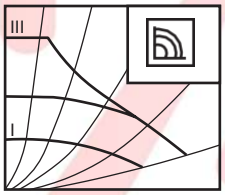
Recommended for two-pipe heating systems with radiators to reduce flow noise at thermostatic valves.

Constant differential pressure Δp-v (I, II, III)



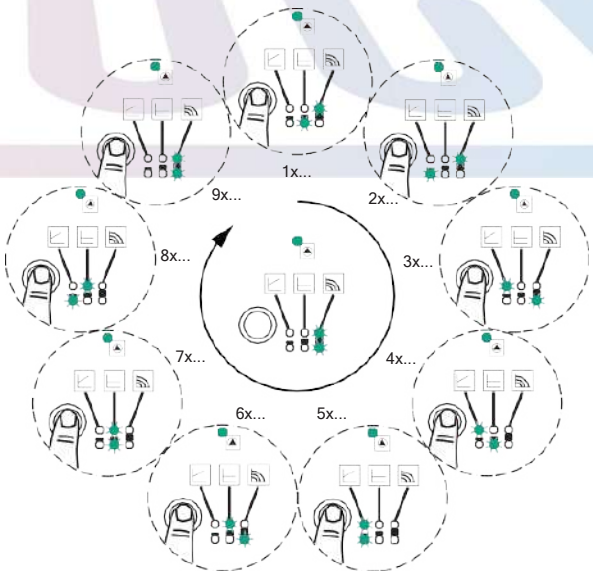
Recommended for underfloor heating or for large pipes, applications without variable piping curve (e.g. storage charge pumps) or single pipe heating systems with radiators.

Constant speed (I, II, III)

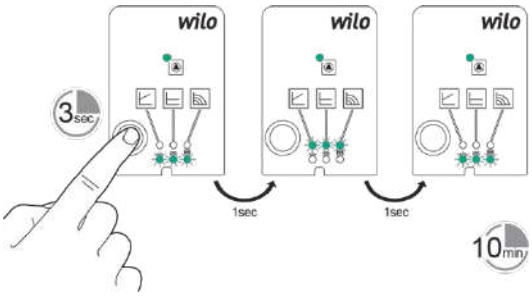


Recommended for systems with fixed system resistance requiring a constant volume flow and for replacing AC pumps.

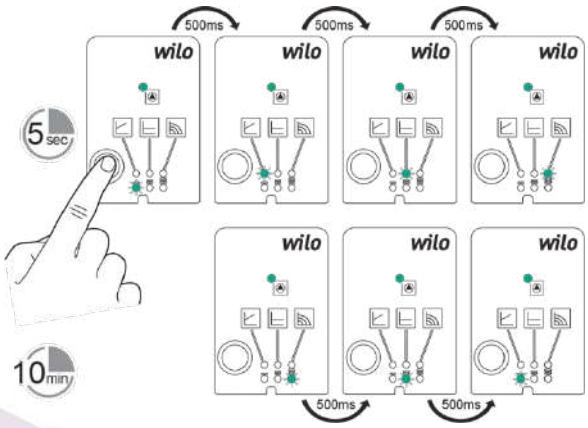
Press to change the pump setting



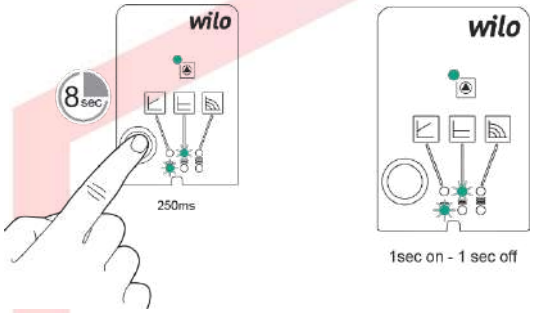
Air bleeding mode



Manual restart



Locking & unlocking



4.1 INSTALLATION

4.1 Installation of the mixing unit

The space required for the mix kit, distributor/manifold kit and D1" union cocks can be determined from the table and drawing below. Check if there is room for the isolation valves and fittings under the inlet connections of the mix kit and leave at least 300 mm from the bottom bar of the manifold to the floor, to prevent any damage to the pipes where they penetrate the floor.

Assemble the mix kit with the manifold using the FE D 1" connections at the top and bottom bar of the manifold, making sure the assembly is horizontal.

Type	2-way	3-way	4-way	5-way	6-way	7-way	8-way	9-way	10-way	11-way	12-way
L mm	500	550	600	650	700	750	800	850	900	950	1000

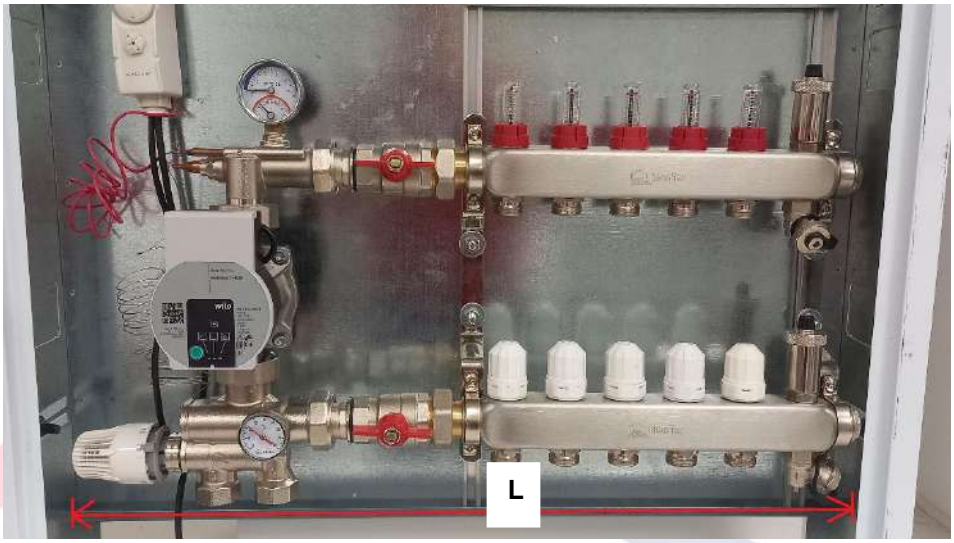


Figure 2.1

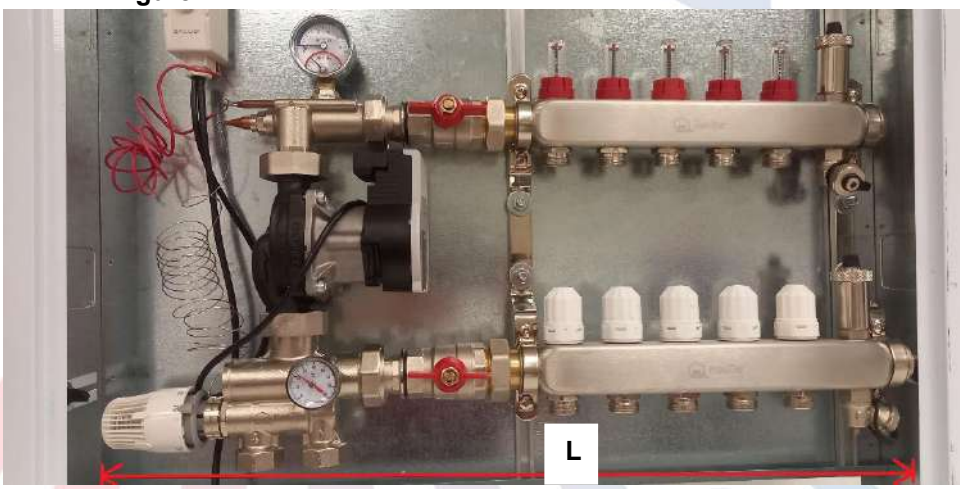


Figure 2.2

Secure the assembly consisting of the mix kit, union cocks and the distributor/manifold kit in the metal box. Check if there is room for the isolation valves under the inlet connections of the mix kit and leave at least 300 mm from the bottom bar of the manifold to the floor, to prevent any damage to the pipes when going through the floor. The metal box is depth adjustable and allows the pump to fit into the box. If seeking to minimise the total depth, the front of the pump can be turned towards the right side of the system. Adjust the legs of the metal box using 2 screws on each side so that the distance between the lower manifold rail and the floor is of at least 300 mm.

Secure the metal box to the wall using suitable fasteners and fill all voids around the housing with cement mortar or any other suitable filler. Connect the flow and return pipes of the underfloor heating system using a eurocone connector selected according to the range and type of the pipes installed.

4.2 Installation of the thermostatic head and of the remote sensor

A thermostatic head should be used for the thermostatic control. Set the thermostatic head to the maximum setting and position the head on the thermostatic valve body (see Figure 1, item 5) with the marking facing forward. Then attach the head to the valve body using the retaining ring on the head, gently tightening the ring. Do not overtighten.

Upper limit thermostat - Safety thermostat

The mix kit is provided with an additional sleeve for inserting the safety thermostat sensor (see Figure 1, item 8). It protects the screed and the finished surface of the floor against cracks that may occur as a result of excessive temperatures in the underfloor heating system. The thermostat should be set at no more than: 45/50 °C in the case of cement slabs; for other materials, see the maximum value specified by the supplier, but it should not exceed 55 °C (EN 1264-4).

Hydraulic connections

Connect the distributor/manifold kit to the G1 male inlet connections fitted on the mix kit. A 1” x 1” FI-FE insulating union ball valve should be used to connect to the G1 connections. Jointing compounds or sealing hemp or other sealing materials should not be used as they could prevent the proper operation of the mixing valve and manifold.

5. COMMISSIONING

5.1 Filling and testing

Fill the mix kit using the filling cock incorporated in the flow bar of the distributor/manifold kit, which is fitted with flowmeters. The drain cock incorporated in the return bar of the distributor/manifold kit cannot be used to fill the circuits - see Figure 3. Before filling, perform a final check of all joints to ensure that no connections have loosened during transit (for details on the recommended commissioning procedure, please refer to the literature on manifolds).

Once filled, pressure test the system in accordance with EN 1264.

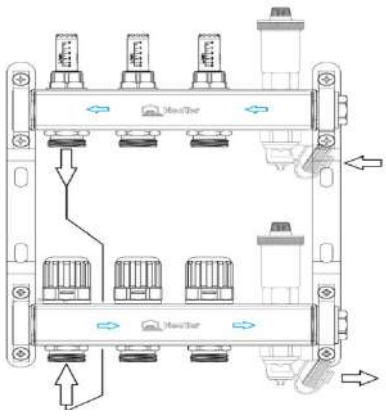


Figure 3

5.2 Setting the flow increase valve

ΔTIp = 10 °C T Boiler =70 °C Tip = 45 °C ΔPIp = 0.25 bar

Capacity (w)	Circulator setting	Valve setting
18000	maximum	5
17000	maximum	3-4
16000	maximum	2
15000	maximum	1
14000	maximum	0
13000	average	5
12000	average	4
11000	average	**2-3**
10000	average	1

ΔTIp = 5 °C T Boiler =70 °C Tip = 45 °C ΔPIp = 0.25 bar

Capacity (w)	Circulator setting	Valve setting
9000	maximum	5
8000	maximum	**2-3**
7000	maximum	0
6000	average	5
5000	average	**2-3**
4000	average	0

Figure 5

Mixing unit pressure drop

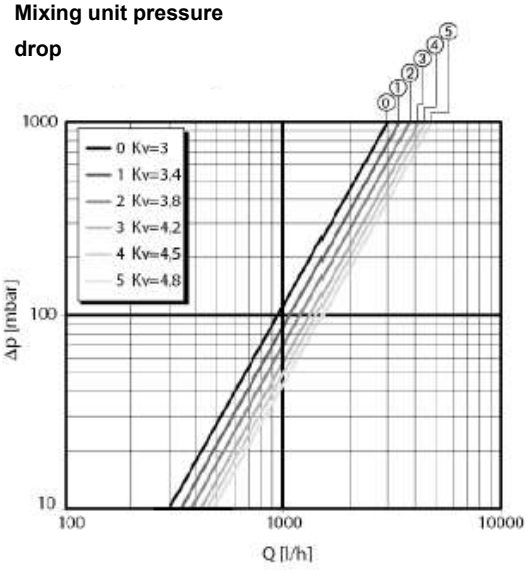


Figure 4

ΔTIp - temperature difference on the circuits

TBoiler - primary flow temperature

Tip - secondary flow temperature

ΔPIp - circuit pressure drop under the floor

After calculating the total flow of the system:

Qip = total floor system flow rate = (P[W] x 0.86)/(ΔTip)

Where P is the total heat demand calculated in Watts and ΔTip is the calculated temperature difference for the floor system.

The pressure drop for the mix kit can be read from the graph in Figure 4. The pressure drop curves on the mix kit show the settings of the flow increase valve from fully closed to fully open and allow the plant designer to select a flow value and a pressure drop which are appropriate for the system. Together with the pressure drop calculated for the underfloor system and the manifold, the pump setting can also be selected. The tables, Figure 5, illustrate two examples of the required system output as a function of the flow increase valve setting, based on guidance values estimated for the underfloor flow temperature, as well as underfloor system temperature and pressure drops.

If necessary, adjust the valve to increase the flow as follows:

Excessive temperature drop.

Insufficient flow – gradually open the valve until the desired temperature decrease is reached.

Flow temperature below the required value.

Gradually close the valve until the requested temperature is reached, allowing time for the system temperature to stabilise.

5.3 Setting the thermostatic head

Once the system is filled and pressure tested, the individual floor circuits can be balanced. As part of this process, the mixture temperature must be adjusted to the correct level provided in the system design. To achieve this, the thermostatic mixing valve can be set on the thermostatic head. (refer to No. 8. Figure 1).

Locking the temperature setting

The thermostatic head is fitted with two control pins, a red one and a blue one. These pins are provided to lock the temperature settings as follows:

1. Set the required temperature as presented above.
2. Find the black dot - see Figure 6 - and insert a pin on either side of the dot.
3. The head can no longer be rotated.

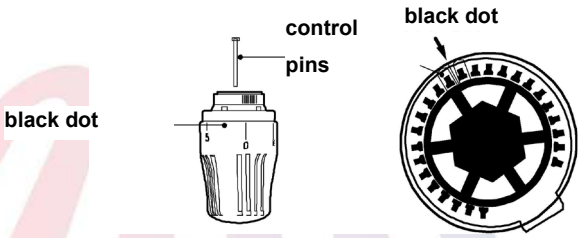


Figure 6

6. PACKAGING, LABELLING, STORAGE, HANDLING

The products are transported using clean, covered means of transport, to protect them against dust or weather.

7. WARRANTY PERIOD

The warranty period is 24 months from the date of delivery, provided that the customer/user fully complies with the handling, storage and transport rules.