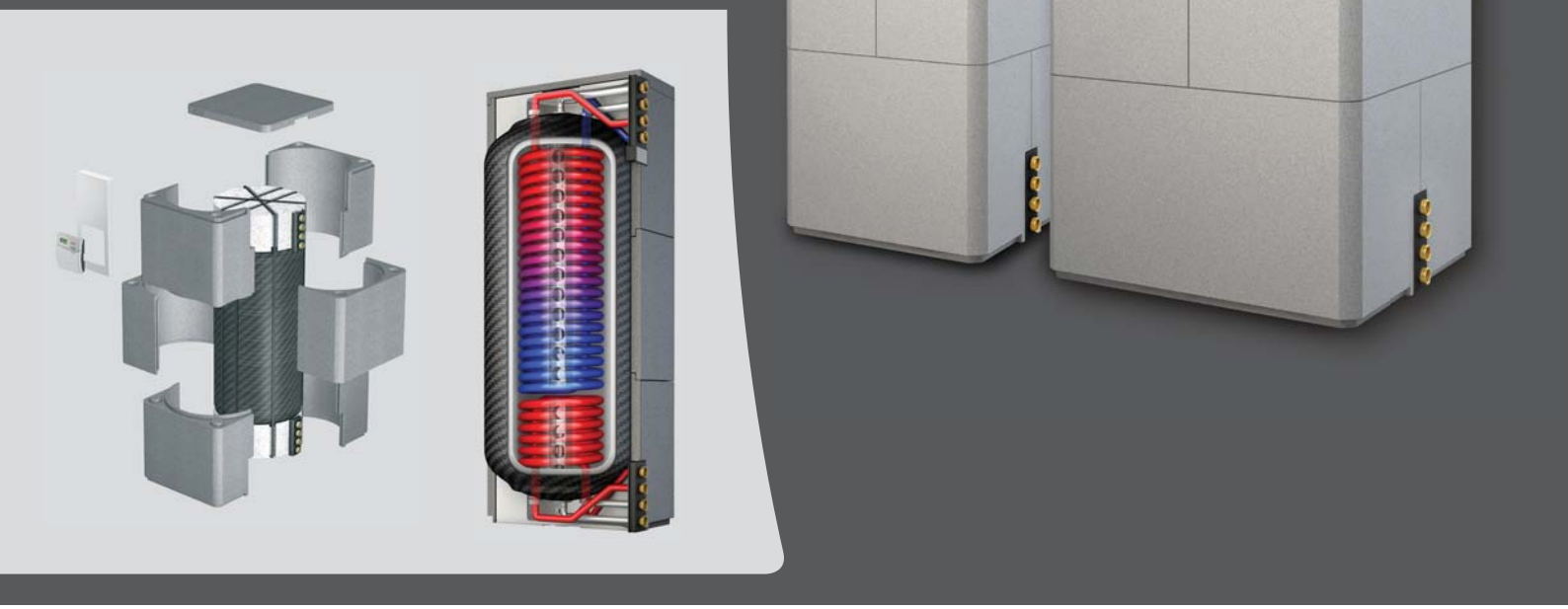
Energy Systems

Thermotank Quadroline
325, 500 and 850 litres

Installation and operating instructions



Living full of energy

Contents

Introduction

Note

These assembly and operating instructions offer important information about the handling of the device. It forms part of the product and must be stored in the immediate vicinity of the device at all times. It must remain available for reference for the duration of the service life of the device. The document must be handed over to any subsequent owners and/or users of the device.

The assembly and operating instructions must be read - specifically the chapter on safety - before any work is started on or with the device. All instructions must be followed completely and without limitation.

Please contact the manufacturer's customer service department or the local representative of the manufacturer with any questions or other issues.

As this manual has been created for several device types, it is imperative to comply with the parameters given for the relevant device type.

The assembly and operating instructions are intended exclusively for personnel dealing with the specified device. All parts of the document are to be held confidential. Its content is protected by copyright. Without the written permission of the manufacturer, none of the content may be reproduced, transmitted, duplicated, stored on electronic systems, or translated into another language either in part or in its entirety.

Signal icons

The manual uses a number of signal icons. These have the following meanings:

DANGER!
Represents an immediate hazard, which may result in severe injury or death.

WARNING!
Represents a possibly hazardous situation, which may result in severe injury or death.

CAUTION!
Represents a possibly hazardous situation, which may result in moderate to slight injury.

CAUTION!
Represents a possibly hazardous situation, which may result in material damage.

NOTE!
Important information.

Reference to other sections of the manual.

General information

Intended use

The storage tank must only be utilised for its intended use.

Available
device types:
- **Buffer Storage Tank TQ-P**
- **Separation Storage Tank TQ-T**
- **Solar Storage Tank TQ-S**
- **Drinking Water Storage Tank TQ-TW**
- **Drinking Water Solar Tank with Solar Energy Facility TQ-TWS**
- **Combination Storage Tank TQ-K**
- **Drinking Water Combination Storage Tank TQ-TWK**

The Roth Thermotanks Quadroline are suitable for all hot water central heating systems (solid fuel or oil-fired boilers, heat pumps, gas or electric flow heaters). Several buffer storage tanks can be optionally combined for custom storage volumes depending on capacity requirements. The tanks must only be used in accordance with the conditions detailed on the rating plate. In addition to legally recognised national standards and requirements, compliance with the connection conditions stated by local utility companies and the assembly and operating instructions contained in the manual must be ensured. Hot water processing must be conducted in accordance with applicable standards.

CAUTION!
The electric conductivity of the domestic hot water must be >100 µS/cm; see the chapter on water quality in accordance with VDI 2035.

NOTE!
The model types TQ-S, TQ-TWS and TQ-K have a solar energy system connectivity option.

WARNING!
The operating overpressures stated on the type plate must not be surpassed. The installation of a pressure relief valve may be required.

Water quality

of the fill and top-up water in accordance with VDI 2035 Sheet 1 and 2 in water heating installations

State of the art and energy-efficient heating systems are increasingly in demand. The sophisticated technology of these systems generates very high efficiency. The increasingly smaller space allowances for heat generation systems has led to the development of more compact devices with smaller footprints and higher heat transfer capacities. As a result, systems are becoming increasingly complex and contain a variety of materials, which plays an important part in its corrosion behaviour in particular. Roth Werke are continuously working on new technological breakthroughs – but all this technical finesse requires the system to be operated using heating water that has been filled correctly. The quality of the heating water not only influences the overall performance of the system, it also plays a part in the life expectancy of the heat generator and the heating components within the system.

As a minimum requirement, the reference values stated in VDI 2035 Sheet 1 and Sheet 2 must be adhered to for correct system operation. Practical experience has shown that the safest and least error-prone operation is guaranteed in so-called 'low-salt operation'.

VDI 2035 Sheet 1 offers important information and recommendations regarding limestone incrustation and its prevention in heating and domestic water heating systems.

VDI 2035 Sheet 2 focusses primarily on the requirements for a reduction in heating water-related corrosion in water heating systems.

Principles regarding Sheet 1 and Sheet 2
The occurrence of incrustation and corrosion damage in water heating systems remains low if
- professional planning and commissioning is provided
- anti-corrosion measures have been implemented
- a sufficiently dimensioned pressure maintenance system has been integrated
- the reference values provided for the heating water are maintained
- and service and maintenance are carried out periodically.

The maintenance of a system log (VDI 2035) for the recording of relevant plan data is required.

What faults could occur in case of non-compliance?
- Function errors and assembly or component faults (e.g. pumps, valves)
- Internal and external leaks (e.g. at heat exchangers)
- Cross-sectional reductions and blockage of components (e.g. heat exchanger, pipes, pumps)
- Material fatigue
- Gas bubble formation and cavitation
- Heat transfer reduction (formation of scaling, sedimentation) and associated noise (e.g. boiling, rushing)

General information

Limescale – the energy killer
A system fill with untreated domestic water will invariably lead to an incrustation with limescale. The result: the heat transfer surfaces of the heating system become encrusted with limescale. Heating efficiency decreases, while energy costs increase. According to a rule of thumb, a limescale layer with a thickness of 1 mm will result in a loss in efficiency of 10%. In extreme cases, the incrustation can result in damage to the heat exchangers.

Descaling in accordance with VDI 2035 – Sheet 1
No limescale can form if domestic water is descaled in accordance with the guidelines provided in VDI 2035 before the heating system is filled. This will effectively prevent the formation of limescale and resulting deficiencies of the entire heating system long-term.

Corrosion – an underestimated problem
VDI 2035 Sheet 2 focusses on the problems resulting from corrosion. A simple descaling of the heating water may prove insufficient. The pH value may significantly exceed the maximum value of 10. pH values above 11 can occur, which may cause damage to rubber seals. The guidelines of VDI 2035 Sheet 1 may therefore be fulfilled, but VDI 2035 Sheet 2 requires a pH value between 8.2 and max. 10.
Where aluminium-based materials are used - which is the case in many modern heating systems - then a pH value of 8.5 must not be exceeded, as this might result in corrosion; aluminium corrodes without the presence of oxygen. It is therefore necessary to condition the heating fill and top-up water in addition to a descaling. Only then can the requirements of VDI 2035, as well as the recommendations and installation instructions of the heating pump manufacturer be maintained.
Sheet 2 of VDI 2035 furthermore references the importance of decreasing the overall salinity (conductivity) of the water. The danger of corrosion is greatly reduced in systems using completely desalinated water than in those using water with some salt content, i.e. descaled water.

Domestic water contains - even if it was descaled - dissolved, corrosion-promoting salts, which, due to the use of various materials in the heating system, act as electrolytes and therefore accelerate corrosion processes. The end result may be pitting.

Low-salt operation for more system safety
Low-salt operation will prevent the problems mentioned above altogether, as the heating water will not contain any corrosion-promoting salts, like sulphates, chlorides, and nitrates or the alkalising sodium hydrogen carbonate. Corrosion-promoting characteristics are very low in fully desalinated water, which means that also limescale cannot form. This is the ideal methodology for closed heating systems, as low oxygenation in the heating circuit can be tolerated.
As a rule, a system fill with de-ionised water will set the pH value in the ideal range by way of alkaline self-treatment. Where needed, the addition of chemicals can easily aid the establishment of a pH value of 8.2. This will ensure optimised protection for the entire heating system.

Monitoring
The analytical capture and monitoring of relevant water values and conditioning additives is of critical importance. It is therefore recommended to carry out periodic monitoring with appropriate water testing equipment.

Liability disclaimer

The manufacturer shall not accept liability for damage resulting from any but the device's intended use.

The manufacturer shall furthermore not accept liability in case of

- Work carried out on the device or its components contrary to the instructions contained in these assembly and operating instructions
- Work carried out unprofessionally on the device or its components
- Work carried out on the device or its components, which is not described in these assembly and operating instructions, and where these tasks were not specifically approved by the manufacturer in writing
- The device or its components are modified, converted or removed without the specific approval of the manufacturer

General information

Safety

The device is safe to operate when implemented according to its intended use. The structure and model of the device comply with the state of technology, all relevant DIN/VDE requirements, and all applicable safety regulations.

All persons carrying out work on or with the device must have read and understood the assembly and operating instructions before starting work. The same applies where the relevant person has previous experience working on or with the same type or a similar type of device, or has received training from the manufacturer.

DANGER!
Work on the device and its components must only be carried out by qualified tradesmen (plumbers, electricians).

Customer service

Please contact your local specialist tradesman, or the manufacturer's partner serving your region with any technical issues.

Warranty

Please consult your purchase documentation for the warranty terms.

NOTE!
Please contact your dealer with any warranty and claims issues.

Device maintenance

The functional safety of the safety valve (and that of the construction-side pressure relief valve where installed) must be verified periodically. The Roth Thermotank Quadroline is maintenance free due to its corrosion-free construction material.

Disposal

When decommissioning the device on site, ensure compliance with local legislation, guidelines and standards for recycling, reuse, and disposal.

Installation and assembly

Installation

It must be ensured during installation that sufficient space is available between the device and walls or other objects to install connection lines. This will be necessary only for the connection side of the tank. The three other sides can be placed against a wall. The following applies for all work to be carried out:

NOTE!
Compliance with local accident prevention guidelines, legal requirements, directives and guidelines is mandatory.

WARNING!
The storage tank must only be installed and assembled by relevantly certified personnel!

CAUTION!
The installation location must be frost-proof to prevent any frost damage to the storage tank, the pipework system and the connections.

NOTE!
Install the storage tank as close as possible to the heat generator to keep heat losses as low as possible. Ensure minimum pipe distances to consumers.

CAUTION!
The substructure at the installation location must be dry, level, and have sufficient load capacity.
Any slight unevenness in the ground can be compensated for by placing wooden or plastic blocks underneath the white EPS foot.

See dimensional drawings for the relevant device type for storage tank weights.

Transportation to the installation location

Use a pallet truck to transport the storage tank (secured on a wooden pallet) to its installation location to prevent transport damage.

DANGER!
Secure the storage tank against accidental movement during transport.

DANGER!
Increased danger of tipping while lifting the storage tank off the wooden pallet and during transport on a pallet truck or handcart! Injury and material damage hazard.
› Ensure appropriate safety measures to prevent tipping.

NOTE!
The storage tank is delivered with fully installed insulation.

Ensure proper and eco-friendly disposal of all packaging and transport material.

Installation and assembly

Assembly

NOTE!
Compliance with local accident prevention guidelines, legal requirements, directives and guidelines is mandatory.

WARNING!
The storage tank must only be installed and assembled by relevantly certified personnel!

NOTE!
We recommend installing an appropriate expansion tank with a flow fitting to compensate pressure fluctuations or water shocks in the cold water system, and to prevent unnecessary water loss.

WARNING!
The operating overpressures stated on the type plate must not be surpassed. The installation of a pressure relief valve may be required.The construction-side provision and installation of a venting and safety valve, as well as a pressure reducer is required.

NOTE
Seal unused connection points with a matching plug.

See dimensional drawings for the relevant device type for connection point positions.

CAUTION!
The storage tank must be integrated into the system in accordance with the connection instructions provided.

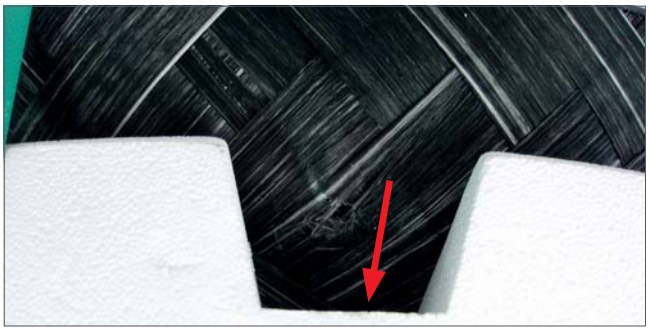
Installation and assembly

Sensor assembly for the heat source and heat pump controller

The Thermotank Quadroline is not provided with the required sensors. The sensors matching your heat generator must be mounted on the construction side in the two sensor sleeves (internal diameter 8 mm) provided on the storage tank. There are four ways to insert the sensors on the TQ 325 and 500 and eight on the TQ 850. On the TQ 325 and 500, up to two sensors can be inserted into the sleeves from above and two from below, while the TQ 850 permits as many as four from above and four from below.

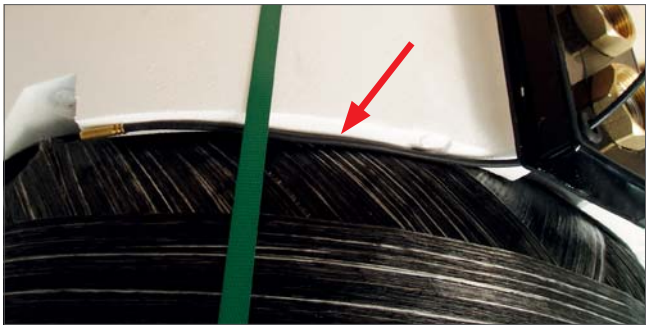
See dimensional drawings for the relevant device type for connection point positions.

1) **ATTENTION!**
The sensors must be inserted before the storage tank's insulating shells are fitted.
The sensors are inserted into the sleeves from the top down or from the bottom up at the cutouts in the head and base part. The cutouts are labelled with a sticker marked "Sensor".

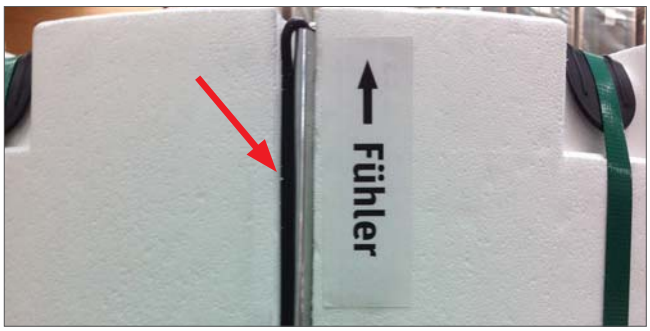


2) It is preferable to fit the sensors from above as they will be easier to service later.
There are two rubber feed-throughs on the connection panel. The sensor must be fed through here from the outside.

3) The sensor cable is then routed along the edge of the white head part and along the back of the green tension straps to the cutout labelled "Sensor".

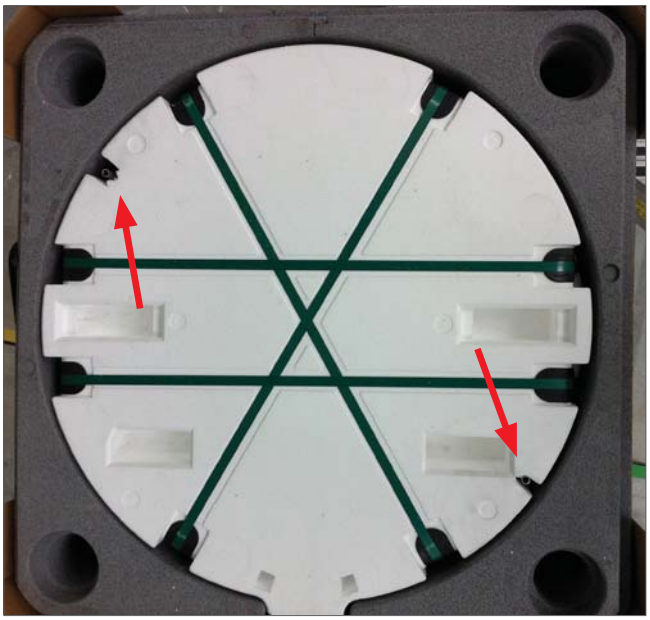


4) The sensor can then be inserted into the sleeve from above. The sensor cable is fed along the recess (groove) adjacent to the sensor sleeve. The sensor insertion depth can be found in the tables under Point 7.



Installation and assembly

5) Later on, when the sensor needs replacing after several years, for instance, this can be done via the lid. To do this, you only need to remove the lid and not any of the other insulating shells; see the marking on the picture.



6) The procedure for fitting the sensor from below is exactly the same. The sensor must first be inserted into the rubber feed-through in the connection panel from the outside. The cable is then fed along the white foot part to the sensor sleeve. The sensor can then be fed into the sleeve at the required height from below.

7) The following table shows the sensor positions.

Table of sensor positions								
TQ 325	**Dim. in mm**	**TQ-P**	**TQ-T**	**TQ-S**	**TQ-TW**	**TQ-TWS**		
Domestic water sensor	from above				1600	1400		
	from below				80	280		
Heating sensor	from above		1400	1400				
	from below		280	280				
Solar sensor	from above			1680		1680		
	from below			100		100		
Table of sensor positions								
TQ 500	Dim. in mm	**TQ-P**	**TQ-T**	**TQ-S**	**TQ-TW**	**TQ-TWS**	**TQ-K**	**TQ-TWK**
Domestic water sensor	from above				1600	1400	max. 1170	max. 1170
	from below				50	240	min. 470	min. 470
Heating sensor	from above		1400	1400			min. 1400	min. 1400
	from below		240	240			max. 240	max. 240
Solar sensor	from above			1540		1540	1540	
	from below			100		100	100	
Table of sensor positions								
TQ 850	Dim. in mm	**TQ-P**	**TQ-T**	**TQ-S**	**TQ-TW**	**TQ-TWS**	**TQ-K**	**TQ-TWK**
Domestic water sensor	from above				1500	1300	max. 1150	max. 1150
	from below				50	300	min. 440	min. 440
Heating sensor	from above		1300	1300			min. 1380	min. 1380
	from below		300	300			max. 200	max. 200
Solar sensor	from above			1490		1490	1490	
	from below			100		100	100	

Installation and assembly

Disassembly and assembly of the Quadroline insulation

1) The Roth Thermotank Quadroline is delivered upright on a pallet, with edge protectors and entirely shrink-wrapped.

2) Prevent any damage to the EPS insulation of the Thermotank when removing the wrapping and edge protectors. Do not use a knife in the immediate vicinity of the unprotected Thermotank.

3) After the wrapping has been removed, the two tension straps must be taken off to allow the removal of the protective cover and the edge protectors.

4) Once the Thermotank Quadroline has been unpacked completely, you can start disassembling the insulating shells. The insulating shells must be removed before the Thermotank is transported into the building to prevent damage to the insulation and facilitate the transport.

Installation and assembly

5) The disassembly begins with the lid. Carefully set aside and store the disassembled insulation components. They must not be damaged and must later be reassembled at the installation location.

6) As a next step, the two upper insulating shells must be removed. Make sure to remove these at an angle (about 45°). This task should be done by two people to ensure that the insulating shells are not damaged.

7) Once the two upper shells have been removed, the same can be done with the insulating shells in the middle.

8) Lift the two middle shells slightly to allow the tongues of the lower shells to detach from the grooves in the middle shells. Both of the middle insulating shells can now be pulled away.

Installation and assembly

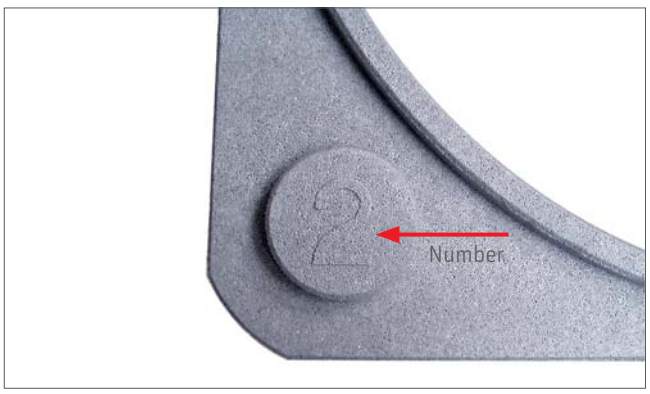
9) The two lower insulating shells are removed last.

10) Lift and slightly pull apart the two shells to detach the tongue and groove connection.

11) Once freed of its insulating shell, the Thermotank can now be tilted and transported horizontally. Two transport grooves each are located in the head and base part to facilitate transport.

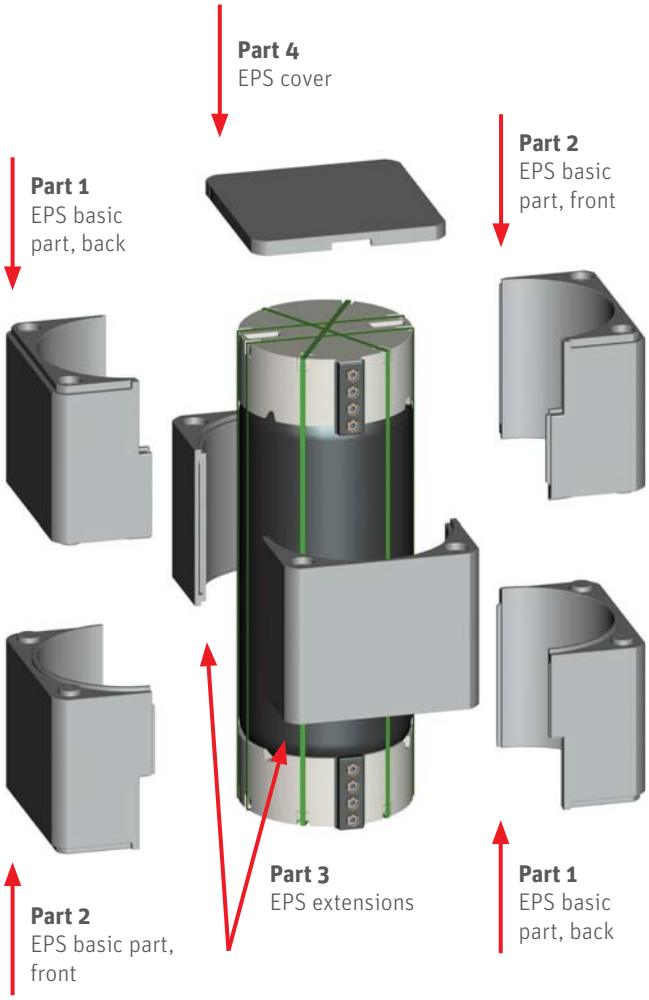
The green tensioning straps form part of the tank construction and must not be removed!

12) The insulating shell can be reassembled as soon as the Thermotank has been positioned in its installation location. Proceed in reverse order of the disassembly, i.e. starting with the bottom shell. All insulation components are numbered for easy assembly. Components 1 and 2 go on the bottom, both components marked with 3 into the middle, and the components 1 and 2 again on the top. Please see the exploded view on the next page for illustration.



Installation and assembly

13) It must be ensured during assembly that the joint edges of the middle shell parts are not on the same side as the two connection panels. The middle shells must be installed with an offset of 90 degrees to the top and bottom shells.



Thermotank Quadroline 325	
Mat. no.	**Description**
1125007110	External insulation, part 1
1125007111	External insulation, part 2
1125007112	External insulation, part 3
1125007113	External insulation, part 4

Thermotank Quadroline 500	
Mat. no.	**Description**
1125007044	External insulation, part 1
1125007045	External insulation, part 2
1125007046	External insulation, part 3
1125007047	External insulation, part 4

Thermotank Quadroline 850	
Mat. no.	**Description**
1125004711	External insulation, part 1
1125004712	External insulation, part 2
1125004713	External insulation, part 3
1125004714	External insulation, part 4

Ventilation, evacuation, insulation and commissioning

Ventilation

There is no direct connection option for a venting valve on the Roth Thermotank Quadroline. A venting valve must therefore be installed externally at the connection pipe. The highest point in all tank types – with the exception of the buffer storage tank – is at connection B. It therefore follows that a venting valve must be installed externally at connection pipe B. The combi storage tank types TQ-K 500/850 and the drinking water combi storage tank TQ-TWK must have a venting valve installed on connections A and B.

These are the only types that require two venting valves. Since the buffer storage tank does not have a connection B, the venting valve must be installed in this tank type only at connection pipe A.
The position of the venting valve can be seen in the hydraulics schematics included in the book »Thermotank Quadroline System Hydraulics«.

Emptying

A drain valve must be installed externally on connection G to provide an evacuation option for the Roth Thermotank Quadroline storage tank. Some types do not come equipped with connection G. Should that be the case, then evacuation must be carried out via connection H.

Caution: Ensure ventilation of the tank before evacuation!

Hydraulic connections

All hydraulic connections (heating, drinking water and solar) have a 5/4” screw connection (SW 46) to the storage tank.
Every connection must have a flat seal.

Connection insulation

Proceed as follows:

1. Check proper seal of all hydraulic connections, conduct pressure check.

2. Insulate all connections and cables.

NOTE!
Comply with local standards and requirements for insulation.

Filling the storage tank

The storage tank must be filled on the heating side in accordance with VDI 2035. See the note on page 4.
When filling the storage tank, make sure that the safety valve is functioning correctly and the operating pressure does not exceed 3 bar.

As the storage tank expands somewhat when it is filled for the first time, you will hear some slight “creaking” noises within the fibre structure. These noises are normal, only occur during the first filling and do not indicate a product defect.

Commissioning

Proceed as follows:

1. Check that the water supply line is open and the tank is full.

2. Check the function of the safety valve (and that of the pressure relief valve as needed).

Accessories

Roth Thermotank Quadroline double nipple 1 1/4"

Double nipple 1 ¼" flat-seal made from low-lead brass CW511L according to DIN 50930-6, which is also suitable for drinking water applications, even if the water quality requires a dezincification-resistant material.
This double nipple can be used as a corresponding part to the 1 ¼" screw connection on the Roth Thermotank Quadroline.
Material No. 1135007394

Roth Thermotank Quadroline double nipple 1 1/4"

Roth TQ circulation return

Corrugated stainless steel circulation lance, approx. 1,8 m long with a T connector made from low-lead brass, usable for Roth Thermotank Quadroline TQ-TW 325, TQ-TWS 325, TQ-TW 500, TQ-TWS 500, TQ-K 500 and TQ-TWK 500.
Material No. 1135007439

Roth TQ circulation return

Roth Thermocoat TQ 325

Roth Thermocoat made from PVC with lid as optional accessory for all versions of the Roth Thermotank Quadroline 325, White, Thermocoat thickness is 5 mm.
Material No. 1135007441

Roth Thermocoat TQ 500

Roth Thermocoat made from PVC with lid as optional accessory for all versions of the Roth Thermotank Quadroline 500, White, Thermocoat thickness is 5 mm.
Material No. 1135007442

Roth Thermocoat TQ 325, 500 and 850

Roth Thermocoat TQ 850

Roth Thermocoat made from PVC with lid as optional accessory for all versions of the Roth Thermotank Quadroline 850,
As well as the change in appearance, the Thermocoat also reduces heat loss in standby mode and thus further increases efficiency
White, Thermocoat thickness is 5 mm.
Material No. 1135007594

Roth Thermocoat TQ 325 plus

Roth Thermocoat made from PVC with integrated PS insulation (thickness 20 mm) and lid as optional accessory for all versions of the Roth Thermotank Quadroline 325 in order to achieve greater efficiency,
White, Thermocoat thickness incl. insulation totals 25 mm,
as a result the diameter is increased by 50 mm.
Material No. 1135007443

Roth Thermocoat TQ 500 plus

Roth Thermocoat made from PVC with integrated PS insulation (thickness 20 mm) and lid as optional accessory for all versions of the Roth Thermotank Quadroline 500 in order to achieve greater efficiency,
White, Thermocoat thickness incl. insulation totals 25 mm,
as a result the diameter is increased by 50 mm.
Material No. 1135007444

Roth Thermocoat TQ 325 plus and TQ 500 plus

Technical Data

Technical data/Type		TQ-P 325	TQ-P 500	TQ-T 325	TQ-T 500	TQ-T 850
Model type		**Buffer storage tank**		**Separation storage tank**		
Material No.		1115009462	1115009467	1115009463	1115009468	1115009992
Description	**Unit**					
Insulation external dimensions						
Length/width	mm	650 × 650	780 × 780	650 × 650	780 × 780	1090 x 970
Height	mm	1965	1965	1965	1965	1965
Installation size						
Diameter D	mm	547	677	547	677	950 x 790
Height	mm	1935	1935	1935	1935	1935
Pivot measurement	mm	2030	2070	2030	2070	2016
Net tank capacity	litres	325	500	325	500	812
Approx. weight	kg	40	50	40	50	75
Max. continuous tank temperature	°C	90	90	90	90	90
Max. continuous operating pressure	bar	3	3	3	3	3
Max. tank test pressure/20 °C *	bar	4,5	4,5	4,5	4,5	4,5
Solar heat exchanger						
Output area	m^2					
Max. operating pressure	bar					
Capacity	litres					
Max. collector area	m^2					
Hot water heat exchanger, output values in accordance with DIN 4708/T3						
Output area	m^2					
Max. operating pressure	bar					
Approx. capacity	litres					
Tapping rate (20 l/min.) approx.	litres					
Output coefficient N_L, approx.						
Connections						
Heat source supply	dim.	IG 1¼" H	IG 1¼" H	IG 1¼" H	IG 1¼" H	IG 1¼" H
Connection height	mm	45	45	45	45	45
Heat source return	dim.			IG 1¼" G	IG 1¼" G	IG ¼" G
Connection height	mm			115	115	115
Heat distribution system supply	dim.	IG 1¼" A	IG 1¼" A	IG 1¼" B	IG 1¼" B	IG ¼" B
Connection height	mm	1890	1890	1820	1820	1820
Heat distribution system return	dim.			IG 1¼" A	IG 1¼" A	IG ¼" A
Connection height	mm			1890	1890	1890
Solar heat exchanger supply (inlet)	dim.					
Connection height	mm					
Solar heat exchanger return (outlet)	dim.					
Connection height	mm					
Hot water heat exchanger supply (cold)	dim.					
Connection height	mm					
Hot water heat exchanger return (hot)	dim.					
Connection height	mm					
Sensor sleeve input	Number of	4	4	4	4	8

* Function test must only be carried out with water!

Technical Data

Technical data (continued)

Technical data/Type		TQ-S 325	TQ-S 500	TQ-S 850
Model type		Solar storage tank		
Material No.		1115009465	1115009470	115009993
Description	**Unit**			
Insulation external dimensions				
Length/width	mm	650 × 650	780 × 780	1090 x 970
Height	mm	1965	1965	1965
Installation size				
Diameter D	mm	547	677	950 x 790
Height	mm	1935	1935	1935
Pivot measurement	mm	2030	2070	2016
Net tank capacity	litres	315,5	485,5	794
Approx. weight	kg	52	62	96
Max. continuous tank temperature	°C	90	90	90
Max. continuous operating pressure	bar	3	3	3
Max. tank test pressure/20 °C *	bar	4,5	4,5	4,5
Solar heat exchanger				
Output area	m^2	1,5	1,5	2,5
Max. operating pressure	bar	10	10	10
Capacity	litres	8	8	13
Max. collector area	m^2	10	12,5	20
Hot water heat exchanger, output values in accordance with DIN 4708/T3				
Output area	m^2			
Max. operating pressure	bar			
Approx. capacity	litres			
Tapping rate (20 l/min.) approx.	litres			
Output coefficient N_L, approx.				
Connections				
Heat source supply	dim.		IG 1¼" H	IG 1¼" H
Connection height	mm		45	45
Heat source return	dim.	IG 1¼" G	IG 1¼" G	IG ¼" G
Connection height	mm	45	115	115
Heat distribution system supply	dim.	IG 1¼" B	IG 1¼" B	IG ¼" B
Connection height	mm	1820	1820	1820
Heat distribution system return	dim.	IG 1¼" A	IG 1¼" A	IG ¼" A
Connection height	mm	1890	1890	1890
Solar heat exchanger supply (inlet)	dim.	IG 1¼" E	IG 1¼" E	IG ¼" E
Connection height	mm	185	255	255
Solar heat exchanger return (outlet)	dim.	IG 1¼" F	IG 1¼" F	IG ¼" F
Connection height	mm	115	185	185
Hot water heat exchanger supply (cold)	dim.			
Connection height	mm			
Hot water heat exchanger return (hot)	dim.			
Connection height	mm			
Sensor sleeve input	Number of	4	4	8

* Function test must only be carried out with water!

Technical Data

Technical data (continued)

Technical data/Type		TQ-TW 325	TQ-TW 500	TQ-TW 850
Model type		**Domestic water heater**		
Material No.		1115009464	1115009469	1115009996
Description	**Unit**			
Insulation external dimensions				
Length/width	mm	650 × 650	780 × 780	1090 x 970
Height	mm	1965	1965	1965
Installation size				
Diameter D	mm	547	677	950 x 790
Height	mm	1935	1935	1935
Pivot measurement	mm	2030	2070	2016
Net tank capacity	litres	302,5	478,5	771
Approx. weight	kg	65	74	106
Max. continuous tank temperature	°C	90	90	90
Max. continuous operating pressure	bar	3	3	3
Max. tank test pressure/20 °C *	bar	4,5	4,5	4,5
Solar heat exchanger				
Output area	m^2			
Max. operating pressure	bar			
Capacity	litres			
Max. collector area	m^2			
Hot water heat exchanger, output values in accordance with DIN 4708/T3				
Output area	m^2	5	5	7,5
Max. operating pressure	bar	10	10	10
Approx. capacity	litres	26	26	37
Tapping rate (20 l/min.) approx.	litres	375	510	930
Output coefficient N_L, approx.		2,8	4,3	7,0
Connections				
Heat source supply	dim.	IG 1¼" B	IG 1¼" B	IG 1¼" B
Connection height	mm	1890	1820	45
Heat source return	dim.	IG 1¼" H	IG 1¼" H	IG ¼" H
Connection height	mm	45	45	45
Heat distribution system supply	dim.			
Connection height	mm			
Heat distribution system return	dim.			
Connection height	mm			
Solar heat exchanger supply (inlet)	dim.			
Connection height	mm			
Solar heat exchanger return (outlet)	dim.			
Connection height	mm			
Hot water heat exchanger supply (cold)	dim.	IG 1¼" D	IG 1¼" D	IG ¼" D
Connection height	mm	1750	1680	1680
Hot water heat exchanger return (hot)	dim.	IG 1¼" C	IG 1¼" C	IG ¼" C
Connection height	mm	1820	1750	1750
Sensor sleeve input	Number of	4	4	8

Subject to technical modifications.

Technical Data

Technical data (continued)

Technical data/Type		TQ-TWS 325	TQ-TWS 500	TQ-TWS 850
Model type		Domestic water heater with solar energy facility		
Material No.		1115009466	1115009682	1115009997
Description	Unit			
Insulation external dimensions				
Length/width	mm	650 × 650	780 × 780	1090 x 970
Height	mm	1965	1965	1965
Installation size				
Diameter D	mm	547	677	950 x 790
Height	mm	1935	1935	1935
Pivot measurement	mm	2030	2070	2016
Net tank capacity	litres	302,5	478,5	758
Approx. weight	kg	65	74	114
Max. continuous tank temperature	°C	90	90	90
Max. continuous operating pressure	bar	3	3	3
Max. tank test pressure/20 °C *	bar	4,5	4,5	4,5
Solar heat exchanger				
Output area	m^2	1,5	1,5	2,5
Max. operating pressure	bar	10	10	10
Capacity	litres	8	8	13
Max. collector area	m^2	12,5	12,5	20
Hot water heat exchanger, output values in accordance with DIN 4708/T3				
Output area	m^2	5	5	7,5
Max. operating pressure	bar	10	10	10
Approx. capacity	litres	26	26	37
Tapping rate (20 l/min.) approx.	litres	295	497	930
Output coefficient N_L, approx.		2,8	4,3	7,0
Connections				
Heat source supply	dim.	IG 1¼" B	IG 1¼" B	IG 1¼" B
Connection height	mm	1890	1820	1820
Heat source return	dim.	IG 1¼" H	IG 1¼" H	IG ¼" H
Connection height	mm	45	45	45
Heat distribution system supply	dim.			
Connection height	mm			
Heat distribution system return	dim.			
Connection height	mm			
Solar heat exchanger supply (inlet)	dim.	IG 1¼" E	IG 1¼" E	IG ¼" E
Connection height	mm	185	255	255
Solar heat exchanger return (outlet)	dim.	IG 1¼" F	IG 1¼" F	IG ¼" F
Connection height	mm	115	185	185
Hot water heat exchanger supply (cold)	dim.	IG 1¼" D	IG 1¼" D	IG ¼" D
Connection height	mm	1750	1680	1680
Hot water heat exchanger return (hot)	dim.	IG 1¼" C	IG 1¼" C	IG 1¼" C
Connection height	mm	1820	1750	1750
Sensor sleeve input	Number of	4	4	8

Subject to technical modifications.

Technical Data

Technical data (continued)

Technical data/Type		TQ-K 500	TQ-K 850
Model type		Combination storage tank	
Material No.		1115009471	111500995
Description	Unit		
Insulation external dimensions			
Length/width	mm	780 × 780	1090 x 970
Height	mm	1965	1965
Installation size			
Diameter D	mm	677	950 x 790
Height	mm	1935	1935
Pivot measurement	mm	2070	2016
Net tank capacity	litres	468	756
Approx. weight	kg	81	116
Max. continuous tank temperature	°C	90	90
Max. continuous operating pressure	bar	3	3
Max. tank test pressure/20 °C *	bar	4,5	4,5
Solar heat exchanger			
Output area	m^2	1,5	2,5
Max. operating pressure	bar	10	10
Capacity	litres	8	13
Max. collector area	m^2	12,5	20
Hot water heat exchanger, output values in accordance with DIN 4708/T3			
Output area	m^2	5	7,5
Max. operating pressure	bar	10	10
Approx. capacity	litres	26	37
Tapping rate (20 l/min.) approx.	litres	374	780
Output coefficient N_L, approx.		2,5	7,0
Connections			
Heat source supply	dim.	IG 1¼" B/H	IG 1¼" B/H
Connection height	mm	1820/45	1820/45
Heat source return	dim.	IG 1¼" A/G	IG ¼" A/G
Connection height	mm	1890/115	1890/115
Heat distribution system supply	dim.	IG 1¼" H	IG ¼" H
Connection height	mm	45	45
Heat distribution system return	dim.	IG 1¼" G	IG ¼" G
Connection height	mm	115	115
Solar heat exchanger supply (inlet)	dim.	IG 1¼" E	IG ¼" E
Connection height	mm	255	255
Solar heat exchanger return (outlet)	dim.	IG 1¼" F	IG ¼" F
Connection height	mm	185	185
Hot water heat exchanger supply (cold)	dim.	IG 1¼" D	IG ¼" D
Connection height	mm	1680	1680
Hot water heat exchanger return (hot)	dim.	IG 1¼" C	IG ¼" C
Connection height	mm	1750	1750
Sensor sleeve input	Number of	4	8

Subject to technical modifications.

Technical Data

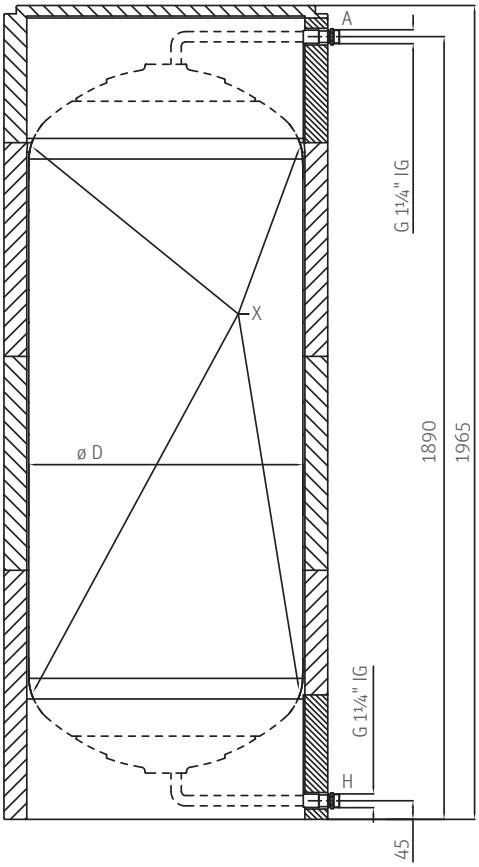
Technical data (continued)

Technical data/Type		TQ-TWK 500	TQ-TWK 850
Model type		**Domestic combination drinking water tank**	
Material No.		1115009952	111500994
Description	**Unit**		
Insulation external dimensions			
Length/width	mm	780 x 780	1090 x 970
Height	mm	1965	1965
Installation size			
Diameter D	mm	677	950 x 790
Height	mm	1935	1935
Pivot measurement	mm	2070	2016
Net tank capacity	litres	478,5	769
Approx. weight	kg	75	108
Max. continuous tank temperature	°C	90	90
Max. continuous operating pressure	bar	3	3
Max. tank test pressure/20 °C *	bar	4,5	4,5
Solar heat exchanger			
Output area	m^2		
Max. operating pressure	bar		
Capacity	litres		
Max. collector area	m^2		
Hot water heat exchanger, output values in accordance with DIN 4708/T3			
Output area	m^2	5	7,5
Max. operating pressure	bar	10	10
Approx. capacity	litres	26	37
Tapping rate (20 l/min.) approx.	litres	374	780
Output coefficient N_L, approx.		2,5	7,0
Connections			
Heat source supply	dim.	IG 1¼" B/H	IG 1¼" B/H
Connection height	mm	1820/45	1820/45
Heat source return	dim.	IG 1¼" A/G	IG ¼" A/G
Connection height	mm	1890/115	1890/115
Heat distribution system supply	dim.	IG 1¼" H	IG ¼" H
Connection height	mm	45	45
Heat distribution system return	dim.	IG 1¼" G	IG ¼" G
Connection height	mm	115	115
Solar heat exchanger supply (inlet)	dim.		
Connection height	mm		
Solar heat exchanger return (outlet)	dim.		
Connection height	mm		
Hot water heat exchanger supply (cold)	dim.	IG 1¼" D	IG ¼" D
Connection height	mm	1680	1680
Hot water heat exchanger return (hot)	dim.	IG 1¼" C	IG ¼" C
Connection height	mm	1750	1750
Sensor sleeve input	Number of	4	8

Subject to technical modifications.

Dimensional drawings

Roth Thermotank Quadroline – Buffer Storage Tank



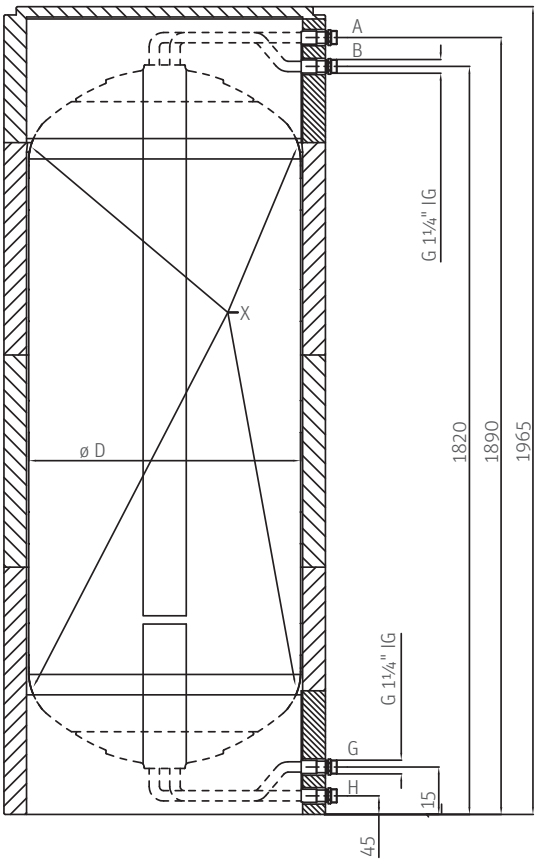
Dimensions in mm

A Heating supply (outlet)
H Heat source supply (inlet)
X Sensor sleeve (4 units)

Technical data/Type		TQ-P 325	TQ-P 500
Model type		Buffer storage tank	
Description	Unit		
Insulation external dimensions			
Length/width	mm	650 × 650	780 × 780
Height	mm	1965	1965
Installation size			
Diameter D	mm	547	677
Height	mm	1935	1935
Pivot measurement	mm	2030	2070
Net tank capacity	litres	325	500
Approx. weight	kg	40	50
Max. continuous tank temperature	°C	90	90
Max. continuous operating pressure	bar	3	3

Dimensional drawings

Roth Thermotank Quadroline – Separation Storage Tank



Dimensions in mm

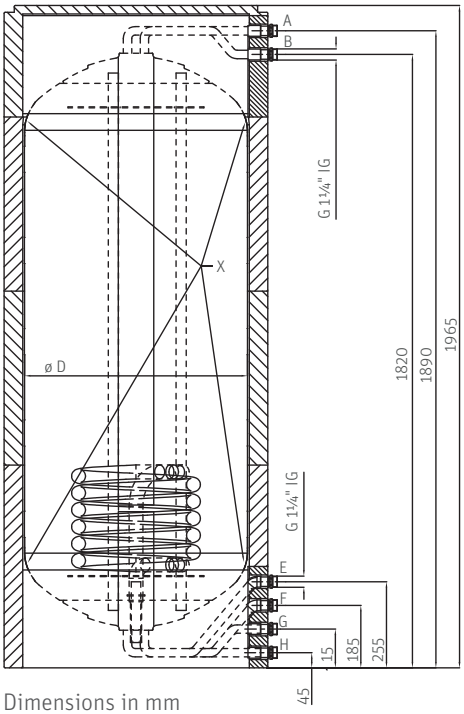
Technical data/Type		TQ-T 325	TQ-T 500	TQ-T 850
Model type		Separation storage tank		
Description	Unit			
Insulation external dimensions				
Length/width	mm	650 × 650	780 × 780	1090 x 970
Height	mm	1965	1965	1965
Installation size				
Diameter D	mm	547	677	950 x 790
Height	mm	1935	1935	1935
Pivot measurement	mm	2030	2070	2016
Net tank capacity	litres	325	500	812
Approx. weight	kg	40	50	75
Max. continuous tank temperature	°C	90	90	90
Max. continuous operating pressure	bar	3	3	3

A Heating return
B Heating supply
G Heat source return
H Heat source supply
X Sensor sleeve

Dimensional drawings

Roth Thermotank Quadroline – Solar Storage Tank

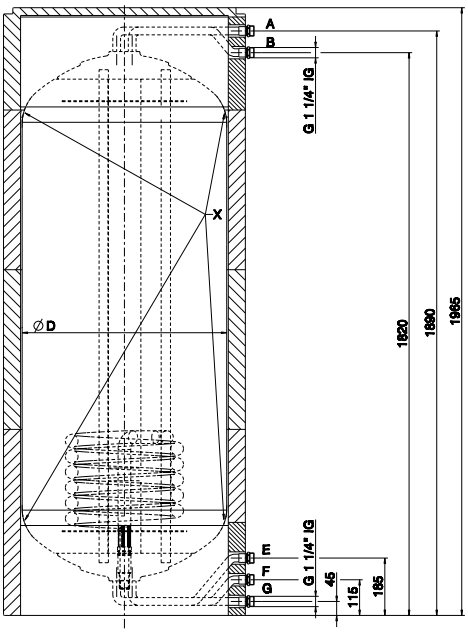
TQ-S 500/850



Dimensions in mm

A Heating return
B Heating supply
E Solar heat exchanger supply (inlet)
F Solar heat exchanger return (outlet)
G Heat source return
H Heat source supply
X Sensor sleeve

TQ-S 325



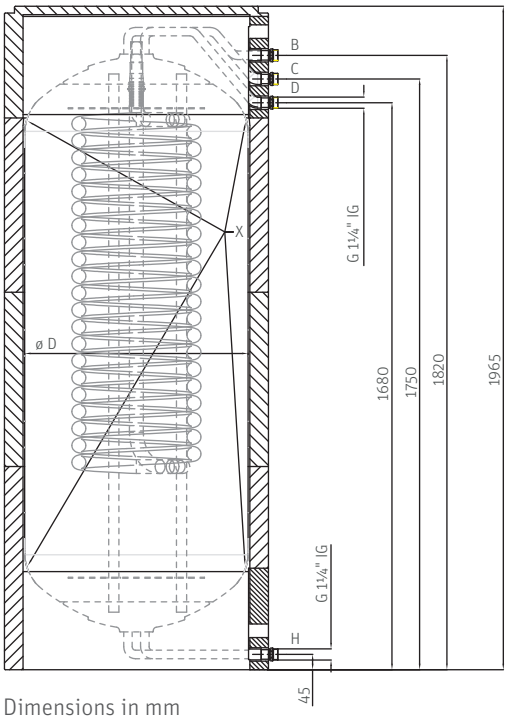
Dimensions in mm

Technical data/Type		TQ-S 325	TQ-S 500	TQ-S 850
Model type		Solar storage tank		
Description	Unit			
Insulation external dimensions				
Length/width	mm	650 × 650	780 × 780	1090 x 970
Height	mm	1965	1965	1965
Installation size				
Diameter D	mm	547	677	950 x 790
Height	mm	1935	1935	1935
Pivot measurement	mm	2030	2070	2016
Net tank capacity	litres	310,5	485,5	794
Approx. weight	kg	52	62	96
Max. continuous tank temperature	°C	90	90	90
Max. continuous operating pressure	bar	3	3	3

Dimensional drawings

Roth Thermotank Quadroline – Domestic Water Heater

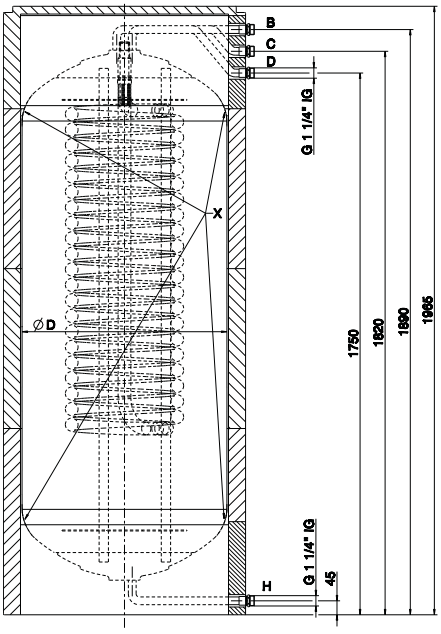
TQ-TW 500/850



Dimensions in mm

B Heat source supply, domestic water
C Hot water outlet
D Cold water inlet
H Heat source return, domestic water
X Sensor sleeve

TQ-TW 325



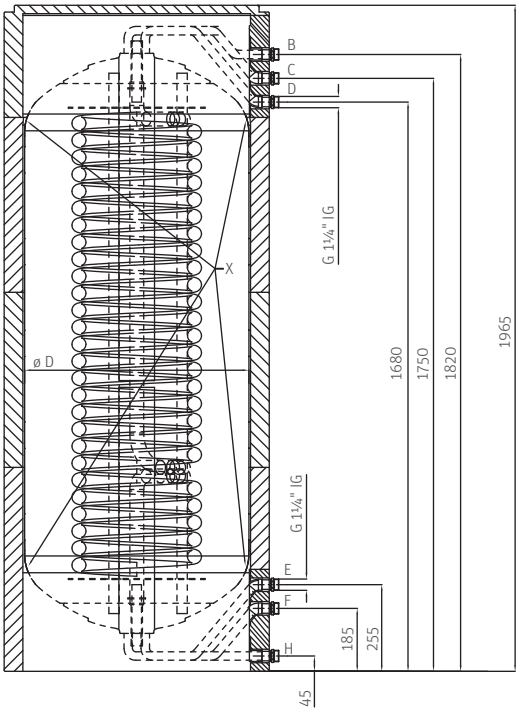
Dimensions in mm

Technical data/Type		TQ-TW 325	TQ-TW 500	TQ-TW 850
Model type		Domestic water heater		
Description	Unit			
Insulation external dimensions				
Length/width	mm	650 × 650	780 × 780	1090 x 970
Height	mm	1965	1965	1965
Installation size				
Diameter D	mm	547	677	950 x 790
Height	mm	1935	1935	1935
Pivot measurement	mm	2030	2070	2016
Net tank capacity	litres	302,5	478,5	771
Approx. weight	kg	65	74	106
Max. continuous tank temperature	°C	90	90	90
Max. continuous operating pressure	bar	3	3	3

Dimensional drawings

Roth Thermotank Quadroline – Domestic Water Heater with Solar Energy Facility

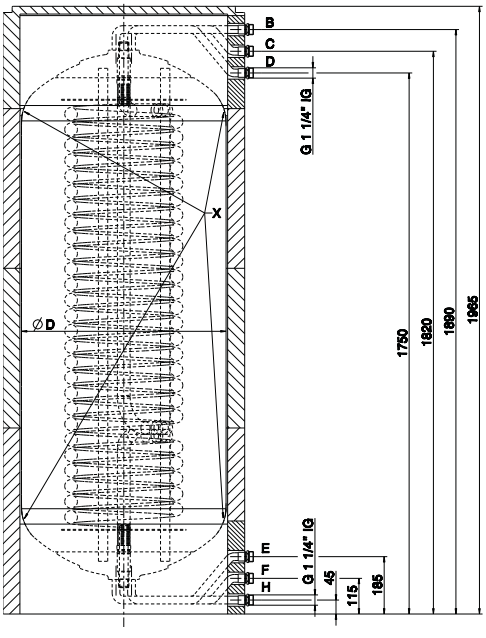
TQ-TWS 500/850



Dimensions in mm

B Heat source supply
C Hot water outlet
D Cold water inlet
E Solar heat exchanger supply (inlet)
F Solar heat exchanger return (outlet)
H Heat source return
X Sensor sleeve

TQ-TWS 325

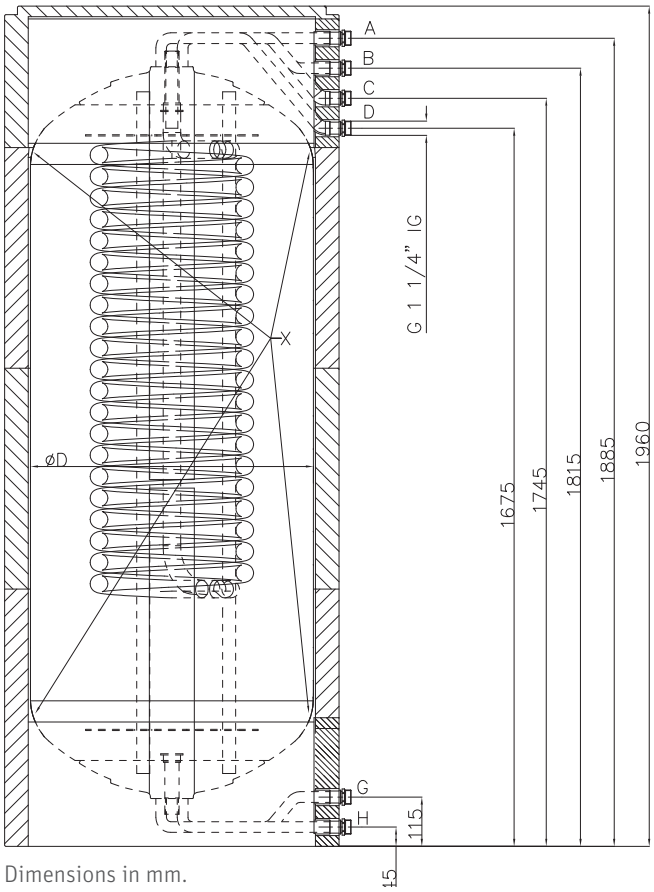


Dimensions in mm

Technical data/Type		TQ-TWS 325	TQ-TWS 500	TQ-TWS 850
Model type		Domestic water heater with solar energy facility		
Description	Unit			
Insulation external dimensions				
Length/width	mm	650 × 650	780 × 780	1090 x 970
Height	mm	1965	1965	1965
Installation size				
Diameter D	mm	547	677	950 x 790
Height	mm	1935	1935	1935
Pivot measurement	mm	2030	2070	2016
Net tank capacity	litres	292	468	758
Approx. weight	kg	72	81	114
Max. continuous tank temperature	°C	90	90	90
Max. continuous operating pressure	bar	3	3	3

Dimensional drawings

Roth Thermotank Quadroline – Drinking Water Combination Storage Tank



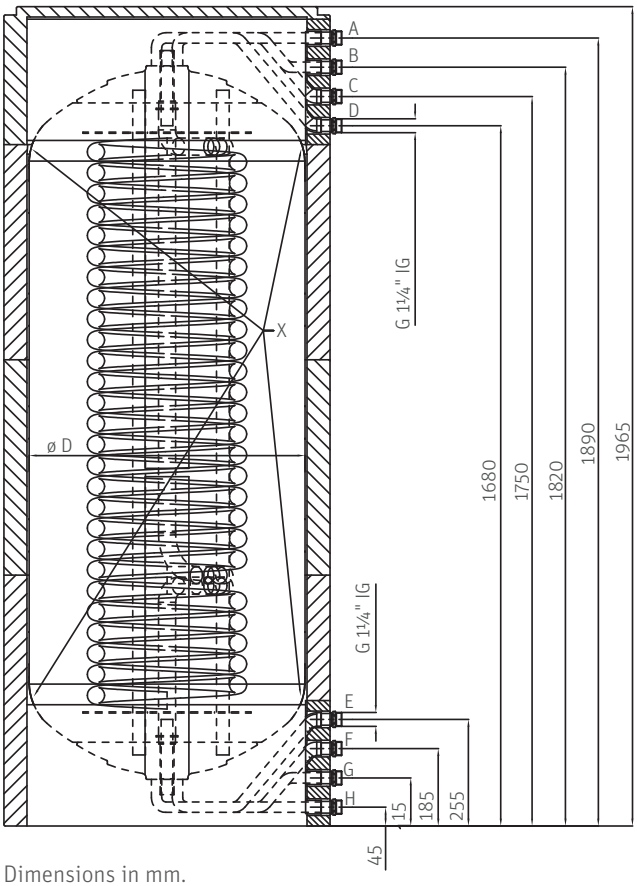
Dimensions in mm.

A Heat source return, domestic water
B Heat source supply, domestic water
C Hot water outlet
D Cold water inlet
G Heating return
H Heating supply
X Sensor sleeve

Technical data/Type		TQ-TWK 500	TQ-TWK 850
Model type		Domestic combination drinking water tank	
Description	Unit		
Insulation external dimensions			
Length/width	mm	780 × 780	1090 x 970
Height	mm	1965	1965
Installation size			
Diameter D	mm	677	950 x 790
Height	mm	1935	1935
Pivot measurement	mm	2070	2016
Net tank capacity	litres	478,5	769
Approx. weight	kg	75	108
Max. continuous tank temperature	°C	90	90
Max. continuous operating pressure	bar	3	3

Dimensional drawings

Roth Thermotank Quadroline – Combination Storage Tank



Dimensions in mm.

A Heat source return, domestic water
B Heat source supply, domestic water
C Hot water outlet
D Cold water inlet
E Solar heat exchanger supply (inlet)
F Solar heat exchanger return (outlet)
G Heating return
H Heating supply
X Sensor sleeve

Technical data/Type		TQ-K 500	TQ-K 850
Model type		Combination storage tank	
Description	Unit		
Insulation external dimensions			
Length/width	mm	780 × 780	1090 x 970
Height	mm	1965	1965
Installation size			
Diameter D	mm	677	950 x 790
Height	mm	1935	1935
Pivot measurement	mm	2070	2016
Net tank capacity	litres	468	756
Approx. weight	kg	81	116
Max. continuous tank temperature	°C	90	90
Max. continuous operating pressure	bar	3	3

Notes

Our strengths
Your benefits

Innovation

- Early identification of market requirements
- In-house materials research and development
- In-house engineering

Service

- Extensive field network of qualified sales professionals
- Hotline and project planning service
- Factory training courses, planning and product seminars
- Fast availability of all Roth brand product ranges throughout Europe
- Comprehensive warranty and extended liability agreements

Products

- Complete range of easy-to-install product systems
- Manufacturing expertise for the complete product range within the Roth Industries group of companies
- Certified in accordance with DIN EN ISO 9001:2008

Roth Energy and Sanitary Systems

Generation
- Solar systems
- Heat pump systems
- Solar heat pump systems

Storage
Storage systems for
- Domestic and heating water
- Combustibles and biofuels
- Rainwater and waste water

Application
- Radiant heating and cooling systems
- Pipe installation systems
- Shower systems

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