# LEOV ELECTRICAL WATER HEATER

AD 30 L – AD 150 L V

AD 50L – AD150 L H

MANUFACTURER: LEOV COMPANY

REPUBLIC OF NORTH MACEDONIA

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**Product Description**

**Dear Customer, we are grateful for the purchase of a product from the range LEOV and the confidence in our company.**

**Advantages of our products:**

Modern Design

The quality of the used components grants a long durability under the supposition of a proper maintenance by following the instructions given in this user manual;

Experience of 20 years´ in the production of electrical water heaters;

The electrical water heater is produced on the latest knowledge of state of the art; the insulation is done this by using PU-foam with high homogenous density;

This insulation enables minimal losses of warmth after heating the water in the appliance;

The tank is made out of high-quality steel; the inner side of the tank is covered with titanium enamel;

There is an MG anode built in, which guarantees the protection of the enamel and prolongs the lifetime of the electrical water heater; in order to protect the appliance this MG anode must be changed every year;

# PRIOR TO INSTALLATION AND FIRST USE OF THE ELECTRICAL WATER HEATER PLEASE CAREFULLY READ THIS INSTRUCTIONS!

## 1. SAFTEY

### 1.1. Classification of warnings-action related



**DANGER!**
Imminent danger to Life or risk of severe personal injury



**DANGER!**
Risk of death from electric shock



**WARNING!**
Risk of minor personal injury



**CAUTION!**
Risk of material or environmental damage

## 1.2. Intended use

There is a risk of injury or death to the user or others, or of damage to the product and other property in the event of improper use or use for which it is not intended.

The product is designed to generate and maintain heated drinking water for households.

Max. hot water temperature: 75 Degrees Celsius

The product from Type AD-30 V to AD-150 V is approved exclusively for vertical installation on the wall.

The product from Type AD-30 H to AD-150 H is approved exclusively for horizontal installation on the wall.

The product must only be operated if a safety group is installed.

Intended use includes the following:

- Observance of accompanying operating, installation and servicing instructions for the product and any other system components
- Compliance with all inspection and maintenance conditions listed in the instructions.

This product can only be used from children older than 3 years as well as persons with reduced physical, sensorial or mental abilities or lack of experience and knowledge, if they are guided or introduced to the safety handling with understanding the potential risks. Children in the age of 3 to 8 years only are allowed to operate the faucets. Children must not play with the product. Cleaning and maintenance activities must not be done from children without observance.

The use of the product in vehicles, such as mobile homes or caravans, is not classed as intended use.

Any other use that is not specified in these instructions, or use beyond that specified in this document shall be considered improper use. Any direct use in the industrial or commercial processes is also deemed to be improper.

**CAUTION:** Improper use of any kind is prohibited!

## 1.3. General safety information - risk caused by inadequate usage

Through inadequate usage you can both endanger yourself and others and damage the product and other property.

- Carefully read the instruction manual and all other valid instructions, especially the chapter Saftey and warning-hints.
- Only follow the instructions given by this instruction and handling-guide.

## 1.4. General safety information - risk of death from electric shock

There is a risk of death from electric shock if you touch live components. Work must only be carried out by competent person who are sufficiently qualified to do so.

- Never work by yourself on the connections for the electrical power
- In case the product is connected with the electrical grid any work must be carried out by competent persons, who are sufficient qualified

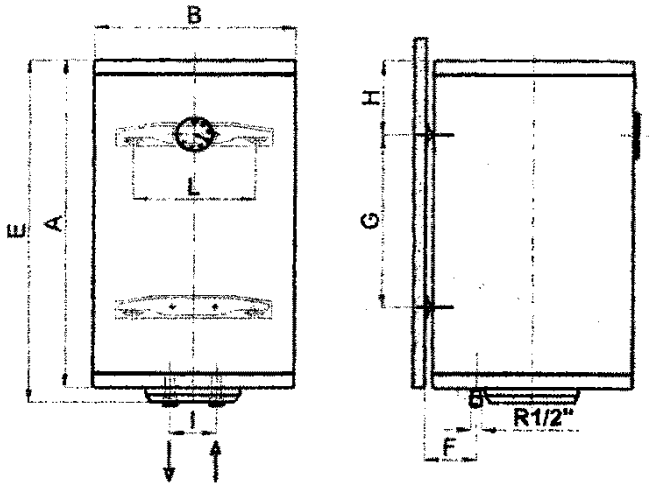
## 2. Mounting

The water heater shall be mounted as close as possible to a frost-free drain pipe. In the case of the installation of the electrical water heater in a room together with a bathtub or shower tray the requirements of the standard IEC 60364-7-701-(VEDE 0100, TEIL 701) must be followed.

The electrical water heater is mounted with rag bolts – nominal diameter of minimum 10mm. In the case of soft underground or dry lining constructions the wall mounting spots of the water heater must be reinforced. Please use for getting the correct drilling dimensions the printed positioning pattern on the packaging.

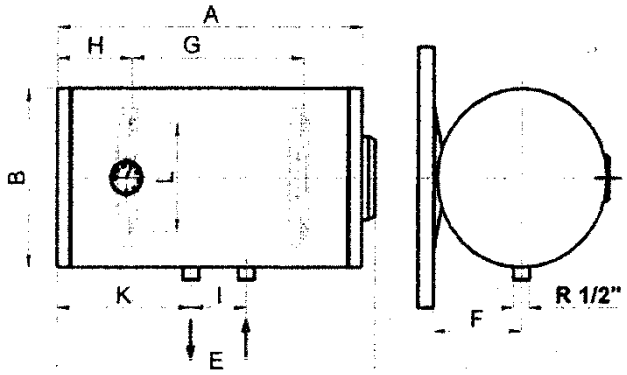
**V - Vertical**

| TYPE | L | Dimensions | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | A | B | E | F | G | H | I | L |
| AD-30 V | 30 | 338 | Ø 440 | 388 | 110 | / | 172 | 100 | 260 |
| AD-50 V | 50 | 490 | Ø 440 | 540 | 110 | / | 172 | 100 | 260 |
| AD-80 V | 80 | 740 | Ø 440 | 790 | 110 | / | 172 | 100 | 260 |
| AD-100 V | 100 | 895 | Ø 440 | 945 | 110 | 576 | 172 | 100 | 260 |
| AD-120 V | 120 | 1060 | Ø 440 | 1110 | 110 | 741 | 172 | 100 | 260 |
| AD-150 V | 150 | 1240 | Ø 440 | 1290 | 110 | 920 | 172 | 100 | 260 |




**H - Horizontal**

| TYPE | L | | Dimensions | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | E | F | G | H | I | K | L |
| AD-50 H | 50 | 490 | Ø 440 | 540 | 230 | 171 | 172 | 150 | 170 | 260 |
| AD-80 H | 80 | 740 | Ø 440 | 790 | 230 | 417 | 172 | 400 | 170 | 260 |
| AD-100 H | 100 | 895 | Ø 440 | 945 | 230 | 576 | 172 | 557 | 170 | 260 |
| AD-120 H | 120 | 1060 | Ø 440 | 1110 | 230 | 741 | 172 | 720 | 170 | 260 |
| AD-150 H | 150 | 1240 | Ø 440 | 1290 | 230 | 920 | 172 | 900 | 170 | 260 |




## 2.1. Piping connection

**WARNING!**

**ATTENTION: Potential interference to the trinking water and damages to the water heater itself. The waterpiping installation must only be done by experts under fulfillment of DIN 1988!**

The water-connection must be done under fulfilment of DIN 1988. The water heater connections for the inflow and outflow are coated red and blue. The water inflow is coated with blue and the outflow is coloured red. The water heater may be connected to the water supply in two ways.

**First way: Closed circuit pressure system**

**(Installation under pressure)**

This type of installation allows the installation of multiply faucets/tabs for taking warm water. You must use a single-lever-mixer or two-handle-faucet, which can be installed under pressure. It is obligatory to install a safety valve, which prevents the nominal pressure not to get higher than 0,6 MPa (6 Bar). A safety valve combination exists of a shut off, test, non-return, drain and safety valve with an expansion water drain and is installed between the cold-water supply line and the cold-water supply (blue) of the storage tank in the order as drawn below. In order to ensure flawless function of the connector fitting, it must only be mounted in frost-protected rooms. The drain of the safety valve must be open and observable or the outlet pipe from the drop collector (expansion water funnel) must lead into the sewer, so that neither frost nor clogging by dirt or anything similar may cause any malfunction. Make sure that the drip cup is not blocked. Furthermore, it must be observed that the drain pipe of the safety valve must be installed with a steady downward inclination. Because of the water expansion during heating the pressure increases in the storage tank up to the limit, which is allowed by the safety valve. Inclines the pressure above this set limit water is released through the safety valve into the drop collector. In case the pressure in the cold-water supply line is higher than 0,6MPa (6 Bar) a pressure reducing valve must be installed. In order to avoid malfunction of the safety valve the test function must be controlled regularly.

*No shutoff valve must be installed between the safety-valve and the cold-water supply of the storage tank.*

**DANGER!**

**ATTENTION: Potential damages to the water heater!**

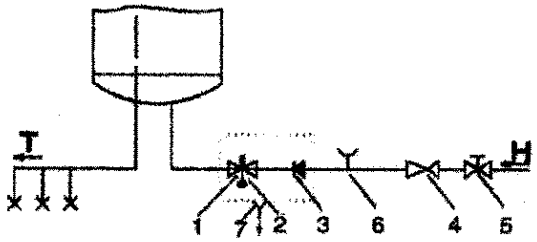
**Missing the water-filling of the boiler can lead to overheating and damage to the water boiler. The electrical boiler must be filled up with water before it is connected to the electricity!**

**Second Way: Open circuit gravity system (Installation without pressure)**

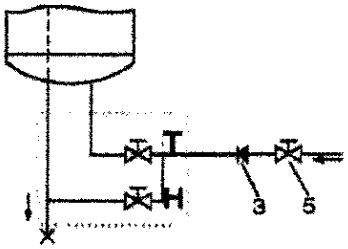
This type of installation allows only the installation of one faucet/tab for taking warm water. This type of installation requests the installation of a non-pressure tab/faucet (non-pressure single lever mixer or non-pressure two-handle-faucet.

*Between the electrical boiler (outflow) and the non-pressure faucet you must not install a shut-off valve. This would invalidate the function of the non-pressure faucet/tab.*

**Closed circuit pressure system:**




**Open circuit gravity system**




**H** cold water line

**T** hot water

**1** Safety valve

**2** Test valve

**3** non-return valve

**4** If needed: pressure reducing valve

**5** Shut-off valve

**6** Test Valve for hot water

**7** Drop collector

**DANGER!**

**ATTENTION: Potential damages to the water heater!**

**Missing the water-filling of the boiler can lead to overheating and damage to the water boiler. The electrical boiler must be filled up with water before it is connected to the electricity!**

Prior connecting to boiler to the electricity the tank must be filled up with water. To accomplish this open the warm water handle of the two-handle tab or the warm water side of the single lever mixer. The tank is filled up with water when from the tab water flows out.

## 1.1. ELECTRICAL POWER CONNECTION

DANGER!

**ATTENTION: Potential damages to the water-boiler!**

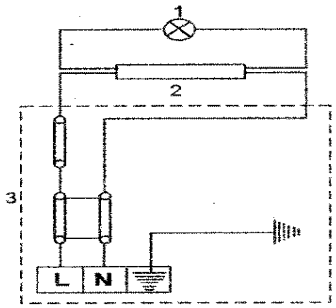
**The electrical installation of the water-heater must only be done by experts.**

Prior to connecting the boiler to the fixed electrical grid an electric cable with a minimum diameter of 1,5mm$^3$ (HO5W-F 3G1,5 mm$^2$) has to be connected to the boiler. Therefor the plastic cover/lid at the bottom of the boiler has to be removed.

The electrical connection must be done under observation of the electrical standards valid in the country. An all-pole disconnecting switch with a control gap width of 3mm must be provided in the power supply line. Automatic safety cut-outs are also permissible as disconnecting switch devices.

After connecting the cable to the correct feeder clamp (L) – Phase conductor, (N)-Zero conductor and (⏚) grounding conductor and switching on the power line the boiler is supplied with electricity.

**CONNECTING DIAGRAM:**




1 Control lamp

2 Heating element

3 Regulation Button for Temperature

The boiler enables an easy handling. The Thermostat consists out of a regulative thermostat and an integrated protective thermostat.

The protective thermostat shuts the boiler off in case the temperature gets too high. In this case you can reactivate the regulative thermostat by pressing the RESET-BUTTON, which you can find close to the regulative thermostat. You can find the RESET-BUTTON under the plastic lid/cover at the bottom of the boiler close to the regulative thermostat.

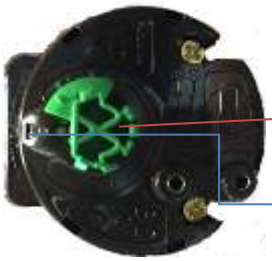
**Handling of the regulative thermostat**

DANGER!

**Attention: Potential damages to the water-heater and severe personal injury!**

**The manipulation on the regulative thermostat only may be done by an expert. The regulative thermostat can be found under the plastic lid at the bottom of the boiler.**

After connecting the boiler to the water-supply and the electrical power supply the appliance is ready for working. If the control-light on the front of the boiler is on the heating element is active. There is an analog thermometer on the outside of the boiler, which shows you the temperature of the water in the tank.



**Regulative thermostat:** through turning the green switch you can set the temperature in the tank (0 degrees = no heating to MAX); in case the heating element is turned on you can set the temperature between 20 degrees Celsius and 75 degrees Celsius;

RESET-TASTE

## 2. GENERELL INFORMATION

**WARNING!**

**Attention: Potential damages to the water heater!**

**In case the water-heater is not mounted in a frost-free surrounding or will be taken out of operating for a longer period damage through freezing can happen to the water-heater. Therefore, the water-heater must be emptied from water entirely.**

If the water heater is taken out of operation or unused for a longer period of time, it must be emptied and disconnected all-pole from the electrical power grid. To accomplish this, turn off the lead switch or the automatic cut-out. The boiler must be emptied from water to avoid damages due to freezing. The draining takes place through the INLET-Pipe, by installing a specific fitting (T-Fitting) between the empty-valve and the INLET-Pipe; before you start the emptying process, the boiler must be disconnected from the electrical power supply. After a waiting period for cooling down the water you can empty the tank through the INLET-PIPE; there will remain a small amount of water in the tank; this water can be removed by opening the heating flange; do not use any abrasive cleaning agents and paint thinners (such as nitro, trichloro, etc.) to clean the device; the best cleaning method is to use a damp cloth added with a few drops of a liquid household cleaner;

In order to ensure a corrosion protection and be entitled to any claims for warranty, as provided on the side of the manufacturer, the installed magnesium anode requires checking by an expert at intervals of max. 1 years of operation.

**Connecting, maintenance and repair must only be done by experts.**

## 3. TECHNICAL DATA

| Typ | LEOV | AD-30L | AD-50L | AD-80L | AD-100L | AD-120L | AD-150L |
|---|---|---|---|---|---|---|---|
| Volume | L | 30 | 50 | 80 | 100 | 120 | 150 |
| Operating pressure | MPa | 0,6 | | | | | |
| Weight | kg | 13<br>43 | 17<br>67 | 22<br>102 | 26<br>126 | 30<br>150 | 34<br>184 |
| Corrosion protection | | Enameled steel tank with Mg Anode | | | | | |
| Wattage heating element | W | 1500 | | | | 2000 | |
| Schlagverlust-koeffizient | W/lm3KI | 0,034 | | | | | |
| Voltage | V~ | 230 | | | | | |
| Consumtion per week | kWH | 10,213 | 26,352 | 27,131 | 27,692 | 43,173 | 50,674 |
| Standby electrical consumption at 65 degrees Celsius | KWh/24h[1*] | 2,402 | 3,045 | 5,354 | 6,853 | 10,622 | 13,063 |
| Declared profile of loads | | S | M | M | M | L | L |
| Energy efficiency class | | C | C | C | C | C | C |
| Mixed water with 40 degrees Celsius | | 39,7 liter | 71,0 liter | 130 liter | 170 liter | 172 liter | 192 liter |
| Max temperature | Tmax | 75 degree C | 75 degree C | 75 degree C | 75 degree C | 75 degree C | 75 degree C |
| Energy efficiency of heating water | $\eta =$ | 34,00% | 37,20% | 38,00% | 43,00% | 47,00% | 42,00% |
| Annual electricity consumption | | 532kWH/ annum | 1370kWH/ annum | 1411kWH/ annum | 1440kWH/ annum | 2245kWH/ annum | 2635kWH/ annum |
| Preset temperature of the heating thermostat (out of the box) | T | 75 degree C | 75 degree C | 75 degree C | 75 degree C | 75 degree C | 75 degree C |
| Sound Power level | | 15dB | 15dB | 15dB | 15dB | 15dB | 15dB |
| Heating time 15 to 65 Grad C | H[2*] | 1,4 | 1,74 | 2,79 | 3,49 | 4,19 | 5,23 |

**Explanations:**

*1: measured under defined conditions based on DIN 44532;

*2: Duration of heating of the water, if the water inflow has a temperature of 15 degrees Celsius

**ATTENTION!** 

**The packaging is recyclable. Therefore, the packaging can be brought to the recycling process;**

**After the guideline 2014/68/UE; 2014/35/UE**

**After the guideline 89/336/WE**

The Norm EC 60335-1:2010 Safety for electrical appliances for household usage and simular purposes: Part 1: General Requirements, modified: + COR1:2010 + COR2:2011 + A1:2013, modified A1:2013/COR1:2014 + A2:2016 + A2:2016/COR1:2016); German version: EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A2:2019 +A14:2019.

The Norm IEC 60335-2-21:2012 Safety for electrical appliances for household usage and simular purposes: Part 2-21: Special requirements for waterheaters (Warm-Water-Storager und Warm-water heater and boiler), Modified:+ COR1:2013 + A1:2018); Deutsche Fassung EN 60335-2-21:2021 + A1:2021

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