GB

tuxhorn

tubra®- nemux-T/ TM

Fresh water station

Assembly and operating instructions

Content

1 Introduction

This manual describes the assembly, operation and maintenance of the **tubra®-nemux-T/ TM** fresh water station.
This manual is intended for trained specialists with an adequate level of expertise in handling heating systems, water pipe installations and electrical installations.
The installation and commissioning procedures should only be conducted by qualified, specialist personnel.
The fresh water station must only be installed and operated in dry areas that are protected from frost.
Read this manual carefully before starting any installation work.
Non-compliance will invalidate all claims under the guarantee and warranty.
Illustrations are symbolic and may differ from product to product.
Subject to technical changes and errors.

1.1 Intended purpose

The **tubra®-nemux-T/ TM** fresh water station is used exclusively for heating drinking water using a buffer storage tank and an internal plate heat exchanger with a flow-through principle. Only drinking water in accordance with the Drinking Water Ordinance must be heated.

1.2 Safety instructions

In addition to country-specific guidelines and local directives, the following technical regulations must also be taken into account:

- DIN 1988 Technical rules for drinking water installations
- DIN 18 380 Heating systems and central water heating systems
- DIN 18 381 Gas, water and wastewater installation works
- DIN 18 421 Thermal insulation work on thermal engineering systems
- VDI 2035 Avoidance of damage in hot water heating systems
- DIN 4753 Water heaters and water heating installations for drinking water and service water
- DIN 4708 Central water heating system
- VDE 0100 Installation of electrical equipment
- VDE 0190 Main equipotential bonding of electrical systems.
- TrinkwV Drinking Water Ordinance
- DVGW W551 Drinking water heating and drinking water pipeline systems
- BGV Accident prevention regulations of workers' compensation associations

As the system can reach temperatures > 60°C, there is a risk of scalding and burning through contact with the components.

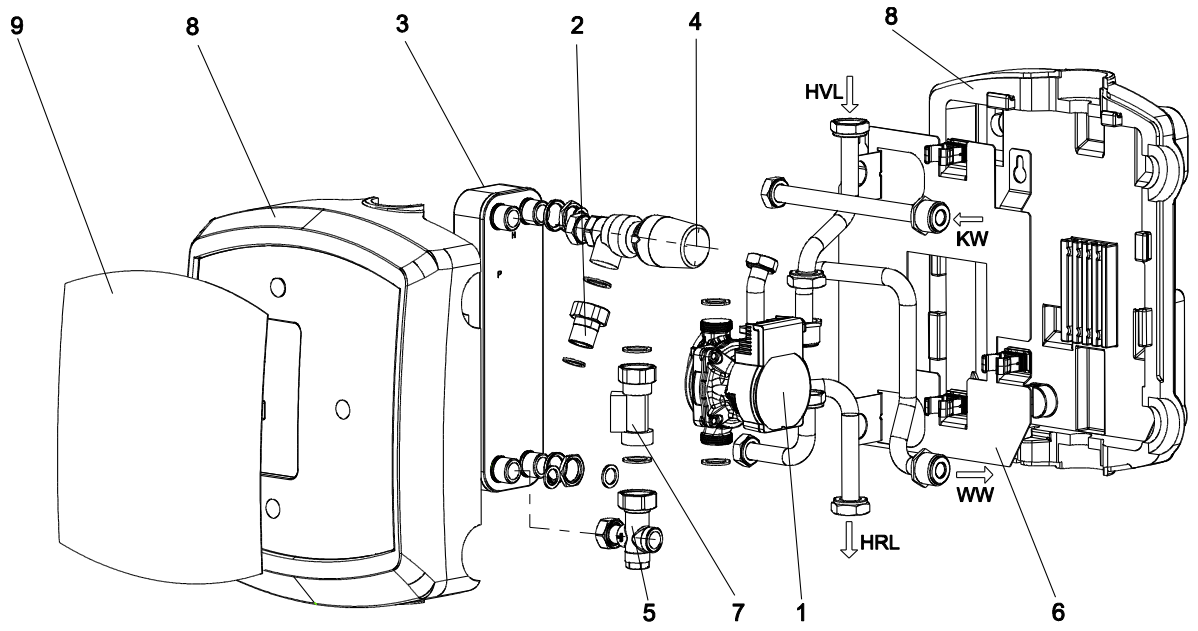
1.3 Applicable documents

Also observe the assembly and operating instructions for the components used.

1.4 Delivery and transport

Check to make sure the product is complete and undamaged immediately after receipt. Any damage or complaints must be reported immediately.

2 Layout – scope of delivery



*Display may vary depending on the version

Item	Designation
1	Circulation pump
2	Screw connection with integrated gravity brake
3	Plate heat exchanger
4	Thermostatic head with stainless steel spiral sensor
5	Square control valve kvs=5.2
6	Flow switch
7	Base plate
8	Heat insulating shell
9	Protective foil
Optional: Ball valve set for single station	

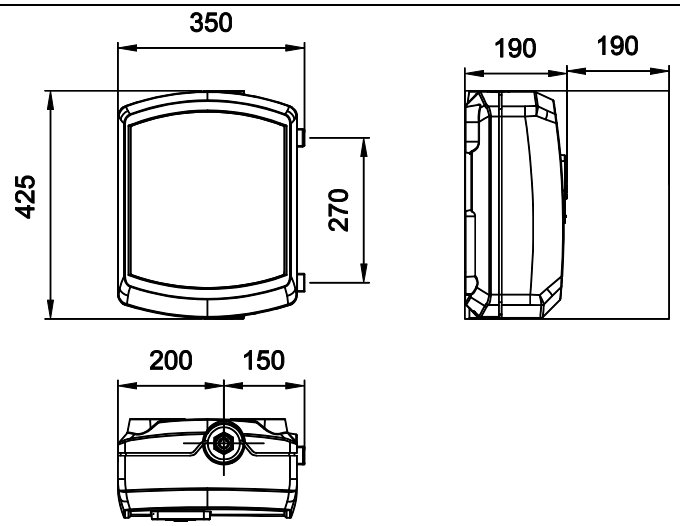
CW	Cold water	HF	Heating flow
HW	Hot water	HR	Heating return

3 Technical specifications

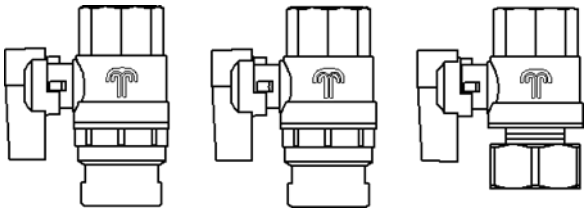
3.1 General instructions

Designation/type		tubra®-nemux-T	tubra®-nemux-TM
Nominal output at 10-45/65°C (CW-HW/HF)		60 kW	83 kW
Tapping capacity at nominal output		24,6 l/min	34 l/min
NL number at nominal output		3	6,5
Output at 10-60/75°C (CW-HW/HF)		65 kW	89 kW
Tapping capacity at 10-60/75°C		18,6 l/min	25,5 l/min
Capacity at 10-60/75°C, mixed to 45°C HW		65 kW	89 kW
Tapping capacity at 10-60/75°C, mixed to 45°C HW		26,6 l/min	34 l/min
Max. operating pressure	Heating side Service water side	3 bar 10 bar	3 bar 10 bar
Max. operating temperature	Heating side Service water side	95 °C 65 °C	95 °C 65 °C
Connections	Heating side Service water side	G1“IG G1 AG	G1“IG G1 AG
Pressure loss on the service water side at nominal output		0,6 bar	0,6 bar
Max. pressure loss for piping on the heating side		50 mbar	50 mbar
Circulation pump		Wilo Para 15/6 SC	Wilo Para 15/6 SC
Power draw		3-45 W	3-45 W
Flow switch		STS02AC-1”	STS02AC-1”
Electrical connection		230 V AC/ 50-60 Hz	230 V AC/ 50-60 Hz
Materials			
Housing/connecting components		CW617N (2.0402)	
Plate heat exchanger		Stainless steel, Cu soldered / Stainless stell, stainless stell soldered	
Seals		AFM	
Insulation		EPP foam 0.038 W/mK	

3.2 Dimensions / required space

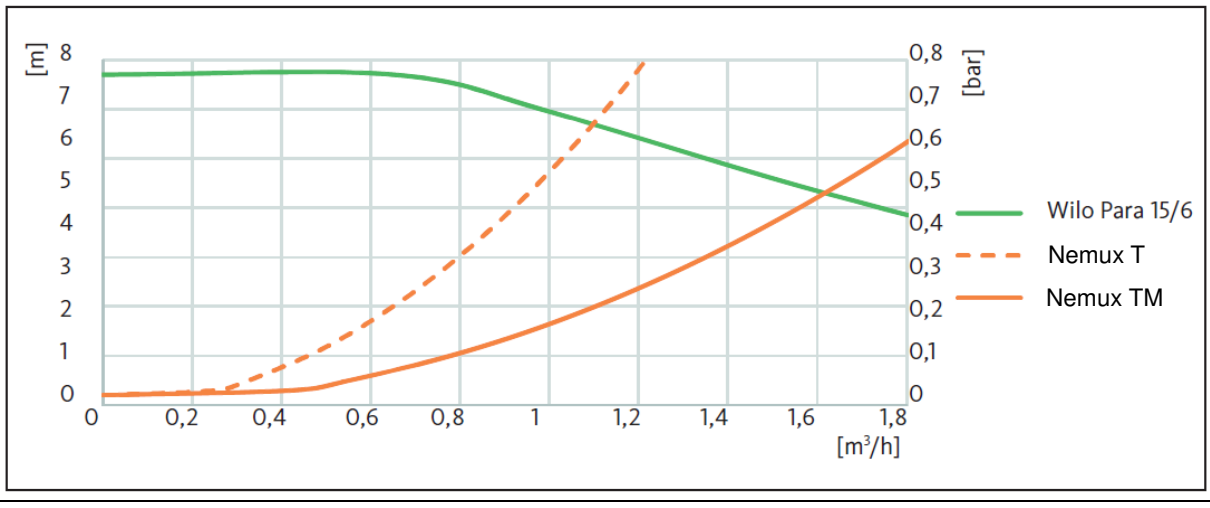


Dimensions and minimum space required for assembly and maintenance work



Optional accessories (ball valve set): Install flow buffer, return buffer and hot water ball valves with flat seal. Design cold water connection according to DIN 1988

3.3 Pressure loss/pump characteristic curve



3.4 Corrosion protection

To prevent corrosion damage to plate heat exchangers, the following drinking water values must be observed:

	Copper-soldered	**Solid stainless steel**
Chloride[1] (CL^-)	< 250 mg/l at 50°C < 100 mg/l at 75°C < 10 mg/l at 90°C	
Sulphate[1] (SO_4^{2-})	< 100 mg/l	< 400 mg/l
Nitrate (NO_3-)	< 100 mg/l	No requirement
pH value	7.5 - 9.0	7,0 – 10,0
Electrical conductivity (at 20°C)	10 - 500 µS/cm	No requirement
Hydrogen carbonate (HCO_3^-)	70 - 300 mg/l	No requirement
Ratio HCO_3^- / SO_4^{2-}	> 1	No requirement
Ammonia (NH_4^+)	< 2 mg/l	No requirement
Free chlorine gas	< 0.5 mg/l	
Sulphite	< 1 mg/l	< 7 mg/l
Ammonium	< 2 mg/l	
Hydrogen sulphide (H_2S)	< 0.05 mg/l	No requirement
Free (aggressive) carbon dioxide (CO_2)	< 5 mg/l	No requirement
Iron (Fe)	< 0.2 mg/l	No requirement
Saturation index SI	-0.2 < 0 < 0.2	No requirement
Manganese (Mn)	< 0.05 mg/l	No requirement
Degree of hardness	4 – 14 $[Ca^{2+}; Mg^{2+}]/ [HCO_3^-] > 0.5$	
Total organic carbon (TOC)	< 30mg/l	No requirement

[1] If the limit values for copper-soldered plate heat exchangers are exceeded, a solid stainless steel plate heat exchanger must be used.

To prevent pitting corrosion in the domestic installation, no new galvanised iron material must be installed downstream in the hot water pipe of the copper-soldered plate heat exchanger without forming a protective layer.
Solid stainless steel plate heat exchangers must be used in mixed installations with zinc-coated iron materials (available on request).

3.5 Calcification protection

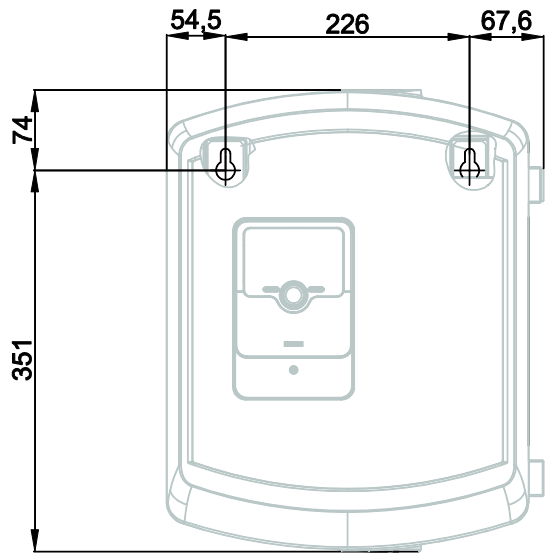
Limescale deposits from the water increase significantly at temperatures >55°C and a water hardness level over 8.5°dH. Because of that the hot water temperature should be set as low as possible taking the drinking water hygiene into account. If necessary reduce calcification by using water softeners or different suitable method.

For heating systems which have, due to preconditions, a low heating flow temperature over 65°C a premix to 65°C by a thermal control valve is expedient. This concerns especially biomass systems and solar thermal systems. Heat pumps have a low primary flow temperature anyways and can be used without a premix. Due to that a better tapping capacity can be reached.

Water treatment measures to prevent scale formation (water softening)		
	Fresh water module with 50°C hot water-tapping temperature and	
Mass concentration of calcium carbonate	primary flow <65°C	primary flow >65°C
< 1.5 mmol/l (< 150 mg/l) < 8.4°dH (≙ 14,95°fH)	**None**	**None**
1.5 to 2.5 mmol/l (150 to 250 mg/l) 8.4°dH to 14°dH (≙14,95°fH to 24,92°fH)	**None**	**Recommended**
> 2.5 mmol/l (> 250 mg/l) > 14°dH (≙24,92°fH)	**Recommended**	**Required**

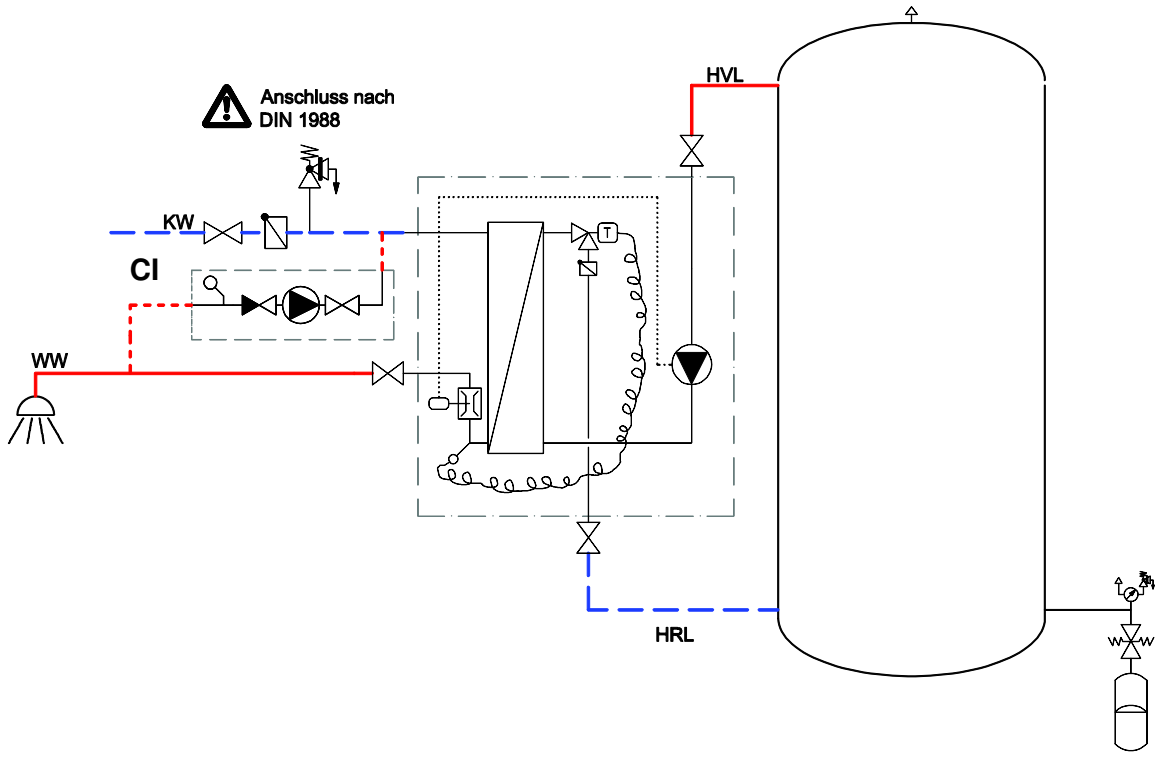
4 Assembly

4.1 Wall-mounted assembly



Mark and drill two ∅ 10mm holes as per the adjacent illustration and insert expansion anchors.
Locate the top screw and washer and tighten until the screw head protrudes approx. 1cm from the wall.
Suspend the station, align it horizontally and secure it in place using a second screw and washer.
Evenly tighten both screws.

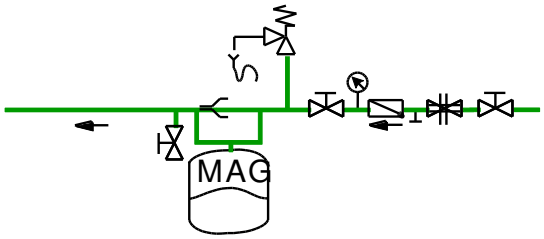
4.2 Hydraulic connection with accessories



Example illustration with optional accessories (circulation unit)
Other available accessories: cold water connection set, piping set and ball valve.
This illustration does not claim to be exhaustive; it is not a replacement for specialist planning.

Designation	Description
HW	Hot water
CW	Cold water
HF	Heating flow
HR	Heating return
CI	Circulation

If the fresh water station is installed in accordance with DIN1988-200, a cold water expansion vessel (minimum water hammer damper) must be provided in addition to a safety valve in order to avoid pressure surges in the stations. Pressure surges can lead to a defect in the sensor system in the fresh water station and thus disable the fresh water heating system.



4.3 Electrical connections

4.3.1 General instructions

Only authorised, specialist personnel are permitted to open electrical housings and work on the electrical system after de-energising the equipment. When establishing connections, make sure the terminal assignments and polarity are correct. Protect the control unit and electrical components against excess voltage.

Danger!

Risk of fatal electric shock as a result of incorrect electrical connections.
- → Electrical connections must exclusively be created by electricians approved by energy suppliers and as per the locally applicable regulations.
- → Disconnect the supply voltage prior to conducting any work.

The **tubra®-nemux-T/ TM** fresh water station is completely pre-assembled and pre-wired at the factory. Connect the power cable to commission.

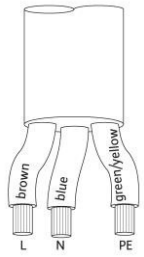
4.3.2 Equipotential

The terminal point must be properly connected to the building potential equalization on the mounting plate.

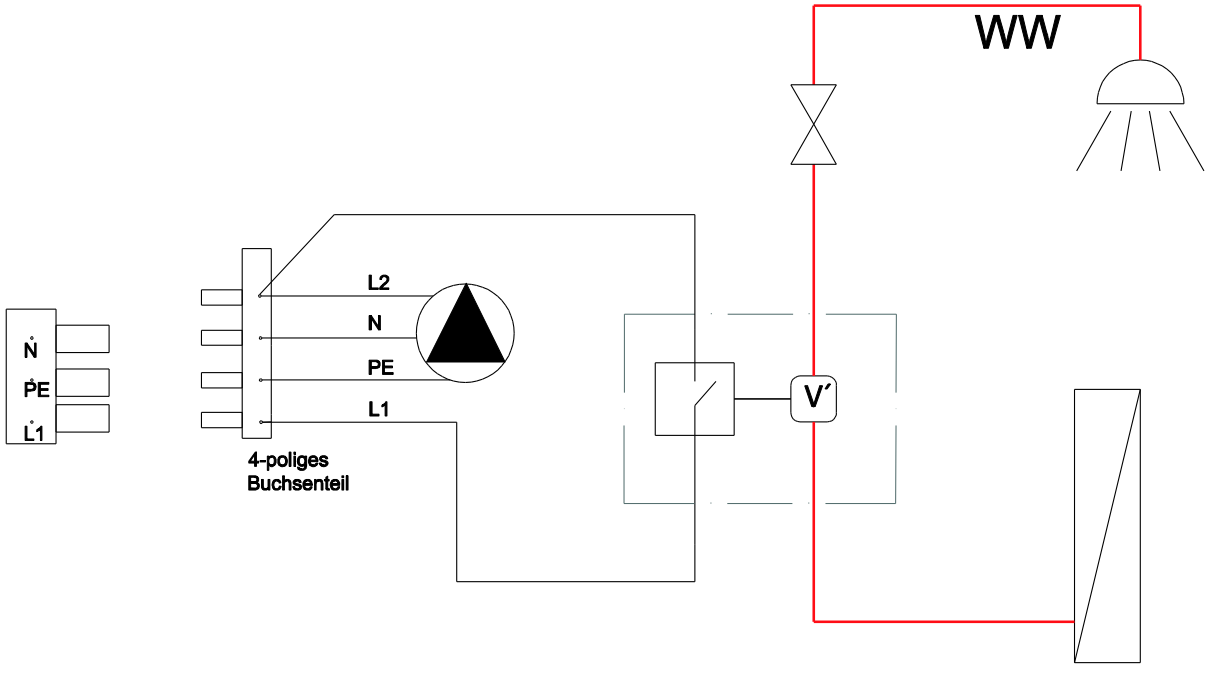
4.3.3 Circulation pump

Refer to the separate operating manual of the corresponding control unit for more detailed information.

Electrical pump connection



L = brown
N = blue
PE = green/yellow



5 Start-up

Complete installation of all hydraulic and electrical components is a precondition for commissioning.

5.1 Leak testing and filling the system

Check all system components, including all pre-fabricated elements and stations, to ensure they are leak-tight; seal any detected leaks accordingly. When doing so, adapt the test pressure and test duration to match the respective piping system and the respective operating pressure.

Fill the drinking water side with clean drinking water as per DIN 1988 only; bleed the air from the system by gradually increasing the pressure.

Only fill the heating system, including the primary side of the fresh water system, with filtered, possibly treated water as per VDI 2035; bleed the system completely.

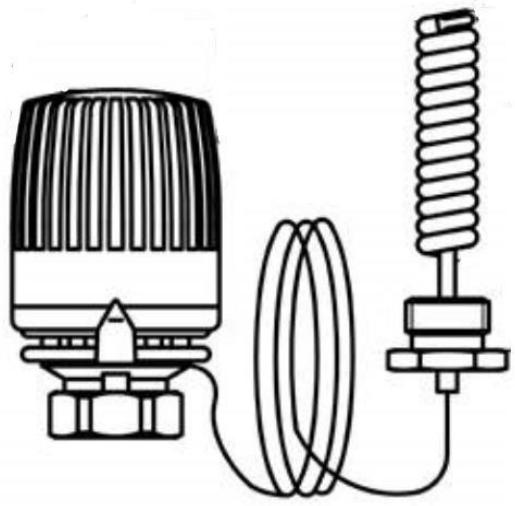
5.2 Initial commissioning

Task	Procedure	OK
Switch on the station	• Supply the pump and flow switch with power	
Preparation and inspection	• Visual inspection of the installation. • Connect the station to the buffer tank, fill with water and drain	☐ ☐ ☐
Check function	• Check the functionality of the hot water supply. • Check the hot water temperature and, if necessary, correct the set temperature on the thermostatic head.	☐ ☐

6 Operation

6.1 Control unit

During the tapping process, the flow switch switches the pumps on. Depending on the temperatures and flow rate, the pump regulates the circulation volume on the heating side together with the thermostatic valve. The desired hot water temperature can be set via the thermostat.



The hot water temperature is controlled by a thermostatic valve.

The thermostatic valve can be adjusted from 3-6.

3 = approx. 40°C hot water temperature
4 = approx. 48°C hot water temperature
5 = approx. 56°C hot water temperature

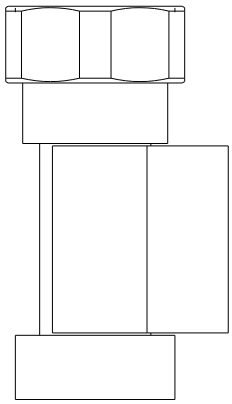
The default and recommended setting is 3.5.

Materials:
Spiral sensor: stainless steel
Control valve: brass CW617

Danger!

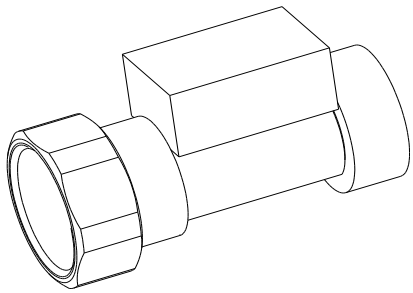
CAUTION!
With low flow rates, a very hot buffer tank and a high set point temperature at the thermostatic valve, hot water temperatures of > 60°C can occur depending on the control unit.
In objects where scalding protection must be provided, a thermostatic outlet fitting must be provided at the tapping points.

6.2 Flow switch



The STS02AC flow sensor is installed vertically and clipped onto the measuring section.

Attention! Before disconnecting, it is essential to disconnect the system from the power supply.



When replacing the flow sensor, observe the direction of flow, which runs from top to bottom.

6.3 Gravity brake

A non-return valve [4] is installed in the connecting valve of the control valve to prevent miscirculation in the primary circuit.
It is not possible to manually open the return valve.

7 Malfunctions/troubleshooting

Malfunction	possible cause	Remedy
Pump noise	Air in the system	Bleed
Insufficient tapping quantity	Insufficient water pressure	Check pressure, increase if necessary
	Calcification in heat exchanger	Decalcify/replace
Insufficient tapping temperature	Incorrect thermostat setting	Check settings
	Excessive pressure loss in the piping on the heating side	Check the piping, change if necessary
Drinking water does not heat up	Air in the system.	Bleed
	Hot water flow switch not connected correctly or faulty.	Check, replace if applicable
	Stainless steel spiral sensor calcified or faulty	Check, replace if applicable
	Pump faulty	Check, replace if applicable

8 Maintenance/service

The manufacturer recommends having the system serviced annually by authorised, specialist personnel.

9 Decommissioning

Temporary

If the **tubra® nemux-T/ TM** fresh water station remains out of operation for a long time and in an area where it is at risk of frost, the power supply must be interrupted and the system must be completely drained.

Final

If the **tubra®-nemux-T/ TM** fresh water station is finally taken out of operation, the power supply of all affected system components must be interrupted and all affected lines and system components must be completely drained.
The decommissioning, dismantling and disposal processes should only be conducted by qualified, specialist personnel. Components and materials must be disposed of in accordance with the current applicable regulations.

Reseller	
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