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CSE2 TMV F G60 1F

Installation and Operation Manual
CSE2 TMV F G60 1F PUMP STATION

EN

CSE2 TMV F G60 1F

Contents

1. INTRODUCTION

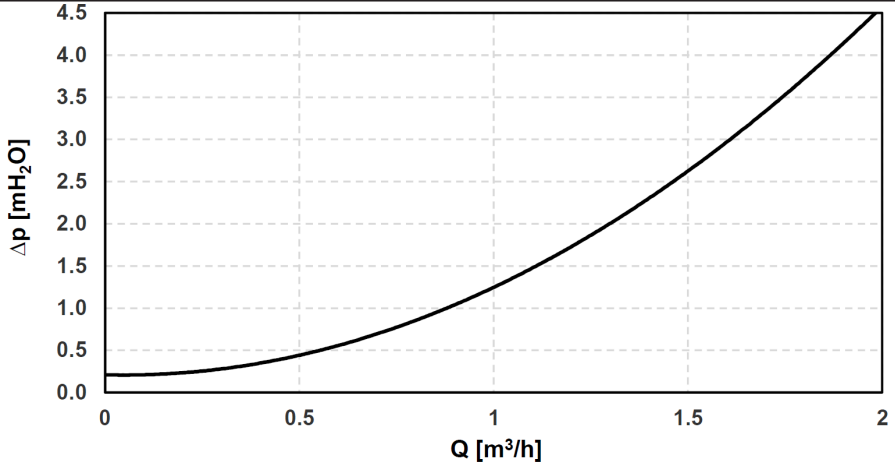
Provides flow through the heating system, mixing to the outlet temperature using a manually adjustable thermostatic mixing valve with a range of 25–45 °C. The pump station includes a filter with magnet, so it is also suitable for older steel pipe systems. It can be easily mounted on a wall or on a manifold for multiple heating circuits. The pump station is especially suitable for heating circuits with underfloor, ceiling or wall heating.

2. PUMP STATION DESCRIPTION AND DATA

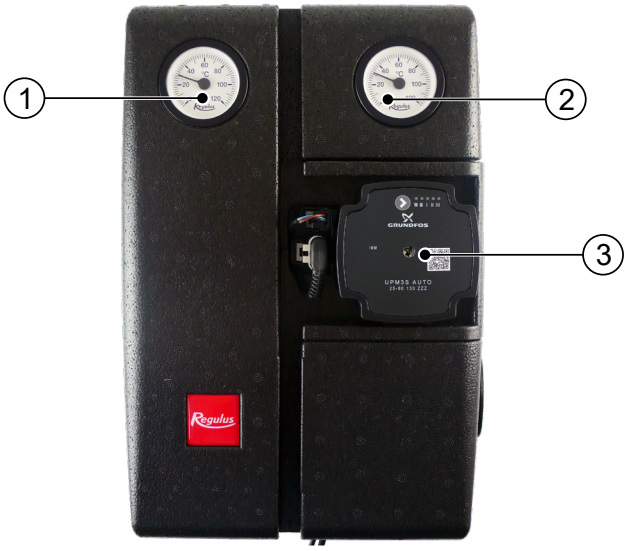
Main Features	
Description	**The pump station consists of:** ● Grundfos UPM3 AUTO 25-60 130 pump ● 2 ball valves w. sensor sheath ● check valve ● manifold connecting fittings ● filter with strainer&magnet ● TV MIX anti-scald valve ● thermometers, insulation
Working fluid	water, antifreeze heat-transfer fluid for heating systems
Installation	vertically on a wall or manifold (125 mm pitch)
Connections	4 x G 1“ F
Code	**19487**

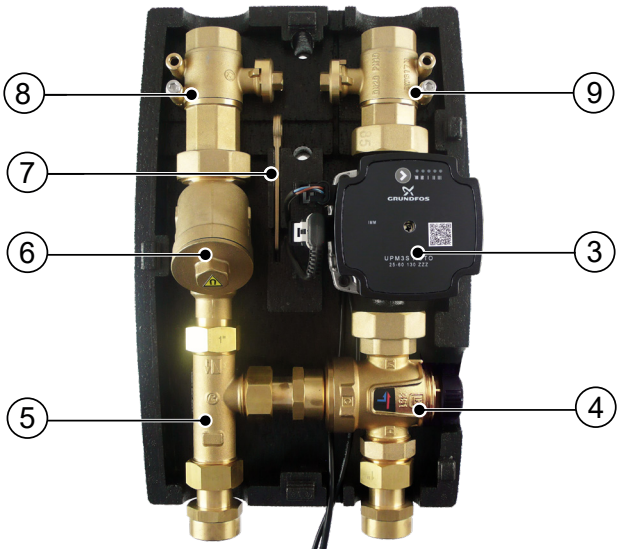
Data for CSE2 TMV F G60 1F Pump Station	
Fluid working temperature	5 - 95 °C
Adjustable temperature range	25 - 45 °C +/– 3 °C
Max. working pressure	10 bar
Min. working pressure	0.5 bar
Ambient temperature	5 - 40 °C
Max. relative humidity	80%, non condensing
Pump power supply	230 V, 50 - 60 Hz
Min./max. current to pump	0.04/0.4 A
Pump station max. power input	39 W
Valve Kv_s	3.5 m^3/h
Insulation material	EPP RG 60 g/l
Overall dimensions	380 x 142 x 245 mm
Total weight	6.6 kg
Connections	4 x G 1" F

Pump Station Pressure Drop Graph



3. PUMP STATION COMPONENTS



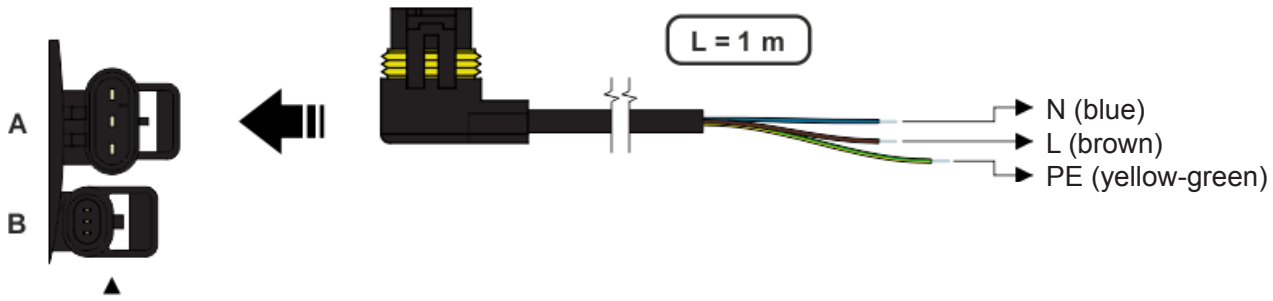


1 – Thermometer at the heating circuit outlet
2 – Thermometer at the heating circuit inlet
3 – Grundfos UPM3 Auto 25-60 circulation pump
4 – TV MIX anti-scald valve
5 – T-piece w. check valve
6 – Dirt filter with magnet
7 – Lever for ball valves
8 – Ball valve w. sheath for temperature sensor (heating circuit outlet)
9 – Ball valve w. sheath for temperature sensor (heating circuit inlet)

3.1. GRUNDFOS UPM3 AUTO 25-60 130 MM PUMP

Wet-running circulation pump with G 6/4“ M connection.

Pump Connection



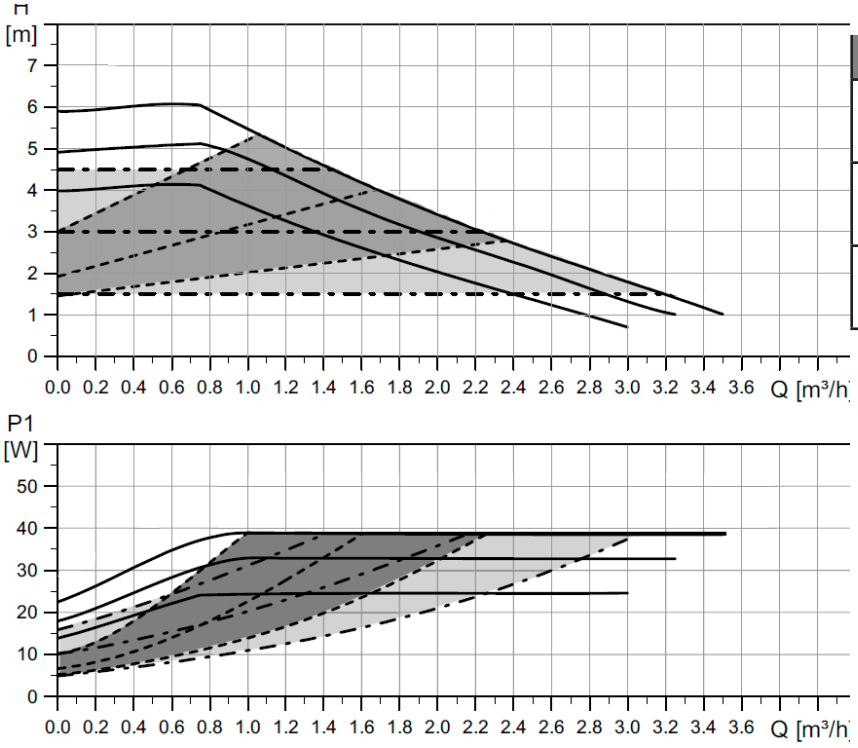
socket for power supply (A) and signal transmission (B) – not used in this pump

power supply connector (A)

Pump control

The circulation pump can be controlled by selecting a suitable profile and performance curve.

Performance curves



Line type	Profile
———	Constant speed
- - - - - -	Proportional pressure
— · — · —	Constant pressure

Description of Pump Frofiles

a) Proportional pressure

- This mode is suitable for heating systems with radiators, to reduce noise caused by heating fluid flowing through thermostatic valves.
- Head (pressure) decreases with decreasing flow rate (increasing system pressure drop).
- Pump operating point: lies on the selected proportional pressure curve depending on the current system pressure drop.

CONTROL MODE		DESCRIPTION	
Proportional pressure	I	The lowest curve of proportional pressure	
	II	The middle curve of proportional pressure	
	III	The highest curve of proportional pressure	
	$AUTO_{ADAPT}$	Automatically controls performance in the range from the highest to the lowest proportional pressure curve	

b) Constant pressure

- This mode is suitable for underfloor heating or for piping of a bigger size. It is also suitable for all applications without variable characteristics (e.g. pumps for heating up a HW storage tank) or for a circuit with a heat exchanger.
- Head (pressure) remains the same in the whole range of flow rates (does not change with the system pressure drop).
- Pump operating point: moves on the selected constant pressure curve depending on the current system pressure drop.

CONTROL MODE		DESCRIPTION	
Constant pressure	I	The lowest curve of constant pressure	
	II	The middle curve of constant pressure	
	III	The highest curve of constant pressure	
	$AUTO_{ADAPT}$	Automatically controls performance in the range from the highest to the lowest constant pressure curve	

c) Constant speed

- This mode is suitable for the maximum utilization of the pump performance or for use in systems with constant resistance which require a constant pumping performance.
- Head (pressure) increases with decreasing flow rate (increasing system pressure drop).
- Pump operating point: moves up or down on the selected curve depending on the current system pressure drop.

CONTROL MODE		Max. H (upper graph)	Max. P_1 (lower graph)	
Constant speed	I	4 m	25 W	
	II	5 m	33 W	
	III	6 m	39 W	

Settings Display

	DISPLAY	CONTROL MODE	
	green LED FLASHING	INTERNAL	
1		Proportional pressure $AUTO_{ADAPT}$	
2		Constant pressure $AUTO_{ADAPT}$	
3		Proportional pressure	I
4			II
5			III
6		Constant pressure	I
7			II
8			III
9		Constant speed	I
10			II
11			III

WARNING: LEDs may be turned by 90° or 180°, or mirrored, depending on the specific pump type.

During operation, the selected pump profile is indicated by green LEDs and the power level by yellow LEDs.

Setting selection

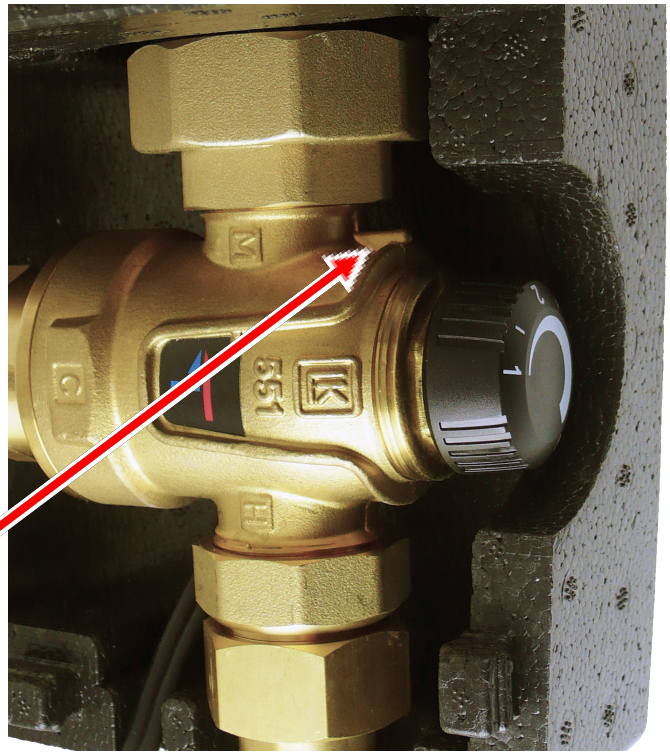
Pump profiles can be switched by pressing the integrated button. The pump profiles change in a closed loop in the order shown in the table.

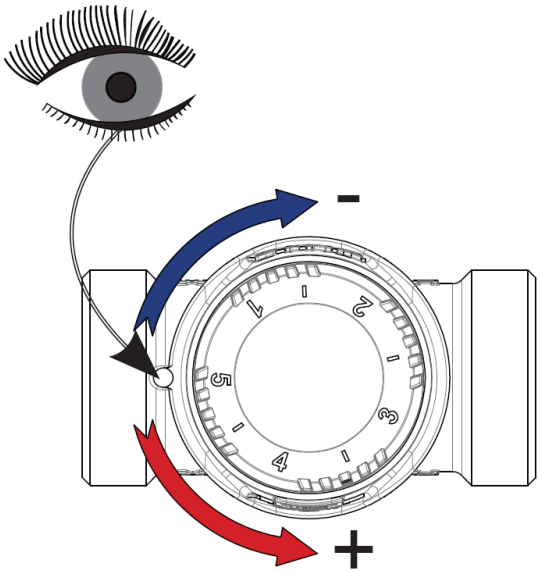
Error Display

DISPLAY	ERROR
	Seized pump
	Too low power supply voltage
	Electric fault

3.2. TV MIX ANTI-SCALD VALVE

The TVMIX anti-scald valve keeps the outlet temperature at the preset value, in the range between 25 and 45 °C/-3 °C. To adjust the temperature, turn the control knob so that the mark on the knob is against the mark on the housing - see pic. below.





Indicative temperature setting on the anti-scald valve	
Point on the control knob	Outlet temperature
1	25 °C
2	30 °C
3	35 °C
4	40 °C
max.	45 °C

3.3. CHECK VALVE

The check valve downstream of the filter prevents natural circulation in the heating circuit.

3.4. FILTER WITH MAGNET

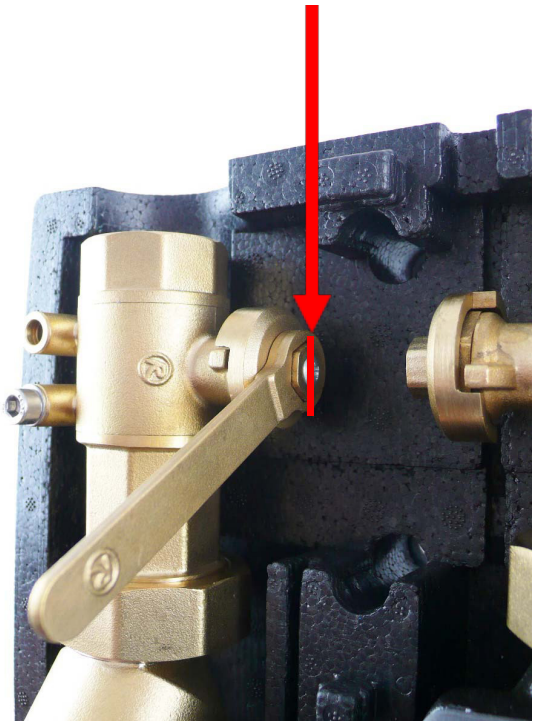
The filter located on the return line of the pump station is designed to collect solid particles from the working fluid. It consists of a brass housing, a removable metal strainer collecting coarse impurities and a brass cap with magnet that collects magnetic impurities.
The filter should be checked regularly and cleaned if necessary. The filter shall be cleaned with the circulation pump switched off and the section where the filter is installed shut off. In the section upstream of the filter, shutting off is done by a ball valve, in the section downstream of the filter the piping is shut off by a check valve. The filter cap needs to be unscrewed, the metal strainer removed and rinsed thoroughly from any dirt. Dirt trapped on the magnet must be wiped off and then reassembled by inserting the strainer, screwing in and tightening the cap.

3.5. BALL VALVES

Ball valves are intended to isolate the pump station from the heating circuit. Then it is not necessary to drain the heating circuit for servicing (incl. cleaning the filter). In order to have a more solid hydraulic section of the pump station, they are fixed to the rear mounting plate.

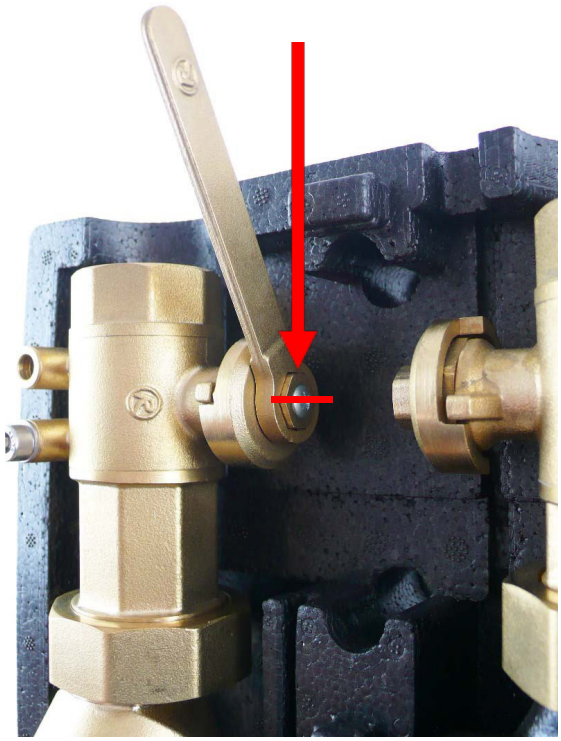
The ball valves are controlled by a lever that is not present on the valve during operation. The valve is closed by turning the lever clockwise by 90°. The open / closed position on the ball valve is indicated by a groove on the control wheel. The groove is perpendicular to the direction of flow when the ball valve is closed. The ball valve opens by turning the lever anti-clockwise by 90°, the groove is then in the flow direction. Before closing / opening the ball valve, the top section of the insulation shall be removed first. As a result, unintentional closure of the system by an unauthorized person is not possible.

OPEN



groove in the flow direction

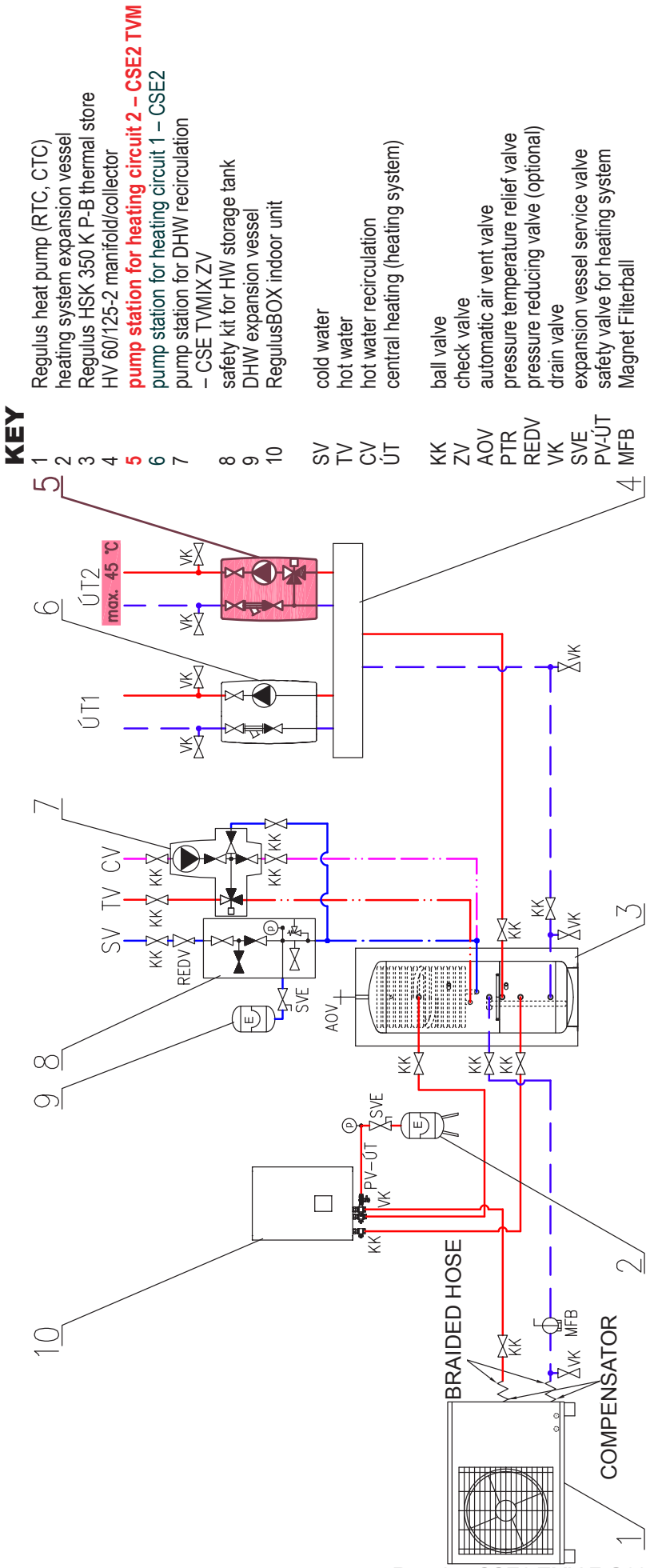
CLOSED



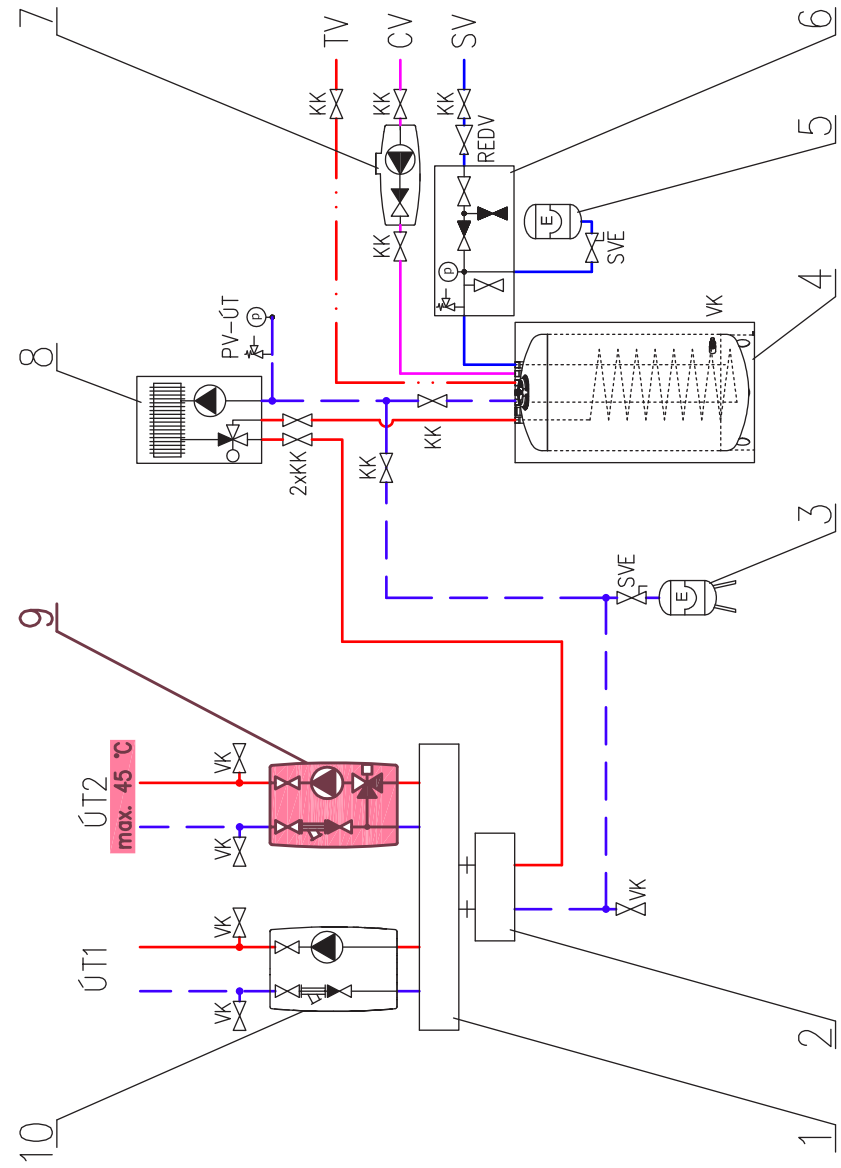
groove perpendicular to the flow direction

4. EXAMPLES OF PUMP STATION CONNECTION

4.1. Example of connection with a heat pump and a HSK thermal store



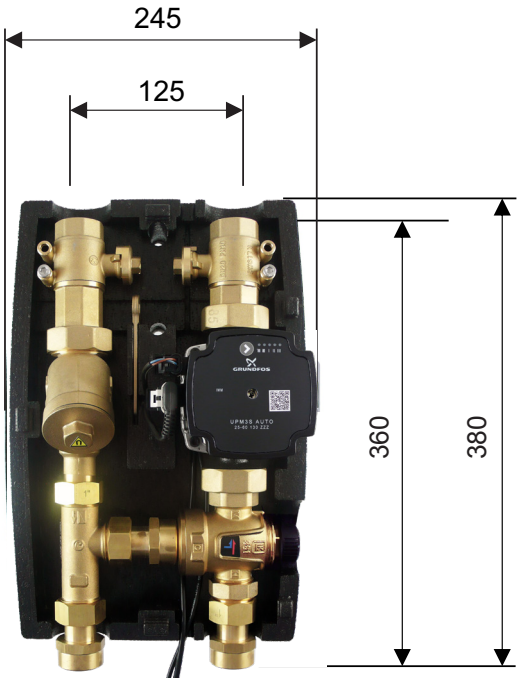
4.2. Example of connection with a gas boiler and a hot water storage tank



5. PUMP STATION INSTALLATION

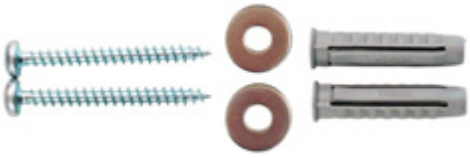
The pump station is designed to be mounted on a wall or a manifold with 125 mm connection pitch. In the rear section of the insulation there are two mounting holes for fixing the metal plate to the wall. Mounting holes pitch is 80 mm.

Installation dimensions are shown in the figure below.



The package includes a mounting kit that is used to fix the pump station to the intended place. The mounting kit includes:

Screw 5x50, round head	2 pcs
6.4 stainless steel washer, DIN 9021/A2	2 pcs
Wall plug 8mm TX	2 pcs

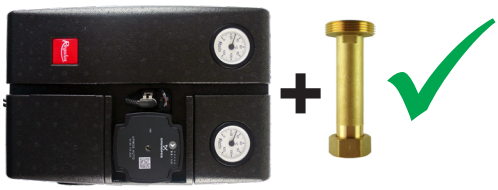


Permitted and prohibited positions of the pump station

Permitted positions

Conditionally permissible positions

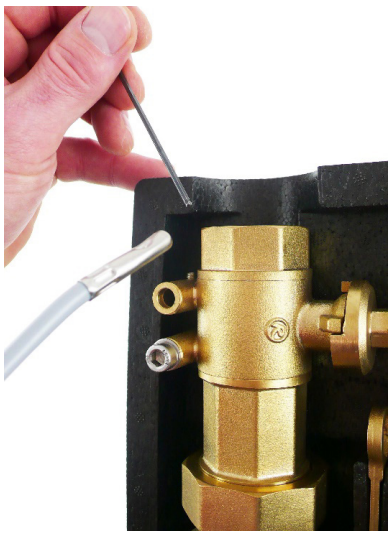
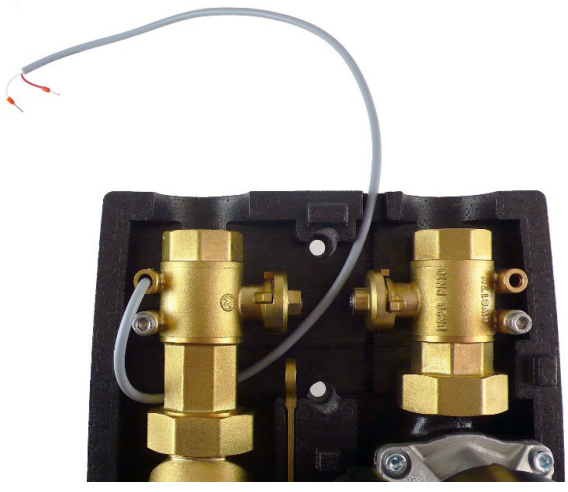
(may be used when a filter is replaced by the filter replacement section, code 19017)

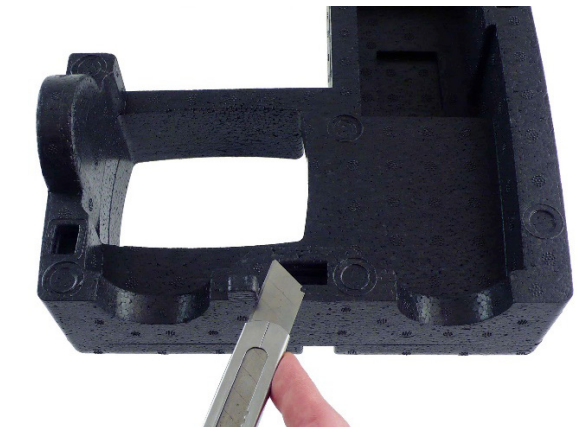


Prohibited positions

6. TEMPERATURE SENSOR INSTALLATION

The ball valve housings are equipped with a sheath for the temperature sensor, where the sensor can be inserted and secured by a fixing screw against being pulled out. In the top and bottom section of the insulation there are passages to run the cables through, then it is necessary to cut the appropriate part of the passage lock from the front part of the insulation with a knife, so that the exiting cables are firmly wrapped around by the lock.

1. Temperature sensor placement	
2. Securing the temperature sensor with the screw	
3. Running the sensor cable through the recess in the insulation	

4. Trimming the cable passage lock	
5. Installed sensors	

7. OPTIONAL ACCESSORIES

The following optional accessories are available for the pump station:

A – Filter replacement section for CSE2
Code 19017

Loosen the unions above and under the filter. 	Remove the filter and mount the filter replacement section (code 19017) in its place. 

B – Ball Valve w. drain valve, 1“ Fu/F
Code 17415
and Union 1“ Fu/M incl. gasket
Code 15695

Remove both the connecting fittings. 	Install the union 15695 in their place, then attach the ball valve w. drain valve (17415) to the union. 

C – Union, 1“ Fu/M, extended, with check valve, incl. gasket
(for return line of CSE2 pump stations)
Code 18653

and **Union, 1“ Fu/M, extended, incl. gasket**
(for flow line of CSE2 pump stations)
Code 18797

Remove both the connecting fittings..

Install the extended union with check valve (18653) to the return line.

Install the extended union (18797) to the flow line.

D – Union to connect CSE2 to 5/4” manifold - 1“x5/4“ Fu/F
Code 17920

Remove both the connecting fittings. 	Replace them with the union 17920 intended for connection to a manifold. 

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