



CONDENSING BOILER



Epsilon ECO

24 kW - 30 kW

USER'S GUIDE



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TS EN ISO 9001:2015

Please Keep
Please Read

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Dear Valued Maktek Customer,

By choosing Maktek Epsilon Eco, we are honored to announce that you have carried the harmony of the latest technology and the modern design to your homes.

We advise you to read this guide carefully. This guide is an important source for both installation and utilization. Moreover, since it contains practical and technical information, you can easily benefit from it.

Maktek Epsilon Eco Boiler provides you safe and comfortable life with conscious utilization.

Please keep this manual for using when needed.

We are stronger with you...

ATTENTION; THESE DEVICES CAN OPERATE WITH NATURAL GAS, LPG OR WITH PROPAN. Contact with Maktek Authorized Service to change the type of gas which is specified on the package. The operations which are performed by unqualified services or people invalidate the product's warranty.

ATTENTION; gas transformation should be performed by the authorized service according to the criteria in the attached table.

1.SAFETY WARNING

1.1 Symbol Key



This symbol expresses the risk of personal injury unless taking care of warnings.



This symbol expresses the conditions can cause harms on environment, animals or goods unless taking care of warnings.

Do not open the protective cover of the device.



Electric shock as a result of the contact with electrical items.
Personal injury like burnt as a result of contact with overheated surfaces or cut as a result of contact with sharp surface.

Do not remove the device from the place of mounting, do not disconnect (Get in contact with authorized service)



Flood as a result of demounted water installation.



Explosion, fire or poisoning danger as a result of demounted gas installation. **Protect the energy cable against damages.**



Electric shock danger as a result of contact with not isolated open wires.

Do not leave tools or staff on the device.



Injury resulted from falling objects from device because of vibration.



Harms on things or animals resulted from falling objects from device because of vibration.

Do not climb on device.

Personal injury as a result of fall down with device or fall down of device itself. **Damage risk on staff under device as a result of fall down from the place installed.**

Do not stamp on chair, stool, ladder or other things which are not strong enough.



Personal injury resulted from falling down from height or cuts can be resulted from a rapid closing of ladder.

Do not clean the device unless switching it to off position or disconnecting energy link.



Use the device for only heating the house and getting hot water. Damage risk resulted from inappropriate using and overloading.




Damage risk of the place resulted from inappropriate using.

Do not allow children or people who can not use the device, to intervene in device.




Damage to device risk resulted from wrong use.


Disconnect the main energy connection, shut down the main gas valve, open all the windows, move away the place and call for help in case of burning smell or smoke from device.


 Personal injury from burns, breathing smoke or poisoning.


Shut down the main gas valve, open all windows, avoid from sparking and move away call for help if there is a gas smell in place.


 Explosion, fire or poisoning danger.

Pay attention not harming the electric cables and pipes inside wall while making holes on wall for metal hangers.

 Electric shock as a result of the contact with electrical items.

 Explosion and fire danger results from gas pipe puncture.

 Flood risk results from water pipe puncture.

 **Suitable profiled cables must be used in all electric connections.**
Fire risk results from overheated law profiled cables

1.2 GENERAL WARNINGS

- Follow the instructions in this manual while using the device. Manufacturer can not be held responsible from breakdowns and damages from wrong use.
- Start-up, maintenance and repairs can be done by only **MAKTEK AUTHORISED SERVICES**. Otherwise device will go out of gurantee and manufacturer will not be responsible for breakdowns or damages.
- It is dangerous and forbidden to use flammable/combustible materials at the site of the boiler.
- Thinner, benzine etc. flammable materials must be kept away from the place that boiler runs.
- Device must be mounted to a suitable location at a distance of at least 2.5 meters from each side of easily flammable household goods and flammable materials.
- Minimum ambient temperature must be 5°C when the boiler installed in a partly covered place like balcony. When the ambient temperature is lower, boiler must be isolated within a proper keeping stuff.
- Only authorised service can intervene the all parts and sections that (when) leakage is observed.

1.3 GENERAL EXPLANATIONS

Epsilon Eco Condensing Boiler provides the heating by central boiler heating system and radiators connected to the system, and provides hot water by heat exchanger.

Installation and services must be in accordance with recent standards, directives and instructions which will be explained in this manual. Producer cannot be held liable for damages caused from wrong installation and usage.

ATTENTION; Installation, start-up and maintenance must be done by Maktek staff or staff authorized by Maktek.

ATTENTION; In case of a leakage, firstly close the gas inlet valve and ventilate the environment, then call authorised service immediately.

WARNING !

This instruction manual is extremely important and must be kept as a reference guide.

Follow the instructions on manual to run the boiler. Manufacturer is not responsible for the failures and damages resulted from improper use.

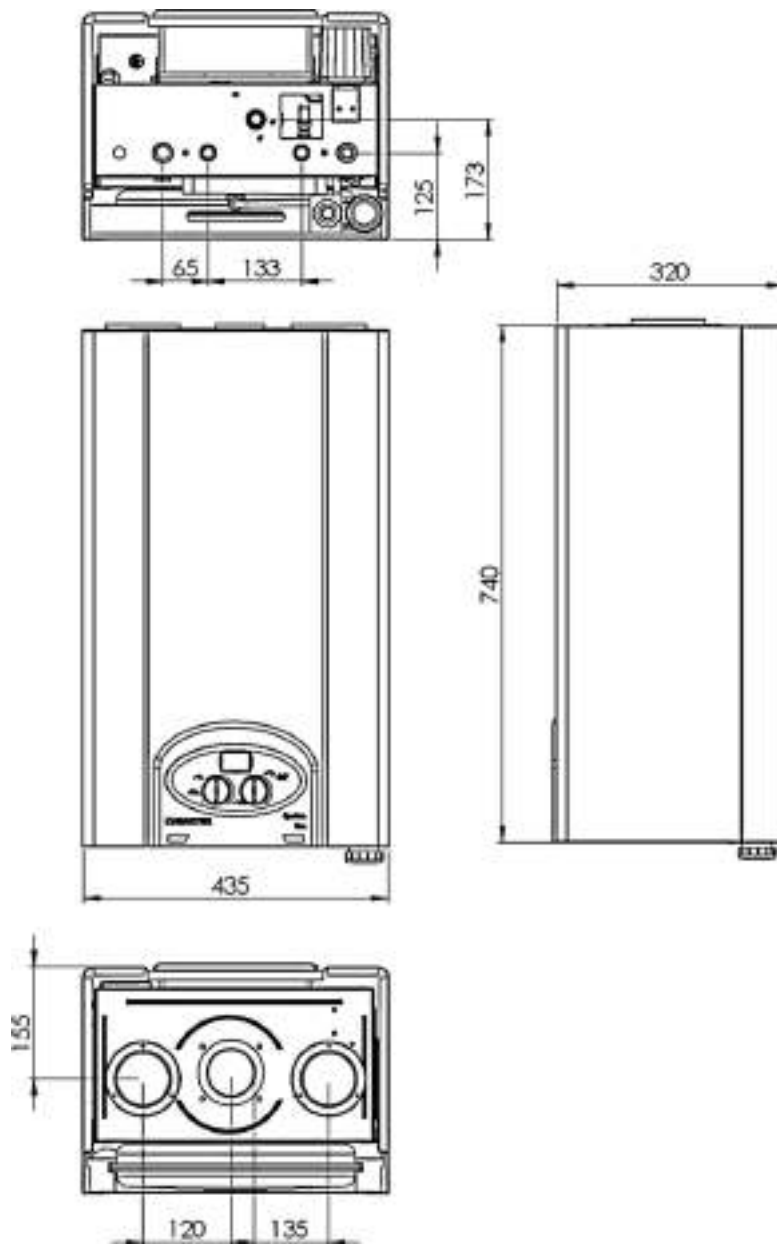
Optimum lifetime of the boiler is 15 years. It should be replaced with a new one at the end of this period.

The boiler is under warranty of the manufacturer if the product complies with conditions specified in the warranty.

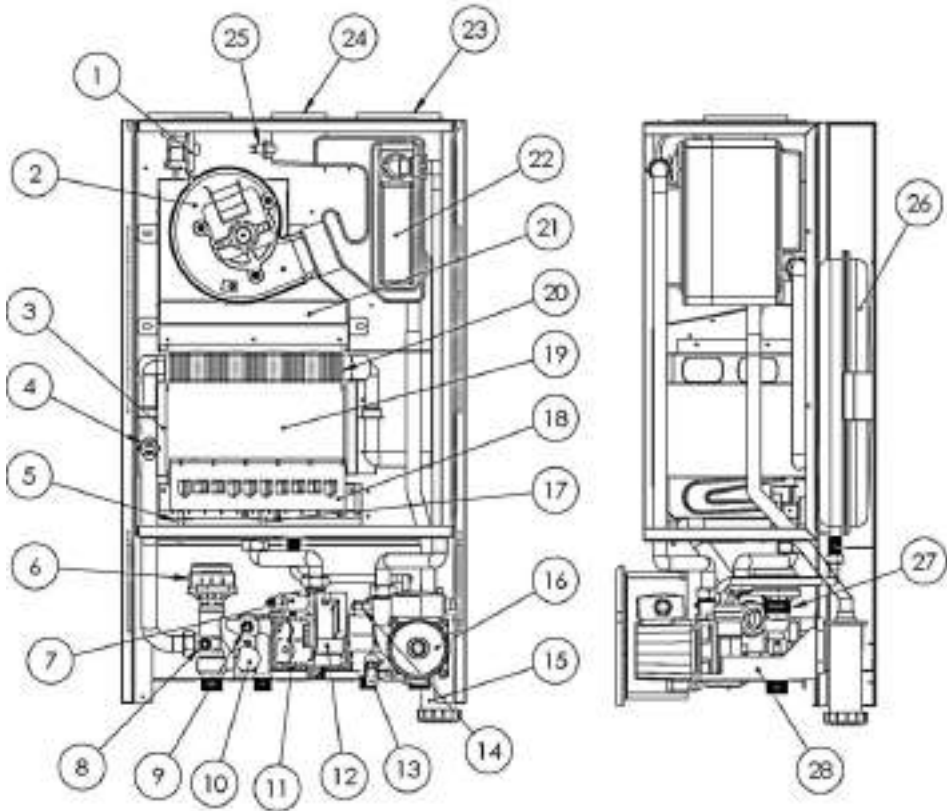
It is recommended to making annual periodic maintenance in accordance with data on maintenance chapter. Only Maktek authorised services can intervene the boiler.

2. INTRODUCTION OF THE DEVICE

2.1 APPEARANCE AND EXTERNAL DIMENSIONS

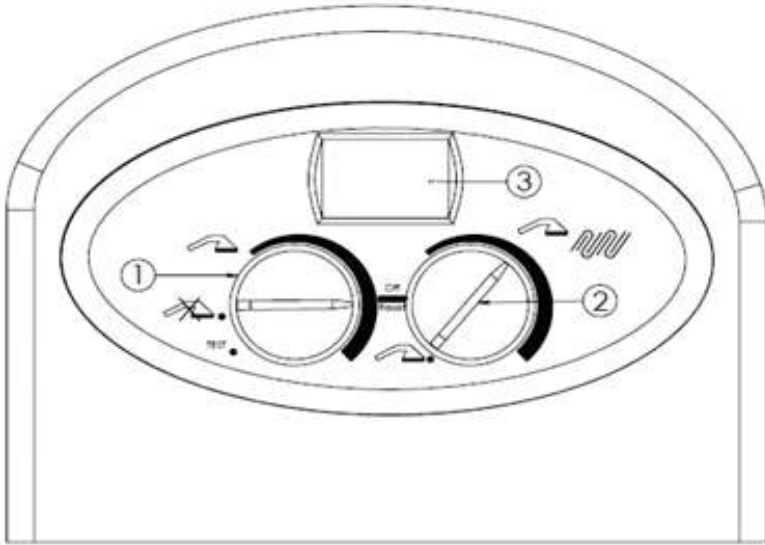


2.2 INTERNAL STRUCTURE AND COMPONENT LIST



- | | |
|---|--|
| 1. Prosestat | 15. Condensing Water Reservoir |
| 2. Fan | 16. Circulation Pump |
| 3. Burning Room Isolation and Side Cap | 17. Ignition Electrode |
| 4. Bimetal Limit Thermostat | 18. Burner |
| 5. Ionisation Electrode | 19. Combustion Chamber |
| 6. 3 Way Motor Valve | 20. Heating Circuit Exchanger |
| 7. Gas Valve Modulation Bobin | 21. Top Smoke Chest |
| 8. Heat Sensor Of The System | 22. Rekuperator (Condensing Exchanger) |
| 9. Hot Water Circuit Temperature Sensor | 23. Fresh Air Entrance Flange |
| 10. Pressure Gauge (Transducer) | 24. Chimney Outlet |
| 11. Plate Exchanger | 25. Chimney Limit Thermostat |
| 12. Gas Valve | 26. Expansion Tank |
| 13. Filling Valve | 27. 3 Bar Safety Ventile |
| 14. Water Flow Sensor | 28. Panel Bottom Support Sheet |

2.3 CONTROL PANEL



All functions required to run the boiler is done via two buttons on the control panel. These functions are seen on the LCD screen. All failure reports are seen on screen via specific codes.

A. P1 KEY



DHW Adjustment: Temperature of the DHW is adjusted. Desired temperature flashes on the screen.



DHW function is OFF.
Note: The boiler does not produce DHW.

TEST: Mode of adjustment by AUTHORISED SERVICE.

B. P2 KEY

OFF - RESET: The boiler is functionally switched off. In case of failure it is used as a reset. Safety against frost and congestion are enabled.



Winter Mode: Both DHW and heating function is on. Heating system adjustments are done. Desired temperature flashes on the screen. DHW is priority.



Summer Mode: Only DHW function is on.

C. LCD SCREEN:

It shows running and failure conditions with the warning codes on screen.
These codes are:

WARNING CODE	EXPLANATION	SOLUTION
E04	Low or high water pressure	(page 22)
E01	No Flame	(page 22)
E02	Limit thermostat	(page 22)
E03	Chimney Thermostat	Call authorised service.
E37	Circulation Failure	Call authorised service.
E05	Heating system sensor error	(page 23)
E06/E12	DHW sensor error	(page 23)
E035	Misleading Flame	Call authorised service.



- S1 : °C (temperature) symbol.
- S2 : (KS) DHW is heating.
- S3 : (MS) Central System is heating
- S4 : Bar (water pressure) symbol.
- S5 : Manual reset is required.
- S6 : Burning initiated, boiler is running.
- S7 : No burning

3. INSTALLATION DATA

3.1 ELECTRICITY CONNECTION

- The boiler works with 230 v. 50 Hz. alternative current.
- Please make sure that the fuse supplied along with the boiler is installed maximum 10 cm. away from the boiler.
- An electricity cable of 3x1,5 mm² must be laid out by an authorised electrician.
- The boiler works with ground line. Both for your and the boiler's safety, please make sure that the grounding is done properly.
- Please make the phase, neutral and ground line connection as shown on the schema.

IMPORTANT

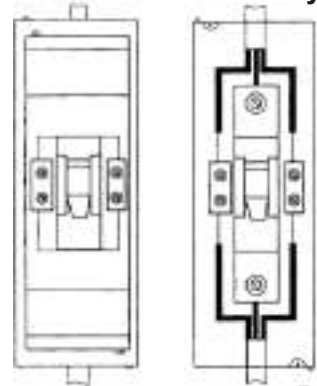
- The boiler does not operate when the connection is done improperly.
- The cable of the boiler must be connected as shown:

System

Brown: Connect this to phase cable.

Blue: Connect this to neutral cable.

Yellow-Green: Connect this to ground cable.



Boiler

3.2 OPENING THE BOX



1. Put the box on the floor as arrows showing down and open the box by cutting packing belts.

2. Open the covers by folding on 4 sides as shown in figure.

3. Turn down the box as shown in figure and pull box to up and remove it from the box.

3.3 WALL MOUNTING

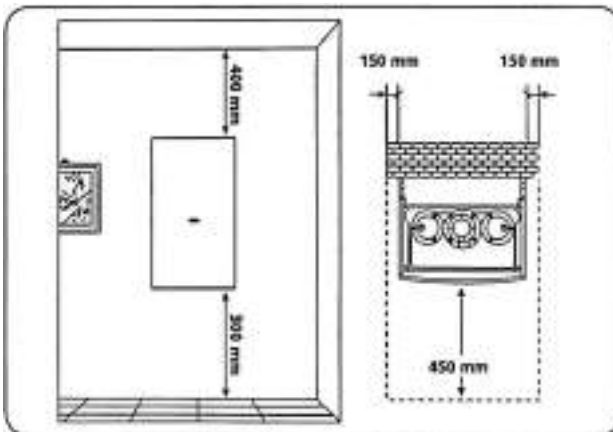
The installation of the gas boiler must be done by authorized dealers. Start-up operation must be done by MAKTEK AUTHORISED SERVICE. Your device will become out of guarantee if the installation and operation terms indicated on this manual are not applied.

3.4 POINTS TO BE CONSIDERED AT INSTALLATION

- Piping must be cleaned before the installation of the device.
- The gas connection of the unit must be done properly and controlled for any leakages.
- Condensing boilers run on closed burning chamber principle. They supply the air from outside for burning, and then exhausts the burned gases to the environment. For this reason, the exhaust gas outlet pipe must be installed in contact with the outside atmosphere.
- Exhaust gas pipes must not be put in closed areas where there is no air circulation.
- Wall mounted boilers must be installed vertically on a strong wall that can carry it.
- The unit must not be installed in connection with dirty and oily flue where the kitchen appliances are connected to.
- Specific spaces must be left around the unit for the authorized service to intervene in the event of a technical breakdown or maintenance. You can find the minimum spaces required for installation indicated below.
- Installation accessories provided along with the boiler (wall plug, screw and hooks) must be used during the installation.
- The proper installation checked by a water gauge is necessary for the healthy operation of the boiler.
- The condensate drain hose of the appliance must be connected to a suitable water drain as specified in this manual. (see page 11)

3.5 SPACES TO BE LEFT DURING INSTALLATION

Following ranges must be left along with installation in order to reach internal parts of the device during maintenance and possible malfunctions.)

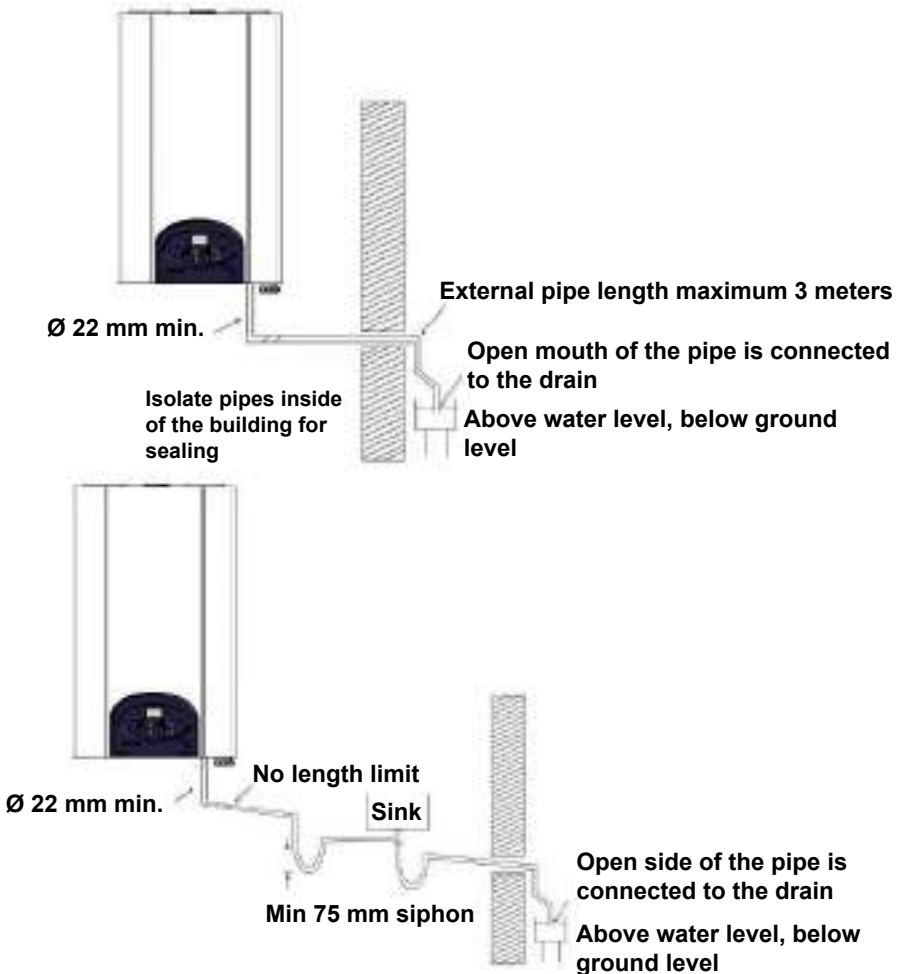


3.6 CONNECTION OF CONDENSATE WATER DISCHARGE

The condensate discharge water hose from the boiler must be connected to a suitable acid-resistant pipe (plastic) at an angle of 2.5° towards the floor. The pipe must be at least in 22 mm diameter and connected to a suitable drain. The connection can be made in the following ways:

- i) Connection can be done to a sink water drain inside the house. At least 75 mm siphon connection should be made when connecting.
- ii) Connection can be done to a water drain outside the house.

The condensation water discharge connection should be made according to the following figures.





**Condensation
Water Outlet**

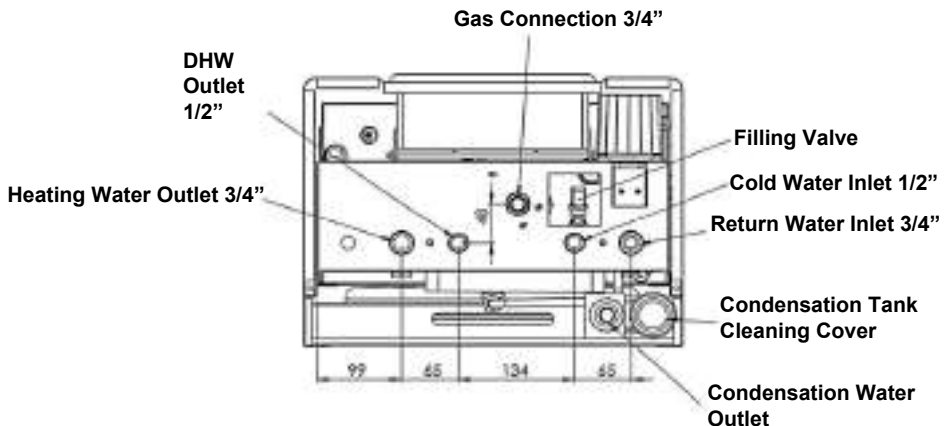
For such connections, the valid standards in that country must be complied and the local public and health authorities' regulations, if any, must also be observed. Condensation outlet pipe should be placed very carefully.

The pipe should not break when placed.
 Pipe should not take the shape of a goose neck.
 It should be clean.

Use the pipes in accordance with the applicable rules for the discharge of condensate water.

Since the condensation water pH is close to 2 (acidity), necessary precautions should be taken before any work is carried out. (Protective gloves)

3.7 INSTALLATION CONNECTION DIAGRAM

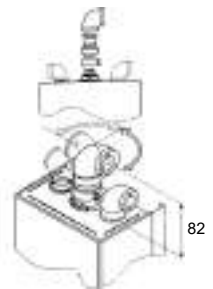
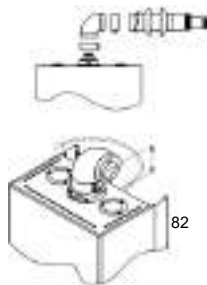
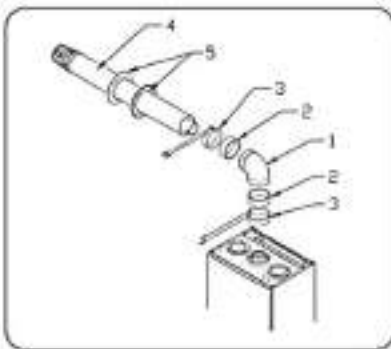


3.8 INSTALLATION CONNECTIONS

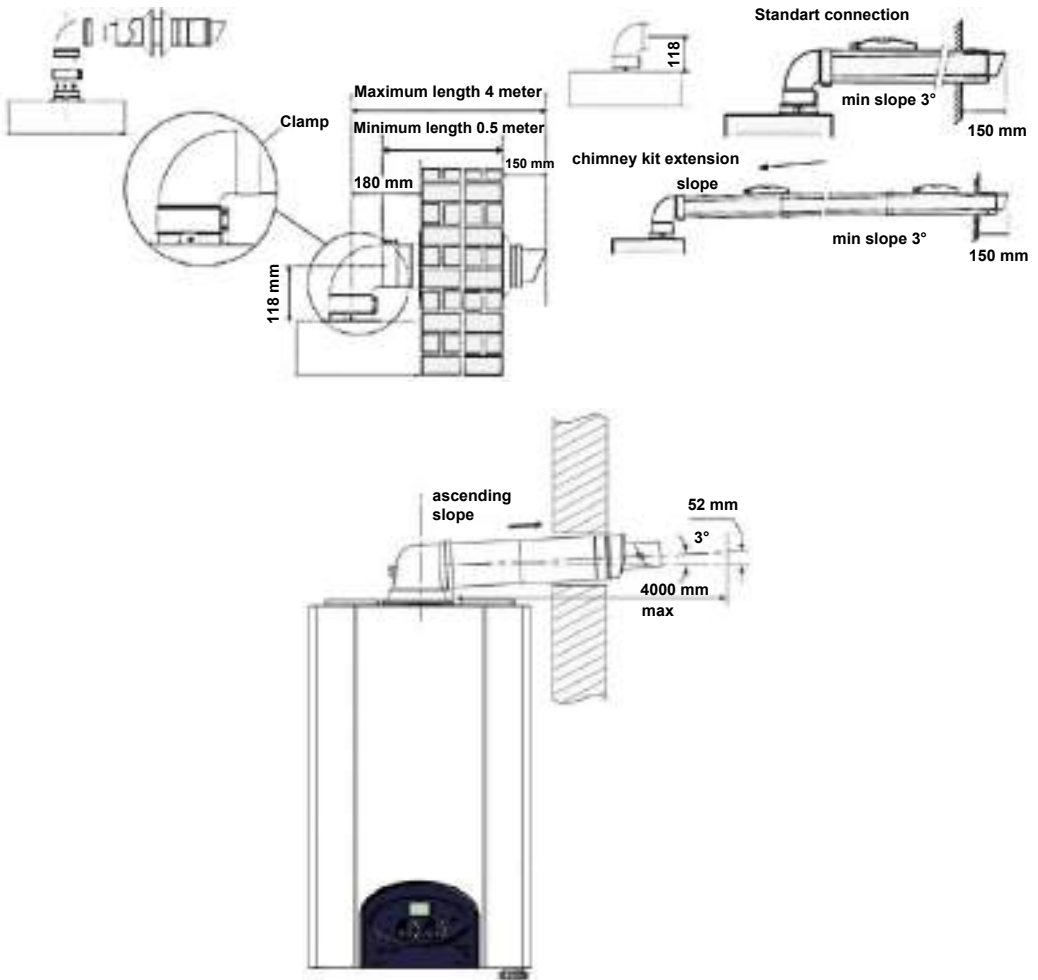
- At DHW function, please make sure that the pressure of the city water network on cold water inlet side is not more than 6 Bars. If the network pressure is more than 6 Bars, a pressure regulator must be added. In order to run DHW system, minimum pressure level of the network must be 0.8 Bar.
- In order to provide a good circulation in heating function, installation pipes must be selected accordingly and diameter structure must not be allowed at elbow passage. In selection of the pipe diameters, pipe resistances above the pump capacity should be avoided by using the pump pressure curve.
- When there is an excessive pressure increase at heating system, the security ventile operates in order to discharge the excessive water.
- When radiator thermostatic valves are installed in the heating system and when the heat balance is provided at all isolated sections, if the thermostatic valves turn off the system: Automatic by-pass system immediately runs in order to provide the minimum circulation in heat exchanger .
- Gas installation connection must be done by gas tightness pastes. Never use linen or teflon. The gas inlet pressure mentioned in this manual must be strictly obeyed.

3.9 CHIMNEY CONNECTION

Mounting of condensing chimney kit must be in accordance with mounting schema which is given with boiler.



- 1.Elbow Set
- 2.Extra Pipe Joint
- 3.Clips 37mm
- 4.Condensing Chimney
- 5.Elastic Wall Badge



ATTENTION: Chimney must be installed upward with a slope of 3% angle in order to provide the leaking of condensing water flow into the condensing tank in the boiler.

Chimney should not come into contact with flammable materials and get through flammable wall material.

Part of the chimney which stays inside the wall, must be maximum 60 cm in behind connections and must be maximum 40 cm in sidelong connections.

Allowed maximum chimney length is 4 m. If otherwise, please consult the manufacturer for technical information.

Important: There is an air protestat inside the boiler to shutdown the boiler in case of a possible failure inside of the chimney. In this case, please contact your local service.

4. FLUSHING TO THE SYSTEM AND MONITORING WATER PRESSURE

Water pressure of the heating system is digitally displayed on LCD screen. To display the pressure, turn P1 Knob to TEST position, and move P2 to SUMMER position on the control panel (page 7). Water pressure will be displayed as bar (unit of pressure). Air must be purged from radiators in the initial flushing process. Please follow these steps to start initial flushing:

1- Open all purgers in central boiler installation and radiators.

Attention: Rotate directions of water evacuation holes and place a pot under each purger in order to prevent environment from water damages.

2- Open the filling valve (page 12) which is placed underneath the boiler and start filling water into the system.

3- Close all the purgers when blister-free water starts to come from purgers.

4- Continue to flush until the system pressure comes up to 1,5 Bar, then turn off the filling valve.

Attention: It is recommended to make initial flushing with at least 2 people. While one person is controlling the radiators and closing the purgers, the other one can control the pressure by standing over the boiler and close the filling valve if needed.

In case of water shortage in closed circuit system after running of the boiler, it is necessary to add water to system by opening filling valve. Radiators must be checked if there is air in them or not.

5. START-UP

Boiler must be put into service by only Technical Services in order to run the boiler efficient and safe, also for the validation of guarantee conditions.

5.1 PRE- CONTROLS BEFORE START-UP

1. The gas type and its pressure must be controlled.

2. Automatic purger fuse on the circulation pump must be loosened.

3. The pressure inside the system must be controlled from the manometer. The pressure must be around 1,5 Bar.

4. In order to dispose the air from all of the system, take out the screw in front of the pump. By this way, whether the pump mill is congested or not can be controlled and any air that is congested can be discharged.

5. Dispose the air from the purgers on radiators.

6. Discharge the air in the hot water system by turning on hot water tap.

7. Check the installation of hermetic flue kit.

8. Check whether all valves in the system are turned on.

9. Check that the accuracy of condensate drain connection.

5.2 START-UP OPERATION

Start-up must be done by the Maktek Authorised Services to validate the warranty conditions.

The below must be applied:

ATTENTION; The condensation reservoir of the boiler must be filled with water during the first start-up. To ensure this, add 1/4 It of water from the boiler flue outlet as shown in the figure below before first operating.



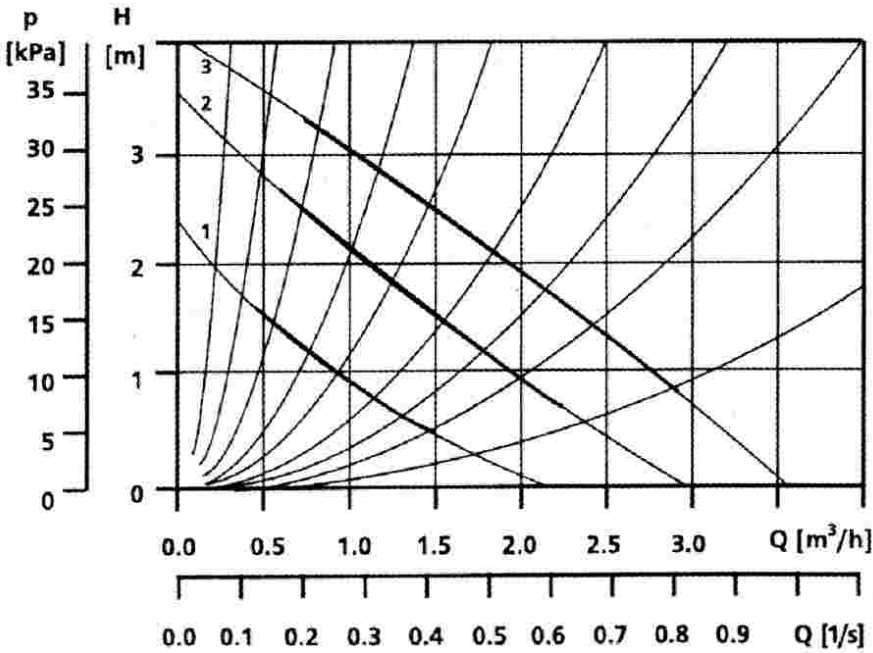
ATTENTION; If there is not enough water in the condensation reservoir of the boiler, device can run by emitting smoke for a while.

- Make sure that fuse switch, which enables the energy connection of boiler, is open. If the boiler has waited for a long time after the installation in OFF mode without start-up, authorised service must check the circulation pump in case of any squeezing.

- Turn on all the valves on boiler and installation pipes.
- Closed circuit water pressure must be at 1,5 bar (page 15).
- Choose the position of use with the help of P1 and P2 buttons on control panel (page 7 and 18).
- You can start using the boiler by setting temperature at desired level.

5.3 PRESSURE CURVE of THE CIRCULATION PUMP

3 speed circulation pump is used in MAKTEK Epsilon Eco Boiler. It is possible to set the circulation with these three speeds according to resistance required by installation.

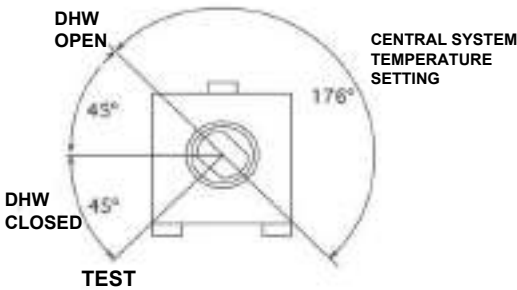


EPSILON ECO 24-30 kW

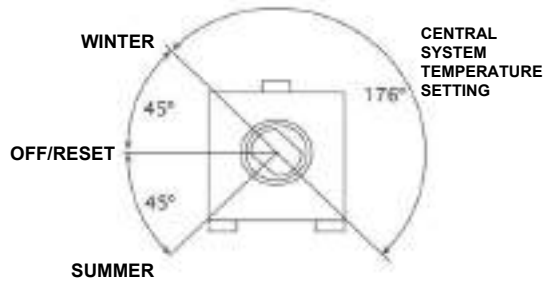
TM00 9749 0397

6. USING OF THE BOILER

P1 KEY SETTING MODES



P2 KEY SETTING MODES



SUMMER MODE:

When Summer mode is chosen, boiler runs only to get DHW (30–60°C) set by P1 key when there is DHW demand.

Opening of the hot water tap is automatically perceived and boiler generates the hot water needed. Provides constant temperature comfort with full modulation system.

In stand by mode when hot water is not demanded, pressure value of the water inside boiler is displayed on the screen.



OFF/RESET MODE:

In Off mode, boiler is shut down.

In OFF mode, automatic protective functions below are in use:

- DHW Freezing Protection
- Central System Freezing Protection
- Pump Squeezing Protection
- 3 Way Valve Squeezing Protection

When manually reset error occurs, key should be placed to RESET position and then should be placed to previous position (before reset position). This process resets your device. In this condition “OFF” is displayed on LCD screen.



ATTENTION!: Electricity, gas and water connections should not be disconnected in order to run the freezing protection function and other automatic protection functions.

Attention!: If the boiler won't be used for a long time, nobody will be in the house and there is a possibility of frost, discharge the water from heating circuit, close the gas valve of the boiler and disconnect the electricity connection. Freezing protection function will be non-utilizable and damaged as a result of disconnecting gas and electric without discharging the water completely.

Discharging Water from the Boiler :

Water inside the boiler can be discharged completely by using the discharging valve which is at the bottom point of boiler heat system. Check the manometer while discharging the water, and be sure that manometer shows 0 "zero" and finally be sure that water leakage is done.

WINTER MODE

When the boiler is in this mode, it runs according to central system temperature which is adjusted by P2 key (30-85°C). Boiler provides the adjusted temperature automatically. Provides constant temperature comfort with full modulation system. DHW production is priority at the winter mode. If it is required, DHW can be moved to OFF position and only central system heating can be provided. Water pressure value is displayed in this condition and conditions of no need of heat.



CENTRAL SYSTEM (CS) TEMPERATURE SETTING

CS temperature is set to intended value by turning P2 key. Temperature increases in clockwise, decreases counter clock wise. Adjusted temperature flashes on screen while adjusting. When it is at intended degree, setting is recorded at the end of this process and completed.



After setting, water temperature in boiler is displayed on boiler screen.

DOMESTIC WATER (DHW) TEMPERATURE SETTING

DHW temperature is set to intended value by turning P1 key. Temperature value increases clockwise, decreases counter clock wise.

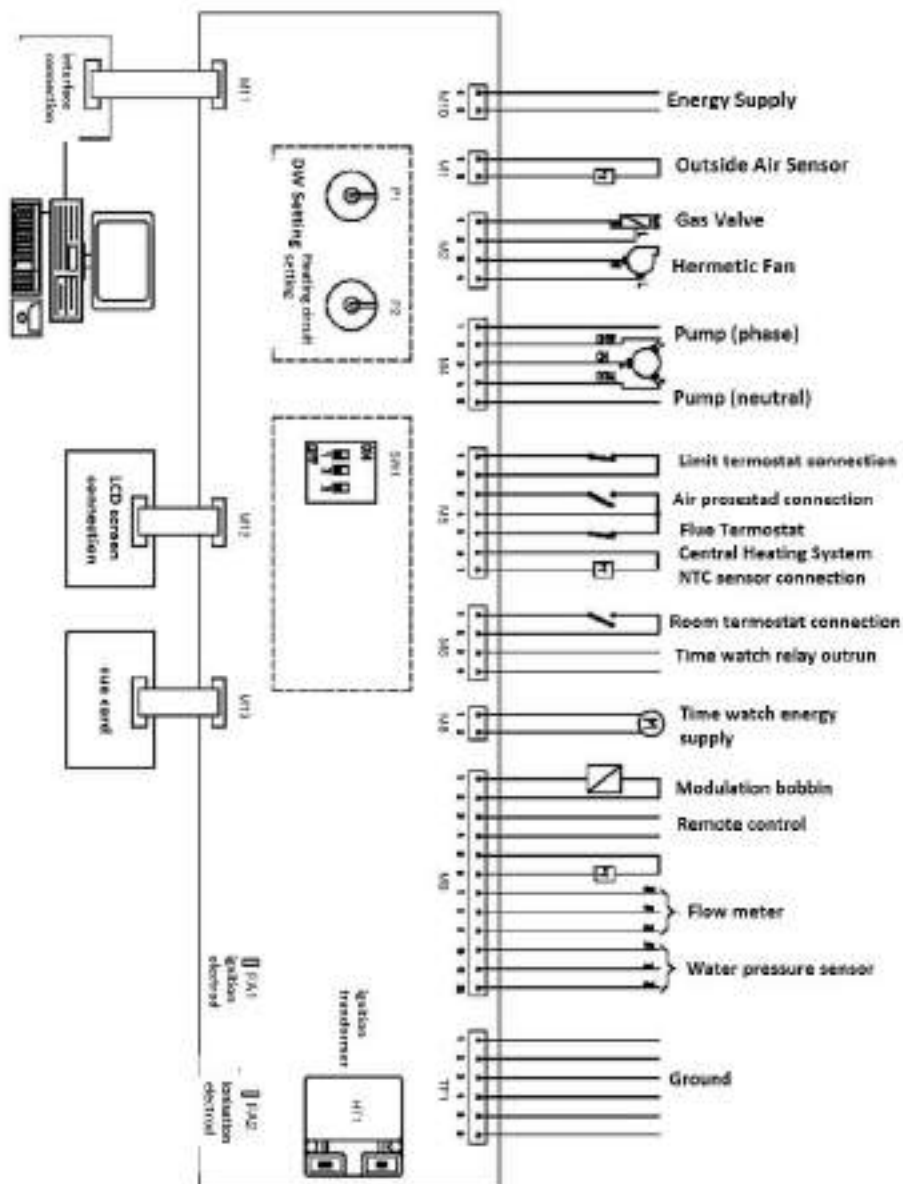
Adjusted temperature flashes on screen during setting. When it is at intended degree, setting is recorded at the end of this process and completed. After setting, water temperature in boiler is displayed on boiler screen.



7. TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS		EPSILON ECO 24	EPSILON ECO 30
Boiler Type		HERMETIC CONDENSING BOILER	
Countries		TR	
Device Category		C 32	
Gas Type		II 2H 3B/P	
Gas Utilization		2H - G20 (20mbar) / G31 (31mbar)	
NOX CLASS		5	
Nominal Heat Input max/min	kW	24,7/11,6	30,2/11,8
Heating Power max/min	kW	25,5/11,3	31/11,5
%100 Heating System Efficiency	%	103	103
Flue Gas Tem. max/min	°C	72/56	78/56
Gas Flue Flow (mass flow)	gr/sec	9,8	12,8
Nominal Natural Gas Consumption	m ³ /h	2,5	2,95
Freezing Protection Function Start	°C	5	
DHW Min Flow	l / min	3	
DHW Max Pressure	bar	6	
DHW Min Pressure	bar	0,2	
Expansion Tank Capacity	lt	8	
Expansion Tank Capacity Before Loading	bar	1	
Maximum Working Pressure (heating system)	bar	3	
Nominal Natural Gas Pressure	mbar	20	
Maximum Heating Water Temperature	°C	85	
Minimum Heating Water Temperature	°C	30	
Maximum Domestic Water Temp.	°C	60	
Minimum Domestic Water Temp.	°C	30	
Domestic Water Flow $\Delta T=35$ C	l / min	11	
Voltage / Frequency	V/ Hz	230 / 50	
Total Electricity Power	W	138	
Electric Isolation Degree	IP	X4D	
Weight	kg	35	37
Dimensions	mm	435x740x320	435x740x320

8. ELECTRICITY CONNECTION SCHEMA



9. SAFETY SYSTEMS AND TROUBLE SHOOTING

MAKTEK BOILER; is accompanied by all security measures necessary for your comfort.

USE WITH CONFIDENCE...

9.1 NO BURNING, MISLEADING FLAME

This problem occurs when there is no burning on the burner and E01 warning code appears on LCD screen.

What to Do: After making sure that the gas valve is on and the gas supply is available, change P2 key to reset position, then readjust it the preferred mode. Repeat this process until burning is provided, if this does not work, please call the authorised service.

9.2 LOW – HIGH WATER PRESSURE

When the pressure in the system is below 0,7 bar or above 2,5 bar; the boiler does not operate and E04 warning code appears on the LCD screen.

What to Do: The heating system pressure is arranged at desired level by filling valve. You can view the pressure of the water on the LCD screen. Switch P1 key to TEST position and P2 key to SUMMER position.

9.3 OVERHEAT LIMIT THERMOSTAT

This problem occurs when the heating system temperature is over 95°C, and E02 warning code appears on the LCD screen.

What to Do: When the water temperature decreases to 60°C, the boiler will work again. If this failure occurs two times successively, please call an authorised service.

9.4 ANTI CALCER SYSTEM

This system provides an indirect control against calcer formation. The water temperature in the heating circuit of the plate exchanger cannot exceed 70 degrees, regardless of the flow rate and temperature. By this way, occurrence of calcer is prevented.

9.5 PREVENTION AGAINST FROST

When the temperature in the heating system drops down to 5°C, inside the boiler there is a security system that automatically switches on the burner. When the water temprature reaches 45°C, burners are switched off. In order for this system to work and protect your device against freezing, the electrical connection of the device, the gas valve and the installation valves must be in open position. This system is active when the device is off.

9.6 When a sensor failure occurs in hot water system, E06/E12 warning code appears on LCD screen. Call authorized service.

9.7 When a sensor failure occurs in heating system, E05 warning code appears on the LCD screen. Call authorized service.

9.8 When there is an over pressure in the heating system, there is an available security ventile to dispose the water.

9.9 If there are thermostatic valves on each radiator, even when all thermostatic valves are switched off, there is an automatic by pass system in order to provide the passage of minimum water flow.

10. GAS PRESSURE SETTING

The gas pressure settings given in the following table should be adjusted while changing gas type of the device.

IMPORTANT NOTE: This modification operation can only done by an authorised service.

Diameter of the injectors must be suitable for fuel type used.

Natural Gas Injector diameter: 1.35mm

LPG/Propan Injector diameter: 0,75mm

Attention: Be sure about the resealing of the parts that were unsealed while gas modification operation. Test to see if there is gas leakage after the operation.

		24 KW	30 KW
NATURAL GAS	Maximum gas pressure (mbar)	9,7	9,7
	Minimum gas pressure (mbar)	1,45	1,45
LPG	Maximum gas pressure (mbar)	20	20
	Minimum gas pressure (mbar)	3,5	3,5

11. CLEANING AND MAINTENANCE

It is recommended to make yearly maintenance to increase the lifespan, efficient usage, energy saving and protect quality at the beginning. Maintenance must be done by only MAKTEK Autorised Service. Intervention of private services except autorised services, is extremely dangerous and causes out of warranty coverage. It is recommended to make yearly maintenance before the heating season.

MAINTENANCE	YEARLY	BIYEARLY
Cleaning hermetic flue presostat and venturi	✓	-
Cleaning heat exchanger	✓	-
Cleaning burning room, fan and inside pipe	✓	-
Checking gas and electric connections	✓	-
Checking gas flow rate and pressure	✓	-
Checking all smoke pipes	✓	-
Cleaning the burner and examining flame performance	✓	-
Checking water system	✓	-
Waste Gaz Analyse	-	✓
Checking situation of parts	-	✓
Checking Gas Way Armatures	-	✓
Checking connection part of heat exchanger	-	✓
Checking electronic parts	-	✓
Checking Fan Working Function	-	✓

✓ Necessary

Not necessary -

12. GUARANTEE CONDITIONS

This guarantee is for 3 years , starting from the date of the boiler's first-start up. In order for this guarantee to be valid, start up and periodical maintainance must be performed by an authorised service in your area.

Attention: The selection of the area where the boiler is installed, must be in conformity with all relevant directives and laws of the country. Producer cannot be held responsible for any negative repercussions as a result of non compliance.

The guarantee of the boiler is not valid under these circumstances:

- 1- Improper installation, improper electricity connection.
- 2- The assembling of non authentic and non approved parts to the boiler.
- 3- Over heat or frost conditions of the area where the boiler is installed.
- 4- Damages that occur as a result of unappropriate storing.
- 5- Parts that belong the boilers which are damaged during transportation.
- 6- Damages that occur as a result of bad/dirty fuel use, the use of extremely calcerous water in hot water system (ideal water hardness must be 15-20 French hardness).
- 7- Start-up and interventions by people other than the authorised service.
- 8- Damages as a result of installation and maintainances that are not in confirmance with relevant directives and rules.
- 9- Damages that occur as a result of low chimney draft.
- 10- Using of the boiler for purposes other than the device is designed for.
- 11- Boilers that are kept unappropriately, as showroom items for a long time.
- 12- Unavailibility of the documents that the authorised service issues after the first operation. The user must keep these documents at all times.
- 13- Boilers whose serial number is modified or damaged.
- 14- For boilers that operate with LPG, damages that might occur when liquid phase fuel is consumed by the boiler as a result of transportation of the LPG tubes or tubes that are subject to over heat.
- 15- Warranty does not start for the devices that have been installed more than 3 years ago.
17. Do not add any chemicals to the closed heating circuit.

ATTENTION !

13. IMPORTANT INFORMATIONS FOR YOUR SAFETY

Please keep these warnings to prevent potential dangers!

In Case of a Gas Leakage

Do not put light fire and prevent formation of sparking

Open the doors and windows

Turn off the gas valve

Call the authorised installation company

Obeys the security protocols of the gas distribution company

Cut the electricity connection by a separate fuse or switch

Turn off the valves of the fuel pipe

In case of fire, appropriate fire extinguisher must be used.

When Performing Maintenance or Repair

When working on the heating system or the boiler itself, there should be no current on these. The main switch or fuse of the system must be switched off and necessary precautions must be taken for preventing their reoperation.

Turn off the gas valve and prevent it is unwanted re-opening.

Installation of Extra Equipments

Extra equipments that is not controlled together with the boiler might have negative effect on the system. Damages that might occur as a result of the use of such items are out of guarantee conditions and manufacturer is not liable what so ever.

14. EFFICIENT USE OF BIOLERS IN TERMS OF ENERGY CONSUMPTION

Points to be considered about efficient energy use in houses, are stated below:

- There is %25-40 heat loss on the wall of buildings. The first precaution for energy efficiency and low fuel consumption, must be enhancing the isolation. For this purpose, outer walls of the building must be isolated from outside or inside.
- There is %20- 25 heat loss from the roofs. Heat isolation must be done in cold roofs lofts according to EN standarts.
- Air and moisture leakage of the doors and windows in house must be provided with proper materials.
- Double- glazed windows and doors, making shutter and blinds will decimate the heat loss.
- If there is air and moisture leakage connection points of door and window frames and walls will be filled up with filling material plaster, paste or silicone.
- Outer doors or other doors belong to the unwarmed places (bathroom, corridor) must be closed as far as possible.
- Most of the cold air flow becomes from under the door. Spaces under the doors can be filled with an elastic material filling.
- Building doors shouldn't left open, double door or automatic closing systems must be applied.
- It is recommended to clean the windows for receiving more sunlight, close the curtains at nights, leave south, west, southwest and southeast position curtains open that are receiveing direct sunlight at winter time.
- Temperature shouldn't be increased more than adequate in winter time.
- When the temperature is too much, heater's regulation must be down instead of opening windows.
- Moist air retain the heat well. In order to increase the felt temperature full of water pot can be put on radiators. In this way place can be moisturised. %50-55 air moisturing provides reducing vaporization and provides feeling temperature 2-3 °C more.
- Marble etc. materials and covers shouldn't place on and laundry shouldn't make dried on radiators.
- One side aluminium covered thermal insulating boards shouldn't be placed behind the radiators and between radiator and wall.
- In unused parts of the house, temperature adjustment must be in minimum level. Also isolation of hot water pipes must be done in unheated parts of the house.

- Windows shouldn't stay open more than one hour in a day in winter time for cleaning the air in internal volumes.
- It is recommended to make maintenance and control of heating systems which includes burner settings based on flue gas measurement by Maktek autorised services before every heating season.
- Heat isolation of pipes and tanks must be done if the boilers are in a place that no need of heating.
- Using boiler automatically with room thermostat prevents overheating by heating up to adjusted temperature and provides fuel saving.
- Using thermostatic valves on radiators provides energy saving by preventing overheating of radiators. Thermostatic valves can be adjusted to the intended degree

15. POINTS TO BE CONSIDERED WHILE MOVING AND TRANSPORTING

Make the moving and transport of the boiler with original ambalage.

Moving must be done with two people by holding from the corners of the boiler box. Be sure that the box is completely closed while the moving and transporting. Protect the boiler from moisture, water, beats that can cause damages to boiler. Be careful about damages from external factors like hitin, crashing and falling.

16. USAGE WITH LPG

Boiler can be use with LPG. Boilers that Natural gas / LPG Modification was done by MAKTEK Autorised Services or produced suitable for LPG burning , must be run with minimum 2 tubes by building suitable collector system.

Tubes must be kept at minimum 15°C ambient temperature. Otherwise LPG in tubes starts condensing and cause damages on liquid phase LPG boiler. It is necessary to to use liqiud filters which our company procures while using LPG. Boiler and tubes shouldn't be kept in same place.

Use registered mark tubes. Tubes shouldn't be shaken, tilted, turned down.

Use 30 mbar pressure hood must be use with tube.

Good ventilation of the place must be provided.



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