

OPERATION AND INSTALLATION

Floor mounted DHW cylinder for heat pumps

- » STD 315-1 Plus
- » STD 420-1 Plus
- » STD 520-1 Plus



STIEBEL ELTRON

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OPERATION

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GUARANTEE

ENVIRONMENT AND RECYCLING

OPERATION

1. General information

The chapters "Special information" and "Operation" are intended for both users and qualified contractors.

The chapter "Installation" is intended for qualified contractors.



Note

Read these instructions carefully before using the appliance and retain them for future reference. Pass on these instructions to a new user if required.

1.1 Safety instructions

1.1.1 Structure of safety instructions



KEYWORD Type of risk

Here, possible consequences are listed that may result from failure to observe the safety instructions.

► Steps to prevent the risk are listed.

1.1.2 Symbols, type of risk

Symbol	Type of risk
	Injury
	Electrocution
	Burns (burns, scalding)

1.1.3 Keywords

KEYWORD	Meaning
DANGER	Failure to observe this information will result in serious injury or death.
WARNING	Failure to observe this information may result in serious injury or death.
CAUTION	Failure to observe this information may result in non-serious or minor injury.

OPERATION

Safety

1.2 Other symbols in this documentation



Note

General information is identified by the adjacent symbol.
▶ Read these texts carefully.

Symbol	Meaning
	Material losses (appliance damage, consequential losses and environmental pollution)
	Appliance disposal

▶ This symbol indicates that you have to do something. The action you need to take is described step by step.

1.3 Units of measurement



Note

All measurements are given in mm unless stated otherwise.

2. Safety

2.1 Intended use

The appliance is intended for domestic use. It can be used safely by untrained persons. The appliance can also be used in non-domestic environments, e.g. in small businesses, as long as it is used in the same way.

This appliance is designed to heat DHW with heat pumps.

Any other use beyond that described shall be deemed inappropriate. Observation of these instructions and of the instructions for any accessories used is also part of the correct use of this appliance.

2.2 General safety instructions



WARNING Burns

There is a risk of scalding at outlet temperatures in excess of 43 °C.



WARNING Injury

The appliance may be used by children aged 8 and up and persons with reduced physical, sensory or mental capabilities or a lack of experience and expertise, provided that they are supervised or they have been instructed on how to use the appliance safely and have understood the potential risks. Children must never play with the appliance. Cleaning and user maintenance must not be carried out by children without supervision.



Material losses

The appliance is pressurised. During the heat-up process, expansion water will drip from the safety valve. If water continues to drip when heating is completed, please inform your qualified contractor.

2.3 Test symbols

See type plate on the appliance.

3. Appliance description

The DHW is heated via a smooth tube internal indirect coil. In addition, a threaded immersion heater can be connected. You can use the appliance to supply one or more draw-off points.

The appliance is equipped with an inspection flange and thermometer.

The steel cylinder is coated on the inside with special directly applied "anticor®" enamel and equipped with a protective anode. This anode protects the inside of the cylinder from corrosion. The cylinder is encased by foam insulation and a plastic jacket.

4. Cleaning, care and maintenance

- Have the function of the safety assembly and electrical safety of the fitted accessories regularly checked by a qualified contractor.
- We recommend having the protective anode initially checked by a qualified contractor after 2 years. The qualified contractor will then determine the intervals at which repeat checks should be performed.
- Never use abrasive or corrosive cleaning agents. A damp cloth is sufficient for cleaning the appliance.

4.1 Scaling

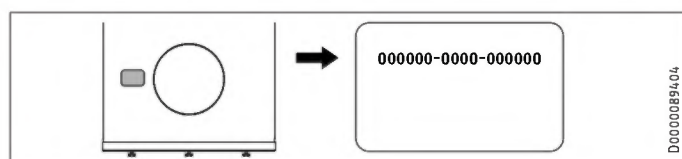
Almost every type of water will deposit limescale at high temperatures. This settles inside the appliance and affects both performance and service life. If a threaded immersion heater is installed, the heating elements must be descaled from time to time. A qualified contractor who knows the local water quality will tell you when the next service is due.

- ▶ Check the taps regularly. Limescale deposits at the tap outlets can be removed using commercially available descaling agents.

5. Troubleshooting

Problem	Cause	Remedy
The flow rate is low.	The aerator in the tap or the shower head is scaled up or dirty.	Clean and/or descale the aerator or shower head.

If you cannot remedy the fault, contact your qualified contractor. To facilitate and speed up your enquiry, please provide the serial number from the type plate (000000-0000-000000).



INSTALLATION

6. Safety

Only a qualified contractor should carry out installation, commissioning, maintenance and repair of the appliance.

6.1 General safety instructions

We guarantee trouble-free function and operational reliability only if original accessories and spare parts intended for the appliance are used.

6.2 Instructions, standards and regulations



Note

Observe all applicable national and regional regulations and instructions.

7. Appliance description

7.1 Standard delivery

The following are delivered with the appliance:

- Cap and gasket for the DHW circulation connection
- Thermometer (inserted in the DHW outlet on delivery)
- 2 lifting straps
- 2 washers
- 3 adjustable feet

7.2 Required accessories

Depending on the static pressure, safety assemblies and pressure reducing valves are available. These type-tested safety assemblies protect the appliance against unacceptable excess pressure.

7.3 Additional accessories

Threaded immersion heaters are available as accessories.

If it is not possible to insert a rod anode from above, install a segmented anode.

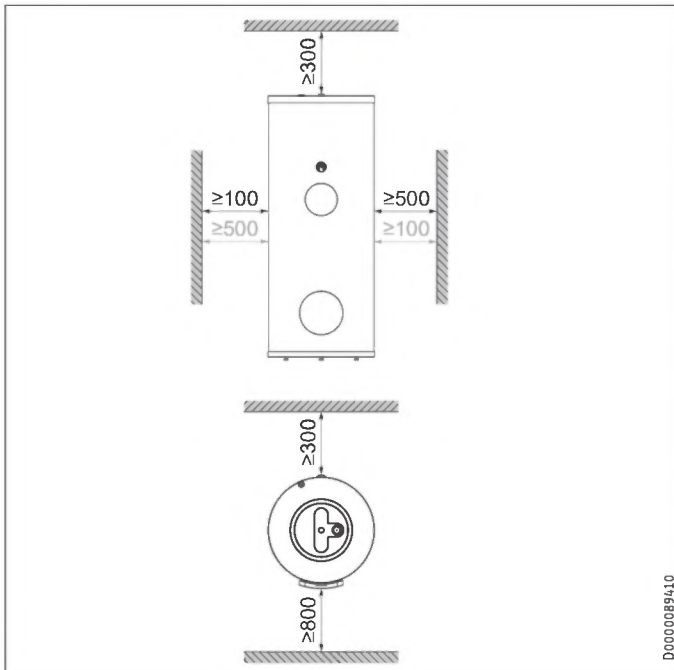
8. Preparation

8.1 Installation site

- ▶ Always install the appliance in a room free from the risk of frost and near the draw-off point.
- ▶ Ensure the floor is level.
- ▶ Ensure the floor has a sufficient load bearing capacity (see chapter "Specification / Data table").
- ▶ Observe the room height and height when tilted (see chapter "Specification / Data table").

Minimum clearances

The minimum side clearances can be swapped between left and right.



- ▶ Maintain the minimum clearances.

8.2 Transport and handling



Material losses

We recommend leaving the transport packaging in place on the cylinder for transportation to the installation site, to prevent the cylinder casing from becoming dirty or damaged.

In particular, the edge protection on the underside of the appliance should only be removed after the appliance has been sited and aligned.



Material losses

The hydraulic connections and installation components can be damaged when the appliance is set down or carried.

- ▶ Ensure that the flange is facing upwards.

For transportation, the appliance is secured to the pallet with 3 screws.

- ▶ Undo the screws from the pallet.
- ▶ Tilt the appliance from the pallet onto a suitable support.

8.2.1 Carrying aids

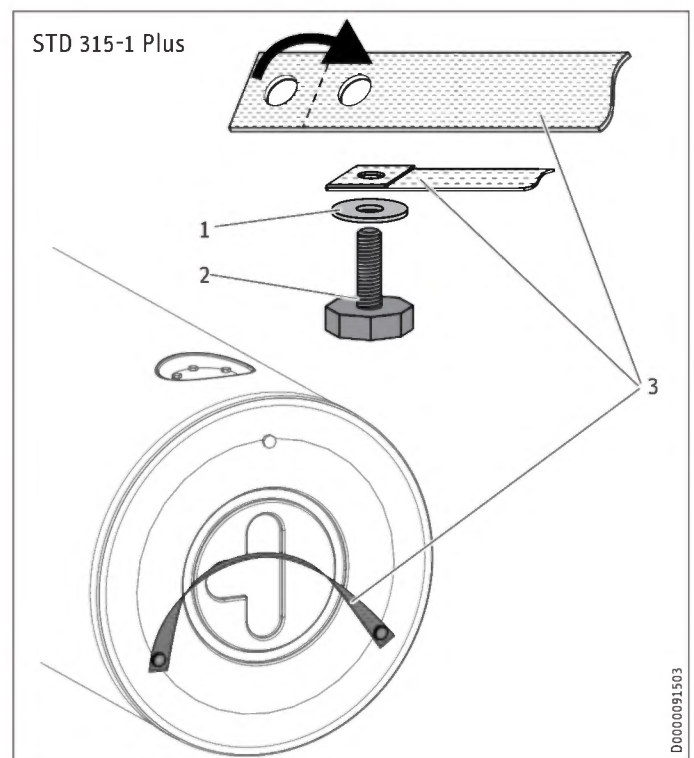
To facilitate handling during transportation, you can fit carrying aids to the top and bottom of the appliance.

Underside of the appliance



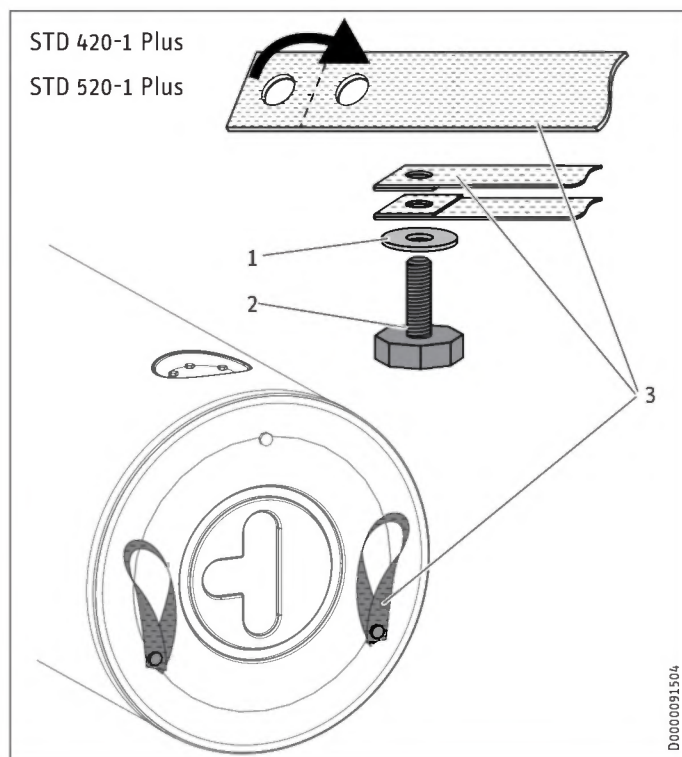
Material losses

Always use the supplied lifting straps in combination with the supplied washers.



INSTALLATION

Preparation



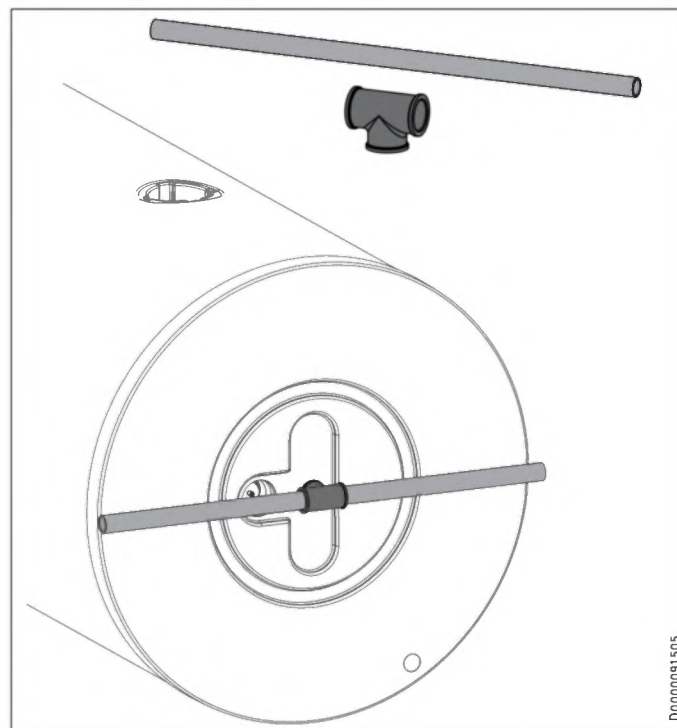
- 1 Washer
 - 2 Adjustable foot
 - 3 Lifting strap
- ▶ Connect 2 of the supplied adjustable feet with the supplied washers and lifting straps, as shown.
 - ▶ Wind in the two adjustable feet with lifting straps as far as possible.
 - ▶ Wind in the adjustable foot without a lifting strap to a similar depth as the two adjustable feet with lifting straps.



Note

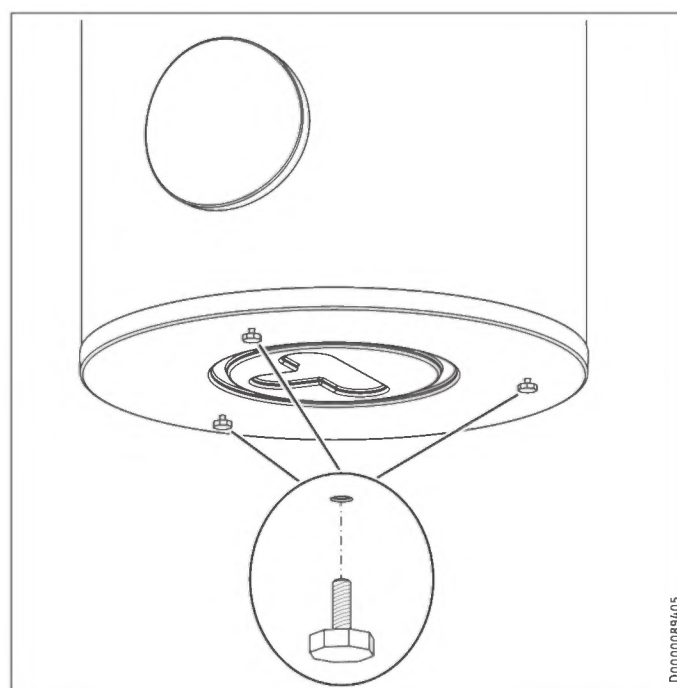
The lifting straps can remain on the appliance once it has been sited.

Top of the appliance



- ▶ Wind a suitable fitting into the DHW outlet.
- ▶ Insert a sufficiently strong pipe or an appropriate rod through the fitting. Take into account the door widths and any narrow areas on the way to the installation site.

8.2.2 Siting



- ▶ Use the adjustable feet to compensate for any unevenness in the floor.

9. Installation

9.1 Heat exchanger connection

- ▶ Flush the indirect coil with water before connection.

9.1.1 Oxygen diffusion

! Material losses
Avoid open vented heating systems and underfloor heating systems with plastic pipes that are permeable to oxygen.

In underfloor heating systems with plastic pipes that are permeable to oxygen and in open vented heating systems, oxygen diffusion may lead to corrosion on the steel components of the heating system (e.g. on the indirect coil of the DHW cylinder, on buffer cylinders, steel radiators or steel pipes).

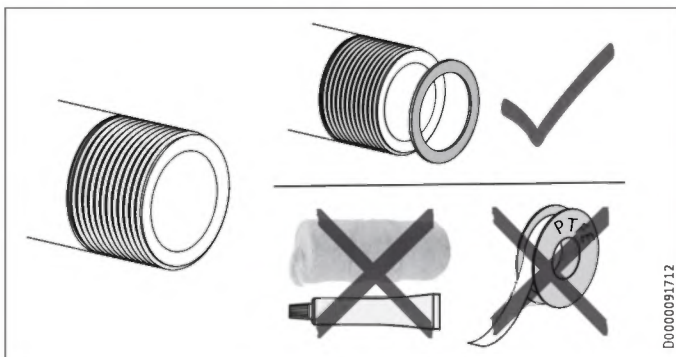
! Material losses
The products of corrosion (e.g. rusty sludge) can settle in the heating system components, which may result in a lower output or fault shutdowns due to reduced cross-sections.

9.2 Water connection and safety assembly

9.2.1 Safety instructions

Note
Carry out all water connection and installation work in accordance with regulations.

Note
Connect the hydraulic connections using flat gaskets only.



Cold water line

Steel, copper or plastic are approved materials for pipework.

! Material losses
A safety valve is required.

DHW line

Copper or plastic are approved materials for pipework.

! Material losses
For the combined use of a threaded immersion heater and plastic pipework systems, observe the maximum permissible temperature and the maximum permissible pressure specified in chapter "Specification / Data table".

! Material losses
Operate the appliance only with pressure-tested taps.

Note
If not used, close off the DHW circulation connection (see chapter "Specification / Dimensions and connections") with the supplied cap and gasket.

9.2.2 Connection

- ▶ Flush the pipework thoroughly.
- ▶ Observe the information in the installation instructions of the safety assembly.
- ▶ Connect the DHW outlet and the cold water inlet lines with the safety assembly. Please note that, depending on the static pressure, you may also need a pressure reducing valve.
- ▶ Size the drain so that water can drain off unimpeded when the safety valve is fully opened. The safety valve discharge aperture must remain open to the atmosphere.
- ▶ Fit the discharge pipe of the safety assembly with a constant fall.

INSTALLATION

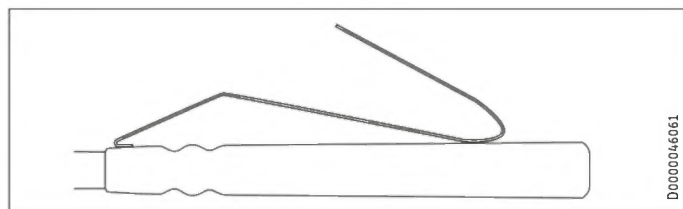
Commissioning

9.3 Temperature sensors



Note

The temperature sensor is part of the standard delivery of the heat pump control unit.



- ▶ Bend the springs of the DHW sensor.
- ▶ Insert the DHW sensor as far as it will go into the sensor well for the heat pump flow sensor (recommended energy saving position) or heat pump return sensor (high DHW convenience).
- ▶ Mount the sensors according to the installation instructions for the heat pump control unit (for sensor wells, see chapter "Specification / Dimensions and connections").
- ▶ Route the connecting cable/lead to the heat pump control unit.

10. Commissioning

10.1 Initial start-up

- ▶ Open a downstream draw-off point until the appliance is full and the pipes are free of air.
- ▶ Vent the internal indirect coil.
- ▶ Fit and check accessories as required.
- ▶ Check the safety valve for correct function.
- ▶ Check that the DHW temperature displayed on the heat pump control unit is correct.

10.1.1 Appliance handover

- ▶ Explain the appliance function to users and familiarise them with how it works.
- ▶ Make the user aware of potential dangers, especially the risk of scalding.
- ▶ Hand over these instructions.

10.2 Recommissioning

See chapter "Initial start-up".

11. Appliance shutdown

- ▶ Disconnect any accessories installed from the mains at the MCB/fuse in the fuse box/distribution board.
- ▶ Drain the appliance. See chapter "Maintenance / Draining the appliance".

12. Troubleshooting

Fault	Cause	Remedy
The safety valve drips when heating is switched off.	The valve seat is contaminated.	Clean the valve seat.

13. Maintenance



WARNING Electrocutation

Carry out all electrical connection and installation work in accordance with relevant regulations.

If you need to drain the appliance, observe chapter "Draining the appliance".

13.1 Checking the safety valve

- ▶ Regularly vent the safety valve on the safety assembly until a full water jet is discharged.

13.2 Checking/replacing the protective anode

- ▶ We recommend having the protective anode initially checked and replaced if necessary after 2 years. For this, observe the maximum transition resistance of 0.3 Ω between the protective anode and the cylinder.
- ▶ Next, decide the time intervals at which further checks should be carried out.

13.3 Draining the appliance



WARNING Burns

Hot water may escape during draining.

- ▶ Close the shut-off valve in the cold water supply line.
- ▶ Open the hot water taps on all draw-off points.
- ▶ Drain the appliance via the drain valve.

13.4 Cleaning and descaling the appliance

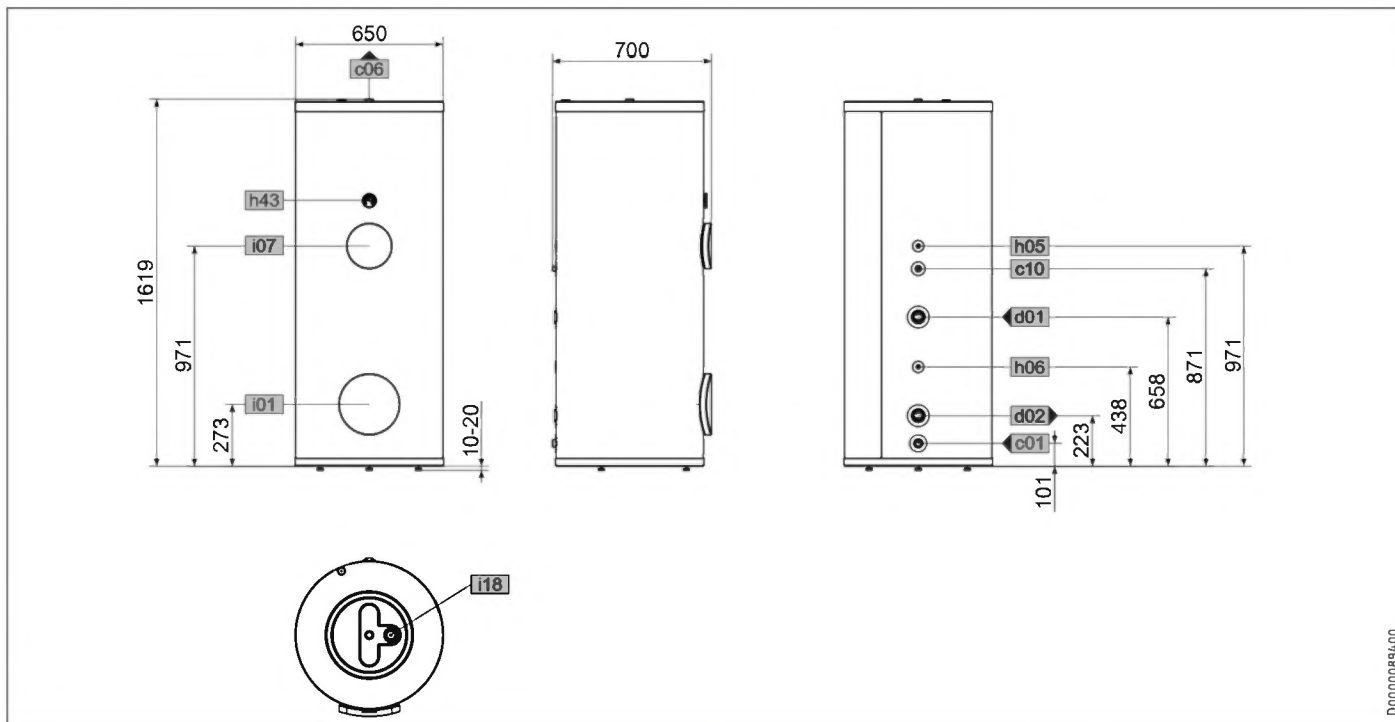
For the torque of the flange screws, see chapter "Specification / Dimensions and connections".

- ▶ Never use descaling pumps.
- ▶ Do not treat the enamelled interior of the cylinder or the protective anode with descaling agents.

14. Specification

14.1 Dimensions and connections

STD 315-1 Plus

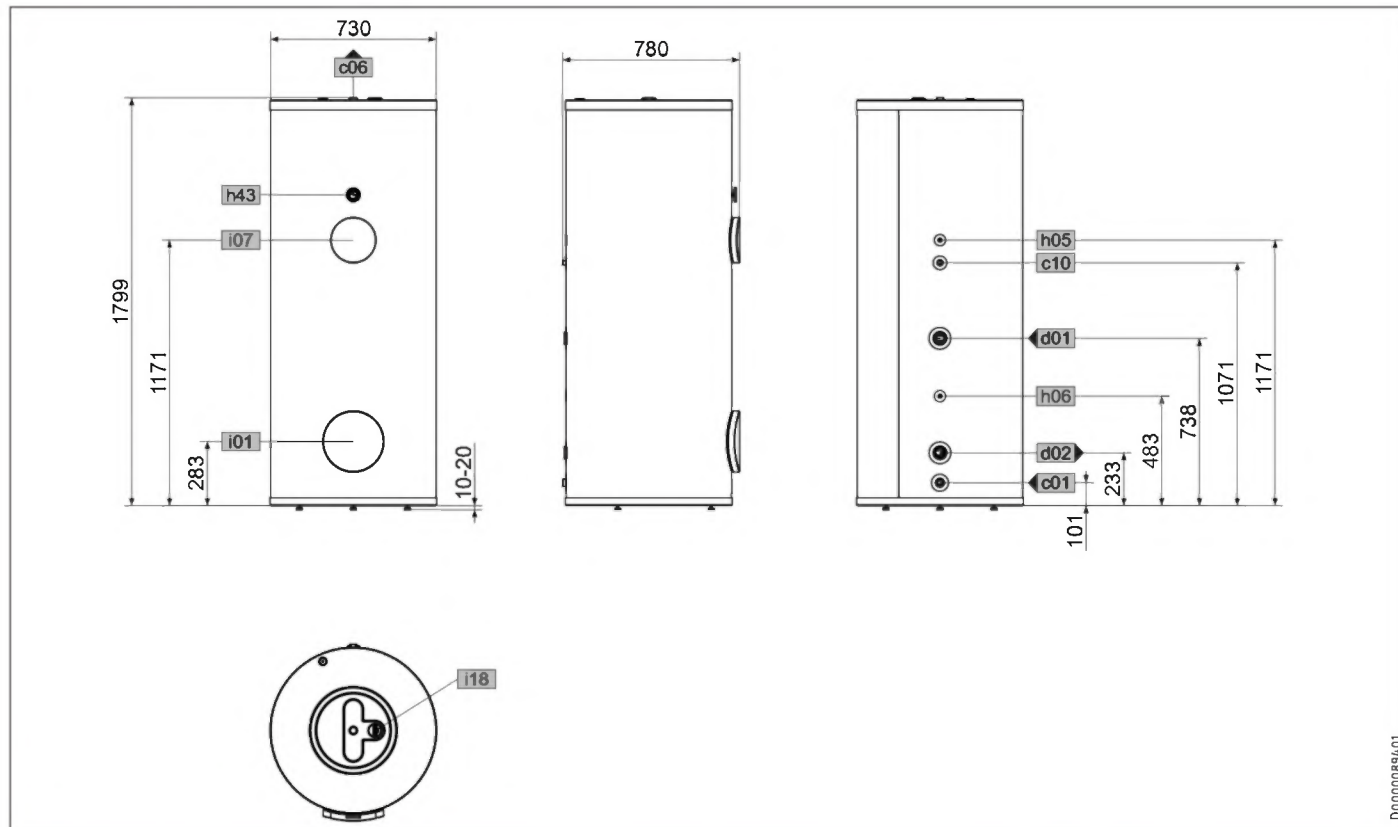


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			STD 315-1 Plus
c01	Cold water inlet	Male thread	G 1
c06	DHW outlet	Male thread	G 1
c10	DHW circulation	Male thread	G 1/2
d01	Heat pump flow	Female thread	G 1 1/2
d02	Heat pump return	Female thread	G 1 1/2
h05	Sensor heat pump DHW	Diameter	mm 9.5
h06	Sensor heat pump DHW optional	Diameter	mm 9.5
h43	Thermometer		
i01	Flange	Diameter	mm 140
		Pitch circle diameter	mm 120
		Screws	M 10
i07	elec. emergency/booster heater	Female thread	G 1 1/2
i18	Protective anode	Female thread	G 1 1/4

INSTALLATION Specification

STD 420-1 Plus

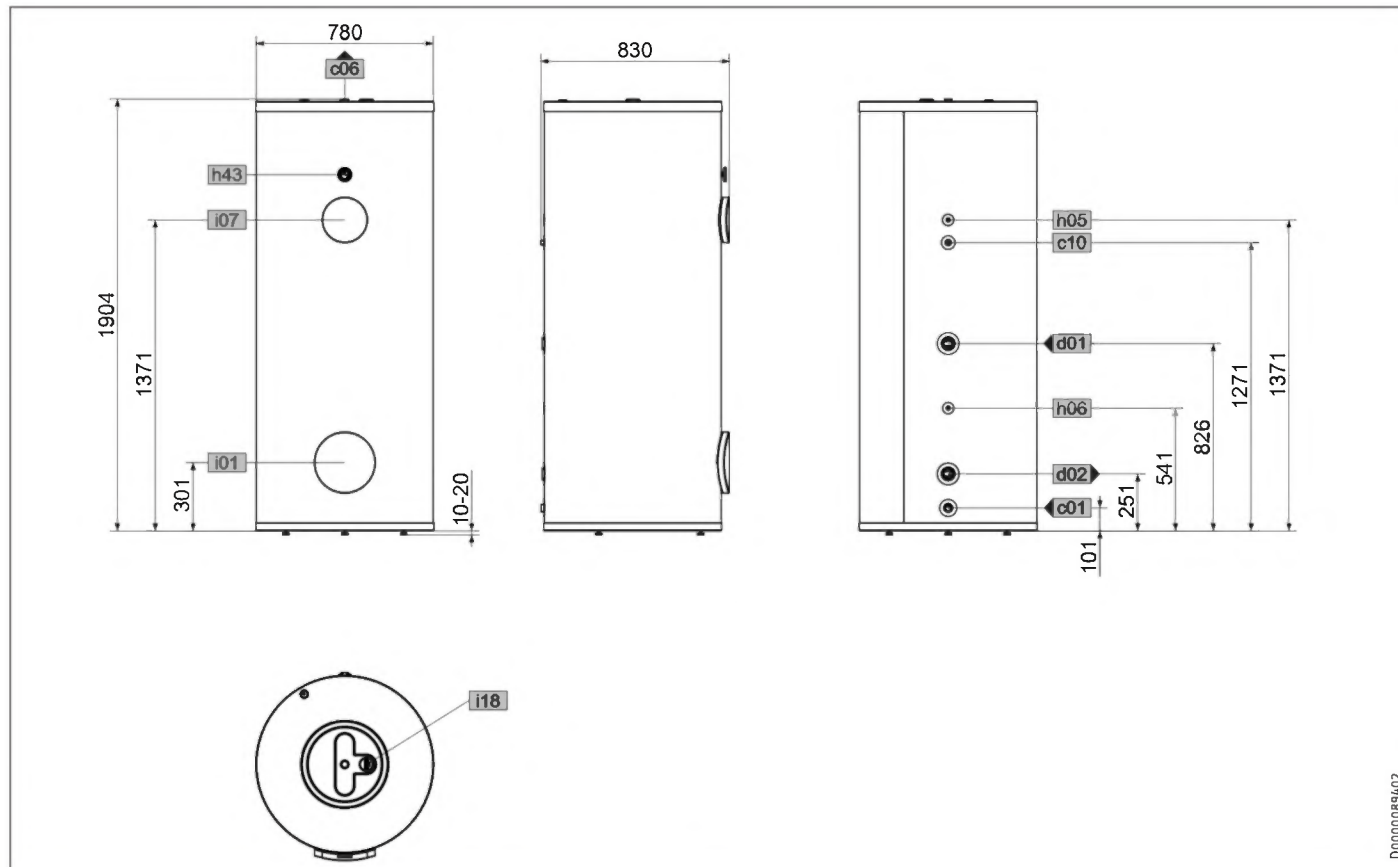


D0000089401

				STD 420-1 Plus
c01	Cold water inlet	Male thread		G 1
c03	Cold water inlet pipe			
c06	DHW outlet	Male thread		G 1
c10	DHW circulation	Male thread		G 1/2
d01	Heat pump flow	Female thread		G 1 1/2
d02	Heat pump return	Female thread		G 1 1/2
h05	Sensor heat pump DHW	Diameter	mm	9.5
h06	Sensor heat pump DHW optional	Diameter	mm	9.5
h43	Thermometer			
i01	Flange	Diameter	mm	140
		Pitch circle diameter	mm	120
		Screws		M 10
i07	elec. emergency/booster heater	Female thread		G 1 1/2
i18	Protective anode	Female thread		G 1 1/4

INSTALLATION Specification

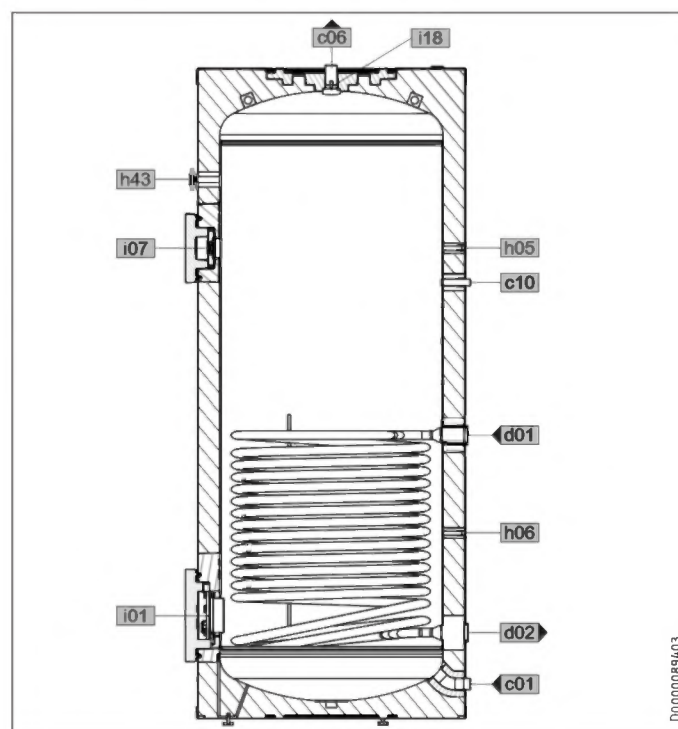
STD 520-1 Plus



D0000089402

STD 520-1 Plus			
c01	Cold water inlet	Male thread	G 1
c06	DHW outlet	Male thread	G 1
c10	DHW circulation	Male thread	G 1/2
d01	Heat pump flow	Female thread	G 1 1/2
d02	Heat pump return	Female thread	G 1 1/2
h05	Sensor heat pump DHW	Diameter	mm 9.5
h06	Sensor heat pump DHW optional	Diameter	mm 9.5
h43	Thermometer		
i01	Flange	Diameter	mm 140
		Pitch circle diameter	mm 120
		Screws	M 10
i07	elec. emergency/booster heater	Female thread	G 1 1/2
i18	Protective anode	Female thread	G 1 1/4

Sectional view



D0000089403

14.2 Energy consumption data

Product datasheet: Hot water storage tanks to regulation (EU) no. 812/2013 / (S.I. 2019 No. 539 / Schedule 2)

		STD 315-1 Plus 204784	STD 420-1 Plus 204785	STD 520-1 Plus 204786
Manufacturer		STIEBEL ELTRON	STIEBEL ELTRON	STIEBEL ELTRON
Energy efficiency class		B	B	B
standing loss S	W	70	75	81
storage volume V	l	326	434	542

14.3 Data table

		STD 315-1 Plus 204784	STD 420-1 Plus 204785	STD 520-1 Plus 204786
Hydraulic data				
Rated capacity	l	314	418	522
Content, indirect coil, top	l	12.30	16	20.20
Surface, indirect coil, top	m ²	2	2.6	3.20
Pressure drop at 1.0 m ³ /h, in- direct coil, top	hPa	24	31	38
Mixed water volume 40 °C (15 °C/60 °C)	l	471	627	783
Application limits				
Max. permissible pressure	MPa	1	1	1
Test pressure	MPa	1.50	1.50	1.50
Max. permissible temperature	°C	95	95	95
Max. throughput	l/min	38	45	50
Energy data				
Standby energy consump- tion/24 h at 65 °C	kWh	1.70	1.80	1.90
Energy efficiency class		B	B	B
Dimensions				
Height	mm	1619	1799	1904
Diameter	mm	650	730	780
Height of unit when tilted	mm	1750	1946	9.5
Weights				
Weight (wet)	kg	437	568	724
Weight (dry)	kg	111	139	182

Guarantee

The guarantee conditions of our German companies do not apply to appliances acquired outside of Germany. In countries where our subsidiaries sell our products a guarantee can only be issued by those subsidiaries. Such guarantee is only granted if the subsidiary has issued its own terms of guarantee. No other guarantee will be granted.

We shall not provide any guarantee for appliances acquired in countries where we have no subsidiary to sell our products. This will not affect warranties issued by any importers.

Environment and recycling

We would ask you to help protect the environment. After use, dispose of the various materials in accordance with national regulations.