

**EES 30 EES 66**  
**EES 40 EES 80**  
**EES 52 EES 120**

**United Kingdom & Ireland**

**ELECTRIC HOT WATER STORAGE HEATERS**

Installation, User and Service Manual



## Read this manual carefully

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### **Warning**

Read this manual carefully before using the device. Not reading this manual and not following the instructions in this manual may lead to personal injuries and damage to the device.

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Although utmost care has been taken in ensuring a correct and, where necessary, complete description of the relevant parts, the manual may contain errors and some things may be unclear.

Should you still discover faults or things which are unclear, please inform us about this. It helps us to further improve the documentation.

### **Additional information**

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For problems with respect to connections to electricity and water supplies, please contact the supplier/installation engineer of your installation.

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## 1. GENERAL

### 1.1 Description of the apparatus

The construction and equipment of the electric storage heater meet the European standards for electric household apparatus (EN60335-1 and EN60335-2-21). Thus, the heater is in conformity with the European directives of electric household apparatus, implying the authority to bear the CE-mark.

The heater is appropriate for a working power of 8 bar (=800 kPa). The tank is of steel plate and has got a glasslined coating, in its interior. Simultaneously, the tank is provided with two sacrificial anodes, as an additional protection against corrosion. A thick FFC insulating layer, surrounded by a steel casing is preventing it from an unnecessary loss of heat. As soon as the heater will be completely filled with water, it will continually be under the pressure of the water supply. Draining hot water, the heater will immediately be refilled with cold water. A good transmission of heat is given by the use of incoloy heating elements.

Additional comfort can be created by making use of a circulation pipe with the corresponding pump. The connection of the above pipe will have to take place at the cold water pipe.

#### 1.1.1 Packaging material

The packaging protects the device against transportation damage. The selected packaging material is environmentally friendly, recyclable and can be disposed of in a relatively easy and environmentally friendly way.



#### 1.1.2 Disposal

Old and discarded devices contain

substances that are to be recycled. Please take the local laws with respect to waste processing into account when disposing of old and discarded devices.

Never dispose of your old device through the domestic waste, but bring it to a municipal collection point for electric and electronic equipment. If necessary, ask your dealer/installer for information. Store the old device outside the reach of children.

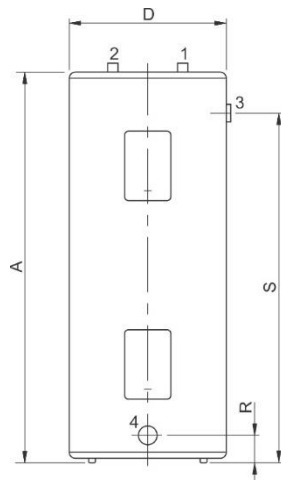


### 1.2 Technical safety devices

#### 1.2.1 Thermostat

The heater is provided with one or two regulating thermostats with a setting range between 32 °C and 82 °C. Further on, the heater is equipped with one safety thermostat, being set at 95 °C.

### 1.3 Technical description



IMD-0299

### 1.3.1 Dimensions

	Description	Unit	EES 30	EES 40	EES 52
A	Total height	mm	930	1110	1370
D	Diameter of the apparatus	mm	520	520	520
R	Height of drain tap	mm	110	110	110
S	Height of T&P plug	mm	730	970	1210
1	Connection cold water	-	3/4 " - 14 NPT	3/4 " - 14 NPT	3/4 " - 14 NPT
2	Connection hot water	-	3/4 " - 14 NPT	3/4 " - 14 NPT	3/4 " - 14 NPT
3	Connection T&P plug	-	3/4 " - 14 NPT	3/4 " - 14 NPT	3/4 " - 14 NPT
4	Connection drain tap	-	3/4 " - 14 NPT	3/4 " - 14 NPT	3/4 " - 14 NPT

	Description	Unit	EES 66	EES 80	EES 120
A	Total height	mm	1530	1540	1620
D	Diameter of the apparatus	mm	560	610	710
R	Height of drain tap	mm	110	110	110
S	Height of T&P plug	mm	1360	1330	1385
1	Connection cold water	-	3/4 " - 14 NPT	3/4 " - 14 NPT	3/4 " - 14 NPT
2	Connection hot water	-	3/4 " - 14 NPT	3/4 " - 14 NPT	3/4 " - 14 NPT
3	Connection T&P plug	-	3/4 " - 14 NPT	3/4 " - 14 NPT	3/4 " - 14 NPT
4	Connection drain tap	-	3/4 " - 14 NPT	3/4 " - 14 NPT	3/4 " - 14 NPT

### 1.3.2 Technical Data

Type	Unit	EES 30	EES 40	EES 52
Tankage	lt.	115	155	190
Number of elements	-	2	2	2
Capacity (220 V)	kW	2,5	2,5	2,5
Capacity (240 V)	kW	3,0	3,0	3,0
Heating time up to 60°C * (220/240 V)	min	159/134	214/180	263/221
Heating time up to 40°C * (220/240 V)	min	95/87	129/118	158/133
Tap capacity 1st hour 60°C ** (220/240)	lt.	149/157	187/194	219/227
Tap capacity continuous 60°C ** (220/240)	lt/hr.	43/52	43/52	43/52
Tap capacity 1st hour 40°C ** (220/240)	lt.	248/261	311/324	366/379
Tap capacity continuous 40°C ** (220/240)	lt/hr.	72/86	72/86	72/86
Weight	kg	36	43	48

Type	Unit	EES 66	EES 80	EES 120
Tankage	lt.	250	300	450
Number of elements	-	2	2	2
Capacity (220 V)	kW	2,5	2,5	2,5
Capacity (240 V)	kW	3,0	3,0	3,0
Heating time up to 60°C * (220/240 V)	min	346/291	415/349	632/523
Heating time up to 40°C * (220/240 V)	min	208/174	249/209	374/314
Tap capacity 1st hour 60°C ** (220/240)	lt.	276/284	323/330	463/471
Tap capacity continuous 60°C ** (220/240)	lt/hr.	43/52	43/52	43/52
Tap capacity 1st hour 40°C ** (220/240)	lt.	459/473	538/551	772/785
Tap capacity continuous 40°C ** (220/240)	lt/hr.	72/86	72/86	72/86
Weight	kg	64	80	125

### 1.3.3 EcoDesign Data

Description	unit	EES 30	EES 40	EES 52
Load Profile	-	L	L	XL
Energy Efficiency Class	-	C	C	C
Water Heating Efficiency	%	39.3	38.0	38.0
Daily Electricity Consumption	kWh	11.907	12.394	20.320
Daily Fuel Consumption	kWh GCV	0.000	0.000	0.000
Mixed Water 40°C (V40)	ltr.	143	187	237
Additional Load Profile	-	-	-	-
Energy Efficiency	%	-	-	-
Daily Electricity Consumption	kWh	-	-	-
Daily Fuel Consumption	kWh GCV	-	-	-
Mixed Water 40°C (V40)	ltr.	-	-	-

Description	unit	EES 66	EES 80	EES 120
Load Profile	-	XL	XL	XL
Energy Efficiency Class	-	C	D	D
Water Heating Efficiency	%	38.0	37.8	37.3
Daily Electricity Consumption	kWh	20.039	21.500	20.830
Daily Fuel Consumption	kWh GCV	0.000	0.000	0.000
Mixed Water 40°C (V40)	ltr.	295	368	552
Additional Load Profile	-	-	-	-
Energy Efficiency	%	-	-	-
Daily Electricity Consumption	kWh	-	-	-
Daily Fuel Consumption	kWh GCV	-	-	-
Mixed Water 40°C (V40)	ltr.	-	-	-

## 2. FOR THE INSTALLER

### 2.1 Installation instructions

The heater will not be installed but in spaces meeting the national and local regulations. These spaces will be frost protected.

### 2.2 Installation

The installation will be effected according to the current general and local regulations of the electric and water works, and that, by an authorized installer.

#### 2.2.1 Water connection

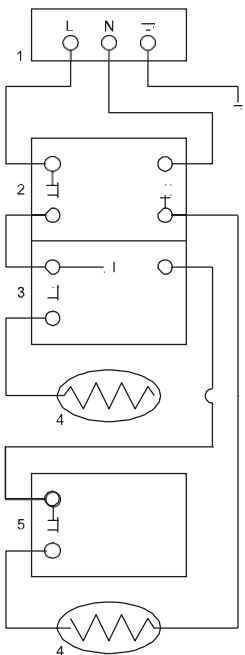
The max. admissible working pressure of the heater will amount to 8 bar. On the cold water side, the heater will have to be provided with a stop valve, as well as an approved inlet combination. The overpressure side, of the inlet combination, will have to be connected to an open water discharge. Insulating long pipes, will prevent from waste of energy.

#### 2.2.2 Electrical connection

The electric installation will always be effected by an authorized installer, as well as according to the general and current regulations of the electricity works. This heater will have to be provided with a main switch, as soon as a fixed connection is involved.

**Warning:**

**Earth/Ground the equipment**



1. Power supply connection
2. Safety thermostat of two poles
3. Regulating thermostat (with priority switch)
4. Heating elements
5. Regulating thermostat

A	
Wiring diagram for non-simultaneous use of heating elements	
Scope: EES 30, EES 40, EES 52, EES 66, EES 80, EES 120	
Power supply: 220-240 V 50-60 Hz IP40	



## 2.3 Putting into operation

### 2.3.1 Filling of the heater

1. Install the drain tap and check whether it is closed.
2. Open the cold water tap leading to the heater and the rest of the taps of warm water outlet, for ventilation. The apparatus will be filled, as soon as water is flowing out of every outlet.
3. Again, turn off all the taps of warm water outlets.

### 2.3.2 Putting into operation

1. Check, whether the heater is filled with water and whether all electric connections leading to it are actually well carried out.
2. Check whether the cold water inlet is open.
3. Open the covering plate at the front remove the insulation to be found thereunder. Now, the regulating thermostats will be accessible. And can subsequently be adjusted at the demanded temperature, by turning the selector switch by a screwdriver.
4. Set the demanded temperature, on the regulating thermostat (see table). The temperature adjusted ex works is of 60°C.

Temperature in °F	Temperature in °C
90	32
100	38
110	43
120	49
130	54
140	60
150	66

5. Replace the insulation and put back the covering plate.
6. With a fixed connection, switch on the main switch or, otherwise, put the plug into the socket. Thereon, the apparatus

will be in operation and start to work, automatically.

### 2.3.3 Putting out of operation

1. For short periods: Remove the plug from the sockey or, if the connection is fixed, switch off the main switch.
2. For longer periods, it will be recommendable to not only act according to the advises sub 1, but also shut of the water supply pipe and, as soon as the heater will be cooled off, let out the water (fitting an outlet pipe on the drain tap and open it), in view of the danger of frost. (Open the nearest warm water drain taps, as well, so that the tank can be ventilated). Whenever the heater will have to be emptied completely, detach it and let it slope in the direction of the drain tap.

### 2.3.4 Temperature control

The apparatus is under the pressure of the water supply (max. 8 bar). There will be supplied the same quantity of cold water as the one used up of hot water. This implies that in the moment of showing the thermostat a temperature being inferior to the set one, the electric circuit will be closed, making an electric current pass through the heating element. After having reached the demanded temperature, the thermostat will interrupt the contact again. High water temperature will involve a calcium precipitation, inside the heater. Therefore, it is recommended to maintain the adjusted temperature of 60 °C, so that less furring will occur. Moreover, a built in safety thermostat will completely interrupt the current supply, at a water temperature of 95 °C.

## 2.4 Maintenance

At least once a year, the heater will have to be checked and cleaned by an expert, to guarantee its good function.

### **Important advises**

**The heater must NEVER be put into operation, with the cold water supply turned off.**

**The heater must not be under pressure nor voltage, in the course of a maintenance.**

### 2.4.1 Sacrificial anode

The service life of the anodes is determined by the quality and quantity of the water flowing through. That is why it will be recommendable to have the anodes inspected, every year.

1. Turn off the cut-off cock of the feed pipe of cold water.
2. Open the nearest warm water tap, to eliminate the water pressure of the heater and the water conduit.
3. Loosen the anode by the right key.
4. Inspect and replace it, whenever used off by 60%.
5. Screw in the anode to be waterproof.

If the anode must be replaced, make sure that the new one always will be of exactly the same type. This can be checked by the type of the heater, as well as by the complete serial number.

### 2.4.2 Decalcification

The lime forming is a sequel of the quality and the demand of the water. Besides, lime forming will always be of a higher degree with high water temperatures than with low ones. Therefore, it is recommended to adjust the temperature at 60 °C, so that the degree of calcium precipitation can be kept at a low rate. Decalcification will have to be done by using appropriate means. If you need more detailed information thereon, the relevant instructions are available.

## 2.5 Measures to be taken at moments of failures

Whenever there is a failure, the items given below will have to be checked before calling a trouble-shooting service.

### 2.5.1 Safety thermostat

Every heater has got a number of safety thermostats interrupting the electric circuit, at high water temperatures (95°C). These safety thermostats cannot be reset but after a decrease of the temperature by 20°C. Subsequently, the regulating thermostat will be checked: if it has been adjusted at a high temperature, the thermostat will probably be broken and must be replaced.

### 2.5.2 Water temperature not right

1. Check the adjustment of the regulating thermostat.
2. Check whether there are leakages and/or open taps.
3. Check whether the wiring is still correctly connected.
4. It's possible that the consumption of hot water is higher than it had been calculated, originally.
5. Inspect whether the cold water inlet pipe has got the right position.

### 2.5.3 Warm water temperature too high

Check whether the regulating thermostat is set too high.

### 2.5.4 Probability of a water leakage

1. Check whether the drain tap is completely shut.
2. Check whether the water connections are waterproof.

### 2.5.5 Measures

Trouble	Cause	Measures to be taken
Insufficient or no hot water at all	The temperature is set too low	Adjust the regulating thermostat higher
	The safety thermostat is interrupting the electric circuit	Press the reset button
	There is no hot water supply left	Reduce the hot water consumption. Admit the necessary heating time
	The plug is out of the socket	Put the plug into the socket
	The cause cannot be determined	Turn off the main switch and/or remove the plug from the socket
Leakage	Insufficient packing of the water connection (threaded connection)	Tighten the threaded connections
	Leakage due to other water apparatus or pipes, sited in the neighborhood	Find the cause

### 2.6 Spare Parts

When ordering spare parts, it will be necessary to specify the type of apparatus and the complete serial number. Thereby, the data of the spare parts can be determined.

### 3. FOR THE USER

Installing and putting into operation the heater for the first time will have to be done by an authorized installer.

#### 3.1 Instructions for use

Operating procedure:

1. Check whether the heater is filled with water.
2. Turn on the main switch, whenever there is a fixed connection or put the plug into the socket.

#### 3.2 Use

The heater is under the pressure of the water supply (max. 8 bar). The quantity of cold water being supplied, will exactly correspond to the one of the consumption of hot water. The regulating thermostat will switch on the electric supply, automatically. This implies that the electric circuit will be shut and heat supplied to the water, whenever the temperature is inferior to the demanded one. The electric circuit will be interrupted again, at the moment the demanded temperature will be reached.

Temperature in °F	Temperature in °C
90	32
100	38
110	43
120	49
130	54
140	60
150	66

In view of the limitation of the precipitation of calcium, it will be recommendable to adjust the temperature at 60 °C. Besides, a safety thermostat will be fitted, interrupting completely the electric circuit, the water temperature having reached 95 °C. After this temperature will have fallen by 20 °C, the thermostat can be reset, again. In the case of

another intervention of the safety thermostat, with the regulating thermostat being adjusted at a high temperature, this last one will have to set at a lower temperature. If there will still be another intervention of the safety thermostat, the regulating one will probably be out of order.

#### 3.3 Putting out of operation

Operating procedure:

1. For short periods: Remove the plug from the socket or, with a fix connection, turn off the main switch.
2. For longer periods it will be recommendable, in view of the danger of frost, not only take the measures indicated sub 1, but also turn off the water supply pipe and, after the heater will have cooled down, drain the water (connect a drain hose on the drain tap and open it). Also, open the nearest hot water tap drain, so that the tank can be ventilated. If there is the intention to totally empty the heater, uncouple it and let it slope in the direction of the drain tap.

#### 3.4 Maintenance

Regularly test the inlet combination by discharging it (activate the discharge button). The water must come out of it as a thick jet: Check, whether the drain pipe is open. It will be recommendable to sign a contract, based on a maintenance, once a year.

When ordering spare parts, it will be necessary to specify the type of apparatus and the complete serial number. Thereby, the data of the spare parts can be determined.

#### 3.5 In case of failures

Whenever there is a failure, do switch off the water heater by means of turning the main switch and call for help by an authorized service engineer.

## **4. WARRANTY**

### **4.1 General warranty**

If, within one year from the original installation date, after investigation and exclusive evaluation by A.O. Smith, a water heater delivered by A.O. Smith turns out to have a part, with the exception of the tank, that is not properly functioning as a result of manufacturing or material faults, A.O. Smith will replace or repair this part.

### **4.2 Tank warranty**

If within 5 years of the original installation date, after investigation and exclusive evaluation by A.O. Smith, a water heater delivered by A.O. Smith turns out to have a steel glass-lined tank that is leaking as a result of rust or corrosion from the water side, A.O. Smith will replace the whole water heater by a completely new one of similar size and quality.

The replacement water heater will have a warranty that will be valid for the remaining period of the warranty for the original water heater delivered. Notwithstanding the provisions in Article 2, the warranty term will be reduced to one year after the original installation date if unfiltered or softened water is flowing through the water heater or left in it.

### **4.3 Conditions of installation and use**

The warranty referred to in Articles 1 and 2 only applies if the following conditions are met:

- a) that the water heater is installed according to the installation instructions of A.O. Smith for the specific model, as well as according to the local and national installation and building regulations, instructions and rules;
- b) that the water heater will remain installed in the original installation position;
- c) that only drinking water is used, which is allowed to circulate freely at all times (a separately installed heat exchanger is

requisite for the heating of saline or corrosive water);

- d) that the tank has been defurred to remove harmful scale deposits by means of periodic maintenance;
- e) that the water heater water temperatures do not exceed the maximum settings of the thermostats that are part of the water heater;
- f) that the water pressure and/or heat load do not exceed the maximum values indicated on the water heater's identification plate;
- g) that the water heater has not been installed in a corrosive atmosphere or environment;
- h) that the water heater has been provided with an inlet combination, approved by an authorized body, of sufficient capacity, not greater than the operating pressure indicated on the water heater, and, if applicable, with a temperature and pressure relief valve, also approved by an authorized body, which has been mounted according to the installation instructions of A.O.
- i) Smith that apply to the specific water heater model, as well as according to the local and national instructions, regulations and rules;
- j) that the anodes are replaced and renewed if and when they have 60 % or more wear.

### **4.4 Exclusions**

The warranty referred to in Articles 1 and 2 does not apply:

- a) for equipment that are not used for domestic use, guarantee on the tank for one year after the initial installation date applies, with the conditions shown in article 2.
- b) if the water heater has been damaged by an external cause;
- c) in case of abuse, neglect (including freezing), modification, incorrect and/or deviating use of the water heater and if attempts have been made to repair leaks;
- d) if contamination or other impurities were allowed to flow into the tank;

- e) if the conductivity of the water is less than 125 microSiemens and/or the hardness of the water is less than 5,6°DH;
- f) if unfiltered, recirculated water flows through or is stored in the water heater
- g) if the owner has attempted to repair a defective water heater himself.

#### **4.5 Extent of the warranty**

A.O. Smith's commitments pursuant to the warranty provided are confined to the delivery free of charge of the water heater to be replaced or any parts thereof ex the Veldhoven warehouse. Any costs involved with transport, labor, installation or any other capacity connected to the replacement cannot be charged to A.O. Smith.

#### **4.6 Claims**

A claim based on the warranty provided shall be deposited with the dealer from whom the water heater was purchased or any other dealer who sells products manufactured by A.O. Smith. The examination of the water heater as referred to in the Articles 1 and 2 will take place in an A.O. Smith laboratory.

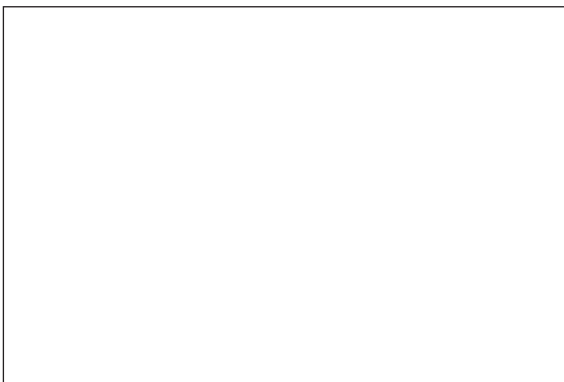
#### **4.7 Obligations for A.O. Smith**

In relation to its water heaters or else the water heaters (or parts or components thereof) supplied for replacement, no warranty or guarantee is given by A.O. Smith other than the warranty given here. A.O. Smith will not be held liable for any damage to property or persons under the warranty given or in any other way caused by a water heater it has supplied (parts or components or the steel glass lined tank) (for replacement).

This warranty applies to the following models:

EES 30	EES 66
EES 40	EES 80
EES 52	EES 120





Your Installer

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