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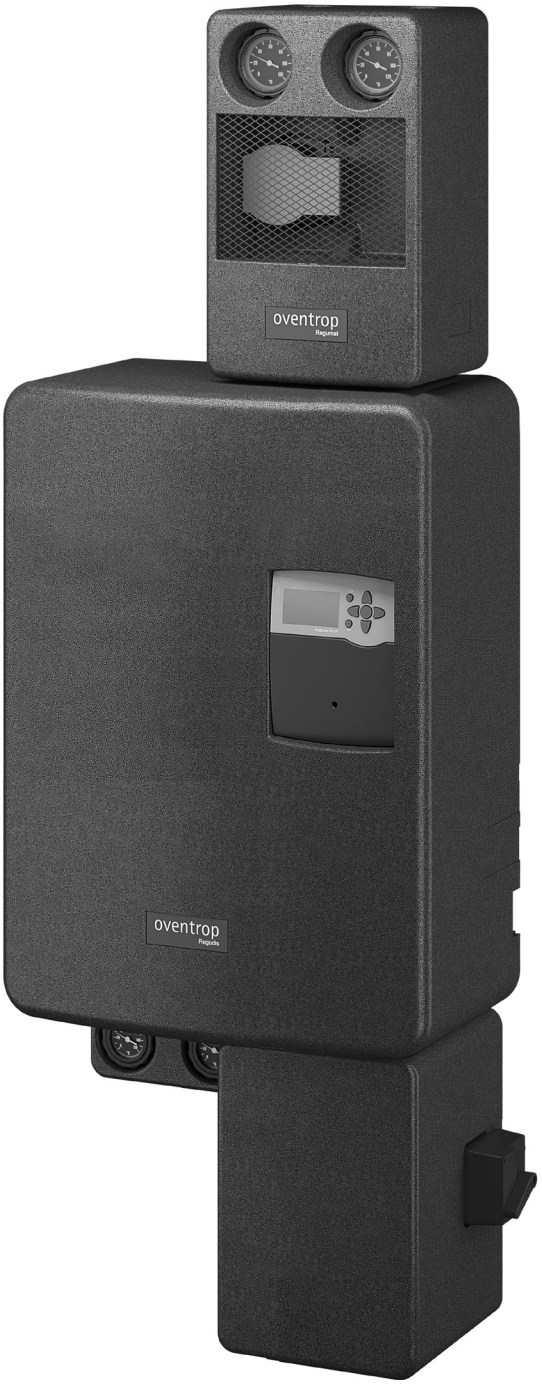
Valves, controls + systems

EN

Transmission station DN 25
Regudis H
Regudis H-H / Regudis H-M
Regudis H-HT / Regudis H-MT
Regudis H-MHT

Operating instructions



Contents

Page

1. General information

The original operating instructions were drafted in German.

The operating instructions in other languages have been translated from German.

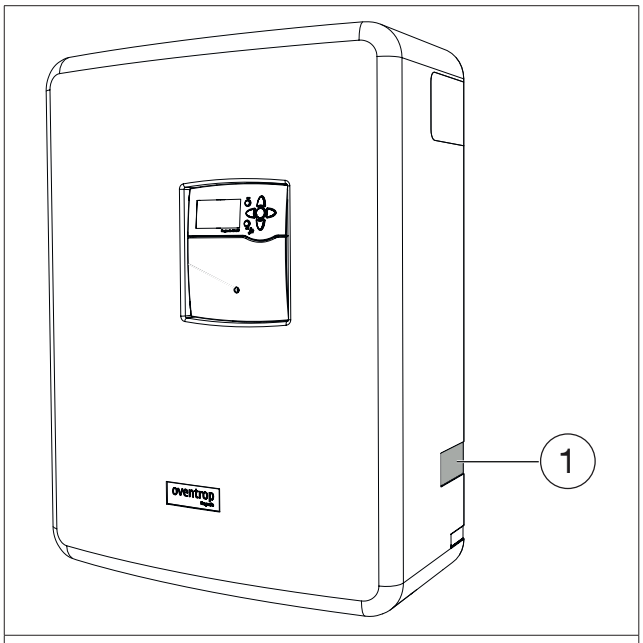
1.1 Validity of the operating instruction

These operating instructions are valid for the following models of the transmission station:

Designation	Item no.
Regudis H consisting of: - Transmission station - Ball valve connection set	**1391036**
Regudis H-H consisting of: - Transmission station - Ball valve connection set - Pump group (Regumat S)	**1391031**
Regudis H-M consisting of: - Transmission station - Ball valve connection set - Pump group (Regumat S) - Electric pipe contact safety switch	**1392031**
Regudis H-HT consisting of: - Transmission station - Ball valve connection set - Switching module (HT switching module)	**1391037**
Regudis H-MT consisting of: - Transmission station - Ball valve connection set - Switching module (HT switching module) - Electric pipe contact safety switch	**1392037**
Regudis H-MHT consisting of: - Transmission station - Ball valve connection set - Pump group (Regumat M3) - Switching module (HT switching module) - Electric pipe contact safety switch	**1393037**

1.2 Type plate

The type plate is located on the right side of the front insulation shell.



Illust. 1: Position of the type plate

(1)	Type plate

1.3 Extent of supply

Please check your delivery for any damage caused during transit and for completeness.

Items included in the delivery:

- Transmission station with functional modules (see section 1.1)
- Outside temperature sensor
- Temperature sensor attached to the pipe with pipe clamp and heat conducting paste
- Storage cylinder temperature sensor
- Plug with O-ring M10x1 for heat meter temperature sensor
- Caps
- Flat seals
- Fixing material
- Mounting template
- Operating instructions
- Connection set (included in the delivery of Regudis H-H, Regudis H-M and Regudis H-MHT)

1.4 Contact

Contact address

OVENTROP GmbH & Co. KG

Paul-Oventrop-Straße 1

59939 Olsberg

GERMANY

www.oventrop.com

Technical services

Phone: +49 (0) 29 62 82-234

1.5 Declaration of conformity

Oventrop GmbH & Co. KG hereby declares that this product complies with the basic requirements and other relevant provisions of the EU Directives concerned.

1.6 Symbols used

	Highlights important information and further explanations.
▶	Action required
•	List
1. 2.	Fixed order. Steps 1 to X.
▷	Result of action

2. Safety-related information

2.1 Correct use

Operating safety is only guaranteed if the product is used correctly.

The transmission station with plate heat exchanger serves the indirect transmission of heat from a local or district heating network (primary side) to the potable water and heating system (secondary side) of detached houses and multiple occupancy dwellings.

The transmission station is suitable for local and district heating networks with a maximum operating temperature of 95°C.

Any other use of the product will be considered incorrect use.

Claims of any kind against the manufacturer and/or its authorised representatives due to damage caused by incorrect use will not be accepted.

Observance of the operating instructions is part of compliance with correct use.

2.2 Warnings

Each warning contains the following elements:

Warning symbol **SIGNAL WORD**	
	Type and source of danger Possible consequences if the danger occurs or the warning is ignored. ▶ Ways to avoid the danger.

The signal words identify the severity of the danger arising from a situation.

 **DANGER**	
	Indicates an imminent danger with high risk. The situation will lead to death or serious injury if not avoided.

 **WARNING**	
	Indicates a possible danger with moderate risk. The situation may lead to death or serious injury if not avoided.

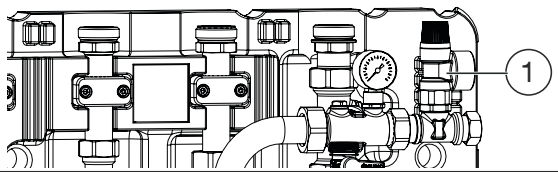
 **CAUTION**	
	Indicates a possible danger with lower risk. The situation will lead to minor and reversible injury if not avoided.

NOTICE	
	Indicates a situation that may lead to damage to property if not avoided.

2.3 Safety devices

2.3.1 Safety group

The safety group with safety valve serves the protection of the pipework against excess pressure (see Illust. 4 on page 8). You can connect a discharge pipe to the safety group.



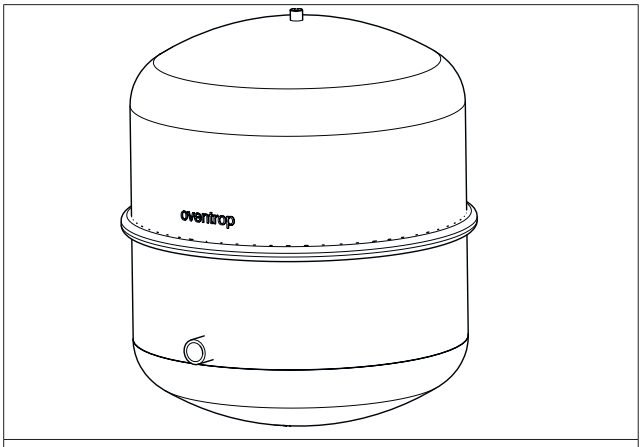
Illust. 2: Safety group

(1)	Safety group

2.3.2 Diaphragm expansion tank

The installation of a diaphragm expansion tank (MAG) in the return of the secondary circuit is mandatory. It serves to compensate pressure variations in the system and to avoid damages caused by excess pressures.

	You can find spare parts and accessories under section 4 on page 22.



Illust. 3: Diaphragm expansion tank

2.4 Safety notes

We have developed this product in accordance with current safety requirements.

Please observe the following notes concerning safe use.

2.4.1 Danger caused by inadequately qualified personnel

Any work on this product must only be carried out by qualified tradespeople.

2.4.2 Risk of injury from pressurised components

- ▶ Only carry out work on the primary and secondary circuit when the system is depressurised.
- ▶ Observe the permissible operating pressures during operation.

2.4.3 Risk of burns due to an inadvertent discharge of hot fluids

- ▶ Only carry out work on the primary and secondary circuit when the system is depressurised.
- ▶ Allow the product to cool down before working on it.
- ▶ Check that the product is not leaking after work is complete.
- ▶ Wear safety gloves.

2.4.4 Risk of burns due to hot components and surfaces

- ▶ Allow the product to cool down before working on it.
- ▶ Wear suitable protective clothing to avoid unprotected contact with hot system components and fittings.

2.4.5 Risk of injury from heavy product

- ▶ Always wear safety shoes during installation.

2.4.6 Risk of injury in case of improper work

Stored energies, angular components, protrusions and edges both inside and outside the product may cause injuries.

- ▶ Before starting work, make sure that there is enough space.
- ▶ Handle open and hard-edged components with care.
- ▶ Make sure that the work place is tidy and clean to avoid accidents.

2.4.7 Damage to property due to an unsuitable installation location

- ▶ Do not install the product in locations prone to frost.
- ▶ Do not install the product in locations with corrosion-enhancing ambient air.
- ▶ Observe the advice regarding corrosion protection (see appendix).

2.4.8 Availability of the operating instructions

Any person working on the product has to read and apply these operating instructions and all other valid documents (e.g. accessory manuals).

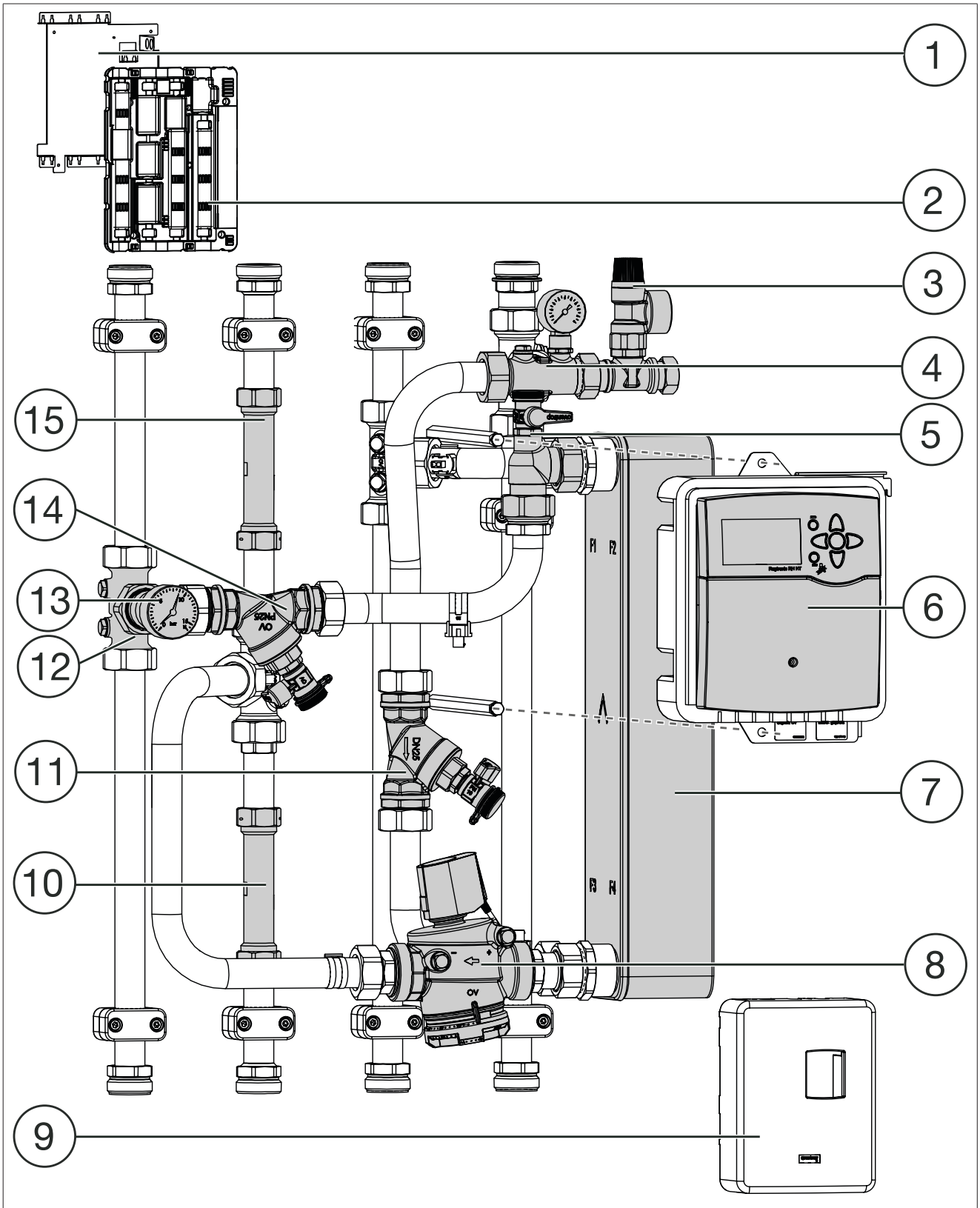
The operating instructions must be available at the installation location of the product.

- ▶ Hand these operating instructions and all other relevant documents (e.g. accessory manuals) over to the user.

3. Technical description

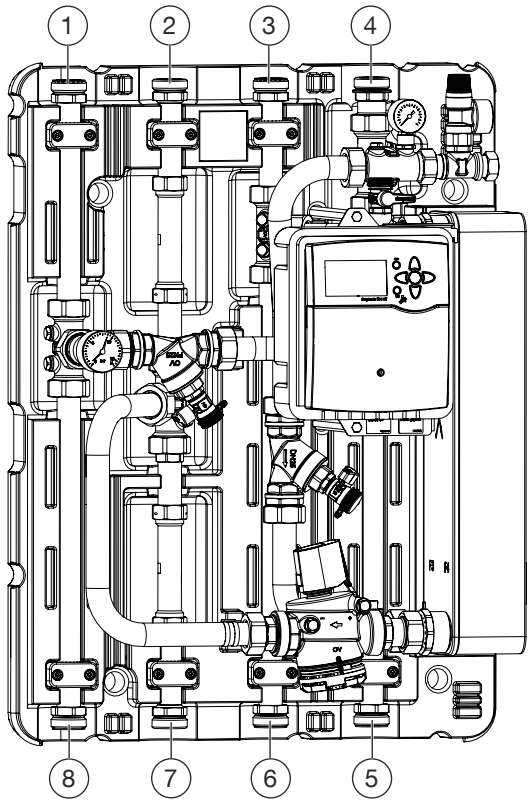
3.1 Construction

3.1.1 Construction of the transmission station



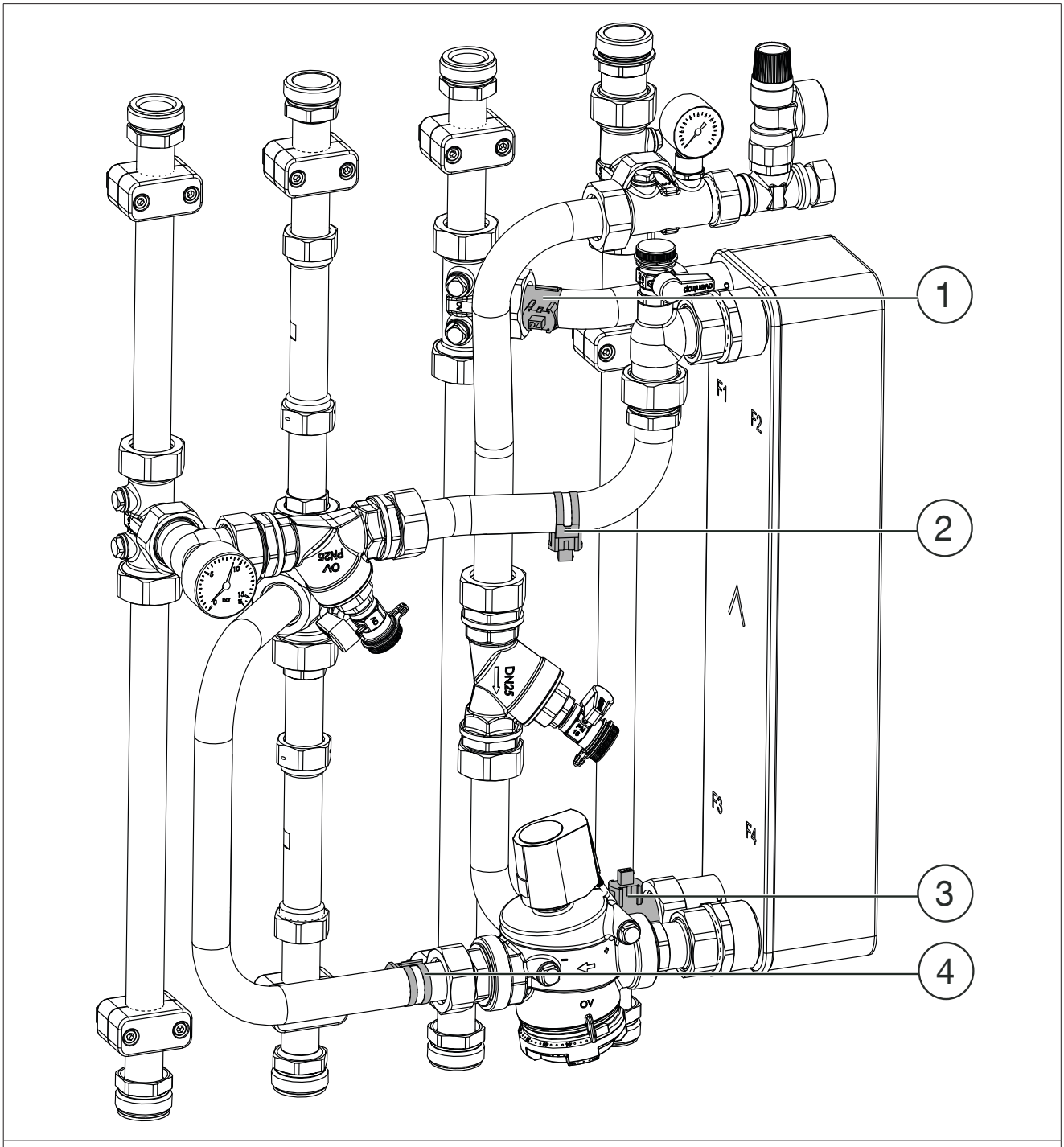
Illust. 4: Construction of the transmission station

(1)	Base plate
(2)	Rear insulation shell
(3)	Safety group
(4)	T-piece with pressure gauge
(5)	Angle pattern fitting with fill and drain ball valve
(6)	Electronic controller Regtronic RH HT
(7)	Heat exchanger
(8)	Pressure independent control valve Cocon QTZ with actuator
(9)	Front insulation shell
(10)	Spacer for heat meter (bottom connection)
(11)	Strainer with fill and drain ball valve
(12)	T-piece for the connection of the flow temperature sensor of the heat meter (primary side)
(13)	Angle pattern fitting with pressure gauge
(14)	Strainer with fill and drain ball valve
(15)	Spacer for heat meter (top connection)



Illust. 5: Connections of the transmission station

(1)	Primary circuit supply (top connection)
(2)	Primary circuit return (top connection)
(3)	Secondary circuit supply (top connection)
(4)	Secondary circuit return (top connection)
(5)	Secondary circuit return (bottom connection)
(6)	Secondary circuit supply (bottom connection)
(7)	Primary circuit return (bottom connection)
(8)	Primary circuit supply (bottom connection)

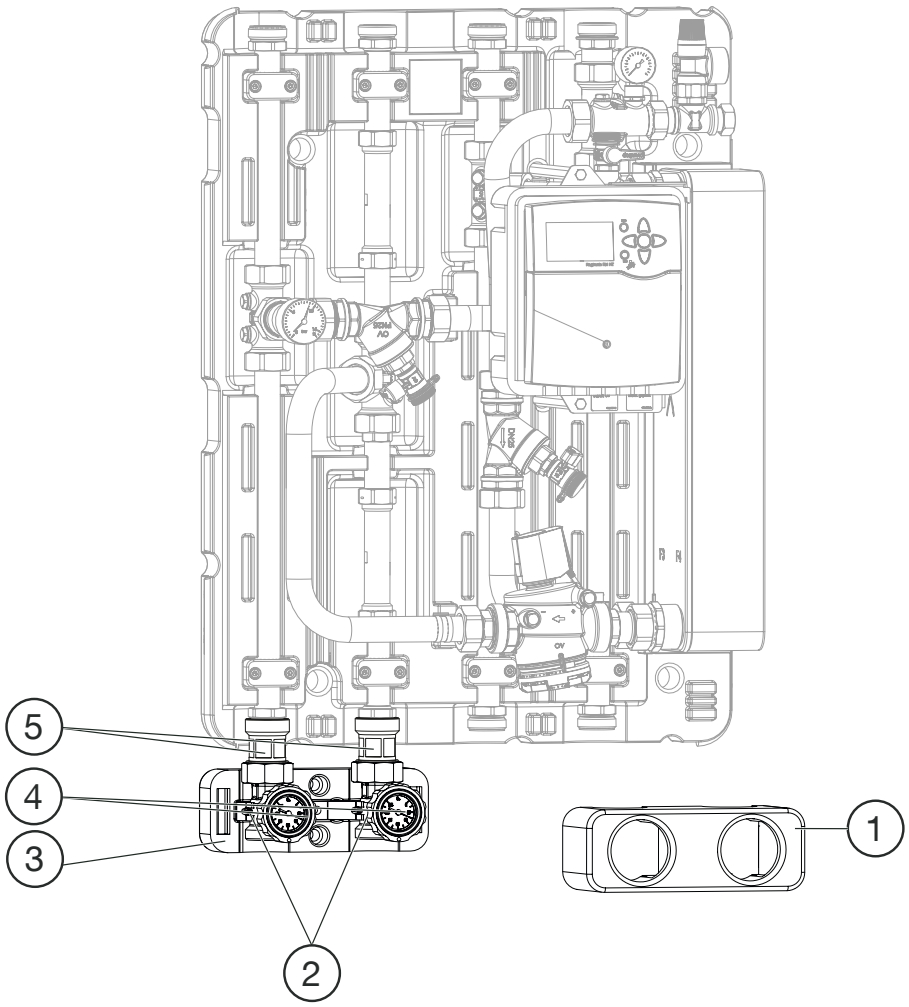


Illust. 6: Temperature sensors

(1)	Temperature sensor S5 (secondary circuit supply)
(2)	Temperature sensor S8 (primary circuit supply)
(3)	Temperature sensor S6 (secondary circuit return)
(4)	Temperature sensor S7 (Primary circuit return)

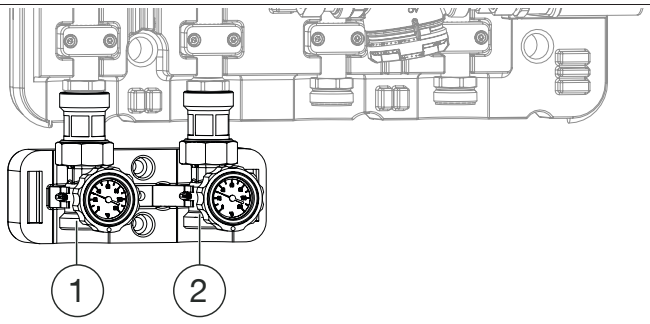
The transmission station is available in 6 connection configurations.

3.1.2 Construction of the Regudis H



Illust. 7: Transmission station with ball valve connection set

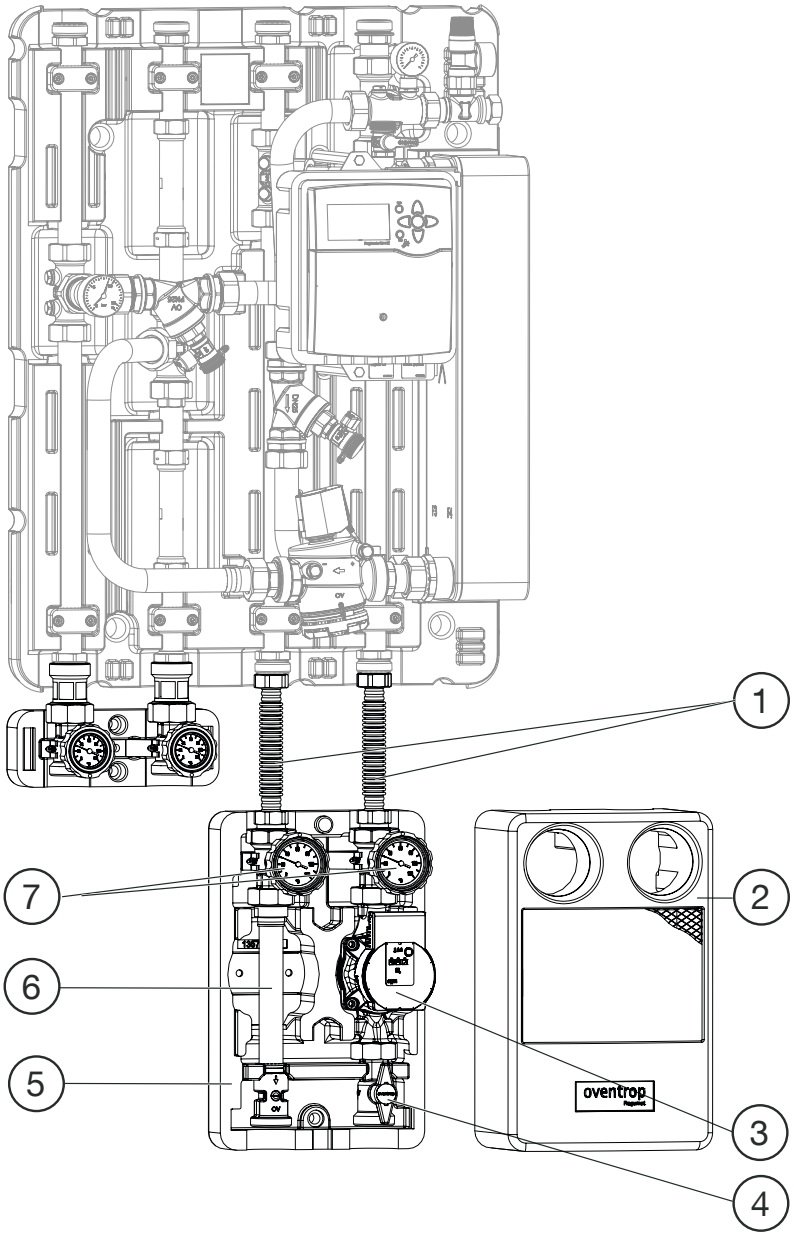
(1)	Front insulation shell
(2)	Ball valve
(3)	Rear insulation shell
(4)	Thermometer
(5)	Connection fitting



Illust. 8: Connections of the ball valve connection set

(1)	Primary circuit supply (bottom connection)
(2)	Primary circuit return (bottom connection)

3.1.3 Construction of the Regudis H-H / Regudis H-M



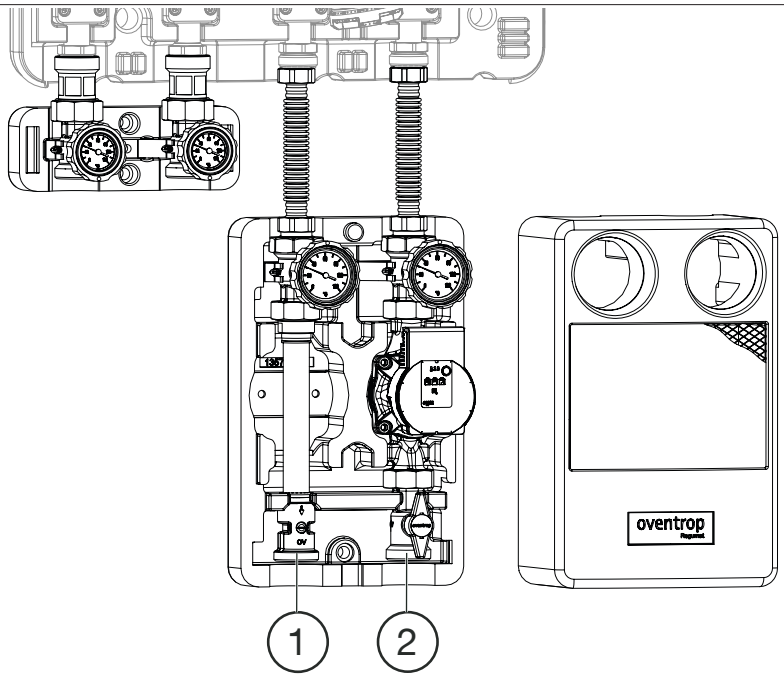
Illust. 9: Transmission station with ball valve connection set and Regumat S

(1)	Connecting pipe
(2)	Front insulation shell
(3)	Pump
(4)	Ball valve with handle
(5)	Rear insulation shell
(6)	Flanged pipe with check valve
(7)	Ball valve with thermometer inside the handle

The Regudis H-M is additionally equipped with an electric pipe contact safety switch.

The electric pipe contact safety switch serves the additional protection against excess temperatures. If the pipe contact safety switch detects an excess temperature, it switches off the pump.

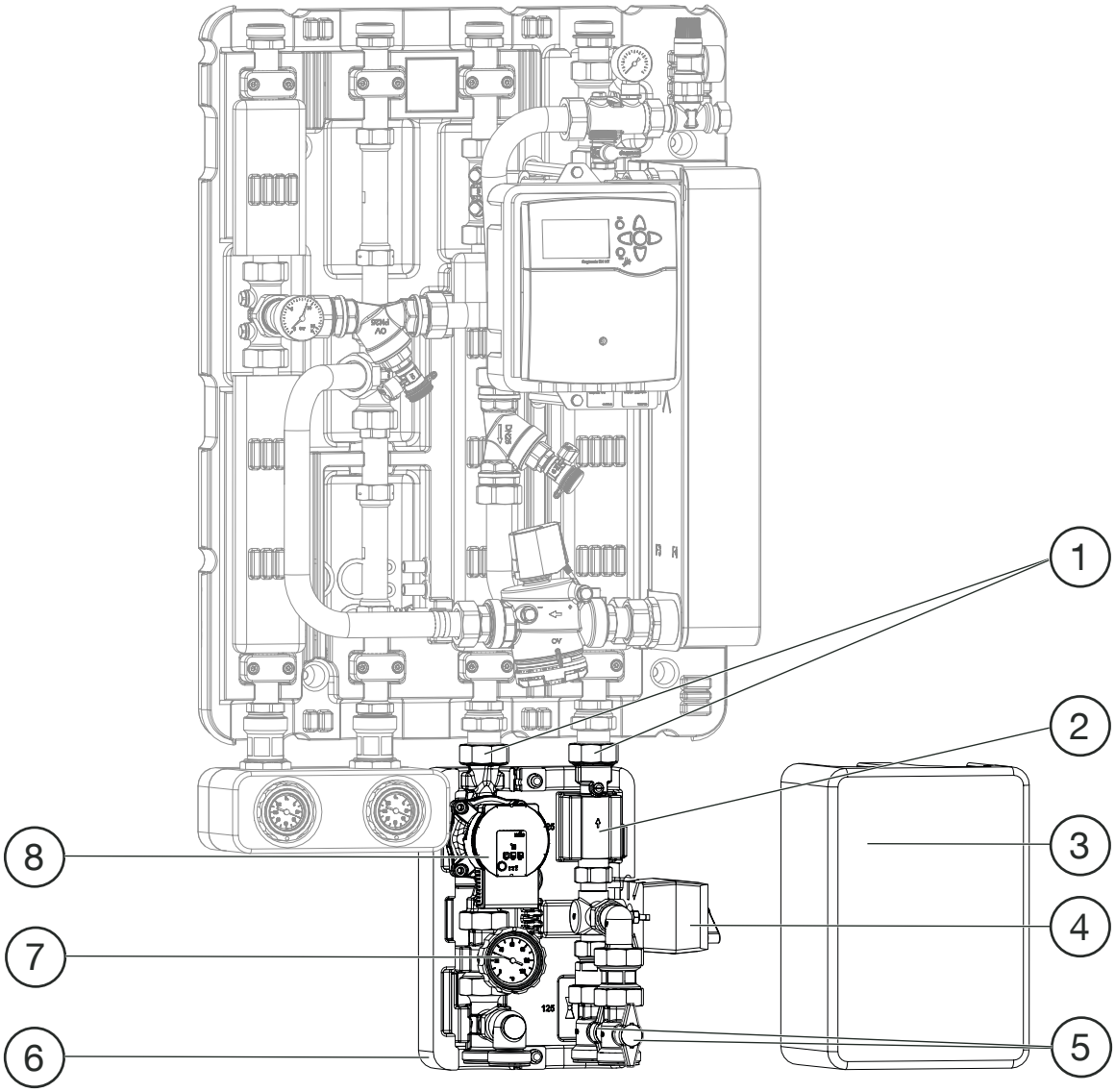
For further information please refer to the operating instructions supplied with the electric pipe contact safety switch. You can learn how to install the electric pipe contact safety switch in section 6.7.



Illust. 10: Connections of the pump group Regumat S

(1)	Heating circuit supply / Storage cylinder circuit supply
(2)	Heating circuit return / Storage cylinder circuit return

3.1.4 Construction of the Regudis H-HT / Regudis H-MT



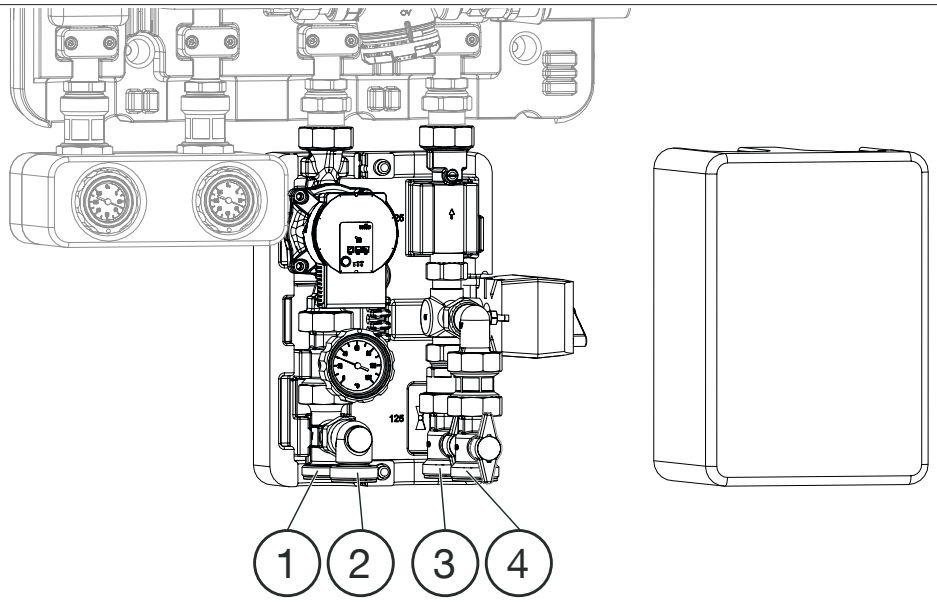
Illust. 11: Transmission station with ball valve connection set and HT switching module

(1)	Connection fitting
(2)	Flanged pipe with check valve
(3)	Front insulation shell
(4)	Switching valve with 2 point actuator
(5)	Ball valve with handle (2x)
(6)	Rear insulation shell
(7)	Ball valve with thermometer inside the handle
(8)	Pump

The Regudis H-MT is additionally equipped with an electric pipe contact safety switch.

The electric pipe contact safety switch serves the additional protection against excess temperatures. If the pipe contact safety switch detects an excess temperature, it switches off the pump.

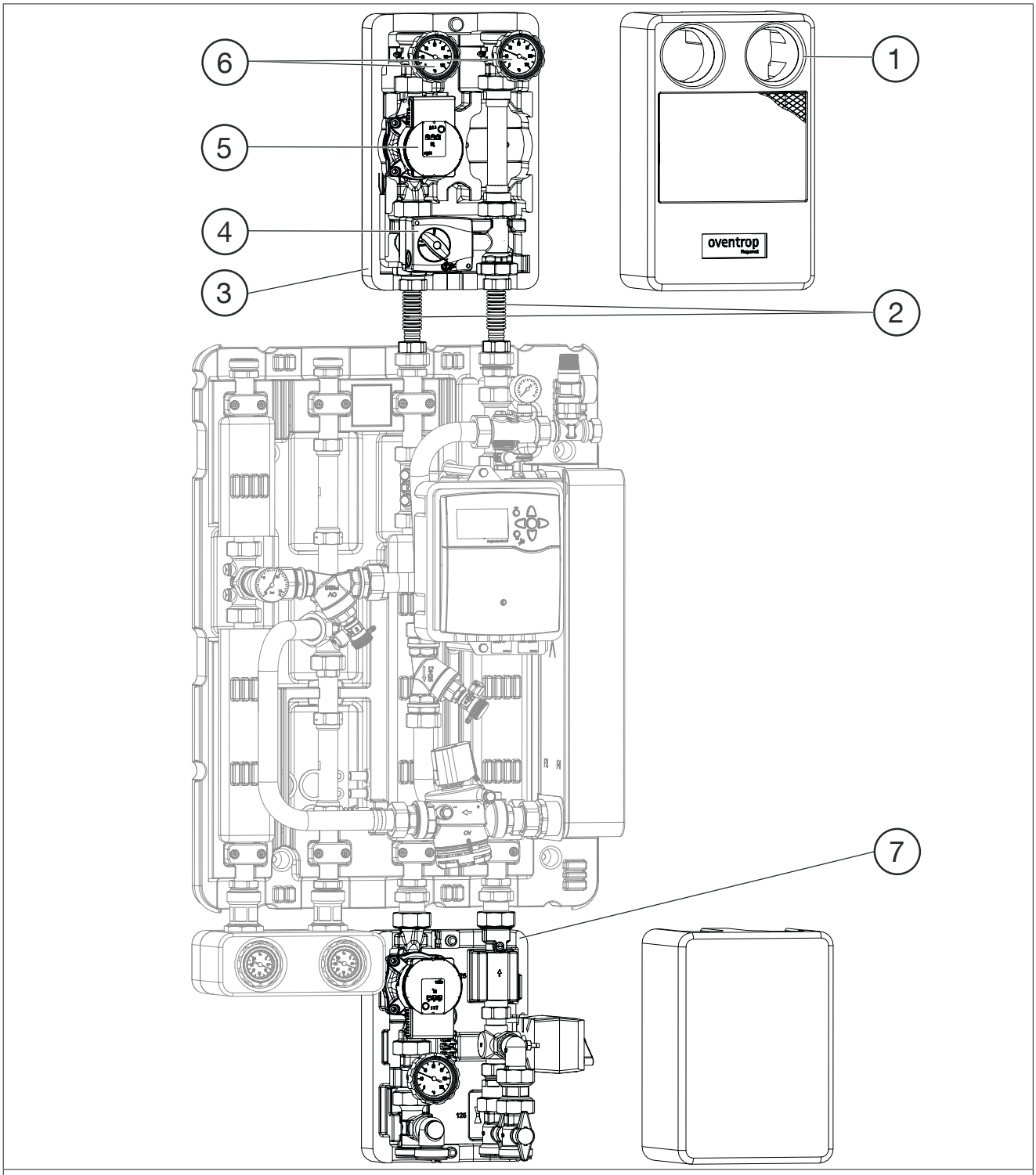
For further information please refer to the operating instructions supplied with the electric pipe contact safety switch. You can learn how to install the electric pipe contact safety switch in section 6.7.



Illust. 12: Connections of the HT switching module

(1)	Heating circuit supply
(2)	Storage cylinder circuit supply
(3)	Heating circuit return
(4)	Storage cylinder circuit return

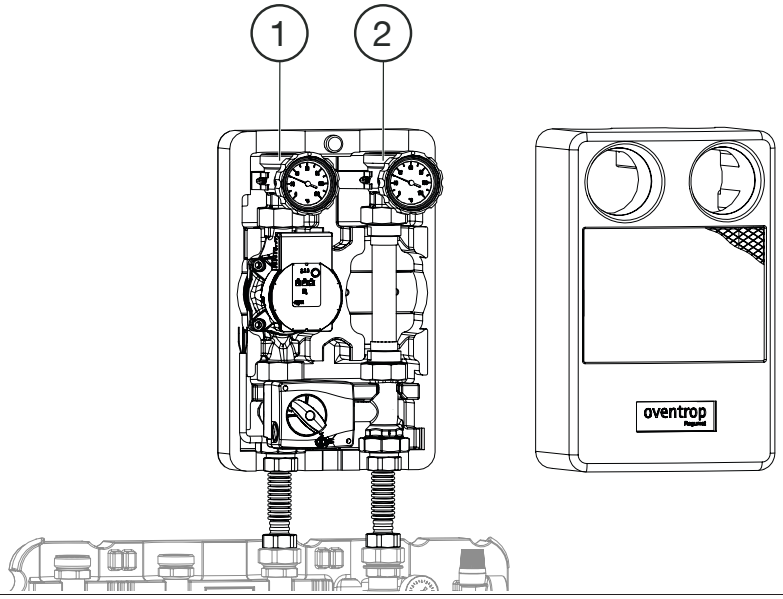
3.1.5 Construction of the Regudis H-MHT



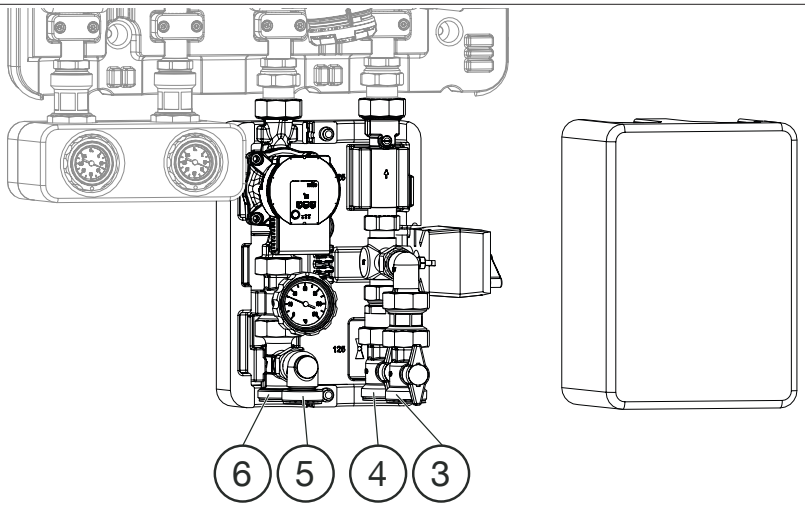
Illust. 13: Transmission station with ball valve connection set, Regumat M3 and HT switching module

(1)	Front insulation shell
(2)	Connecting pipe
(3)	Rear insulation shell
(4)	Three-way mixing valve
(5)	Pump
(6)	Ball valve with thermometer inside the handle
(7)	HT switching module (you can find the construction of the HT switching module in Illust. 11 on page 14)

	The Regudis H-MHT is additionally equipped with an electric pipe contact safety switch. The electric pipe contact safety switch serves the additional protection against excess temperatures. If the pipe contact safety switch detects an excess temperature, it switches off the pump. For further information please refer to the operating instructions supplied with the electric pipe contact safety switch. You can learn how to install the electric pipe contact safety switch in section 6.7.



Illust. 14: Connections of the Regudis H-MHT at the Regumat M3 (operation with surface heating)



Illust. 15: Connections of the Regudis H-MHT at the HT switching module (operation with radiators and storage cylinder loading)

(1)	Surface heating circuit supply
(2)	Surface heating circuit return
(3)	Storage cylinder circuit return
(4)	Radiator heating circuit return
(5)	Storage cylinder circuit supply
(6)	Radiator heating circuit supply

3.2 Functional description

The transmission station is designed for the use of water or water and glycol mixtures circulating in local and district heating networks.

The transmission station is divided into a primary and a secondary side. The water supplied by the local and district heating network arrives via the primary side. The secondary side is heated indirectly via the plate heat exchanger. The secondary side supplies the hot heating water to the potable water system or the heating system.

A system separation between the local/district heating network (primary circuit) and the secondary circuit inside the building is guaranteed by the integrated plate heat exchanger.

Depending on the connection configuration, the transmission station offers a larger variety of functions. The connection configurations allow for the connection of different heating circuits (e.g. radiator heating circuit, surface heating circuit, storage cylinder circuit for hot potable water preparation) to the secondary side of the transmission station.

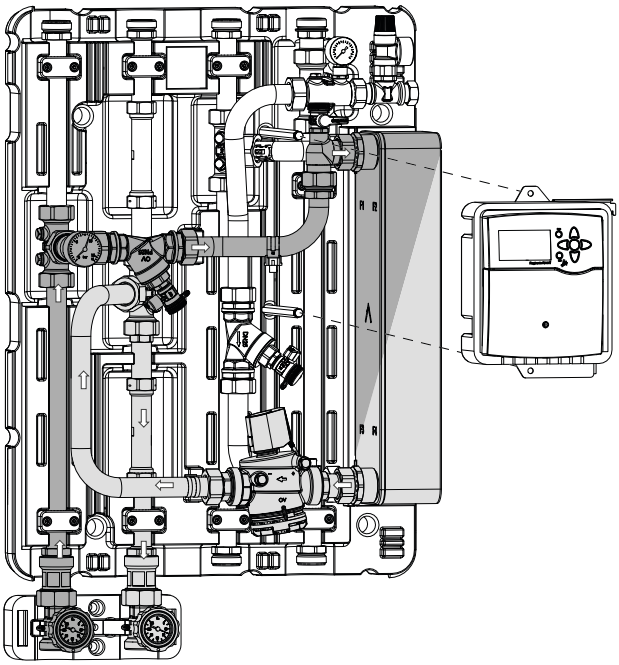
3.2.1 Primary side

The hot water supplied by the local or district heating network enters the heat exchanger (see Illust. 4 on page 8 (7)) via the supply either from the top or the bottom (see Illust. 16 on page 18).

The heating water is warmed up in the heat exchanger according to the continuous flow principle at the time when it is needed and is then transmitted to the corresponding secondary circuits. The heat demand of the secondary circuits is detected by temperature sensors (see Illust. 6 on page 10) and is transmitted to the controller. The actuator fitted to the pressure independent control valve Cocon QTZ is controlled by the controller via a 0-10 V signal.

Depending on the deviation from the set nominal temperature, the volume flow of the primary circuit is reduced or increased. The travel movement of the actuator fitted to the Cocon QTZ valve influences the hot water supply on the secondary side.

The return flow water discharged from the heat exchanger is re-directed to the local/district heating network via the primary circuit return (see Illust. 16 on page 18).



Illust. 16: Primary side Regudis H (bottom connection)

dark	Primary circuit supply
light	Primary circuit return

3.2.2 Potable water storage cylinder loading

Heating circuits and a storage cylinder circuit can be connected to the secondary side. With the storage cylinder circuit, the transmission station can also be used for hot potable water preparation on the storage cylinder loading principle which requires a potable water storage cylinder with internal tube heat exchanger (e.g. Hydrocor WM, see section 4 on page 22). Here one needs to distinguish between a direct (primary side (see section 3.2.1 on page 18) and an indirect (secondary side) connection of the potable water storage cylinder to the transmission station.

Direct connection

In case of direct connection, the hot water supplied by the local/district heating network directly flows into the tube heat exchanger of the potable water storage cylinder without passing across the heat exchanger of the transmission station. The tube heat exchanger inside the potable water storage cylinder heats the potable water. The water supplied by the local/district heating network is directed into the tube heat exchanger with the help of an external valve with actuator which controls loading of the storage cylinder together with the controller of the transmission station.

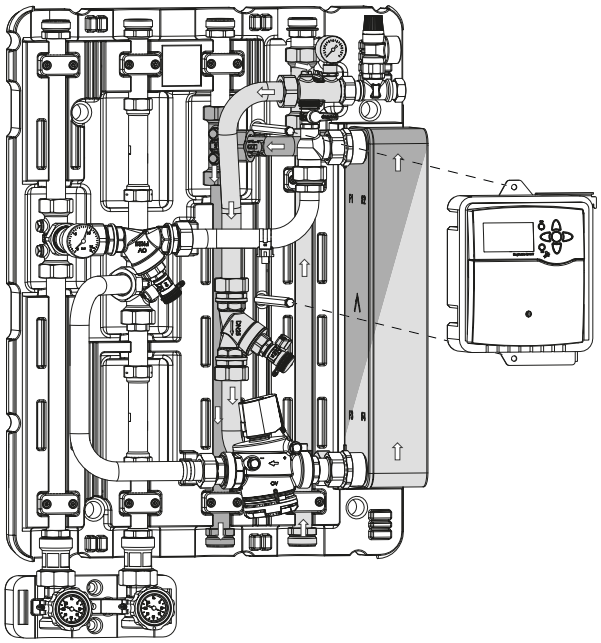
Indirect connection

In case of indirect connection, the potable water storage cylinder is connected to the station like a heating circuit, i.e. the hot water supplied by the local/district heating network flows into the heat exchanger of the station and heats up the heating water. The heated water flows into tube heat exchanger of the potable water

storage cylinder. The tube heat exchanger inside the potable water storage cylinder heats the potable water. An external pump is required for the transport of the heating water into the tube heat exchanger (e.g. pump group Regumat).

3.2.3 Secondary side Regudis H

The heating circuits or storage cylinder circuits are connected to the secondary side. 2 autonomous heating circuits can be connected to the transmission station via the supply and return connections (see Illust. 5 on page 9) without additional accessories. Each heating circuit requires an external pump (e.g. pump group Regumat). The controller takes over the control of the pump on the secondary side.



Illust. 17: Secondary side Regudis H-HT (example bottom connection)

dark	Secondary circuit supply
light	Secondary circuit return

3.2.4 Secondary side Regudis H-H / Regudis H-M

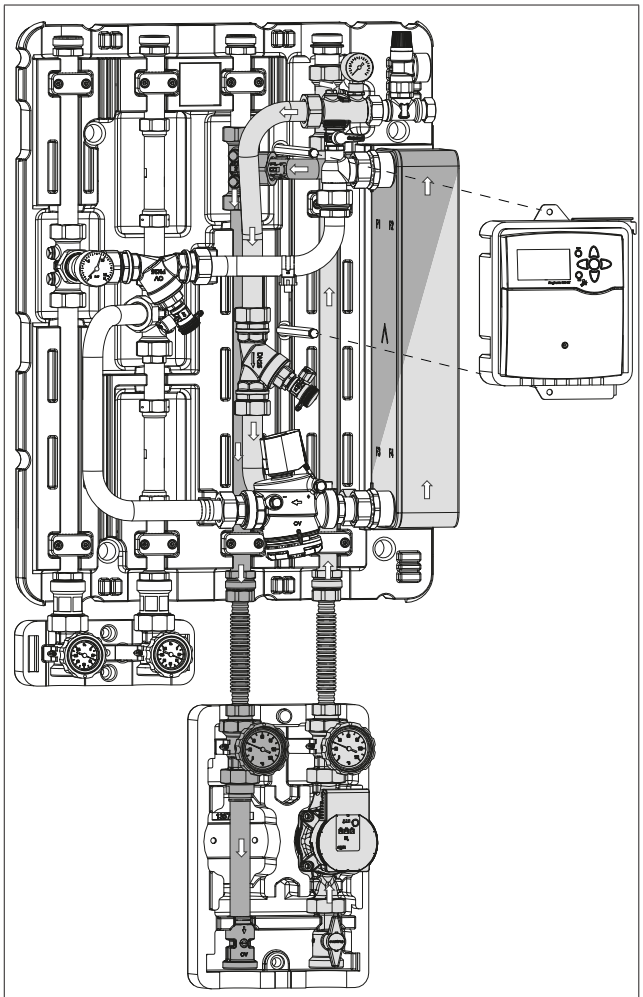
A radiator heating circuit or a storage cylinder circuit can be connected to the secondary side of the Regudis H-H.

The Regudis H-H / Regudis H-M features a pump group Regumat S (see Illust. 11 on page 14).

The Regumat S serves the supply of heating water to the radiators or storage cylinders according to requirements. The controller takes over the control of the pump on the secondary side.

A surface heating circuit can be connected to the secondary side of the Regudis H-M. The electric pipe contact safety switch of the Regudis H-M serves the additional protection of the surface heating circuit against excess temperatures. If the pipe contact safety switch detects an excess temperature, it switches off the pump.

The heating circuit or the storage cylinder circuit is connected to the transmission station via the supply and return connections (see Illust. 10 on page 13).



Illust. 18: Secondary side Regudis H-H / Regudis H-M (example bottom connection)

3.2.5 Secondary side Regudis H-HT / Regudis H-MT

A radiator heating circuit and a storage cylinder circuit can be connected to the secondary side of the Regudis H-HT.

A surface heating circuit and a storage cylinder circuit can be connected to the secondary side of the Regudis H-MT.

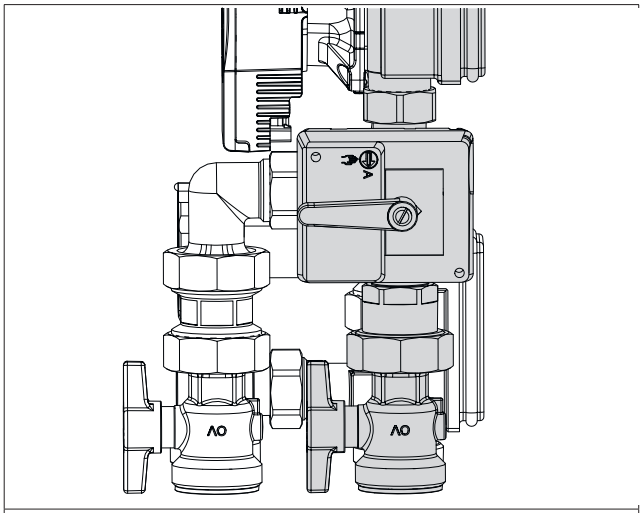
The Regudis H-HT / Regudis H-MT is equipped with a switching valve with two point actuator (see Illust. 11 on page 14). .

The switching valve with actuator switches between the heating circuit and the storage cylinder circuit according to requirements.

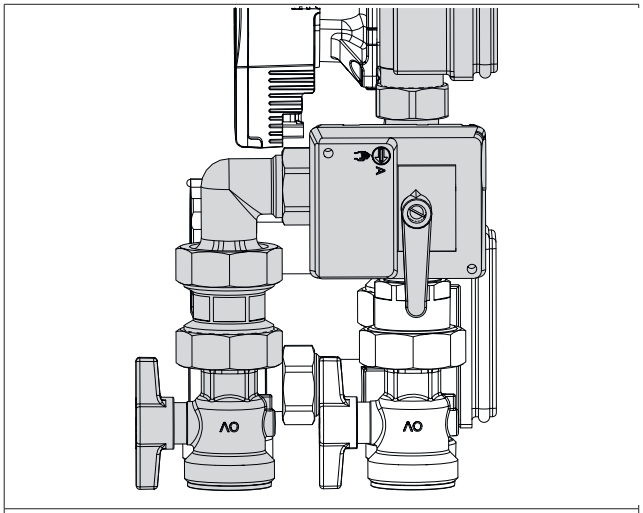
During normal operation, the heated fluid is directed to

the heating circuit. The potable water priority function ensures that the fluid is directed to the storage cylinder circuit as soon as the storage cylinder temperature drops below the set nominal temperature.

The controller takes over the control of the switching valve with actuator on the secondary side.



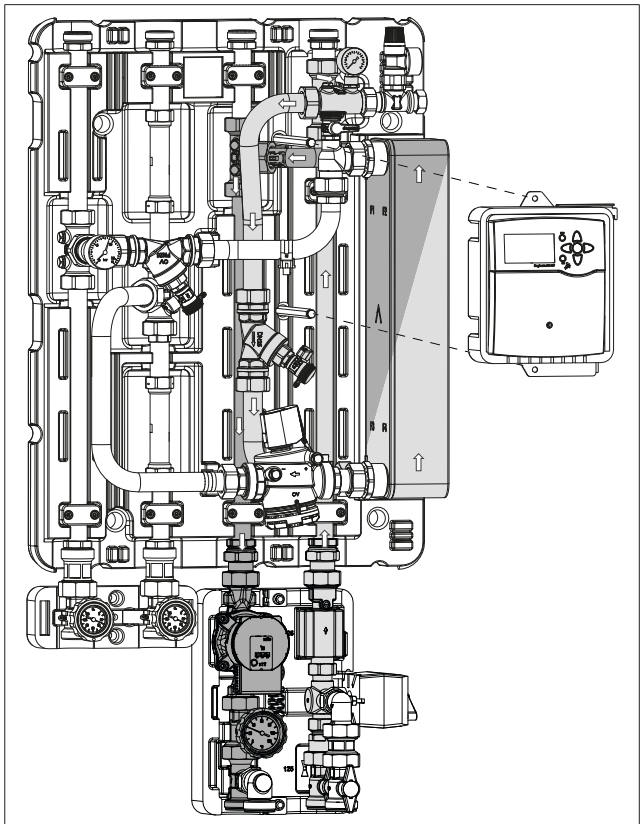
Illust. 19: Switch position of the switching valve (heating mode)



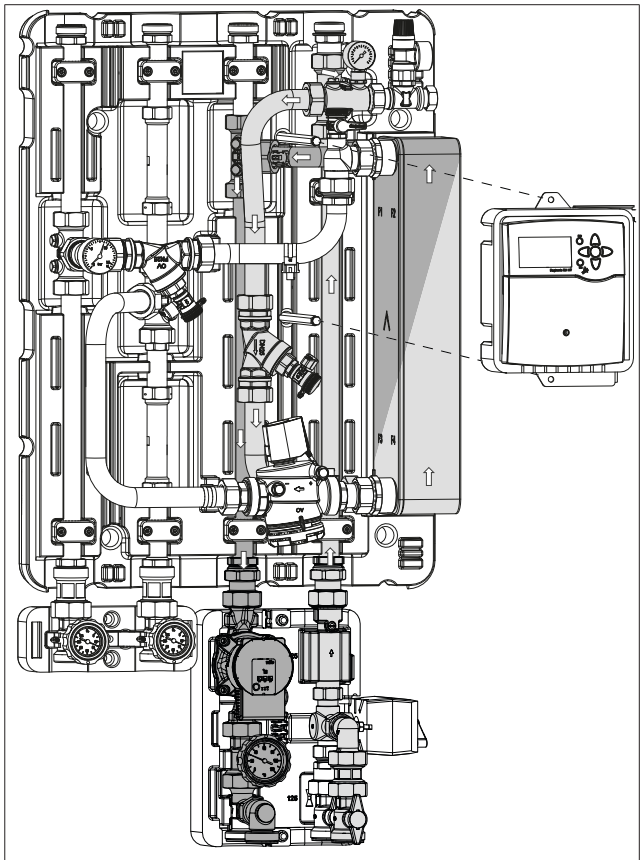
Illust. 20: Switch position of the switching valve (storage cylinder loading)

The electric pipe contact safety switch of the Regudis H-MT serves the additional protection of the surface heating circuit against excess temperatures. If the pipe contact safety switch detects an excess temperature, it switches off the pump.

The heating circuit and the storage cylinder circuit are connected to the transmission station via the supply and return connections (see Illust. 12 on page 15).



Illust. 21: Secondary side - Connection of the heating circuit Regudis H-HT / Regudis H-MT (bottom connection)



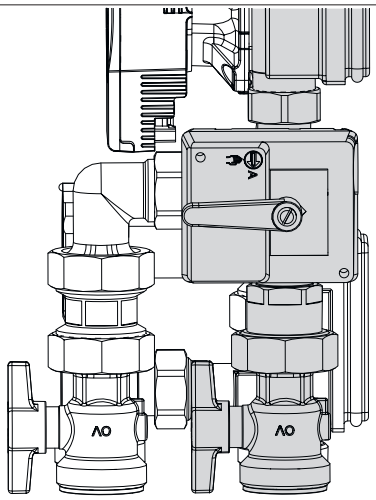
Illust. 22: Secondary side - Connection of the storage cylinder circuit Regudis H-HT / Regudis H-MT (bottom connection)

3.2.6 Secondary side Regudis H-MHT

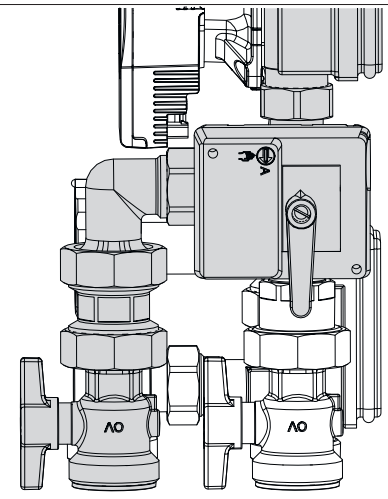
A radiator heating circuit and a storage cylinder circuit (HT switching module) as well as a surface heating circuit (Regumat M3) can be connected to the secondary side of the Regudis H-MHT.

The radiator heating circuit and the storage cylinder circuit can be connected to the transmission station via the supply and return connections of the HT switching module (see Illust. 15 on page 17).

The switching valve with two point actuator switches between a heating circuit and the storage cylinder circuit according to requirements.



Illust. 23: Switch position of the switching valve (heating mode)



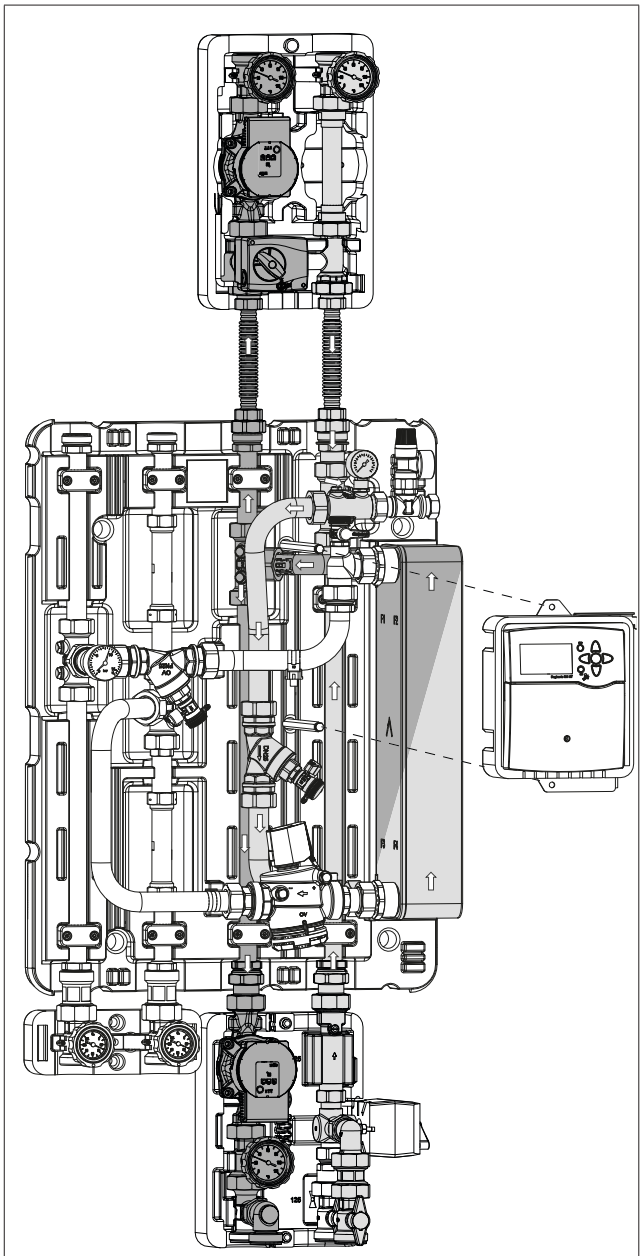
Illust. 24: Switch position of the switching valve (storage cylinder loading)

During normal operation, the heated fluid is directed to the heating circuit. The potable water priority function ensures that the fluid is directed to the storage cylinder circuit as soon as the storage cylinder temperature drops below the set nominal temperature.

The controller takes over the control of the switching valve with actuator on the secondary side (see Illust. 19 on page 20).

The surface heating circuit can be connected to the transmission station via the supply and return connections of the Regumat M3 (see Illust. 14 on page 17). The Regumat M3 serves the supply of heating water to the surface heating circuit. The integrated three-way mixing valve with actuator serves the reduction of the flow temperature by variably adding cooler return water.

The electric pipe contact safety switch of the Regudis H-MHT serves the additional protection of the surface heating circuit against excess temperatures. If the pipe contact safety switch detects an excess temperature, it switches off the pump.



Illust. 25: Secondary side Regudis H-MHT (example storage cylinder loading)

3.3 Technical data

General information		
Nominal size	DN25	
Max. operating temperature ts	95°C	
Max. operating pressure ps	10 bar	
Min. operating pressure ps	1 bar	
Max. primary differential pressure	6 bar	
Ambient temperature T	2-35°C	
Empty weight		
Regudis H	41.75 kg	
Regudis H-H	48.13 kg	
Regudis H-M	48.28 kg	
Regudis H-HT	51.15 kg	
Regudis H-MT	51.30 kg	
Regudis H-MHT	58.44 kg	
Hydronic performance data		
Safety valve secondary side	3 bar	
Max. primary volume flow	4800 l/h	
Display range of the pressure gauge	0 - 16 bar	
Operating fluids	Water / mixtures of water and glycol	
Dimensions		
Regudis H	Width x Height x Depth (in mm)	630 x 940 x 330
Regudis H-H / Regudis H-M		630 x 1365 x 330
Regudis H-HT / Regudis H-MT		630 x 1182 x 330
Regudis H-MHT		630 x 1706 x 330
Connections to the pipework		
Transmission station	Flat sealing male thread G 1 ¼	
Ball valve connection set	Flat sealing male thread G1 ½	
Regumat	Flat sealing male thread G1 ½	
HT switching module	Flat sealing male thread G1 ½	
Electrical performance data		
Operating voltage controller	230 V AC, 50-60 Hz	
Actuator	Closed with current off, 24 V DC, control voltage 0-10 V	
Material		
Valves and fittings	Brass, bronze	
Seals	Fibre materials; EPDM	
Base plate	Galvanised steel	
Thermal insulation	EPP	
Heat exchanger	Plate material: stainless steel 1.4401	
	Connections: Stainless steel 1.4404	
	Brazing material: Copper	
Pipes	Stainless steel 1.4404	
Spacers	Messing	

4. Accessories and spare parts

Spare parts and accessories are available from specialist stores. The following items are available as accessories:

Designation	Item no.
Accessories	
Monovalent potable water storage cylinder Hydrocor WM	1395010
	1395011
	1395012
Diaphragm expansion tank	1399091
	1399092
Extension module Regtronic EM	1152098
Aktor T ST 24 V DC 0-10 V electrothermal actuator	1012954
Connection set	1399083
Spare parts	
Electronic controller Regtronic RH HT	1152070
Electric pipe contact safety switch Sensor LW TH	1143000

5. Transport and storage

Transport the product in its original packaging.

Store the product under the following conditions:

Temperature range	-20°C to +60°C
Relative air humidity	Max. 95%
Particles	Store dry and free from dust
Mechanical influences	Protected from mechanical agitation
Radiation	Protected from UV rays and direct sunlight

Chemical influences	Do not store together with solvents, chemicals, acids, fuels or similar substances

6. Installation

WARNING

Risk of injury from pressurised components

Fluids escaping under pressure may lead to injuries.

- ▶ Only carry out installation work when the system is depressurised.
- ▶ When upgrading an existing installation: Drain the system or close the supply pipes of the section of the system and depressurise it.
- ▶ Any work on the system must only be carried out by qualified tradespeople.

CAUTION

Risk of injury from heavy station

The transmission station is heavy. If it falls down, it may lead to injuries.

- ▶ Always wear safety shoes during installation.
- ▶ Install the station with the help of a second person.

6.1 Advice regarding installation

Before installing the transmission station make sure that:

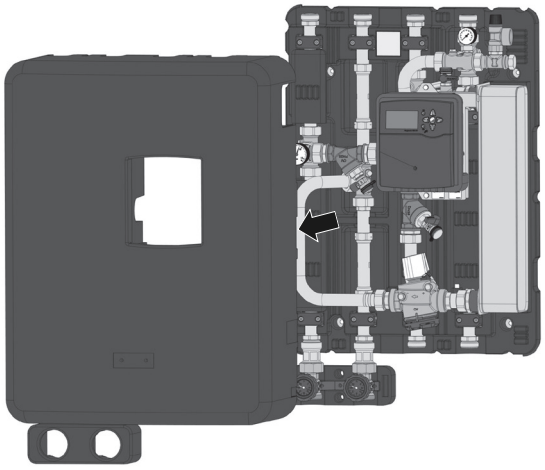
- The power cable and grounding cable to the installation location are laid.

Please observe EN60204-1 chapter 5.3.2 for the electrical connection.

- Install the transmission station in a dry and frost-free room. Make sure that ambient temperature during operating does not exceed 35 °C.
- Always install the transmission station in a vertical position and never in an inclined or lying position.
- The transmission station must always be accessible, even after installation.
- The transmission station is directly attached to the wall.

6.2 Wall attachment of the Regudis H

1. Hold the mounting template against the desired installation location and align it horizontally. Fix the mounting template to the wall.
2. Drill the boreholes with the help of the mounting template and insert the enclosed dowels.
3. Remove the mounting template from the wall.
4. Remove the front insulation shells of the transmission station and of the ball valve connection set.

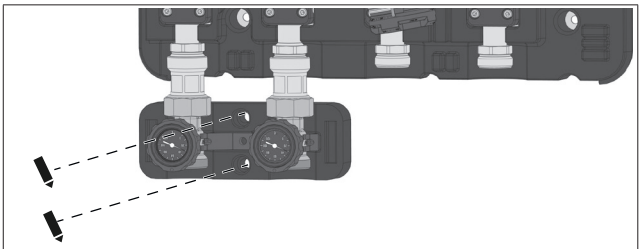


Illust. 26: Removal of the front insulation shells

5. Fix the transmission station in the rear insulation shell to the wall with the help of the enclosed screws (8x70mm) and washers.

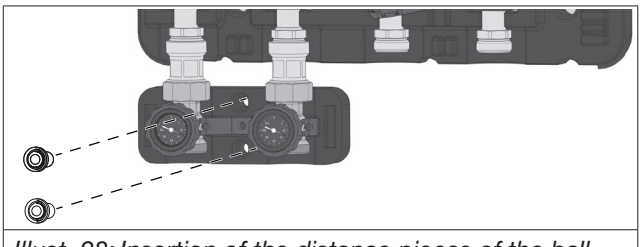
In step 7 you remove the transmission station from the wall again to fix the ball valve connection set to the wall.

6. Mark the boreholes for the ball valve connection set on the wall.



Illust. 27: Marking of the boreholes for the fixing screws

7. Loosen the fixing screws of the transmission station. Remove the transmission station with the ball valve connection set from the wall.
8. Drill the boreholes for the ball valve connection set and insert the enclosed dowels.
9. Insert the enclosed distance pieces into the holes in the rear insulation shell of the ball valve connection set.



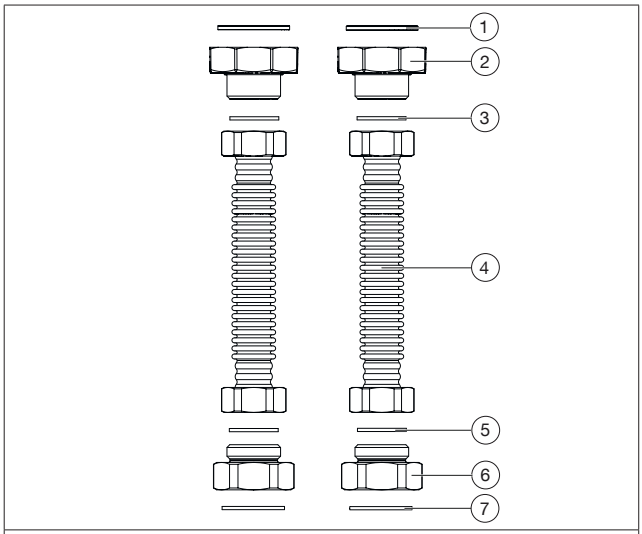
Illust. 28: Insertion of the distance pieces of the ball valve connection set

10. Fix the transmission station to the wall with the enclosed screws (transmission station: 8x70; ball valve connection set: 8x100) and washers.
11. Fit the front insulation shells.

6.3 Wall attachment of the Regudis H-H / Regudis H-M

1. Fix the transmission station with the ball valve connection set to the wall as described in section 6.2 on page 23.

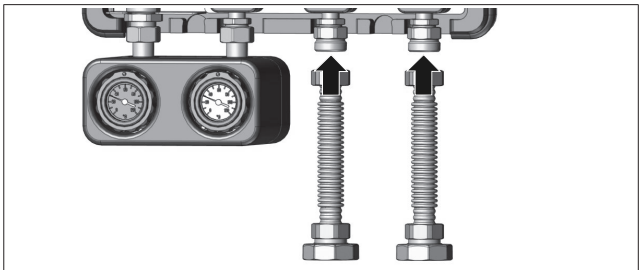
Take the enclosed connection set for the following installation steps.



Illust. 29: Construction of the connection set

(1)	Seal (Ø 44.5 mm)
(2)	Transition piece G1 x G 1½ ; Connection to pump group (torque 25 Nm; spanner size 54)
(3)	Seal (Ø 30.3 mm)
(4)	Stainless steel corrugated pipe; 150 mm (torque 45 Nm; spanner size 37)
(5)	Seal (Ø 30.3 mm)
(6)	Transition piece G1 ¼ x G1; Connection to transmission station (torque 25 Nm; spanner size 46;)
(7)	Seal (Ø 38.9 mm)

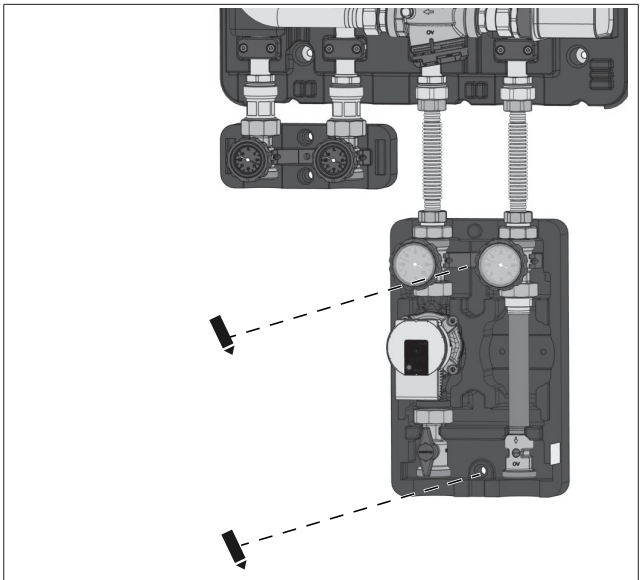
2. Insert the seals (see Illust. 29 on page 24 (7)) into the transition pieces (6).
3. Screw the transition pieces (6) onto the transmission station (hand tight).
4. Fit the seals (3) between the transition pieces (2) and the stainless steel corrugated pipes (4) and hand tighten the components.
5. Screw the stainless steel corrugated pipes (4) onto the transition pieces (6) (hand tight). See Illust. 30 on page 24.



Illust. 30: Fixing of the connecting pipe (bottom connection)

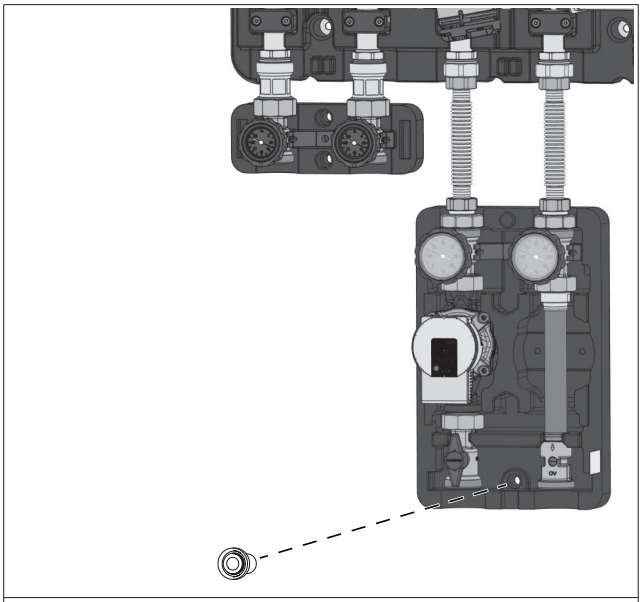
Take the enclosed pump group Regumat S for the following installation steps.

6. Remove the front insulation shell of the pump group.
7. Screw the pump group onto the connection set (hand tight).
8. Mark the boreholes on the wall and remove the pump group. Drill the bore holes for the fixing screws and insert the enclosed dowels.



Illust. 31: Fixing of the pump group (bottom connection)

9. Screw the pump group onto the connection set.
10. Tighten all connections (the respective torques are detailed in the table below Illust. 29 on page 24).
11. Insert the enclosed distance piece into the hole.

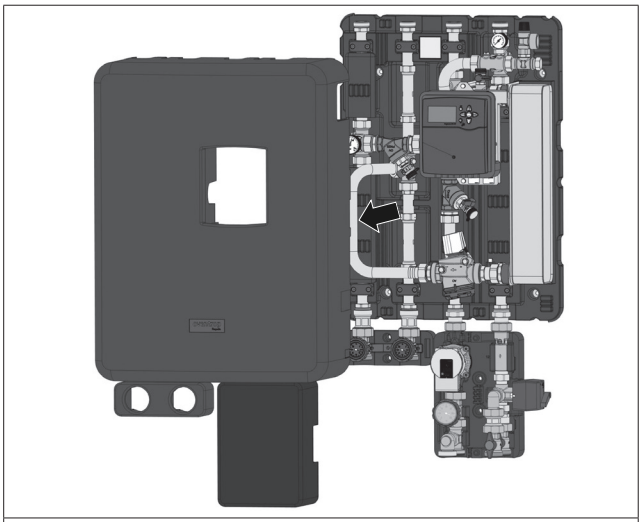


Illust. 32: Insertion of the distance piece of the Regumat S

12. Fix the pump group to the wall with the enclosed screws (8x100) and washers.
13. Fit the front insulation shells.

6.4 Wall attachment of the Regudis H-HT / Regudis H-MT

1. Hold the mounting template against the desired installation location and align it horizontally. Fix the mounting template to the wall.
2. Drill the boreholes with the help of the mounting template and insert the enclosed dowels.
3. Remove the mounting template from the wall.
4. Remove the front insulation shells of the transmission station, of the ball valve connection set and of the HT switching module.

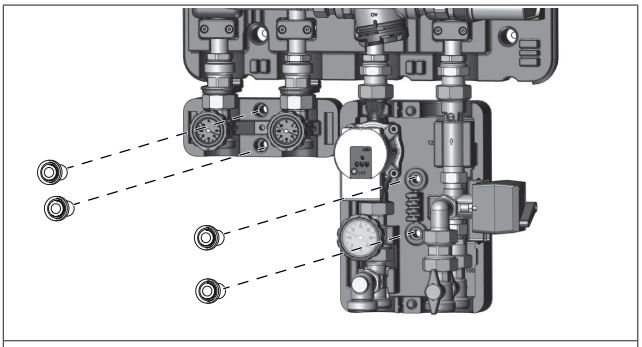


Illust. 33: Removal of the front insulation shells

5. Fix the transmission station in the rear insulation shell to the wall with the help of the enclosed screws (8x70mm) and washers.

In step 7 you remove the transmission station from the wall again to fix the ball valve connection set to the wall.

6. Mark the boreholes for the ball valve connection set and the HT switching module on the wall.
7. Loosen the fixing screws of the transmission station. Remove the transmission station with the ball valve connection set and the HT switching module from the wall.
8. Drill the boreholes for the ball valve connection set and the HT switching module and insert the enclosed dowels. Insert the enclosed distance pieces into the holes.



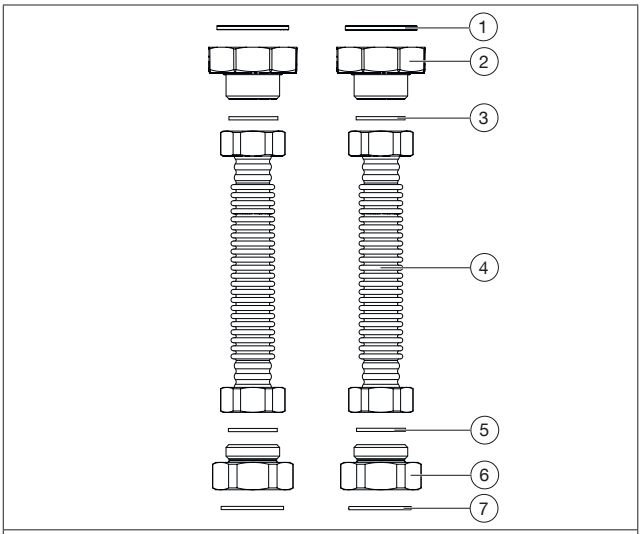
Illust. 34: Insertion of the distance pieces of the HT switching module

9. Fix the transmission station (8x70 mm) with the ball valve connection set (8x100 mm) and the HT switching module (8x100 mm) to the wall with the enclosed screws.
10. Fit the front insulation shells.

6.5 Wall attachment of the Regudis H-MHT

1. Fix the transmission station with the ball valve connection set and the HT switching module to the wall as described in section 6.4 on page 25.

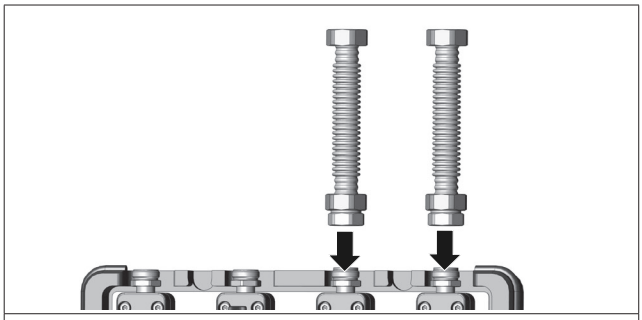
Take the enclosed connection set for the following installation steps.



Illust. 35: Construction of the connection set

(1)	Seal (Ø 44.5 mm)
(2)	Transition pieces G1 x G 1½ ; Connection to pump group (torque 25 Nm; spanner size 54;)
(3)	Seal (Ø 30.3 mm)
(4)	Stainless steel corrugated pipe; 150 mm (torque 45 Nm; spanner size 37)
(5)	Seal (Ø 30.3 mm)
(6)	Transition piece G1 ¼ x G1; Connection to transmission station (torque 25 Nm; spanner size 46;)
(7)	Seal (Ø 38.9 mm)

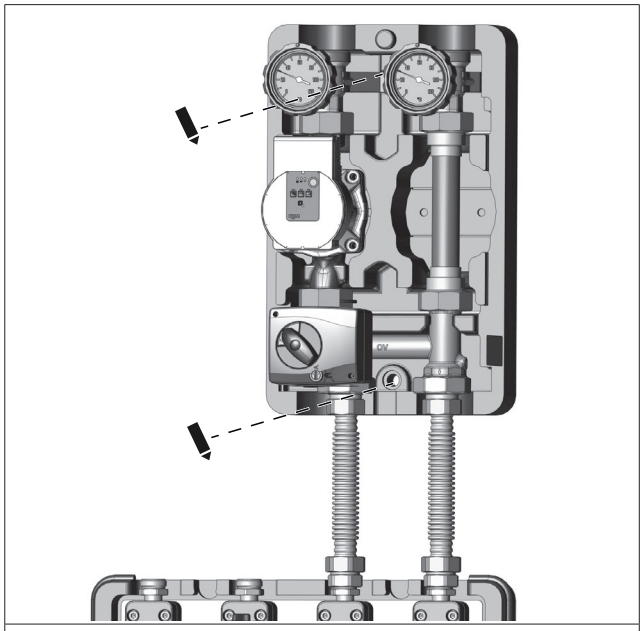
2. Insert the seals (see Illust. 35 on page 25 (7)) into the transition pieces (6).
3. Screw the transition pieces (6) onto the transmission station (hand tight).
4. Fit the seals (3) between the transition pieces (2) and the stainless steel corrugated pipes (4) and hand tighten the components.
5. Screw the stainless steel corrugated pipes (4) onto the transition pieces (6) (hand tight). See Illust. 36 on page 26.



Illust. 36: Fixing of the connecting pipe (top connection)

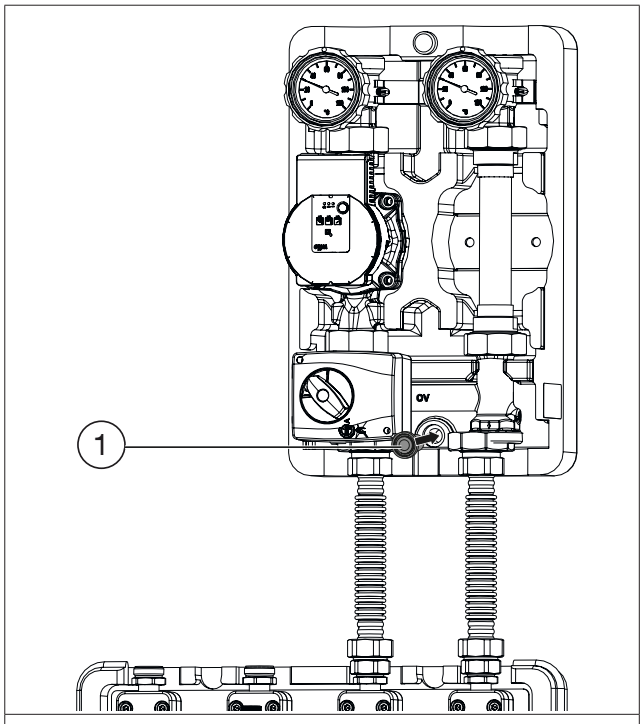
Take the enclosed pump group Regumat M3 for the following installation steps.

6. Remove the front insulation shell of the pump group.
7. Screw the pump group onto the connection set (hand tight).
8. Mark the boreholes on the wall and remove the pump group. Drill the boreholes and insert the enclosed dowels.



Illust. 37: Fixing of the pump group (top connection)

9. Screw the pump group onto the connection set.
10. Tighten all connections (the respective torques are detailed in the table below Illust. 35 on page 25).
11. Insert the enclosed distance piece into the hole.



Illust. 38: Insertion of the distance piece of the Regumat M3

(1)	Distance piece

12. Fix the pump group to the wall with the enclosed screws (8x100) and washers.
13. Fit the front insulation shells.

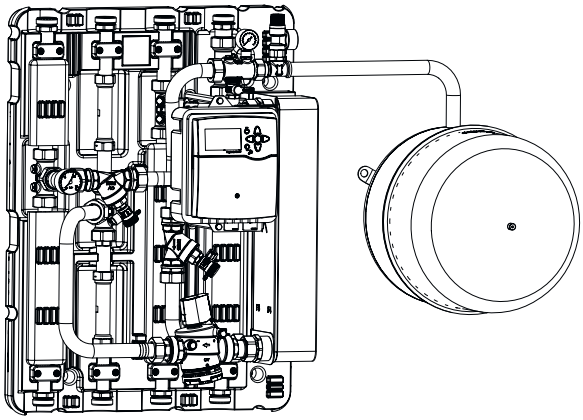
6.5.1 Installation of the diaphragm expansion tank

1. Check the inlet pressure of the diaphragm expansion tank.

	The minimum inlet pressure should be as high as the static pressure (installation height up to the centre of the expansion tank) or amount to at least 0.5 bar. Please observe DIN 4807 for an exact calculation.

2. Connect the diaphragm expansion tank to the safety group.

	For further information please refer to the operating instructions supplied with the diaphragm expansion tank.



Illust. 39: Diaphragm expansion tank in installed condition

6.6 Connection of the pipework

6.6.1 Connection of the transmission station to the local/district heating network

CAUTION

	Risk of scalding due to hot fluids An incorrect connection of the transmission station to the local/district heating network may lead to an uncontrolled discharge of hot fluids. ▶ Before installation of the transmission station, please contact the heat network operator for information on the connection conditions to be fulfilled. ▶ Avoid damage to the installation due to wrong material.

CAUTION

	Risk of injury in case of improper work Angular components, protrusions and edges both inside and outside the product may cause injuries. ▶ Before starting work, make sure that there is enough space. ▶ Handle open and hard-edged components with care. ▶ Make sure that the work place is tidy and clean to avoid accidents.

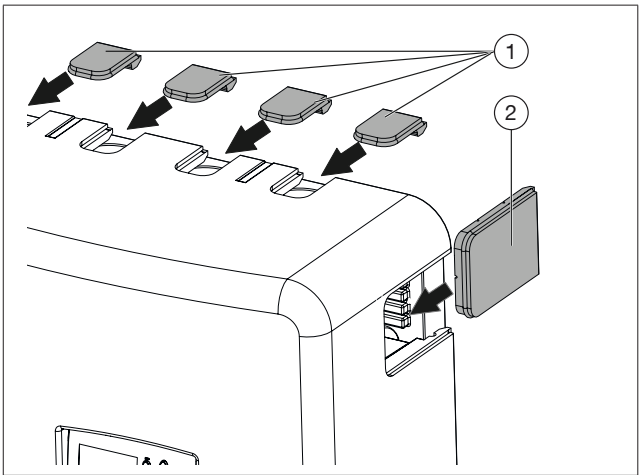
The transmission station is connected to the local/district heating network (primary side) via the ball valve connection set from the bottom.

The local/district heating network is connected to the ball valve connection set via flat sealing G 1 ½ male threads.

Equip the connections with seals.

Close the connections which are not used with the caps included in the delivery.

	For pipework connection, remove the protection covers in the insulation shell. To prevent heat loss and dirt penetration, the protection covers of the unused connections should not be removed.



Illust. 40: Protection covers in the insulation shell

(1)	Protection covers in the insulation shell for pipework connection
(2)	Protection cover in the insulation shell for the connection of a diaphragm expansion tank

6.6.2 Connection of the heating circuits

Depending on the connection configuration, the heating circuits (secondary side) are connected to the transmission station from the top or the bottom. A simultaneous operation of the top and bottom connections, e.g. for the operation of two heating circuits, is possible.

The connection geometries of the different connection configurations are detailed in the sections „3.3 Technical data“ on page 22 and „3.1 Construction“ on page 8.

Equip the connections with the seals included in the delivery.

Close the connections which are not used with the caps included in the delivery.

For pipework connection, remove the protection covers in the insulation shell. To prevent heat loss and dirt penetration, the protection covers of the unused connections should not be removed (see section 6.6.2 on page 27).

6.6.3 Connection of the potable water storage cylinder

The transmission station can also be used for hot potable water preparation on the storage cylinder loading principle which requires a suitable potable water storage cylinder with internal tube heat exchanger (e.g Hydrocor WM; see section 4 on page 22).

The potable water storage cylinder can be connected to the transmission station directly (primary side) or indirectly (secondary side) (see section 3.2.2 on page 18).

The connection of the pipework to the transmission station depends on the connection configuration.

The connection geometries of the different connection configurations are detailed in the sections „3.3 Technical data“ on page 22 and „3.1 Construction“ on page 8.

Equip the connections with the seals included in the delivery.

Close the connections which are not used with the caps included in the delivery.

For pipework connection, remove the protection covers in the insulation shell. To prevent heat loss and dirt penetration, the protection covers of the unused connections should not be removed (see section 6.6.2 on page 27).

6.7 Installation of the electric pipe contact safety switch

Connect the electric pipe contact safety switch to the supply pipe of the surface heating.

For further information please refer to the operating instructions supplied with the electric pipe contact safety switch.

6.8 Electrical connection of the transmission station

DANGER

Danger to life due to electric current

Danger to life due to contact with live components.

- ▶ Check that no no voltage is present.
- ▶ The connection must only be carried out by a qualified electrician.

6.8.1 Connection of the equipotential bonding

Protective equipotential bonding ensures a connection with good electrical conductivity between the exposed conductive parts of electrical equipment and the main equipotential bonding rail (main earthing rail) of the building. (According to DIN VDE 0100, elements are exposed conductive parts which, in contrast to "live parts", can only be live as a result of a fault.)

This measure serves to protect against electric shock and is standardised according to IEC 60364-4-41:2005 or DIN VDE 0100-410:2007-06.

The technical design for equipotential bonding is standardised according to IEC 60364-5-54:2011 or DIN VDE 0100-540:2012-06.

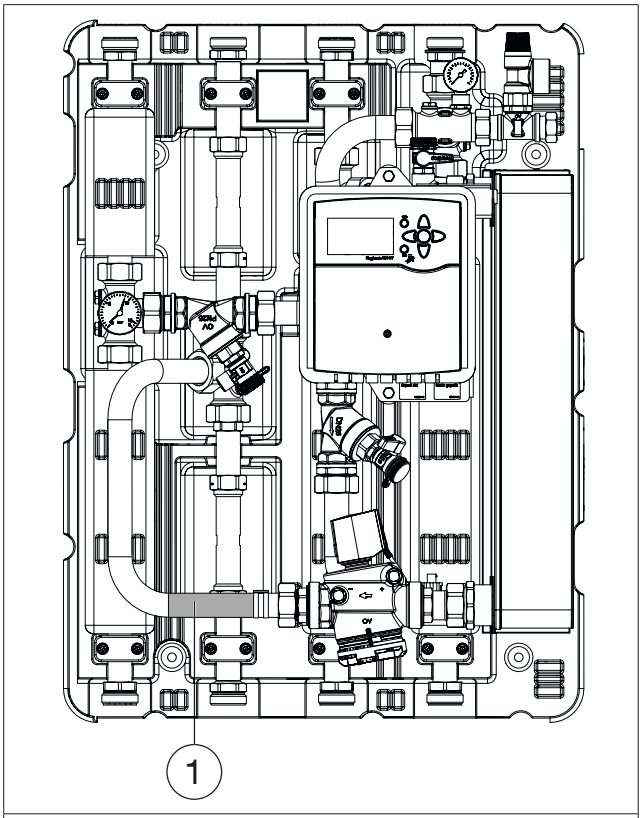
- ▶ Observe the valid standards and local regulations.
- ▶ Use an equipotential bonding conductor made of copper with a minimum cross section of 6 mm^2.

DANGER

Danger to life due to electric current

Danger to life due to contact with live components.

- ▶ The connection must only be carried out by a qualified electrician.



Illust. 41: Grounding of the transmission station

(1)	Position for the grounding clamp

- ▶ Connect a grounding clamp (Ø 18 mm) to the pipework of the transmission station in the area highlighted in grey (1).
- ▶ Connect the grounding clamp to a suitable equipotential rail in the building using an equipotential bonding conductor made of copper with a minimum cross section of 6 mm².

6.8.2 Electrical connection of the system components

The actuator and the internal sensors of the transmission station are already connected to the controller on delivery.

The connection of additional components (e.g. heating circuit pump, outside temperature sensor etc.) to the controller has to be carried out according to the installation configuration (see section 6 on page 23).

	As soon as the transmission station is connected to the power supply, the actuator fitted to the pressure independent control valve (see Illust. 4 on page 8 (8)) carries out an adjustment run. Please observe section 7.1 on page 29.

	For further information please refer to the operating instructions supplied with the controller.

7. Commissioning

7.1 Filling of the installation

7.1.1 Filling of the secondary side

	Before filling the installation, make sure that the unused connections of the transmission station are closed.

Fill the secondary side first.

1. Open the cap of the fill and drain ball valve at the stainer on the secondary side (see Illust. 4 on page 8 (11)).
2. Screw a hose which is connected to a potable water draw off point of the building onto the fill and drain ball valve.
3. Open the fill and drain ball valve.
4. Open the water tap slightly to fill the heating system slowly.

	Observe the pressure displayed at the safety group during filling of the installation. The filling pressure of the installation should be at least as high as the required inlet pressure of the diaphragm expansion tank plus 0.5 bar. The minimum pressure of a cold installation amounts to 1 bar.
	Because of the safety valve, the maximum pressure must not exceed 3 bar at maximum system temperature.

5. Close the water tap and the fill and drain ball valve.
6. Unscrew the hose.
7. Bleed the installation via the venting valves of the heating system (e.g. at the radiator or the distributor/collector of the surface heating circuit). If the system pressure drops below the minimum filling pressure as a result, water needs to be added.

7.1.2 Filling of the primary side

- ▶ Fill the primary side with the fluid of the local/district heating network.

CAUTION	
	Risk of scalding due to hot fluids The fluid supplied by the local/district heating network is hot. An uncontrolled discharge may lead to scalding. ▶ Wear safety goggles and gloves during filling and draining of the primary side.

WARNING

Risk of injury from pressurised components

Fluids escaping under pressure may lead to injuries.

- Observe the permissible operating pressure (10 bar) when pressurising the system.

Inform the local/district heating network operator about the planned filling of the installation.

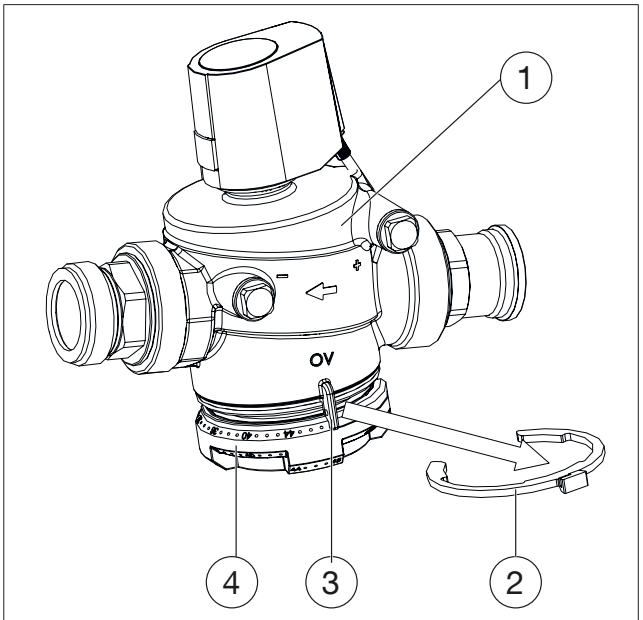
Keep a cloth and a container available to collect escaping water.

1. Slowly open the ball valves of the isolating device (see Illust. 7 on page 11) to the local/district heating network.
2. Unscrew the cap of the fill and drain ball valve at the strainer on the primary side (see Illust. 4 on page 8 (14)).
3. Bleed the circuit by slowly opening the fill and drain ball valve until bubble-free water escapes.
4. Close the fill and drain ball valve.
5. Refit the cap of the fill and drain ball valve at the strainer on the primary side.
6. Check the system pressure wit the help of the pressure gauge (see Illust. 4 on page 8 (4)). The maximum permissible operating pressure of the transmission station amounts to 10 bar .
7. Carry out a leakage test.

7.2 Limitation of the volume flow on the primary side

After filling, the flow rate on the primary side of the transmission station amounts to 4800 l/h, as the pressure independent control valve Cocon QTZ (see Illust. 4 on page 8 (8)) is fully open on delivery. Depending on the contract with the energy supplier, it might become necessary to limit the maximum flow rate. The flow rate is limited via the pressure independent control valve Cocon QTZ.

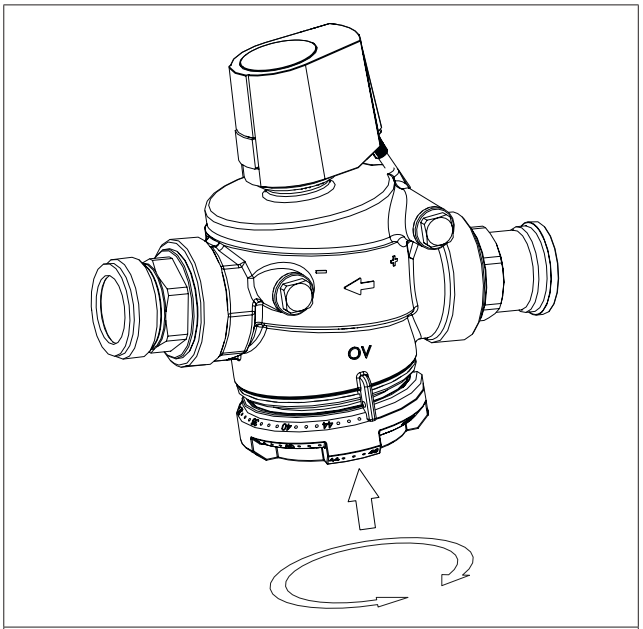
1. Remove the locking ring.



Illust. 42: Removal of the locking ring

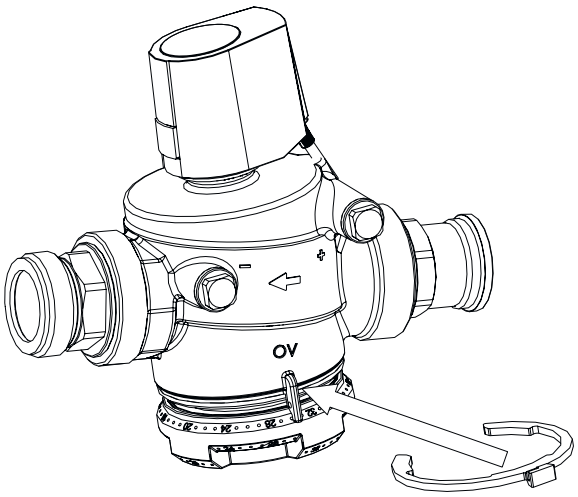
(1)	Pressure independent control valve Cocon QTZ
(2)	Locking ring
(3)	Nominal value marking
(4)	Handwheel

2. Push the handwheel and turn it until the nominal value marking is in line with the required flow rate (the handwheel will snap back into the cogs).



Illust. 43: Setting of the nominal value

3. Refit the locking ring. As an option, the locking ring can be lead locked at the nominal value marking with the help of a sealing wire.



Illust. 44: Fitting of the locking ring

The pressure independent control valve Cocon QTZ integrated in the transmission station only limits the flow rate of the fluid passing across the heat exchanger according to the system separation.

A potable water storage cylinder which is directly connected to the transmission station requires a separate volume flow limitation.

7.3 Activation of the installation and of the installation scheme in the controller

1. Insert the pre-assembled power supply cable with shock-proof plug of the controller into a mains socket (230 V).
2. Set the required parameters (e.g. date, hour, etc.) via the menu control of the controller.
3. Select an installation scheme from the appendix. The controller is already preloaded with installation schemes for some connection configurations (see section 10.2 on page 34).

Installation scheme	Connection configuration of the transmission station
Installation scheme 8	Regudis H-H
	Regudis H-M
Installation scheme 9	Regudis H-HT
	Regudis H-MT
Installation scheme 10	Regudis H-MHT

For further information please refer to the operating instructions supplied with the controller.

▷ From that moment, the transmission station operates with the predefined parameters for the selected installation scheme.

8. Advice for the user

WARNING

Risk of injury from excess pressure of the transmission station

Fluids escaping under pressure may lead to injuries.

- ▶ Make sure that all ball valves are open during operation.
- ▶ Contact qualified tradespeople.

After a longer absence (e.g. holidays) and a power failure, check the system pressure on the primary side by comparing the pressure displayed on the pressure gauge with the nominal value indicated in the handover report. In case of a drop of the system pressure, inform the installer to detect and remedy the malfunction.

Please observe that slight pressure variations caused by changing temperatures are normal.

In general, information on the system status (e.g. temperature) can be queried via the controller menu.

For further information please refer to the operating instructions supplied with the controller.

9. Removal and disposal

9.1 Removal

9.1.1 Disconnection of the transmission station from the power supply

DANGER

Danger to life due to electric current

Danger to life due to contact with live components.

- ▶ Completely disconnect the transmission station from the power supply and secure it against switching back on.
- ▶ Check that no voltage is present.
- ▶ The connection box must only be opened by a qualified electrician.

1. Pull out the mains plug to disconnect the controller from the power supply.
2. Close the isolating device for the local/district heating network and allow the system to cool down.

▷ The transmission station is without current and can be removed.

9.1.2 Removal of the transmission station

CAUTION

Risk of injury from pressurised fluids

Fluids escaping under pressure may lead to injuries.

- ▶ Only carry out work when the system is depressurised.
- ▶ Close the ball valves at the transmission station.
- ▶ Depressurise and drain off the section of the system and the transmission station.
- ▶ Wear safety goggles.
- ▶ Any work on the system must only be carried out by qualified tradespeople.

CAUTION

Risk of scalding due to hot fluids

Escaping hot fluids may lead to scalding.

- ▶ Close all ball valves at the transmission station and depressurise the station.
- ▶ Allow the water in the transmission station to cool down.

CAUTION

Risk of burns due to hot components

Any unprotected contact with hot components may lead to burns.

- ▶ Allow the transmission station to cool down.

CAUTION

Risk of injury from heavy station

The transmission station is heavy. If it falls down, it may lead to injuries.

- ▶ Always wear safety shoes during installation.
- ▶ Remove the station with the help of a second person.

The following step describes how to drain the primary and secondary circuit of the transmission station. Keep a cloth and a container available to collect escaping water.

1. Close the supplies and returns of the transmission station.
2. Drain the heating water from the primary and secondary circuit in a controlled manner.

▶ Remove the transmission station.

▶ The components of the transmission station can be disposed of separately.

9.2 Disposal

NOTICE

Risk of environmental pollution

Incorrect disposal (for instance with standard waste) may lead to environmental damage.

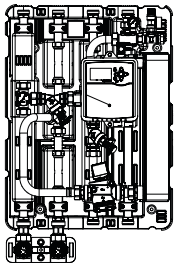
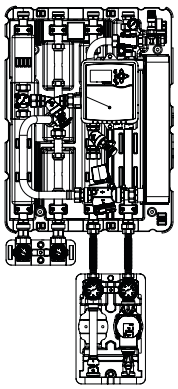
- ▶ Dispose of the components appropriately.

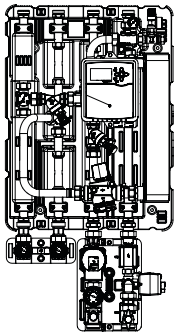
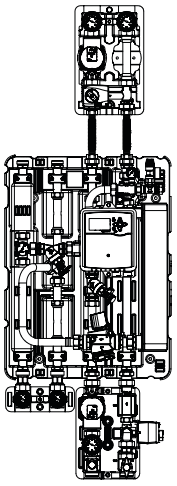
Directive 2012/19/UE WEEE:

Waste electrical and electronic components (WEEE) must not be disposed of with domestic waste, but must be dropped off at a collection point of the recycling of electrical and electronic appliances.

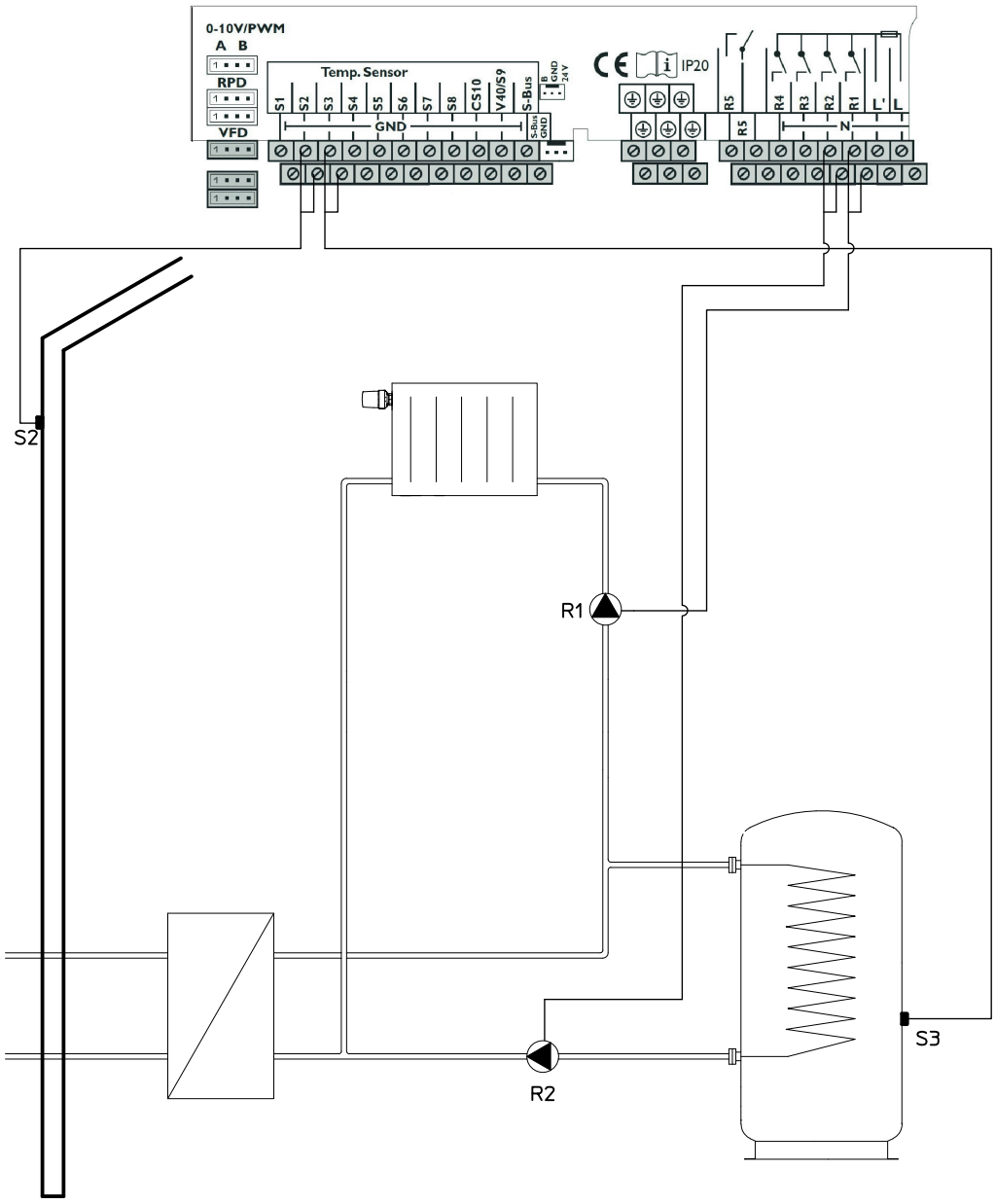
10. Appendix

10.1 Function overview

Regudis H	Regudis H-H / Regudis H-M
	
Secondary side connection for: - Heating circuit (radiator and/or surface heating circuit) and - storage cylinder circuit 2 autonomous heating circuits can be connected to the transmission station via the supply and return connections. Extendible on site.	Secondary side connection for: - Radiator circuit or - surface heating circuit or - storage cylinder circuit The heating circuits can be connected to the transmission station via the supply and return connections. (Regudis H-M additionally equipped with an electric pipe contact safety switch)

Regudis H-HT / Regudis H-MT	Regudis H-MHT
	
Secondary side connection for: - Radiator heating circuit and storage cylinder circuit or - surface heating circuit and storage cylinder circuit The heating circuits can be connected to the transmission station via the supply and return connections. (Regudis H-MT additionally equipped with an electric pipe contact safety switch)	Secondary side connection for: - Radiator circuit and - surface heating circuit and - storage cylinder circuit The heating circuits can be connected to the transmission station via the supply and return connections.

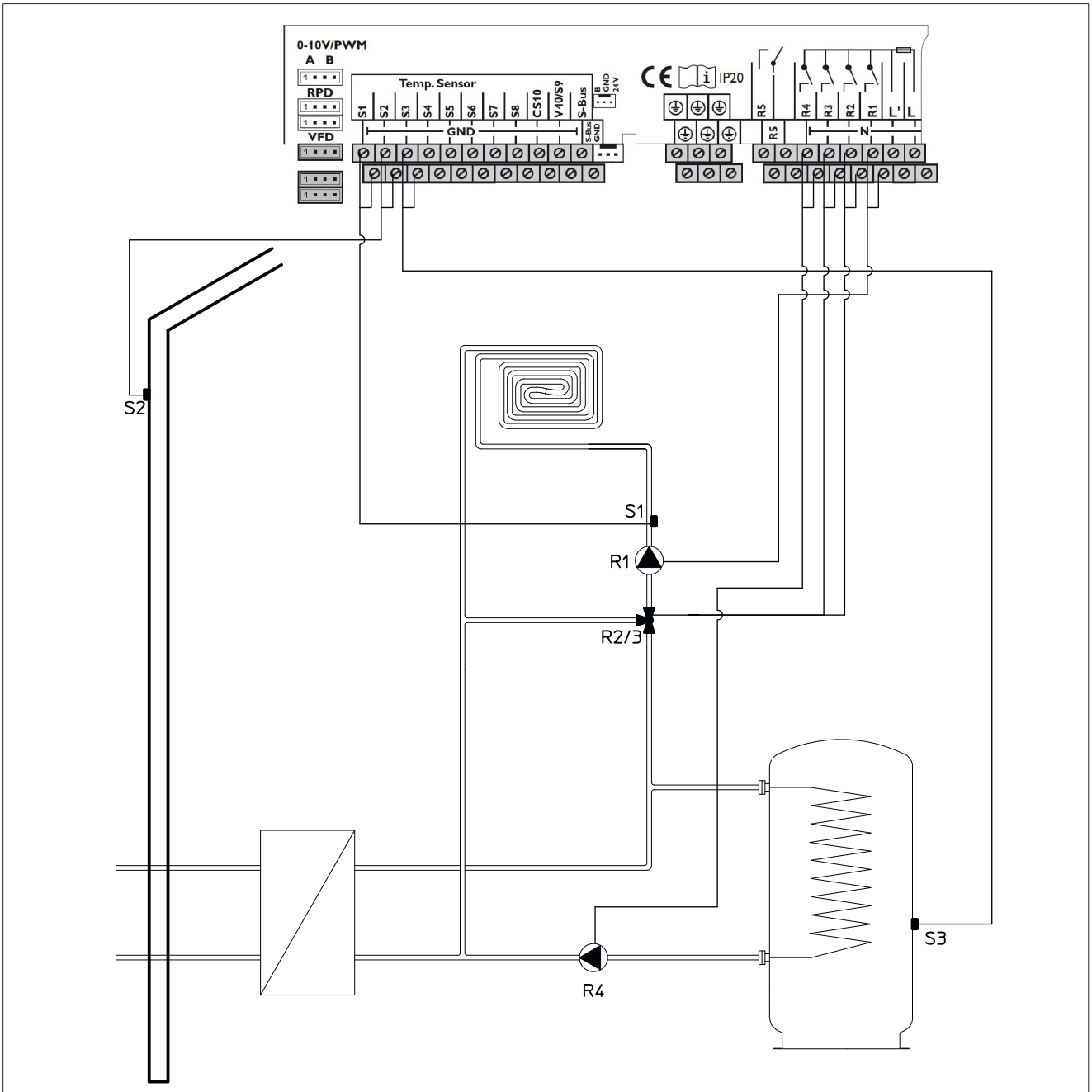
10.2 Installation scheme



Illust. 45: Scheme 1, one constant temperature heating circuit, indirect hot potable water preparation

Sensor		Connection
S2	Outside	2 / GND
S3	Potable water storage cylinder	3 / GND

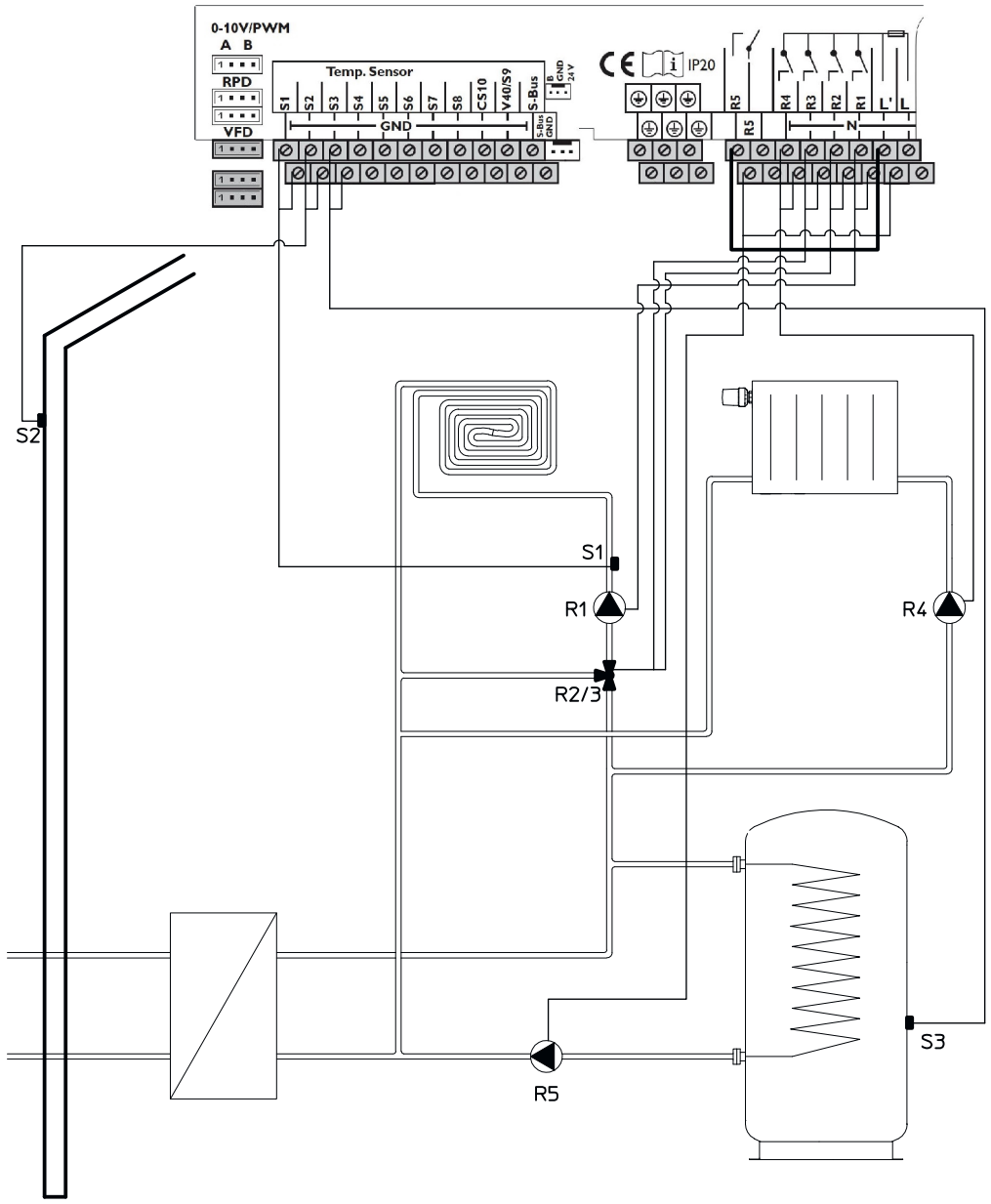
Sensor		Connection
R1	Pump heating circuit 1	17 / N / PE
R2	Storage cylinder loading pump	16 / N / PE



Illust. 46: Scheme 2, one variable temperature heating circuit, indirect hot potable water preparation

Sensor		Connection
S1	Heating circuit 1 supply	1 / GND
S2	Outside	2 / GND
S3	Potable water storage cylinder	3 / GND

Sensor		Connection
R1	Pump heating circuit 1	17 / N / PE
R2	Mixing valve open	16 / N / PE
R3	Mixing valve closed	15 / N / PE
R4	Storage cylinder loading pump	14 / N / PE

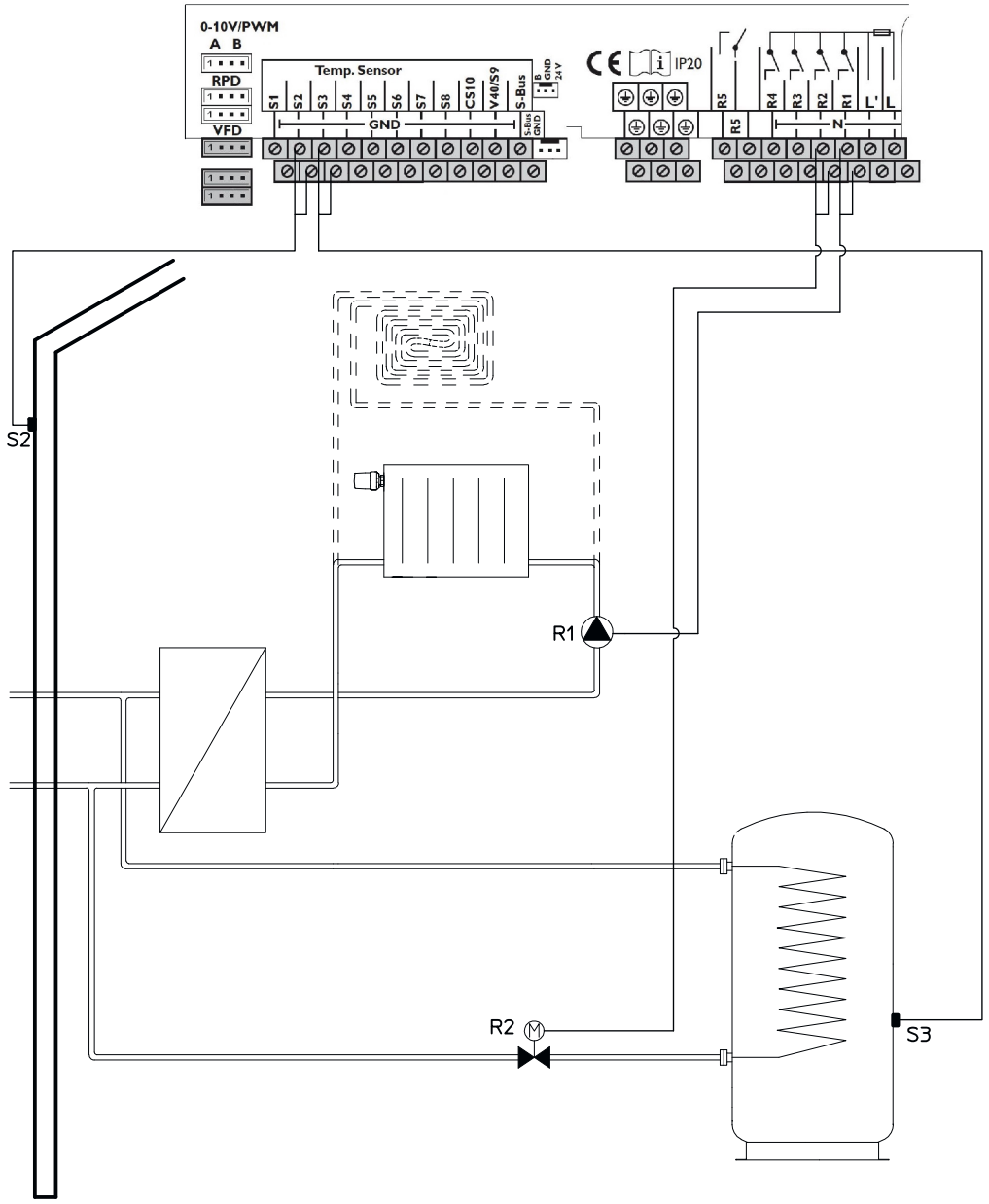


Illust. 47: Scheme 3, one variable and one constant temperature heating circuit, indirect hot potable water preparation

Sensor		Connection
S1	Heating circuit 1 supply	1 / GND
S2	Outside	2 / GND
S3	Potable water storage cylinder	3 / GND

Sensor		Connection
R1	Pump heating circuit 1	17 / N / PE
R2	Mixing valve open	16 / N / PE
R3	Mixing valve closed	15 / N / PE
R4	Pump heating circuit 2	14 / N / PE
R5	Storage cylinder loading pump	12 / N / PE

Relay R5 is volt free. For the control of a pump or an actuator, you have to connect the power supply to terminal 13.

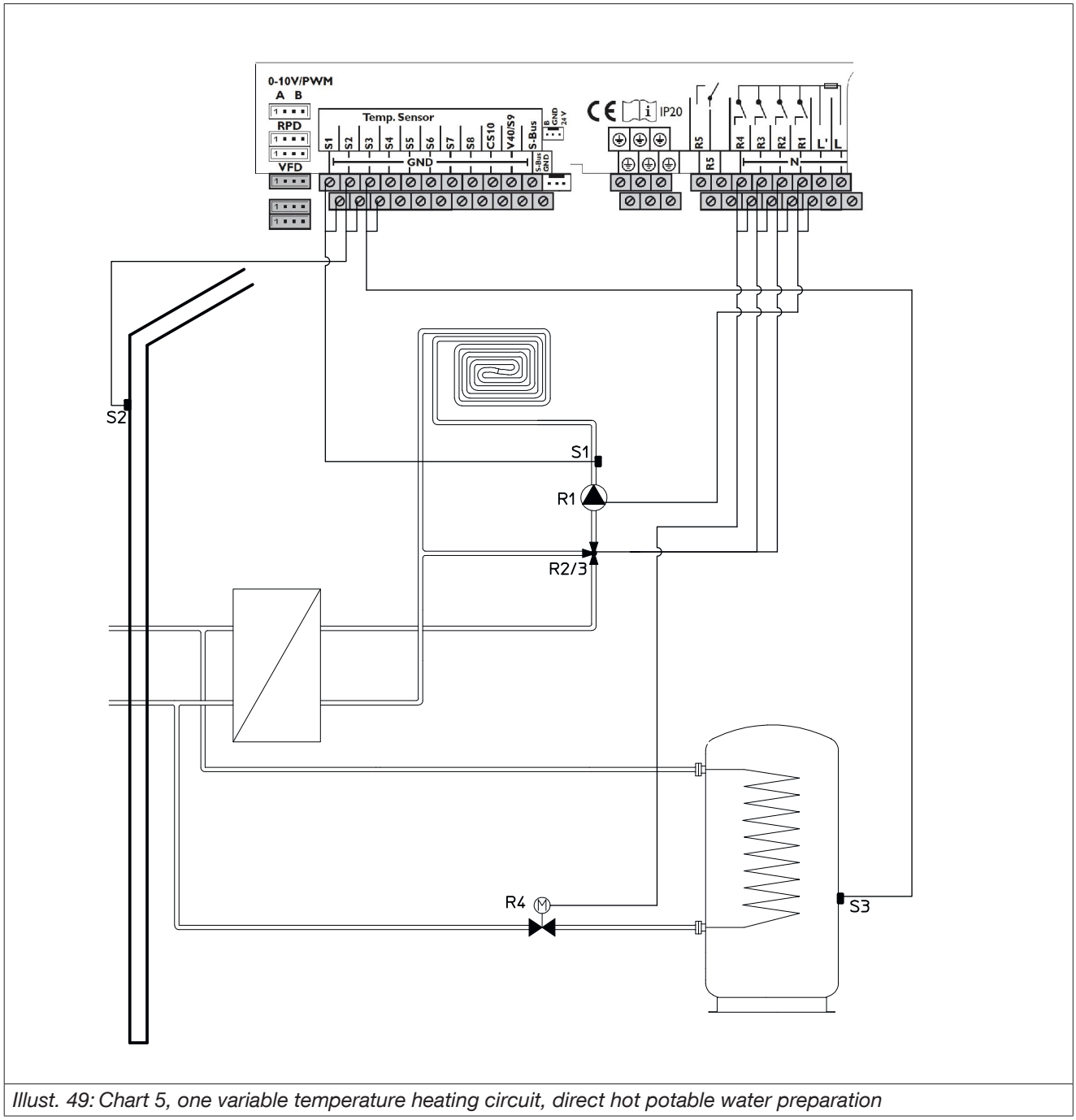


Illust. 48: Scheme 4, one constant temperature heating circuit, direct hot potable water preparation

Sensor		Connection
S2	Outside	2 / GND
S3	Potable water storage cylinder	3 / GND

Sensor		Connection
R1	Pump heating circuit 1	17 / N / PE
R2	Actuator storage cylinder loading	16 / N / PE

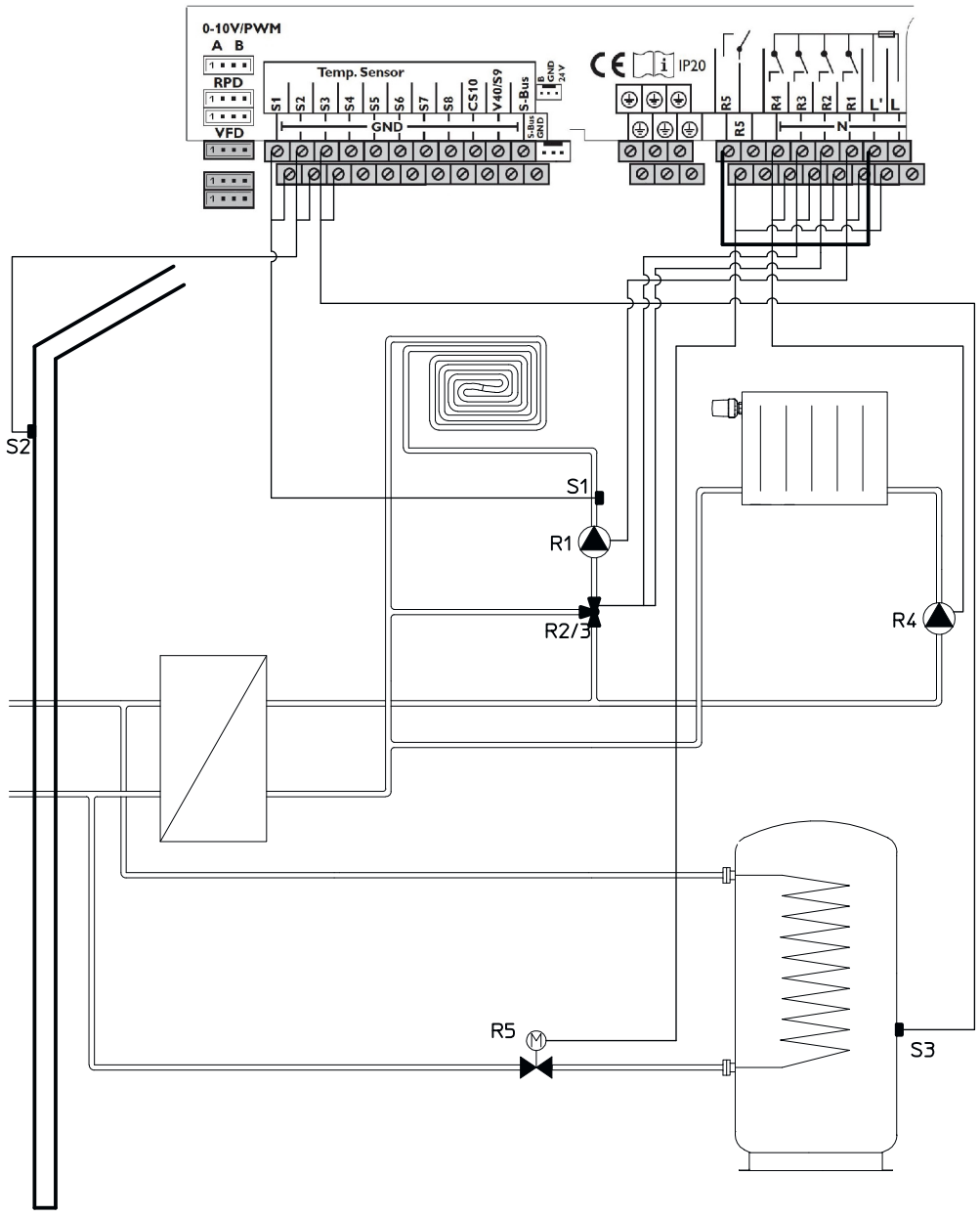
You may choose between operation with a radiator heating circuit **or** a surface heating circuit.



Illust. 49: Chart 5, one variable temperature heating circuit, direct hot potable water preparation

Sensor		Connection
S1	Heating circuit 1 supply	1 / GND
S2	Outside	2 / GND
S3	Potable water storage cylinder	3 / GND

Sensor		Connection
R1	Pump heating circuit 1	17 / N / PE
R2	Mixing valve open	16 / N / PE
R3	Mixing valve closed	15 / N / PE
R4	Actuator storage cylinder loading	14 / N / PE

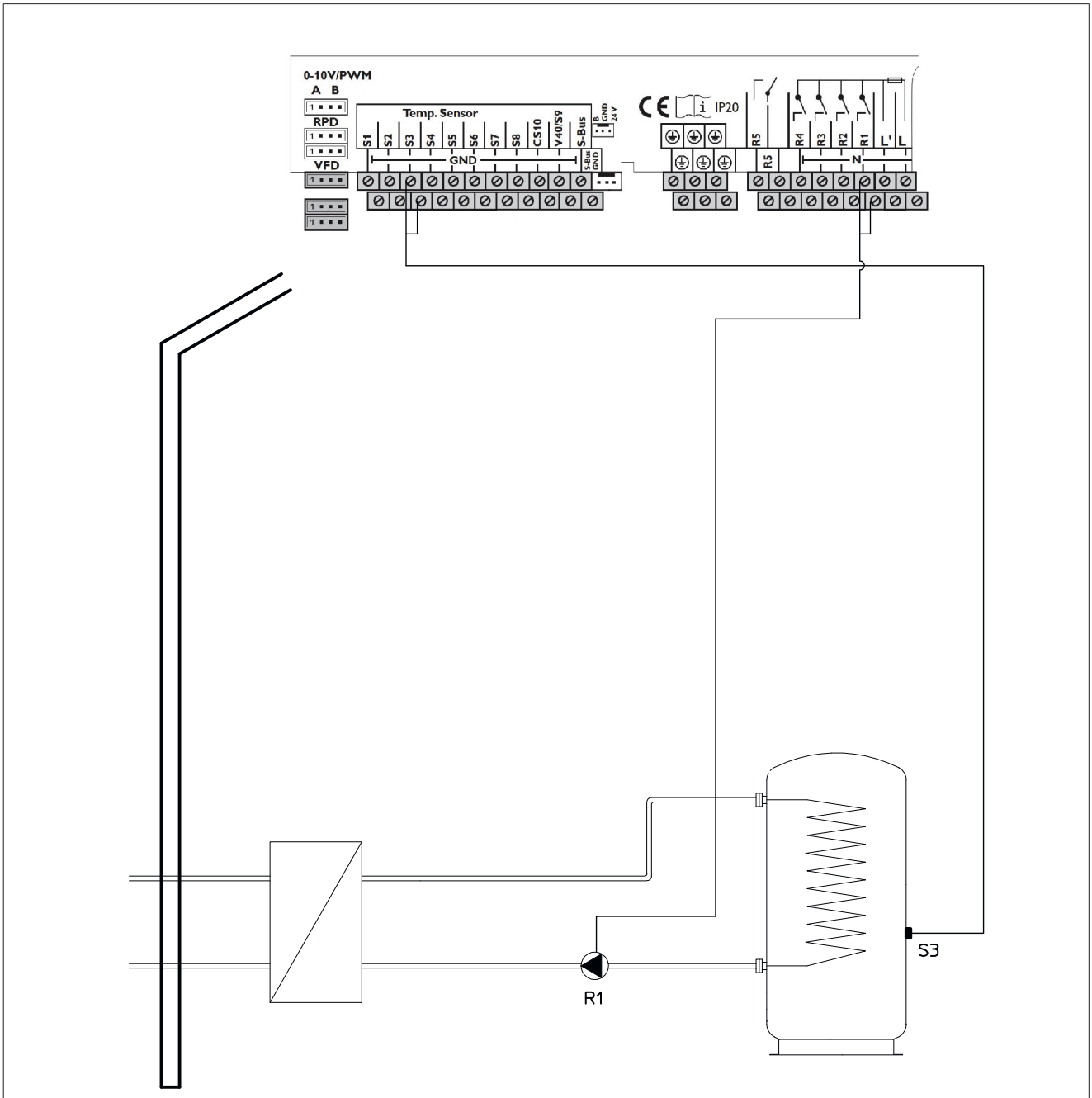


Illust. 50: Diagram 6, one variable and one constant temperature heating circuit, direct hot potable water preparation

Sensor		Connection
S1	Heating circuit 1 supply	1 / GND
S2	Outside	2 / GND
S3	Potable water storage cylinder	3 / GND

Sensor		Connection
R1	Pump heating circuit 1	17 / N / PE
R2	Mixing valve open	16 / N / PE
R3	Mixing valve closed	15 / N / PE
R4	Pump heating circuit 2	14 / N / PE
R5	Actuator storage cylinder loading	12 / N / PE

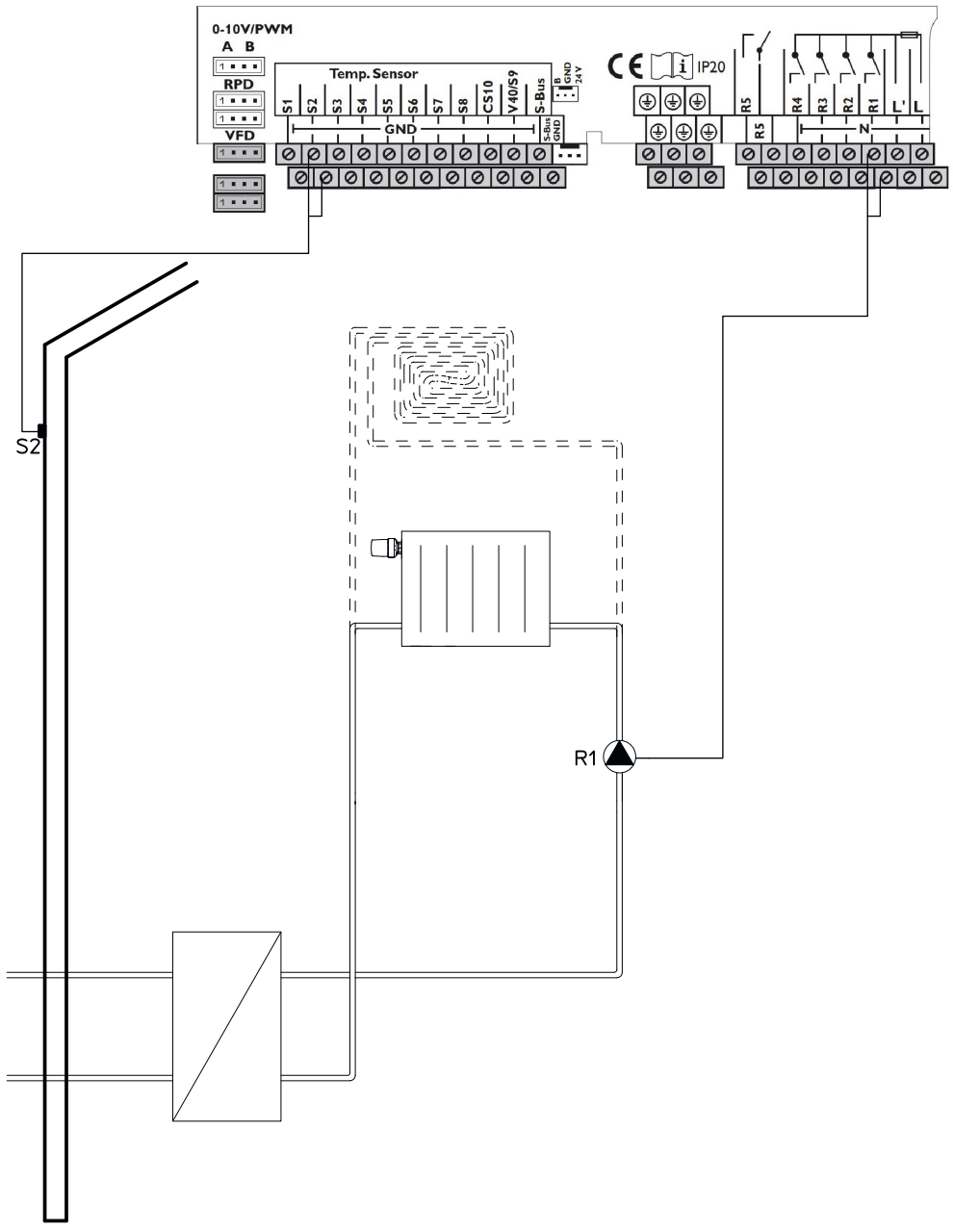
Relay R5 is volt free. For the control of a pump or an actuator, you have to connect the power supply to terminal 13.



Illust. 51: Scheme 7, indirect hot potable water preparation

Sensor		Connection
S3	Potable water storage cylinder	3 / GND

Sensor		Connection
R1	Storage cylinder loading pump	17 / N / PE

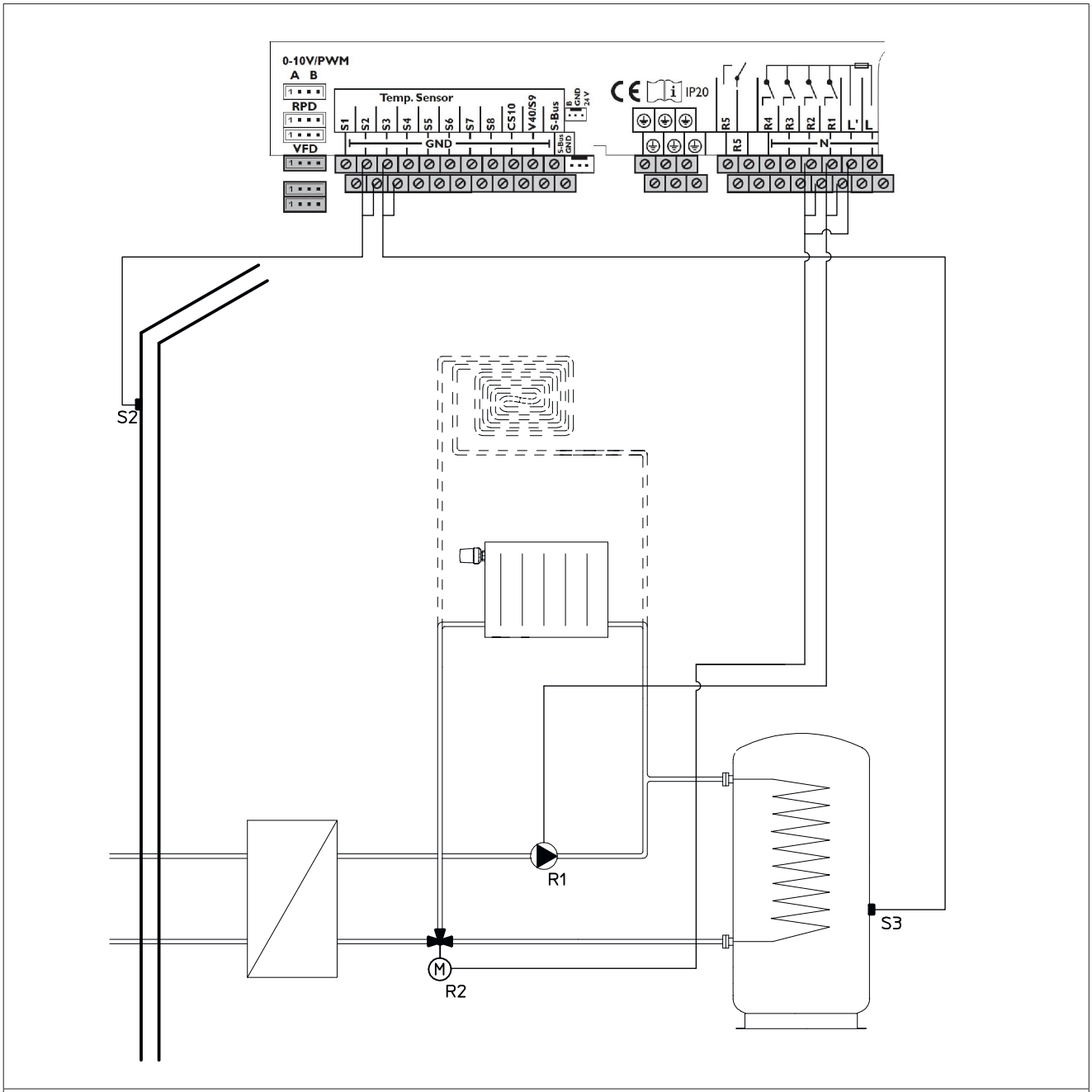


Illust. 52: Scheme 8, one constant temperature heating circuit

Sensor		Connection
S2	Outside	2 / GND

Sensor		Connection
R1	Pump heating circuit 1	17 / N / PE

You may choose between operation with a radiator heating circuit **or** a surface heating circuit.
The controller is preloaded with this installation scheme for operation with the transmission stations Regudis H-H and Regudis H-M.



Illust. 53: Scheme 9, one constant temperature heating circuit, indirect hot potable water preparation

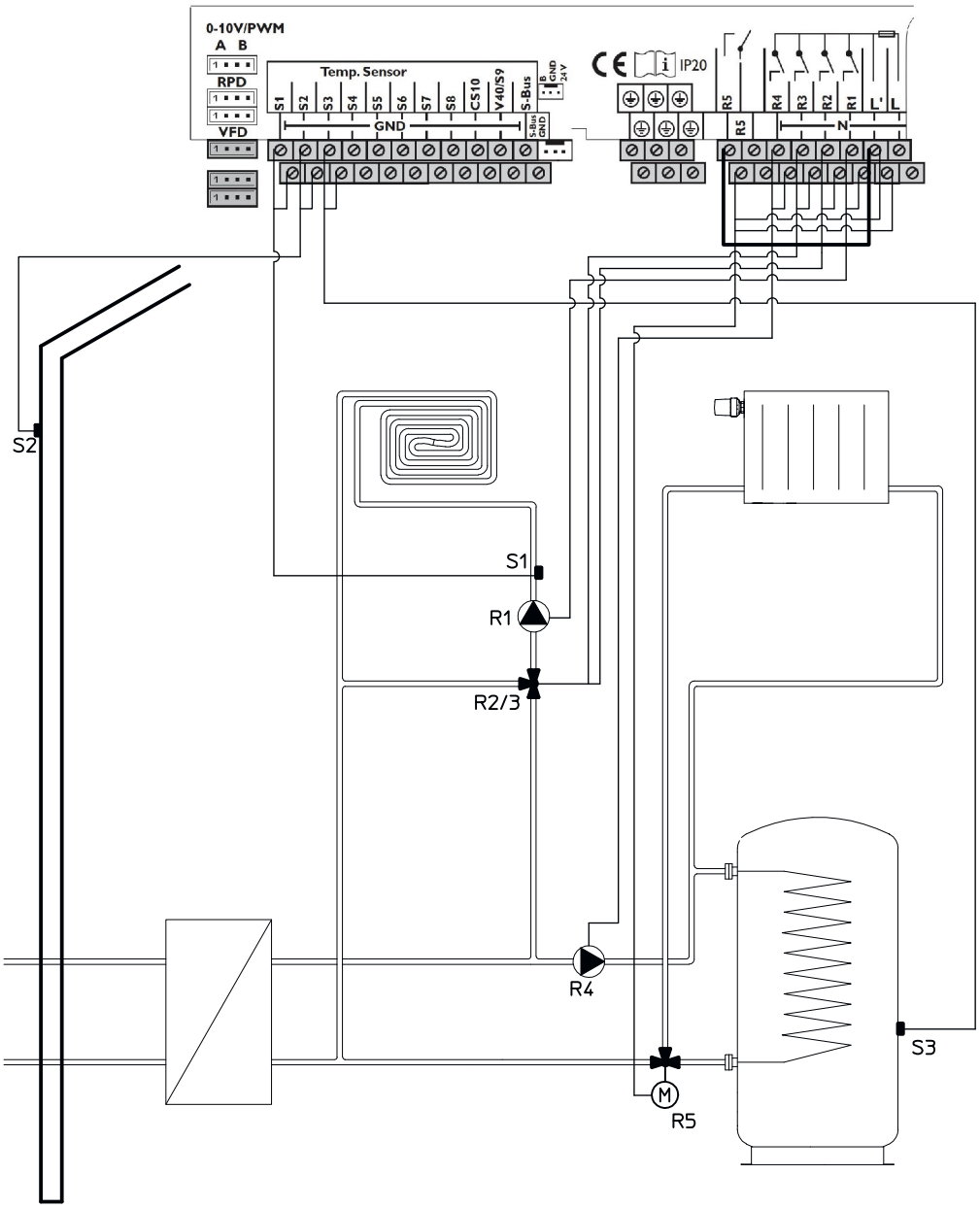
Sensor		Connection
S2	Outside	2 / GND
S3	Potable water storage cylinder	3 / GND

Sensor		Connection
R1	Pump heating circuit 1 / Storage cylinder loading pump	17 / N / PE
R2	Actuator heating circuit / storage cylinder loading	16 / N / PE

To avoid malfunctions, the potable water priority function (DHW priority) must not be deactivated.

You may choose between operation with a radiator heating circuit **or** a surface heating circuit.

The controller is preloaded with this installation scheme for operation with the transmission stations Regudis H-HT and Regudis H-MT.



Illust. 54: Scheme 10, one variable and one constant temperature heating circuit, indirect hot potable water preparation

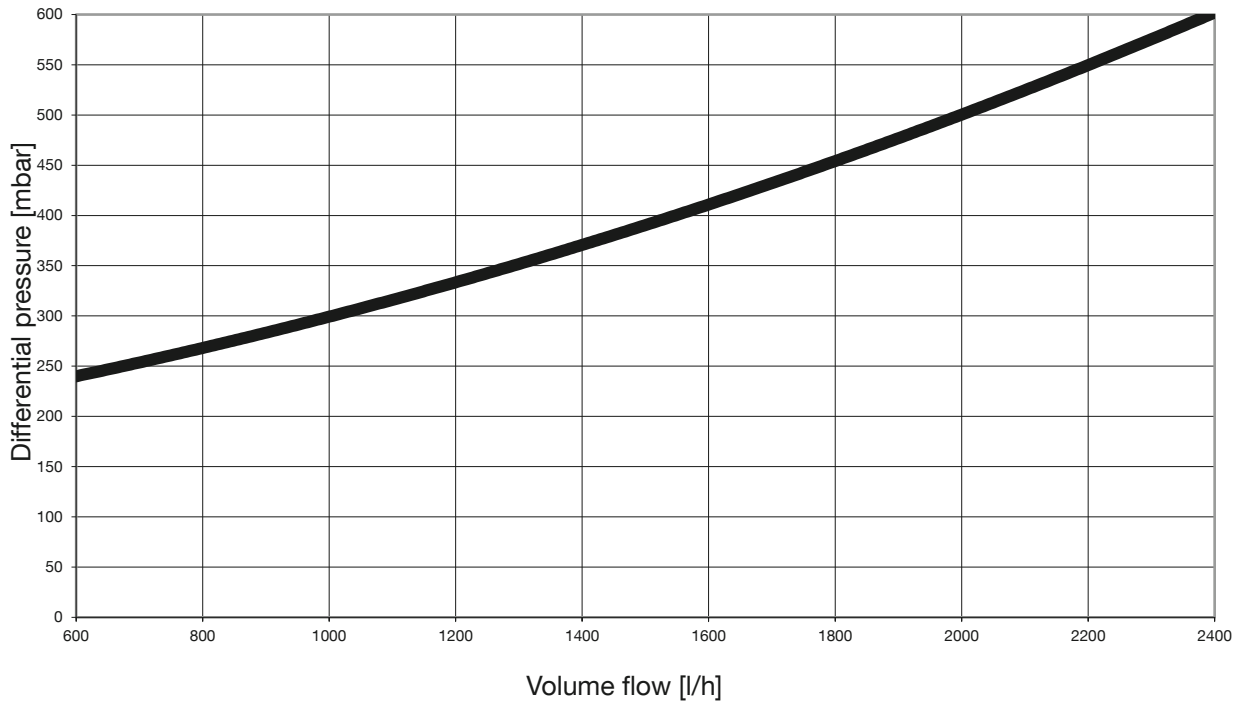
Sensor		Connection
S1	Heating circuit 1 supply	1 / GND
S2	Outside	2 / GND
S3	Potable water storage cylinder	3 / GND

To avoid malfunctions, the potable water priority function (DHW priority) in the constant temperature heating circuit (static) must not be deactivated.

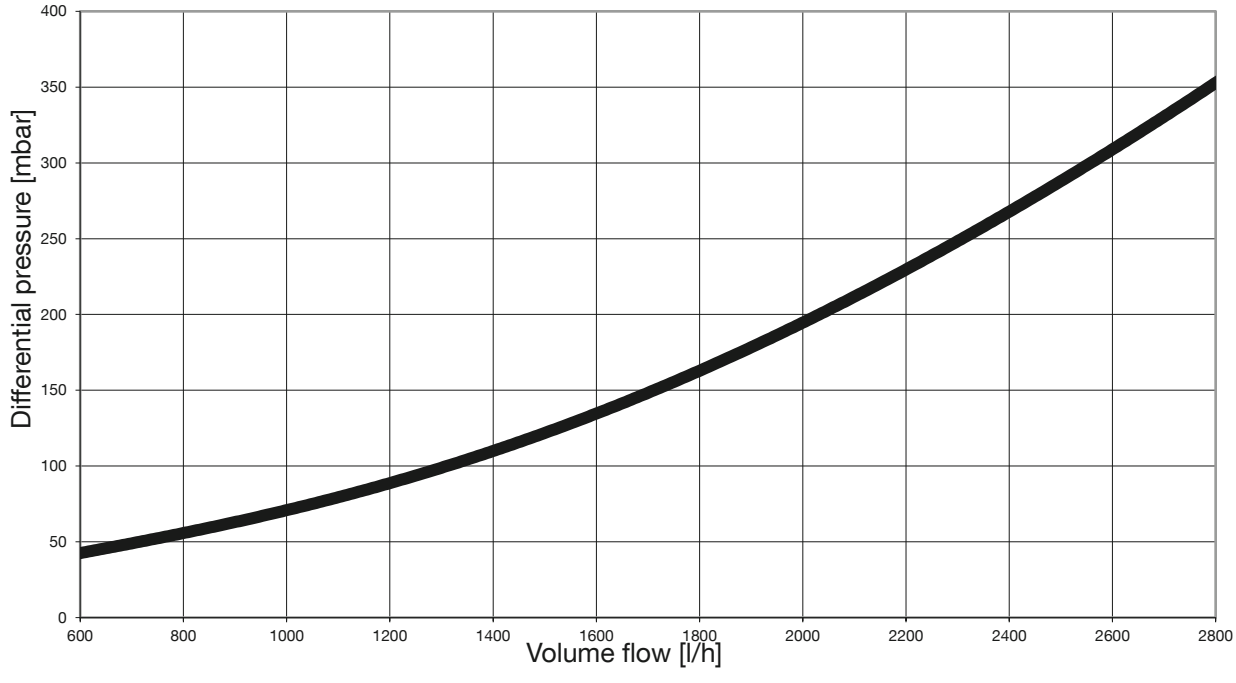
The controller is preloaded with this installation scheme for operation with the transmission station Regudis H-MHT.

Sensor		Connection
R1	Pump heating circuit 1	17 / N / PE
R2	Mixing valve open	16 / N / PE
R3	Mixing valve closed	15 / N / PE
R4	Pump heating circuit 2 / Storage cylinder loading pump	14 / N / PE
R5	Actuator heating circuit / storage cylinder loading	12 / N / PE

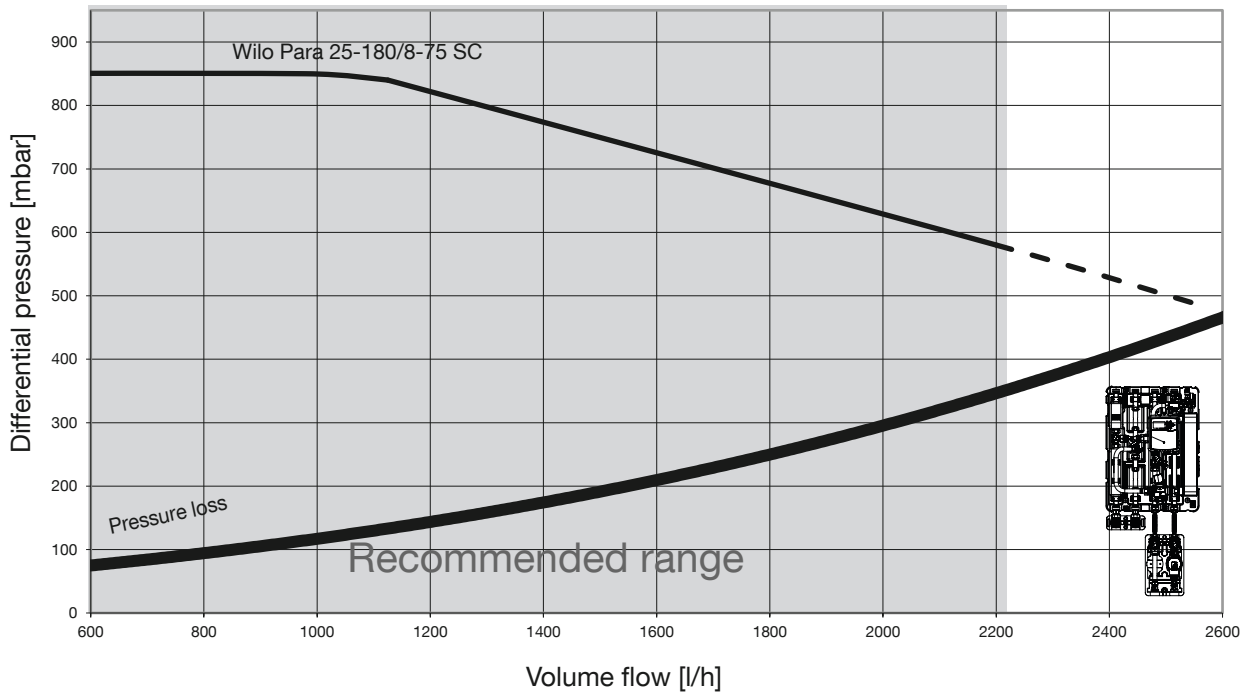
Relay R5 is volt free. For the control of a pump or an actuator, you have to connect the power supply to terminal 13.



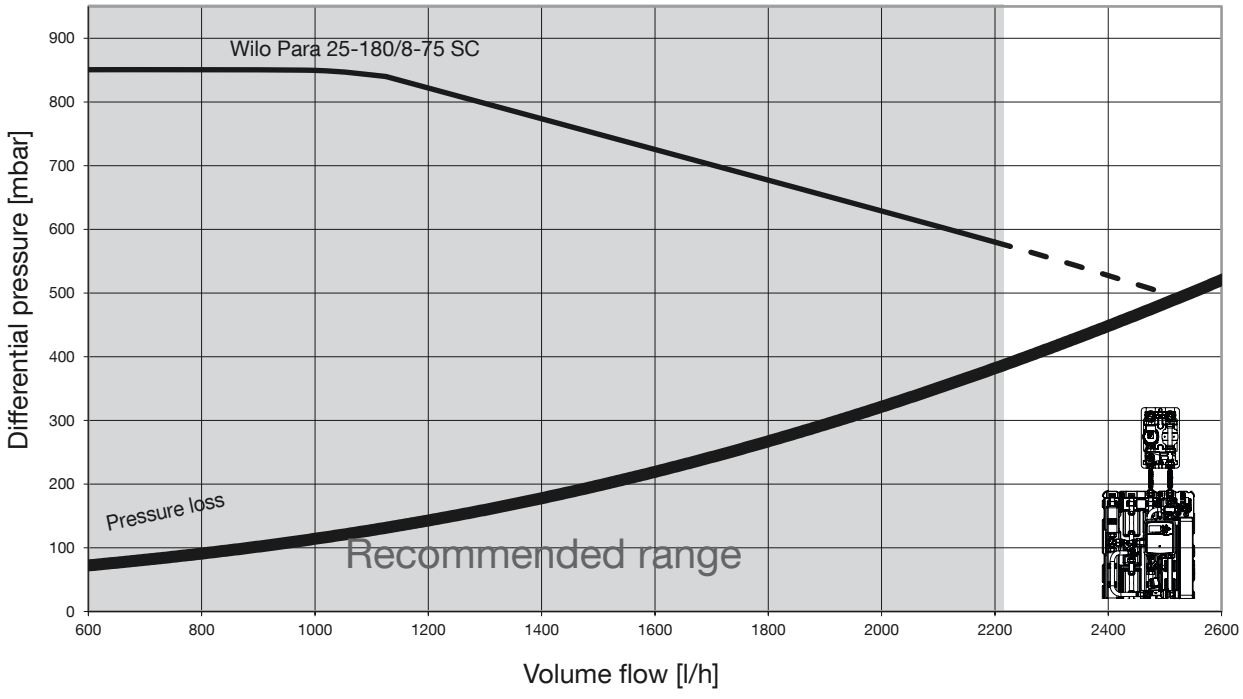
Illust. 55: Pressure loss primary circuit Regudis H



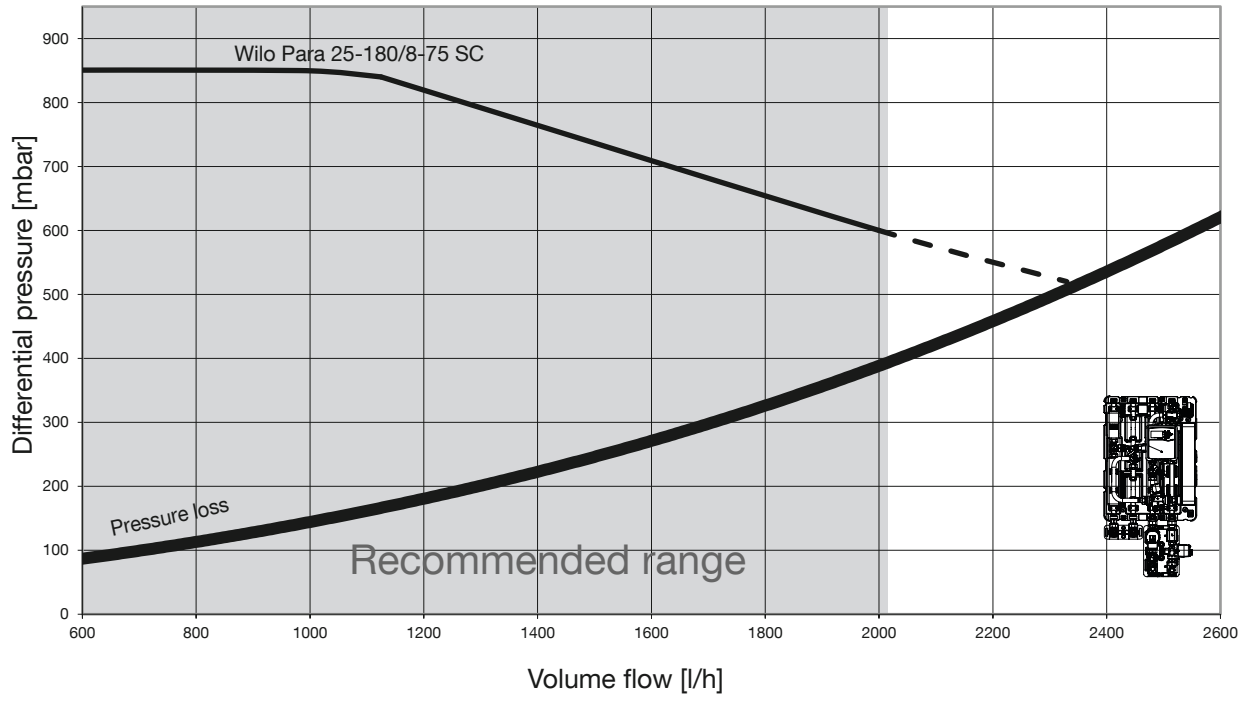
Illust. 56: Pressure loss secondary circuit Regudis H



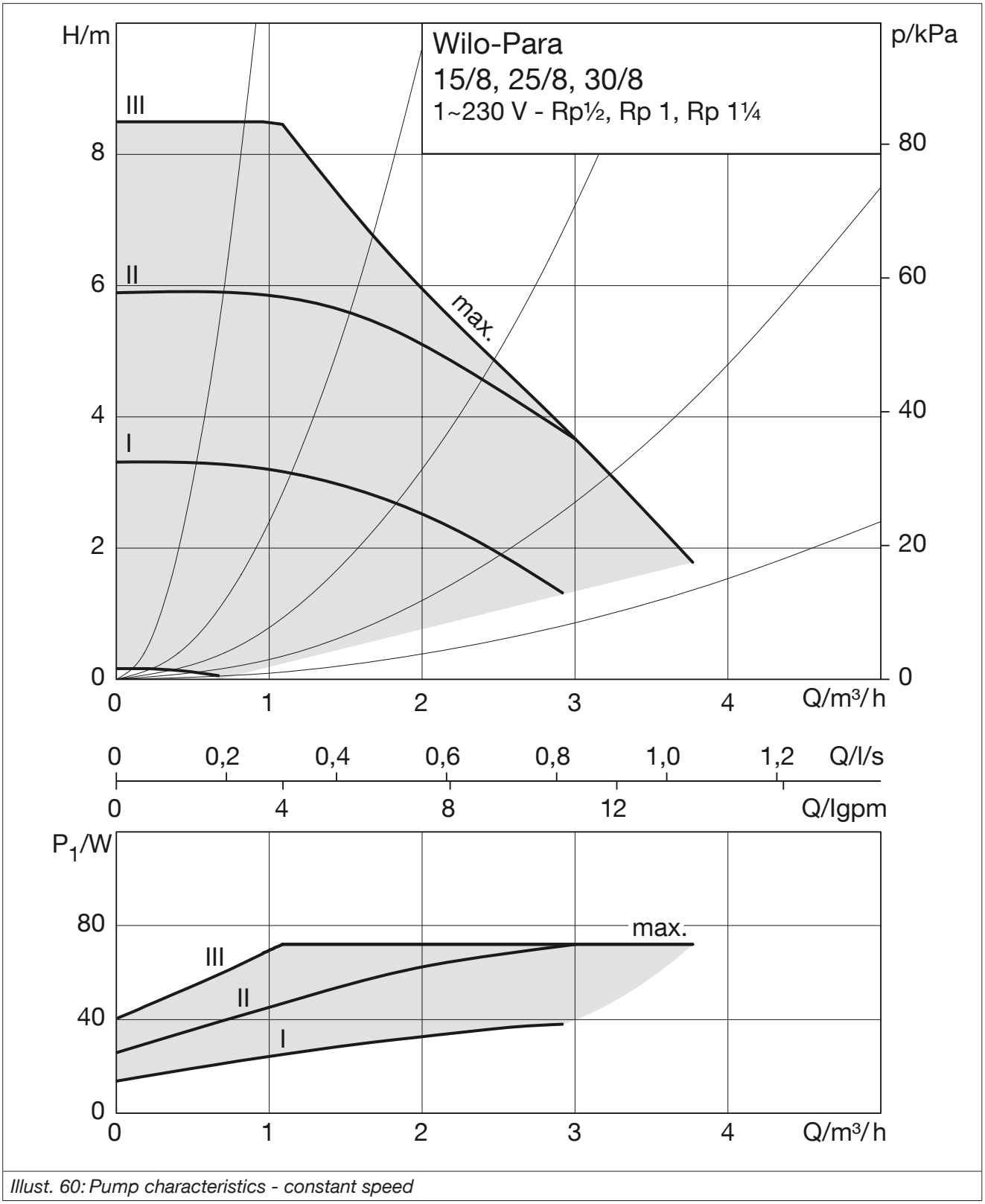
Illust. 57: Pressure loss secondary circuit -Transmission station with Regumat S



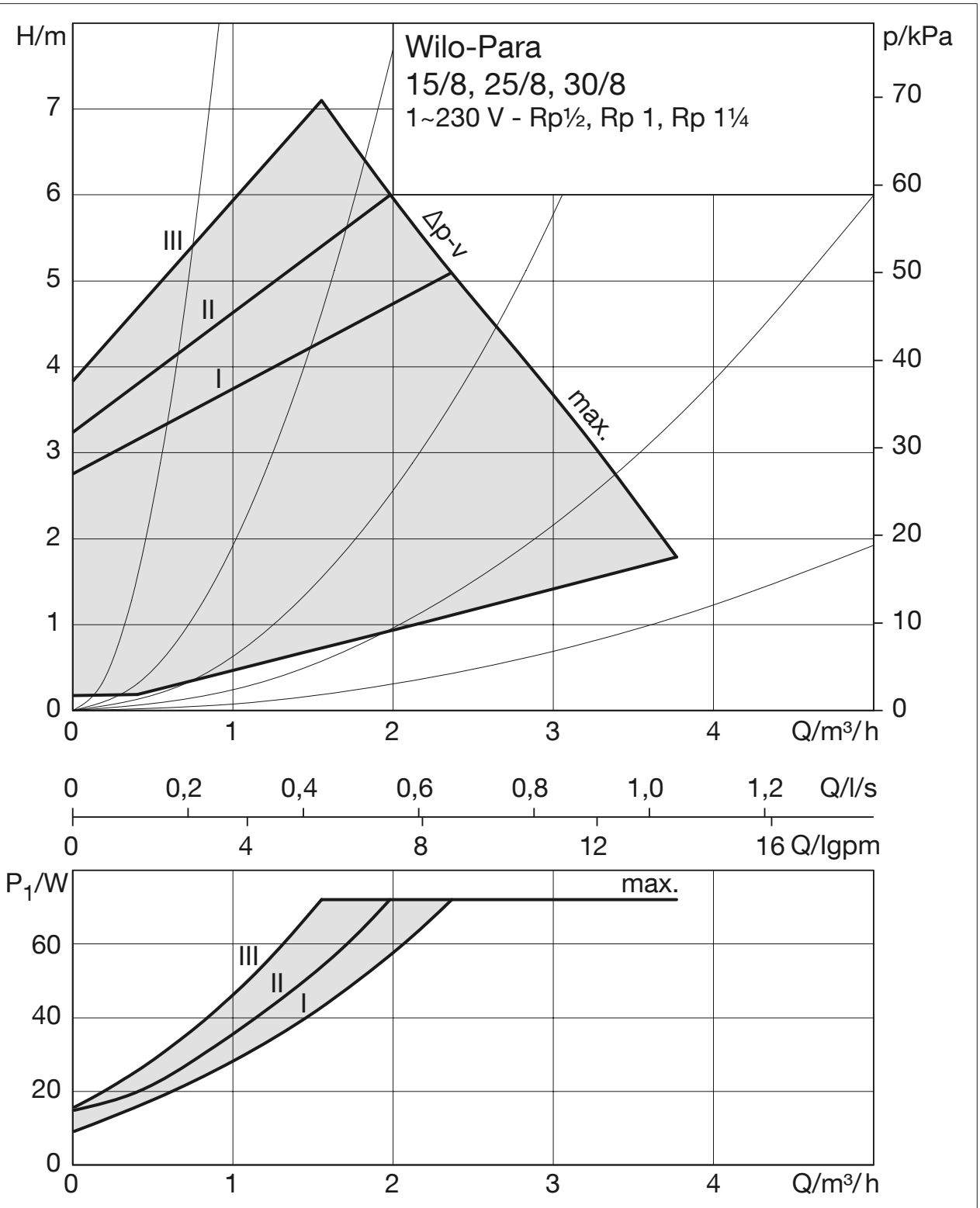
Illust. 58: Pressure loss secondary circuit -Transmission station with Regumat M3



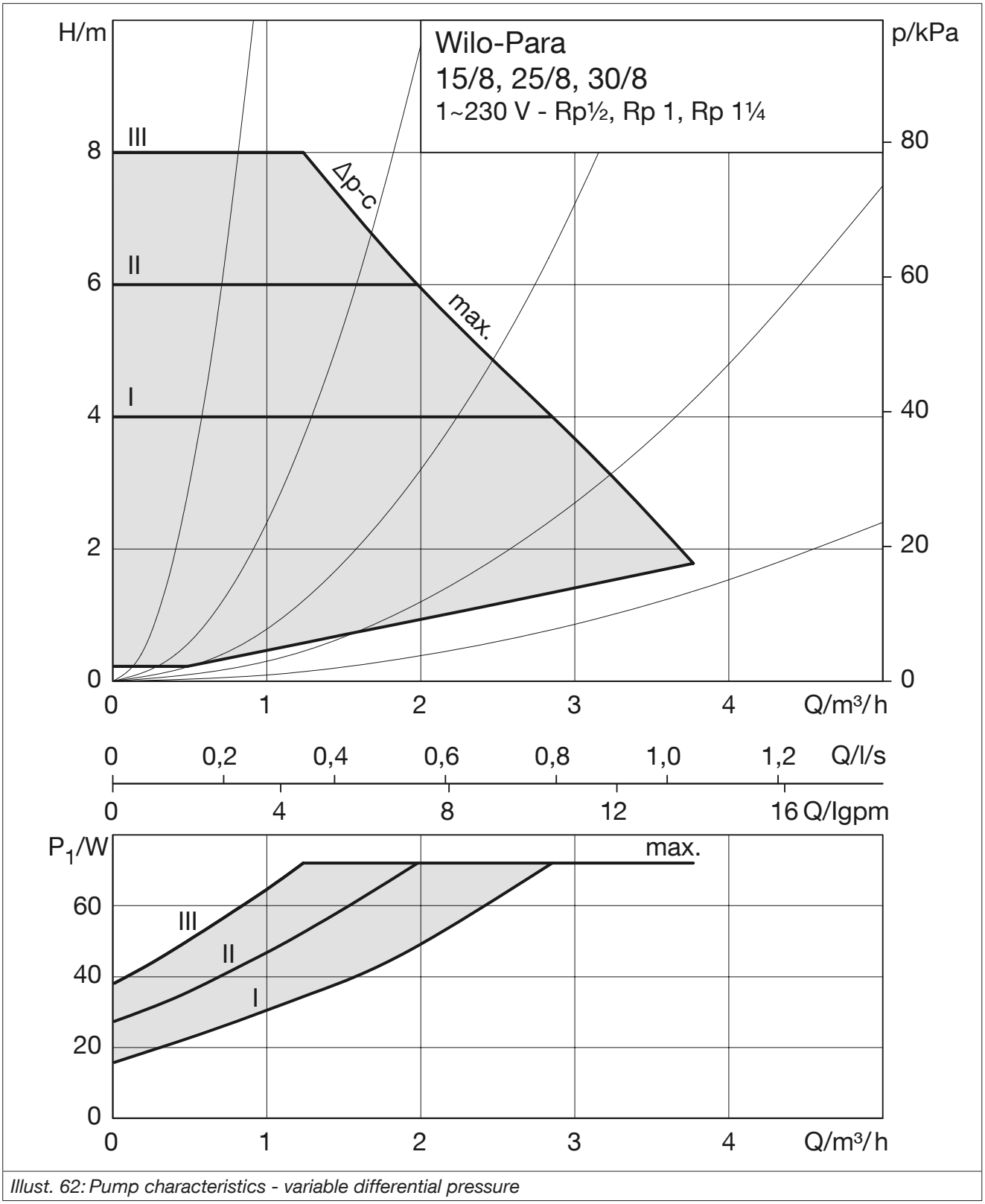
Illust. 59: Pressure loss secondary circuit -Transmission station with HT switching module



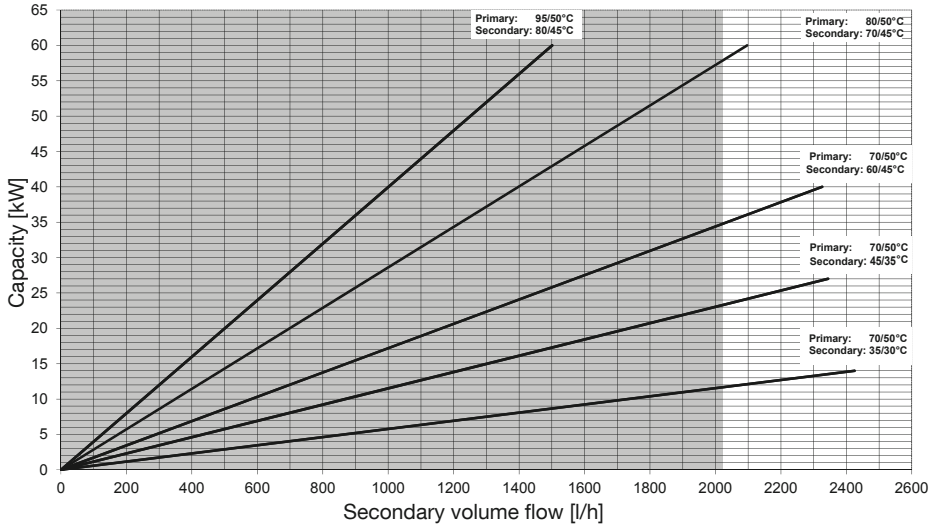
Illust. 60: Pump characteristics - constant speed



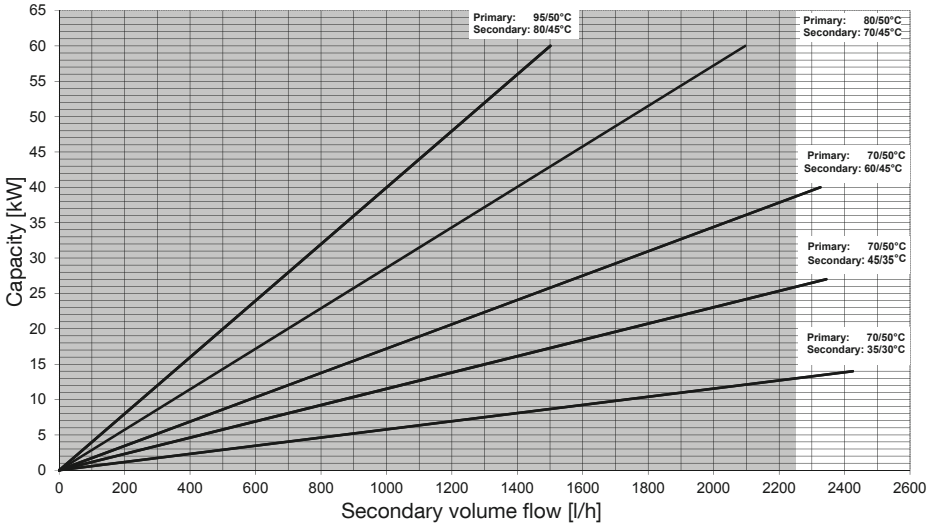
Illust. 61: Pump characteristics - constant differential pressure



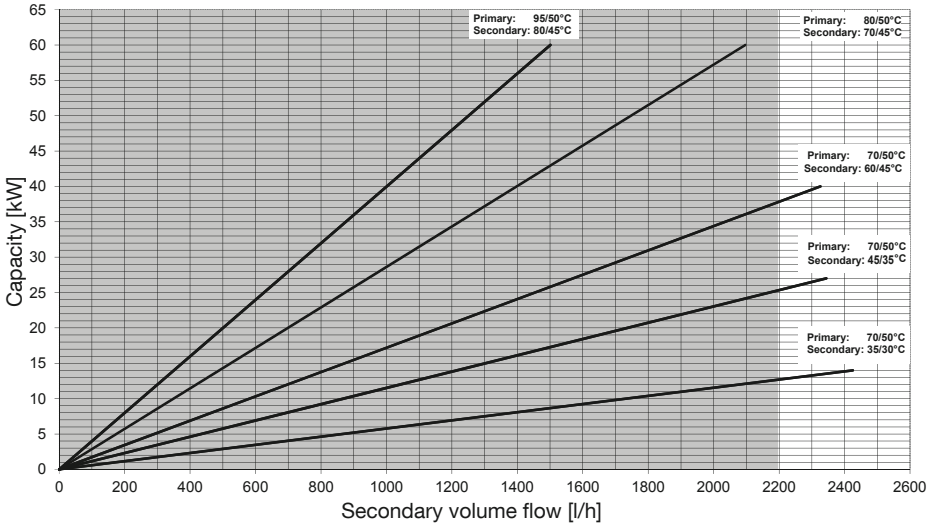
Illust. 62: Pump characteristics - variable differential pressure



Illust. 63: Performance chart; recommended max. volume flow Regudis H in combination with HT switching module



Illust. 64: Performance chart; recommended max. volume flow Regudis H in combination with Regumat S



Illust. 65: Performance chart; recommended max. volume flow Regudis H in combination with Regumat M 3

oventrop Valves, controls + systems

EN

Fresh water and dwelling stations
Advice regarding corrosion protection

The materials used in the Oventrop fresh water and dwelling stations are selected and processed in accordance with strict quality specifications. The material used for the heat exchanger plates (stainless steel 1.4401) has proven its worth in potable water installations over a long time. **Depending on the water quality, especially in case of high chloride concentrations > 100 mg/l, leaks caused by corrosion** at the heat exchanger can, however, not be excluded.

For this reason, the specifying engineer and/or the user of the system have to make sure that the fresh water and dwelling stations are only operated with **potable water** whose chemical composition **does not have a corrosive effect** on the components.

Consult your local water authority if necessary.

The below table shows limit values of substances in potable water when using heat exchangers with different **brazing materials** (copper, nickel or stainless steel).

It must be noted that **interactions** between certain substances in the water may have an adverse effect on the materials.

This concerns, amongst others, combinations of hydrogen carbonate with chloride and/or sulphate. (see next page).

The choice of a suitable heat exchanger therefore has to be carried out according to the water quality. Corresponding analyses can be obtained from your local water authority.

Demands on the water quality

		Stainless steel heat exchanger brazed with:		
SUBSTANCES	**CONCENTRATION** (mg/l or ppm)	**COPPER**	**NICKEL / STAINLESS STEEL**	**COPPER with Sealix® protective layer**
⚠ Chlorides (Cl^-) at 60 °C See chart on next page!	< 100 100 - 300 > 300	+ - -	+ - -	+ + 0
Hydrogen carbonate (HCO_3^-)	< 70 70 - 300 > 300	0 + 0	+ + +	+ + +
Sulphate (SO_4^{2-})	< 70 > 70	+ -	+ +	+ +
HCO_3^- / SO_4^{2-}	> 1.0 < 1.0	+ -	+ +	+ +
Electrical conductivity at 20 °C	< 50 µS/cm 50 - 500 µS/cm > 500 µS/cm	0 + 0	+ + +	+ + +
pH In general, a low ph value (below 6) increases the risk of corrosion and a high ph value (above 7.5) reduces the risk of corrosion.	< 6.0 6.0 - 7.5 7.5 - 9.0 9.0 - 9.5 >9.5	0 0 + 0 0	0 + + + +	+ + + + 0
Free chlorine (Cl_2)	< 1 > 1	+ -	+ -	+ 0
Ammonium (NH_4^+)	< 2 2 - 20 > 20	+ 0 -	+ + +	+ + -
Hydrogen sulphide (H_2S)	< 0.05 > 0.05	+ -	+ +	+ 0
Free (aggressive) carbon dioxide (CO_2)	< 5 5 - 20 > 20	+ 0 -	+ + +	+ + +
Nitrate (NO_3^-)	< 100 > 100	+ 0	+ +	+ +
EXPLANATIONS:	+ Good resistance under normal conditions 0 Corrosion may arise - Use not recommended			

The chemical composition of the potable water may be subjected to temporal fluctuations.

Special advice regarding corrosion protection

NOTICE

High fluid temperatures (>60 °C) increase the risk of corrosion

- ▶ Do not set the hot water temperature and the flow temperature of the heating water higher than necessary.

NOTICE

Long stagnation periods increase the risk of corrosion

- ▶ Flush the installation manually or automatically at regular intervals if longer stagnation periods are to be expected continually (VDI/DVGW 6023).

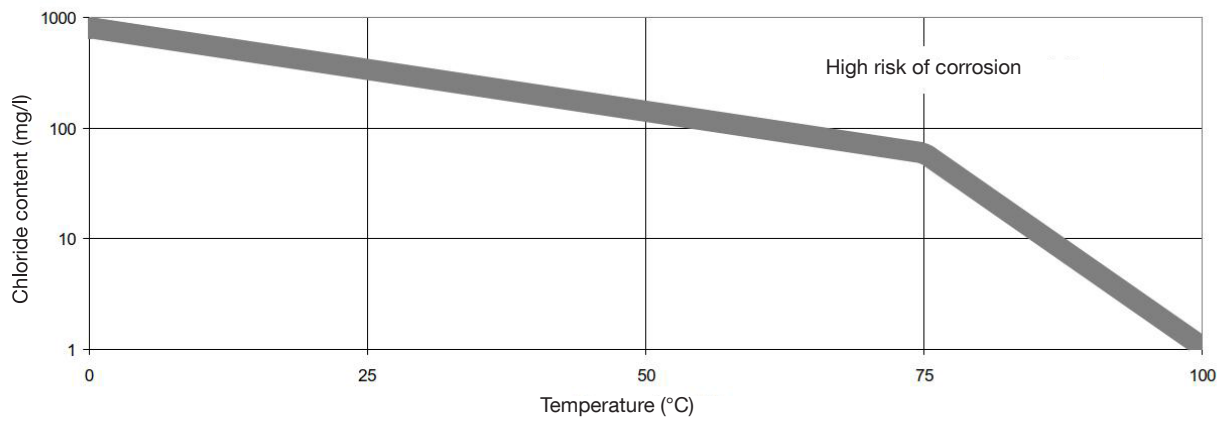
- Be careful in case of hydrogen carbonate/chloride combinations. **Low hydrogen carbonate contents combined with high chloride contents increase the risk of corrosion.**
- Be careful in case of hydrogen carbonate/sulphate combinations**. When using copper brazed heat exchangers, the hydrogen carbonate content in the water must not be lower than the sulphate content.** If this is the case, a nickel brazed, stainless steel brazed or a heat exchanger with protective layer has to be used.
- If the substances in the water are outside the indicated limit values, a **water treatment system** has to be installed, if required.

NOTICE

An incorrectly operated water treatment system may increase the risk of corrosion!

- **In case of mixed installations, the "flow rule" must be observed when using copper brazed heat exchangers in combination with galvanised steel pipes.** More detailed information can be obtained from the DIN EN 12502 standard.
- **Flush** all **supply pipes** before **installation** of the station (DIN EN 806-4), to remove any dirt particles and residues from the system**.**
- During **maintenance work** on the station, please consider that even **detergents may encourage corrosion of the heat exchanger**. In this context, observe the DVGW specifications, such as the work sheets W291 and W319.
- **When using a copper brazed heat exchanger without protective layer, the electrical conductivity of the water lies between 50 and 500 µS/cm**. Bear this in mind particularly in the context of water treatment according to VDI2035.

Premissible chloride content depending on the temperature



A heat exchanger with Sealix® protective layer minimises the risk of corrosion even in case of higher temperatures and chloride contents. Refer to the table “Demands on the water quality” for the respective limit values.

NOTICE

Corrosion and formation of stones in the system

- ▶ The specifying engineer and the user of the system are responsible for incorporating and evaluating substances and other factors in the water, which could influence corrosion and the formation of stones in the system. In critical water supply areas, the local water authority should be consulted.

OVENTROP GmbH & Co. KG
Paul-Oventrop-Straße 1

11. Declaration of conformity

oventrop

EU Declaration of Conformity

Product identification:	Transmission station “Regudis H“, “Regudis H-H“, “Regudis H-M“, “Regudis H-HT“,“Regudis H-MT“,“Regudis H-MHT“,
Manufacturer:	Oventrop GmbH & Co. KG
Adress:	Paul-Oventrop-Straße 1 59939 Olsberg GERMANY

This declaration of conformity is issued under sole responsibility of the manufaturer.

Object of the declaration:

Item no.	Type
1391026	“Regudis H” DN 20
1391021	“Regudis H-H” DN 20
1392021	“Regudis H-M” DN 20
1391027	“Regudis H-HT” DN 20
1392027	“Regudis H-MT” DN 20
1393027	“Regudis H-MHT” DN 20

Item no.	Type
1391036	“Regudis H” DN 25
1391031	“Regudis H-H” DN 25
1392031	“Regudis H-M” DN 25
1391037	“Regudis H-HT” DN 25
1392037	“Regudis H-MT” DN 25
1393037	“Regudis H-MHT” DN 25

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

Machinery directive

DIRECTIVE **2006/42/EC** OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2006on machinery, and amending Directive 95/16/EC (recast)

The conformity of the product described above with the provisions of the applied Directive(s) is demonstrated by compliance with the following Standards/ regulations:

EN 12100:2010 + AC:2013

EN 60335-1:2012+AC:2014+A11:2014

EN 60730-1:2011

EN 60730-2-9:2010

EN 60730-2-14:1997+A1:2001

Electromagnetic Compatibility Directive

DIRECTIVE **2014/30/EU** OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility

The conformity of the product described above with the provisions of the applied Directive(s) is demonstrated by compliance with the following Standards/ regulations:

EN 60730-1:2011

EN 60730-2-9:2010

EN 60730-2-14:1997+A1:2001

EN 55014-1:2006 + A1:2009 + A2:2011

EN 55014-2:1997 + A1:2001 + A2:2008

RoHS

DIRECTIVE **2011/65/EU** OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (recast)

Pressure Equipment directive

These articles fall under **Article 4(3)** of the Pressure Equipment Directive **2014/68/EU** and are designed and manufactured in accordance with good engineering practice.

59939 Olsberg, 11.05.2020
Signed for and behalf of:
Oventrop GmbH & Co. KG

i.V. .....
Dipl.-Ing. Michael Pehl
Head of serial development

i.V. .....
Dipl.-Ing. Thomas Droste
Group Leader Development

12. Illustration index

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