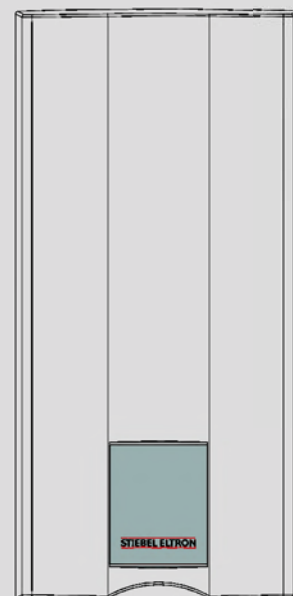


**BEDIENUNG UND INSTALLATION  
OPERATION AND INSTALLATION  
UTILISATION ET INSTALLATION  
OBSLUHA A INSTALACE  
ЭКСПЛУАТАЦИЯ И МОНТАЖ**

Elektronisch gesteuerter Durchlauferhitzer | Electronically controlled instantaneous water heater | Chauffe-eau instantané à gestion électronique | Elektronicky řízený průtokový ohříváč | Проточный водонагреватель с электронным управлением

- » HDB-E 12 Si
- » HDB-E 18 Si
- » HDB-E 21 Si
- » HDB-E 24 Si



**STIEBEL ELTRON**

**OPERATION**

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**INSTALLATION**

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**WARRANTY | ENVIRONMENT AND RECYCLING**

# Operation

## 1. General information

The chapter "Operation" is intended for appliance users and heating contractors.

The chapter "Installation" is intended for heating contractors.



**Note**  
Read these instructions carefully before using the appliance and retain them for future reference.  
Pass on the 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.

1.2 Other symbols in this documentation



**Note**  
General information is identified by the symbol shown on the left.  
► Read these texts carefully.

Symbol	Meaning
	Material damage (appliance, consequential 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

This appliance is designed for domestic use. It can be used safely by untrained persons. The appliance can also be used in a non-domestic environment, e.g. in a small business, as long as it is used in the same way.

This pressure appliance is designed to heat DHW. The appliance can supply one or more draw-off points.

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

2.2 General safety instructions



**CAUTION Burns**  
During operation, the tap can reach temperatures of around 55 °C.  
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 provided that they are supervised or they have been instructed on how to use the appliance safely and have understood the resulting risks. Children must never play with the appliance. Children must never clean the appliance or perform user maintenance unless they are supervised.



**Material damage**  
Protect the appliance and its tap against frost.

2.3 CE designation

The CE designation shows that the appliance meets all essential requirements according to the:

- Low Voltage Directive
  - Electromagnetic Compatibility Directive
- The maximum permissible mains impedance is indicated in chapter "Specification / Data table".

2.4 Test symbols

See type plate on the appliance.

Country-specific approvals and certifications: Germany

A general test certificate [Germany] as verification of suitability regarding noise emissions has been issued for this appliance, based on the State Building Regulations [Germany].



3. Appliance description

The appliance heats potable water that flows through it. When a DHW valve is opened, the heater starts automatically as soon as the start-up volume has been reached. The heating output is determined and matched by the flow rate and the cold water temperature.

Heating system

The heating system is suitable for hard and soft water areas; it is not susceptible to scale build-up. The heating system ensures quick and efficient DHW availability.



**Note**  
The appliance is equipped with an air detector that largely prevents damage to the heating system. If, during operation, air is drawn into the appliance, the heater shuts down automatically for one minute, thereby protecting the heating system.

Thermostatic valve

The appliance is suited to operation with a thermostatic valve.

### 4. Operation

The heating system of the appliance starts automatically and heats the water as soon as you open the DHW valve at the tap.

#### Setting the DHW temperature

Should the outlet temperature fail to reach the required level with the draw-off valve fully open, then more water flows through the appliance than can be heated by the heating system.

- ▶ Reduce the flow rate with the draw-off valve.

#### Outlet capacities

Subject to season, different maximum mixed water or outlet capacities can result from varying cold water temperatures (see chapter "Specification").

#### Following an interruption of the water supply

See chapter "Restarting"

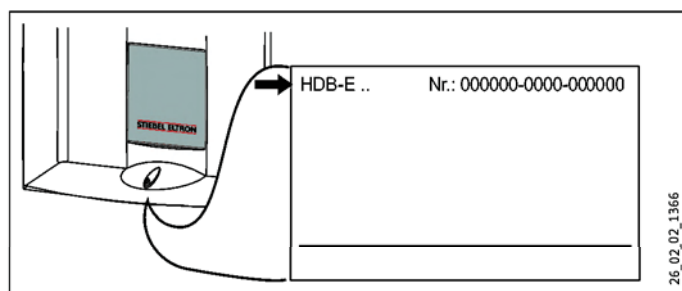
### 5. Cleaning, care and maintenance

- ▶ Never use abrasive or corrosive cleaning agents. A damp cloth is sufficient for cleaning the appliance.
- ▶ Check the taps/valves regularly. You can remove limescale deposits at the tap outlets using commercially available descaling agents.

### 6. Troubleshooting

Fault	Cause	Remedy
The appliance will not start in spite of a fully open DHW valve.	There is no power.	Check the fuse/MCB in your fuse box/distribution panel.
	Starting volume is not achieved. The jet controller in the tap or shower head is scaled up or contaminated.	Clean and/or descale the jet controller or shower head.
	The water supply has been interrupted.	Vent the appliance and the cold water inlet line (see chapter "Commissioning/ Restarting").
Cold water flows briefly while hot water is being drawn.	The air sensor detects air in the water and briefly switches the heater off.	The appliance restarts automatically after 1 minute.

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



# INSTALLATION

## 7. Safety

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

### 7.1 General safety instructions

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



**Material damage**

Observe the maximum inlet temperature. The appliance can be damaged by higher temperatures.

### 7.2 Regulations, standards and instructions



**Note**

Observe all applicable national and local instructions and regulations, e.g. DIN 1988 / DIN EN 806 in Germany.

- The protection rating IP 25 (hoseproof) can only be ensured with a correctly fitted cable grommet.
- The specific electrical resistance of the water must not fall below that stated on the type plate. In a linked water network, observe the lowest electrical water resistance (see chapter "Specification / Application areas"). Your water supply utility will advise you of the specific electrical water resistance or conductivity.

## 8. Appliance description

### 8.1 Standard delivery

- Mounting bracket
- Twin nipple
- Cross-piece
- DHW tee
- Flat gaskets
- Sieve
- Flow limiter
- Plastic profile washer
- Plastic cap
- Flexible plastic couplings
- Cap and back panel guides

### 8.2 Accessories

**Taps**

- MEKD - Pressure-tested kitchen tap
- MEBD - Pressure-tested bath tap

**Plug G ½ A**

These plugs are required if you use pressure-tested taps for finished walls other than the ones recommended by us.

**Installation sets for installation on finished walls**

- Solder fitting - copper pipe for solder connection Ø 12 mm.
- Compression fitting - copper pipe.
- Compression fitting - plastic pipe (suitable for Viega: Sanfix-Plus or Sanfix-Fosta).

**Universal mounting frame**

Mounting frame with electrical connections.

**Pipe assembly DHB water plug-in couplings**

2 water plug-in couplings allow the appliance to be connected to the available water plug-in connections of a DHB.

**Load shedding relay (LR 1-A)**

The load shedding relay which needs to be installed in the distribution board provides priority control for the instantaneous water heater when operating, for example, electric storage heaters simultaneously.

## 9. Preparations

- ▶ Flush the water line thoroughly.

**Taps/valves**

- ▶ Use appropriate pressure-tested Taps (see "Appliance description / Accessories" chapter). Open taps are not permitted.

A safety valve is not required.



**Material damage**

If plastic pipework systems are used, take into account the maximum inlet temperature and the maximum pressure (see chapter "Specification / Data table").

**Permissible water pipe materials**

- Cold water inlet pipe:  
Galvanised steel pipe, stainless steel pipe, copper pipe or plastic pipe
- DHW outlet pipe:  
Stainless steel pipe, copper pipe or plastic pipe



**Material damage**

If plastic pipework systems are used, take into account the maximum inlet temperature and the maximum pressure (see chapter "Specification / Data table").

**Flow rate**

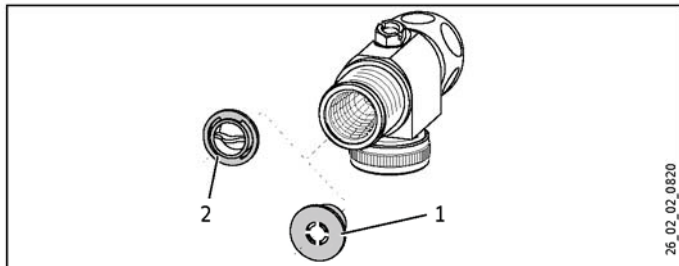
- ▶ Ensure that the flow rate (see chapter "Specification / Data table". On) for switching on the appliance is achieved.
- ▶ Increase the mains water pressure if the required flow rate is not achieved with the draw-off valve fully opened.

# INSTALLATION

## Installation

### Flow pressure

If the minimum flow rate required for the appliance to switch on is not achieved even with the tap fully open, remove the flow limiter. Replace it with the plastic profile washer supplied. If required the pressure in the water installation can also be raised.



- 1 Flow limiter
- 2 Plastic profile washer



#### Note

Always use a flow limiter when operating the appliance with a thermostatic valve.

### Flexible water connection lines

- ▶ If the appliance is installed with flexible water connection lines, ensure that the pipe bends do not become twisted. Pipe bends have a bayonet fitting and are installed inside the appliance.
- ▶ Secure the back panel at the bottom with an additional screw.

### 9.1 Installation site



#### Material damage

Install the appliance in a room free from the risk of frost.

- ▶ Always install the appliance vertically near the draw-off point.

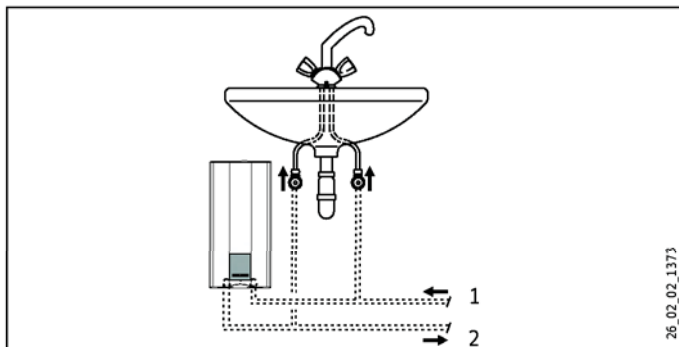
The appliance is suitable for undersink and oversink installations.



#### Note

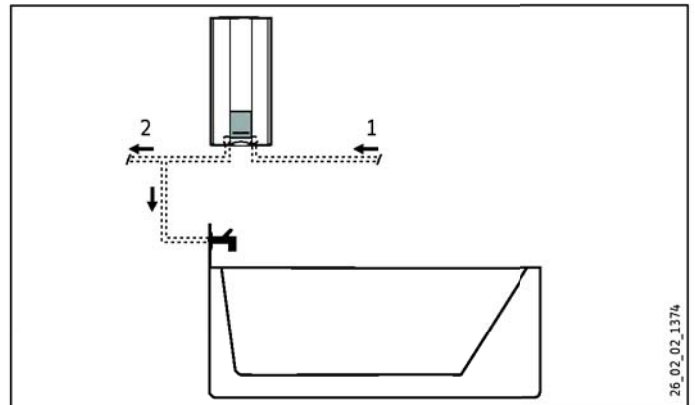
The appliance must be fitted to a wall with sufficient load-bearing capacity.

### Undersink installation



- 1 Cold water inlet
- 2 DHW outlet

### Oversink installation



- 1 Cold water inlet
- 2 DHW outlet

### 9.2 Factory settings

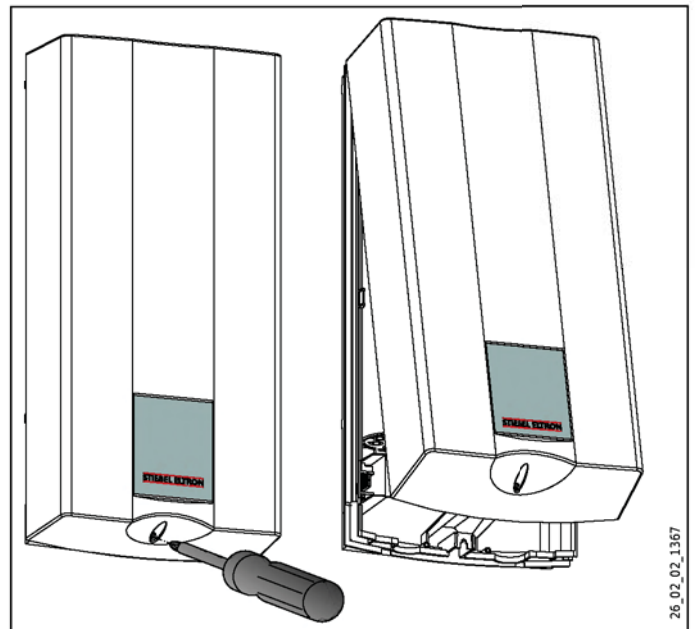
The appliances are prepared in the delivered condition:

- Power supply from "below", installation on unfinished walls
- Water connection, installation on unfinished walls

## 10. Installation

This chapter describes installation in accordance with the factory settings.

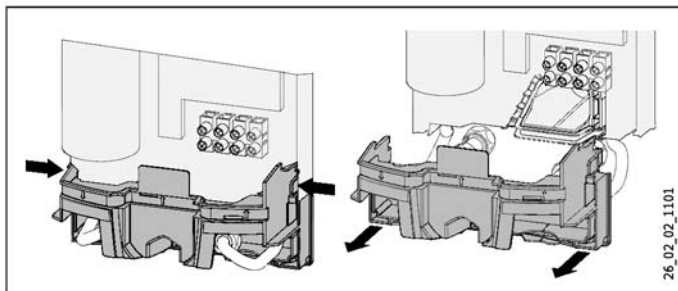
For further installation options, see chapter "Installation alternatives".



- ▶ Open the appliance.

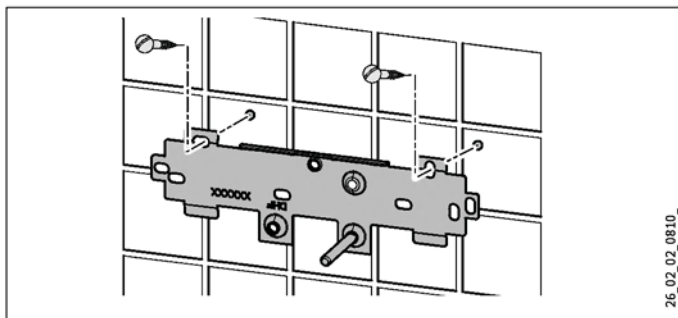
# INSTALLATION

## Installation



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- ▶ Press the two locking hooks and remove the lower part of the back panel towards the front.



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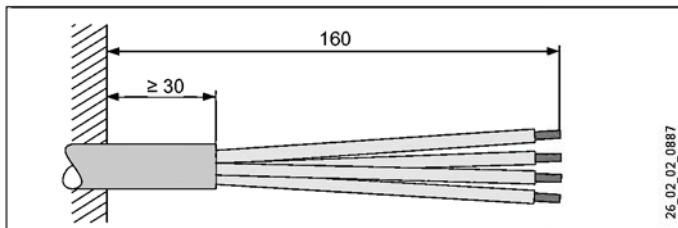
- ▶ Mark out the holes to be drilled; see chapter "Specification / Dimensions and connections".
- ▶ Drill the holes and secure the mounting bracket with 2 screws and 2 rawl plugs (screws and rawl plugs are not part of the standard delivery).



### Note

If you are installing the appliance with flexible water connections, secure the back panel with a screw.

- ▶ Fit the mounting bracket.



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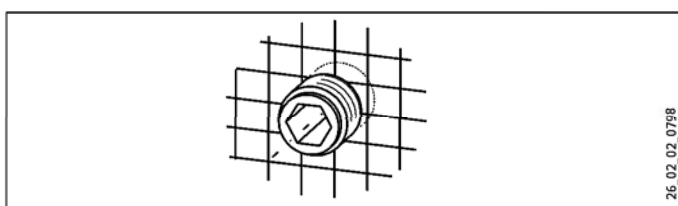
- ▶ Prepare the power cable.

### Making the water connection



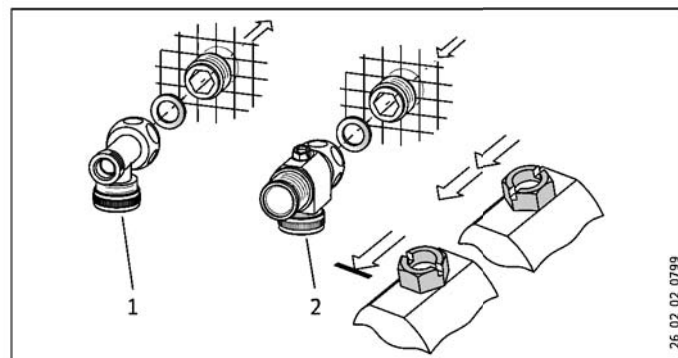
### Material damage

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



26\_02\_02\_0798

- ▶ Seal and insert the twin nipples.



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- 1 DHW tee
- 2 Cross-piece

- ▶ Secure the tee and cross-piece, with a flat gasket each, to the twin nipples.

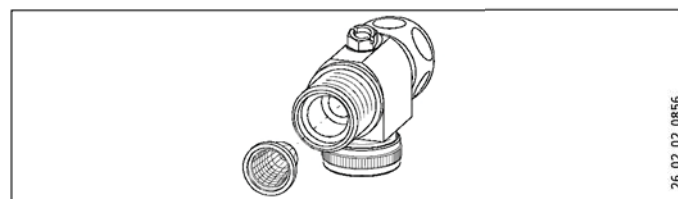
### Fitting the strainer



### Material damage

The strainer must be fitted for the appliance to function.

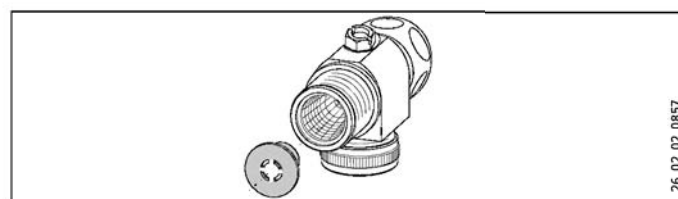
- ▶ When replacing the appliance, check that the strainer is present.



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- ▶ Fit the strainer provided in the cold water inlet of the appliance.

### Installing the DMB flow limiter



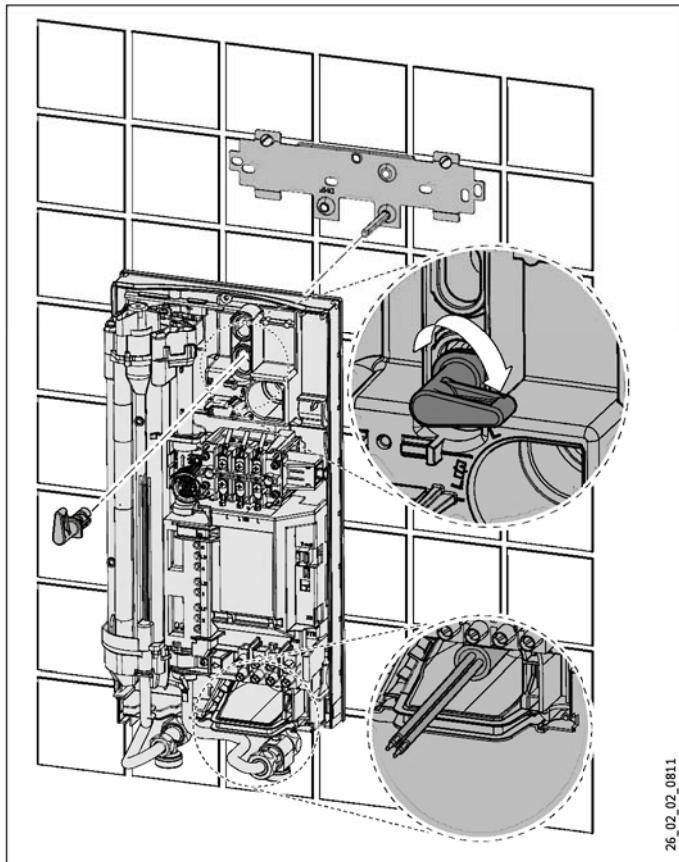
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- ▶ Install the flow limiter provided in the cold water inlet of the appliance.

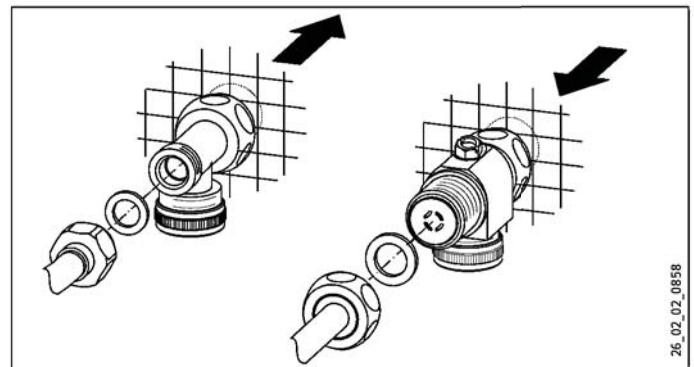
# INSTALLATION

## Installation

### Installing the appliance



- ▶ For easy installation, push the cable grommet of the upper electrical connection into the back panel from behind.
- ▶ Remove the transport plugs from the water connections.
- ▶ Remove the fixing toggle from the upper part of the back panel.
- ▶ Route the power cable from behind through the cable grommet until it rests against the cable sheath. Align the power cable. In the case of a cross-section  $> 6 \text{ mm}^2$ , enlarge the hole in the cable grommet.
- ▶ Push the appliance over the threaded stud of the mounting bracket, so that it breaks through the soft seal. If necessary, use a screwdriver.
- ▶ Push the fixing toggle onto the threaded stud of the mounting bracket.
- ▶ Press the back panel firmly into place and lock the fixing toggle by turning it through  $90^\circ$ .



- ▶ Fit the pipes with flat gaskets onto the twin nipples.

### Connecting the power supply



#### WARNING Electrocutation

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



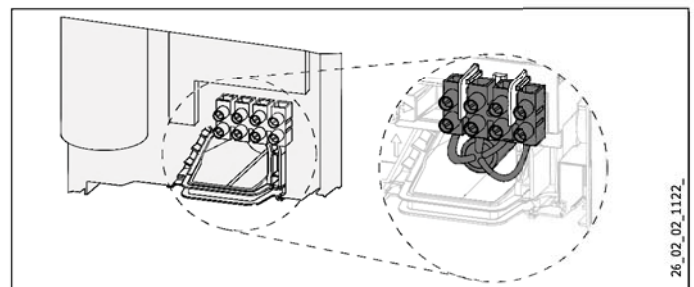
#### WARNING Electrocutation

Connection to the power supply is only permissible in the form of a permanent connection in conjunction with the removable cable grommet. The appliance must be able to be separated from the power supply by an isolator that disconnects all poles with at least 3 mm contact separation.



#### WARNING Electrocutation

Ensure that the appliance is earthed.



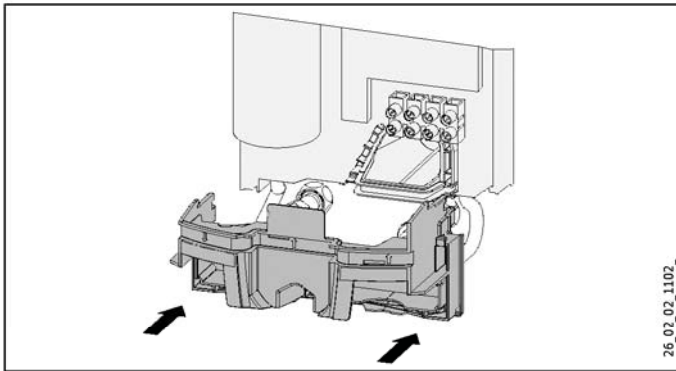
- ▶ Connect the power cable to the mains terminal (see chapter "Specification / Wiring diagram"). The specified voltage must match the mains voltage.



# INSTALLATION

## Installation

### 10.1 Completing the installation

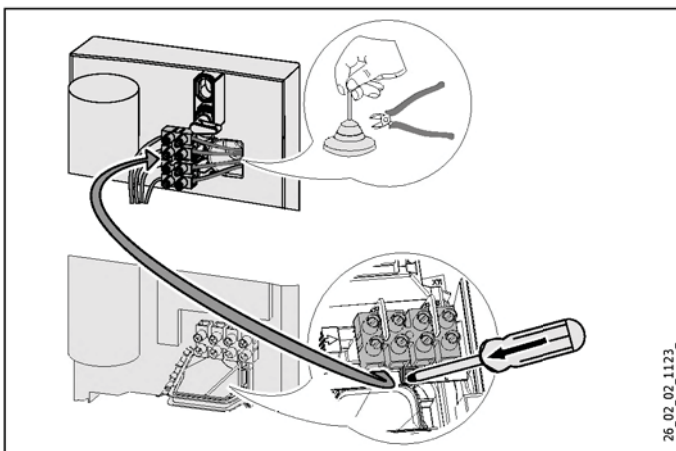


- ▶ Fit the lower part of the back panel. Ensure that it clicks into place.
- ▶ Align the appliance by carrying out the following: Loosen the fixing toggle and align the power supply and back panel. Retighten the fixing toggle. If the back panel of the appliance is not flush, the appliance can be secured at the bottom with an additional screw.

### 10.2 Alternative installation methods

- Power supply from above for unfinished walls
- large cross-section for power supply from below
- Connecting a load shedding relay
- Water installation for finished walls
- Water installation for finished walls with solder/compression fitting
- Water installation on finished walls, fitting the appliance cap
- Installing lower part of back panel
- Use of existing mounting bracket when replacing an appliance
- Installation for offset tiles

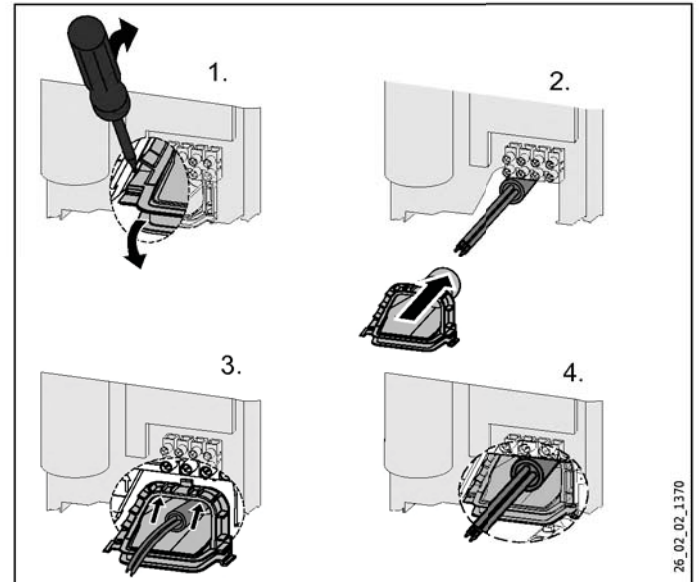
#### Power supply from above for unfinished walls



- ▶ Cut off the cable grommet for the power cable.
- ▶ Push down and remove the locking hook that secures the mains terminal, then remove the mains terminal.
- ▶ Reposition the mains terminal from the bottom to the top. Secure the mains terminal by pushing it under the locking hook.

#### Conductor cross-sections for power supply from below

If cables with a large cross-section are used, the cable grommet can be fitted after the appliance has been installed.



- ▶ Before installing the appliance, use a screwdriver to push the cable grommet out.
- ▶ Push the cable grommet over the power cable. In the case of a cross-section  $> 6 \text{ mm}^2$ , enlarge the hole in the cable grommet.
- ▶ Push the cable grommet into the back panel and click grommet into place.

#### Connecting a load shedding relay

Install the load shedding relay in the distribution board in conjunction with other electric appliances, e.g. electric storage heaters. The relay responds when the instantaneous water heater starts. The load shedding relay is available as an accessory.

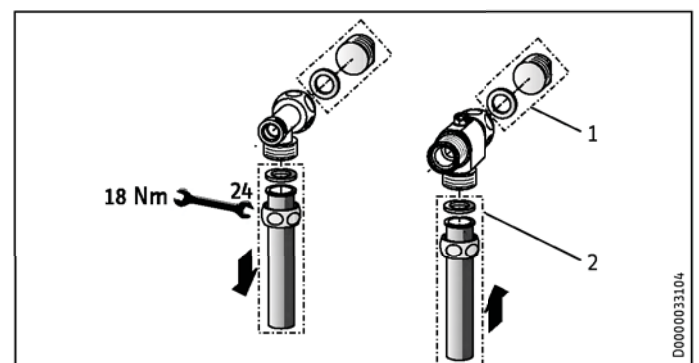


#### Material damage

Connect the phase that switches the load shedding relay to the indicated terminal of the mains terminal in the appliance (see chapter "Specification / Wiring diagram").

#### Water installation for finished walls

Suitable pressure-tested taps can be ordered as accessories.



- 1 Water plugs
- 2 Taps

# INSTALLATION

## Installation

- ▶ Fit the water plugs with gaskets to seal the connection below the plaster. With twin-lever pressure-tested taps, the plugs and gaskets are part of the standard delivery. For pressure-tested taps other than those recommended by us, plugs and gaskets can be ordered as accessories.
- ▶ Install the tap.
- ▶ Push the lower part of the back panel under the connecting pipes of the tap and push it into the back panel.
- ▶ Secure the connecting pipes to the appliance.

### Water installation for finished walls with solder/compression fitting

You can connect copper or plastic pipes with the accessories "solder fitting" or "compression fitting".

With the "solder fitting" with threaded connection for 12 mm copper pipe, proceed as follows:

- ▶ Push the union nuts over the connecting pipes.
- ▶ Solder the inserts to the copper pipes.
- ▶ Push the lower part of the back panel under the connecting pipes of the tap and push it into the back panel.
- ▶ Secure the connecting pipes to the appliance.

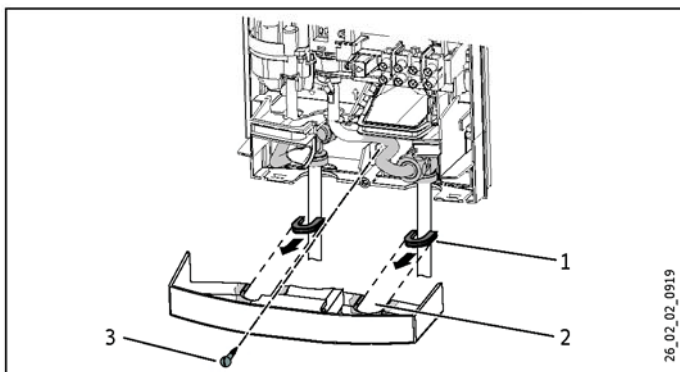


#### Note

Observe the tap/valve manufacturer's instructions!

### Water installation on finished walls, fitting the appliance cap

see "Appliance description / Accessories" chapter.



- 1 Cap guides
- 2 Knock-out
- 3 Screw

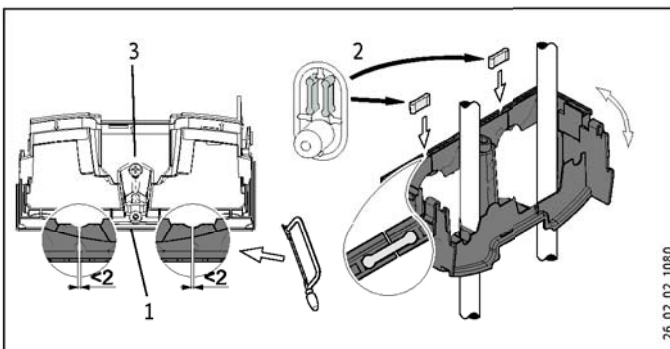
- ▶ Cleanly break out the knock-outs in the appliance cap. If necessary, use a file.
- ▶ Push the cap guides provided into the knock-outs.
- ▶ Secure the back panel at the bottom with a screw. This is also relevant if flexible water pipework is used.

### Installing lower part of back panel

If using threaded connections for finished walls, the lower part of the back panel can also be installed after fitting the taps/valves. To do this, carry out the following steps:

- ▶ Cut open the lower part of the back panel.
- ▶ Fit the lower part of the back panel by bending it out at the sides and guiding it over the pipes.

- ▶ Insert the connection pieces from behind into the lower part of the back panel.
- ▶ Click the lower part of the back panel into place.
- ▶ Secure the lower part of the back panel with a screw.



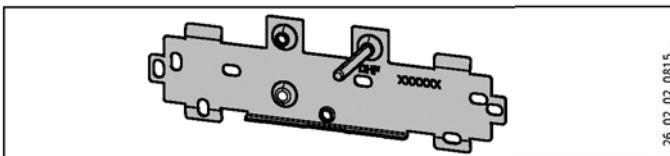
- 1 Lower part of back panel
- 2 Connection piece from the pack
- 3 Screw

### Mounting bracket for appliance replacement

An existing Stiebel Eltron mounting bracket may be used when replacing appliances (except instantaneous water heater DHF).

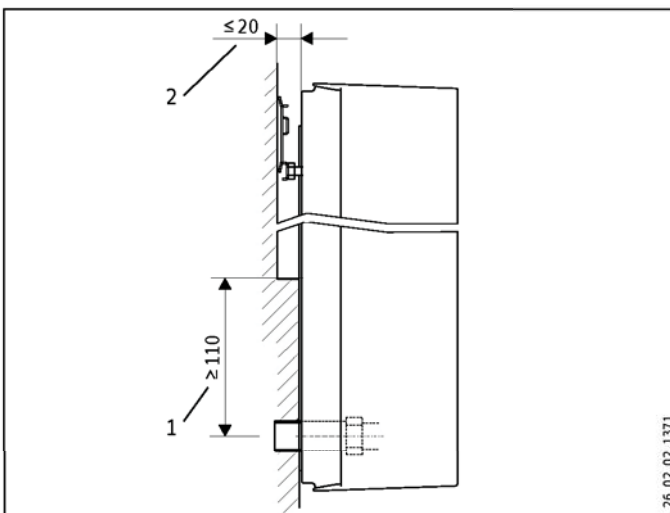
- ▶ Break through the back panel of the appliance for the threaded stud on the pre-installed mounting bracket.

DHF replacement



- ▶ Reposition the threaded stud on the mounting bracket (the stud has a self-tapping thread).
- ▶ Rotate the mounting bracket through 180° and mount it on the wall (the DHF logo is then turned towards the reader).

### Installation for offset tiles



- 1 Minimum contact area of the appliance
- 2 Maximum tile offset

# INSTALLATION

## Commissioning

- ▶ Adjust the wall clearance and lock the back panel with the fixing toggle by turning it clockwise through 90°.

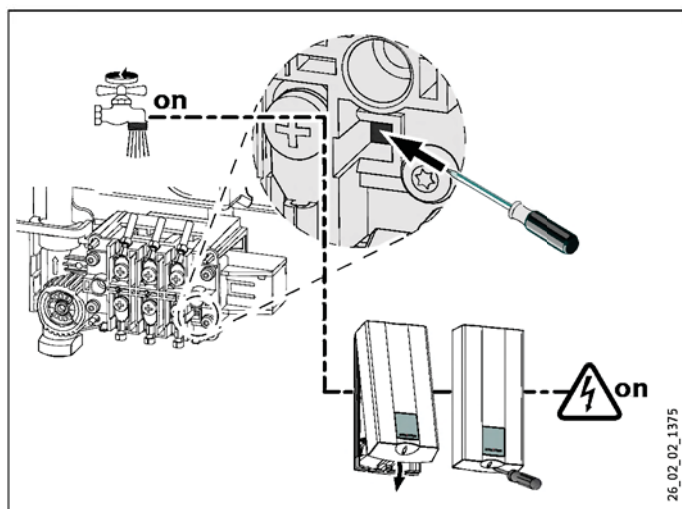
### 11. Commissioning



#### WARNING Electrocutation

Commissioning may only be carried out by an authorised contractor in accordance with safety regulations.

#### 11.1 Commissioning



- ▶ Open and close all connected draw-off valves several times, until all air has been vented from the pipework and the appliance.
- ▶ Carry out a tightness check.
- ▶ Activate the safety pressure limiter. The instantaneous water heater is supplied with the safety pressure limiter in the triggered state. Activate the safety pressure limiter at flow pressure by pressing the reset button with a screwdriver.
- ▶ Fit the appliance cap and secure it with a screw.
- ▶ Switch the mains power ON.
- ▶ Check the function of the appliance.
- ▶ Remove the protective foil from the user interface.

#### Appliance handover

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

#### 11.2 Recommissioning



#### Material damage

Following an interruption of the water supply, recommission the appliance by carrying out the following steps, in order to prevent the destruction of the bare wire heating system.

- ▶ Disconnect the appliance from the power supply by removing the fuses/tripping the MCBs.
- ▶ Open the tap until the appliance and its upstream cold water inlet line are free of air.
- ▶ Switch the mains power back ON again.

### 12. Shutting down

- ▶ Isolate all poles of the appliance from the power supply.
- ▶ Drain the appliance (see chapter "Maintenance").

# INSTALLATION

## Troubleshooting

### 13. Troubleshooting



**WARNING Electrocutation**  
In order to check the appliance, it must be supplied with power.

#### 13.1 Display options for LED diagnostic traffic light

##### Possible indications

	Red	Illuminates in case of faults
	Yellow	Illuminates in heating mode
	Green	Flashing: appliance is supplied with mains power

#### 13.2 Fault table

Fault / diagnostic traffic light LED display	Cause	Remedy
The appliance does not start.	The shower head / aerators are scaled up.	Descale or if necessary replace the shower head / aerators.
Inadequate flow rate.	The sieve in the appliance is dirty.	Clean the strainer.
The temperature is not achieved.	One phase down.	Check the MCB/fuse in your fuse box.
The heater does not switch on.	The air sensor detects the presence of air in the water and briefly switches the heater off.	The appliance restarts after one minute.
No hot water and no traffic light display.	The MCB/fuse has responded/blown.	Check the MCB/fuse in your fuse box.
	The safety pressure limiter (see chapter "Specification / Wiring diagram" has switched off.	Remove the cause of the fault (e.g. faulty pressure washer). Protect the heating system against overheating by opening a draw-off valve downstream from the appliance for one minute. This depressurises and cools down the heater. Activate the safety pressure limiter at flow pressure by pressing the reset button; see also chapter "Commissioning".
No hot water at flow rate of > 23 l/min. Traffic light display: green flashing.	The PCB is faulty.	Check the PCB and replace if necessary.
	The PCB is faulty.	Check the PCB and replace if necessary.
No hot water at flow rate of > 23 l/min. Traffic light display: green flashing.	The flow sensor is not plugged in.	Plug the flow sensor plug back in.
	The flow sensor is faulty.	Check the flow sensor and replace it if required.
No hot water at flow rate of > 23 l/min. Traffic light display: yellow constantly on; green flashing.	The high limit safety cut-out has responded (see chapter "Specification / wiring diagram" or has suffered a break in continuity.	Check the high limit safety cut-out and replace it if required.
	The heating system is faulty.	Check the resistance of the heating system, and replace the appliance if required.
No hot water. Traffic light display: red constantly on; green flashing.	The PCB is faulty.	Check the PCB and replace if necessary.
	The cold water inlet temperature exceeds 35 °C.	Reduce the cold water inlet temperature to the appliance.
	The cold water sensor is faulty.	Check the PCB and replace if necessary.

### 14. Maintenance



**WARNING Electrocutation**  
Before any work on the appliance, disconnect all poles from the power supply.

#### Draining the appliance

You can drain the appliance for maintenance work or to protect it from frost.

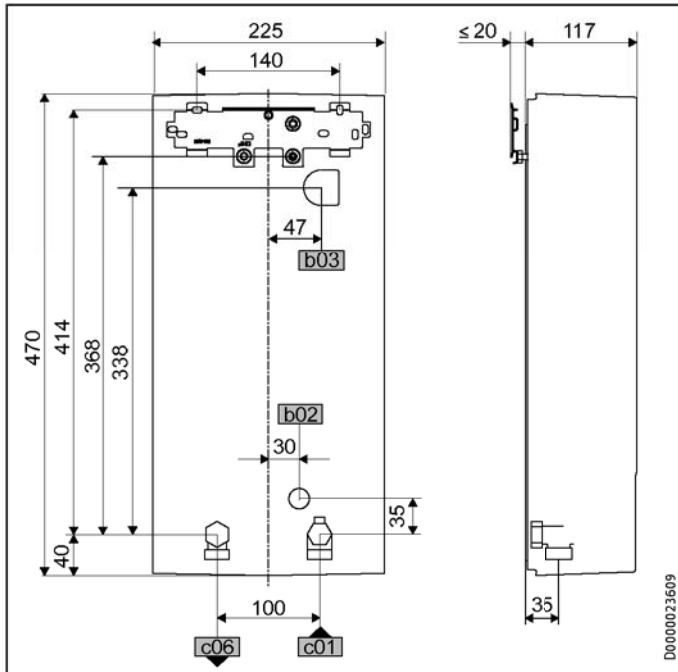
- ▶ Close the shut-off valve in the cold water supply line.
- ▶ Open all draw-off valves.
- ▶ Undo the water connections on the appliance.
- ▶ Store the dismantled appliance in a room free from the risk of frost, as water residues remaining inside the appliance can freeze and cause damage.



**CAUTION Scalding**  
Hot water may escape when draining the appliance.

## 15. Specification

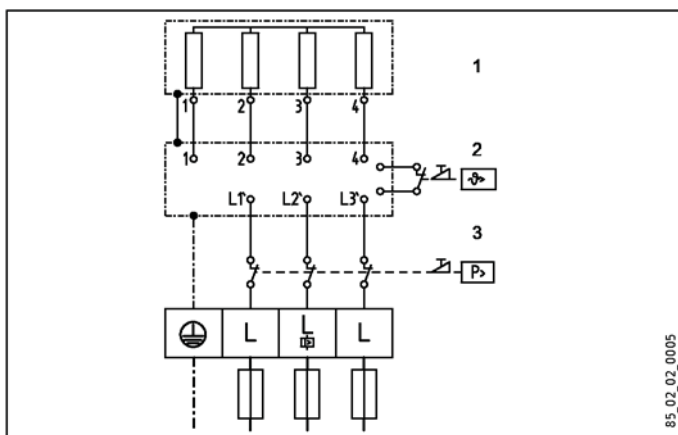
### 15.1 Dimensions and connections



b02	Entry electrical cables I		
b03	Entry electrical cables II		
c01	Cold water inlet	Male thread	G 1/2 A
c06	DHW outlet	Male thread	G 1/2 A

### 15.2 Wiring diagram

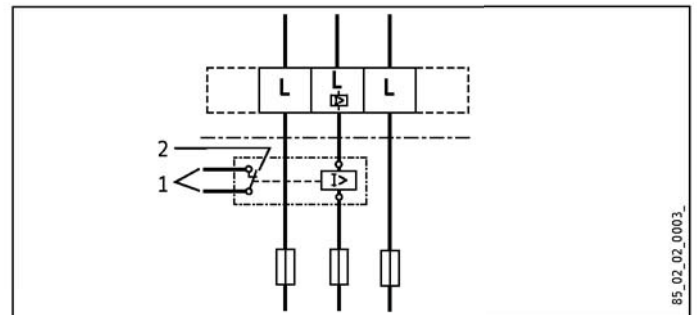
3/PE ~ 380 - 415 V



- 1 Bare wire heating system
- 2 High limit safety cut-out
- 3 Safety pressure limiter

### Priority control with load shedding relay (LR 1-A)

See also chapter "Appliance description / Accessories".

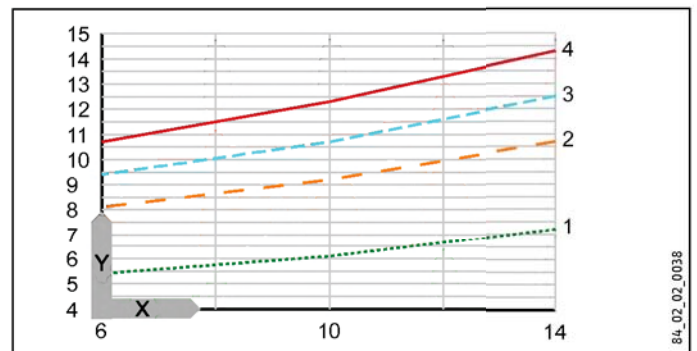


- 1 Control cable to the contactor of the second appliance (e.g. electric storage heater).
- 2 Control contact opens when switching the instantaneous water heater on.

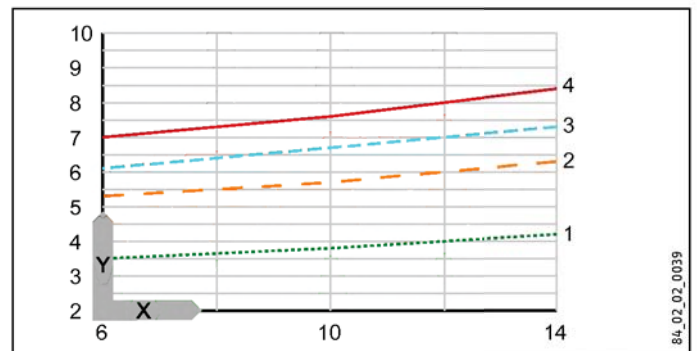
### 15.3 Mixed water volume / outlet volume

The values are relative to a rated voltage of 400 V. The mixed water volume and outlet volume are subject to the available supply pressure and the available mains voltage.

Available temperature approx. 38 °C in the shower, for hand washing, filling the bath etc.



Outlet temperature approx. 55 °C for the kitchen sink and when using thermostatic valves.



- X Cold water inlet temperature in °C  
Y Mixed water volume / outlet volume in l/min
- 1 HDB-E 12 Si
  - 2 HDB-E 18 Si
  - 3 HDB-E 21 Si
  - 4 HDB-E 24 Si

# INSTALLATION Specification

## 15.4 Applications / Conversion table

Specific electrical resistance and specific electrical conductivity, see "Data table".

Standard specification at 15 °C			20 °C			25 °C		
Spec. Resistance $\rho \geq$	Spec. Conductivity $\sigma \leq$		Spec. Resistance $\rho \geq$	Spec. Conductivity $\sigma \leq$		Spec. Resistance $\rho \geq$	Spec. Conductivity $\sigma \leq$	
$\Omega\text{cm}$	$\text{mS/m}$	$\mu\text{S/cm}$	$\Omega\text{cm}$	$\text{mS/m}$	$\mu\text{S/cm}$	$\Omega\text{cm}$	$\text{mS/m}$	$\mu\text{S/cm}$
900	111	1111	800	125	1250	735	136	1361
1000	100	1000	890	112	1124	815	123	1227
1100	91	909	970	103	1031	895	112	1117
1200	83	833	1070	93	935	985	102	1015
1300	77	769	1175	85	851	1072	93	933

## 15.7 Data table

		HDB-E 12 Si			HDB-E 18 Si			HDB-E 21 Si			HDB-E 24 Si		
		232003			232004			232005			232006		
<b>Electrical details</b>													
Rated voltage	V	380	400	415	380	400	415	380	400	415	380	400	415
Rated output	kW	9.7	10.7	11.5	16.2	18	19.4	19	21	22.6	21.7	24	25.8
Rated current	A	14.4	15.5	16	24.7	26	27	29.5	31	32.2	33.3	35	36.3
Fuse	A	16	16	16	25	25	32	32	32	32	35	35	40
Phases		3/PE			3/PE			3/PE			3/PE		
Frequency	Hz	50/60	50/60	50/-	50/60	50/60	50/-	50/60	50/60	50/-	50/60	50/60	50/-
Max. mains impedance at 50Hz	$\Omega$				0.47	0.45	0.43	0.41	0.39	0.37	0.36	0.34	0.33
Max. mains impedance at 60 Hz	$\Omega$				0.39	0.37		0.34	0.32		0.29	0.28	
Specific resistance $\rho_{15} \geq$ (at $\vartheta_{\text{cold}} \leq 35^\circ\text{C}$ )	$\Omega\text{cm}$	$\geq 1100$	$\geq 1100$	$\geq 1200$	$\geq 1100$	$\geq 1100$	$\geq 1200$	$\geq 1100$	$\geq 1100$	$\geq 1200$	$\geq 1100$	$\geq 1100$	$\geq 1200$
Specific conductivity $\sigma_{15} \leq$ (at $\vartheta_{\text{cold}} \leq 35^\circ\text{C}$ )	$\mu\text{S/cm}$	$\leq 910$	$\leq 910$	$\leq 830$	$\leq 910$	$\leq 910$	$\leq 830$	$\leq 910$	$\leq 910$	$\leq 830$	$\leq 910$	$\leq 910$	$\leq 830$
<b>Connections</b>													
Water connection		G 1/2 A			G 1/2 A			G 1/2 A			G 1/2 A		
<b>Application limits</b>													
Max. permissible pressure	MPa	1			1			1			1		
<b>Values</b>													
Max. permissible inlet temperature	$^\circ\text{C}$	35			35			35			35		
ON	l/min	>2.3			>2.3			>2.3			>2.3		
Flow rate for pressure drop	l/min	3.1			5.2			6.0			6.9		
Pressure drop at flow rate	MPa	0.07 (0.02 without DMB)			0.08 (0.06 without DMB)			0.10 (0.08 without DMB)			0.13 (0.1 without DMB)		
Flow rate limit at	l/min	4			7.5			7.5			8.5		
DHW delivery	l/min	5.5			9.0			10.5			12		
$\Delta\vartheta$ if presented	K	28			28			28			28		
<b>Hydraulic data</b>													
Rated capacity	l	0.4			0.4			0.4			0.4		
<b>Versions</b>													
Temperature adjustment	$^\circ\text{C}$	55			55			55			55		
Protection class		1			1			1			1		
Insulation block		Plastic			Plastic			Plastic			Plastic		
Heating system		Bare wire			Bare wire			Bare wire			Bare wire		
Cap and back panel		Plastic			Plastic			Plastic			Plastic		
Colour		white			white			white			white		
IP-Rating		IP25			IP25			IP25			IP25		
<b>Dimensions</b>													
Height/Width/Depth	mm	470	225	117	470	225	117	470	225	117	470	225	117
<b>Weights</b>													
Weight	kg	3.6			3.6			3.6			3.6		

## 15.5 Pressure drop

Pressure drop at taps at flow rate of 10 l/min

Mono-lever mixer tap, approx.	MPa	0.04 - 0.08
Thermostatic valve, approx.	MPa	0.03 - 0.05
Hand shower, approx.	MPa	0.03 - 0.15

## Sizing the pipework

When calculating the size of the pipework, a pressure drop for the appliance of 0.1 MPa is recommended.

## 15.6 Fault conditions

In case of faults, loads up to a maximum of 95 °C at a pressure of 1.2 MPa can occur temporarily in the installation.

### **Warranty**

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

We shall not provide any warranty 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.

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