



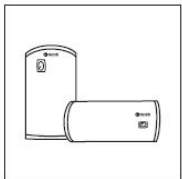
# About A. O. Smith

Established in 1874, the A. O. Smith Water Products Company is a global leader in innovative water technologies. With 21 fully-owned plants, they are currently the largest water heater manufacturer in the world.

Over the years, A. O. Smith has gained the respect and support of homeowners, contractors, architects and specifying engineers in over 60 countries by providing energy efficient hot and clean water solutions.

## What's in the box?

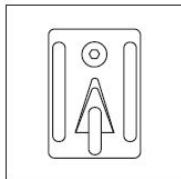
Electric Water Heater



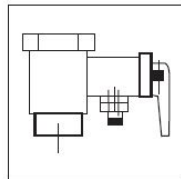
User Guide



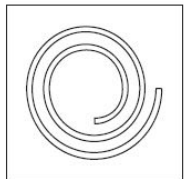
Wall Mounting Accessory



Safety Valve



Drain Pipe



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## Read Before Use

Before installation and use of this device, please read this manual carefully and keep it ready for future reference.

Engage an experienced water heater installer. A. O. Smith and AOS Bath will not be held liable by any damages or piping leakages caused by incorrect installations.

This heater is suitable for residential use. Any attempts to use it for commercial purposes will reduce the heater lifespan. Once the heater has been installed, owners should run checks every 6 months and the system should undergo maintenance every 3 years. If there are any operational irregularities, please discontinue use of the heater immediately and call our company hotline.

Before any instances of heater repair and maintenance, users should disconnect the power supply. Any modifications and repairs should only be handled by company approved technicians.

Heaters may cause serious scalding. Mix hot with cold water before showering or taking a bath.

If heater suffers from dry heating, any resultant steam and hot water may cause serious scalding. As a result, users should ensure that the heater tank is always full of water. If dry heating occurs, immediately cut off electrical & water supply and stop using the heater. Call our company service hotline and wait for our approved technicians to do the necessary checks and repair.

For safety issues, do not change any of the settings of the pressure relief valve or temperature pressure relief valve. Ensure all blockages are clear and install a drainage pipe to allow the overflow water to be discharged into a floor drain.

Water produced by the heater is not potable and should not be consumed.

Any circuits, gauges, circuit breakers and wiring used for the heater must meet current ampere requirements and be checked by approved technicians. Do not use damaged circuitry or an outdated, loose, unstable power outlet for the heater. This will cause electrical shocks, fuses, fires, etc.

Heater electrical connections must be used in tandem with a dedicated power source located at a dry area. Do not handle electrical points with wet hands. This may cause electrocution or physical damage to self.

A white translucent colour to the water produced by the heater is considered normal. This is due to the air pockets or foam caused by the pressure of dissolved air in water after heating.

**Note:** Incomplete compliance of this manual's contents may cause fires, financial or property losses, personal harm or death.

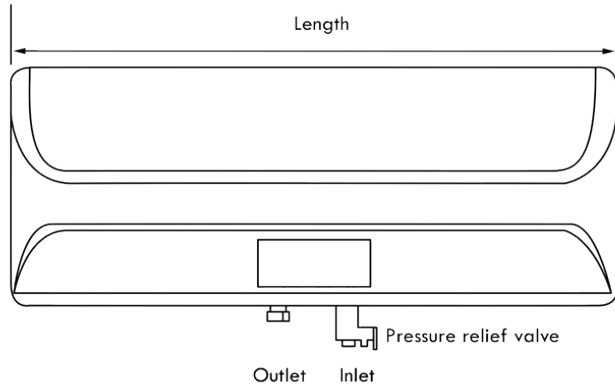
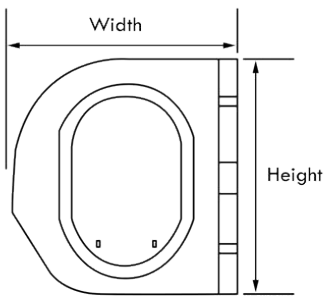
**Warning:** This is an electronic appliance and must be used with reliable connections.

# Specifications

Specifications	
Rated volume (L)	40
Power (kW)	4.0
Voltage/Frequency (V/Hz)	220/50
Temperature range (°C)	35-75±5
Rated water pressure (MPa)	0.8
Max-min inlet water pressure (MPa)	2.0/3.0
Inlet/outlet connection (inches)	1/2
Waterproof grade	IPX4

Dimensions	
Length (mm)	880
Width (mm)	340
Height (mm)	350

A. O. Smith reserves the right to make product changes or improvements at any time without notice.



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## Safety Features

### Thermal Cut Out

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The water heater employs a thermal cut out. In case any fault occurs and the water temperature exceeds the highest preset limits, the switch rapidly cuts off the live and neutral line for user's safety.

### Pressure Relief Valve

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The safety valve will relieve pressure automatically through droplets of water when the system exceeds the rated pressure.

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## Product Features

### Intelligent Maintenance Monitor (IMM)

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IMM helps to prevent corrosion of the internal heater tank. The intelligent active system releases protective ions into the tank, neutralizing aggressive corrosive ions in the water.

### Automatic Energy Saver (AES) (Patent ZL00112584.2)

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The AES memory chip records up to 21 days of usage habits and automatically heats water before users take a bath. During off peak periods, the heater goes into energy saving mode.

### 6 MAX Heating (Patent ZL200820185859.4)

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6 MAX heating technology produces thrice as much hot water as a conventional electric heater without consuming more energy.

## Instant Heating (Patent ZL200820185859.4)

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The latest instant technology allows users to get hot water from an unheated tank immediately, without consuming more energy.

## Touch Control Panel

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Access all modes of the water heater or reduce your water heating bills by turning down your heater thermostat from the control panel.

## Hot Water Display

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Temperature sensors in the heater provide a visual display of hot water from the control panel.

## Programmable Timer

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The timer powers up the heater for you so you don't have to turn it on manually. It also switches your heater to energy saving mode when not in use.

## Intelligent sleep mode

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The heater goes into power-saving mode after 3 minutes of inactivity.

## Wireless remote

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Program your heater with the wireless remote. The keys are identical to those on the touch screen panel.

## Blue Diamond Dual Elements (Patent ZL200510037670.1)

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① This water heater has two patented Blue Diamond heating elements which increase heating efficiency by up to 50%.

## Blue Diamond Tank (Patent US6303183)

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Patented A. O. Smith Blue Diamond Tanks provide superior durability. The longest lasting Blue Diamond tank in the world was used for 52 years.

## High Efficiency Insulation

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A polyurethane foam insulating layer without freon is used, which provides a good insulation and reduces heat loss effectively.

## 3 Year Full Warranty

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**3** years

With the highest manufacturing standards and strict quality control, we assure users durability with a 3 year full warranty on the whole unit, the longest warranty in Singapore.



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## Installation

### CAUTION:

- Please wait for 30 minutes before using the heater for the first time.
- The heater should only be connected to a power source after a full installation which ensures secure mounting, piping, wiring and filling of the tank with water.
- To prevent injuries from lifting heavy equipment, the water heater should be installed by at least 2 persons.
- The water heater must be installed by a qualified personnel.

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### Location

This water heater should be installed at a location that is close to a power source, floor drain and water supply. As the water heater is in use, water may be discharged from the pressure relief valve, so there must be a floor drain near the heater. When installing the water heater, be sure the water inlet and outlet pipes are at the bottom of the heater. The system must not be installed vertically.

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### Mounting Procedures and Precautions

The surface for installation must be capable of supporting at least four times the weight of the water heater when filled with water. If the water heater is not installed on the bearing wall or is mounted on hollow brick wall, corresponding protective measures must be provided.

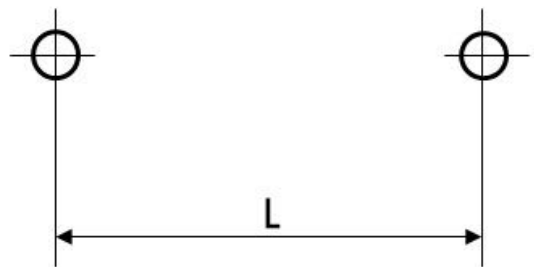
This water heater must be installed with the fixing accessories provided. The heater must be hung on accessories which are fixed firmly or else the heater may dislodge and serious injuries will result.

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### Mounting Guidelines

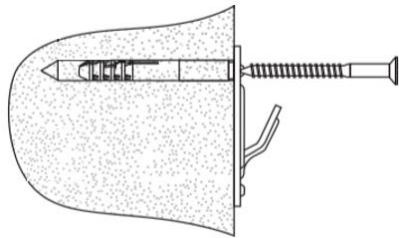
Before drilling, ensure the right side of the heater is at least 300mm away from the wall so as to allow for easy maintenance access. If the heater is installed above a false ceiling, ensure a 500 x 500mm service access directly below.

Use an electric drill with a  $\varnothing 12$ mm drill bit to drill two holes 100mm in depth. The holes must be level. The space between the two holes should be 380mm.

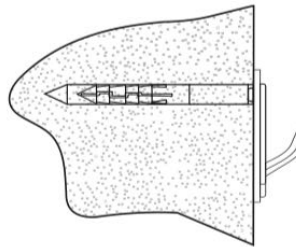


Fit a plastic drill bit into the drilled holes and slowly twist the screws into the holes with an allen key. Do not over tighten as it may cause the drill bits to break.

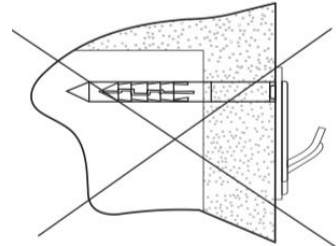
Place the screws through the square, top portion of the mounting plates and mount the heater on the plates. Give the heater a firm downward tug to ensure the screws are lodged firmly against the brackets.



100mm depth



correct installation



incorrect installation

#### CAUTION:

- The mounting accessories provided can only be used for solid walls, as shown in the drawing above. Improper installation may cause the water heater to dislodge.

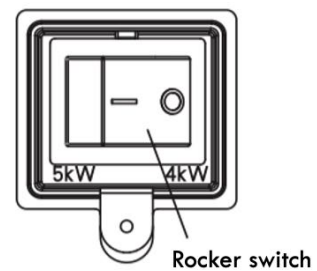
### Electrical Connection

This water heater must be permanently connected to the electrical supply through a double pole switch having a contact separation of at least 3mm in all poles incorporated in the fixed wiring. The insulation of the fixed wiring must be protected by an insulating sleeving with a temperature rating of at least 80°C.

Ensure the water heater is reliably grounded. The earth wire must be longer than the current carrying conductors. The maximum power of this water heater is 5000W, hence a single dedicated power supply circuit is proposed. On 5kW mode, the heater must be connected to a circuit of rated current no less than 32A. If the wire diameter is 2.5mm<sup>2</sup>, the system must operate in 4kW mode.

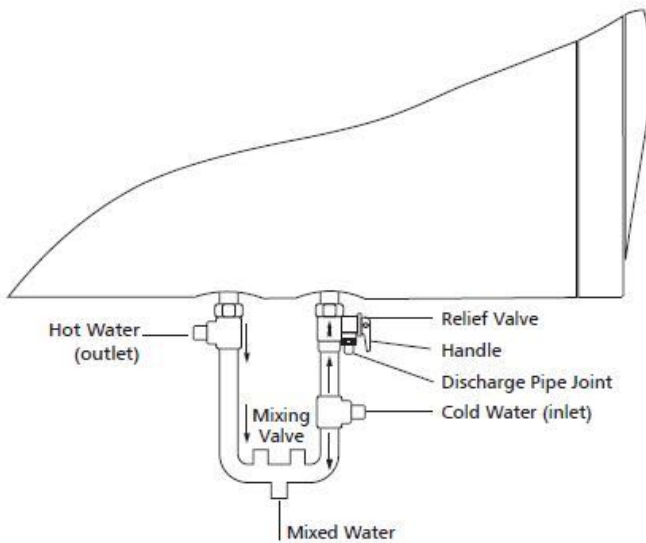
### Switching wattage modes

1. Use screwdriver to remove power adjustment switch cover
2. Turn rocker switch to '0' position as shown in the figure
3. Close cover and tighten screws to secure



## Water Inlet and Outlet Connection

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## Plumbing Connection

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The heater comes with a relief valve. Connect the valve to the inlet (marked in blue). The arrow on the valve should be in line with the direction of the water flow. The storage heater must be permanently connected to the water mains and the use of a hose set is prohibited. The hot water pipe is connected to the water outlet (marked in red).

The safety valve must be connected to a PVC discharge tube, mounted downwards to a nearby floor drainage in a frostless environment. The pipes should not be blocked. The relief valve is to be operated regularly to remove lime deposits and to verify that it is not blocked. If the water pressure of the inlet pipe approaches or exceeds the relief limit (0.80 MPa) of the safety valve, the valve will relieve pressure automatically. Refer to the following diagram for the pipe connection.

We recommend the use of a double check valve assembly for the installation of the water heaters. The double check valve assembly is a safe and effective measure for preventing backflow and back-siphonage of water from the water heaters through the inlet pipe.

### CAUTION:

- Apply proper sealant to the pipe joints to prevent leakage. Do not over-tighten the safety valve to avoid damage.

## Filling the Tank

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After all the pipes are connected, open the discharge valve of the water heater and then the feed valve. Fill the water heater with water and exhaust the air till a uniform water stream flows out of the hot water outlet. This indicates that the water heater has been filled up. Close the hot water discharge valve and check all connections for any leakage. If leakage occurs, empty the water tank, repair the leaked connection and then refill the heater with water. Do not close the feeding valve during the filling of water.

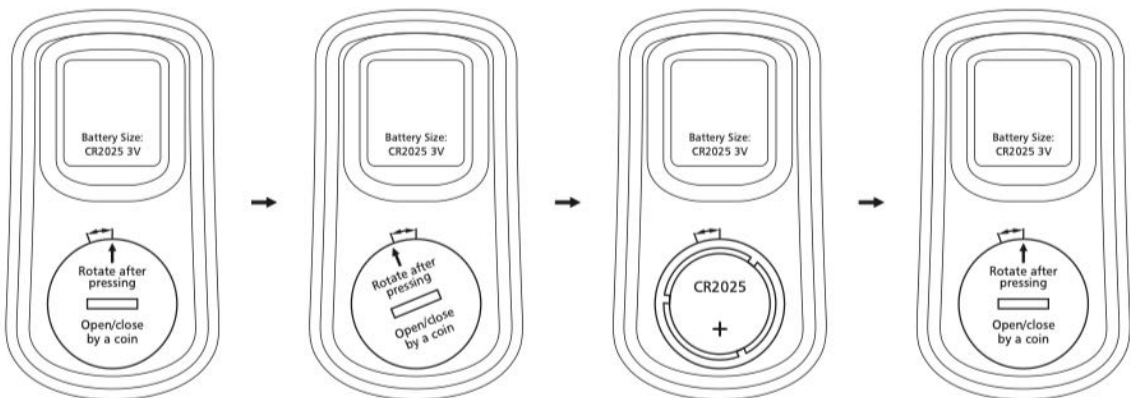
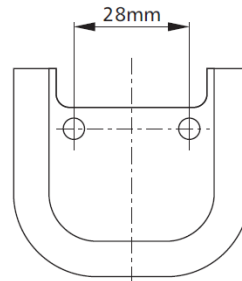
## Remote Control Installation

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For convenience, the remote control may be installed on a wall near the water heater. Keep the remote control dry.

### Remote Control Batteries

- Insert coin into slot and twist counterclockwise to open the battery cover
- Use a CR2025 battery. The '+' side should face upwards
- Insert coin into slot and twist clockwise to close the battery cover



## Directions For Use

### CAUTION:

- Before using the water heater, ensure it is filled with water and that the power plug has been connected properly.

The default settings are:

- Power: 4000W
- Time: 12:00
- Thermostat: 70°C

If the water heater encounters a power outage, all settings will revert to default settings.

### 1. Initial power up

During the initial power up, all screen indicators on the control panel will light up momentarily (2 seconds). After this, the water heater will enter standby mode.

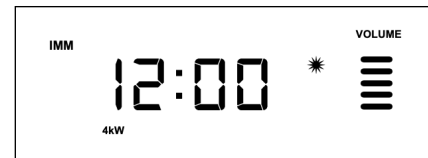
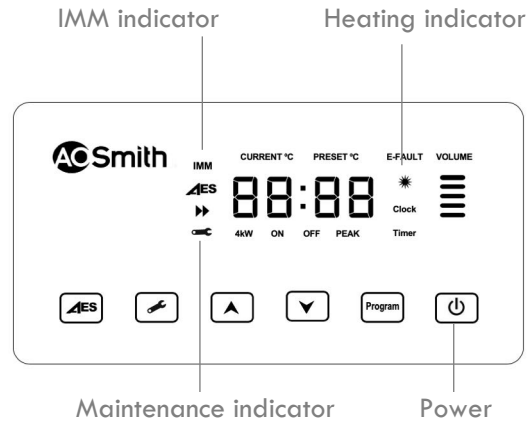
### 2. Power on/off

Press the power button to turn the water heater on. The system is currently operating on default settings. The actual temperature and set temperatures are displayed and if the actual water temperature in the tank is lower than the preset temperature, heating begins and the heating indicator lights up.

### 3. Setting the temperature

The water heater can simultaneously display both the actual temperature and set temperature. The actual temperature measures the average internal tank water temperature and the preset temperature is the user defined thermostat setting.

Press the “▲” the “▼” buttons to adjust the thermostat. The set temperature will blink while being adjusted. Holding down the adjustment buttons will cause the temperature to increase or decrease continually. The thermostat has a range of 35°C to 75°C.



After initial power up

#### 4. Setting the clock

In 'clock' mode, hold down the 'Program' button for 3 seconds till the time on the screen flashes. Press the "▲" the "▼" buttons to set the hour, then press the 'Program' button again to confirm the hour. Similarly, use the "▲" and "▼" buttons to set the minute. Holding down the adjustment buttons will cause the digits to increase or decrease continually. Press the 'Program' button to confirm the minute. At any point after 16 seconds of inactivity, the system will exit setting mode and the time at that point will be saved.



Clock mode, where 'clock' indicator is lit

#### 5. Setting the first timer

Users can set a timer to specify when water is to be heated and when the heater will go into energy saving mode. If users choose not to activate the timer function, toggle the 'Program' button until the 'Timer' indicator light goes on.

Before setting the timer, ensure the clock is adjusted to the right time. Note that the timer start time is set first, followed by the end time. Toggle the 'Program' button till the 'Timer' indicator is lit, then press and hold down the 'Program' button for 3 seconds till the time on the screen flashes. You are now adjusting the timer start time. Use the "▲" and "▼" buttons to make 30min increments or decrements. Press 'Program' to finalize the start time and to begin setting the end time. When done, press 'Program' to confirm.

If the timer is set from 20:30 – 22:00, the setting panels should look like these:



Timer start time



Timer end time

#### 6. Setting the second timer

The second timer is an added feature that can only be set between the hours of 21:00 – 08:00. The directions for setting the second timer are the same as setting the first timer. The difference is, to enter the setting mode, press (but do not hold) the 'Program' button while the 'Timer' indicator light is off.

Note: None of the timers will work if AES is activated.

## 7. Automatic Energy Saver (AES)

Press the 'AES' button to activate or deactivate AES. The AES indicator will be lit if active.

AES is a memory chip that records up to 21 days of your family's usage habits. It is an automatic timer which preheats water according to your family's needs and sends the heater into energy saving mode at required intervals, saving energy by minimizing thermal loss.

Note: None of the timers will work if AES is activated.

## 8. MAX and instant hot water

The MAX function is an A. O. Smith technology that allows users to get consistent hot water for long periods of time. This function will automatically activate if there is an unexpected surge in demand for hot water. The ►► indicator will light up when MAX is activated.

In climates where incoming water temperature is 30°C, the water heater can produce hot water at a rate of 8 lit/min instantaneously.

## 9. Hot water display

The heater can display the amount of hot water available. The five light blocks on the left of the panel are an indication of the quantity of hot water in the tank.

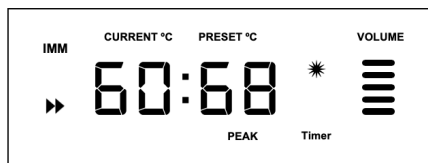
Red – hot

Orange – warm

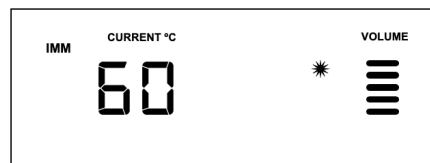
Green - cool

## 10. Intelligent sleep

The water heater's display panel goes into sleep mode after 3 minutes of inactivity. Press any key to 'wake' the heater to view the full display.




Panel in 'wake' mode



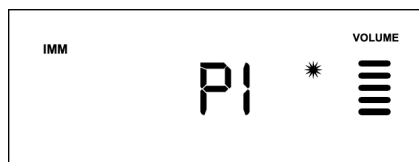
Panel in 'sleep' mode

## 11. Intelligent Maintenance Monitor (IMM)


IMM is activated the minute the system is connected to a power source and the 'IMM' indicator lights up on the panel. Press the  key to commence a water ion quality test. There are two results:

P1: corrosive ion count is low

P2: corrosive ion count has increased to 90%



Water ion quality test result

When corrosive ion count reaches 98%, the  indicator will flash on the panel.

Users will be prompted to contact a qualified AOS service personnel to change their depleted anode rod and perform a tank flush. Tank lifespan will be prolonged when the corrosive ions are neutralized.

## 12. System reset

Press and hold the 'AES' and 'Program' buttons for 8 seconds to revert to factory state. When the system is reset, all screen indicators will glow for 2 seconds and the system will reboot.

## 13. Electrical safety

In the event of any circuitry issues, the system will cut off power and prompt for a reset. The display panel will go blank and the 'E-fault' indicator will appear. If this happens, contact your local authorized dealer to perform a thorough check.



Circuitry issues, E-fault indicator

## 14. Pressure relief valve inspection

The pressure relief valve is a safety device installed to protect the tank against excessive pressure build up. The valve relieves pressure when it exceeds 0.8MPa in the form of intermittent water droplets.

Users should check the valve every 6 months by lifting the handle on the valve to discharge any calcium carbonate deposits. If water does not discharge from your valve, please contact your local authorized dealer.

## 15. Remote controller

The functions on the remote controller correspond with the buttons on the touch screen panel of the system. The recommended distance for usage of the remote is 4 meters. Install the batteries before use and change the batteries every 18 months.



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## Maintenance Instructions

**DECLARATION:** Only an A. O. Smith authorized service personnel may maintain and repair this water heater. Improper methods could result in serious injury or property damage.

**WARNING - Electric shock:** Before repairing the water heater, be sure to disconnect the water heater from the power source.

**CAUTION:** Prior to repair works, please refer to the troubleshooting chart.

### Maintenance

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If the water heater needs to be serviced, close the water inlet valve, then open the drain valve. Rotate the handle of the relief valve, release the nut connected to the water outlet joint of the inner tank and drain the water from the discharge pipe.


It is recommended that the system undergo a safety maintenance every 3 years and the tank be flushed every 6 years to remove sediments which may have built up during operation. The tank flushing procedure is as follows:

1. Disconnect the power.
2. Screw off the relief valve and remove the internal water inlet pipe of the water heater.
3. Connect the water outlet pipe connection of the water heater to the tap water pipeline and fill water from this end. The water inlet pipe connection is connected to floor drain by pipes. Discharge water from this end.
4. Open the water inlet valve to get the maximum tap water flow and flush the tank till the drained water from the tank becomes clean.
5. Connect the water inlet and outlet pipes again and put the water heater to use after a leakage test.

**CAUTION:**

- The drained water might be very hot and may scald.

## Troubleshooting

Problem	Possible causes	Corrective action
Display is off No hot water	<ol style="list-style-type: none"> <li>1. No power to heater</li> <li>2. No power at electric socket</li> <li>3. Failure in control circuit or internal wiring</li> </ol>	<ol style="list-style-type: none"> <li>1. Switch on power to heater</li> <li>2. Check power socket</li> <li>3. Contact local authorized dealer</li> </ol>
Display is off High water temperature	<ol style="list-style-type: none"> <li>1. High temperature limit switch tripped</li> <li>2. Electrical circuit failure</li> </ol>	Switch off power supply and contact local authorized dealer
Display on, no hot water	Heating element or internal circuit failure	Contact local authorized dealer
Leaking from tank	Leaking tank or components	Switch off power supply and contact local authorized dealer
Dripping from pipe joints	Unsealed joints	Reconnect pipes of the water heater and be sure to use sealant
Display “E0”	Blue wire of two-core terminal open circuit or short circuit	Contact local authorized dealer
Display “E1”	Red wire of two-core terminal open circuit or short circuit	Contact local authorized dealer
Display “E2”	Black wire of two-core terminal open circuit or short circuit	Contact local authorized dealer
Display “E3”	White wire of two-core terminal open circuit or short circuit	Contact local authorized dealer
Display “EH”	High temperature	Contact local authorized dealer
Display “EL”	Low voltage protection	Resume use when voltage is normal
Display “EA”	Relay circuit issue	Switch off power supply and contact local authorized dealer
Display ‘E-fault’	External grounding fault	Switch off power supply and contact local authorized dealer
Display ‘  ’	Anode needs to be replaced	Contact local authorized dealer

