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MODENA

User Manual Book

(Electric Storage Water Heater)

Casella Series
ES 10D, ES 15D, ES 30D
ES 10DR, ES 15DR, ES 30DR

Snella Series
ES 20SR

MODENA

Thank you for your trust in choosing MODENA products for your household needs. With your satisfaction as our priority, we constantly aim to deliver stylishly designed products equipped with state-of-the-art technology to assist you in your daily activities.

This is your guidebook containing everything you need to know about our product. Please reach us if you need further assistance or other information via our Customer Care or our official website www.MODENA.com.

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CONTENTS **PAGE.**

Part 1: Important Safety Information

General Remark

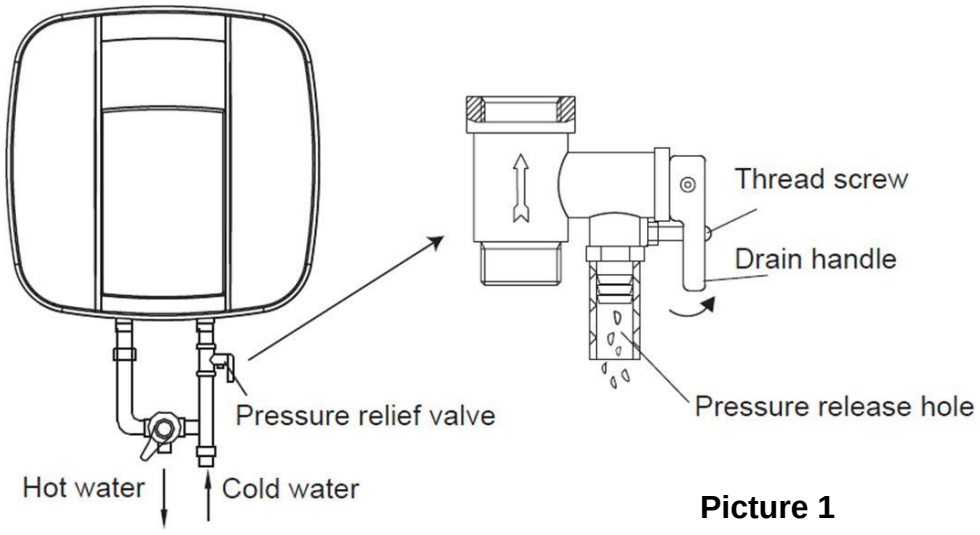
The installation and maintenance has to be done by qualified professionals or authorized technicians of MODENA. MODENA is not responsible for any damage or malfunction caused by wrong installation or the failure of following instructions that are included in this manual book. For more information regarding to installation and maintenance guidelines in details, please refer to below chapters.

Cautions

Before installing this electric storage water heater, check and ensure that the (power) electrical socket is properly functional and reliably grounded. Otherwise, the electrical storage water heater cannot be installed and used. Do not use an extension cord if there is a problem with the power socket. Incorrect installation and use of this electrical water heater may result in serious injuries and loss of property.

Special Cautions

- Warning: If the supply cord is damaged, it must be replaced by MODENA technicians, MODENA service agent or similarly qualified persons in order to avoid a hazard.
- The supply socket must be *grounded* (earthed) reliably. The rated current of the power socket shall not be lower than 16A. The socket and plug shall be kept dry to prevent electrical leakage.
- The installation height of the supply socket shall not be lower than 1.8m.
- The wall in which the electrical storage water heater is installed shall be able to bear the twice bigger load than the weight of this water heater filled fully with water without distortion and cracks. Otherwise, other strengthening measures shall be adopted.
- The pressure relief valve attached with the water heater must be installed at the cold water inlet of this heater (Picture 1), and make sure it is not exposed in the foggy. The water may be flowed out from the pressure relief valve, so the outflow pipe must open wide towards the air; The pressure relief valve need to be checked and cleaned regularly, so as to make sure it will not be blocked.

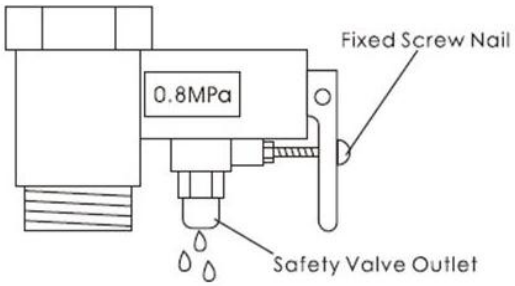


Picture 1

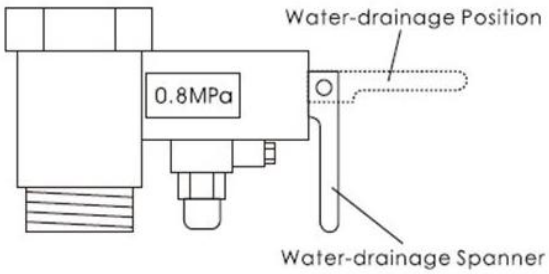
- When using the heater for the first time (or the first use after maintenance), the heater cannot be switched on until it has been filled fully with water. When filling the water, at least one of the outlet valves at the outlet of the heater must be opened to exhaust the air. This valve can be closed after the heater has been filled fully with water.
- This water heater is not intended to be used by persons with special needs for their physical, sensory or mental capabilities, or with lack of experience and knowledge (including children), unless they have been given the supervision or instructions concerning the use of the appliance

by a person who responsible for their safety. Children should be supervised to ensure that they are not playing with this water heater.

- During the heating process, there may be drops of water dripping from the pressure relief hole. This is a normal case. If there is an over-leaking, please contact MODENA customer call center for repair. This pressure relief hole shall, under no circumstances, be blocked; otherwise, the heater may be damaged, even resulting on accidents.
- The drainage pipe connected to the pressure release hole must be kept sloping downwards.
- Since the water temperature inside the heater can reach up to 75^{o}C, the hot water must not be directly flowed to human bodies at the initial use. Adjust the water temperature to a suitable temperature to avoid scalding.
- If the flexible power supply cord is damaged, the special supply cord provided by MODENA must be selected, and replaced by MODENA maintenance personnel (technician).
- If any parts and components of this electrical storage water heater are damaged please contact MODENA Call Center for repair.
- Caution: In order to avoid a hazard due to inadvertent resetting of the thermal cut-out, this appliance must not be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly switched on and off by the utility.
- For the correct operation of the appliance, it is necessary to pay attention that the maximum inlet water pressure is 0.8MPa (0.8Bar), and the minimum inlet water pressure is 0.015MPa (0.15Bar).
- When the water pressure is over 0.8MPa, this will be automatically activated the safety valve, the water may drip from the discharge pipe of the pressure-relief device (Picture 2). Therefore, this pipe must be left open towards the air (atmosphere). The pressure-relief device should be operated/activated regularly to remove limestone deposits and to ensure that the pipe is free from blockage;
- Draining away the water inside the inner container can be done from the pressure relief valve. Twist the thread screw of the pressure relief valve off, and lift the drain handle upwards (Picture 3). A discharge pipe connected to the pressure-relief device has to be installed in a continuously downward direction and in a frost-free environment.



Picture 2



Picture 3

Part 2: Product Introduction

Nomenclature (The Terms to Classified Product Types and Names)

ES XXD, ES XXDR, ES XXSR

ES = the product code of the electric storage water heater;
XX = the capacity of the water heater (L);
D / DR /SR = the series of the water heater;

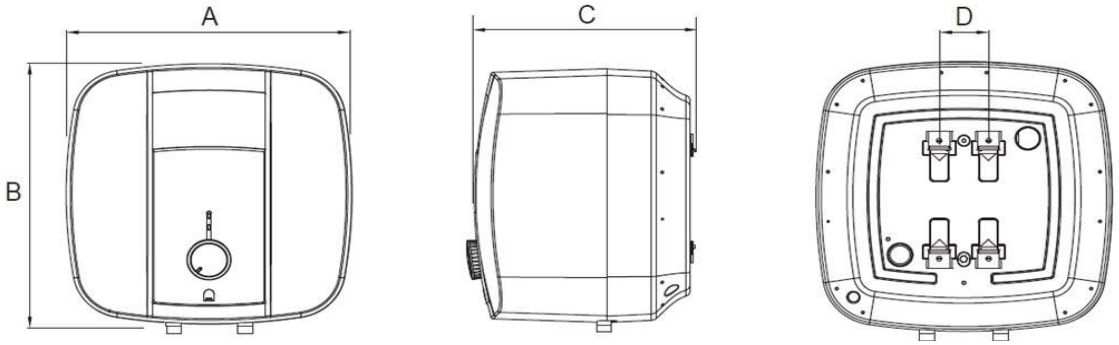
Technical Performance Parameters

Model	Volume (L)	Rated Power (W)	Rated Voltage (ACV)	Rated Pressure (Mpa)	Max of Water Temperature (°C)	Protection Class	Waterproof Grade
ES 10D	10	250	220	0.75	75	1	IPX4
ES 15D	15	350	220	0.75	75	1	IPX4
ES30D	30	800	220	0.75	75	1	IPX4
ES 10DR	10	250	220	0.75	75	1	IPX4
ES 15DR	15	250+350	220	0.75	75	1	IPX4
ES 30DR	30	400+800	220	0.75	75	1	IPX4
ES 20SR	20	350	220	0.75	75	1	IPX4

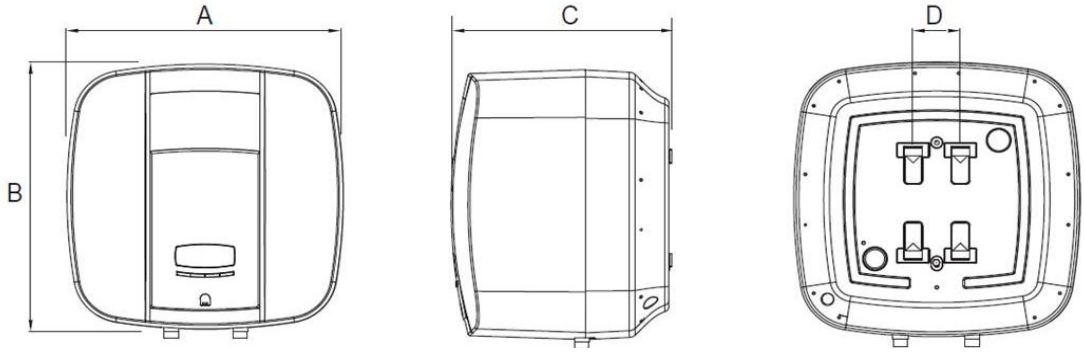
Picture 4

Brief Introduction of Product Structure

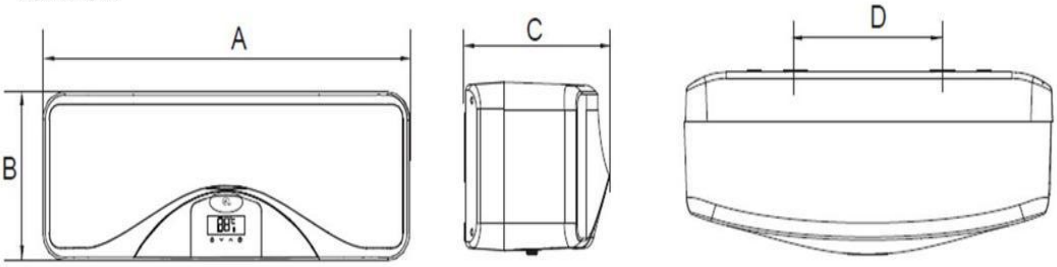
ES XXD



ES XXDR



ES XXSR

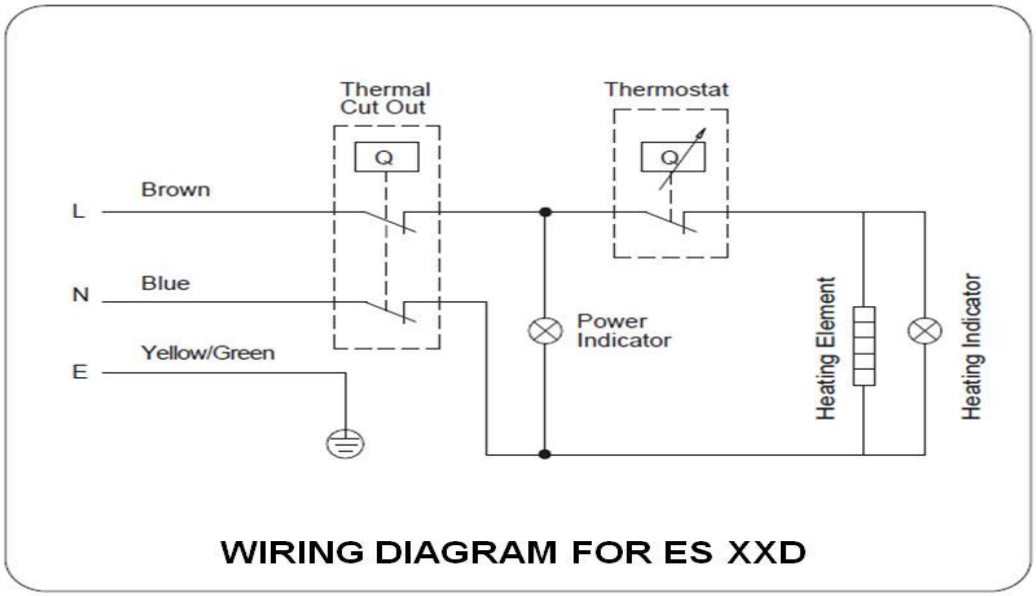


	ES 10D	ES 15D	ES 30D	ES 10DR	ES 15DR	ES 30DR	ES 20SR
A	355	400	455	355	400	455	750
B	355	400	455	355	400	455	271
C	295	312	388	295	312	388	293
D	66	66	66	66	66	66	300

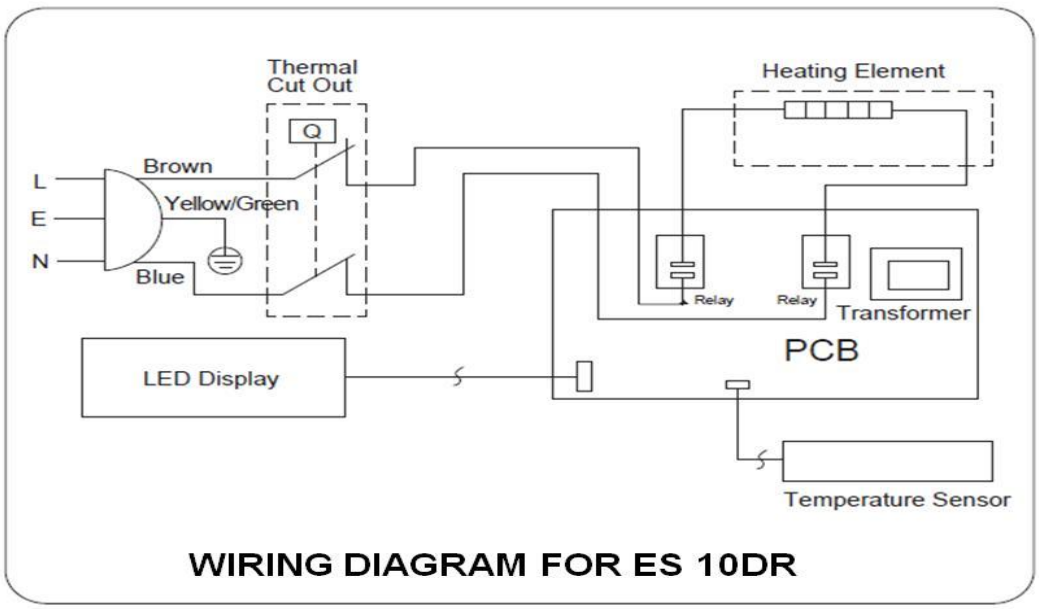
Picture 5

(Note: All dimensions are in mm)

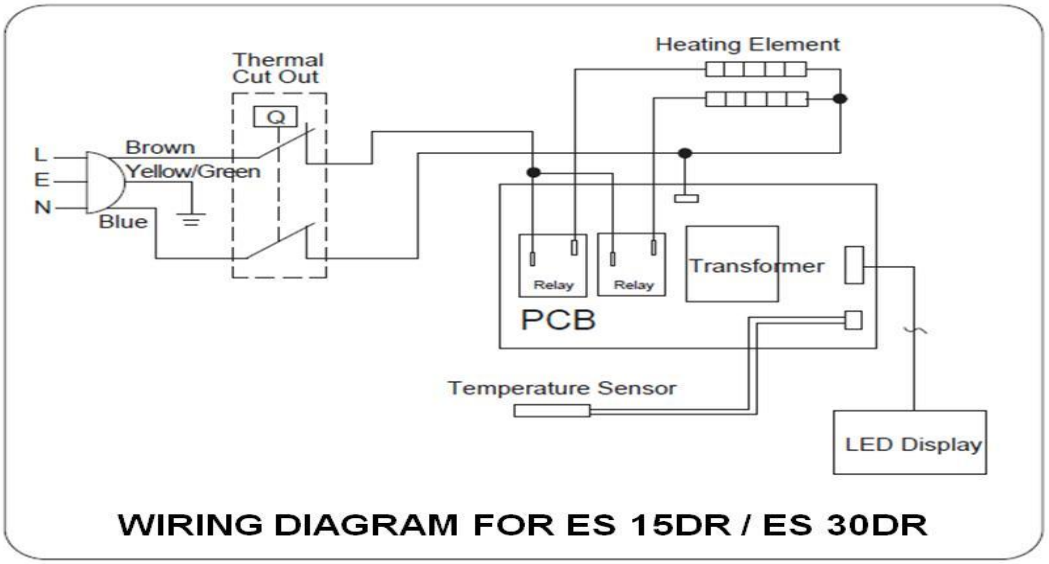
Internal Wiring Diagram

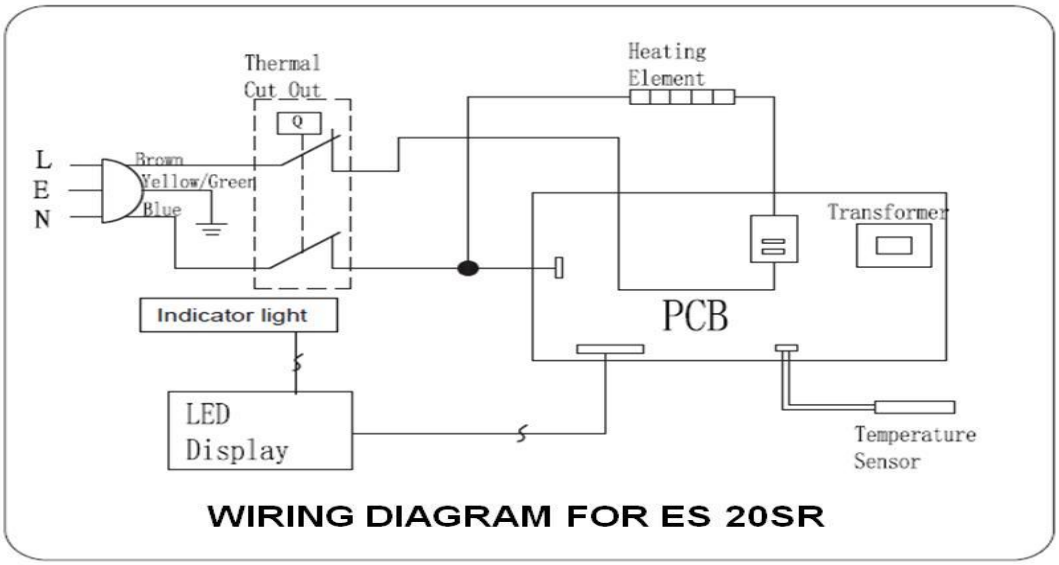


WIRING DIAGRAM FOR ES XXD



WIRING DIAGRAM FOR ES 10DR



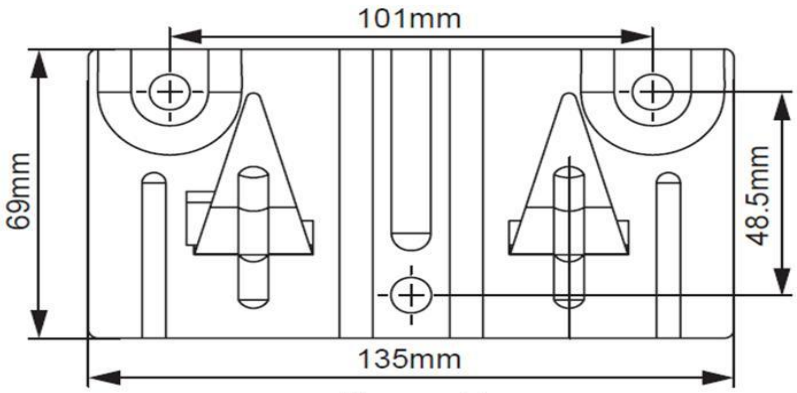


Picture 6

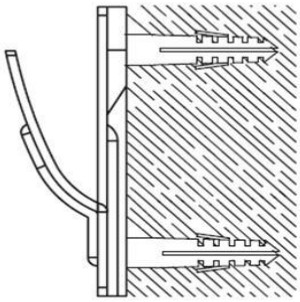
Part 3: Installation

Installation Instruction

- This electric storage water heater shall be installed on a solid wall. If the strength of the wall cannot bear the load equal to two times of the total weight of the heater filled fully with water, it is then necessary to install a special support. In case of the hollow bricks wall, ensure to fill it with concrete cement completely, and use the anchor fastener bolt in case of the hebel wall.
- After selecting a proper location, install the mounting bracket to a solid wall.
- The methods of installation **ES XXD & ES XXDR:** On the wall that is strong enough, drill the hole with depth of approximately 45mm. Use the anchor fastener bolts provided along with the product for securing the bracket (Picture 7a) firmly in the wall.
- Align the slots on the back of the water heater with the projections on the bracket and install the water heater on the bracket until it is locked.

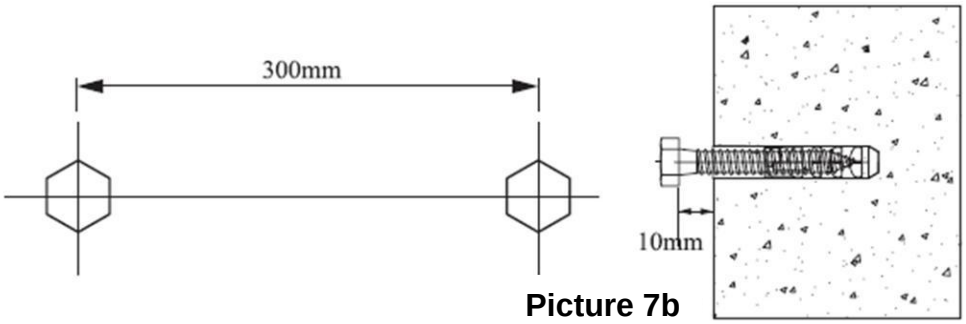


Picture 7a



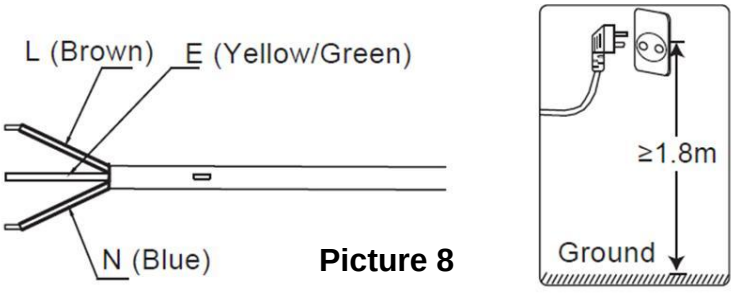
Picture 7

- Methods of installation **ES 20SR:** After selecting a proper location, determine the positions of the two installed holes that is used for the expansion bolts with the hook (300mm), Make two holes on the wall with the corresponding depth by using a chopping bit with the size matching the expansion bolts attached with the machine, insert the Fischer screw (M8*80), tighten the nuts to fix firmly, and then hang the electrical storage water heater on it (see Picture 7b).



Picture 7b

- Connect to power plug to the Installed supply socket on the wall. The power supply for this appliance is 220V. The supply socket is recommended to be placed on the right above the heater. The height of the supply socket from the ground should not be less than 1.8m (see Picture 8). If there is a problem on the power cord, it should be replaced by MODENA agencies or qualified person who is able to do the repairment so as to ensure the safety.

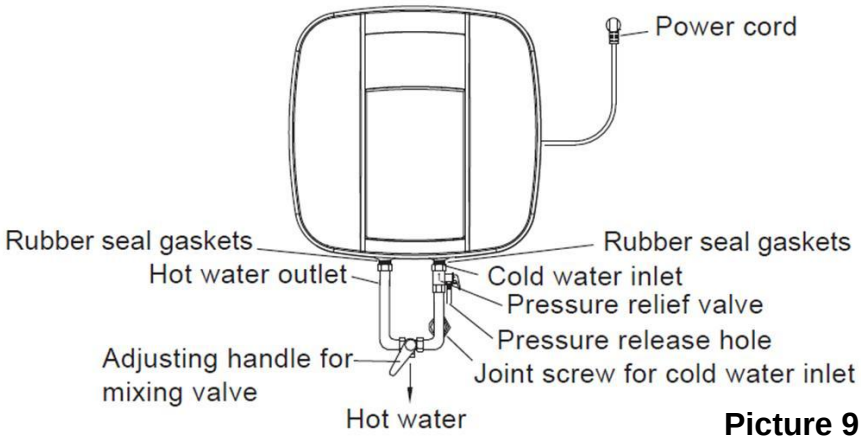


Picture 8

- If the size of the bathroom is too small, the water heater can be installed at another place. However, the water heater shall be installed closely to the stand-point of its usage to optimize the heat of the water.

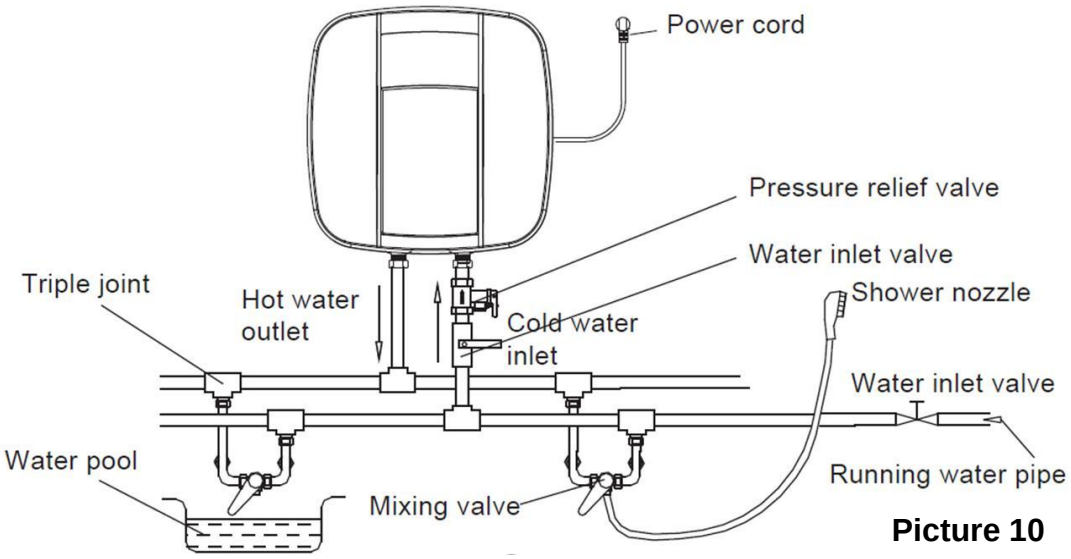
Plumbing Connection

- The dimension of each used pipe is G1/2 (”BSP ½”) ; The maximum and minimum pressures of inlet should use Pa (Bar) as the unit.
- Connect the pressure relief valve with the water heater on the inlet of the water heater.
- In order to avoid leakage when connecting the plumbing, the rubber seal gaskets provided with the water heater must be added at the end of the threads to ensure the connection is leak-proof (see Picture 9).



Picture 9

- If the users want to utilize a multi-ways supply system, refer to the method shown in Picture 10 for the connection of the plumbing.



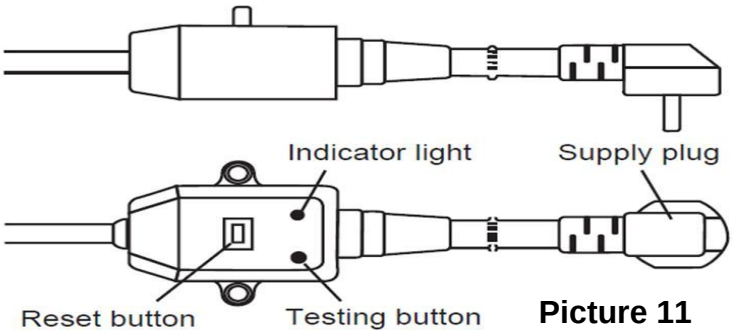
Picture 10

Note:
Please be sure to use the accessories provided by MODENA to install this electric storage water heater. This electric storage water heater cannot be hung on the bracket until it has been confirmed to be firm and reliable. Otherwise, this water heater may drop off from the wall, resulting to its damage, even serious accidents of injury to the user. When determining the locations for the holes of the bolt, it shall be ensured that there is a clearance not less than 0.2m on the right side of the electric heater, for the convenient maintenance of this water heater, if necessary.

Part 4: How to Use

Operating Procedure

- Check all the piping connection to avoid the leakage case before turning on this electric storage water heater.
- Open one of the outlet valves of the water heater, then, open the inlet valve .to get the water heater filled with water.
- When the water flows out of the outlet pipe it implies that the heater has been filled fully with water, and the outlet valve can be closed.
- Make sure that the tank is fully filled up with water; otherwise it will cause the heating elements to be damaged. Note: During normal operation, the inlet valve shall be always kept open.
- Insert the power plug into the power socket and check the reliability of the leakage protection device (ELCB). Press the testing button, the indicator light on the power plug should be off, and the reset button should bounce up; then push down the reset button, the indicator light will turns on to verify that the leakage protection works well (Picture 11). If the reset button cannot be pressed during the process of using, the leakage protection device (ELCB) might be error or fails to work; If the reset button is pressed down and bounce up again, then it shows the power circuit leaks or the power supply is disconnected.

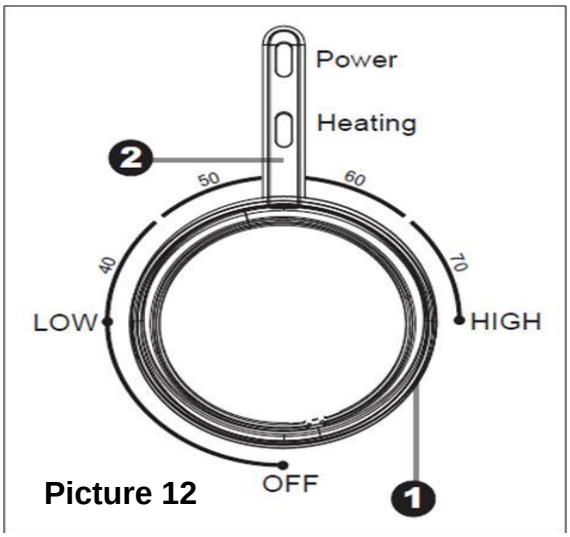


Picture 11

- If the indicator lights up, the thermostat will automatically control the temperature. When the water temperature inside the heater has reached the set the temperature, it will switch off this water heater automatically. When the water temperature falls below the set point, the heater will be turned on automatically to restore the heating.

Operating the Water Heater

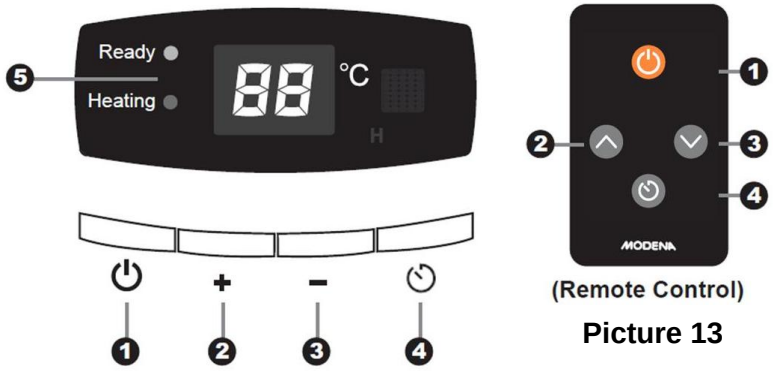
A. <u>ES 10D, ES 15D, & ES 30D</u>



Picture 12

- Rotate the knob according to the marking on the knob to increase or decrease the setting temperature.
- The Red “Power” LED and Green “Heating” LED remain ON while there is power to the system.
- The Green LED will turns off when the water temperature reaches the user setting, at the end of the heating phase.

B. ES 10DR



Picture 13

Specific Functions of Button and Display Screen

(1) “ON/OFF” Button

This key acts as an ON/OFF operating key. When this appliance (the water heater) is connected to the power, the display screen is fully bright for 2s. If the power to the memory function is disconnected (there is power outage), this appliance will return to the working condition before the power outage. Otherwise, system will be in the “power-off” state.
When in the power-on state, press “ON/OFF” button to shut down the system.
When in the power-off state, press “ON/OFF” button to turn on the system. In this case, the memory data at the time of power outage will be restored and the system will enter into the corresponding working condition.
Notes:

a. The “ON/OFF” button is the highest priority button among all buttons in system. That is, if you press it under all failure-free working conditions, the system will enter into the power-off state; no content is displayed in the power-off state.
b. The version number of the software will be displayed after the full-screen display for 2s. (the double “8” digits shown on the digital screen will turns into 01).

(2) “+” Button (Button on the Remote Controller)

a. This button is used cooperatively with the “BOOK” button to adjust the booked time. The specific operations are shown in the booking adjustment function.
b. Adjust setting temperature: temperature is adjusted in the range of (Tmin)-(Tmin+1)-(Tmin+1)……75-(Tmin). The setting temperature will increase by 1^{o}C after “+” button is clicked for once. Long pressing “+” button will render the setting temperature to increase at the rate of 5^{o}C/s. If no button is pressed within 5s, the system will store the setting temperature parameters and exit the temperature setting status.

(3) “-” Button (Button on the Remote Controller)

a. This button is used cooperatively with the “BOOK” button to adjust the booked time. The specific operations are shown in the booking adjustment function.
b. Adjust setting temperature: temperature is adjusted in the range of 75-74-73-…-(Tmin+1)-(Tmin)-35. The setting temperature will decrease by 1 ^{o}C after the “-” button is clicked for once.

Long pressing “-” button will render the setting temperature to decrease at the rate of 5 ^{o}C /s. If no button is pressed within 5s, the system will store the setting temperature parameters and exit the temperature setting status.

(4) “BOOK” (Heating Time Programming) Button

When the appliance is in the power-on state: press this button to enter into the booked time setting mode for the heating program. At this moment, the booked time can be set through pressing “+”or “-” button. The specific operations are shown in the booking function introduction. This key will be invalid in the power-off state.

(5) LED Light Indicator (ES 10DR);

The Red “Heating” LED will remain ON during the heating process. The Green “Ready” LED will turn on when the water temperature reaches the user setting at the end of the heating phase; meanwhile the Red LED turns off.

Detailed Description of Functions

- **Heating/Heat Preservation Function**

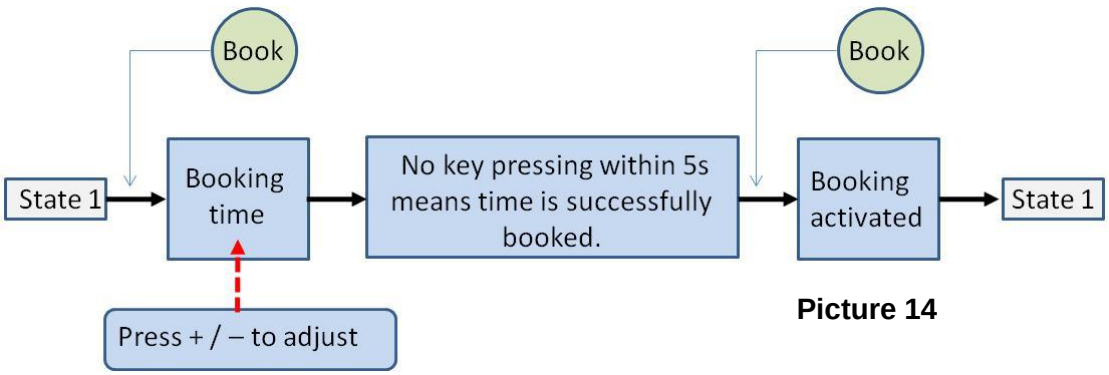
The system could identify the heating/heat preservation state and will light up the corresponding indicator if there is a difference between the actual temperature and the set temperature. When the water heater is in the heating state, the “HEATING” indicator will lights up (bright green), while the “READY” indicator lights up (bright red) when in the heat preservation state.
The water heater could be directly heated to the set temperature after it is just started or re-adjust the temperature. When the set temperature is reached, the water heater will stop heating and enter into the heat preservation state. If the difference between the actual temperature and the set temperature is greater than the previous temperature difference, the water will be heated again.

- **Booking Bath Function**

When the appliance is in the power-on state, press the “BOOK” button ( ). Then, the booking indicator will light up. The system will enter into booked time adjustment state and the digital display on the tank(tube) will flickers. At this moment, the user could adjust the booked time for the heating process through pressing “+” button or “-”button

- **Delay Booking Function**

This appliance adopts the delay booking function. By this function, the hot water is available after “XX” hours (user’s set time). When in the booking (heating time programming) state, the user cannot only adjust the booked time circularly in the range of “01-02…-24-01” by clicking “+” button, but also adjust the booking hours circularly in the range of “24-23…-01-24” by clicking “-” button.
If the “ADJUST” button is long pressed (or “+” or“-”buttons on the remote controller), the time can be adjusted at a rate of 5 times per second. The operation chart of the booking function is shown in Picture 14.



Picture 14

Notes:

1. The delay booking cannot set the minutes of the booked time;
2. In the setting process of booked time, the set time shall flicker. In the flickering period:
   a. Do not press any button within 5s and then confirms the booking state;
   b. Press the "BOOK" button, and then confirm the booking mode immediately;
   When in the booking state, the temperature setting can be adjusted. However, the heating function and the return difference of heating function can be identified only in booking heating process (namely 1 hour). Besides, the "READY" indicator only lights up in the period when the actual temperature decreases by 5^{o}C after booking heating is finished.
3. The set temperature could be adjusted under the booking state;
4. The booking for one time is valid repeatedly;
5. The booking indicator is always on during the entire booking process. When in the power-on state, pressing "BOOK" button will cancel booking function;
6. Upon the completion of the booking setting, the system will pre-heat 1 hour ahead. For instance, if the user books the water usage for 6 hours later, the system will start heating immediately after 5 hours from the current time. The booking will also be conducted at the same time of tomorrow (24 hours later), and the like. This process is valid for long time.
7. The disconnected power does not affect the booking, and this product has the time memory function;
   Remarks: For ES 10DR, the power supply of the clock module has automatic charging function. One time charging can maintain the power during the power outage time for about 5 days. The accuracy of the booking time cannot be guaranteed, if exceeding that period.

- **Power Outage Memory Function**

  The system possesses power outage memory function and could remember the working condition, the set temperature and the relevant information before outage. The system could return to the working condition before outage automatically after charged with electricity again.

- **Anti-freezing Protection Function**

  When in the non-heating state, if the water temperature in the water heater is less than or equal to 6^{o}C, connect the appliance to the corresponding heating tube to conduct heating:

  ☑ Heating tube P1 ☐ Heating tube P2

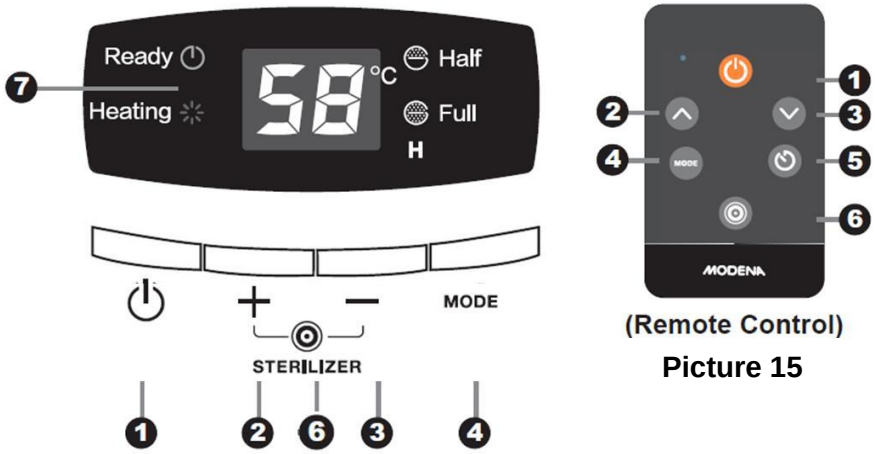
  The water heater could stop heating when the temperature reaches 10^{o}C (the heating mark is not displayed, i.e., hidden heating).

- **Factory Setting Function**
  When in the power off state, if the "BOOK" button and the "POWER" button are pressed for 3s simultaneously, the display screen will be fully bright and system will enter into the factory setting mode (buzzer will ring, if any). Then, the system will enter to the "heating/heat preservation" state after 2s. The factory setting parameters are shown in the following table.

The Basic Parameters of the Factory Setting System

Function	Factory setting parameter
User setting temperature	70℃
Booked time	8 hours
Booking mode	Default cancel
Power	250W(Heating at full speed)

C. ES 15DR & ES 30DR



Picture 15

Specific Functions of Button and Display Screen of ES XXDR Series

(1) "ON/OFF" Button

This key acts as an ON/OFF operating key. When this appliance (the water heater) is connected to the power, the display screen is fully bright for 2s. If the power to the memory function is disconnected (there is power outage), this appliance will return to the working condition before the power outage. Otherwise, system will be in the "power-off" state. When in the power-on state, press "ON/OFF" button to shut down the system. When in the power-off state, press "ON/OFF" button to turn on the system. In this case, the memory data at the time of power outage will be restored and the system will enter into the corresponding working condition.

Notes:

a. The "ON/OFF" button is the highest priority button among all buttons in system. That is, if you press it under all failure-free working conditions, the system will enter into the power-off state; no content is displayed in the power-off state.

b. The version number of the software will be displayed after the full-screen display for 2s. (the double "8" digits shown on the digital screen will turns into 01).

(2) "+" Button (Button on the Remote Controller)

a. This button is used cooperatively with the "BOOK" button to adjust the booked time. The specific operations are shown in the booking adjustment function.

b. Adjust setting temperature: temperature is adjusted in the range of (Tmin)-(Tmin+1)-(Tmin+1)……75-(Tmin). The setting temperature will increase by 1^{o}C after "+" button is clicked for once. Long pressing "+" button will render the setting temperature to increase at the rate of 5 ^{o}C /s. If no button is pressed within 5s, the system will store the setting temperature parameters and exit the temperature setting status.

(3) "-" Button (Button on the Remote Controller)

a. This button is used cooperatively with the "BOOK" button to adjust the booked time. The specific operations are shown in the booking adjustment function.

b. Adjust setting temperature: temperature is adjusted in the range of 75-74-73-…-(Tmin+1)-(Tmin)-35. The setting temperature will decrease by 1^{o}C after the "-" button is clicked for once. Long pressing "-" button will render the setting temperature to decrease at the rate of 5^{o}C /s. If no button is pressed within 5s, the system will store the setting temperature parameters and exit the temperature setting status.

(4) "MODE" Button

When in the power-on state, press this button to enter into half container/whole container switch, i.e., half container – whole container – half container…, and the corresponding indicator will lights up. If this button is long pressed for 3s, this water heater will enter into the booking mode. At this time, it is allowed to set booked time via "+" or "-" key. The specific operations are listed in the booking function introduction. This key will be invalid in the power-off state.

(5) "BOOK" (HEATING TIME PROGRAMMING) Button

When the appliance is in the power-on state: press this button on the remote controller to enter into the booked time setting mode for the heating program. At this moment, the booked time can be set through pressing "+"or "-" button. The specific operations are shown in the booking function introduction. This key will be invalid in the power-off state.

(6) "STERILIZER" Mode

In the power-on state: long press the **"+"** button and the **"-"** button simultaneously for 3s. Then, the digital screen will display sterilizer status (two digits 8 are in a clockwise cycle dynamitic display); long press **"+" "-"** keys simultaneously for 3s again to exit the status. The heating should stop when the temperature reaches 80^{o}C and the antibacterial (sterilizer) mode is maintained for 5 minutes to indicate that cycle is still in dynamitic display. After 5 minutes, the system will exit sterilizer mode and return to the previous status.

Instructions:

a. In the sterilizer situation, if the system exit from the sterilizer mode because of the heating temperature is reached, then it will return to the previous mode. If it exits the sterilizer mode because long pressing of "MODE" key, then the water heater will enter into the booking status.
b. In the sterilizer situation, the temperature is non-adjustable and double "8" figures flicker for 5s simultaneously when the user presses "+" or "-" button, without quitting of sterilizer process.
c. It is impossible that the sterilizer mode and the booking mode exit at the same time. Specifically, the booking can be cancelled by long pressing "+" or "-"button, and the system enters into the sterilizer status accordingly; the system can also exit the sterilizer status through long pressing the "MODE" button.
d. If the temperature has reached 80^{o}C (exit the sterilizer mode), long pressing "+" and "-"buttons simultaneously for 3s. Then the double "8" figures will flickers for 5s and the system will return to the previous state after 5s.
e. The memory is for the power outage in the sterilizer mode.
f. The sterilizer power is set as the whole container of power heating.

Detailed Description of Functions

- **Heating/Heat Preservation Function**

The system could identify the heating/heat preservation state and will light up the corresponding indicator if there is a difference between the actual temperature and the set temperature. When the water heater is in the heating state, the "HEATING" indicator will lights up (bright green), while the "READY" indicator lights up (bright red) when in the heat preservation state.

The water heater could be directly heated to the set temperature after it is just started or re-adjust the temperature. When the set temperature is reached, the water heater will stop heating and enter into the heat preservation state. If the difference between the actual temperature and the set temperature is greater than the previous temperature difference, the water will be heated again.

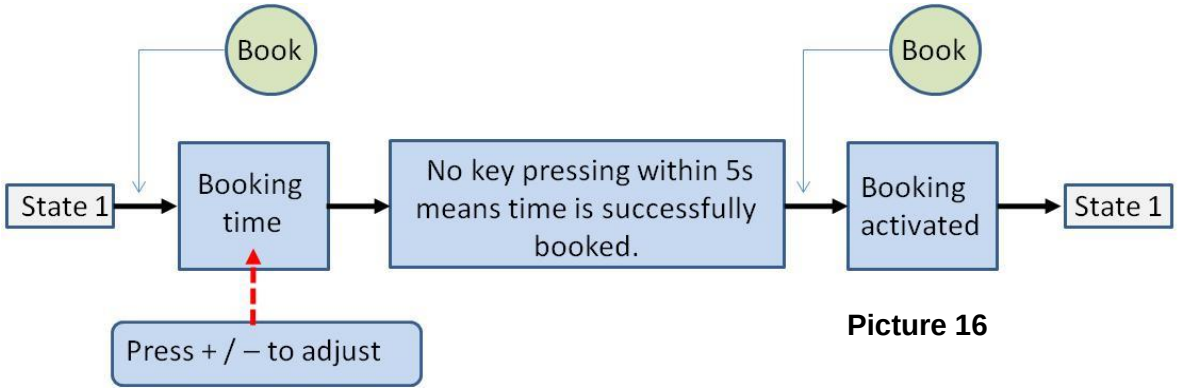
- **Booking Bath Function**

When the appliance is in the power-on state, long press "MODE" key for 3s. Then, the booking indicator will light up. The system will enter into booked time adjustment state and the digital display flickers. At this moment, the user could adjust the booked time for the heating process through pressing "+" button or "-"button

- **Delay Booking Function**

This appliance adopts the delay booking function. By this function, the hot water is available after "XX" hours. When in the booking (heating time programming) state, the user cannot only adjust the booked time circularly in the range of "01-02…-24-01" by clicking "+" button, but also adjust the booking hours circularly in the range of "24-23…-01-24" by clicking "-"button.

If the "+" button or the "-" button on the remote controller is long pressed, the time can be adjusted at a rate of 5 times per second. The operation chart of the booking function is shown in Picture 16 : Operation Chart of Booking Function



Picture 16

Notes:

1. The delay booking can't set the minutes of the booked time;
2. In the setting process of booked time, the set time shall flicker. In the flickering period
   a. No button is pressed within 5s and then confirms the booking state;
   b. Long press "MODE" key for 3s to confirm the booking mode immediately;
3. The set temperature could be adjusted under the booking state;
4. The booking for one time is valid repeatedly;
5. The booking indicator is always on during the entire booking process.
6. Upon the completion of the booking installment, the system will pre-heat 50 minutes ahead (the half container) or one hour (the whole container). For instance, if the user books the water usage 6 hours later, the system will start heating immediately after 5 hours (the whole container power) or (5 hours and 10 minutes) from the current time. The booking (heating) will also be conducted at the same time of tomorrow (24 hours later), and the like. This process is valid for long time.
7. The system enters into the heat preservation state when the booking heating reaches the setting temperature, if the temperature decreases by 5°C, it will reenter into the heating state;
8. The disconnected power does not affect the booking, and this product has the time memory function;
9. Pressing other keys is valid (except for "ON/OFF" key) in the booking heating process;
10. If the setting temperature is not reached within the booked heating time, heating will be prolonged for 30 minutes and the system will enter into the heat preservation state after 30 minutes. If the booked heating is completed (reach the setting temperature), the system will directly enter into the heat preservation state without quitting the booking mode (aiming to guarantee the accurate memory of the booking during the power outage).

    Remarks: the system will exit the booking in the power-off state or just after restarting. The power supply of the clock module has automatic charging function. One time charging can maintain the power during the power outage time for about 5 days. Booking time accuracy cannot be guaranteed, if exceeding that period.

- **Power Outage Memory Function**
  The system possesses power outage memory function and could remember the working condition, the set temperature and the relevant information before outage. The system could return to the working condition before outage automatically after charged with electricity again.

- **Anti-freezing Protection Function**
  When in non-heating state, if the water temperature in water heater is less than or equal to 6°C, connect to the corresponding heating tube to conduct heating:

  ☑ Heating tube P1 ☐ Heating tube P2

  The water heater could stop heating when the temperature reaches 10°C (heating mark is not displayed, i.e., hidden heating).

- **Factory Setting Function**
  When in the power off state, if the “MODE” button and the “POWER” button are pressed for 3s simultaneously, the display screen will be fully bright and the system will enter into the factory setting mode (buzzer will ring, if any). Then, the system will enter to the “heating/heat preservation” state after 2s. The factory setting parameters are shown in the following table.

Basic Parameters of Factory Setting System

Function	Factory setting parameter
User Setting Temperature	70℃
Booked time	8 Hours
Booking mode	Default cancel
Power	600W(Heating at full speed)

- **Alarming Function and Self Problem Detection (not available in empty-shell machine)**

  If there is a problem due to several cases (such as dry-heating, over-temperature and sensor turn off the heating device or short circuit), nixie tubes on the display screen successively show **E2, E3** and **E4** with blinking display. All other nixie tubes and the indicator lights will not show signs. For instance, if there is a buzzer, it will give six short alarms. At this moment, all relays are switched off and all buttons do not work. After the problems are solved and electricity is connected again, the water heater will recover to the power-off state. In the *power-on* state, the system will automatically conduct self-inspection. If there is a problem, the corresponding error code will be displayed accordingly, and the system cannot work (i.e. the water heater is unable to start.)

- **Identification of the Dry-heating Problem**
  If the system detects the rising of inner container temperature that is in ≥ 15 ^{o}C /min or ≥ 8 ^{o}C /30s, and the temperature is greater than 50^{o}C, the error code **E2** is shown on display screen with blinking display

- **Identification of the Over-temperature Problem**
  If the temperature of the thermostat of the inner container is greater than 90 ^{o}C, over-temperature is identified and the error code **E3** is shown on display screen with blinking display.

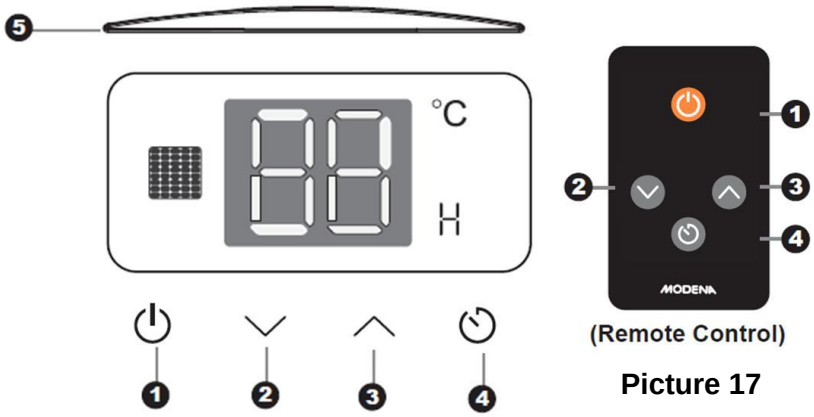
- **Identification of the Censor Problem**
  If the sensor turns off or the short circuit occurs, an alarm will beep and the error code **E4** is shown on display screen with blinking display.

Note :
E2: Dry Heating--- Refill the appliance with water and re-heat.
E3: Overheating---Check the heating system or replace it.
E4: Sensor Fault---Check the sensor or replace it.

Other Technical Requirements

1. The overall dimension and the installation dimension of the control panel and the power panel, height of components and parts, the signal line between each other and so on are in the conformity with the corresponding drawings. Besides, the control panel and power panel shall have good interchangeability during matching. All the circuit board materials adopt 1.6 mm thick anti-flaming epoxy board with damp proof treatment. A complete set of the controller shall be subject to ageing treatment before leaving the factory.
2. When the PCB board is laid out, creepage distance shall be guaranteed to reach the corresponding standard. That is, cords are not allowed to be installed within 3 mm of the hole location.

D. ES 20SR



Picture 17

Note:

- The temperature displayed on the LED refers to water temperature of the central part in the tank. The outlet water temperature may be higher than the displayed temperature.
- The hot water from the water heater may cause scald. Please test the temperature of the hot water before using.

(1) "⏻" Button

This button functions as an ON/OFF operating key. When the power is connected to the water heater, the display screen is fully bright for 2s. If there is power outage memory function, the water heater will return to the working condition before power outage. Otherwise, system will enter into power-off state.

When in the power-on state, press "⏻" button to shut down the system.

When in the power-off state, press "⏻" button to turn on the system. In this case, the running data during the power outage will be restored by the memory function, and the system will enter into the corresponding working condition.

Notes:

a. The "⏻" button is the highest priority button among all buttons in the system. That is, if you press it under all failure-free working conditions, the system will enter into the power-off state; no content is displayed in the power-off state.

b. The software version number will be displayed after the full-screen mode on the display for 2s. (the double "8" digits shown on the digital screen will turns into 01).

(2) "∨" Button

a. This button is used cooperatively with the "BOOK" button to adjust the booked time. The specific operations are shown in the booking adjustment function.

b. Adjust setting temperature: temperature is adjusted in the range of adjusted in the range of 75-74-73-…-(Tmin+1)-(Tmin)-75. The setting temperature will reduce by 1^{o}C after "∨" button is clicked for once. Long pressing "∨" button will render the setting temperature to decrease at the rate of 5^{o}C/s. If no button is pressed within 5s, the system will store the setting temperature parameters and exit the temperature setting status.

(3) "∧" Button

a. This button is used cooperatively with the "BOOK" button to adjust the booked time. The specific operations are shown in the booking adjustment function.

b. Adjust setting temperature: temperature is adjusted in the range of (Tmin)-(Tmin+1)-(Tmin+1)…75-(Tmin). The setting temperature will increase by 1 ^{o}C after the "∧" button is clicked for once. Long pressing "∧" button will render the setting temperature to increase at the

rate of 5 °C/s. If no button is pressed within 5s, the system will store the setting temperature parameters and exit the temperature setting status.

(4) "BOOK" (HEATING TIME PROGRAMMING) Button

When the appliance is in the power-on state: press this button to enter into the booked time setting mode for the heating program. At this moment, the booked time can be set through pressing "∧" or "∨" button. The specific operations are shown in the booking function introduction. This key will be invalid in the power-off state.

(5) LED Light Indicator

The LED will turns into blue while there is the power to the system and the water temperature reaches the user setting, at the end of the heating phase. The LED turns to pink (red and blue mix color) when the heating is working.

Detailed Description of Functions

- **Heating/Heat Preservation Function**

  The system could identify the heating/heat preservation state and will light up the corresponding indicator if there is a difference between the actual temperature and the set temperature. When the water heater is in the heating state, LED indicator will light pink. LED indicator will light blue in the heat preservation state.

  The water heater could be directly heated to the set temperature after it is just started or re-adjust the temperature. When the set temperature is reached, the water heater will stop heating and enter into the heat preservation state. If the difference between the actual temperature and the set temperature is greater than the previous temperature difference, the water will be heated again.

- **Booking Bath Function**

  When the appliance is in the power-on state, press "BOOK" button, Then, the booking indicator "H" will light up. The system will enter into booked time adjustment state and the digital display flickers. At this moment, the user could adjust the booked time for the heating process the user could adjust the booked time through pressing "∧ "or "∨".

Notes:

1. The delay booking can't set the minutes of the booked time;
2. In the setting process of booked time, booked time shall flicker. In the flickering period:
   a. No key is pressed within 5s, then confirm the booking state;
   b. Press the "BOOK" key to confirm the booking mode immediately;
3. The setting of delay booking will be canceled when you press the "Book" button during the reservation waiting process;
4. Upon the completion of booking set, system will preheat one hour. For instance, if the user books water usage 6 h later, system will start heating immediately after 5 h from the current time. If the user books water usage 1 h later, system will start heating immediately.
5. The system enters into the heat preservation state when the booking heating reaches the setting temperature, if the temperature decreases by 5°C, it will reenter into the heating state;

- **Power Outage Memory Function**

  The system has the function of the power outage memory that can remember the working state, the set temperature and other related information's which are before the outage. After the power is re energized, the system will automatically return to the state of work which is before the power off.

  Note:

  1. This power outage memory function does not contain clock memory function.
  2. The booked status cannot be remembered, that is, after the power off, the booked status will be cleared automatically.

- **Anti-freezing Protection Function**

When in non-heating state, if the water temperature in water heater is less than or equal to 6°C, connect to the corresponding heating tube to conduct heating; The water heater could stop heating when the temperature reaches 10°C (heating is not displayed, i.e., hidden heating).

- **Factory Setting Function**

  When in power off state, if "⏻" key and "⏲" key are pressed for 3s simultaneously, the display screen will be fully bright and system will enter into the factory setting mode (buzzer will ring, if any). Then the system will enter into "heating/heat preservation" state after 2s. The factory setting parameters are shown in the following table.

User setting temperature	70°C
Timer reservation (Booked time)	8 Hours
Reservation mode	Unlock by default

- **Alarming Function and Self Problem Detection (not Available for Empty-shell Machine)**

  If there is a problem due to several cases (such as dry-heating, over-temperature and sensor turn off the heating device or short circuit), nixie tubes on the display screen successively show **E2, E3** and **E4** with blinking display. All other nixie tubes and the indicator lights will not show signs. For instance, if there is a buzzer, it will give six short alarms. At this moment, all relays are switched off and all buttons do not work. After the problems are solved and electricity is connected again, the water heater will recover to the power-off state. In the *power-on* state, the system will automatically conduct self-inspection. If there is a problem, the corresponding error code will be displayed accordingly, and the system cannot work (i.e. the water heater is unable to start.)

- **Identification of the Dry-heating Problem**
  If the system detects the rising of inner container temperature that is in ≥ 15 ^{o}C /min or ≥ 8 ^{o}C/30s, and the temperature is greater than 50^{o}C, the error code **E2** is shown on display screen with blinking display.

- **Identification of the Over-temperature Problem**
  If the temperature of the thermostat of the inner container is greater than 90 ^{o}C, over-temperature is identified and the error code **E3** is shown on display screen with blinking display.

- **Identification of the Censor Problem**
  If the sensor turns off or the short circuit occurs, an alarm will beep and the error code **E4** is shown on display screen with blinking display.

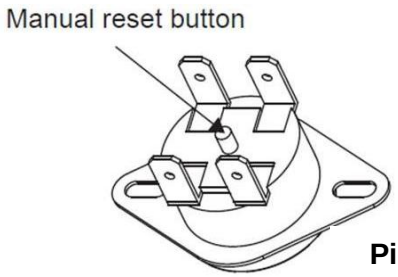
Note :
E2: Dry Heating--- Refill the appliance with water and re-heat.
E3: Overheating---Check the heating system or replace it.
E4: Sensor Fault---Check the sensor or replace it.

Part 5: Maintenance

Warning: Do cut off the power supply before maintenance, to avoid danger like electric shock.

- Check the power plug and the power socket as often as possible. Secure electrical contact and also proper grounding must be provided. The power plug and the power socket must not heat excessively.

- If the heater is not used for a long time, especially in the area with low air temperature (below $0^{o}C$), it is necessary to drain the water from the heater to prevent damage of the water heater, due to water-freezing in the internal tank.(Refer to the “Cautions” chapter in this manual book for the method of draining away the water from the inner container).
- To make the water heater operation durable, it is recommended to regularly clean the internal tank and remove deposits on the electric heating element of the water heater, as well as check the condition of the magnesium anode (whether fully decomposed or not) and, if necessary, replace it with a new one in case of full decomposition. Tank cleaning frequency depends on the hardness of the water in each location where this water heater is applied. Cleaning must be performed by MODENA or special maintenance services.
- The water heater is equipped with a thermal switch, which cuts off the power supply of the heating element upon overheating water or the absence of water in the water heater. If the water heater is connected to the power supply (electricity), but the water is not heated and the indicator does not light up, then the thermal switch was switched off or not switched on. To reset the water heater to the operating condition, it is necessary to:
    1. De-energize the water heater; remove the plate of the front cover (upside).
    2. Press the button that is located at the center of the thermal switch, (see Picture 18);
    3. If the button is not pressed and there is no clicking, then you should wait until the thermal switch cools down to the initial temperature.



Picture 18

Warning: Non-professionals are not allowed to disassemble the thermal switch to do the reset. Please contact professionals of MODENA to maintain this electric storage water heater. Otherwise, MODENA will not take responsibility of any accidents.

Tank Cleaning

After having been used in a long time, the storage (tank) of this water heater will have the dirt in it and therefore must be cleaned:

- Turn off the power source.
- Close the cold water tap.
- Open the hot water tap.
- Open the pressure relief valve (if it is used).
- Flush / rinse with cold water tanks.

Repeat this process several times until the tank is completely clean.

Safety Valve Cleaning

Safety valves should be cleaned regularly to prevent any dirt that clogs the valve:

- Remove the safety valve, then clean and wash it.
- Check if the parts of the valve are still able to move well.
- After cleaning, replace the safety valve in its place by giving the seal tape.
- Fill the water heater with water after pipes refitted.

Magnesium Anode

- Magnesium Anodes serves to neutralize corrosive substances in the water and will run out in a certain time depending on the corrosive properties of the water.

- If the water has good enough quality (PAM), Magnesium Anodes should be replaced within 2 (two) years.
- If the water quality is not good, Magnesium Anodes should be replaced in maximum 1 (one) year period of time. To replace Magnesium Anodes, contact MODENA Call Center.

Heating Element

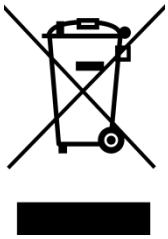
- If the water contains limestone (Mud), the heating element cannot function properly (slow heat) because it was covered by a crust of limestone (mud). Therefore, heating element must be cleaned off from the sediment each year. To do this cleaning procedure, contact MODENA Call Center.

Part 6: Troubleshooting

Check the things below before contacting MODENA Call Center in the event of interruption of operation:

Problem	Possible Cause	Recommended Action
Heating indicator light is off.	Failures of the temperature controller.	Contact MODENA Call Center for repairs
Power indicator light is off.	1. Power source is not connected or badly connected.	Contact MODENA Call Center for repairs
	2. Indicator light is damaged.	
	2. Overheating sensor is activated.	
No water coming out of the hot water outlet.	1. Water supply is cut off.	Wait for restoration of the water supply.
	2. Hydraulic pressure is too low.	Use the heater again when the hydraulic pressure is increased.
	3. The inlet valve of running water is not open.	Open the inlet valve of running water.
Water temperature is not warm enough.	1. The heating element is deactivated	Replace the heating element and Contact MODENA Call Center to repair.
	2. Temperature controller malfunction	Contact MODENA Call Center to repair.
	3. No power to water heater.	Check power supply.
Water temperature is too high.	1. Failures of the temperature control system.	Contact MODENA Call Center for repairs
Water leak.	1. Seal problem of the joint (connection) of each pipe.	1. Seal up the joints.
	2. Leaking from plumbing connection.	2. Tighten the connection.
	3. Leaking at gasket.	3. Tighten the element or replace the gasket and Contact MODENA Call Center to repair.

Part 7: Disposal of Used Product



This symbol (crossed-out wheeled dustbin) on the product or in its packaging indicates that this product must not be treated as household waste. Instead, it should be taken to the appropriate waste collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by the inappropriate waste handling of this product. For more detailed information about the recycling of this product, please contact your local council or your household waste disposal service.

Part 8: Specifications

Model	ES 30D	ES 15D	ES 10D
Type	Storage (Tank)		
Installation	Vertical		
Heat Source	Electric		
Heating Tank Material	Stainless Steel		
Heating Tank Coating	Titanium Porcelain Enamel		
Electric Safety (ELCB)	Yes		
Overpressure Safety	Yes		
Thermostat	Double		
Grounding Terminal	Yes		
Anti-rust	Magnihealth^{+}		
Capacity	30 L	15 L	10 L
Power	350 W	350 W	200 W
Water Pressure	0.75 MPa		
Water Pipe Diameter	0.5 Inch		
Temperature	Max 75 ^{o}C		
Product Dimension	455 x 455 x 388 mm	400 x 400 x 312 mm	355 x 355 x 295 mm
Product Weight	13.52 kg	10.20 kg	9.29 kg

Model	ES 30DR	ES 15DR	ES 10DR
Type	Storage (Tank)		
Installation	Vertical		
Heat Source	Electric		
Heating Tank Material	Stainless Steel		
Heating Tank Coating	Titanium Porcelain Enamel		
Electric Safety (ELCB)	Yes		
Overpressure Safety	Yes		
Temperature Display	Yes		
Thermostat	Double		
Grounding Terminal	Yes		
Anti-rust	Magnihealth^{+}		
Heating Mode	Half and Full Tank		Full Tank
Sterilization Function	Yes		No
Heating Time Adjustment	Yes		
Memory Function	Yes		
Remote Control	Yes		
Capacity	30 L	15 L	10 L

Power	800 W, 1200 W	350 W, 600W	200 W
Water Pressure	0.75 Ma		
Water Pipe Diameter	0.5 Inch		
Temperature	Max 75 ^{o}C		
Product Dimension	455 x 455 x 388 mm	400 x 400 x 312 mm	355 x 355 x 295 mm
Product Weight	13.75 kg	10.50 kg	9.44 kg

Specifications of this appliance may change without notice to improve the quality of the product. Figures in this manual are schematic and may not match your product exactly. Values stated on the machine labels or in the documentation accompanying it are obtained in laboratory in accordance with the relevant standards. Depending on operational and environmental conditions of the appliance, values may vary.

Model	**ES 20SR**
Type	Storage (Tank)
Installation	Vertical
Heat Source	Electric
Heating Tank Material	Stainless Steel
Heating Tank Coating	Titanium Porcelain Enamel
Electric Safety (ELCB)	Yes
Overpressure Safety	Yes
Temperature Display	Yes
Thermostat	Double
Grounding Terminal	Yes
Anti-rust	Magnihealth^{+}
Sterilization Function	Yes
Heating Time Adjustment	Yes
Memory Function	Yes
Remote Control	Yes
Capacity	20 L
Power	350 W
Water Pressure	0.75 MPa
Water Pipe Diameter	0.5 Inch
Temperature	Max 75 ^{o}C
Product Dimension	750 x 293 x 271mm
Product Weight	13.10 kg

Specifications of this appliance may change without notice to improve the quality of the product. Figures in this manual are schematic and may not match your product exactly. Values stated on the machine labels or in the documentation accompanying it are obtained in laboratory in accordance with the relevant standards. Depending on operational and environmental conditions of the appliance, values may vary.