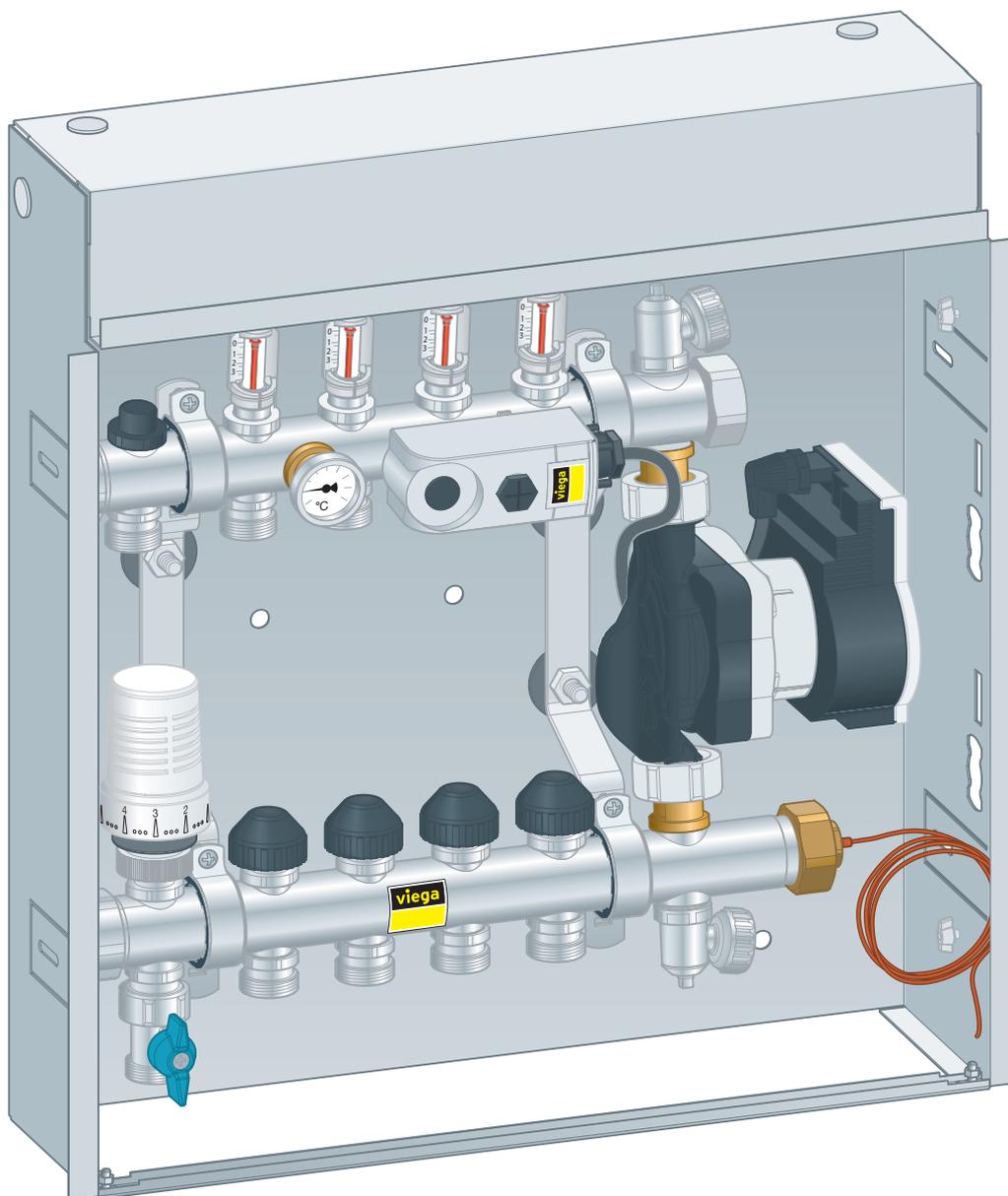


Instructions for Use

Small surface control station



for Fonterra radiant heating and cooling, regulation of the supply temperature (constant), combination of underfloor heating and radiators with different temperature levels

Model
1256

Year built (from)
01/2010

viega

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1 About these instructions for use

Trade mark rights exist for this document; for further information, go to viega.com/legal.

1.1 Target groups

The information in this instruction manual is directed at the following groups of people:

- Heating and plumbing experts and trained personnel
- Qualified electricians
- Operators

Individuals without the abovementioned training or qualification are not permitted to mount, install and, if required, maintain this product. This restriction does not extend to possible operating instructions.

The installation of Viega products must take place in accordance with the general rules of engineering and the Viega instructions for use.

1.2 Labelling of notes

Warning and advisory texts are set aside from the remainder of the text and are labelled with the relevant pictographs.



DANGER!

This symbol warns of possible life-threatening injury.



WARNING!

This symbol warns of possible serious injury.



CAUTION!

This symbol warns of possible injury.



NOTICE!

This symbol warns of possible damage to property.



This symbol gives additional information and hints.

1.3 About this translated version

This instruction for use contains important information about the choice of product or system, assembly and commissioning as well as intended use and, if required, maintenance measures. The information about the products, their properties and application technology are based on the current standards in Europe (e.g. EN) and/or in Germany (e.g. DIN/DVGW).

Some passages in the text may refer to technical codes in Europe/Germany. These should serve as recommendations in the absence of corresponding national regulations. The relevant national laws, standards, regulations, directives and other technical provisions take priority over the German/European directives specified in this manual: The information herein is not binding for other countries and regions; as said above, they should be understood as a recommendation.

2 Product information

2.1 Standards and regulations

The following standards and regulations apply to Germany / Europe and are provided as a support feature.

Regulations from section: Application areas

Scope / Notice	Regulations applicable in Germany
Heating water	VDI 2035

Regulations from section: Filling the system

Scope / Notice	Regulations applicable in Germany
Water quality of hot water heating systems	VDI 2035

Regulations from section: Limiting the underfloor supply temperature

Scope / Notice	Regulations applicable in Germany
Maximum supply temperature of the heating water	DIN EN 1264-4
Maximum supply temperature of the heating water	DIN 18560

Regulations from section: Disposal

Scope / Notice	Regulations applicable in Germany
Disposal of electronic components	WEEE-Richtlinie 2012/19/EU

2.2 Intended use

2.2.1 Areas of application

The small surface control station is intended for regulating the temperature of surface heating systems at a preselected fixed target value. The setpoint value can be set steplessly on the thermostat head between 20 and 70 °C. Limitation of the setting range according to minimum and maximum temperature is possible.

The small surface control station is used in heating installations whose consumers (e.g. radiators) are replaced by low-temperature heating surfaces (e.g. underfloor heating or wall heating).

Pump (Wilo-Para)

The high-efficiency circulation pump of the Wilo-Para series is used exclusively for circulating media in hot-water heating systems and similar systems with constantly changing flow rates.



NOTICE!

Be sure to introduce only ready-to-use mixtures into the system. Do not use the pump to mix the media in the system.

Permitted media

- Heating water in accordance with current regulations, see ↗ *'Regulations from section: Application areas' on page 5*
- Water-glycol mixture with a maximum share of 50% glycol

* glycol has a higher viscosity than water. If glycol is added, the delivery data of the pump must be corrected according to the mixing ratio.

Any use beyond this is considered misuse and will invalidate any liability claims.

2.3 Product description

2.3.1 Overview

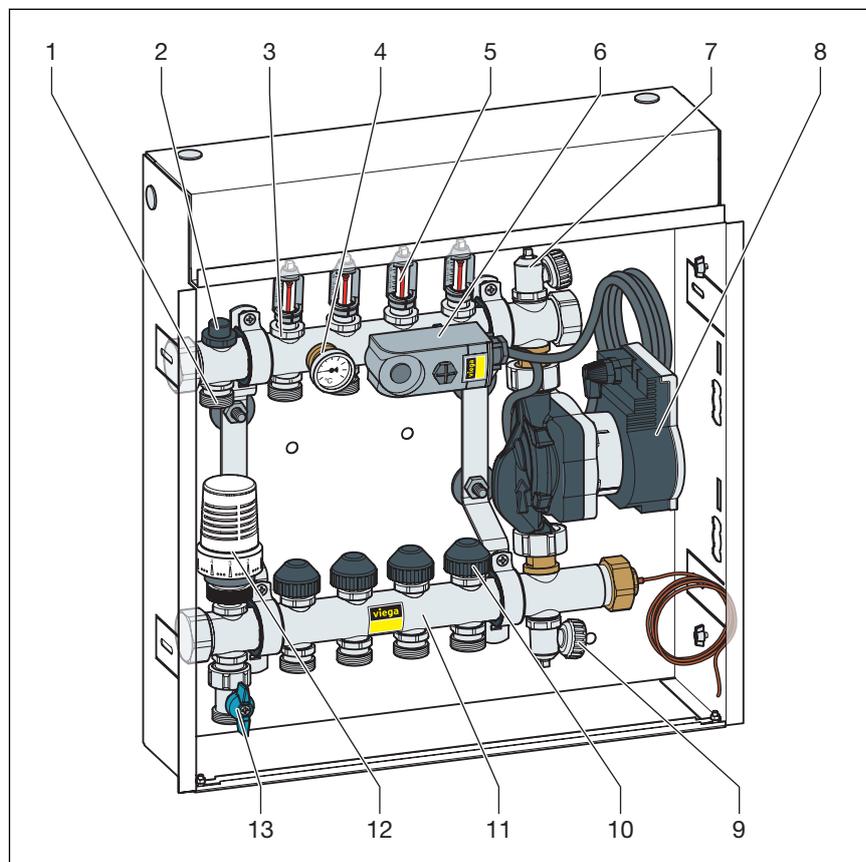


Fig. 1: Component overview

- 1 - Boiler return
- 2 - Return regulating valve (preset: open by one turn)
- 3 - Heating circuit supply
- 4 - Thermometer
- 5 - Flow quantity gauge
- 6 - Safety contact thermostat (factory setting 60 °C)
- 7 - Filling / drainage valve
- 8 - Pump
- 9 - Filling / drainage valve
- 10 - Protective cap
- 11 - Heating circuit return
- 12 - Thermostat head
- 13 - Boiler supply

Displays on the pump control element

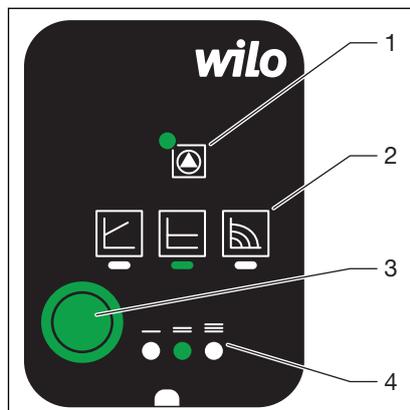


Fig. 2: Control elements of the pump

- 1 Operating / fault notification LED
 - 2 Control type
 - 3 Operating button
 - 4 Characteristic line
- Operating / fault notification LED
 - LED is green during normal operation.
 - LED illuminates/blinks when there is a fault.
 - Display of selected control type
 - Δp -v
 - Δp -c
 - Constant speed
 - Display of the selected characteristic line (I, II, III) within the control type

2.3.2 Technical data

Maximum permitted operating temperature	70 °C
Maximum permitted operating pressure	0.6 MPa (6 bar)
Temperature control range	20–70 °C
Nominal heating capacity	approx. 3 kW ¹⁾
Pump capacity	3–43 W ²⁾
Operating voltage	230 V, 50/60 Hz

¹⁾ Pressure difference primary side to control station **at least 100 hPa** (100 mbar)

²⁾ See the pump manufacturer's plate.

Pump (Wilo-Para)

Supply voltage	1 ~ 230 V +10 % / -15 %, 50/60 Hz
IP Code	IP X4D
Energy Efficiency Index EEI	See manufacturer's plate
Media temperature at maximum ambient temperature +40 °C	-20–95 °C (heating/GT) -10–110 °C (ST)
Ambient temperature +25 °C	0–70 °C
Maximum operating pressure	1 MPa (10 bar)
Minimum overprint	at +95 °C: 0.05 MPa (0.5 bar) at +110 °C: 0.1 MPa (1.0 bar)

GT = Geothermal

ST = Solar thermal

Materials

Flat seals	AFM 34 or EPDM
Fittings	Brass Ms58, partly nickel-plated
Pipe sections	Stainless steel round tube 1.4301
Sealing element	EPDM
Plastics	Impact resistant and temperature resistant

2.3.3 Operating mode

The supply temperature of the heating circuits is kept constant in the small surface control station by controlled addition of hot water from the heat generator. The target value for the supply temperature is set at the thermostat head. When there is an operating fault, an additional temperature limiter switches off the pump when the temperature is excessive to prevent damage to the surface heating. The switching point of the temperature limiter must be at least 10 K above the setpoint value of the thermostat head.

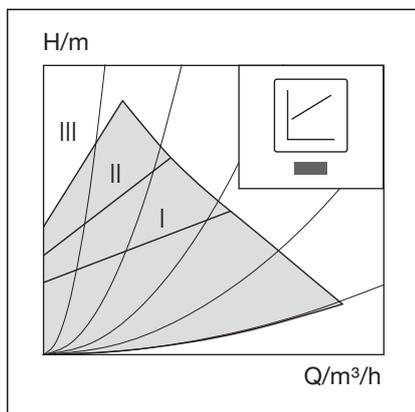
Pump control types

The pump has the following control types:



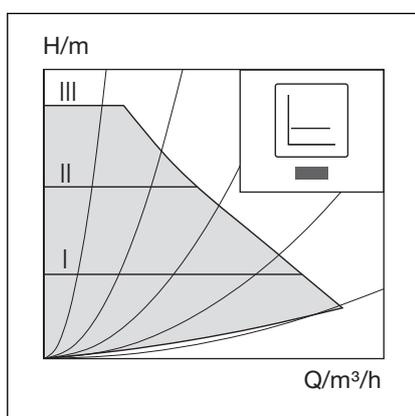
For use in surface heating elements Viega recommends the control type **constant differential pressure Δp -c**.

See also  'Setting the control type' on page 21.



Differenzdruck variabel $\Delta p-v$ (I, II, III)

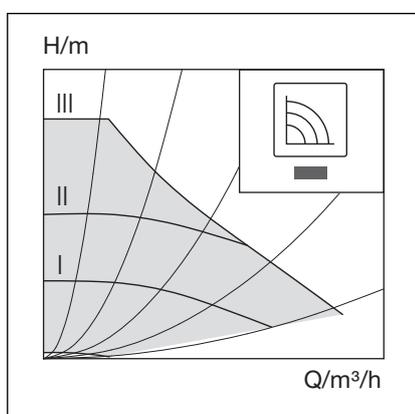
Recommended for two-pipe heating installations with radiators to reduce flow noises at the thermostat valves.



Constant differential pressure $\Delta p-c$ (I, II, III)

Recommendation for **underfloor heating** or large-dimensional pipelines or all applications without changeable pipeline characteristic lines (e.g. storage loading pumps), as well as single-pipe heating installations with radiators.

The control keeps the set delivery head constant, irrespective of the delivered volumetric flow.



Constant speed (I, II, III) (factory setting)

Recommended for systems with invariable system resistance that require a constant volumetric flow.

3 Handling

3.1 Assembly information

3.1.1 Installation dimensions

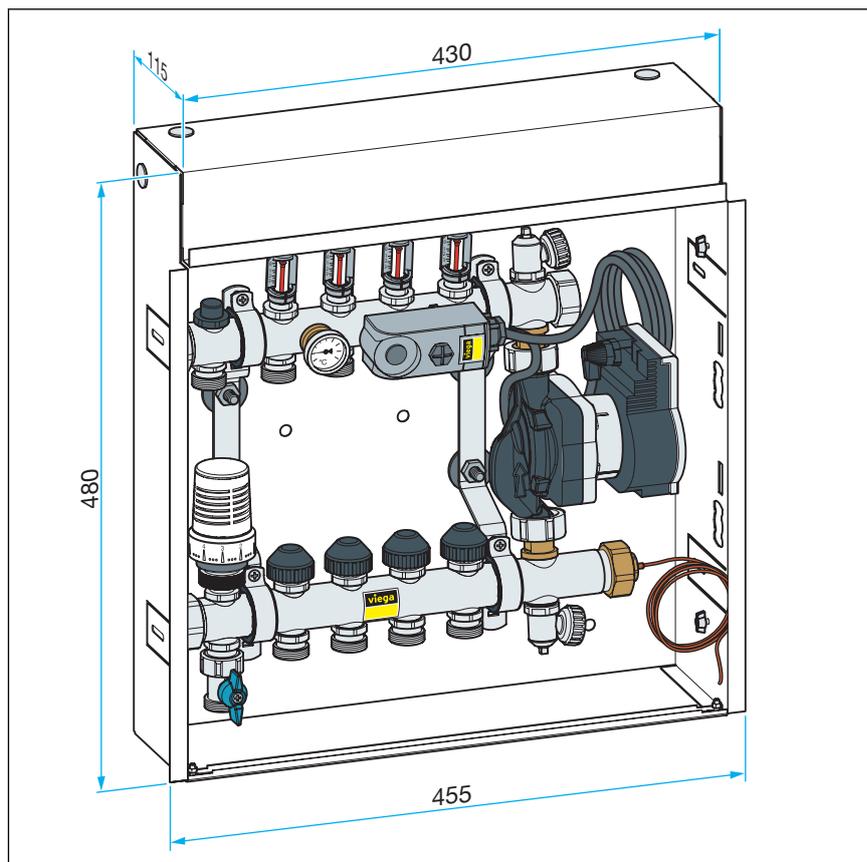


Fig. 3: Installation dimensions

Installation and connection dimensions

Height	approx. 480 mm
Width	approx. 430 mm
Depth	approx. 115 mm
connection	G $\frac{3}{4}$ Eurocone

3.2 Assembly

3.2.1 Wall mounting

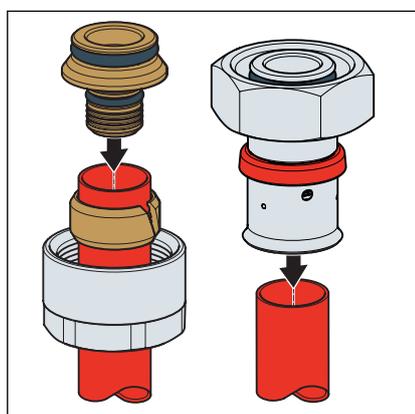


NOTICE!

The small surface control station is not suitable for use in splash water zones.

- Install the small surface control station flush in a wall cut-out or a pre-wall.

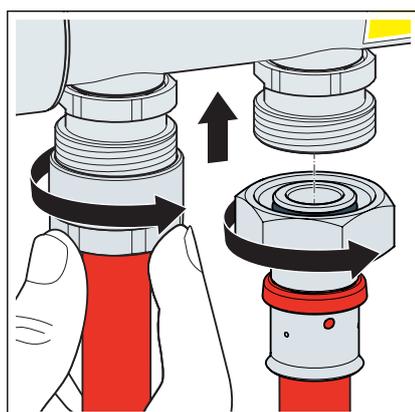
3.2.2 Connecting pipes



- Use a pipe shear (model 5341) to cut the pipe to length at right angles.
- Fit the pipe end with one of the two connectors.

Left: Push the union nut, the clamping ring and the adapter for the connection screw fitting onto the pipe.

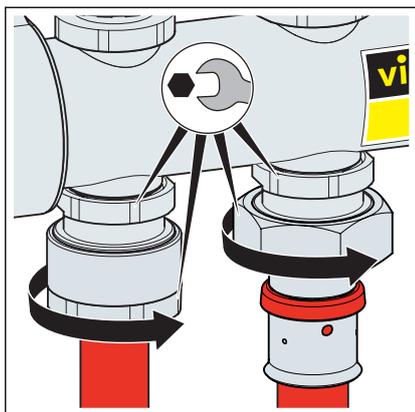
Right: Push the connection screw fitting with SC-Contur on the pipe until the pipe end is visible in the window of the press sleeve.



- Connect the connection line with the manifold.

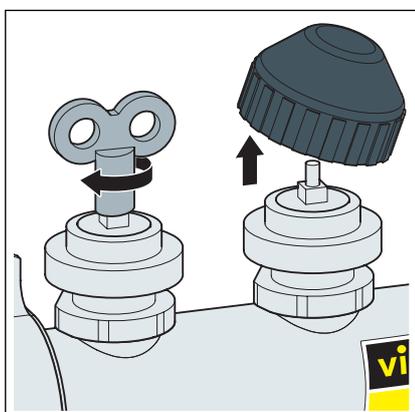
Left: Manually tighten the union nut while pushing the pipe up as far as it will go.

Right: Use a suitable press tool to press the connection screw fitting with SC-Contur and the pipe. Manually tighten the union nut.

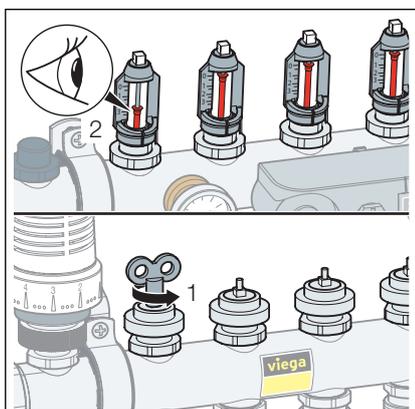


- Use a fork spanner SW 24 to hold the output connection in place, and a fork spanner SW 27 / SW 30 to tighten the union nut.

Setting the flowthrough volume



- Remove the protective caps.
- Use a ventilation key to close the valve in clockwise direction (= small value at flow control unit).



- Open the valve in counter-clockwise direction until the desired volumetric flow is indicated at the flow quantity gauge.
- Repeat the process with the other valves.
- Check the settings on the flow quantity gauge and adjust if necessary.

3.3 Commissioning

3.3.1 Making the electrical connection



DANGER! **Danger due to electrical current**

An electric shock can lead to burns and serious injury and even death.

- Only allow electrical work to be carried out by qualified electricians.
- Always de-energise the connection cable before work is commenced.

The circulation pump and the contact thermostat are factory wired. Depending on the installation situation, there are different ways to connect the 230 V connection cable. Additional system components may be required.

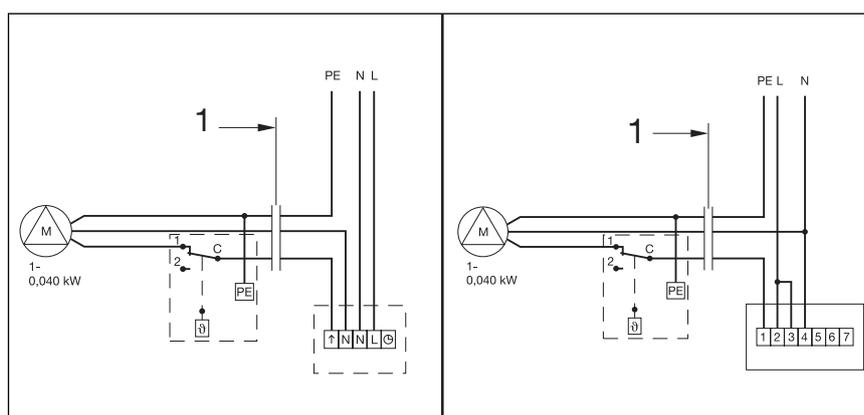
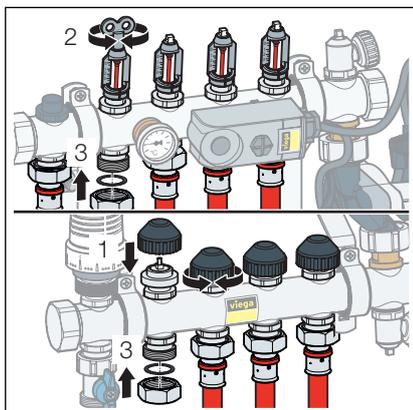


Fig. 4: Wiring diagram for a Viega room thermostat 230 V (left), clock thermostat 230 V (right)

1 Factory wired

	Single-room supply	Multi-room supply
Additional components	Room thermostat	Basic unit Actuators Room thermostats (maximum of four)
Power connection	The connection cable of the small surface control station is directly connected to the 230 V mains supply.	Connect the connection cable of the small surface control station to a base unit. Connect the base unit to the 230 V power supply.
Control	The room thermostat controls the pump of the small surface control station. When the set room temperature is reached, the room thermostat switches off the pump.	It is possible to extend the small surface control station with a base unit and electric actuators. Up to four room thermostats can then be connected (one room thermostat per heating circuit). The base unit can be fixed in the distribution cabinet with magnetic straps without tools (included in the scope of delivery).

3.3.2 Filling the control station



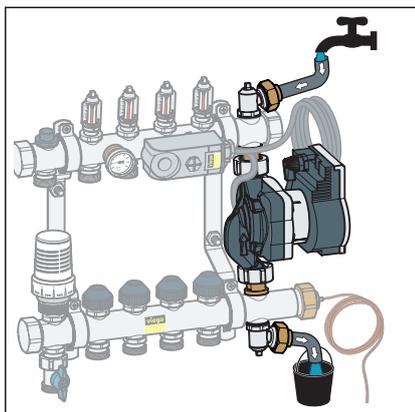
General information on opening and closing of valves and outlets

- Use the protective caps (1) to close the valves.
- Use a ventilation key (2) to close the flow quantity gauge.
- For long-term closure of individual outlets, screw on a 3/4 inch metal cap with seal (3).

Requirements:

- The control station and the manifold are properly connected.
- The heating water meets the requirements of the applicable guidelines, see also ↗ *'Regulations from section: Filling the system' on page 5*.
- De-energise the control station.
- Close the ball valves to lock the control station on the boiler side.
- Close all heating circuits at the manifold.

It is sufficient to close the valves at the return flow beam of the manifold with the protective caps.



- Connect the filling water hose to the filling / drainage valve on the supply bar of the manifold.
 - Open the filling / drainage valve on the supply and return bars with the square ring spinner integrated into the cap.
 - Fill the control station with water.
 - Collect any escaping water in a suitable container or let it drain.
 - Then once again close both filling / drainage valves and screw on the caps again.
- The control station is completely filled with water.

3.3.3 Flushing the heating circuits



NOTICE!

Only flush the heating circuits in the flow direction to prevent damage to the system.

The backflow preventer above the pump prevents a short-circuit line being created that would prevent correct flushing and/or filling of the heating circuits. During the flushing and after the flushing equipment is closed the system pressure may not exceed 0.25 MPa (2.5 bar) as otherwise the safety valve opens and heating water discharges.

Requirements:

- The control station is filled with water.
- The control station is currentless.
- Connect one filling and drainage line to each of the filling and drainage valves integrated into the manifold.
- Open the first heating circuit and flush it in the flushing direction until all air and contamination are fully removed from the heating circuit.
- After flushing, close the heating circuit once more.
- Repeat flushing for every heating circuit.
- After you have flushed the entire system, open and adjust all heating circuits.
- Re-connect the pump power supply.



NOTICE!

Ventilate the pump after the control station and heating circuits are filled for the first time, see also ☞ 'Venting the pump' on page 20.

3.3.4 Hydraulic adjustment of heating circuits

For the hydraulic balancing of the small surface control station, refer to the following diagrams:

Setting the supply regulating valve

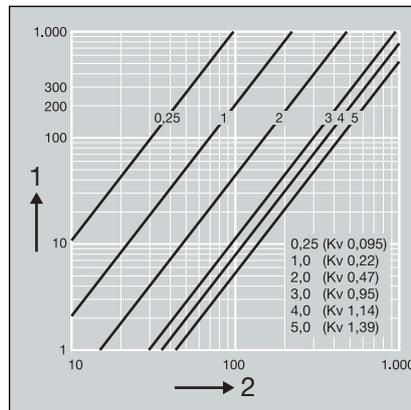


Fig. 5: Diagram

- 1 - pressure loss [hPa]
- 2 - volume flow [l/h]

Setting the return regulating valve

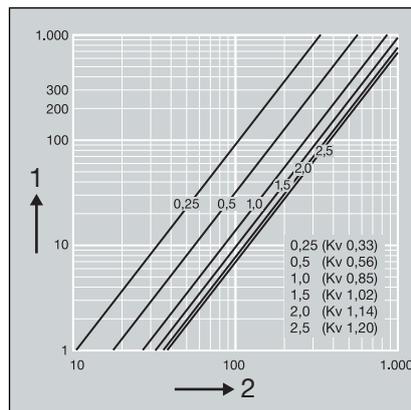


Fig. 6: Diagram

- 1 - pressure loss [hPa]
- 2 - volume flow [l/h]

Total pressure loss

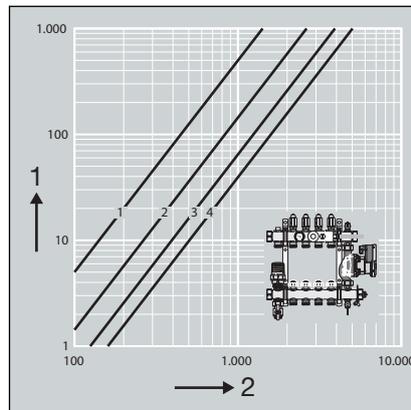


Fig. 7: Diagram

- 1 - pressure loss [hPa]
- 2 - volume flow [l/h]

Approximate values for setting the return regulating valve

Heat output [Watt]	Return regulating valve [open by following turn(s)]
1400	0.75
2000	1.0
3000	1.5

In the delivery state, the return regulating valve is open by one turn.

- If the actual temperature fails to reach the setpoint temperature in the manifold with maximum heat requirement, open the regulation valve in small increments until the setpoint is reached.

3.3.5 Setting the heating circuit supply temperature



NOTICE!

Set the heating circuit supply temperature of the small surface control station at full load and high boiler temperature.

- Fully open all return valves at the manifold bar (setting screw is flush with valve casing).
- Set and check the required supply temperature at the thermostat head.

3.4 Control

3.4.1 Setting the underfloor supply temperature

When maximum output is required (nominal output), set the boiler supply temperature at least 15 °C higher than the desired supply temperature in the underfloor heating.

The handwheel of the thermostat head has a scale going from 1 to 7 and enables stepless adjustment of the supply temperature between 20 and 70 °C. Refer to the table for the respective setpoint temperature:

Scale value	1	2	3	4	5	6	7
Setpoint temperature in °C	20	28	37	45	53	62	70

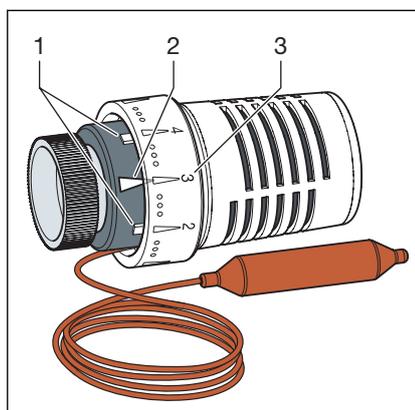
3.4.2 Limiting the underfloor supply temperature

Usually, surface heating does not use supply temperatures of more than 50 °C. The temperature in the boiler or heating circuit is often significantly higher (e.g. 70/50 °C or 60/40 °C). To prevent damage to the floor structure due to overtemperature of the heating medium, Viega recommends limiting the target value of the supply temperature at the thermostat head in accordance with the respective installation situation.

How to limit the supply temperature:

Requirements:

- The desired setpoint value is set at the thermostat head (e.g. level 3 = 37 °C).
- The set temperature roughly corresponds to the display on the thermometer.
- Place the locking devices before and after the marker arrow.
 - The temperature value is fixed and protected from accidental re-adjustment.



- 1 Locks for temperature limitation
- 2 Marking arrow
- 3 Scale values

Maximum supply temperature of the heating water

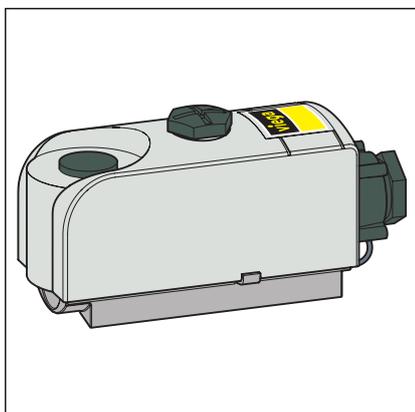
Wall heating	Temperature *
Gypsum or lime plaster	50 °C
Loam rendering	50 °C
Lime-cement plaster	70 °C
Side 12 (plaster boards)	50 °C

*Maximum supply temperature in accordance with current regulations, see ↗ 'Regulations from section: Limiting the underfloor supply temperature' on page 5

Underfloor heating	Temperature *
Calcium sulphate screed and cement screed	55 °C
Reno	50 °C

*Maximum supply temperature in accordance with current regulations, see ↗ 'Regulations from section: Limiting the underfloor supply temperature' on page 5

Safety temperature limiter



When an operating fault occurs, the safety temperature limiter switches the recirculating pump off to prevent the underfloor heating becoming excessively hot. To avoid unintentional triggering, set the temperature at the safety temperature limiter at least 10 K above the desired supply temperature (factory setting 60 °C).



NOTICE!

Ensure the maximum permitted underfloor heating temperature close to the heating cable is not exceeded.

3.4.3 Programming the pump settings

Venting the pump

Requirements:

- The control station is full and the heating circuits are vented.
- To ventilate the pump, press the operating button for 3 seconds (see also ↗ 'Displays on the pump control element' on page 8).
- The ventilation function starts and lasts for 10 minutes.

The LEDs in the top and bottom row blink alternately at intervals of 1 second.

After venting, the LED display shows the previously set values of the pump.

- To break off the procedure early, press the operating button for 3 seconds.

Setting the control type

- Briefly press the operating button (approx. 1 second).
 - ◇ The LEDs display the set control type and characteristic line.
- To change the setting, press the operating button several times until the LEDs display the desired combination of control mode and characteristic line.

INFO! The LED selection of the control types and the corresponding characteristic lines is carried out clockwise.

Lock / unlock keys

- To activate the key lock, press the operating button for 8 seconds.
- As soon as the LEDs of the selected setting flash, release the control button.
 - ◇ The LEDs flash permanently at intervals of 1 second.
 - The key lock is activated.
- Deactivating the key lock works in the same way as activating it.

Manual restart

The pump automatically attempts a restart if a blockage is detected. If the pump does not restart automatically, perform a manual restart.

- To activate the manual restart, press and release the control button for 5 seconds.
 - ◇ The restart function starts and takes 10 minutes.
 - The LEDs flash one after the other in a clockwise direction.
- To break off the procedure early, press the operating button for 5 seconds.

Activating factory setting

- To activate the factory setting, disconnect the pump from the power supply while holding down the control button (4 seconds).
 - ◇ All LEDs flash for 1 second.
 - The LEDs of the last setting flash for 1 second.
- Re-connect the pump power supply.
 - ◇ The pump runs in factory setting (delivery state).

Decommission

In case of damage to the connection cable or other electrical components, stop the pump immediately.

- Disconnect the pump from the power supply.



In the event of a malfunction, contact the Viega Service Centre.

3.5 Faults

3.5.1 Troubleshooting

Fault	Cause	Solution
Floor heating circuits do not get warm.	Safety temperature limiter is set too low and switches off the pump of the control station.	<p>Set the safety temperature limiter at least 10 K higher than the supply temperature of the underfloor heating.</p> <p>Observe the permissible maximum temperature of the underfloor heating.</p> <p>Note: The switching differential of the safety temperature limiter is approx. 5 K. The control station is ready for operation again more quickly if the safety temperature limiter is briefly removed until it has cooled down to the switch-on temperature again.</p>
	<p>Safety temperature limiter switches off the pump of the control station.</p> <p>The pump remains switched on even though the heating circuits of the underfloor heating are closed. The water in the control station heats up due to the waste heat of the pump. As soon as the maximum temperature is reached, the safety temperature limiter switches off the pump.</p>	Remove the safety temperature limiter from the control station, let it cool down and check its function. Using basic unit with pump module. The pump logic ensures that the pump only runs when at least one heating circuit in the underfloor heating is open.
	The pump is connected to a room thermostat or electrical manifold. If all actuators close, the pump switches off. The underfloor heating supply line cools down during long shutdowns. The controller causes the injection mixing valve to open. Hot water is injected from the primary heating circuit. This heats the control station up. As soon as the maximum temperature is reached, the safety temperature limiter switches off the pump.	Remove the safety temperature limiter from the control station, let it cool down and check its function.

Fault	Cause	Solution
	The difference between the supply temperature of the boiler and the desired supply temperature of the underfloor heating is too low for the existing heat load.	Set the supply temperature higher at the boiler. At the maximum output requirement of the underfloor heating, the supply temperature of the heat generator must be at least 15 °C higher than the desired supply temperature of the underfloor heating.
	The differential pressure between the boiler / radiator circuit and the low-temperature circuit is insufficient.	Hydraulically adjust the system in such a way that a pressure difference of 100 hPa (100 mbar) is applied upstream of the control station.
	The pump does not run.	Check the electrical connection of the pump.
	The regulation valves of the heating circuits is closed too far.	Check the setting of the regulation valves and adjust if applicable.
	The thermostat head is defective.	Remove the thermostat head. If the floor heating circuit now gets warm, mount the new thermostat head.
Floor heating circuits do not warm even with thermostat head removed.	Return pipe screw fitting is closed too far.	Open the return pipe screw fitting as per instruction.
	Return pipe screw fitting is open too far.	Close the return pipe screw fitting as per instruction.
	Thermostat valve is defective.	Remove the thermostat head. If the floor heating circuit now gets warm, mount the new thermostat head.
Supply temperature of the floor heating circuits is too high.	Thermostat head is defective.	Mount a new thermostat head.
The pump does not run when the power is on.	The electrical fuse is defective.	Check the fuses.
	The pump is de-energised.	Remedy the voltage interruption.
	The temperature limiter has switched the pump off.	Set the temperature at the temperature limiter correctly (at least 10 K above the thermostat head setting).
	Pump defective.	Mount a new pump.
The pump makes noise.	Cavitation due to insufficient supply pressure.	Increase the operating pressure within the permissible range.
		Check the delivery height setting and set a lower height if necessary.
The building does not get warm.	The heat output of the heating surfaces is too low.	Increase the set point.
		Set the control mode to Δp -c.

Fault	Cause	Solution
The supply temperature cannot be set to the desired value or fluctuates heavily.	The connections for supply and return flow of the control station have been reversed.	Check all connections of the control station for proper connection, switch connections if applicable.
	The delivery head / pump level of the pump is set too low.	Increase speed or delivery head / pump level of the pump.
	The heating load is too high for the control station, i.e. the heat consumption exceeds the nominal capacity of the control station. This condition may occur temporarily for example when heating up a "cold" floor.	Define the maximum heat requirement and compare to the nominal capacity. Possibly, some of the heating circuits need to be assigned to a second control station by means of an appropriate manifold. If the cause lies in heating up the underfloor heating for the first time, normal operation may still occur after the heating up phase (after 2 or 3 days). This applies particularly when the system operates close to the upper limit of the nominal capacity.
	The thermostat head is defective.	Mount a new thermostat head.
	Wrong characteristic line set.	Set the characteristic line $\Delta p-c$.

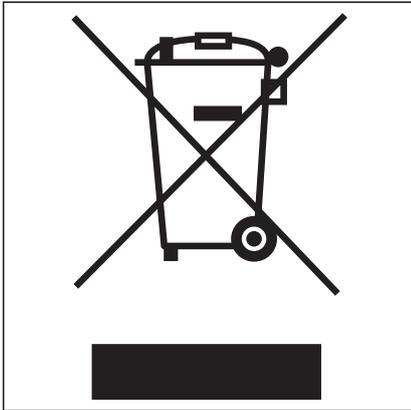
Pump malfunctions

- The fault indication LED indicates a fault.
- Depending on the type of fault, the pump switches off and attempts cyclical restarts.

LED	Faults	Causes	Action required
Emits red light	Blocking	The rotor locks.	Activate manual restart. If the fault has not been rectified, contact the Viega Service Centre.
	Contacting / Winding	The winding is defective.	
Flashes red	Undervoltage / overvoltage	Power supply on the mains side too low or too high.	Check mains voltage and operating conditions.
	Module overtemperature	The module interior is too warm.	
	Short circuit	Motor current too high.	
Flashes red/green	Generator operation	The pump hydraulics are flowing but the pump has no mains voltage.	Check mains voltage, water quantity / pressure and ambient conditions.
	Dry run	Air is in the pump.	
	Overload	Sluggish motor: The pump is operated outside the specification (e.g. high module temperature). The speed is lower than in normal operation.	

3.6 Disposal

Separate the product and packaging materials (e. g. paper, metal, plastic or non-ferrous metals) and dispose of in accordance with valid national legal requirements.



Electronic components and batteries must not be put in the domestic waste but must be disposed of appropriately in conformity with the applicable directives, see ↗ *'Regulations from section: Disposal' on page 5.*



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