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ait
HEAT PUMPS



Operating Manual

Series buffer tanks
Stratified storage tanks

Accessory for heat pumps

UK

www.aitgroup.com

83018300pUK



1 Please read first

This operating manual provides important information on the handling of the unit. It is an integral part of the product and must be stored so that it is accessible in the immediate vicinity of the unit. It must remain available throughout the entire service life of the unit. It must be handed over to subsequent owners or users of the unit.

Read the operating manual before working on or operating the unit. This applies in particular to the chapter on safety. Always follow all instructions completely and without restrictions.

It is possible that this operating manual may contain instructions that seem incomprehensible or unclear. In the event of any questions or if any details are unclear, contact the factory customer service department or the manufacturer's local partner.

Since this operating manual was written for several different models of the unit, always comply with the parameters for the respective model.

This operating manual is intended only for persons assigned to work on or operate the unit. Treat all constituent parts confidentially. The information contained herein is protected by copyright. No part of this manual may be reproduced, transmitted, copied, stored in electronic data systems or translated into another language, either wholly or in part, without the express written permission of the manufacturer.

2 Symbols

The following symbols are used in the operating manual. They have the following meaning:



Information for operators.



Information or instructions for qualified technicians.



DANGER

Indicates a direct impending danger resulting in severe injuries or death.



WARNING

Indicates a potentially dangerous situation that could result in serious injuries or death.



CAUTION

Indicates a potentially dangerous situation that could result in medium or slight injuries.



IMPORTANT

Indicates a potentially dangerous situation, which could result in property damage.



NOTE

Emphasised information.

1., 2., 3., ... Numbered step within a multi-step instruction for action.
Adhere to the given sequence.



Single-step instruction for action



List



Reference to further information elsewhere in the operating manual or in another document.



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3 Intended use

The storage tank may be used only for the intended purpose.

This means as a buffer storage tank in conjunction with:

- Air/water heat pumps
- Brine/water heat pumps
- Water/water heat pumps



NOTE

For systems with cooling, only TPSK / WT-PSK storage tanks are allowed.

- If local regulations apply, observe: laws, standards and directives.

4 Disclaimer

The manufacturer is not liable for losses resulting from any use of the unit which is not its intended use.

The manufacturer's liability also expires:

- if work is carried out on the unit and its components contrary to the instructions in this operating manual.
- if work is improperly carried out on the unit and its components.
- if work is carried out on the unit which is not described in this operating manual, and this work has not been explicitly approved by the manufacturer in writing.
- if the unit or components in the unit have been altered, modified or removed without the explicit written consent of the manufacturer.

5 Safety

The unit is safe to operate when used for its intended purpose. The construction and design of the unit conform to current state-of-the-art standards, all relevant DIN/VDE regulations and all relevant safety regulations.

The operating manuals supplied with the product are intended for all users of the product.

The operation of the product via the heating and heat pump control and work on the product which is intended for end customers / operators is suitable for all

age groups of persons who are able to understand the activities and the resulting consequences and can carry out the necessary activities.

Children and adults who are not experienced in handling the product and do not understand the necessary activities and the resulting consequences must be instructed and, if necessary, supervised by persons experienced in handling the product and who are responsible for safety.

Children must not play with the product.

The product may only be opened by qualified personnel.

All instructional information in this operating manual is solely directed at qualified, skilled personnel.

Only qualified, skilled personnel is able to carry out the work on the unit safely and correctly. Interference by unqualified personnel can cause life-threatening injuries and damage to property.

- Ensure that the personnel is familiar with the local regulations, especially those on safe and hazard-aware working.
- Only allow qualified personnel with "electrical" training to carry out work on the electrics and electronics.
- Only allow qualified, skilled personnel to do any other work on the system, e.g.
 - Heating installer
 - Plumbing installer
 - Refrigeration system installer (maintenance work)

Every person who carries out work on the unit must comply with the applicable accident prevention and safety regulations. This applies in particular to the wearing of personal protective clothing.

During the warranty and guarantee period, servicing and repair work may only be carried out by personnel authorised by the manufacturer.



5.1 Personal protective equipment

During transport and work on the unit, there is a risk of cuts due to the sharp edges of the unit.

- ▶ Wear cut-resistant protective gloves.

During transport and work on the unit, there is a risk of foot injuries.

- ▶ Wear safety shoes.

When working on liquid-conveying lines, there is a risk of injury to the eyes due to leakage of liquids.

6 Contact

Addresses for purchasing accessories, for servicing or for answers to questions about the unit and this operating manual can be found on the internet and are kept up-to-date.

→ "Contact" in the heat pump operating manual

7 Warranty / Guarantee

For warranty and guarantee conditions, please refer to the purchase documents.



NOTE

Please contact your dealer about all matters concerning warranties and guarantees.

8 Disposal

When decommissioning the unit, always comply with applicable laws, directives and standards concerning recovery, recycling and disposal.

9 Scope of delivery

- Storage tank
- additional for TPS /WTPSK:
1 sensor for the heating and heat pump regulator.
- additional for TPSK:
2 sensors for the heating and heat pump regulator.

1. Inspect the delivery for outwardly visible signs of damage.
2. Check to make sure that the delivery is complete. Any defects or incorrect deliveries must be claimed immediately.

Refer to the rating plate attached to the delivered storage tank to find out what type of storage tank it is. The abbreviations stand for the following:

- WPS = Series buffer tank, wall-mounted
- TPS = Stratified buffer tank (= parallel buffer tank)
- WTPSK = Wall-mounted, vapour diffusion tight, insulated, striated buffer tank (suitable for reversible systems)
- TPSK = Vapour diffusion tight, insulated, striated buffer tank (suitable for reversible systems)

9.1 Accessories



IMPORTANT

Use only original accessories from the manufacturer of the unit.

Select electrical heating elements from 4.5 to 9 kW for the specific system and order separately.

- For information on which electrical heating element is suitable for the storage tank: "Technical Data", from page 9, for the respective model



10 Transport, Installation, Assembly

Observe the following when performing all work:



IMPORTANT

The tank must be installed in a frostproof room, to prevent frost damage to the storage tank, pipe system and connections.



NOTE

Install the storage tank as close as possible to the heat generator, to keep the heat losses as low as possible. Ensure the shortest possible pipe lengths to the load.



IMPORTANT

The floor or ground at the place of installation must be dry, firm and able to safely support the weight of the tank.

In the case of wall-mounted storage tanks, the wall must have sufficient load-bearing capacity to safely carry the weight of the storage tank when full.

→ "Technical Data", from page 9, for the respective model

10.1 Transport to installation location

To avoid damage during transport, transport the storage tank (secured on the wooden pallet) to its final installation location using a lifting truck.



WARNING

Make sure to secure tank against slipping during transport.



WARNING

The tank can tip over when being removed from the wooden pallet and during transport with a hand truck or lifting truck. This can result in personal injuries and damage.

► Take suitable precautions, which prevent the tipping hazard.

► Dispose of the transport and packaging materials properly and under ecological aspects.

10.2 Installation

When installing the tank, ensure sufficient clearance from walls and other objects to enable the connection pipes to be fitted.

10.3 Assembly



IMPORTANT

If several storage tanks are used, do not connect the flanges of the storage tanks directly to each other.

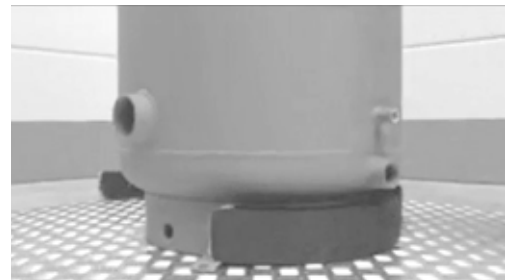
Cold insulation

Only TPSK 1000 and TPSK 1500

1. Attach adhesive tape such that the start and end of the insulating jacket come together at the adhesive tape. (Note connections).



2. Insulate base.



3. Connect insulation to the adhesive surfaces.





4. Start with the insulation on the connections.



5. Fasten the start and end of the insulating jacket at the adhesive tape applied in 1.



6. Stick second adhesive tape over the butt joint of the insulating jacket.



7. Attach insulation cover.



8. Glue the ends of the insulating cover.



9. Seal the butt joint with additional insulating tape.



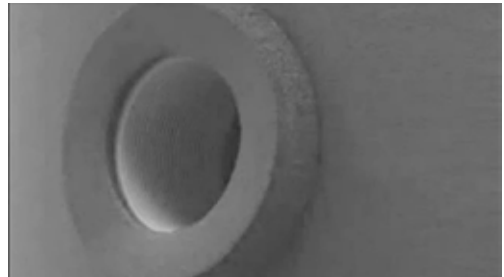
10. Attach external insulation at the base.



11. Remove packaging from the insulating rings.



12. Attach insulating rings at the connections.



13. The whole tank must be insulated vapour diffusion-tight.



IMPORTANT

Do not exceed the operating pressures specified on the rating plate.



NOTE

Close off any connections not required with appropriate plugs or caps.

- For position of the connections: "Dimensional drawings", from page 11, for the respective model

10.4 Installation of the sensor for the heating and heat pump regulator

Series buffer tanks

The sensor for the heating and heat pump regulator is already installed in the heat pump in the factory.

Parallel buffer tank

Stratified buffer tanks TPS

On site, you **must** install the sensor included with the tank for the heating and heat pump regulator in one of the sensor pockets provided.

- For positioning: "Dimensional drawings", from page 11, for respective model

Stratified buffer tank Cooling TPSK

On site, you **must** install the two sensors included with the tank for the heating and heat pump regulators, in the sensor pockets provided.

- For positioning: "Dimensional drawings", from page 11, for respective model

Stratified buffer tank wall-mounted cooling WTPSK

On site, you **must** install the two sensors included with the tank for the heating and heat pump regulators, in the sensor pockets provided.

- For positioning: "Dimensional drawings", from page 11, for respective model

11 Insulation of the connections and the storage tank



NOTE

Insulate in accordance with applicable local standards and directives.

1. Check seals of all hydraulic connections. Conduct pressure test.
2. Insulate all connections, pipes and cables.



IMPORTANT

The insulation of TPSK-/WTPSK tanks of the connections and lines must be moistureproof.

12 Draining the storage tank



IMPORTANT

When draining the storage tank, always ensure adequate ventilation.



Technical Data

WPS 61 – TPS 500.1

Tank name		WPS 61	WTPSK 101	TPS 200
Series buffer tank Stratified storage tank Stratified storage tank solar • yes – no		• – –	• • –	– • –
Heating water reservoir				
Energy efficiency class according to ErP		B	B	B
Standing loss according to ErP (at 65°C)		33	41	53
Total tank volume according to ErP		60	120	200
Nominal capacity		60	120	200
Max. operating pressure		6	6	3
Test pressure		12	9	4,5
Operating temperature minimum maximum		– 95	5 95	– 95
Installation location				
Room temperature minimum maximum		7 35	7 35	7 35
Relative humidity maximum (non-condensing)		65	65	65
General unit data				
Maximum output of electric heating element		–	–	1 x 6,0
Insulation				
Material: Rigid foam soft foam • yes – no		• –	• –	• –
Insulation thickness		45	42	45
Sheet metal jacket Foil jacket • yes – no		• –	• –	– •
Manufacturer: ait deutschland GmbH Index: a		813621	813642	813624

Tank name		TPSK 200.2	TPSK 470	TPS 500.1
Series buffer tank Stratified storage tank Stratified storage tank solar • yes – no		– • –	– • –	– • –
Heating water reservoir				
Energy efficiency class according to ErP		B	B	B
Standing loss according to ErP (at 65°C)		55	68	72
Total tank volume according to ErP		201	470	472
Nominal capacity		201	470	472
Max. operating pressure		3	3	3
Test pressure		4,5	4,5	4,5
Operating temperature minimum maximum		7 95	5 95	– 95
Installation location				
Room temperature minimum maximum		7 35	7 35	7 35
Relative humidity maximum (non-condensing)		65	65	65
General unit data				
Maximum output of electric heating element		3 x 6,0	3 x 7,5	3 x 7,5
Insulation				
Material: Rigid foam soft foam • yes – no		• –	• –	• –
Insulation thickness		45	70	80
Sheet metal jacket Foil jacket • yes – no		– •	– •	– •
Manufacturer: ait deutschland GmbH Index: a		813626	813662	813627



TPSK 500 – TPSK 1500

Technical Data

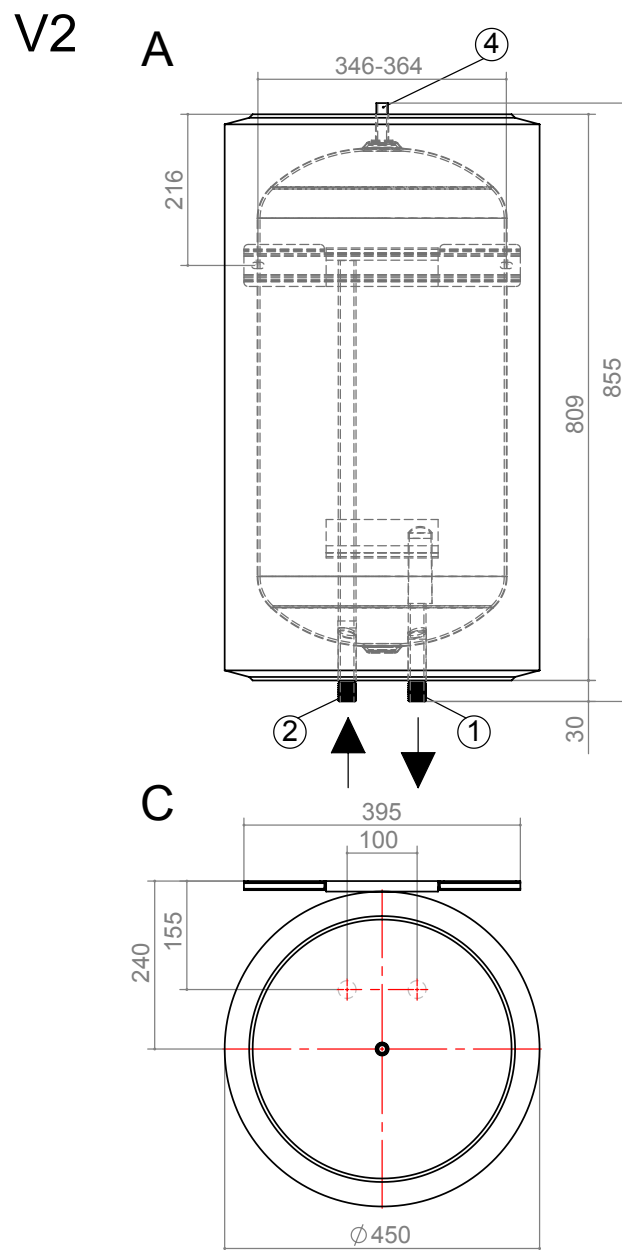
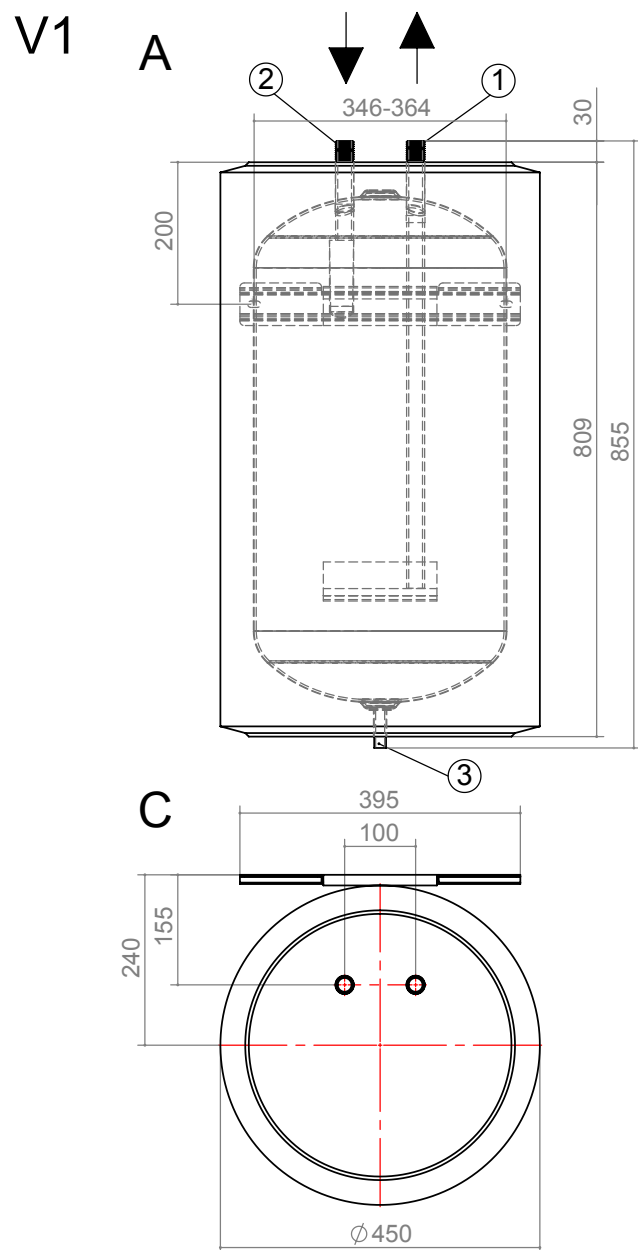
Tank name		TPSK 500	TPS 750	TPS 1000
Series buffer tank Stratified storage tank Stratified storage tank solar	• yes – no	– • –	– • –	– • –
Heating water reservoir				
Energy efficiency class according to ErP	...	C	–	–
Standing loss according to ErP (at 65°C)	W	103	126	144
Total tank volume according to ErP	l	479	765	1000
Nominal capacity	l	479	765	1000
Max. operating pressure	bar	3	3	3
Test pressure	bar	4,5	4,5	4,5
Operating temperature minimum maximum	°C	7 95	– 95	– 95
Installation location				
Room temperature minimum maximum	°C	7 35	7 35	7 35
Relative humidity maximum (non-condensing)	%	65	65	65
General unit data				
Maximum output of electric heating element	kW	3 x 7,5	3 x 9,0	3 x 9,0
Insulation				
Material: Rigid foam soft foam	• yes – no	• –	• –	• –
Insulation thickness	mm	45	80	80
Sheet metal jacket Foil jacket	• yes – no	• –	– •	– •
Manufacturer: ait deutschland GmbH Index: a		813628	813629	813630

Tank name		TPSK 1000 WD TPSK 1000	TPS 1500	TPSK 1500 WD TPSK 1500
Series buffer tank Stratified storage tank Stratified storage tank solar	• yes – no	– • –	– • –	– • –
Heating water reservoir				
Energy efficiency class according to ErP	...	–	–	–
Standing loss according to ErP (at 65°C)	W	119	153	152
Total tank volume according to ErP	l	1000	1490	1490
Nominal capacity	l	1000	1500	1490
Max. operating pressure	bar	3	3	3
Test pressure	bar	4,5	4,5	4,5
Operating temperature minimum maximum	°C	5 95	– 95	5 95
Installation location				
Room temperature minimum maximum	°C	7 35	7 35	7 35
Relative humidity maximum (non-condensing)	%	65	65	65
General unit data				
Maximum output of electric heating element	kW	3 x 9,0	3 x 9,0	3 x 9,0
Insulation				
Material: Rigid foam soft foam	• yes – no	• •	• –	• •
Insulation thickness	mm	105	100	105
Sheet metal jacket Foil jacket	• yes – no	– •	– •	– •
Manufacturer: ait deutschland GmbH Index: a		813631	813632	813633



Dimensional drawings

WPS 61



Keys: UK819421b

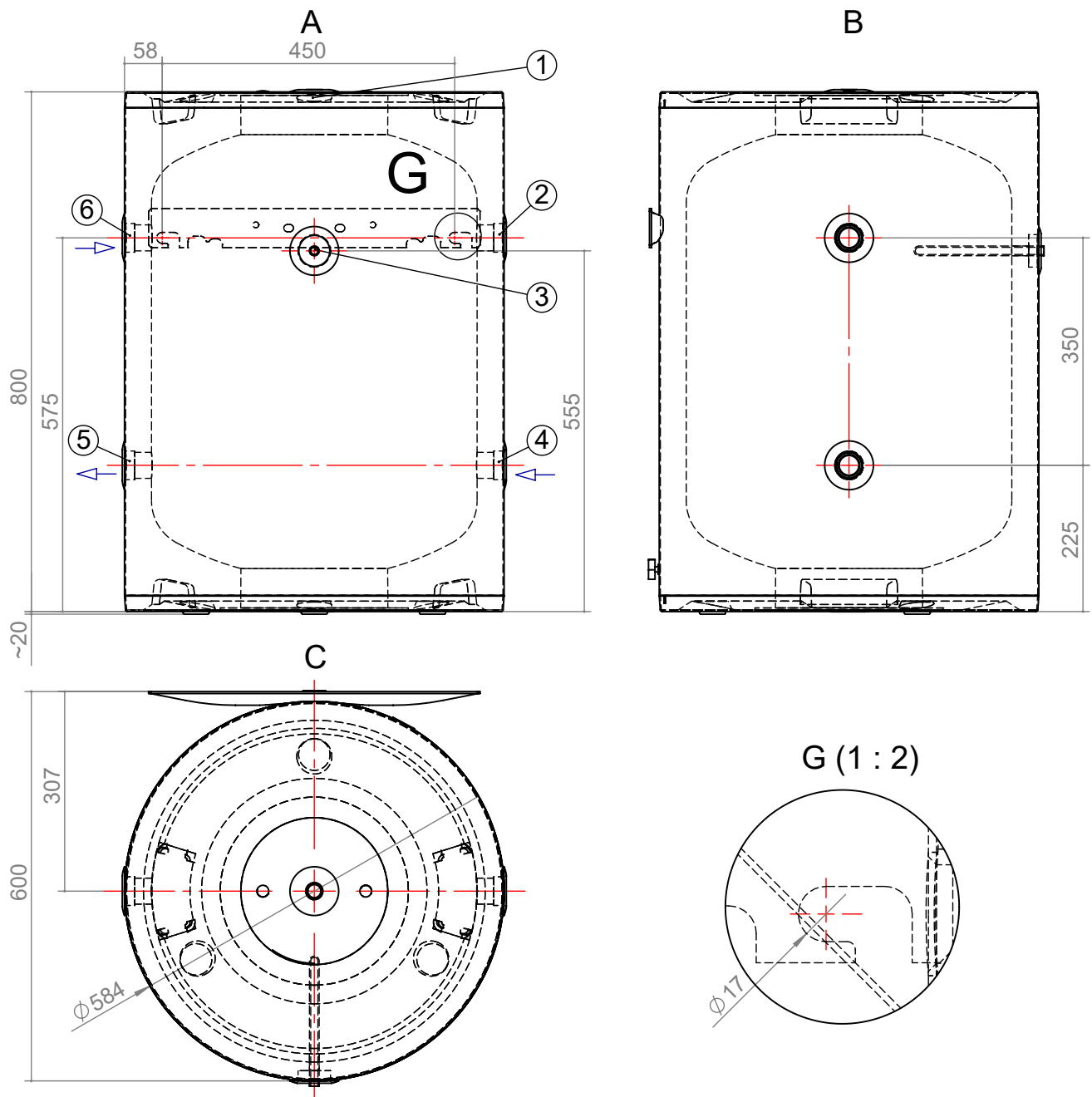
All dimensions in mm.

Pos.	Name	Dimension
V1	Variant 1	–
V2	Variant 2	–
A	Front view	–
C	Plan view	–
1	Heating water outlet	R 1 ½" AG
2	Heating water inlet	R 1 ½" AG
3	KFE tap connection	Rp ½" IG
4	Bleeding	Rp ½" IG
Net weight		24 kg
Nominal volume		62 litres



WTPSK 101

Dimensional drawings



Keys: UK819533

All dimensions in mm.

Pos..	Name
A	Front view
B	Side view from left

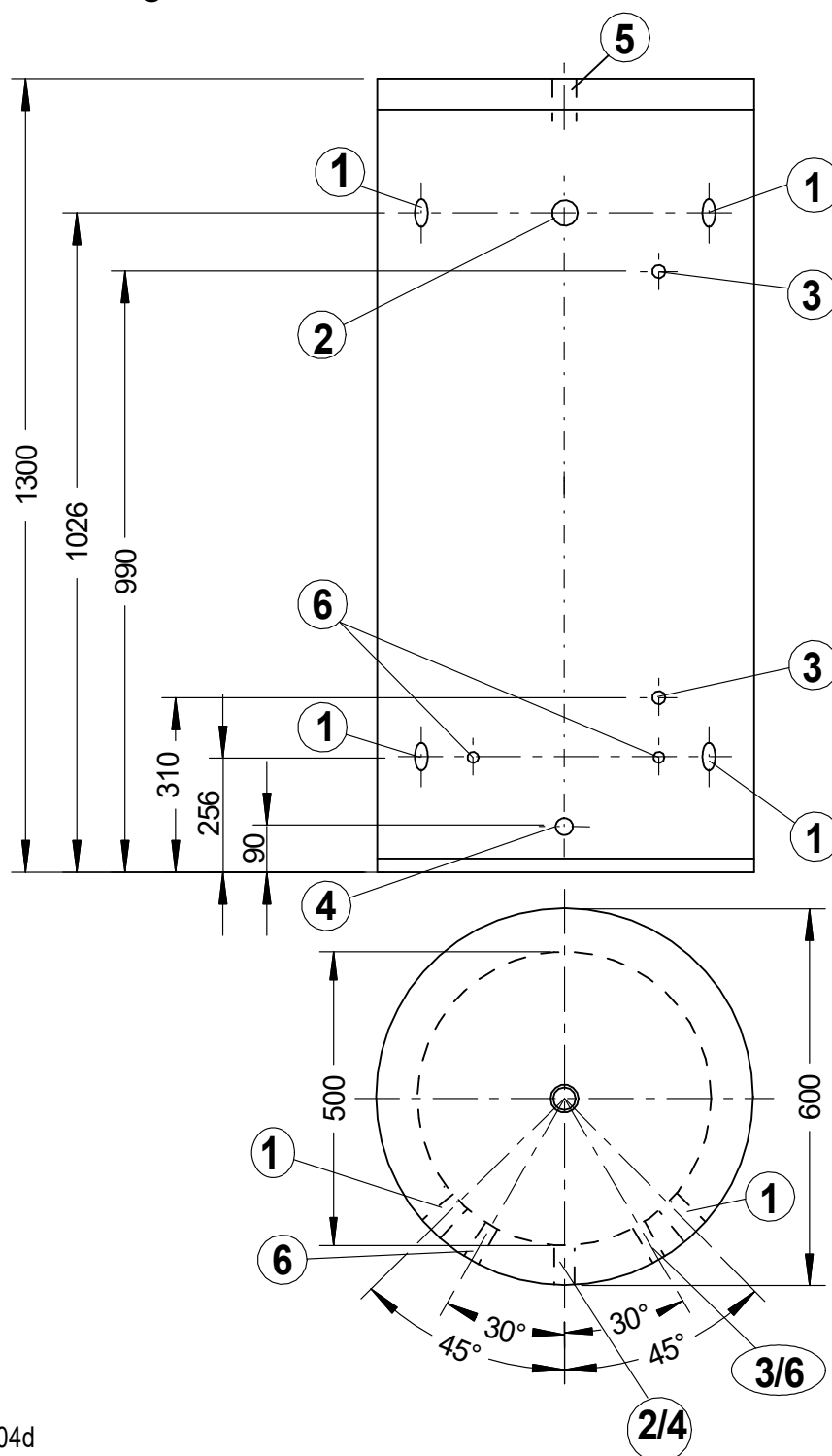
Pos.	Name
C	Plan view
G	Detail view

Pos.	Name	Dimension
1	Bleeding	G ½"
2	Filler plug	–
3	Sensor	Ø i 10 mm
4	Return heating circuit	G 1"
5	Return heat pump	G 1"
6	Flow heat pump / heating circuit	G 1"
Net weight		41 kg
Nominal volume		120 litres



Dimensional drawings

TPS 200



Keys: UK819304d

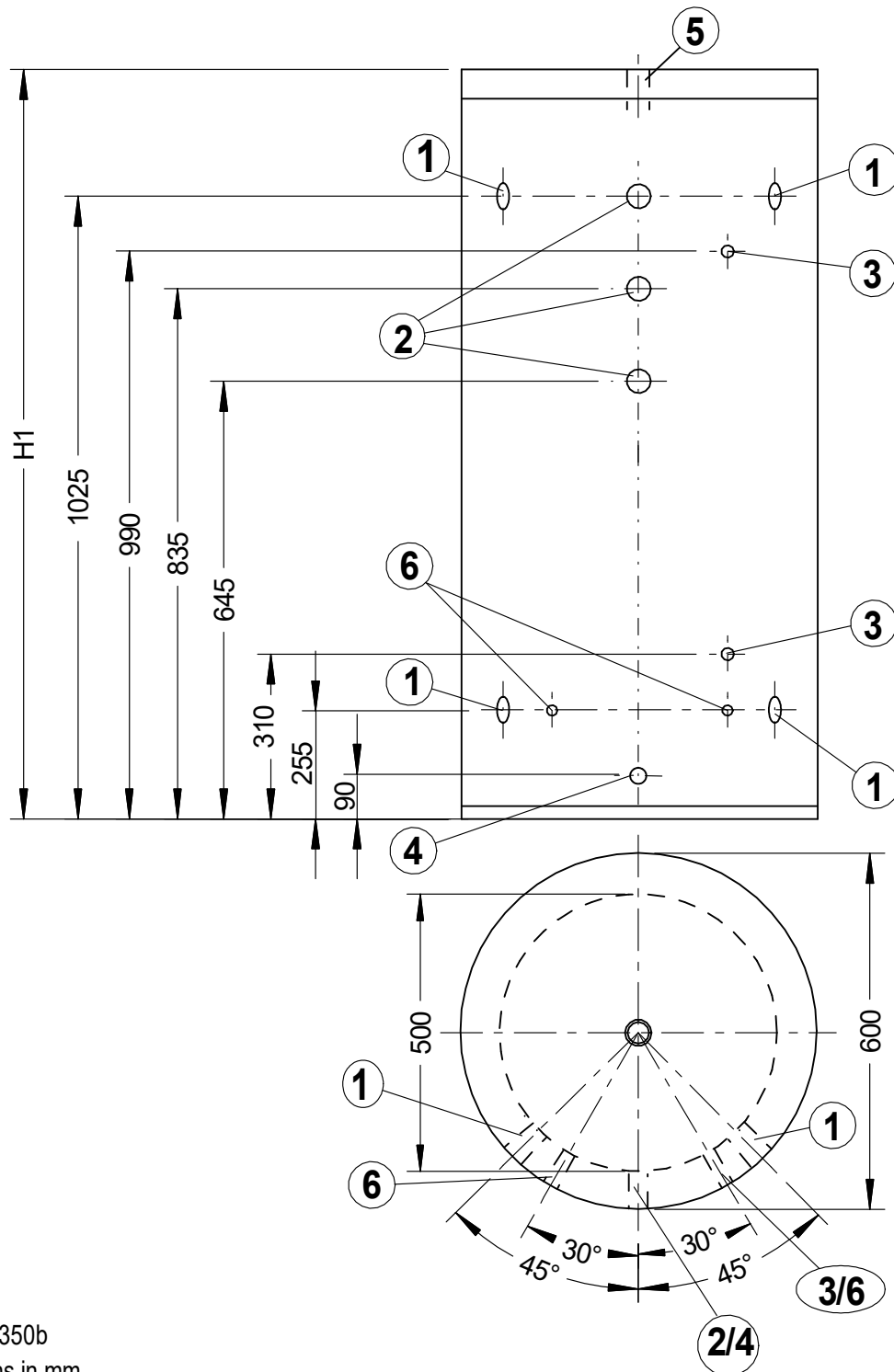
All dimensions in mm.

Pos.	Name	Dimension
1	Heating water	R 1 ½" IG
2	Bushing for sensor electric heating element	R 1 ½" IG
3	Bushing for sensor sensor pocket	R ½" IG
4	Connection for emptying tap	R ¾" AG
5	Bushing for sensor bleed and safety valve	R 1" IG
6	Immersion tube for sensor pocket	Ø i 8 mm
Net weight		39.4 kg
Tilting dimension storage tank		1440



TPSK 200.2

Dimensional drawings



Keys: UK819350b

All dimensions in mm.

Pos.	Name	Dimension
1	Heating water	R 1 1/2" IG
2	Bushing for sensor electric heating element	R 1 1/2" IG
3	Bushing for sensor sensor pocket	R 1/2" IG
4	Connection for emptying tap	R 3/4" AG
5	Bushing for sensor bleed and safety valve	R 1" IG
6	Immersion tube for sensor pocket	Ø i 8 mm

Net weight
41.2 kg

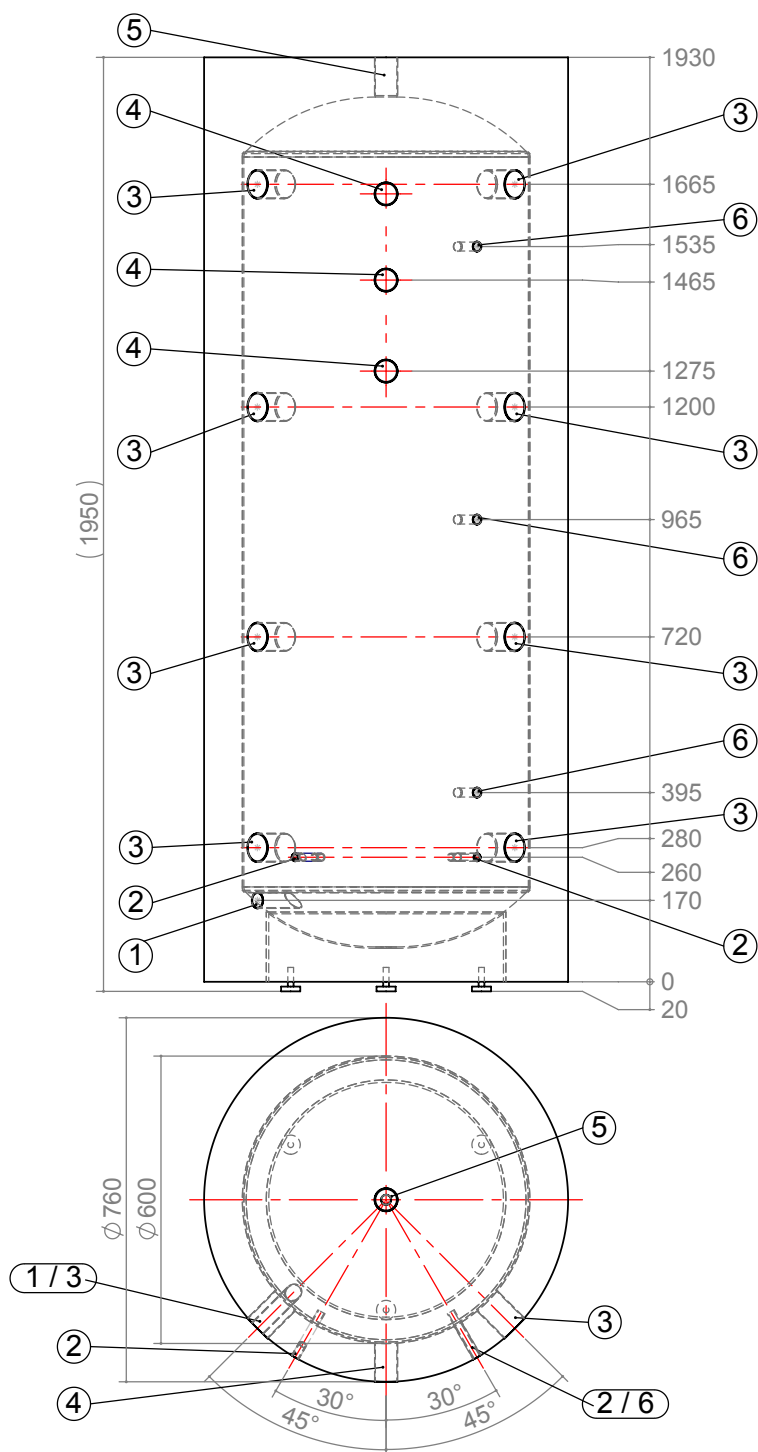
Tilting dimension storage tank
1400

H1
1310



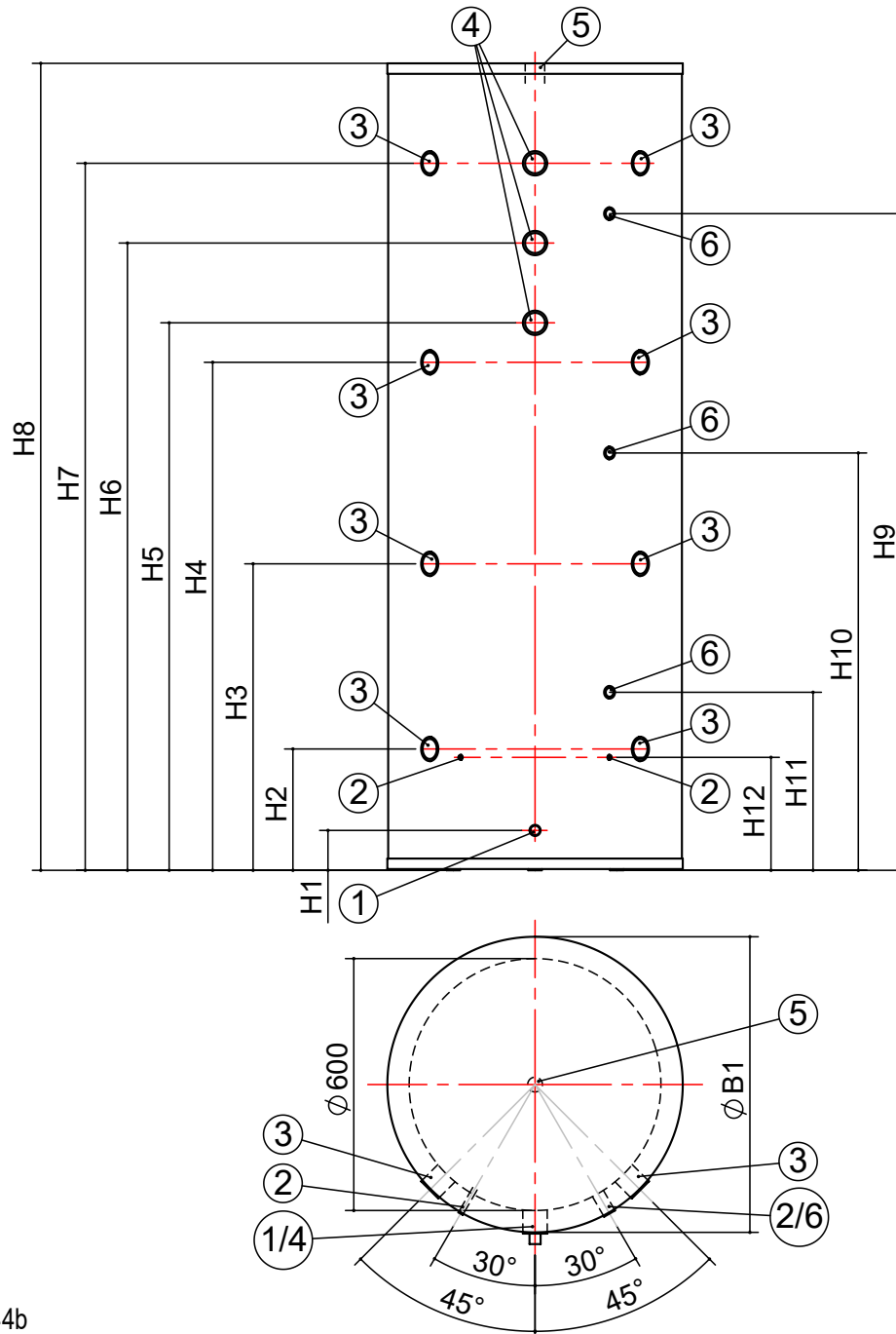
Dimensional drawings

TPS 500.1



Keys: UK819459
All dimensions in mm.

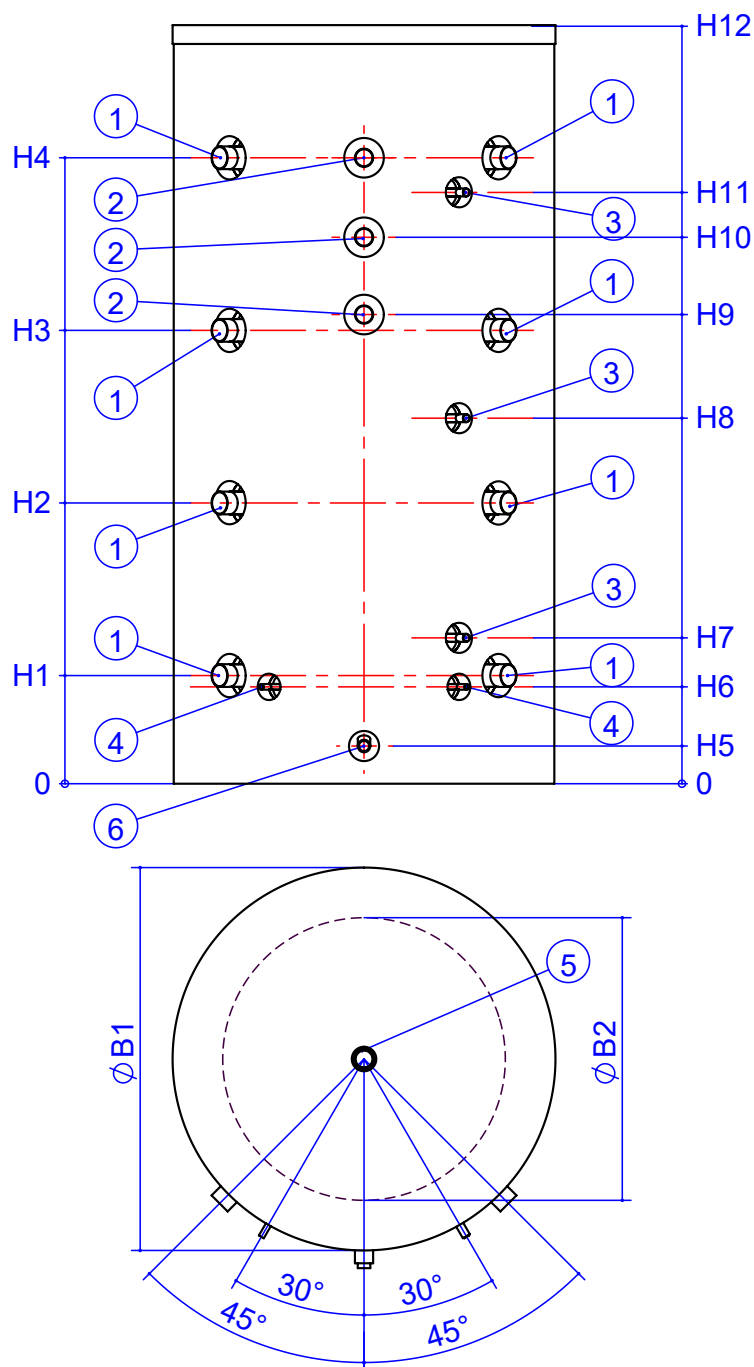
Pos.	Name	Dimension
1	Connection for emptying tap	R 1" AG
2	Immersion tube for sensor pocket	Ø i 12,6 mm
3	Heating water	R 2" IG
4	Bushing for sensor electric heating element	R 1 ½" IG
5	Bushing for sensor bleed and safety valve	R 1 ½" IG
6	Bushing for sensor sensor pocket	R ½" IG
Nominal volume		Tilting dimension storage tank
485 litres		2080
Net weight		
111 kg		





Dimensional drawings

TPS 750 / TPS 1000



Keys: UK819450

All dimensions in mm.

Pos.	TPS 750	TPS 1000
H1	280	290
H2	730	745
H3	1155	1205
H4	1645	1660
H5	100	100
H6	255	255
H7	380	390
H8	965	970
H9	1250	1245
H10	1450	1450
H11	1555	1570
H12	2000	2015
B1	910	1010
B2	750	850

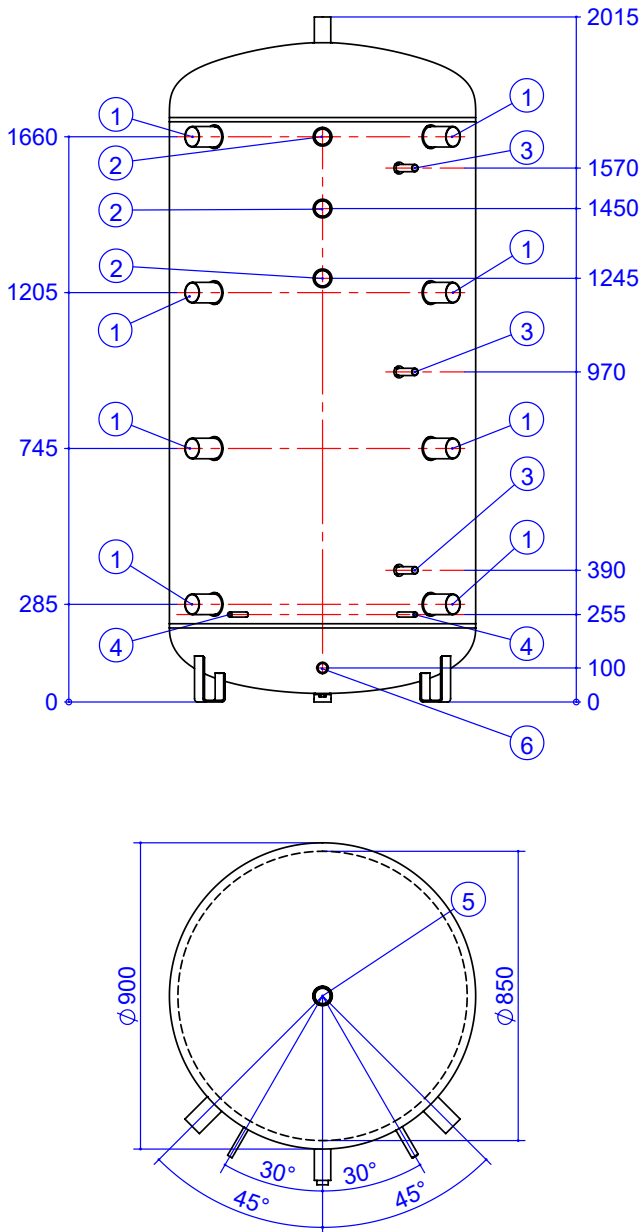
Pos.	Name	Dimension
1	Heating water	R 2" IG
2	Bushing for sensor electric heating element	R 1 ½" IG
3	Bushing for sensor sensor pocket	R ½" IG
4	Immersion tube for sensor pocket	Ø i 11 mm
5	Bushing for sensor bleed and safety valve	R 1 ½" IG
6	Connection for emptying tap	R 1" AG

	Net weight	Tilting dimension storage tank (without insulation)	Moving dimensions
TPS 750	122 kg	2030	L: 880 W: 750 H: 2000
TPS 1000	140 kg	2050	L: 980 W: 850 H: 2015



TPSK 1000

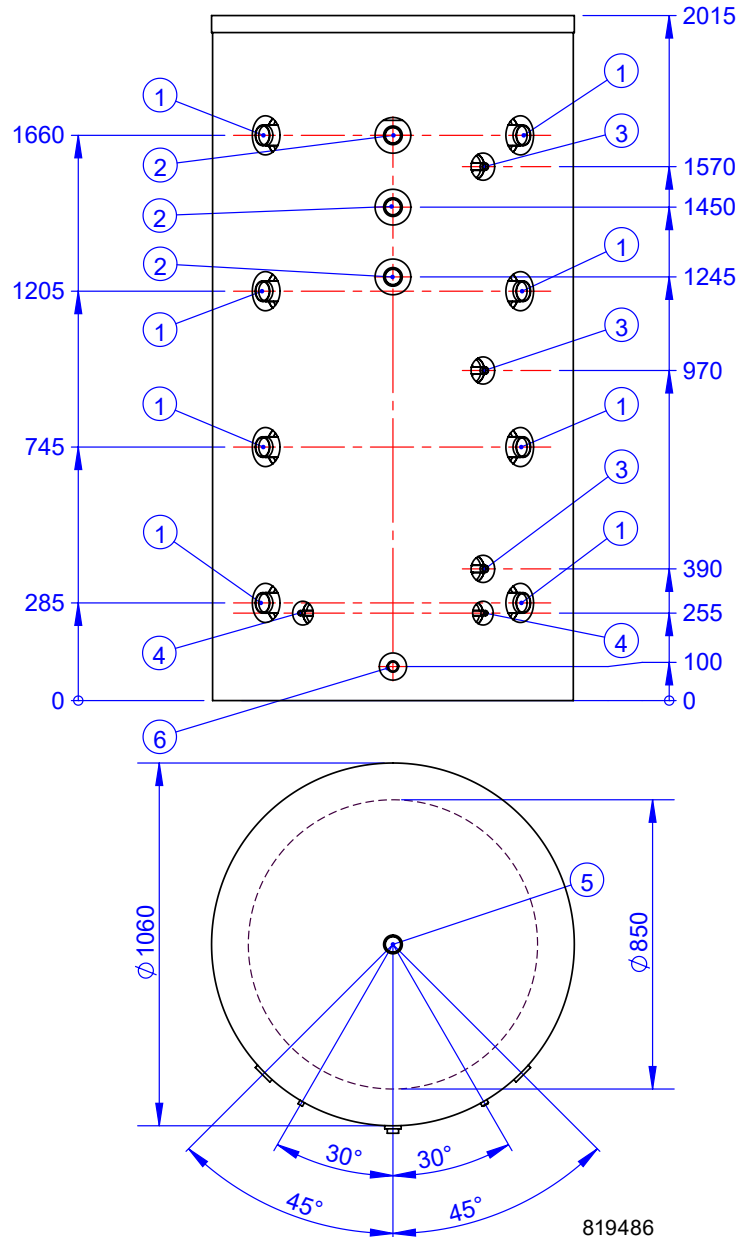
incl. cold insulation



819481

Dimensional drawings

incl. cold and heat insulation



819486

Keys: UK819481 | UK819486

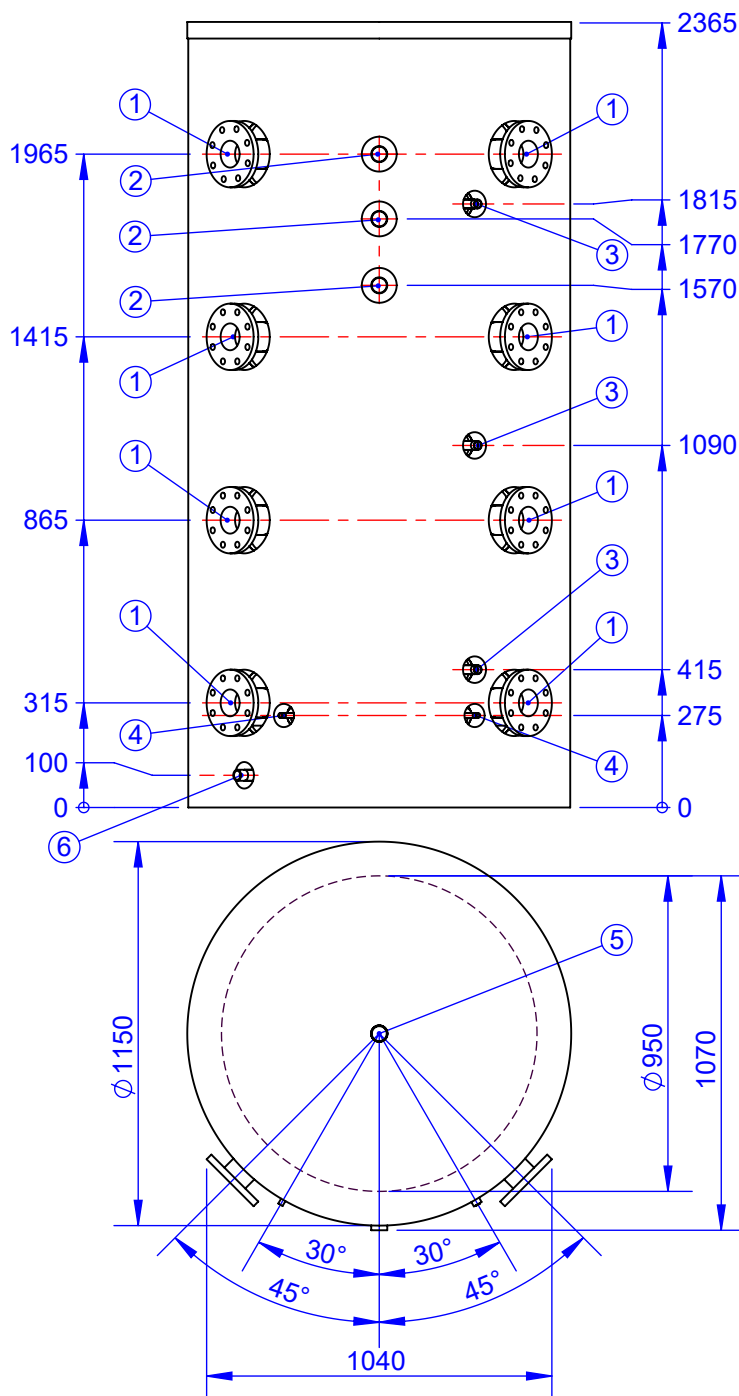
All dimensions in mm.

Pos.	Name	Dimension
1	Heating water	R 2" IG
2	Bushing for sensor electric heating element	R 1 ½" IG
3	Bushing for sensor sensor pocket	R ½" IG
4	Immersion tube for sensor pocket	Ø i 11 mm
5	Bushing for sensor bleed and safety valve	R 1 ½" IG
6	Connection for emptying tap	R 1" AG
Net weight with cold insulation		142 kg
Net weight with cold and heat insulation		153 kg
Tilting dimension storage tank (without insulation)		2050
Moving dimensions		L: 980 W: 850 H: 2015



Dimensional drawings

TPS 1500



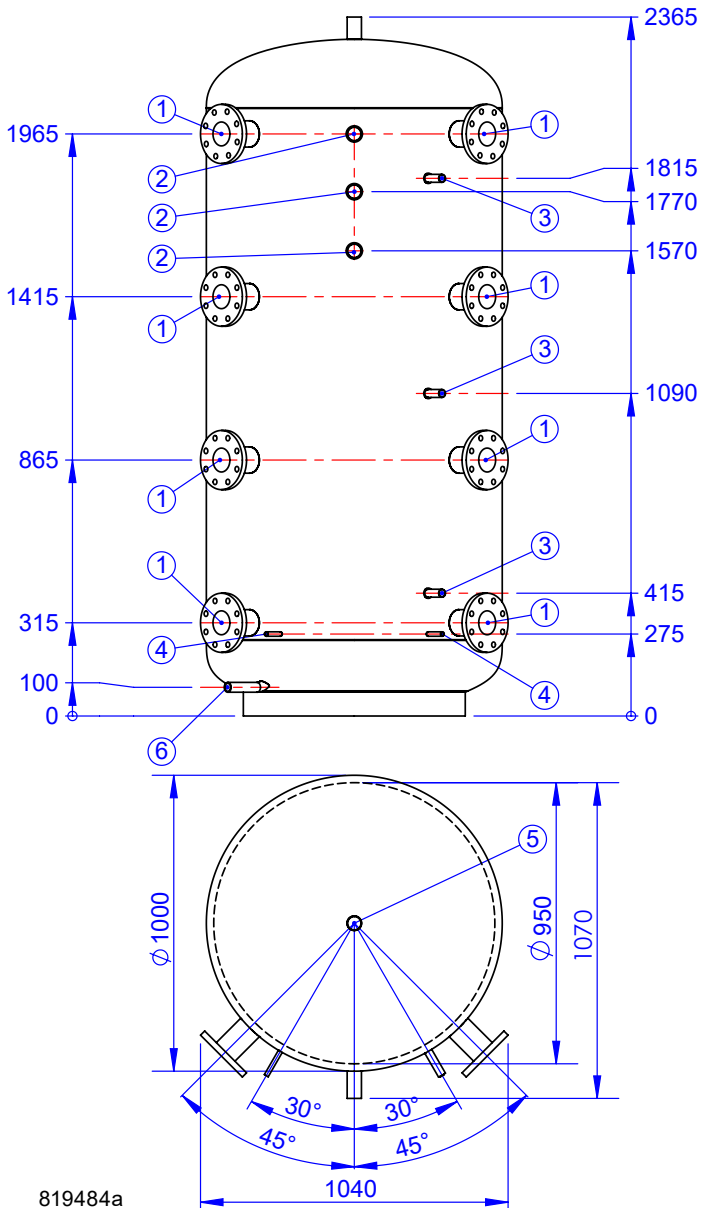
Keys: UK819506a
All dimensions in mm.

Pos.	Name	Dimension
1	Heating water 8 x flange	DN 80 / PN 16
2	Bushing for sensor electric heating element	R 1 1/2" IG
3	Bushing for sensor sensor pocket	R 3/4" IG
4	Immersion tube for sensor pocket	\varnothing i 11 mm
5	Bushing for sensor bleed and safety valve	R 1 1/2" IG
6	Connection for emptying tap	R 1" AG
Net weight		255 kg
Tilting dimension storage tank (without insulation)		2420
Moving dimensions		L: 1100 B: 1100 H: 2400



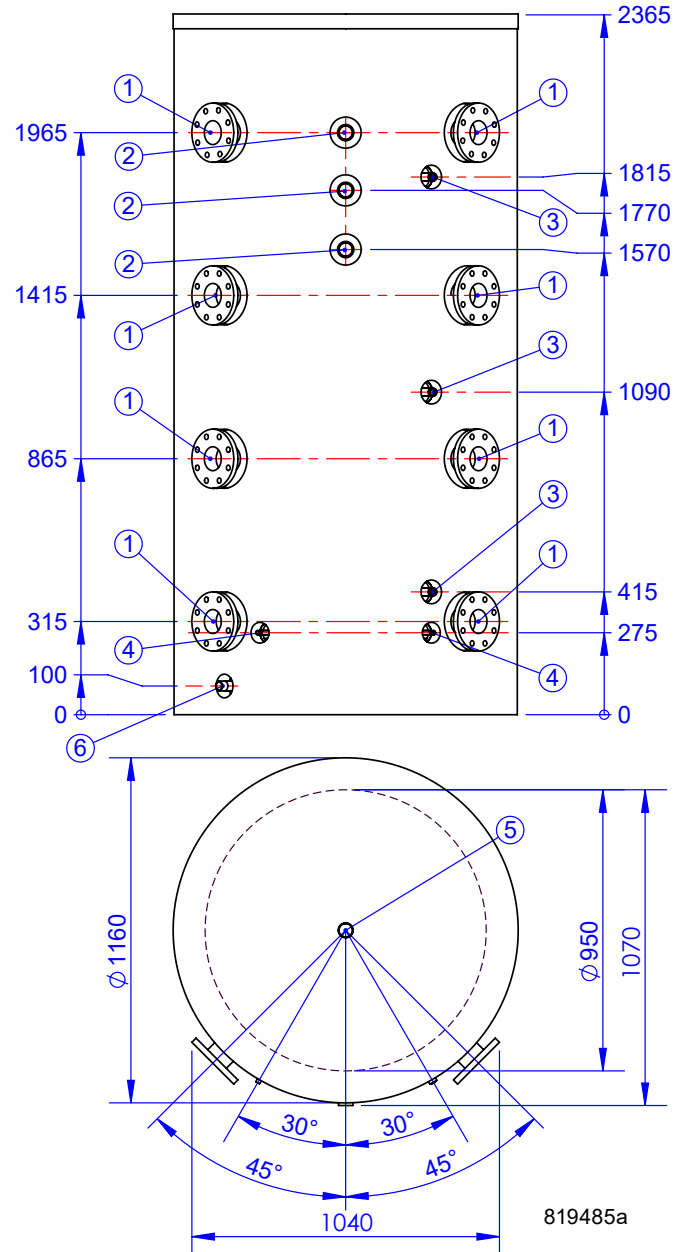
TPSK 1500

incl. cold insulation



Dimensional drawings

incl. cold and heat insulation



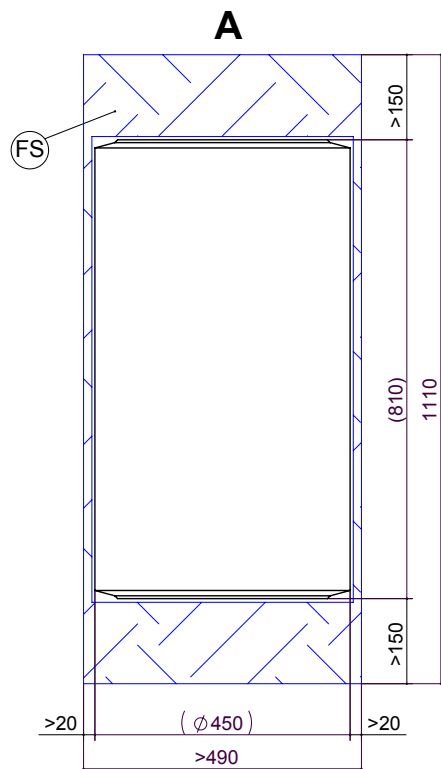
Keys: UK819484a | UK819485a

All dimensions in mm.

Pos.	Name	Dimension
1	Heating water 8 x flange	DN 80 / PN 16
2	Bushing for sensor electric heating element	R 1 1/2" IG
3	Bushing for sensor sensor pocket	R 3/4" IG
4	Immersion tube for sensor pocket	Ø i 11 mm
5	Bushing for sensor bleed and safety valve	R 1 1/2" IG
6	Connection for emptying tap	R 1" AG
Net weight with cold insulation		246 kg
Net weight with cold and heat insulation		262 kg
Tilting dimension storage tank (without insulation)		2420
Moving dimensions		L: 1100 B: 1100 H: 2400



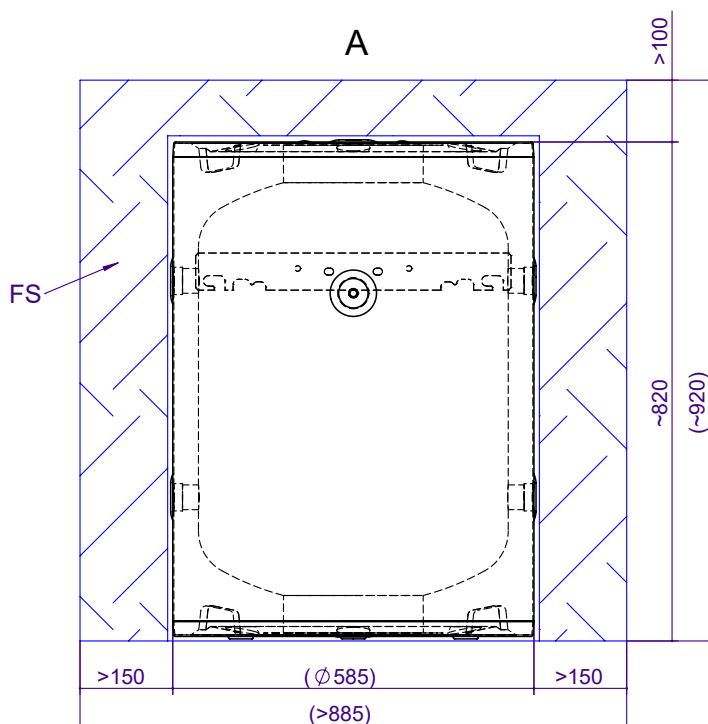
Installation plan WPS 61



Legende: UK819426
All dimensions in mm.

Pos.	Name
A	Front view
FS	Free space for servicing

Installation plan WTPSK 101

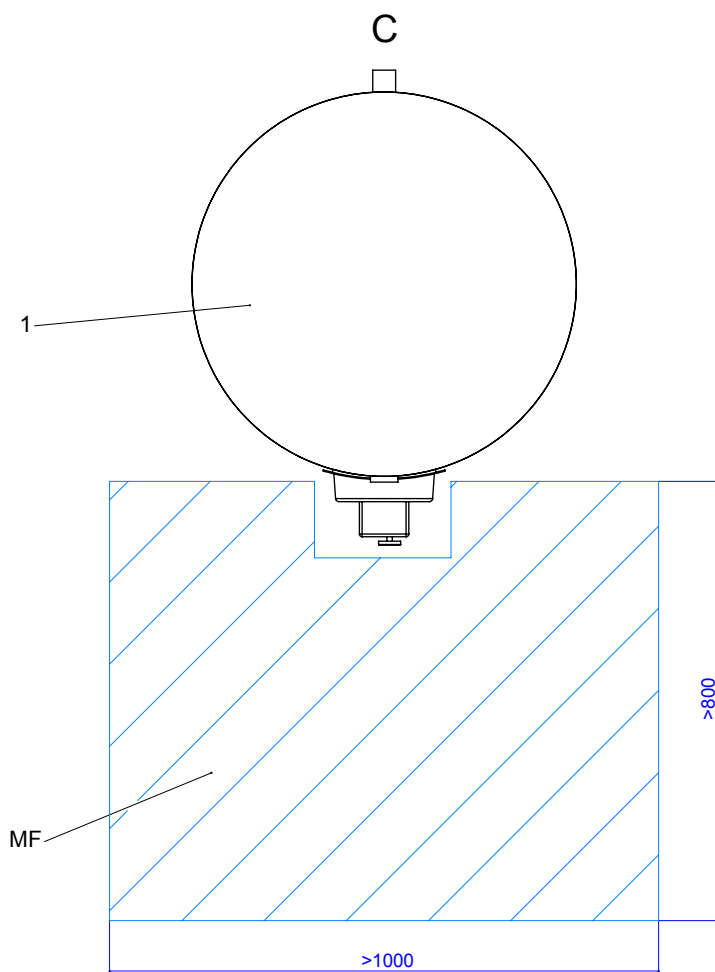


Legende: UK819535
All dimensions in mm.

Pos.	Name
A	Front view
FS	Free space for servicing



Installation plan Floor standing storage tanks



Legende: UK819397
All dimensions in mm.

Pos.	Name
C	Plan view
MF	Minimum area to ensure ability to operate and service
1	Storage tank



an ideal tomorrow



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