User and Installer manual

VPB 500 UK

Indirect heated storage water heater

CHB GB 1711-2
331976

Table of Contents

1 Important information

Safety information

This manual describes installation and service procedures for implementation by specialists.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

Rights to make any design or technical modifications are reserved.

Symbols

NOTE

This symbol indicates danger to person or machine .

Caution

This symbol indicates important information about what you should observe when maintaining your installation.

TIP

This symbol indicates tips on how to facilitate using the product.

Marking

CE The CE mark is obligatory for most products sold in the EU, regardless of where they are made.

General

Serial number

The serial number can be found on top of the product.

Caution

Always give the product's serial number when reporting a fault.

Recovery

Leave the disposal of the packaging to the installer who installed the product or to special waste stations.

Do not dispose of used products with normal household waste. It must be disposed of at a special waste station or dealer who provides this type of service.

Improper disposal of the product by the user results in administrative penalties in accordance with current legislation.

Country specific information

User and Installer manual

This user and installer manual must be left with the customer.

Great Britain

This installation is subject to building regulation approval, notify the local Authority of intention to install.

Use only manufacturer's recommended replacement parts.

benchmark COLLECTIVE MARK
THE MARK OF QUALITY FOR THE INSTALLATION, COMMISSIONING AND SERVICING OF DOMESTIC HEATING AND HOT WATER SYSTEMS

Benchmark places responsibilities on both manufacturers and installers. The purpose is to ensure that customers are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturers instructions by competent persons and that it meets the requirements of the appropriate Building Regulations. The Benchmark Checklist can be used to demonstrate compliance with Building Regulations and should be provided to the customer for future reference.

Installers are required to carry out the installation, commissioning and servicing work in accordance with the Benchmark Code of practice which is available from the Heating and Hotwater Industry Council who manage and promote the Scheme. Visit www.centralheating.co.uk for information.

Warranty and insurance information

Thank you for installing a new NIBE water heater in your home.

NIBE water heaters are manufactured in Sweden to the very highest standard so we are pleased to offer our customers a comprehensive guarantee.

The product is guaranteed for 24 months for parts and labour from the date of installation or 33 months from the date of manufacture, whichever is the shorter.

The NIBE guarantee is based on the unit being installed and commissioned by a NIBE accredited installer, serviced every year and the Benchmark documents completed. Where this condition is not met, any chargeable spare parts or components issued within the applicable guarantee period still benefit from a 12 month warranty from the date of issue by the manufacturer.

We recommend the installer completes and returns as soon as possible, your guarantee registration card or completes the guarantee form on the NIBE website www.nibe.co.uk.

Please ensure that the installer has fully completed the Benchmark Checklist in the end of the Installation Instructions supplied with the product and that you have signed to say that you have received a full and clear explanation of its operation. The installer is legally required to complete a commissioning checklist as a means of complying with the appropriate Building Regulations (England and Wales).

All installations must be notified to Local Area Building Control either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer who should, on receipt, write the Notification Number on the Benchmark Checklist.

This product should be serviced regularly to optimise its safety, efficiency and performance. The service engineer should complete the relevant Service Record on the Benchmark Checklist after each service.

The Benchmark Checklist may be required in the event of any warranty work and as supporting documentation relating to home improvements in the optional documents section of the Home Information Pack.

Inspection of the installation

Current regulations require the heating installation to be inspected before it is commissioned. The inspection must be carried out by a suitably qualified person.

✔	Description	Notes	Signature	Date
Heat pump (page 14)				
	Shut off valves			
	Venting valve			
	Shut off valve			
Hot water (page 14)				
	Shut off valves			
	Mixing valve			
	Expansion vessel			
	T&P valve			
	Tundish			
Cold water (page 14)				
	Shut off valves			
	Non-return valve			
	Safety valve			
	Tundish			
Electricity (page 16)				
	Connected supply			
	Sensors			
	Temperature limiter			
Miscellaneous				
	Benchmark checklist			

2 For the User

Maintenance

Safety valve

The function of the safety valves must be regularly checked, about four times a year, to prevent clogging.

To inspect the valve, open the safety valve manually and check that water flows through the overflow pipe. If this does not happen then the safety valve is defective and must be replaced.

Emptying

1. Cut the current to the immersion heater and solenoid valve.
2. Shut off the incoming cold water.
3. Open the drain connection, or the drain valve (enclosed) if installed.

During draining, air must be let into the water heater by loosening a hot water connector (XL4) or opening a hot water tap.

To ensure that the water heater drains completely, a hose, or a pipe, with an outlet below the lowest level of the water heater must be attached to the drain connection or drain valve. When installed in a location that is exposed to the risk of frost, the water heater must be emptied whenever it is not in operation. Freezing will result in the water heater bursting.

Service

For service, contact the installer. Serial number (PF3) (14 digits) and installation date should always be stated.

Only replacement parts supplied by NIBE may be used.

NOTE

If immersion heaters are installed, please ensure that therminal cut-out are also installed.

3 For the Installer

General

VPB 500 UK is a water heater, which is suitable for connection to heat pumps.

The water tank consists of a steel jacket, with a copper lining to protect against corrosion. The water heater is equipped with a copper finned tube.

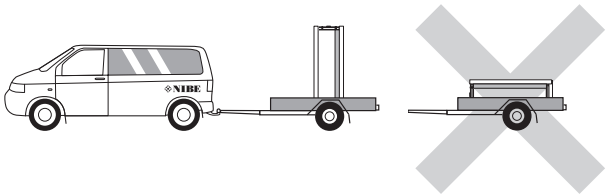
The water heater is designed and manufactured for a maximum cut-off pressure of 6 bar in the water tank. Maximum permitted temperature is 90 °C.

The insulation is Neopor and polyester fleece, which provides excellent heat insulation. The insulation and grey plastic outer cladding can be removed easily to simplify moving the water heater through doorways, for example.

VPB 500 UK can be equipped with an immersion heater.

Transport

VPB 500 UK should be transported and stored vertically in a dry place. The VPB 500 UK may, however, be carefully laid on its back when being moved into a building.



Assembly

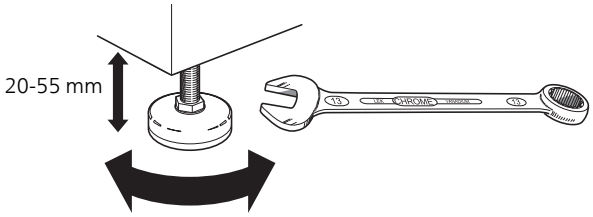
The water heater is only designed for upright installation.

The water heater's installation area should always have a temperature of at least 10 °C (to prevent the risk of damage from frost) and max 30 °C.

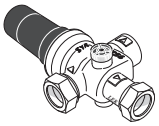
The water heater is unscrewed from the pallet and lifted into position, using the lifting eye at the top.

Position VPB 500 UK on a firm base that can take the weight, preferably on a concrete floor or foundation. Use the product's adjustable feet to obtain a horizontal and stable set-up.

The area where VPB 500 UK is located must be equipped with floor drainage.

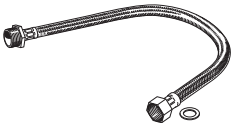


Supplied components

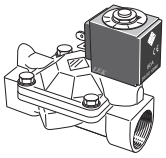


Pressure reduction valve

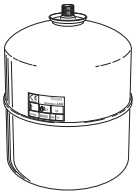
Tundish



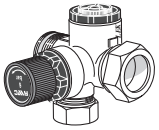
Armoured hose (expansion vessel)



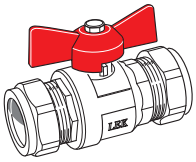
Shut off valve



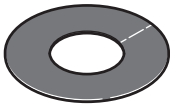
Expansion vessel with holder



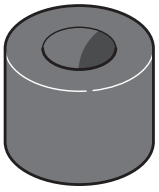
Cold water inlet and expansion relief valve, water heater



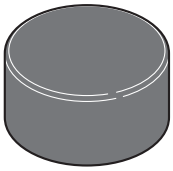
Drain valve with plug



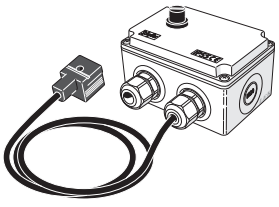
Cover discs



Insulation plug



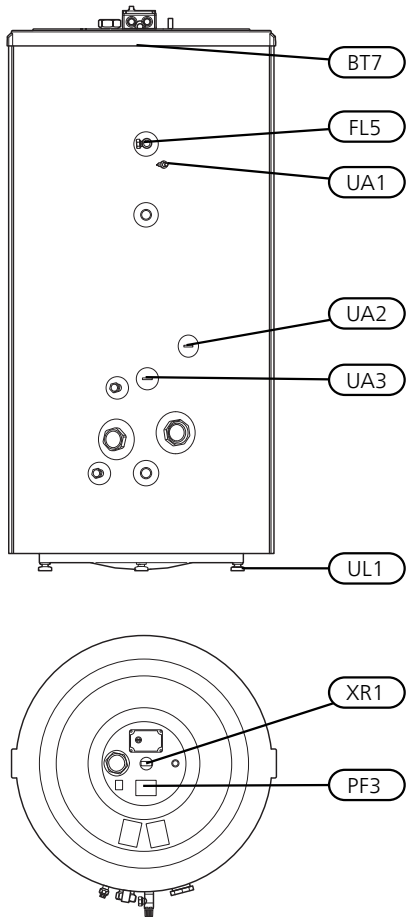
Plastic cover



Temperature limiter

Component positions

VPB 500 UK



Designation	Name
BT7	Hot water sensor, top (factory fitted)
FL5	T&P valve
UA1	Submerged tube, temperature limit, Ø 10 mm (int)
UA2	Submerged tube, docking heat pump (BT6), Ø 11 mm (int)
UA3	Submerged tube, external heat source (solar), Ø 11 mm (int)
UL1	Adjustable feet
XR1	Lifting eye
PF3	Serial number plate

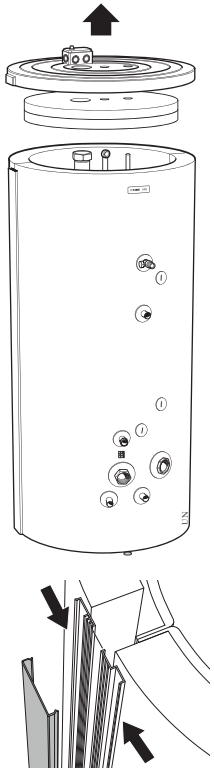
Removing the insulation

The insulation can be removed, to facilitate handling in confined spaces.

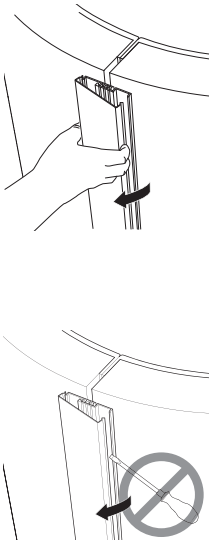
- Lift off the plastic top and the top insulation.
- On VPB 500, the lifting eye on the top must be unscrewed first.
- Remove the joining plates holding the insulated jacket halves together. Do not use any tools when dismantling.
- Unhook and remove the insulated jacket halves, the outer diameter of the heater becomes approx. 200 mm less without the insulated jackets.

The figure shows VPB 500 UK with insulation.

Ø 850 mm with insulation

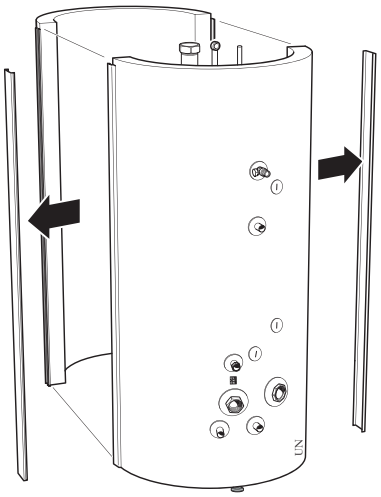


Do not use any tools when dismantling the joining plate.



Insulation removed

200 mm less without insulation



Carry out assembly in reverse order.

Install the enclosed insulation plugs around each connection. Finally, fit all the enclosed cover discs on each connection by pressing them over the connections.

NOTE

Fit the cover discs and the insulation plugs before installing the pipe.

NOTE

In certain cases, more insulation plugs are enclosed than are required.

Installation

VPB 500 UK can be equipped with the following elements, connection dimension G50. When installing the water heater, ensure that there is enough room in front of the connection area to remove the element, see following table.

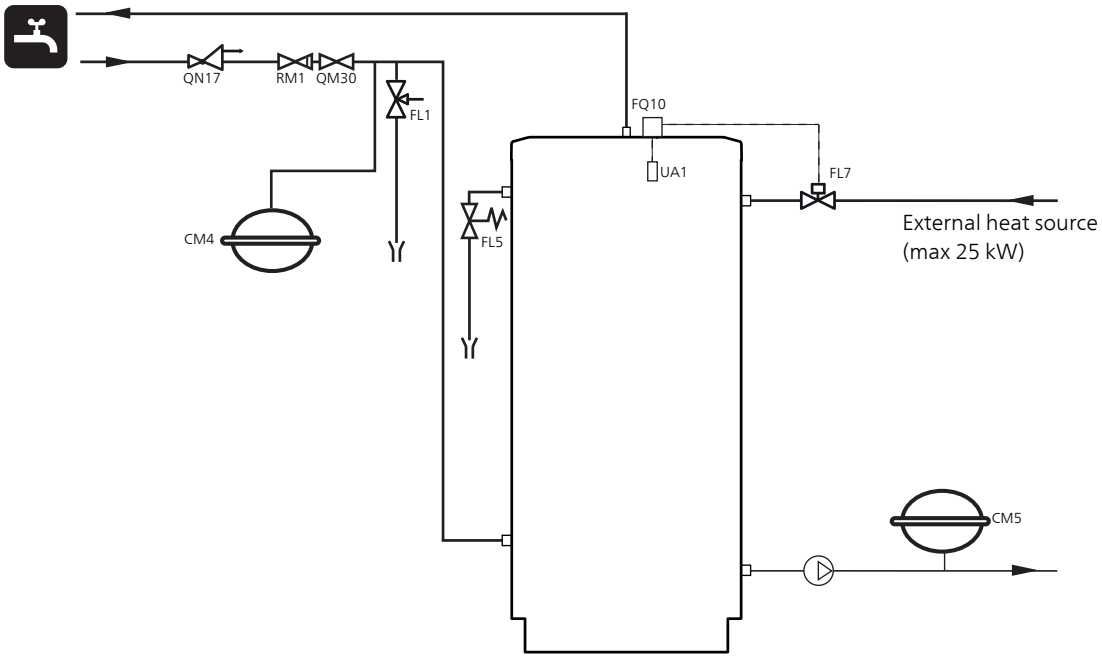
Fit the enclosed cover discs before pipe installation. The cover discs, with self-adhesive backs, must be installed on the relevant connection, by pushing them over the connections.

All connections (including connections or holes left by the lifting eyes that are not used) must be insulated to minimise energy losses.

Immersion heaters

Element	Output	Free space
IU 31	1500 W	250 mm
IU 33	2250 W	260 mm
IU 34	3000 W	280 mm

Outline diagram



Explanation

CM4 + CM5	Expansion vessel
FL1	Setting, expansion relief valve
FL5	T&P-valve
FL7	Shut off valve
FQ10	Temperature limiter
QM30	Shut off valve hot water
QN17	Pressure reducing valve
RM1	Cold water inlet and pressure relief valve, water heater
UA1	Pocket tube

There´s a plug on the cold water inlet valve that can be removed and there mount the flexble hose for the expanssion vessel CM4.

Pipe installation

General

NOTE

Pipe installation must be carried out in accordance with current norms and directives

NOTE

This installation is subject to building regulation approval, notify the local Authority of intention to install.

NOTE

Use only manufacturer's recommended replacement parts.

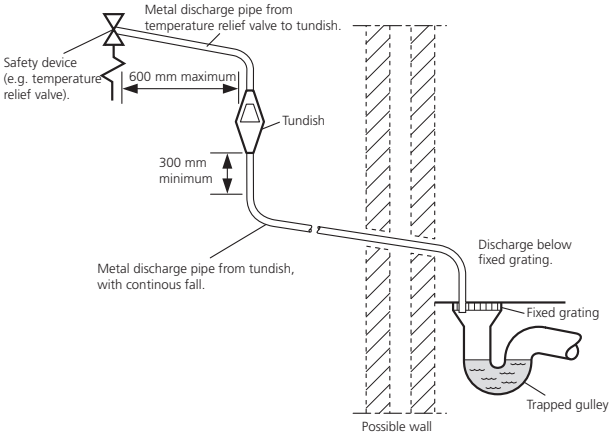
Overflow water from the safety valves goes via non-pressurised collecting pipes to a drain so that hot water splashes cannot cause injury. These non-pressurised collecting pipes shall not be used for anything else. A discharge pipe from the tundish connected to the expansion relief valve (safety valve) shall also be connected to a drain in the same way.

Please note that the connection of the T&P-valve should not be used for any other purpose.

Valves may not be positioned between the expansion valve and the vessel.

Overflow pipes from tundish must be routed with a fall and at least 300 mm long, before bends or angles in the pipework (see image).

The tundish should be installed away from electrical components.



NOTE

The expansion vessel accomodates expansion that results from heating the water inside the unit. The expansion vessel must be connected between the expansion valve and the cylinder. The location of the expansion vessel should allow access to recharge the pressure as and when necessary.

Valve outlet size	Minimum size of discharge pipe	Minimum size of discharge pipe from tundish	Maximum resistance allowed, expressed as a lenght of straight pipe (i.e. no elbows or bends)	Resistance created by each elbow or bend
G1/2	15 mm	22 mm	up to 9 m	0.8 mm
G1/2	15 mm	28 mm	up to 18 m	1.0 mm
G1/2	15 mm	35 mm	up to 27 m	1.4 mm
G3/4	22 mm	28 mm	up to 9 m	1.0 mm
G3/4	22 mm	35 mm	up to 18 m	1.4 mm
G3/4	22 mm	42 mm	up to 27 m	1.7 mm
G1	28 mm	35 mm	up to 9 m	1.4 mm
G1	28 mm	42 mm	up to 18 m	1.7 mm
G1	28 mm	54 mm	up to 27 m	2.3 mm

The tables shows the dimension of the copper overflow pipe for common safety valve connection size.

Hard water areas

Usually, it should not be a problem installing VPB 500 UK in areas of hard water as the operating temperature is 50-60 °C.

Pipe connection

The water heater must be supplied with a thermometer and pressure gauge as well as a shut-off valve, drain valve, non-return valve, mixer valve, safety valve, and vacuum valve as per applicable standards.

The water heater must be provided with a mixer valve, which limits the temperature of outgoing hot water to 60 °C. If this valve is not fitted, some other measure must be taken to prevent the risk of scalding.

The safety valve must have a maximum opening pressure in accordance to the applicable regulations (however max 6 bar/0.6 MPa). The overflow pipe must be the same size as the safety valve. The overflow pipe must be routed downwards along its entire length and be frost proof. It must run out unobstructed over the drain.

Commissioning and adjusting

Filling the water heater

Fill as follows:

1. Open a hot water tap in the system.
2. Open the shut-off valve on the incoming cold water. This valve should then be fully open during operation.
3. The hot water tap can only be shut off when the water heater is filled, which is when only water comes out of the tap (initially an air-water mixture comes out of the tap).

Cleaning the climate system

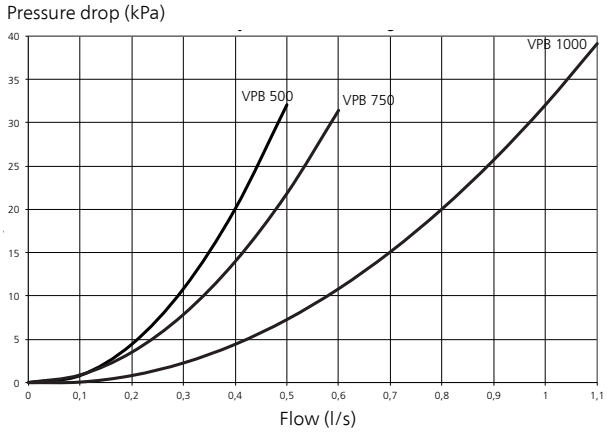
When the water heater and the climate system have been filled with water, VPB 500 UK must operate at maximum normal temperature for at least one hour. Thereafter the system must be drained of water and refilled.

Emptying the system by

1. Open external filler valve and external drain valve.
2. Flush the system for some minute. Watch out for water splashes from the safety valve.
3. Close the valves and check the stainer.

Pressure drop diagram

Primary side (coil)



Electrical installation

NOTE

Electrical installation and service must be carried out under the supervision of a qualified electrician, and in accordance with applicable electrical safety regulations.

VPB 500 UK can be supplemented with an immersion heater with a maximum output of 3 kW.

The immersion heater is supplemented with junction box type K11 (2-pole thermostat, 3-pole temperature limiter). Do not modify or reconnect!

A separate supply from group central is routed to the immersion heater.

Sensors

VPB 500 UK can be supplemented with one hot water sensor, for display and control. The sensor is positioned in the pocket tube for the sensor (UA2).

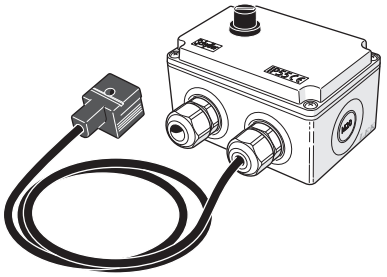
Use the sensors provided with the heat pump/control module. When no heat sensors have been provided these must be ordered from the manufacturer of the heat pump/ control module.

Temperatur limiter

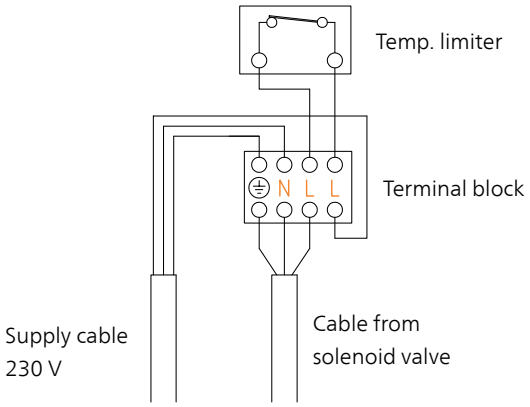
Power supply to temperature limiter (FQ10) is 230 V.

Connect temperature limiter electrically to the solenoid valve for the heat source.

Put the sensor in the pocket tube (UA1).



Connection temperature limiter



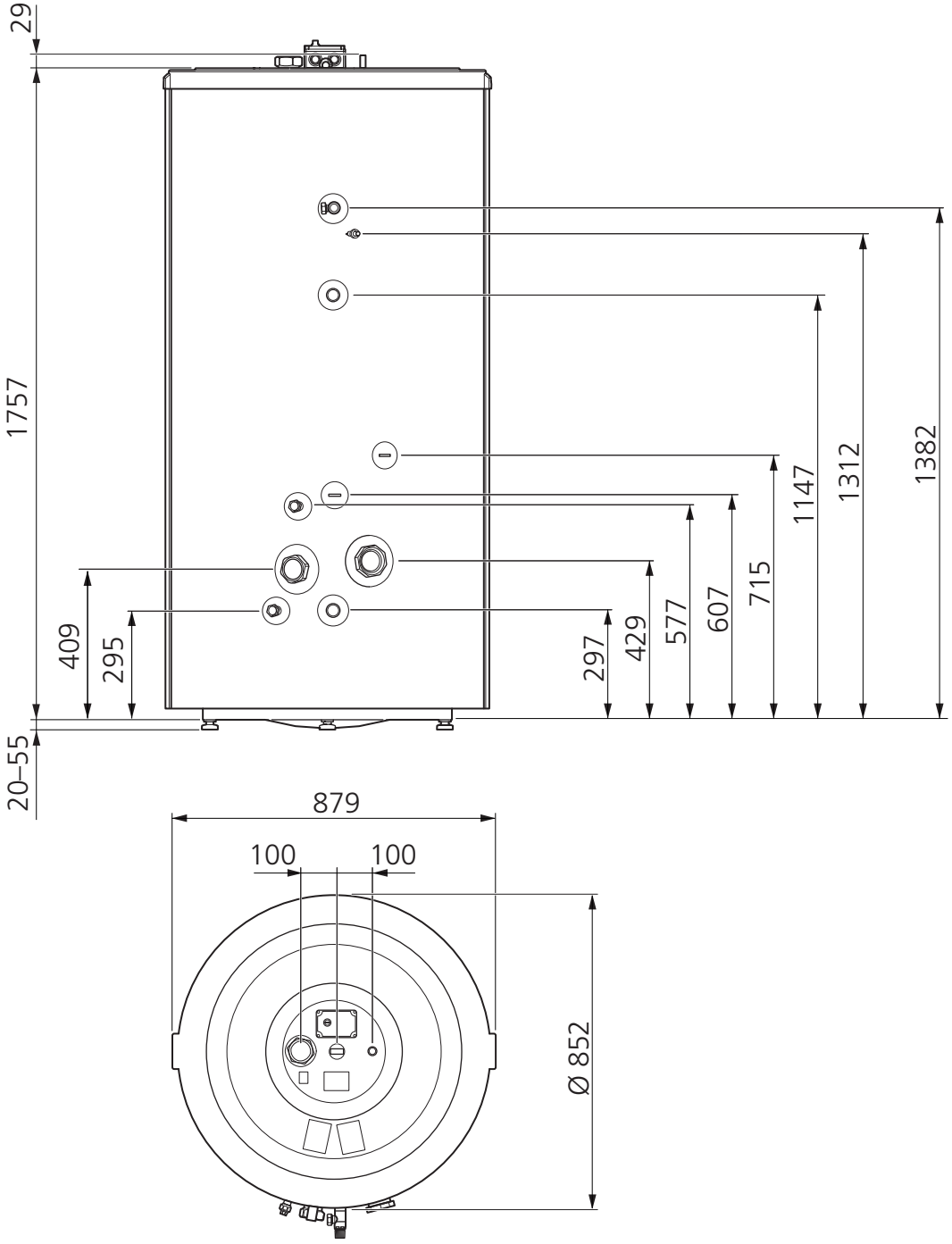
NOTE

The water heater must be completely filled with water before it is connected on the electrical side.

4 Technical data

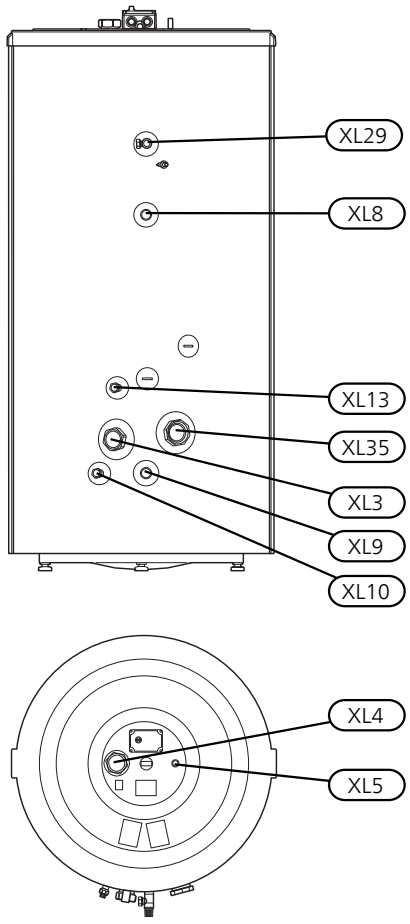
Dimensions

VPB 500 UK



Pipe connections

VPB 500 UK



Designation	Name	Dimensions
XL3	Cold water connection, (solar connection, out), internal thread	G50
XL4	Hot water connection, internal thread	G50
XL5	HWC connection	Ø 15 mm
XL8	Docking connection, incoming from heat pump	Ø 28 mm
XL9	Docking connection, outgoing from heat pump	Ø 28 mm
XL10	Drain connection	Ø 22 mm
XL13	Other heat source, for example solar	Ø 22 mm
XL29	Connection T&P valve	Ø 15 mm
XL35	Connection for immersion heater, internal thread*	G50

*can be used as an access to view the cylinder internally.

Technical specifications

Model		VPB 500 UK
Corrosion protection		Copper
Diameter	mm	850
Height (excl. feet)	mm	1757
Gross weight	kg	212
Net weight	kg	170
Immersion heater, supply	V	230
Max. output	kW	3
Total input power	kW	25
Drainage capacity, T&P valve	kW	25
Max pressure incoming cold water	bar/MPa	16/1.6
Pressure reduction valve, setting:	bar/MPa	3.5/0.35
Max pressure, water heater	bar/MPa	6/0.6
Max pressure, primary side	bar/MPa	3/0.3
Operating pressure, secondary side	bar/MPa	5.5/0.55
Setting, expansion relief valve	bar/MPa	6/0.6
Max operating pressure, T&P-valve	bar/MPa	7/0.7
Exp. vessle, tap water, charge pressure	bar/MPa	3.5/0.35
Max operating temperature, T&P-valve	°C	90
Maximum operating temperature, heating fluid:	°C	90
Volume, hot water heater	litre	490
Volume, coil	litre	6
Length, coil	m	15.7
Heating surface, coil	m^2	5.2
Heat transfer, primary 60/50 °C, 50 °C HW temp at the top	kW	15.8
Heat content at 50°C	kWh	23
Equivalent amount of hot water (40 °C)*	litre	825
Heating time to 15 - 60 °C, (10 kW)**	min.	163
Part No.		081 056

* At incoming temperatures 10 °C and hot water draining of 30 l/min.
** Primary flow to achieve the maximum capacity VPB 500 UK: 2000 l/h.
Tested according to En 12897:2016

Energy labelling

Supplier		NIBE
Model		VPB 500 UK
Energy efficiency class		**C**
Heat loss	W	111
Volume	l	496

Accessories

Immersion heater IU

Immersion heater IU 31 - IU34
See table (page 12)

Connection box K11

Connection box with thermostat and overheating protection. (When connecting Immersion heater IU)

Part no. 018 893

5 Item register

Item register

MAINS PRESSURE HOT WATER STORAGE SYSTEM COMMISSIONING CHECKLIST

This Commissioning Checklist is to be completed in full by the competent person who commissioned the storage system as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission this equipment to the manufacturer's instructions may invalidate the warranty but does not affect statutory rights.

Customer Name _____ Telephone Number _____

Address _____

Cylinder Make and Model _____

Cylinder Serial Number | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Commissioned by *(print name)* _____ Registered Operative ID Number _____

Company Name _____ Telephone Number _____

Company Address _____

_____ Commissioning Date _____

To be completed by the customer on receipt of a Building Regulations Compliance Certificate*:

Building Regulations Notification Number *(if applicable)* _____

ALL SYSTEMS PRIMARY SETTINGS (indirect heating only)

Is the primary circuit a sealed or open vented system?	Sealed ☐	Open ☐
What is the maximum primary flow temperature?		°C

ALL SYSTEMS

What is the incoming static cold water pressure at the inlet to the system?			bar
Has a strainer been cleaned of installation debris (if fitted)?	Yes ☐	No ☐	
Is the installation in a hard water area (above 200ppm)?	Yes ☐	No ☐	
If yes, has a water scale reducer been fitted?	Yes ☐	No ☐	
What type of scale reducer has been fitted?			
What is the hot water thermostat set temperature?			°C
What is the maximum hot water flow rate at set thermostat temperature (measured at high flow outlet)?			l/min
Time and temperature controls have been fitted in compliance with Part L of the Building Regulations?		Yes ☐	
Type of control system (if applicable)	Y Plan ☐ S Plan ☐	Other ☐	
Is the cylinder solar (or other renewable) compatible?	Yes ☐	No ☐	
What is the hot water temperature at the nearest outlet?			°C
All appropriate pipes have been insulated up to 1 metre or the point where they become concealed		Yes ☐	

UNVENTED SYSTEMS ONLY

Where is the pressure reducing valve situated (if fitted)?			
What is the pressure reducing valve setting?			bar
Has a combined temperature and pressure relief valve and expansion valve been fitted and discharge tested?	Yes ☐	No ☐	
The tundish and discharge pipework have been connected and terminated to Part G of the Building Regulations		Yes ☐	
Are all energy sources fitted with a cut out device?	Yes ☐	No ☐	
Has the expansion vessel or internal air space been checked?	Yes ☐	No ☐	

THERMAL STORES ONLY

What store temperature is achievable?		°C
What is the maximum hot water temperature?		°C

ALL INSTALLATIONS

The hot water system complies with the appropriate Building Regulations	Yes ☐
The system has been installed and commissioned in accordance with the manufacturer's instructions	Yes ☐
The system controls have been demonstrated to and understood by the customer	Yes ☐
The manufacturer's literature, including Benchmark Checklist and Service Record, has been explained and left with the customer	Yes ☐

Commissioning Engineer's Signature _____

Customer's Signature _____

(To confirm satisfactory demonstration and receipt of manufacturer's literature)

*All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.

benchmark COLLECTIVE MARK
THE MARK OF QUALITY FOR THE INSTALLATION, COMMISSIONING AND SERVICING OF DOMESTIC HEATING AND HOT WATER SYSTEMS

SERVICE RECORD

It is recommended that your hot water system is serviced regularly and that the appropriate Service Record is completed.

Service Provider
Before completing the appropriate Service Record below, please ensure you have carried out the service as described in the manufacturer's instructions.

SERVICE 1 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 2 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 3 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 4 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 5 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 6 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 7 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 8 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 9 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 10 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

NIBE Energy Systems Ltd
3C Broom Business Park
Bridge Way
Chesterfield S41 9QG
Phone 0845 095 1200
Fax 0845 095 1201
info@nibe.co.uk
www.nibe.co.uk

331976