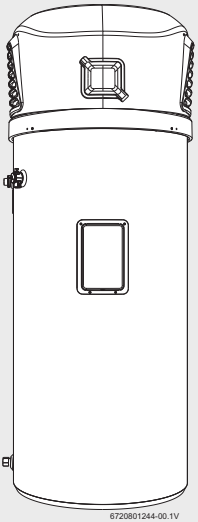

Electric Heat Pump Water Heater

Compress 3000 DW FO

HP 270-1E 0 FOV/S...

BOSCH

Installation instructions

6 720 801 244 (2013/08) AU

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1 Key to symbols and safety instructions

1.1 Key to symbols

Warnings

Warnings in this document are identified by a warning triangle printed against a grey background.
Keywords at the start of a warning indicate the type and seriousness of the ensuing risk if measures to prevent the risk are not taken.

The following keywords are defined and can be used in this document:

- **NOTICE** indicates a situation that could result in damage to property or equipment.
- **CAUTION** indicates a situation that could result in minor to medium injury.
- **WARNING** indicates a situation that could result in severe injury or death.
- **DANGER** indicates a situation that will result in severe injury or death.

Important information

This symbol indicates important information where there is no risk to people or property.

Additional symbols

Symbol	Explanation
▶	Step in an action sequence
→	Cross-reference to another part of the document
•	List entry
–	List entry (second level)

Table 1

1.2 Safety information

„Water“ safety warnings

WARNING:
This water heater is not suitable for pool heating.

WARNING:
The appliance should be located in an area where leakage of the heater or connections will not result in damage to the area adjacent to the appliance or to lower floors of the structure. When such locations cannot be avoided, it is recommended that a suitable drain pan, adequately drained, be installed under the appliance.

WARNING:
If a water heater is installed in a closed water supply system, such as one having a backflow preventer in the cold water supply line, means shall be provided to control thermal expansion. Contact the water supplier or local plumber on how to control this situation.

WARNING:
Precautions must be taken prior to manually operating the relief valve to avoid contact with hot water coming out of the relief valve and to prevent water damage.

WARNING:
If a relief valve discharges periodically, this may be due to thermal expansion in a closed water supply system. Contact the water supplier or local plumber on how to correct this situation. Do not plug the relief valve.

WARNING:
The temperature pressure relief valve should be checked for performance every six months or replaced at intervals not exceeding 3 years, or more frequently in areas where there is a high incidence of water deposits.

Refrigerant

- Please observe the relevant environmental regulations when using and reusing refrigerant. Do not allow refrigerant to be discharged into the environment. Use the refrigerant R134a. It is non-flammable and does not have a destructive impact on the ozone layer.
- Before working on parts of the refrigerant circuit, remove the refrigerant to ensure work safety.

Use HFC-134a and PAG-OIL for maintenance purposes. It contains fluorinated greenhouse gas and is rated with a greenhouse potential of 1300 in the Kyoto Protocol.

„Electric“ safety warnings

WARNING:
This water heater contains electronic equipment and 500V insulation tests must only be conducted between active and earth and between neutral and earth. **An active to neutral test WILL damage the electronics.**

WARNING:
All electrical work and fixed wiring must be carried out by a qualified person and in accordance with the Wiring Rules AS/NZS 3000 and local authority requirements.

DANGER:
Shock hazard: line voltage is present. Before servicing the water heater, please cut the power supply. Failure to do so could result in severe personal injury or death.

CAUTION:
Label all wires prior to disconnection when servicing controls. Wiring errors can result in improper and dangerous operation.
Verify proper operation after servicing.

WARNING:
Do not turn power off to the appliance if cold weather is expected as components may be damaged by freezing. If power needs to be turned off or power failure occurs and freezing conditions are expected, water should be drained from the appliance.

„General“ safety warnings

Do not store or use gasoline or other flammable, combustible or corrosive vapors and liquids in the vicinity of this or any other appliance.

WARNING:
Do not operate this system before reading the manual.

WARNING:
This appliance must be installed, commissioned and serviced by an authorised person in accordance with all applicable local rules and regulations.

WARNING:
Keep appliance area clear and free from combustible materials, gasoline and other flammable vapors and liquids.

For your safety

WARNING:
The power supply to the appliance must not be activated until the system is filled with water.

WARNING:
To meet the requirements of the National Plumbing Standard, the temperature of the stored water must not be below 60 °C.

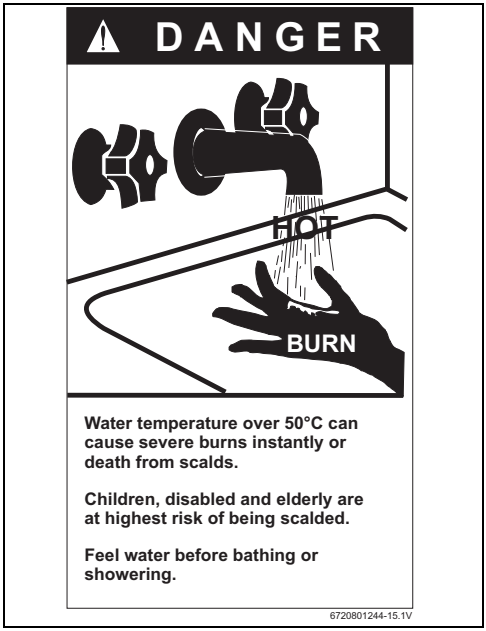

Fig. 1

To prevent serious injury, unit damage or damage to other property, please use the unit properly. Read this manual carefully and understand the following information correctly.

WARNING:
This appliance is not intended for use by persons, including children, with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

WARNING:
Water temperatures over 50 °C can cause severe scalds. Local regulations and/or the requirements of AS/NZS 3500.4 must be considered regarding the temperature limitations of hot water used primarily for personal hygiene.

High temperature water increases the risk of scald injury

This water heater can heat up water to temperatures which can cause scalding. Always feel the water temperature before use, either before having a shower or when filling a bath tub to ensure it will not cause scald injuries.

We recommend, and it may also be required by regulations that an approved temperature limiting device is fitted into the hot water pipe connected to sanitary outlets (i.e. bathroom and ensuite). This will keep the water temperature below 50 °C at these outlets. The risk of scald injury will be reduced and still allow hotter water to the kitchen and laundry.

Notice to Victorian Customers from the Victorian Plumbing Industry Commission.

This water heater must be installed by a licensed person as required by the Victorian Building Act 1993. Only a licensed professional will give you a Compliance Certificate, showing that the work complies with all the relevant standards. Only a licensed person will have insurance protecting their workmanship.
Make sure you use a licensed person to install this water heater and ask for your Compliance Certificate.

WARNING:
Installation requirements are described in section 4. The water heater must be installed by an authorised person and the installation must comply with Standards AS/NZS 3500.4, AS/NZS 3000 and all local codes and regulatory authority requirements. In New Zealand, the installation must conform with Clause G12 of the New Zealand Building Code.

WARNING:
A wrong operation may lead to death or serious injury to people.

Every care has been taken to ensure accuracy in preparing this document.

No liability can be accepted for any consequences, which may arise as a result of its application.

2 Standard delivery

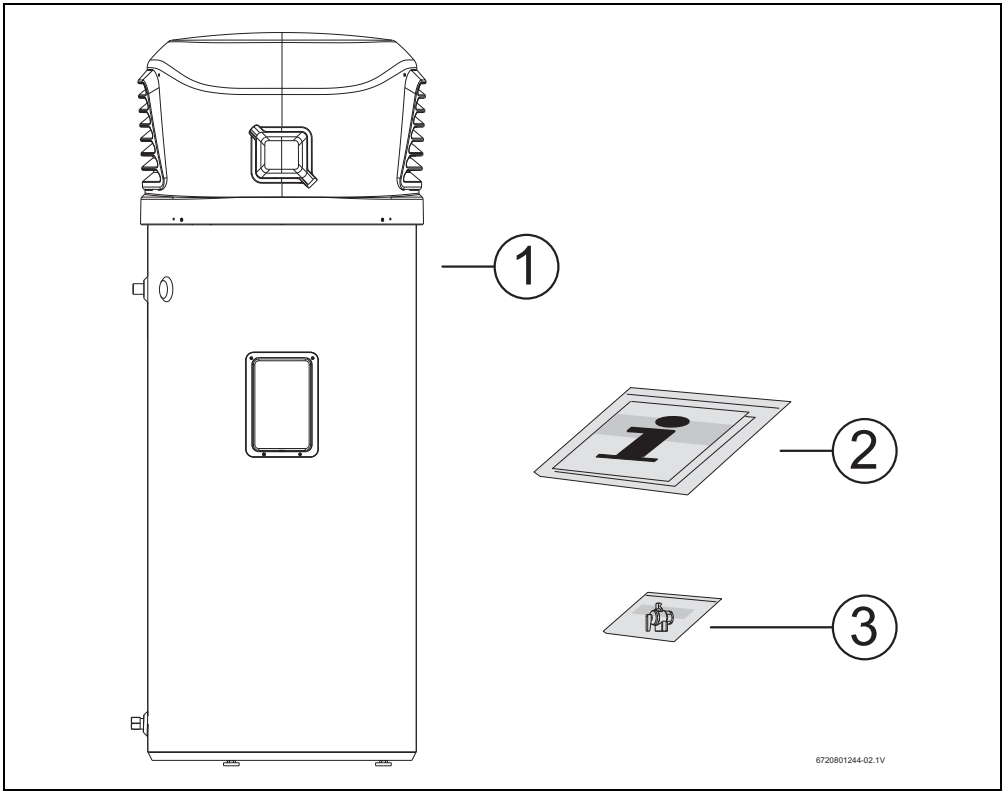

Fig. 2

[1] Heat pump
[2] Set of printed documents for the appliance
[3] PTR valve

3 Appliance details

3.1 Overview

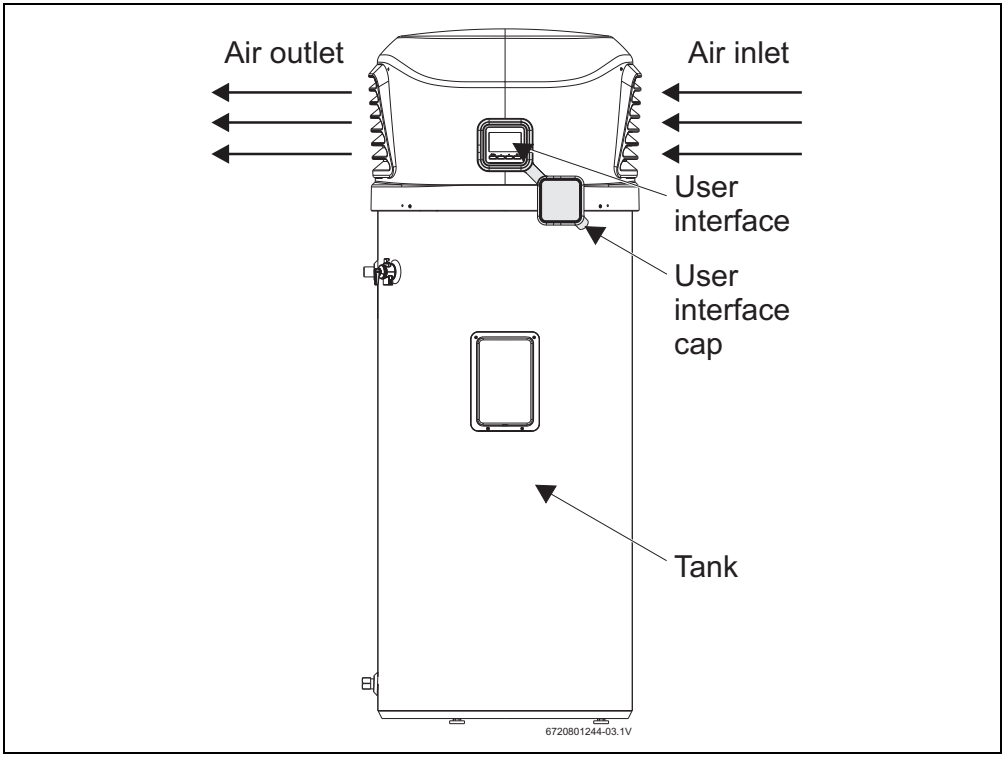

Fig. 3 Appliance overview

3.2 Features and safety devices

Easy to operate and environmentally friendly

The heat pump has user interface with easy use menu keys for ease of programming. The heat pump is also environmental friendly as it transfers heat from the surrounding area into the water.

Heating capacity

The unit absorbs ambient energy and releases the heat into the water stored in the tank. If the ambient temperature is low, the heating capacity of the heat pump will be reduced, but you can still rely on the electric element for backup.

Thermal Cut Out (TCOs)

The water heater is equipped with one thermal cut out (TCO) located above the heating element, in contact with the tank surface. If for any reason the water temperature becomes excessively high, the thermal cut-out (TCO) cuts the power circuit to the heating element. Once activated, the TCO must be reset manually. Resetting of the temperature limiting control should be done by a qualified service technician.

CAUTION:
The cause of the high temperature condition must be investigated by a qualified service technician and corrective action must be taken before placing the water heater in service again.

Defrosting

During heating, when the air temperature is between 3 °C and 10 °C, the unit will defrost automatically to make sure the heating efficiency is retained (it will last 15 minutes).
The fan motor will continue running when the unit is being defrosted.

Working condition

The appliance is designed to operate with best efficiency when the air temperature is between +3 °C and +40 °C. For the best results please install the unit in an area with an environment temperature of +3 °C to +40 °C.
Care should be taken to feed the unit only with potable water (→ section 4.8.1). Do not use untreated water from lakes, rivers or groundwater!

Overheating protection

When the water temperature reaches 84 °C ± 4 °C the power to the heating element will be cut off and will require a manual reset.

Water temperature or pressure protection

The unit is supplied with a PTR valve for your safety (supplied accessory). If the tank pressure reaches 1000kPa or the temperature reaches 99 °C, the PTR valve will open automatically to allow the pressure or temperature to decrease to safe values.

The warranty can become void if relief valves or other safety devices are tampered with or if the installation is not in accordance with the instructions in this manual.

Mains Pressure

This water heater is designed for direct connection to mains water supply. In case the mains supply pressure exceeds 800kPa, a pressure limiting valve must be installed (→section 4.4.6). A minimum water supply pressure of 200kPa is required to assure the effective operation of this water heater.

3.3 Specification tables

Model			HP 270-1E 0 FOV/S...
Running modes			Heat Pump Only Mode
Running ambient air temp.		℃	+3 ℃/+40 ℃
Outlet Water Temp.		℃	60 ℃ - 65 ℃
Minimum Inlet Water Temp.		℃	3 ℃
Maximum Inlet Water Temp.		℃	70 ℃
Power supply		Ph-V-Hz	1ph / 230V-240V / 50 Hz
IP rating		IP	X4
Storage size		ltr	270
Water heating	Heating capacity[1)]	kW	1.5
	Max. input[1)]	kW	0.6
	COP[1)]	-	3.3
	Max. current[1)]	A	2.5
Unit	Dimension (D×H)	mm	670 x 1840
	Packing (W×H×D)	mm	770 x 770 x 2050
	Net/gross weight	kg	130
Sound pressure level at 2 m		dB (A)	43
Refrigerant type/Mass		kg	R134a / 0.375
Max. refrigerant circuit pressure		kPa	2700
PTR valve setting[2)]		kPa	1000
Throttling type			Thermal expansion valves
System protection			High pressure switch, Temperature limiter
Air flow		m^3/h	350
Compressor	Model		WHP01900
	Type		Rotary
	Brand		Highly
	Input	W	700
Fan motor	Model		W1G230EB
	Brand		EBM Papst
	Input	W	28
	Speed	r/min	1500
Water connections	Water inlet		¾ BSP inch
	Water outlet		¾ BSP inch
	Max. water working	kPa	1000
	PTR valve joint		½ BSP inch
	Max inlet pressure	kPa	800
	Heat exchanger		Double wall plate heat exchanger
E-heater	Rated power input at 240 V	kW	1.8
	Rated current at 240 V	A	7.8

Table 2

1) EN255-3, water inlet 15 ℃, air at 15 ℃

2) PTR valve power capacity: 10 kW

Operating ambient air temperature range:

Operating ambient temperature range (Heat pump only): 3 - 40 °C
Range of warehouse storage temperature: -20~60 °C
Set point for the hot water temperature: fixed at 60 °C

In Combi Mode the appliance can operate beyond the normal temperature range by the use of the electrical heater only.

3.4 Storing and transportation

As a rule, the unit is to be stored and/or transported in its shipping package in upright position and with an empty tank. For transport over short distances, and provided due care is taken, an inclination angle of up to 20° is permitted. Both during transport and storage, ambient temperatures of - 20 to +60 °C are permissible.

3.4.1 Transport using a forklift

When transported by a forklift, the unit must remain mounted on the pallet. The lifting rate should be kept to a minimum. Due to its top-heaviness, the unit must be secured against tipping over. To prevent any damage, the unit must be placed on a level surface!

3.4.2 Manual transport

For the manual transport, the wooden pallet can be used for bottom part as long as the carrying straps are secure. Care must be taken that the maximum permissible inclination angle of 20° from vertical is not exceeded. If transport in an inclined position cannot be avoided, the unit should only be taken into operation one hour after it has been moved into it's final vertical position.

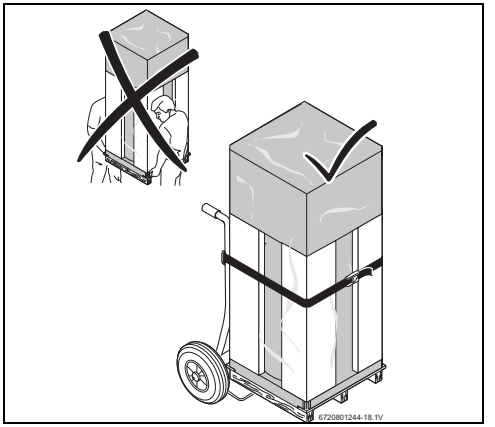

Fig. 4

WARNING:
Heat pumps are heavy and bulky. Australian States and Territories have a Principal Occupational Health and Safety (OH&S) Act which contains requirements relating to the handling of large, bulky or awkward items. Persons installing this heat pump system must be aware of their responsibilities and be adequately trained and qualified in accordance with local OH&S requirements.

WARNING: Transport damage!
- Avoid tilting the appliance at an angle of more than 20°.
- Take care when handling the appliance.
- To avoid dropping the appliance and damaging internal components, do not pivot the appliance.

WARNING: Transport damage!
- To avoid transport damage, wait until the appliance is at the installation location to remove the protective packaging.
- Use straps to prevent the appliance from becoming scratched.
- Use suitable means of transport to bring the appliance to the installation location (special car, pallet truck, etc).

3.5 Operational principle (brief overview of modes)

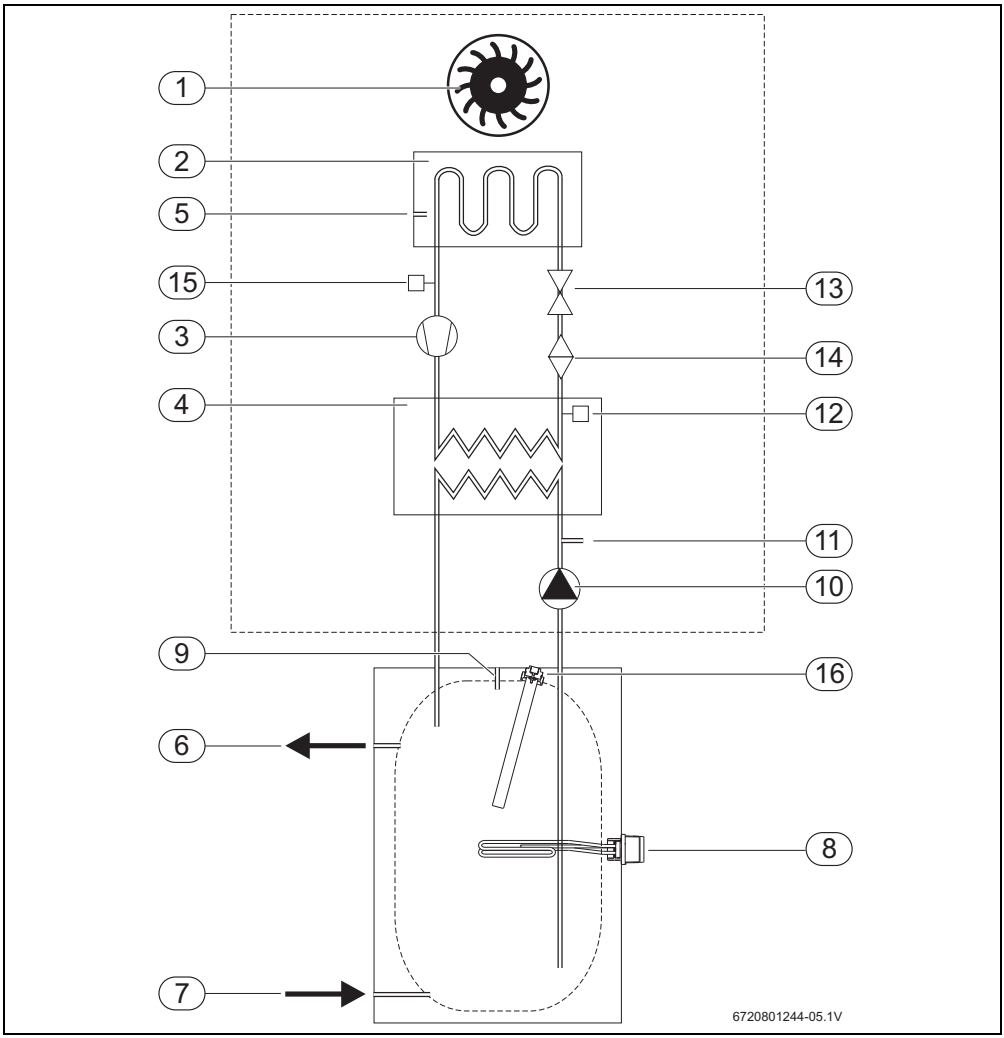

Fig. 5

[1] Air fan
[2] Evaporator
[3] Compressor
[4] Condenser (gas/water heat exchanger)
[5] NTC temperature sensor (air inlet)
[6] DHW connection
[7] Cold water inlet
[8] Electric heating element
[9] NTC temperature sensor (top of storage tank)
[10] DHW circulation pump
[11] NTC temperature sensor (bottom of storage tank)
[12] High-pressure pressure switch
[13] Expansion valve
[14] Dry filter
[15] Low-pressure pressure switch
[16] Magnesium anode

System theory

The refrigerant circuit is a closed system in which the refrigerant R134a circulates as a heat transfer medium.

The evaporator transfers the heat from the air to the refrigerant circuit, and the refrigerant evaporates into a gas.

The compressor compresses the refrigerant R134a, thus increasing its temperature.

Then the heat is transferred via a heat exchanger, also referred to as a condenser, to the storage water tank. The refrigerant R134a condenses in the process.

R134a flows through the expansion valve in a liquid state with decreasing pressure. Then it is routed back to the evaporator.

Brief overview of modes

- **Heat pump mode: only the economical heat pump cycle is used; if the air temperature goes beyond the nominal range (3 °C - 40 °C) the appliance automatically turns off.**
- **Combi mode: the heat pump cycle is used under the nominal range for the air temperature (3 °C - 40 °C); if the air temperature goes out of this interval, the appliance automatically switches to the electrical heating element; this is the factory pre-selected mode.**

3.6 Dimensions

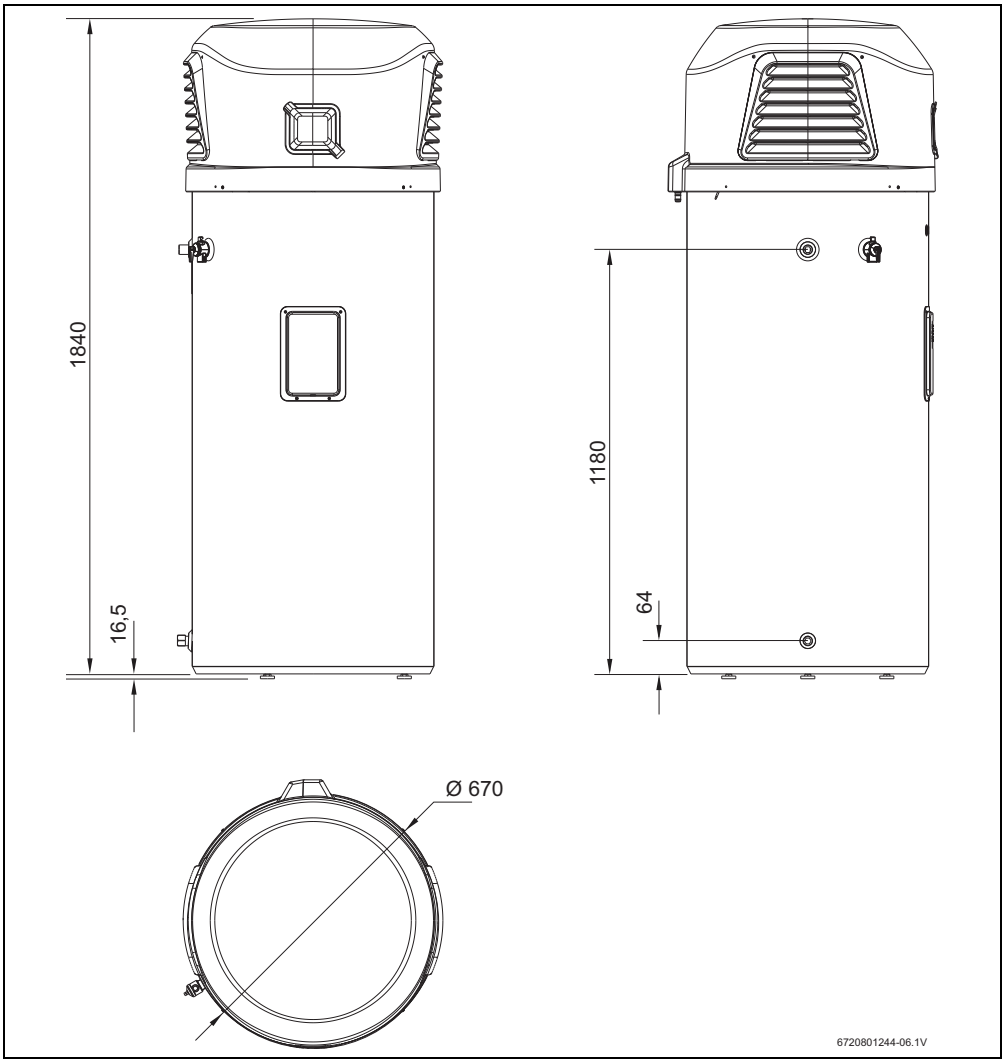

Fig. 6 Dimensions (in mm)

3.7 Clearances

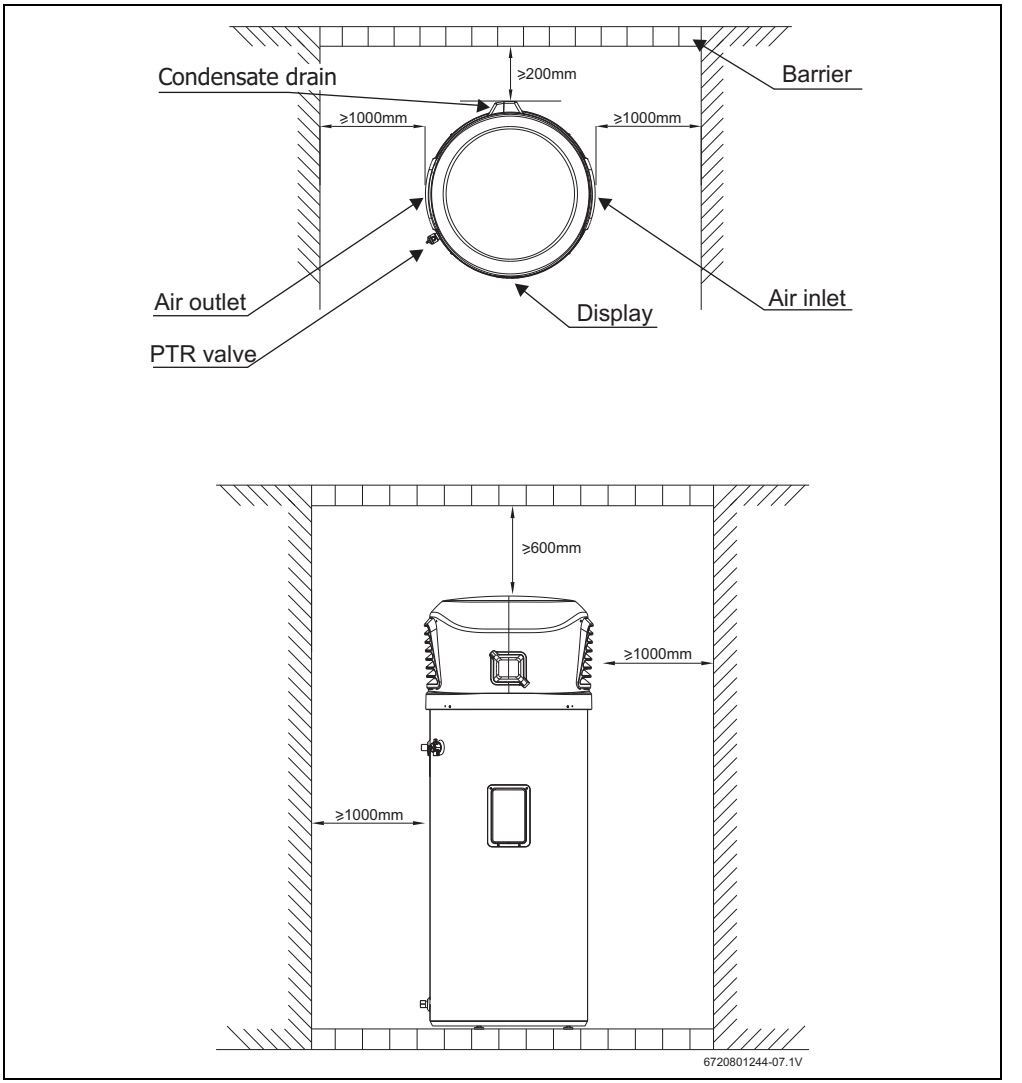

Fig. 7

DANGER:
The Temperature and Pressure relief valve delivered with the unit must be installed and must not be sealed or blocked. Failing to do so will result in a dangerous situation (→section 4.4.4).

4 Installation instructions

The manufacturer's warranty does not cover any damage or defect caused by improper installation, attachment or use of any type of accessories (other than those listed in this user manual) with this water heater. The use of unauthorized

energy-saving devices may shorten the life of the water heater and may endanger life and cause property damage.

The manufacturer disclaims any responsibility for such loss or injury resulting from the use of such unauthorized devices.

4.1 Tools required

- Wrench ¾ "
- Philips screwdriver
- Flat screwdriver

4.2 Location requirements

Locate the water heater in a clean area as near as possible to the area of biggest hot water demand. Long uninsulated hot water lines can waste energy and water.

Note: Because this unit draws in ambient air to heat the water, when using the unit indoors, the room must be at least 3m x 3m x 2,5m (22,5 m^3) or larger, and preferably vented. If the room is smaller, there must be a louvered door with minimum 500cm^2 venting area.

Place the water heater in such a way that clearance for proper servicing is considered (→section 3.7), namely for top cover removal, PTR valve access and anode rod removal and installation.
Remember you may need to remove the entire unit later for servicing.

The water heater and water lines should be protected from freezing temperatures and highly corrosive atmospheres.

CAUTION:
The water heater should not be located in an area where leakage of the tank or connection will result in damage to the area adjacent to it or to lower floors of the structure. In places where installation in such areas cannot be avoided, it is recommended that a suitable catch pan, adequately drained, be installed under the water heater (Fig. 8).

WARNING:
This water heater SHOULD NOT be installed in an area with a corrosive atmosphere where chemicals or flammable liquids are stored or where aerosol propellants are released. When using outdoors, because of natural air movement in a room or other enclosed space, these corrosive/flammable vapours can be carried from where they are being used or stored. Any electric arc drawn within the water heater's electronic controls can ignite these vapours causing an explosion or fire, which may result in severe burns or death to those in range, as well as property damage.

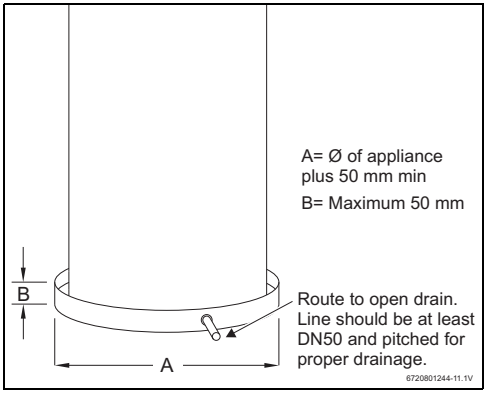

Fig. 8 Water heater support as specified in AS3500.4

NOTE: Auxiliary catch pan MUST conform to local codes. Catch Pan Kits are available from the store where the water heater was purchased, a builder store or any water heater distributor.

Recommendation

Even if this unit runs at very low noise levels, it is advisable to install it away from any living area windows.

▶ Check council laws for specific localized rules in relation to location requirements for this appliance.

Outdoor installation

This unit was designed both for outdoor and indoor installation. Proper clearances must be observed.

Local installation regulations

The installation must comply with the requirements of AS/NZS 3500.4 and AS/NZS 3000 standards and all additional local codes and regulatory authority requirements.

In New Zealand, the installation must comply with Clause G12 of the New Zealand Building Code.

All packaging materials must be removed from the water heater prior to its installation.

Required clearances

There must be a 60 cm vertical clearance, a 100 cm minimum clearance in front of the inlet/outlet grilles and 20 cm clearance from the back of the appliance (where the drain is) to any object (→ Fig. 7). This will ensure a proper air flow through the appliance mode and facilitate the service any time is needed.

Appliance orientation

In case of possible direct exposure to strong wind:

- ▶ Face the air outlet to the most protected area.

The direct incidence of strong wind in the outlet grille during long periods may affect the performance of the heat pump increasing the heating times. The use of the silent mode is not recommended in case of moderate or strong wind.

Condensation drain

The unit has a condensate drain, therefore a drain must be available in close proximity to the unit. The drain must be no higher than 90 cm above the ground. Discharge point must comply with AS/NZS 3500.4.

If no drain is available, then a common condensate pump with a capacity no less than 4 liters/day must be purchased from a local builder and supply store and installed.

4.3 Secure the appliance

- ▶ Remove the shrink wrap and external protective packaging.
- ▶ Lift the appliance from its pallet following the instruction in the packaging.
- ▶ To correctly align the appliance at the installation location, adjust the height of the adjustable feet.

To ensure faultless operation, the unit must be installed vertically, with a tilt no more than 1°.

WARNING: Damage to external tank casing!

- ▶ Do not tilt more than 20° without packaging.

4.4 Water piping

WARNING:
All plumbing work must be carried out by a qualified professional and in accordance with the Plumbing Standard AS/NZS 3500.4 and local authority requirements.

4.4.1 Inlet - Outlet connections

Installation of the water inlet or outlet pipes: The water inlet and outlet thread are ¾ BSP (internal thread). Pipes must be heat-resistant, durable, and UV resistant (when doing outdoor installation).

Installation of the pipe for PTR valve: The spec of the valve connecting thread is ½ BSP (internal thread).

WARNING:
Care should be taken not to touch the pipe work as it may be hot.

All pipe work should be insulated with proper insulating material (weatherproof and UV resistant if exposed) to optimize energy efficiency. Water piping sizing should be performed in accordance with AS/NZS 3500.4.

CAUTION:
The temperature and pressure-relive valve must be installed according to local code. Not doing so will cause damage to the appliance and damage to other property.

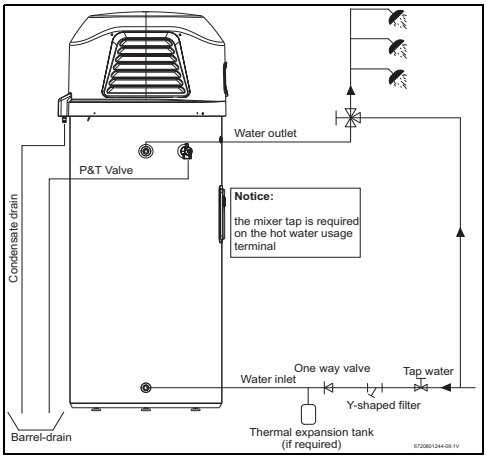

Fig. 9 Typical installation

4.4.2 Dielectric joint (not supplied with the appliance)

Different metals between plumbing and tank materials and additionally the effect of hot water can cause the corrosion of one of the metals (generally the one in the tank is the metal attacked).

The Dielectric Joint will basically avoid any physical contact between the two metals, acting as an effective insulator and prevent this attack. How quickly this, or if at all, this happens depends a lot on the content of your water; its pH, the dissolved minerals and the metals involved.

BOSCH therefore advises the use of the dielectric joint, that is to be installed between the house piping and the tank water connections.

4.4.3 Condensate Drain Tubes (not supplied with the appliance)

This unit has an integrated condensation tray. The water collected in the tray drains out of the tube coming off the back of the unit. It is important that a hose is attached to the drain port off the back of the unit.

- ▶ Attach one end of the condensate drain pipe(15mm inner diameter recommended) to the drain port on the back of the unit.
- ▶ Direct the other end to a drain in the floor or no higher than 8 cm above the ground in an outdoor installation.
  If such drain is unavailable, a condensate drain pump (not provided) must be purchased and installed.

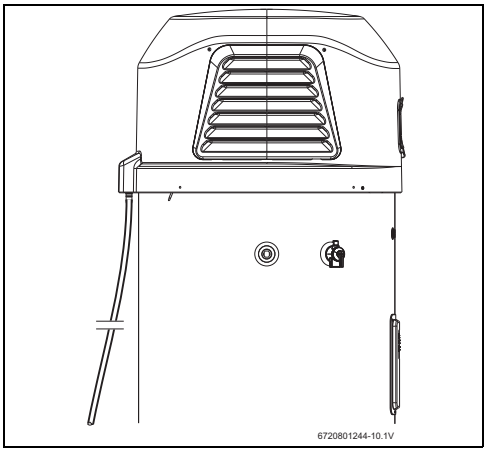

Fig. 10

4.4.4 TPR Valve (supplied with the appliance)

A temperature and pressure-relief valve is supplied and must be installed in the tank port marked for this purpose. No valve or accessory of any type should be installed between the relief valve and the tank. Please observe local codes for the correct installation of relief valves.

WARNING:
The pressure rating of the relief valve must not exceed 1000 kPa, the maximum working pressure of the water heater as marked on the rating plate.

WARNING:
Relief valve easing gear should be operated AT LEAST ONCE EVERY SIX MONTHS. If water does not discharge freely when the lever is operated, the valve should be checked by an authorized agent.

WARNING:
The relief valve and relief valve drain pipe must not be sealed or blocked. Small amounts of water may leak from relief valve during heating cycles.

WARNING:
Relief valves should be checked every six months, or replaced at intervals not exceeding 3 years or more frequently in areas where there is a high incidence of water deposits.

WARNING:
The function of the temperature and pressure relief valve once installed on this water heater is to discharge high temperature water under certain conditions. Therefore it is strongly recommended that the pipe work connected to the relief valve is able to withstand water temperatures exceeding 99 °C. Failure to follow this recommendation may result in a dangerous situation.

The kW rating of the relief valve must not be less than the input rating of the water heater as indicated on the rating label located on the front of the heater.

WARNING:
Never block or seal the outlet of the PTR valve or it's drain for any reason.
The warranty will be void if the relief valve or other safety devices are tampered with or if the installation is not in accordance with this manual.

Connect the outlet of the relief valve to a suitable open drain so that the discharge water cannot contact any electrical parts, persons or animals and to eliminate any other possible risks.

A drain line from a relief valve must comply with the requirements of AS/NZS 3500.4.

WARNING:
To reduce the risk of excessive pressures and temperatures in this water heater, install temperature and pressure protective equipment required by local codes and no less than a combination temperature and pressure relief valve certified by a nationally recognized testing laboratory that maintains periodic inspection of production of listed equipment or materials, as meeting the requirements of AS/NZS 3500.4, AS/NZS 3000 and all local codes and regulatory authority requirements.

Always use a valve of the same rated pressure and temperature as the PTR Valve supplied with the unit.

4.4.5 Thermal expansion tank (not supplied with the appliance)

Thermal expansion is a natural process where heated water increases its volume. When this water is stored in a tank, this volume increase will in fact mean a pressure increase. This pressure increase can result in a dangerous situation. If the safety settings on the relief valve are reached, then the relief valve will operate during the heating cycle. Thermal expansion, if normally reaching the relief valve nominal values, can cause premature valve failure and contribute to increased components stress.

Bosch recommends therefore the installation of an expansion tank in order to relieve this over-pressure, avoiding repeated relief valve operation.

Please contact a licensed professional, water supplier or plumbing inspector for more information about this subject.

4.4.6 Temperature mixing device (not supplied with the appliance)

WARNING:
This water heater can heat water to temperatures which can cause scalding.

Bosch recommends the installation of a temperature limiting device between the water heater and the hot water outlets in a bathroom or similar usage point, in order to reduce the risk of scalding.

Additionally, a certified plumber may have the legal obligation to ensure the water heater installation meets the hot water delivery requirements listed in AS/NZS 3500.4.

4.4.7 Pressure limiting valve (not supplied with the appliance)

In installations where the mains water supply temperature exceeds that specified for this product (listed in chapter 3), an approved pressure limiting valve is required and must be fitted.

If the water heater is supplied with low pressure water, below the minimum working pressure specified for this product (listed in chapter 3), then a pressure pump should be installed in order to minimize the forming of air traps in the hydraulic circuit.

4.4.8 Expansion control valve (not supplied with the appliance)

Local regulations, a saturation index greater than +0.4 or in corrosive water areas where there are sufficient quantities of silica dissolved in the water may require the installation of an expansion control valve (ECV) in the cold water line, being the last valve installed prior to the water heater.

4.5 Electric requirements

CAUTION:
Do not incorrectly connect electrical connections. 230-240V AC must be applied to L1 and L2 wires as shown in Fig. 11. Failure to do so will VOID the warranty, and can result in 120V applied to water heater, which may damage the compressor or other electrical components.

Power requirements

Check the markings on the rating plate of the water heater to be certain the available power supply corresponds to the water heater requirements.

This water heater must be directly connected to a 230V-240V AC, 50Hz mains power supply. When connected off grid, please make sure a 230V-240V AC 50Hz true sine wave power supply is available.

Do not connect this unit to inverters providing square sine waves.

Electrical connections

WARNING:
All electrical work and fixed wiring must be carried out by a qualified professional and in accordance with the Wiring Rules AS/NZS 3000 and local authority requirements.

The water heater must be installed on its own circuit with a breaker switch installed directly at the switchboard.

- Remove the top cover.
- Route the power supply cord through the orifice next to the drain port.
- Open the electric connection box.
- Connect the power supply wires and earth tab directly to the provided terminal block, ensuring there are no unnecessary excess wire loops inside the electric connection box.
- Close the electric connection box.

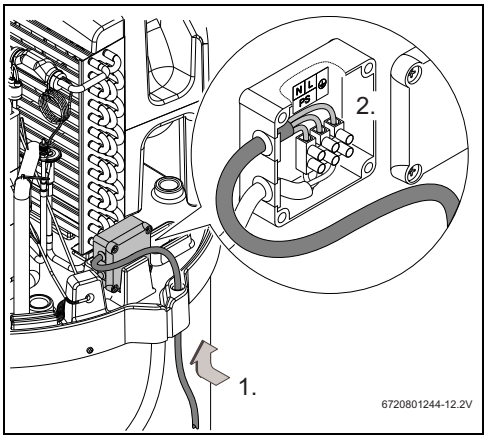

Fig. 11

WARNING:
Proper ground connection is essential.
The presence of water in the piping and water heater does not provide sufficient conduction for a ground. Non metallic piping, dielectric unions, flexible connectors, etc., can cause the water heater to be electrically isolated.

Electrical test requirements

WARNING:
This water heater contains electronic equipment and 500V insulation tests must only be conducted between active and earth and between neutral and earth. An active to neutral test WILL damage the electronics.

AS/NZS 3000:2000, clause "Results" (6.3.3.3.2) states: *"The value of 1 MOhm may be reduced to 0.01 MO for sheathed heating elements"*
This water heater has been tested to AS/NZS 3350.1:2002 clause 16 "Leakage current and electric strength" and passed the requirements of this Standard. Therefore, this water heater complies with the conditions stated in AS/NZS 3000:2000 clause 6.3.3.3.2 (b).

4.6 Installation configurations

4.6.1 Ecological ambient heat recovery

Even on cold days, heat is drawn from surrounding ambient air. The heat pump will operate at temperatures between a minimum of 3 °C and maximum of 40 °C. The electrical element will operate when Combi mode is selected and the air temperature is below 3 °C or higher than 40 °C and heating is required. The efficiency of the water heater increases as the surrounding ambient air temperature increases.
Automatic safety controls are fitted to the water heater to provide safe and efficient operation.
Additionally, the heat pump water heater enables direct connection in series to a second heat generator, e.g. a solar heating system or a boiler as backup hot water generation sources.

CAUTION:
- Choose the right path to move the unit.
- Only move the unit in its original packaging.
- If the unit is installed in a metal building, proper insulation and compliance with the relevant technical standards of electrical equipment is to be provided.

4.7 Insulation blanket

If local codes require external application of thermal insulation blankets kits, the manufacturer's instructions included with the kit must be carefully followed.

Application of any external insulation, blankets, or water pipe insulation to this water heater will require careful attention to the following:

- Do not cover the temperature and pressure-relief valve.Do not cover access panels to the heating elements.Do not cover the operating or warning labels attached to the water heater or attempt to relocate them to the exterior of the insulation blanket.Do not block the air inlets/outlets and the top cover.
- Do not cover water heater control unit.

4.8 Fill the water storage tank

CAUTION: Damage to the appliance!
- Prior to commissioning the appliance, fill the storage tank with water and purge tank through hot water piping and fixtures.

Check if the purge valve outlet is pointing downward. If not:
- Rotate the purge valve clockwise (tightening) to ensure the outlet is pointing downwards.

- Open DHW connection (Fig. 5, [6]) and one or more hot water taps.
- Open storage tank cold water inlet (Fig. 5, [8]). Storage tank filling starts.
- Close hot water taps only when water flow is free of air pockets.
- Connect the appliance to the power supply via fixed wiring installation, including earth conductor.
- Rotate circulation pump speed selector to position **„III“.**

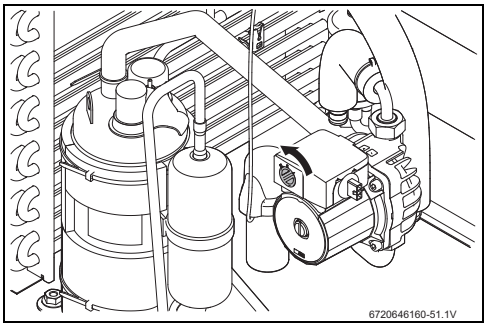

Fig. 12 Circulation pump

Make sure that the appliance is in “manual” mode before activating the Purg.
“man” must be written on the display.
If “auto” is displayed:
- Select “man” mode (→ page 25, section 5.4).

- Activate „Purg“ function (→ page 31, section 5.6.6).

CAUTION: Risk of scalding!
- Ensure that draining water from the purge valve presents no risk to people or property.

- Open purge valve (at least one complete rotation, Fig. 13, [1]) until water drops out through the purge valve outlet. Ensure that water drains correctly.

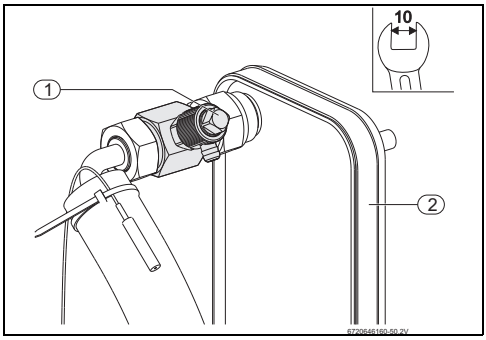

Fig. 13 Purge valve

[1] Purge valve
[2] Condenser (gas/water heat exchanger)

- Close purge valve.

- Open the purge screw of the circulation pump and leave it opened until the water leaks uniformly without visible air bubbles.

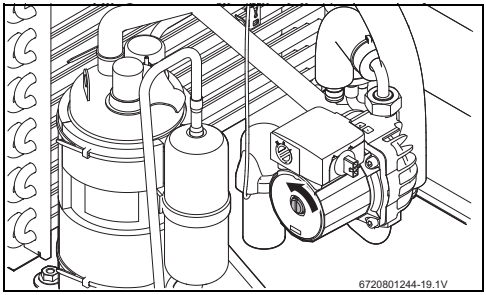

Fig. 14 Circulation pump purge screw

- Close the circulation pump purge screw.
- Wait for about 5 minutes until „Purg“ mode goes off.

During the 5min the Purg function lasts, open the purge valve for a few seconds several times. This will release some air excess from the water loop.

- Rotate circulation pump speed selector to position **„I“.** Filling procedure is now completed.

If, after a few minutes of operation (up to 20-30 minutes), display shows „E09“,you should:

- Reset the appliance (→ page 32, paragraph „Resetting the system“).
- Rotate circulation pump speed selector to position **„III“.**
- Activate „Purg“ function (→ page 31, section 5.6.6).
- Reopen the purge screw of the circulation pump and leave it opened until the water leaks uniformly without visible air bubbles.
- Close the circulation pump purge screw.
- Reopen the purge valve for a few seconds several times during the "Purg" procedure to ensure the complete purge of the system.
- After "Purg" function ends, rotate the circulation pump speed selector to position **„I“.**

4.8.1 Water characteristics

Usage of water with unsuitable characteristics can result in shortened product life.

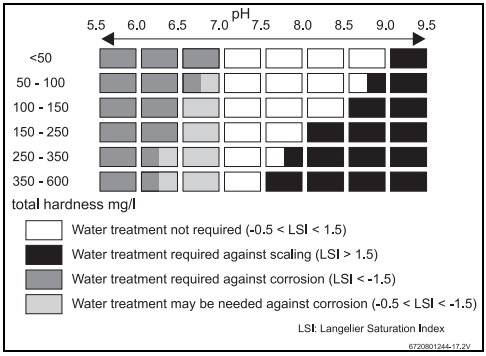

Fig. 15 Water treatment vs water characteristics

Please note that the Langelier saturation Index depends on the water temperature and the above information considers two extremes: 10 °C and 70 °C.
While corrosion is higher at low water temperature, scaling is more important at higher water temperature.

In case of water hardness above 600 mg/l, the Langelier saturation index must be determined to evaluate the necessity for water treatment.
Please require help from your technical assistance.

Water conductivity for sacrificial anodes
130 µS/cm - 1500 µS/cm

Table 3 Water conductivity

Enamelled tanks must not be used with completely desalted, distilled or de-ionised potable water.

4.9 Installation checklist

1. Tank location

- Is the room size less than 3 m x 3 m x 2,5 m (22,5 m^3)? If yes, louvered door or similar ventilation is needed.
- Back of unit away from wall by 150 mm.
- Front of unit is free and clear.
- Is the water heater level? If not, adjust the adjustable feet, or add shims under the base of the unit.
- Are fixing straps (if required) in place?

2. Plumbing connections

- No leaks after filling the tank with water, either when water is flowing or is stationary.

3. Condensate lines are in place

- Condensate drain pipe connected to drain connection, and directed into a floor drain or a condensate pump

4. Temperature and pressure-relief valve is working and drain line completed per local code.

5. Electrical connections

- Electrical connections are properly isolated

6. Verify control panel displays 60 °C.

7. Front cover is in place.

WARNING:
The power supply to the appliance must not be activated until the system is filled with water.

4.10 What to expect for “normal startup”

After the unit has been installed, with all electrical and water connections secure and checked, the unit should be filled with water (vent tank by opening a hot water faucet somewhere in home to allow tank to fully fill with water). Once tank is full and power is energized, the user must press the POWER button on the user interface.

Elapsed time	HPWH actions	Comments
0 to 5 minutes	Unit is silent. Water pump runs during the first minute.	This 7 minutes off-time prevents compressor damage
5 to 7 minutes	Fans turn on	
7 minutes and beyond	Compressor turns on	Uses efficient heat pump for majority of heating

Table 4

If the ambient temperature is outside of the range 3 °C-40 °C, the pump will not be able to run by using the heat pump mode. The electric element will be used if COMBI mode is selected (default mode) and until the ambient air temperature returns to the operating range. If HEAT PUMP mode is selected the electric element will not be used outside the nominal operating range to heat up the water.

4.11 Off-peak compatibility

The appliance is technically compatible to be connected to a fix line for off-peak tariff. However, the off-peak must be wisely used.

Off-peak periods off less than 16 hours might not ensure the re-heating, depending on the hot water demand and on the temperature of the air and inlet water. Ensure that your off-peak periods are suitable for your needs.

The weekly LEG mode requires additionally 6 to 7 hours. Therefore once a week this additional period must be ensured to complete the thermal disinfection. It is recommended to programme the LEG to be done when extended off-peak periods are available, typically weekends.

To optimize the comfort and maximize the savings, it is recommended the use of a power commutator between the normal line and the off peak line together with a programmed working period (→section 5.6.2). The best strategy will depend up on the hot water needs and ambient conditions.

In case time of use tariffs are available, it is recommended to use the programmed working periods (→section 5.6.2) to take full advantage of them.

In case of a temporary suspension on the water supply during a off-peak period the appliance may get unpurged and stop working during its restart. An error message will be displayed and the appliance will remain blocked. To minimize the possible inconveniences from a suppression on the water supply service, always check the appliance after such incident occurred.

NOTICE: Damage to the appliance!
Never use the off-peak in case the appliance is set to OFF mode and temperatures around 0 °C or below are expected: the anti-freeze mechanism will not be ensure!

5 Operation Instructions

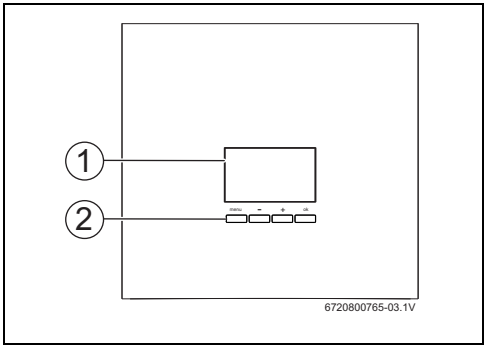

Fig. 16 Control panel

[1] Display
[2] Selection keys

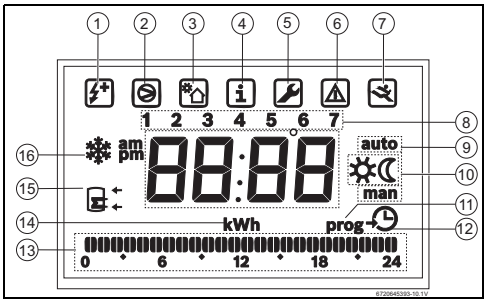

Fig. 17 Display

[1] Element possible to be auto-activated (COMBI mode)
[2] Heating in heat pump mode
[3] Not used
[4] Information
[5] Parameter adjustment entry
[6] Error indicator
[7] „Service“ menu entry
[8] Days of the week
[9] „auto/man“ functioning
[10] Indicator light
[11] „Prog“ menu entry
[12] Clock adjustment
[13] Timetable
[14] Consumption
[15] Storage tank sensor positions
[16] „anti-freeze“ function

5.1 Safety warnings

WARNING:
If the hot water system is not used for two weeks or more, flammable hydrogen gas may accumulate in the water heater. To dissipate this gas safely, it is recommended that a non-electrically operated hot tap be fully opened for 2 minutes. During this procedure, smoking, open flames or operating electric appliances should be avoided.

DANGER:
Do not store or use gasoline or other flammable vapors and liquids, such as adhesives or paint thinner, in the vicinity of this or any other appliance. If such flammables must be used, open doors and windows for ventilation.

CAUTION: Turn off power to water heater if it has been subjected to overheating, fire, flood or physical damage.

CAUTION:
Do not turn on water heater unless it is filled with water.

CAUTION:
Do not turn on water heater if cold water supply shut-off valve is closed.

WARNING:
If there's any difficulty in understanding or following the Operating Instructions or the Care and Cleaning section, it is recommended to have a qualified person or serviceman performing the work.

Flammable vapours may be drawn by air currents from surrounding areas to the water heater.

5.2 Working display

Visible display symbol

Device functioning.

Visible display symbol

Device inactive (water temperature remains at previously selected temperature).

5.3 Working modes

Visible display symbol „auto“

Operating periods in accordance with defined programming (P1, P2 or P3).

Visible display symbol „ man “

Permanent operation (24 h/7 days) without defined programming.

5.4 „Operating“ menu

Access the „Operating“ menu

▶ Press the „menu“ key for no longer than 3 seconds.

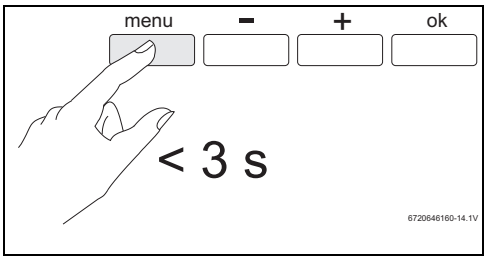

Fig. 18 Accessing the „Operating“ menu

Accessing the „Operating“ menu provides access to the following modes of operation:

- manual
- P1
- P2
- P3
- Off

▶ Use the „+“ or „-“ keys to navigate through the desired working modes.

▶ Select the desired mode by pressing „ok“ key

To go back one menu:

▶ Press the „menu“ key.

-or-

▶ Do not press any key for the following 15 seconds.

5.4.1 „manual“ mode

In this working mode, the device functions 24 hours a day, 7 days a week, until it reaches a selected temperature. Used heat source is defined using the Mode function (→ Section 5.6.1) of „Main“ menu.

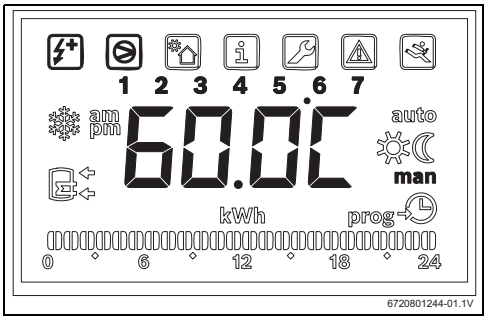

Fig. 19 „manual“ mode

5.4.2 „P1“, „P2“ and „P3“ modes

„P1“ mode

Selecting this mode causes the device to function during the predefined factory time periods (→ „„P1“ period„, page 27).

„P2“ and „P3“ mode

Selecting either of these modes causes the device to function during user-defined time periods (→ „P2“ and „P3“ periods, page 27).

5.4.3 „Off“ mode

This operating mode disconnects the device. Electric heating element is only activated for the „anti-freeze“ protection function, if necessary.

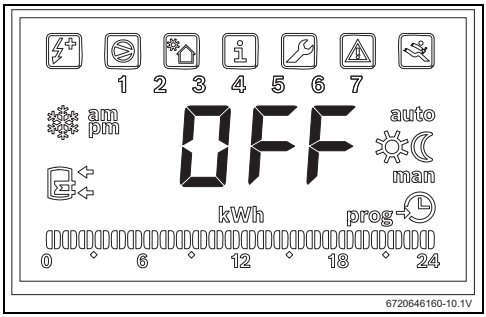

Fig. 20 „Off“ mode

„Anti-freeze“ function

The electric heating element is activated when the water temperature in the tank reaches 5 °C. It is disconnected when the water temperature reaches 8 °C.

5.5 Temperature set point

The water temperature is factory-set at a value of 60 °C, and is not changeable.

DANGER: Scalding!
A hot water scald potential exists if the water temperature is set above 50 °C. Children, disabled, and elderly people are at higher risk of being scalded.

- ▶ Always feel water temperature before bathing or showering.

Time/Temperature Relationship in Scalds

Tempera -ture	Time to produce a serious burn Aged persons/ children under 5 years	Adults
50 °C	2-1/2 minutes	More than 5 minutes
52 °C	Less than 1 minute	1-1/2 to 2 minutes
55 °C	About 15 seconds	About 30 seconds
57 °C	About 5 seconds	About 10 seconds
60 °C	About 2-1/2 seconds	Less than 5 seconds
62 °C	About 1-1/2 second	Less than 3 seconds
65 °C	About 1 second	About 1-1/2 seconds
68 °C	Less than 1 second	About 1 second

Table 5

5.6 „Main“ menu

Accessing the „Main“ menu

- ▶ Press the „menu“ key and hold it down for more than 3 seconds.

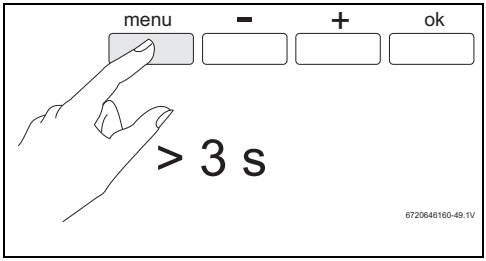

Fig. 21 Accessing the „Main“ menu

Accessing the „Main“ menu provides access to the following functions:

- Mode - „Heating modes“
- Prog - “Timetable operation programming“
- Leg - “thermal disinfection“
- Set - “adjustments“
- Purg - “purge”
- Info - “information“

- ▶ Use the „+“ or „-“ keys to select the desired menu.
- ▶ Confirm using the „ok“ key.
- ▶ Exit by pressing the „ok“ key and hold it down for over 3 seconds.

5.6.1 „Mode“ function - heating modes

The „Mode“ function permits selection of 2 different heating modes:

- „Heat pump“ mode
- „Combi“ mode

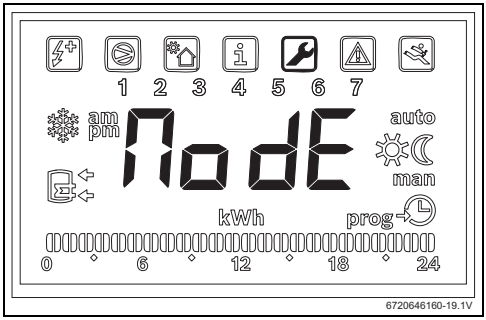

Fig. 22 „Mode“ function

„Heat pump“ mode

In this mode, the main heat source used is the heat pump.

When the incoming air temperature is between 10 °C and 40 °C the appliance will only use the heat pump cycle to heat up the water.
In case the inlet air temperature is between 3 °C and 10 °C the unit will only use the heat pump cycle to heat up the water if during the heating period the water temperature does not drop below 45 °C.
If the water drops below 45 °C the appliance will use the electrical heater to increase the water temperature up to 55 °C and after that it will return to the heat pump cycle.

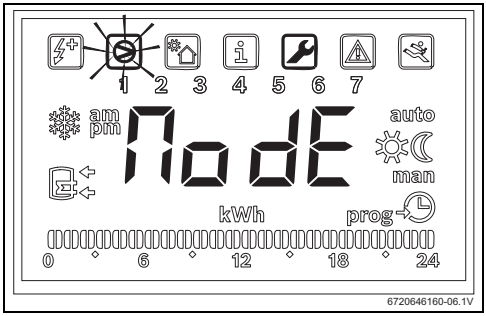

Fig. 23 „Heat pump“ mode

The appliance will return to use the heat pump cycle when water temperature reaches 55 °C.

„Combi“ mode

This mode uses two heat sources, depending on conditions: the heat pump or the backup electric element.

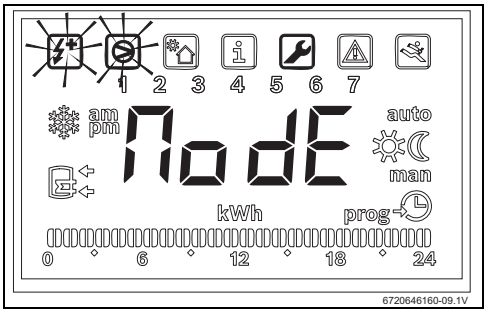

Fig. 24 „Combi“ mode

If the water temperature inside the tank is less than 60 °C and the incoming air temperature is between 3 °C and 40 °C, the appliance will operate in the same way as in the Heat Pump mode.

The electric heating element will be activated when these conditions are not achieved.

5.6.2 „Prog“ function - Timetable operation programming

The „Prog“ function permits the heat pump to be programmed for operation based on the desired timetable only.

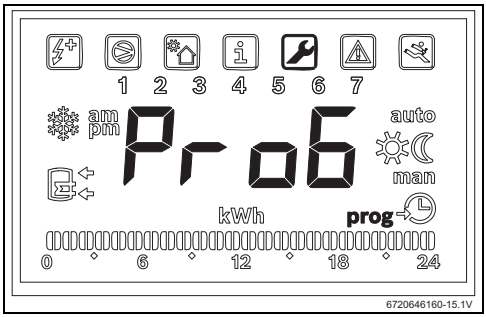

Fig. 25 „Prog“ function

The „Prog“ function provides access to the following menus:

- „P1“ period (days 1-5)
- „P1“ period (days 6-7)
- „P2“ period (days 1-5)
- „P2“ period (days 6-7)
- „P3“ period (days 1-5)
- „P3“ period (days 6-7)

„P1“ period

The heat pump functions during the predetermined factory times. No other type of alteration is possible:
Days 1 - 5: [00:00 → 06:00] and [16:00 → 19:00]
Days 6 - 7: [02:00 → 08:00]

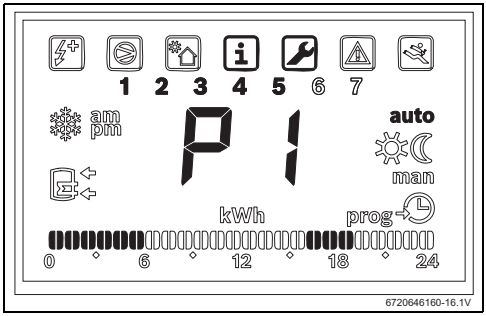

Fig. 26 „P1“ period

„P2“ and „P3“ periods

The heat pump functions at times preset by the user.

Days 1, 2, 3, 4 and 5 corresponds to Monday, Tuesday, Wednesday, Thursday and Friday, respectively. Days 6 and 7 corresponds to Saturday and Sunday (→ Section 5.10).

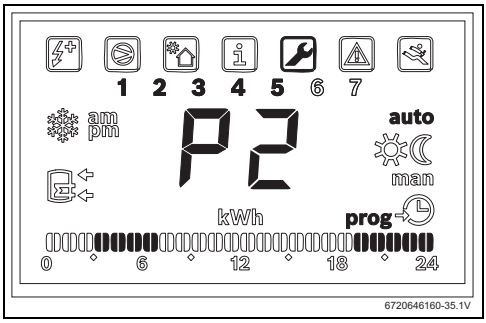

Fig. 27 „P2" and „P3" periods

Setting the operating periods to „P2" and „P3"

4 operating periods will be set in each of the functions:

- 2 periods for days „1 to 5"
- 2 periods for days „6 to 7"

Definition of operating periods

- ▶ Access the „P2" or „P3" functions (→ section 5.4).
- ▶ Press „ok".
  Display shows the start schedule of the 1st operating period in blink mode.

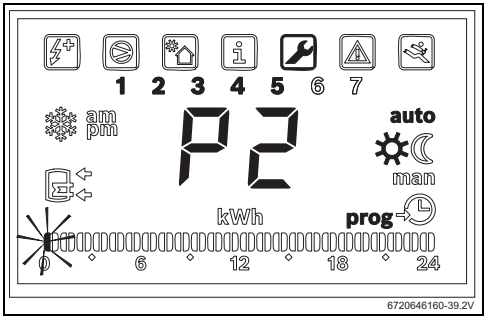

Fig. 28 Start of 1st operating period

- ▶ Use the „+" and „-" keys to define the operating start schedule.
- ▶ Press „ok".
  Blinking display shows operating stop schedule for the 1st period.
- ▶ Use the „+" and „-" keys to set the operating duration.
- ▶ Press „ok".
  Blinking display shows the start schedule for the 2nd operating period.

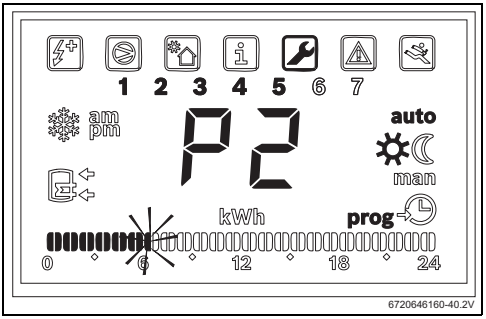

Fig. 29 Beginning of the 2nd operating period

If the start of the 2nd operating period is set within the operating period of the 1st period, the end of operation of the 1st period will be adjusted to the newly defined value.

- ▶ Use the „+" and „-" keys to set the operating start schedule of the 2nd period.
- ▶ Press „ok".
  Blinking display shows the operating stop schedule for the 2nd period.
- ▶ Use the „+" and „-" keys to set the operating duration.
- ▶ Press „ok".
  Days „1 to 5" are now set.

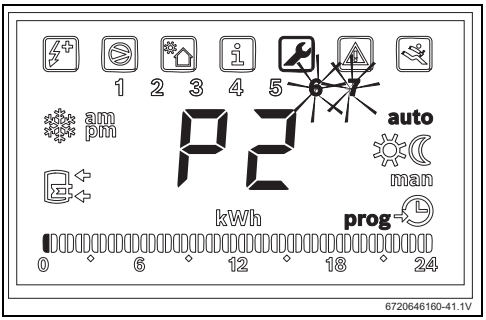

Fig. 30 Start of 1st operating period for days „6 to 7"

If there's no need for a 2nd working period:

- ▶ Select the start schedule and end of functioning for the same time.

- ▶ Repeat the above described operations for the operating periods of days „6 and 7“.
  Completed definition of the 2nd operating period for days „6 and 7“ concludes the definition of the operating periods.

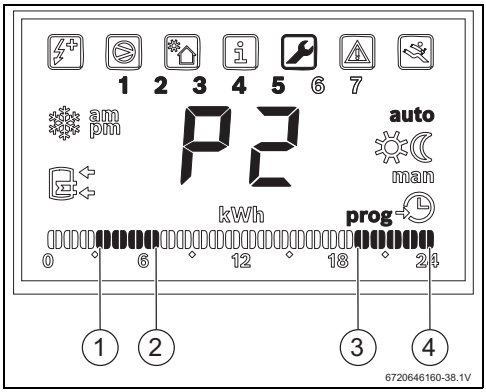

Fig. 31 Definition of periods

[1] Start of 1st period
[2] End of 1st period
[3] Start of 2nd period
[4] End of 2nd period

Switching off the operating period

- ▶ Select the start schedule and end of functioning for the same time.
  The operating period will be switched off.

5.6.3 Silent Mode programming - „Sil“ function

Setting a lower speed will decrease the appliance efficiency marginally. Activate the lower speed only in situations where lower noise levels are to be achieved.

In cases of moderate/strong wind it is highly recommended to **DO NOT** use the silent mode, unless the air outlet of the appliance is not directly exposed to the wind. Direct and moderate/strong wind on the air outlet grille may result in an abnormal operation of the appliance with larger heating times.

The „Sil“ function allows the selection of the ventilator speed in order to get lower noise levels.

The device is factory set with the highest fan speed activated.

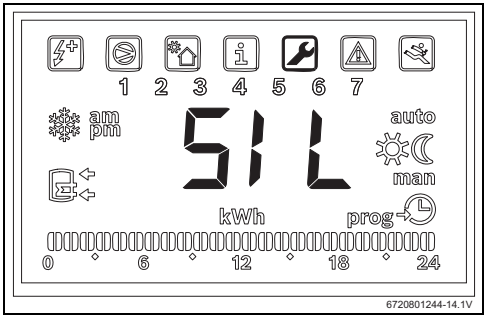

Fig. 32 „Sil“ function

Setting the silent mode periods

2 silent mode periods will be set in each of the programming steps:

- 2 periods for days „1 to 5“
  - Start of 1st period
  - End of 1st period
- 2 periods for days „6 to 7“
  - Start of 2nd period
  - End of 2nd period

Programming of silent mode periods

- ▶ Access the „Sil“ function.
- ▶ Press „ok“.
  Display shows the start schedule of the 1st silent mode period in blink mode.
- ▶ Use the „+“ and „-“ keys to set the silent mode start schedule.
- ▶ Press „ok“.
  Blinking display shows silent mode stop schedule for the 1st period.
- ▶ Use the „+“ and „-“ keys to set the silent mode duration.
- ▶ Press „ok“.
  Blinking display shows the start schedule for the 2nd silent mode period.
- ▶ Use the „+“ and „-“ keys to set the silent mode start schedule of the 2nd period.
- ▶ Press „ok“.
  Blinking display shows the silent mode stop schedule for the 2nd period.
- ▶ Use the „+“ and „-“ keys to set the silent mode duration.
- ▶ Press „ok“.
  Days „1 to 5" are now set
- ▶ Repeat the above described operations for the silent mode periods of days „6 and 7“.
  Completed definition of the 2nd silent mode period for days „6 and 7“ concludes the silent mode programming.

After programming the display shows SIL with the time bars indicating the periods the silent mode will be activated.

Select only one day period

- ▶ Select the first period according to the previously mentioned.
- ▶ Press “ok” for more than 3s until “Prog” and “sun symbol” goes off.
  The bar of the selected period blinks.
- ▶ Pres “menu” to go out of the SIL mode submenu (no blinking).

Switching off the silent mode period

- ▶ Access the „Sil“ function.
- ▶ Press „ok“.
  Display shows the start schedule of the 1st silent mode period in blink mode.
- ▶ Use the „+“ and „-“ keys to set the silent mode start and finish time to the same period.
  When selecting end period of the second day period display shows
  “----”.
- ▶ Press „ok“ to confirm.
- ▶ Press „ok“ again and hold it for more than 3s until “Prog” and “sun symbol” goes off.
  The period bar blinks.
- ▶ Press “menu” to go out of the SIL mode submenu (no blinking).
  The SIL menu will show no time bars.

5.6.4 „Leg“ function - automatic thermal disinfection

The „Leg“ function allows for the thermal disinfection process. This bacteria elimination process will be performed automatically once a week.

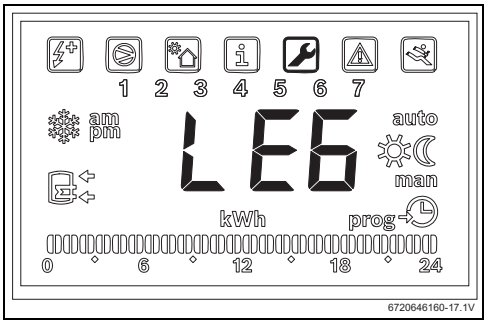

Fig. 33 „Leg“ function

Activation of the disinfection mode temporarily replaces any defined programming.

DANGER: Beware of burns!
Hot water can cause serious burns.

- ▶ During thermal disinfection the temperature may rise up to 66 °C at the top of the tank.
- ▶ Warn all users of the danger of burns and the need to perform thermal disinfection.

The disinfection process will run until stored water tank temperature reaches more than 60 °C for at least 35 minutes.

Weekday programming of the "Leg" function

- ▶ Access the Leg function and press „ok“.
  Display with blinking indication „ **man** “ active.
- ▶ Press „+“.
  Display with blinking indication „**auto**“ active.
- ▶ Press „ok“.
  „Leg“ function activated and blinking 1st day of the week.

Define the day of the week for disinfection.

- ▶ Select the day, using the „+“ and „-“ keys.
- ▶ Press „ok“.

Define the time to start disinfection

- ▶ Select the time, using the „+“ and „-“ keys.
- ▶ Press „ok“.

Upon reaching a temperature of 60 °C for more than 35 minutes, the device returns to the previously selected mode.

In case a programed period (P1, P2 or P3) is selected, the auto-activation of the LEG mode will be postponed to the next activation of the selected programed period. The finalization of the thermal disinfection will have priority over the end of the programed period,i.e., in case the programed period is to short to allow the conclusion of the LEG mode, the appliance will be forced to operate until the thermal disinfection is concluded.

Manual activation of the „Leg“ function

- ▶ Access the „Leg“ function and press „ok“.
  Display with blinking indication „ **man** “ active.
- ▶ Press „ok“.
  „Leg“ function activated.

Upon reaching a temperature of 60 °C for more than 35 minutes, the device returns to the previously selected mode.

Thermal disinfection requires about 6 to 7 hours additional time after normal heating up. During most of this additional period the disinfection is ensured by the electrical element.
Therefore, it is recommended to be done during a period of low energy tariffs combined with low hot water demand to do not compromise the energy savings.

5.6.5 „Set“ function - adjustments

The „Set“ function permits adjustment of the following values:

- Degrees Celsius or degrees Fahrenheit (→ Section 5.9)
- Time and day of the week (Section 5.10)

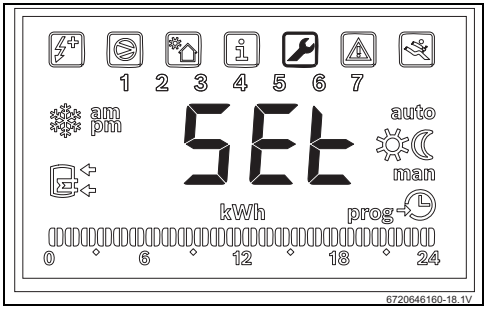

Fig. 34 „Set“ function

5.6.6 „Purg“ function - purge

„Purg“ function is an auxiliary for the system purging process.

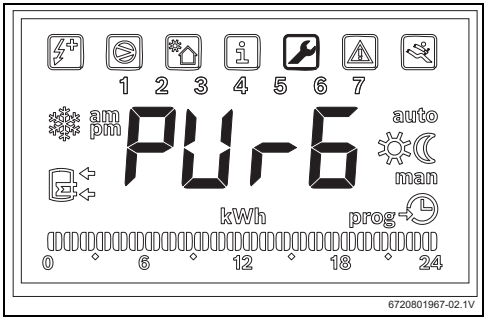

Fig. 35 „Purg“ function

To activate „Purg“ function

- ▶ Access „Purg“ function and press „OK“.Circulation pump will start functioning and the timetable is displayed below "Purg". After 5 minutes the appliance returns to the operating mode previously selected.

5.6.7 „Info“ function - information

The „Info“ function permits display of the cumulative consumption over the past 30 days.

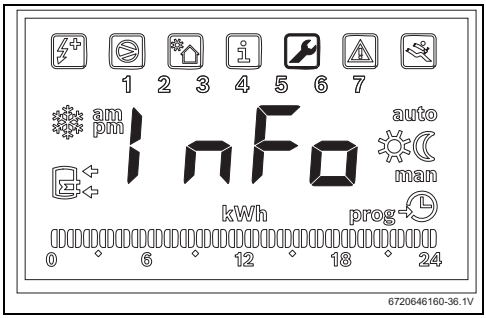

Fig. 36 „Info“ function

Displaying the consumption

- ▶ Access the „Info“ function and press „ok“.
  Displays cumulative consumption (in kWh).

„reset“ consumption

Display cumulative consumption.

▶ Press „-“.
Displays with blinking „del“ indication.

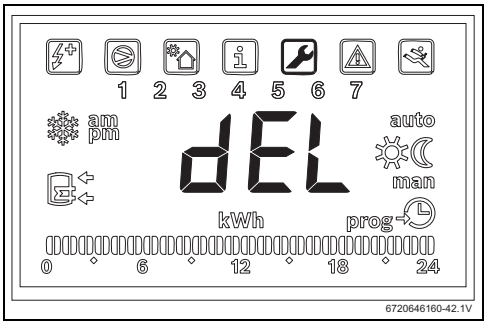

Fig. 37 „del“ function

▶ Press „ok“.
The meter restarts the count.

5.7 Troubleshooting

This device is equipped with a troubleshooting function. Error indication is performed by means of a code (Table 6, page 40) corresponding to the error indication symbol in the digital display (Fig. 17, [6]). In most cases, the device will only return to normal functioning following elimination of the cause of the malfunction and resetting of the device.
To identify the malfunction, see Section 7.

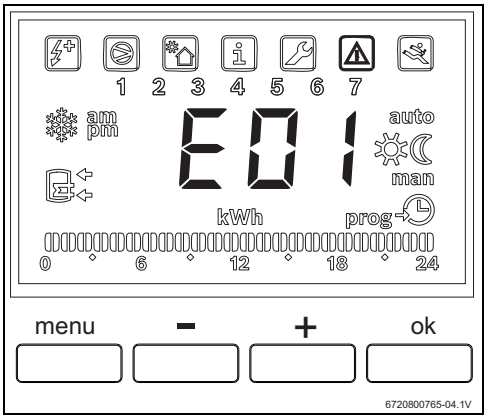

Fig. 38 Error code

Resetting the system

▶ Press the „ok“ key and hold it down for more than 3 seconds.

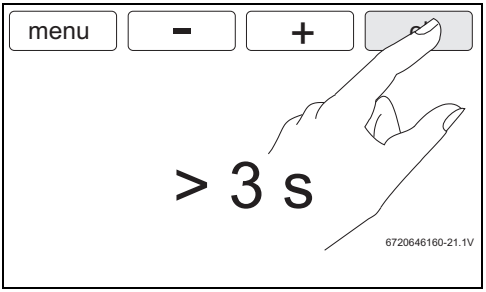

Fig. 39 Resetting the system

5.8 Factory configurations

Upon setting the temperature units and timetable, the device will operate according to the factory set values.

Heating mode: „Combi“ (→ section 5.6.1)

Manual functioning: „manual“ (→ section 5.4)

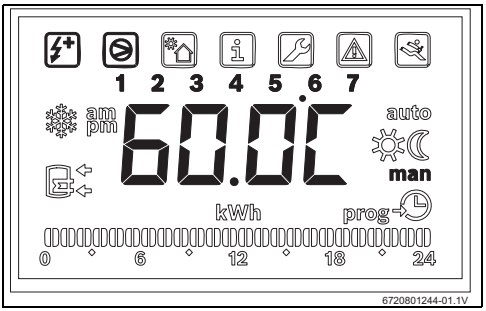

Fig. 40 Initial menu

5.9 Selecting the temperature units - „°C“ or „°F“

Upon the 1st use, the user must select the temperature unit.

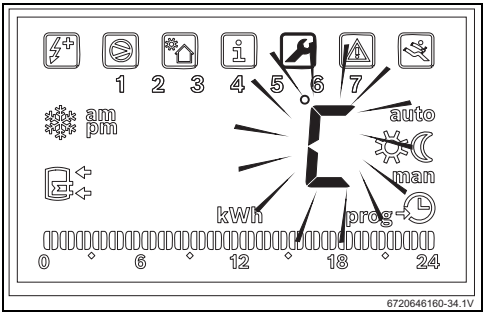

Fig. 41 Selecting the temperature units

▶ Press the „+“ or „-“ key to select the temperature unit.

- Confirm the selection by using the „ok“ key.

5.10 Setting the time and day of the week

The „am/pm“ selection is only valid if „°F“ is selected as temperature units.
If set to °C, time will be displayed in the 24 hour format.

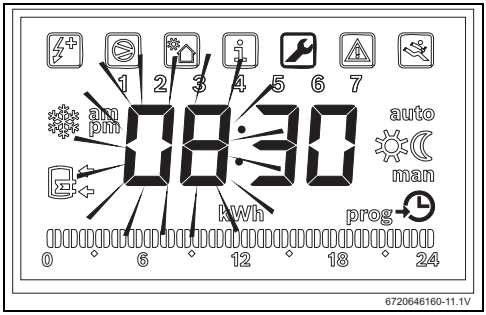

Fig. 42 Setting the time

- Press the „+“ or „-“ key to set the time.
- Confirm the selection by using the „ok“.
  Display shows the minute digits, blinking.
- Press „+“ or „-“ key to set the minutes.
- Confirm the selection by using the „ok“.
  The clock is set and the day of the week begins to blink.

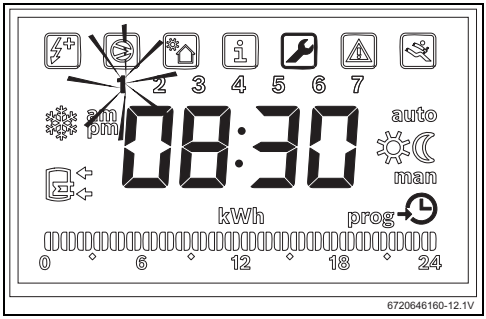

Fig. 43 Setting the day of the week

- Press the „+“ or „-“ key to set the day of the week.
- Confirm the selection by using the „ok“.

By default, the first day of the week is Monday, the second is Tuesday, and so on. The definition of the 1st day of the week can be changed if desired.

5.11 Controls

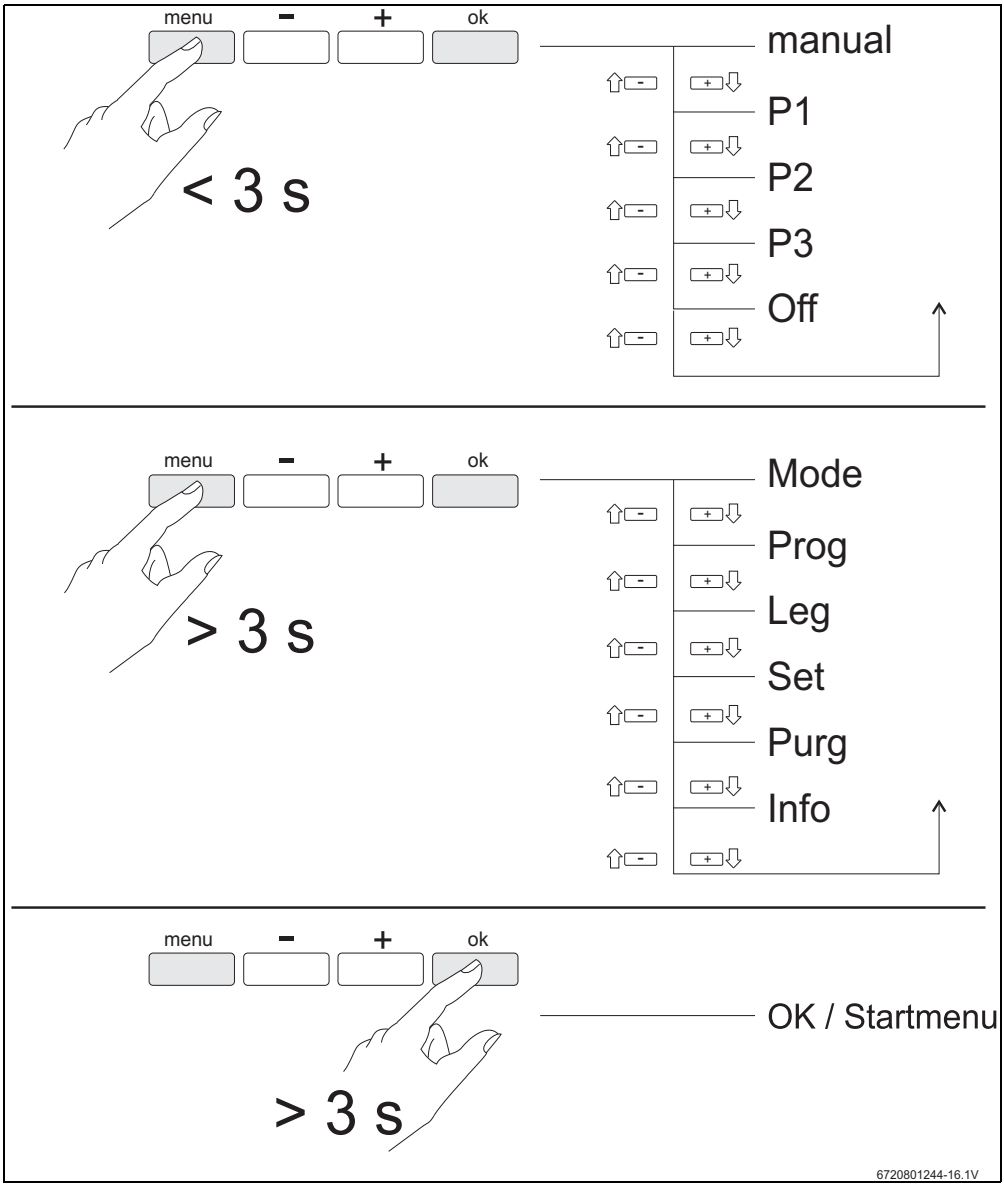

Fig. 44

6 Maintenance and repair

WARNING:
The water heater should be serviced by a qualified professional and in accordance with the Plumbing Standard AS/NZS 3500.4 and local authority requirements.

WARNING:
Before manually operating the relief valve, make certain no one will be exposed to the danger of coming in contact with the hot water released by the valve. The water may be hot enough to create a scald hazard. The water should be released into a suitable drain to prevent injury or property damage.

It is part of normal operation for the Temperature and Pressure Relief valve to discharge periodically. This is due to thermal expansion in a closed water system. If this discharge becomes excessive and runs continuously, contact plumbing contractor. Do not plug the relief valve outlet.

Properly maintained, your water heater will provide years of dependable trouble-free, economic service.

It is suggested that a routine preventive maintenance program be established and followed by the user.

6.1 Periodic Inspection

It is recommended that a periodic inspection of the operating controls, heating elements and wiring should be made by service personnel qualified in electric appliance repair.

Most electrical appliances, even when new, make some sound when in operation. If the hissing or singing sound level increases excessively, the electric heating element may require cleaning. Contact a qualified installer or service agent.

Additionally it is also recommended that the evaporator and refrigeration circuit are checked every two years for dust and residues. In dusty environments it may be necessary to have the appliance checked and cleaned on a more regular basis.

6.2 Temperature and pressure relief valve (PTR Valve)

At least every 6 months.

- Lift and release the lever handle on the temperature and pressure-relief valve, to make certain the valve operates freely.

Allow several liters to flush through the discharge line to an open drain.

Never replace the PTR Valve with one which has a higher pressure rating than is specified for your water heater.

If the valve does not discharge water when the release lever is opened or does not seal properly when release lever is closed, replacement by an authorised person must be arranged without delay.
The PTR Valve is not serviceable.

DANGER:
Before manually operating the relief valve, make certain no one will be exposed to the hot water released by the valve. The water drained from the tank may be hot enough to present a scald hazard and should be directed to a suitable drain to prevent injury or damage.

6.3 Flushing tank

A water heater's tank can act as a settling basin for solids suspended in the water. It is therefore not uncommon for hard water deposits to accumulate in the bottom of the tank.

It is advisable to periodically flush the tank of these deposits by draining and then refilling the unit (see section 6.4).

6.4 Draining the Water Heater

CAUTION:
Shut off power to the water heater before draining water.

CAUTION: Risk of scalding!
Check the appliance's DHW temperature before opening the safety valve.

- Wait until the water temperature has dropped enough to prevent burns and other damage.

Large volumes of water will drain from the cold water inlet (>270 liters).

- ▶ Ensure proper drainage of water.

- ▶ Close cold water supply.
- ▶ Open a hot water tap (preferable one install at the same level as the appliance) to relieve pressure and wait until flow substantially decreases.
- ▶ After ensuring a proper drainage solution, remove cold water inlet connection and wait until water is drained.

6.5 Vacation and Extended Shutdown

If the water heater is to remain idle for an extended period of time, the power and water to the appliance should be turned off to conserve energy and prevent the buildup of dangerous hydrogen gas.

The water heater and piping should be drained if they might be subjected to freezing temperatures. After a long shutdown period, the water heater's operation and controls should be checked by qualified service personnel. Make certain the water heater is completely filled again before placing it in operation.

Note: refer to the Hydrogen Gas Caution in the Operating Instructions.

6.6 Clearing the Condensation Drain Tubes

The condensate drain is located on the back of the water heater. If blocked, water will spill down the outside of the unit.

- ▶ Remove the condensate drain pipe.
- ▶ Clear any debris and reattach.
- ▶ Periodically inspect the drain line and clear any debris that may have collected in the line.
- ▶ See Installation Instructions for more information.

6.7 Refrigerant circuit

NOTICE: Refrigerant leak!

- ▶ Repairs to the refrigerant circuit (e.g. to the compressor, condenser, evaporator, expansion vessel) may only be carried out by an authorised contractor.

6.8 Anode Rod servicing

A water heater anode rod is the most important safeguard any storage tank has against corrosion and premature failure.

Inspecting the anode rod is therefore very important. Sacrificial anodes are designed to deteriorate overtime. Most water heating industry professionals recommend inspecting the anode yearly.

Homes with salty or softened water supplies should consider more frequent inspection. When in doubt consult a local water heating professional.

- ▶ Arrange for an authorised person to inspect the anode and replace if required.

6.9 Checking/replacing the magnesium anode

The appliance is protected against corrosion by an internal magnesium anode.

WARNING: Damage to the appliance!
The magnesium anode must be installed before commissioning the appliance.

WARNING: Damage to the appliance!
Appliances operated without this protection are excluded from our warranty.

- ▶ Check the magnesium anode yearly and replace if required.

The internal wall of the DHW storage tank is coated with a double glass lining. The coating is designed for normal quality water (section 4.8.1, page 21). When using more corrosive water, the warranty only applies if additional safety measures (i.e. dielectric joints) have been taken, and the magnesium anode is checked more frequently.

To check the protective anode:

- ▶ Isolate the appliance from the power supply.
- ▶ Isolate appliance from water supply.
- ▶ Open a hot water tap (preferable one install at the same level as the appliance) to relieve pressure and wait until flow substantially decreases.
- ▶ Remove the anode rod protective cap.

► Remove the anode rod.

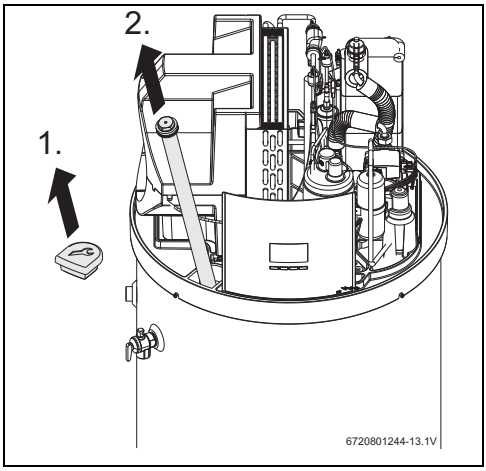

Fig. 45 Check state of magnesium anode

► Visually inspect and replace if necessary.
► Refill tank and purge the system (see section 4.8)

6.10 Service menu

This menu is meant to assist the contractor and may be used by the contractor only.

Calling up the service menu

► Press and hold "menu" and "ok" simultaneously for 5 seconds.

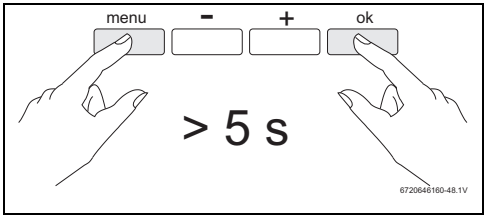

Fig. 46 „Service" menu

When the service icon " " appears, the service functions can be accessed.

► Use "+" or "-" key to select the required menu.
► Confirm by pressing "ok".

"0d" function

The "0d" function can be used to check the set value and the DHW outlet temperature.

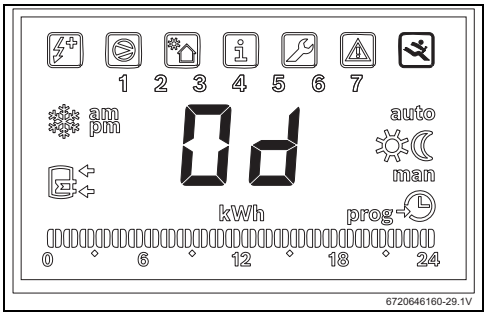

Fig. 47 DHW outlet temperature

"1d" function

The "1d" function can be used to check the temperature in the top part of the storage tank.

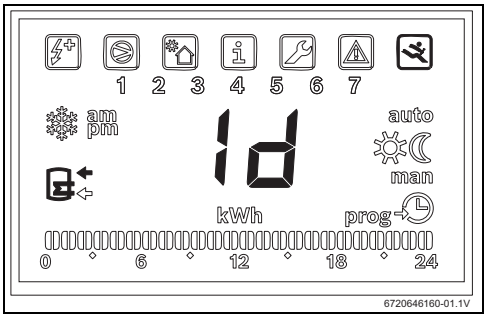

Fig. 48 Temperature in the top part of the storage tank

"2d" function

The "2d" function can be used to check the temperature in the bottom part of the storage tank.

The value displayed only corresponds to the bottom temperature if the compressor is working or the electric element is ON during the LEG procedure. Otherwise the value shown corresponds to the temperature of the stagnated water inside the piping at the module

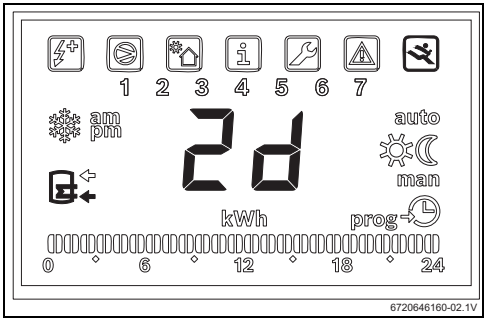

Fig. 49 Temperature in the bottom part of the storage tank

"3d" function

The "3d" function can be used to check the ambient air temperature.

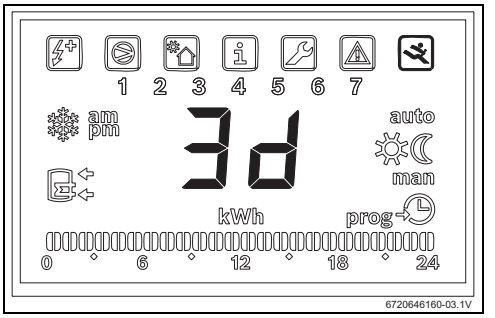

Fig. 50 Ambient air temperature

"5d" function

The "5d" function can be used to check the current power consumption of the appliance.

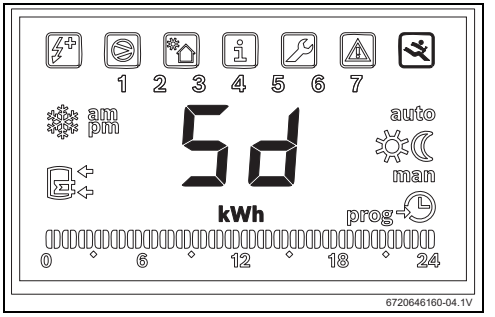

Fig. 51 Power consumption of the appliance

"6d" function

The "6d" function can be used to check the number of air defrost cycles.

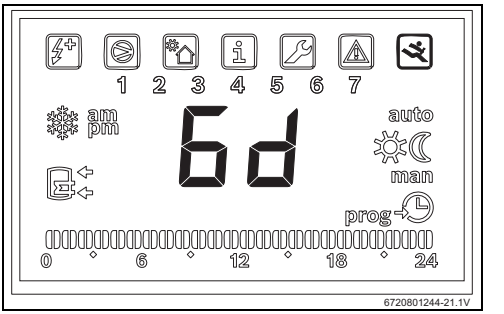

Fig. 52 Number of air defrost cycles

Functions "1F" to "10F"

The functions "1F" to "10F" can be used to display the last 10 faults that occurred.

- "1F" - last fault
- "2F" - second to last fault
- .....
- "10F" - tenth to last fault

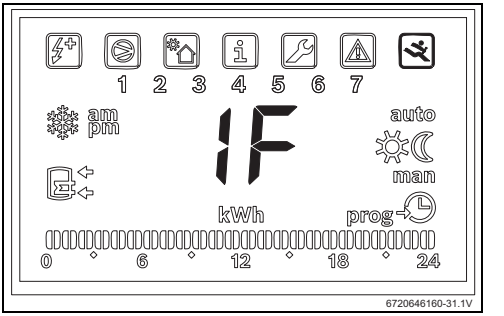

Fig. 53 Last fault

"EE" function

The "EE" function can be used to delete the fault history.

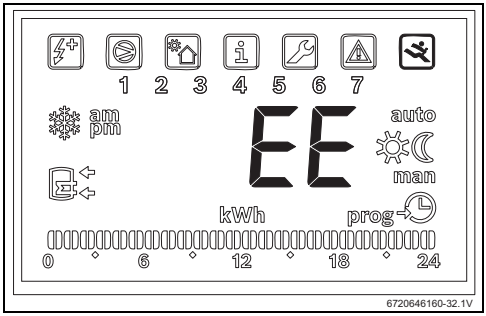

Fig. 54 Deleting the service history

"AL" function

The "AL" function can be used to show all the display's segments.

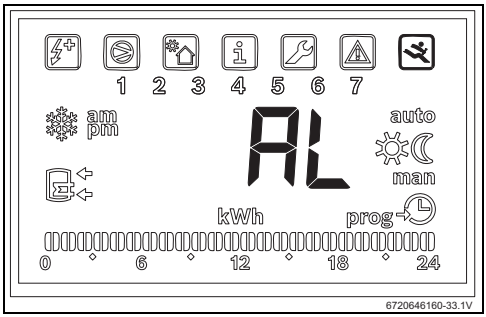

Fig. 55 Showing all the display's segments

"E" function

The "E" function can be used to exit the service menu.

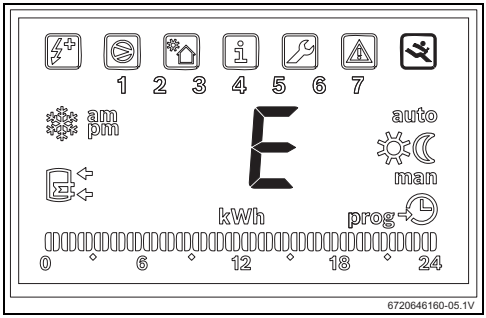

Fig. 56 Exiting service mode

7 Display

7.1 Fault display

Installation, maintenance and repairs may only be carried out by an authorised contractor. The following table lists the fault codes and their remedies.

Display	Description	Solution
E01	Fault in the top storage tank temperature sensor	Notify authorised contractor
E02	Fault in the bottom storage tank temperature sensor	Notify authorised contractor
E03	Fault in the temperature sensor at the air inlet	Notify authorised contractor
E05	Not used	Notify authorised contractor
E06	Hold down setting keys longer than 30 seconds	Release keys
E07	Not used	Notify authorised contractor
E08	Not used	Notify authorised contractor
E09	Incorrect system purging	Notify authorised contractor
	Water shortage during off-peak	
	Water shortage for long period (> 12h)	Reset the system
E10	Heating element faulty	Notify authorised contractor
	Fault in the high limit safety cut-out	
	Adjusted temperature in the thermostat below the set point temperature in the tank	
E11	Fault in the fan	Reset the system and notify authorised contractor
	High pressure loss in the air ducts	
	Leak in refrigerant circuit	
	Fault in the compressor	
	Fault in the expansion valve	
	Fault in the dry filter	
	Start up after a long standby period at very low temperatures	

Table 6 Fault codes

7.2 Displays

Display	Description	Note
E04	Temperature in storage tank ≥ 80 °C	Isolate electrical connection. Notify authorised contractor.
E12	Abnormal frost formation due to partial evaporator blockage, moderate wind on the air outlet while running in silent mode or strong wind on the air outlet while running in normal mode	Reset the system. Do not use the silent mode in case of high possibility to have the air outlet exposed to the wind direction. Notify authorised contractor if the warming persists.
LEG	Thermal disinfection process running	When temperature reaches and holds 60 °C for 35 mins, the appliance goes back to the mode previously selected.
HOT	Temperature of inlet air ≥ 40 °C	Occurs when air inlet is higher than 40 °C or lower than 3 °C, respectively. The appliance will automatically shut off if "heat pump" mode is selected. If Combi is selected the appliance will use the electric element to heat up the water.
COLD	Temperature of the inlet air ≤ 3 °C	

Table 7 Display indications

8 Electrical diagram

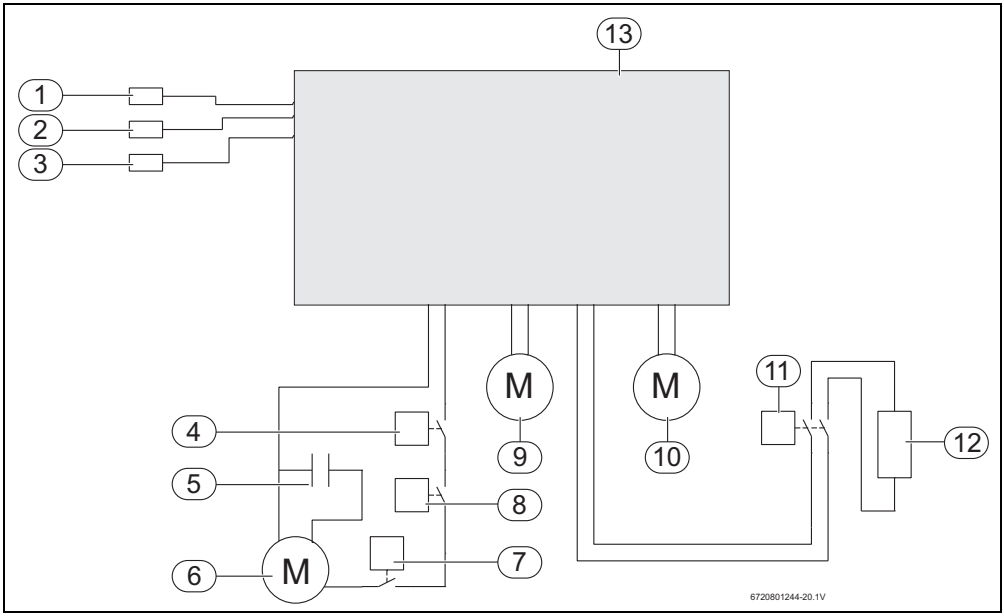

Fig. 57

[1] Temperature sensor for air inlet
[2] Storage tank temperature sensor for DHW
[3] Storage tank temperature sensor for cold water
[4] High-pressure pressure switch
[5] Compressor startup capacitor
[6] Compressor
[7] Compressor thermal protector
[8] Low-pressure pressure switch
[9] DHW circulation pump
[10] Air fan
[11] Heating element thermal cut-out
[12] Heating element
[13] Control unit

9 Environmental protection

Environmental protection is a basic company strategy of Bosch. The quality of our products, profitability and environmental protection are equal-ranking goals for us. Laws and regulations concerning environmental protection are strictly observed. We use the best possible technology and materials, under economic considerations, to protect the environment.

Packaging

We participate in the recycling program of the respective country to ensure optimal recycling. All of our packaging materials are environmental-friendly and can be recycled.

Old appliances

Old appliances contain valuable materials that should be recycled. The assemblies can be easily detached and synthetic materials are marked accordingly. The assemblies can therefore be sorted out and passed on for recycling or disposal.

At the end of the service life of this appliance and prior to it's environmental disposal, a person qualified to work with refrigerant circuits must recover the refrigerant from within the sealed system.

WARNING:
The refrigerant must not be vented to the atmosphere.

10 Warranty details

Robert Bosch (Australia) Pty Ltd Thermotechnology Division
Voluntary Repair or Replacement Warranty for Bosch Heat Pump

All Bosch products are carefully checked, tested and certified to Australian and New Zealand standards.

Important Note: Mandatory Australian Consumer Law statement
If you have purchased your product in Australia, you should be aware that:
This warranty is provided in addition to other rights and remedies held by a consumer at law. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Important Note: New Zealand law
If you have purchased your product in New Zealand, you should be aware that:
This warranty is supplemental to any other rights and remedies you have under the Consumer Guarantees Act 1993 NZ, unless your purchase is made for commercial purposes, in which case Bosch excludes all consumer guarantees implied in the Consumer Guarantees Act 1993 NZ in respect of your product.

1. Warranty

Bosch warrants, at its option, to repair or replace your water heater or relevant part thereof (Product) if such Product are faulty or defective in manufacture or materials during the warranty period specified below.

The warranty period commences on the date of purchase. If the date of original purchase cannot be determined, then the warranty period will commence six (6) months after the date of manufacture stamped on the Product. Bosch may require evidence to verify the date of purchase.

This warranty only covers repair or replacement of defective Product (including labour costs where indicated). It does not cover:

- any costs incurred by the end user in normal or scheduled maintenance of the Product; or
- subject to any law to the contrary, any damage to property, personal injury, direct or indirect loss, consequential losses or other expenses arising from breach of this warranty. Any end user concerned with this exclusion should consider the "Important Note: Mandatory Australian Consumer Law statement" above.

2. Warranty periods & coverage

Bosch will provide warranty service for Product purchased and installed in Australia and New Zealand as follows:

Components	The period after purchase within which the fault must appear	What Bosch will do (see below for definitions)
Domestic Use (see below for definition)		
All components	Year 1 to 2	Parts & Labour
Water tank	Year 2 to 5	Parts only
Commercial Use (see below for definition)		
All components	Year 1 to 1	Parts & Labour
Water tank	Year 1 to 1	Parts only

Table 8

"Parts & Labour" means free of charge repair and/or replacement, including labour.

"Parts only" means a replacement heat exchanger, free of charge. All installation and repair labour costs are the responsibility of the owner.

"Domestic use" warranty period applies to Product installed to supply hot water for use by individuals in domestic dwellings. For Product used for all other uses, the commercial use warranty period will apply. This includes, without limitation, installations such as centralised or bulk hot systems, hotels, sporting complexes, caravan parks, laundry facilities, restaurants and cafes.

For “Parts only” warranty, the end user will be charged for service call costs and service technician fees in effecting the replacement.

For valid claims within "Parts & Labour" warranty periods, the end user will not be charged for costs associated with making a warranty claim, including service call costs, any service technician fees or the cost of replacement parts and freight, provided that:

- the Product is located within the usual operating area of an authorised service technician; and
- the Product has been installed according to the installation instructions so as to provide adequate service access.

If the Product is not located within the usual operating area of an authorised service technician, the end user will be required to pay the service call costs associated with a service call under this voluntary warranty.

Notwithstanding the above, if the Product has not been installed in accordance with the installation instructions in regards to access, or has been otherwise installed in location where service access is difficult, the end user will be required to pay charges associated with the difficult access. This includes, but is not limited to, the removal of walls or doors to gain access and the use of specialised equipment to move the Product or components to safe working levels. Where the Product cannot be safely accessed, Bosch may refuse to service the Product under this voluntary warranty.

For invalid claims under this voluntary warranty, the end user will be liable for the costs of making the warranty claim including any service call costs.

3. Warranty exclusions

This voluntary warranty is subject to the following conditions:

- The Product must have been installed and correctly commissioned by an authorised and licensed installer in compliance with applicable Australian Plumbing and Gas Standards. Proof may be required of correct commissioning of the Product (such as certificate of compliance). Claims for failures due to incorrect installation or commissioning are not covered under this voluntary warranty and may be rejected by Bosch.
- Where a Product or part thereof is replaced or repaired under this voluntary warranty, the balance of the original voluntary warranty will apply. The replacement Product or part does not carry a new voluntary warranty.
- The Product must have its original serial numbers and rating labels intact.
- The warranty does not extend to any Product that have been completely or partially disassembled.
- These warranty terms cannot be amended except in writing by an authorised officer of Bosch.
- The warranty only applies to Product installed for an end user in Australia or New Zealand and purchased from Bosch or from a reseller where the Product have been originally sold by Bosch.
- Any claim made under this voluntary warranty meets the requirements set out below in the "How to Make a Warranty Claim" section.

4. Warranty Exclusions

This warranty will not apply to a defect or fault to the extent to which it arises:

- due to storage, handling or installation of the Product otherwise than in accordance with instructions provided for the Product by Bosch or without reasonable care, including installation of a Product which is of inappropriate size or type for the intended purpose;
- due to operation, use or maintenance of the Product otherwise than in accordance with instructions provided for the Product by Bosch or without reasonable care, including use of the Product with faulty or unsuitable plumbing, water pressure, power or gas supply;
- due to accidental damage or use of the Product for a purpose or in environmental conditions for which the Product were not designed or sold, or use of the products outside the specified or normal operating ranges for such Product;
- as a result of changes which occur in the condition or operational qualities of the Product due to climate or other environmental influence, foreign material contamination or water entry or as a result of exposure to excessive heat or solvents or because of use of non-potable water or bore water in the Product or damage as result of an Act of Nature including but not limited to storms, fires, floods and lightning strikes;
- from normal wear and tear or when replacement or repair of parts would be part of normal maintenance or service of the Product or where the damage is only to surface coating, varnish or enamel;
- as a result of repairs, alterations or modifications to the Product which have been performed by a person who is not suitably qualified and experienced to perform works on the Product; or
- from the use of any spare parts not manufactured, sold or approved by Bosch in connection with the repair or replacement of Product.

This voluntary warranty does not apply to damage that has been caused by continued use of a Product after it is known, or would have been known with regular servicing, it is defective.

Failure to service Product in accordance with recommendations in instruction manuals for Product may result in a warranty claim under this voluntary warranty being rejected by Bosch. Bosch alerts end users that instruction manuals for Product contain specific recommendations for servicing and safety checks to be carried out on Product.

5. Wrong Deliveries and Transit Damage

Wrong deliveries, incorrect or damaged packing and transit damage claims are not warranty claims. Such cases should be

directed to Bosch's Customer Service line in Australia on ph: 1300 307 037 or in New Zealand on ph: 0800 543 352.

6. How to Make a Warranty Claim

If a Product fails within the warranty period, the end user must stop using the Product and make a claim as soon as possible, in any event before the end of the Warranty Period (see Deadlines for Submitting Warranty Claims below).

To make a warranty claim under this voluntary warranty, call the Bosch Customer Contact Centre (in Australia on ph: 1300 307 037 or in New Zealand on ph: 0800 543 352). Please be ready to provide the model and serial number, date of installation, purchase details and a full description of the problem. Alternatively, for claims in Australia, you can post details of your claim to Robert Bosch (Aust) Pty Ltd, Attn TT Warranty Department, Locked Bag 66, Clayton Sth, Victoria, 3169. Claims received by post will take longer to process and we encourage you to call. Bosch may refer you to one of its Bosch Warranty Authorised Service Dealers.

Proof of purchase and purchase date, as well as proof of installation and proper commissioning by a licensed installer, may be required by Bosch or an authorised service technician.

All warranty service calls will be conducted by an authorised service technician during normal business hours. Bosch will not accept claims under this voluntary warranty for attendance and repair of the Product by third parties not authorised by Bosch.

7. Deadlines for Submitting Warranty Claims

Bosch aims to rectify genuine quality problems as a priority. This is generally achieved by investigating why defective products have failed and by introducing immediate corrective action measures to prevent re-occurring warranty failures. It is therefore critical that all warranty claims are promptly submitted to Bosch as soon as the product fails, and in any event before the end of the warranty period.

8. Product Liability and Product Safety

Bosch should be informed immediately about any potential product safety concerns within and outside the warranty period. Bosch is well aware of its product liability and product safety obligations and responsibilities. It is our aim to ensure appropriate product safety standards are met in order to avoid injury, loss and damage caused by defects in any Product.

9. Privacy

Bosch is required to seek personal information from an end user who seeks to make a claim under this warranty.

Such personal information may be used by Bosch and/or any authorised service technician (who is authorised to process warranty claims and/or carry out warranty repairs on behalf of Bosch) for the purpose of processing such warranty claim and also for the provision of customer support and further information about Bosch's products and services (**Purpose**).

If an end user does not wish to provide Bosch and/or its authorised service technician with personal information, Bosch may be unable to process the end user's warranty claim or to provide the end user with additional customer support, services and information.

Bosch is committed to protecting the privacy of personal information and will act in compliance with applicable privacy laws, including the National Privacy Principles under the Australian Privacy Act 1988 (Cth) (as amended) and New Zealand's Information Privacy Principles described in the Privacy Act 1993 (NZ).

Bosch takes security measures in order to protect any personal information collected in the warranty claim process against manipulation, loss, destruction, access by unauthorized persons or unauthorized disclosure.

Bosch will not disclose any personal information to third parties other than for the Purpose or except as required by law.

An end user has the right to access the personal information Bosch or its authorised service technician hold about them. The end user can request to see, change or modify the personal information held about them, or withdraw consent for its usage, by contacting Bosch at the Bosch Contact Details below.

10. Bosch Contact Details

This warranty is offered by Robert Bosch (Australia) Pty Ltd (ACN 004 315 628) of 1555 Centre Road, Clayton, Victoria 3168. Please call the Customer Contact Centre on 1300 30 70 37 in Australia or 0800 543 352 in New Zealand if you have any queries in relation to this warranty or contact us using the online form at www.bosch-climate.com.au.

Notes

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