



BOILER



Epsilon LCD

23 KW - 29 KW - 40 KW

USER'S GUIDE



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TS EN ISO 9001:2015

Please Keep
Please Read

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SAFETY WARNING

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 sparkling 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 low profiled cables.

GENERAL WARNING

- Follow the instructions in this manual while using the device. Manufacturer can not be held responsible from breakdowns and damages from wrong use.
- First burning, maintenance and repairs can be done by only MAKTEK AUTHORISED SERVICES. Otherwise device will be out of gurantee and manufacturer is not responsible for breakdowns or damages.
- It is dangerous forbidden to inflammable and explosive materials to be found in the place device runs.
- Thinner, benzine etc. flammabe materials must be kept away from the place that boiler runs.
- Device must be installed at a proper place with min. 2,5 meter distance with staff lthat can flame easily.
- 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 staff.
- Only autorised service can intervene the all parts and sections that leakage is provided.

EXPLANATIONS

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 and directives will be announced. Our company is not responsible for damages caused from wrong installation and usage.

ATTENTION; Authorized Services and Manufacturer are responsible for the boiler. Do not allow other people to fiddle with settings of the boiler.

ATTENTION; Firstly close the gas entrance valve and ventilate the place, call the authorized service, when any gas leakage felt.

WARNING

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

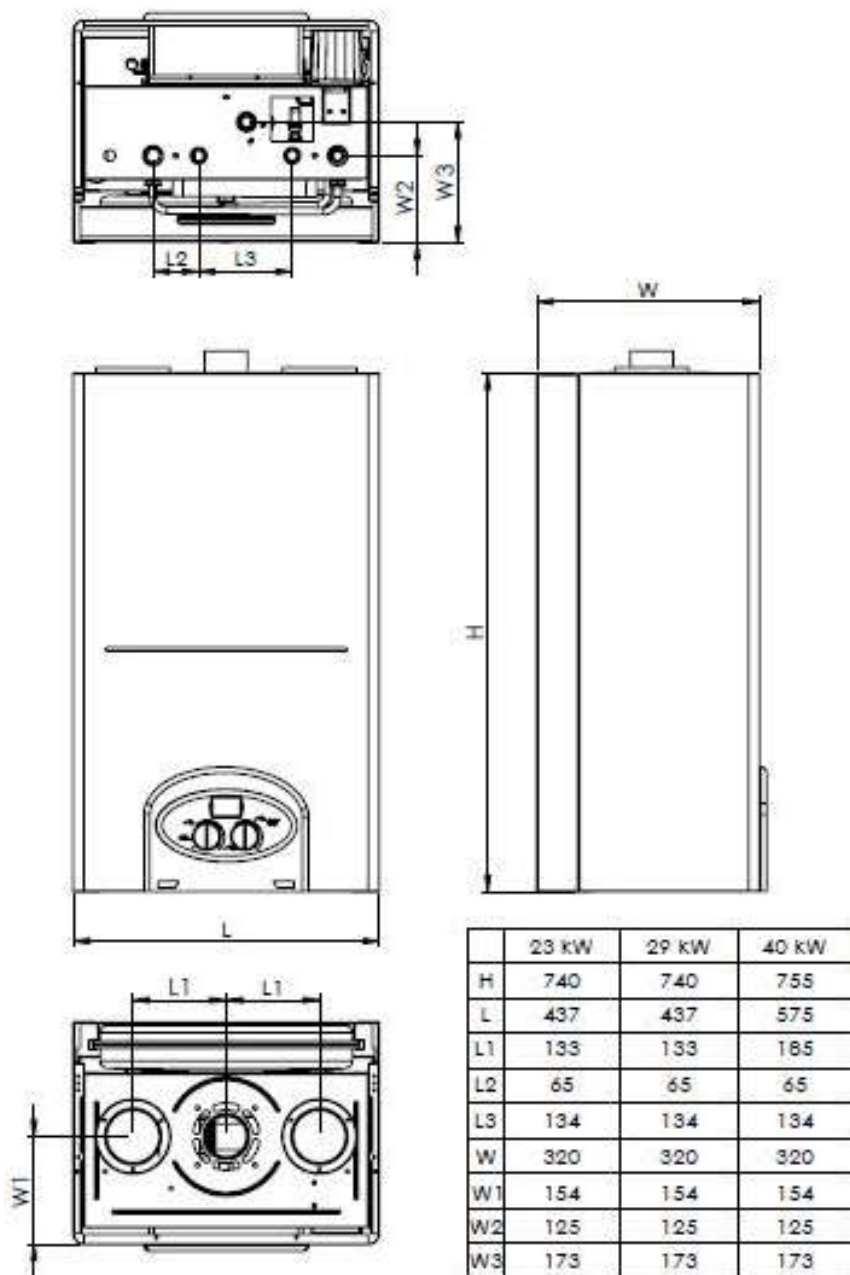
Follow the instructions on manual to run the boiler. Manufacturer is not responsible for the failures and damages resulted from wrong use.

Useful economic life of the boiler is 15 years. It should be replaced with new one at the end of this period.

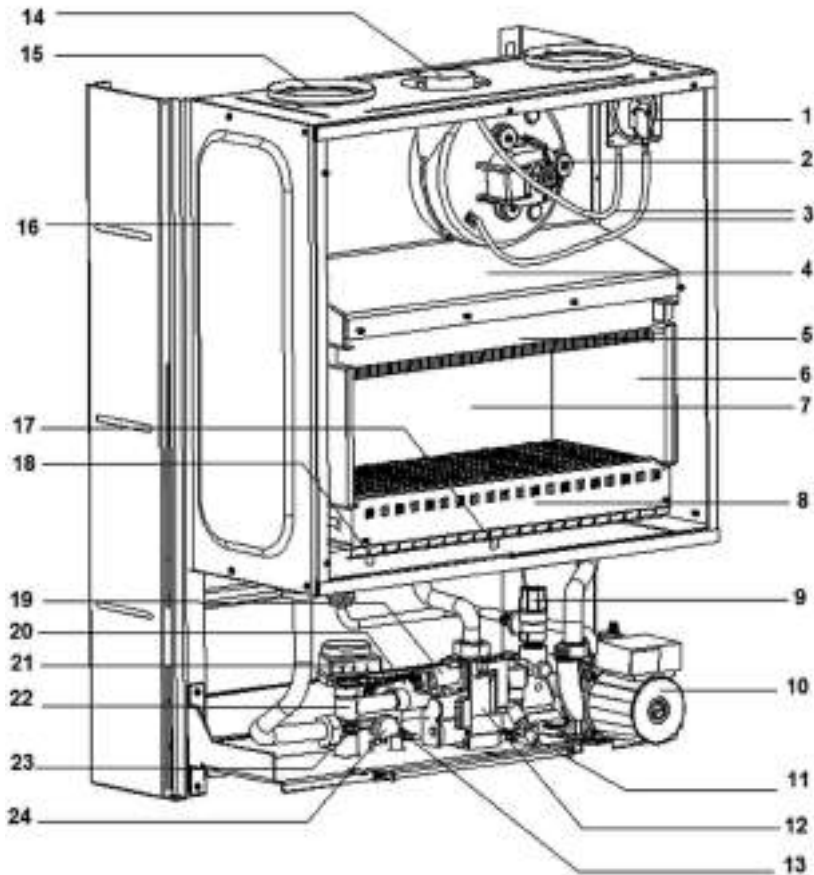
Boiler is under warranty in case of abiding the Warranty Conditions.

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

APPERANCE AND EXTERNAL DIMENSIONS

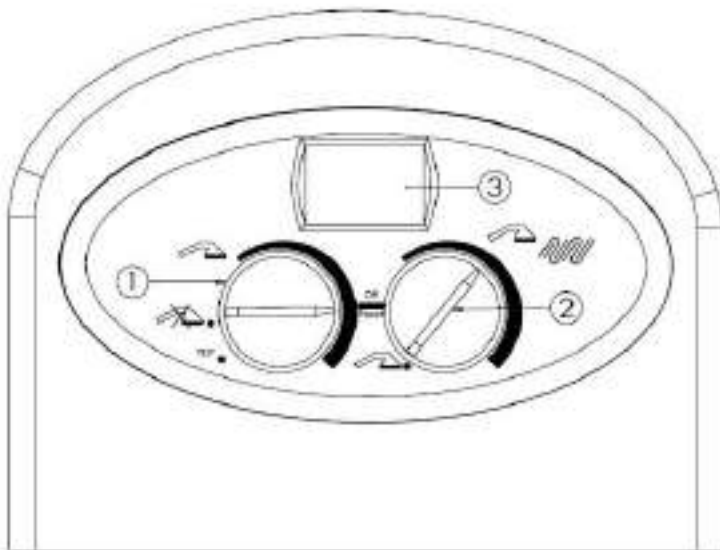


INTERNAL STRUCTURE AND COMPONENT LIST



- | | |
|--|---------------------------------|
| 1. PROSESTAT | 13. HOT WATER SYSTEM SENSOR |
| 2. FAN | 14. CHIMNEY OUT |
| 3. SILICONE PRESSURE HOSES | 15. FRESH AIR IN FLANGE |
| 4. TOP SMOKE TANK | 16. HERMETIC CABIN SIDE STEEL |
| 5. HEATING SYSTEM EXCHANGER | 17. BURNING ELECTRODE |
| 6. BURNING ROOM ISOLATION AND SIDE CAP | 18. IONISATION ELECTRODE |
| 7. BURNING ROOM | 19. MODULATION BOBIN |
| 8. BURNER | 20. PLATE EXCHANGER |
| 9. 3 BAR SAFETY VENTILE | 21. 3 WAY VALVE ENGINE |
| 10. CIRCULATOR | 22. 3 WAY VALVE |
| 11. FILLING VALVE | 23. HEAT SENSOR OF THE SYSTEM |
| 12. GAS VALVE | 24. PRESSURE GAUGE (TRANSDUCER) |

CONTROL PANEL



All functions required to run the boiler, is done via two buttons on control panel. These functions can be followed on LCD screen. All failure reportings can be seen on screen via specific codes.

1.P1 KEY



DHW Adjustment: Temperature of the DHW is adjusted from here. Desired temperature blinks on the screen.



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

TEST: Mode of adjustment by AUTHORISED SERVICE.

2.P2 KEY

OFF -RESET: The boiler is functionally switched off. At failure times, it is used as reset. Security measures against frost and congestion is in effect.



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



Summer Mode: Only DHW function is on.

3. LCD SCREEN: 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 20)
E01	No Flame	(page 20)
E02	Limit thermostat	(page 20)
E03	Chimney thermostat	Call authorized service.
E37	Pump Failure	Call authorized service.
E05	Heating system sensor error	(page 21)
E06/E12	Heating system sensor error	(page 21)
E035	Misleading flame	Call authorized service.

8.8.8



S1 : °C (temperature) symbol.

S2 : (KS) DHW is heating.

S3 : (MS) Central System is heating

S4 : Bar (water pressure) symbol.

S5 : Manuel reset is required.

S6 : Burning occured, boiler is running.

S7 : Burning was not occured (appears on S6 symbol).

INSTALLATION DATA

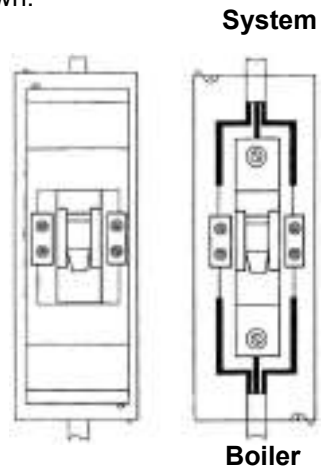
ELECTRICITY CONNECTION

- The boiler works with 230 v. 50 Hz. alternative current.
- Please make sure that the fuse supplied along 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 boilers safety, please make sure that the grounding is done properly.
- Please make the phase, neutral and ground line connection as shown on the scheme.

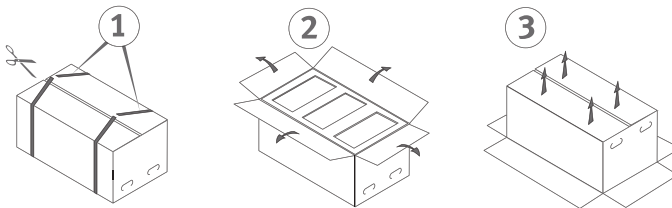
IMPORTANT

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

- Brown:** Connect this to phase cable.
- Blue:** Connect this to neutral cable.
- Yellow-Green:** Connect this to ground cable.



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.

INSTALLATION

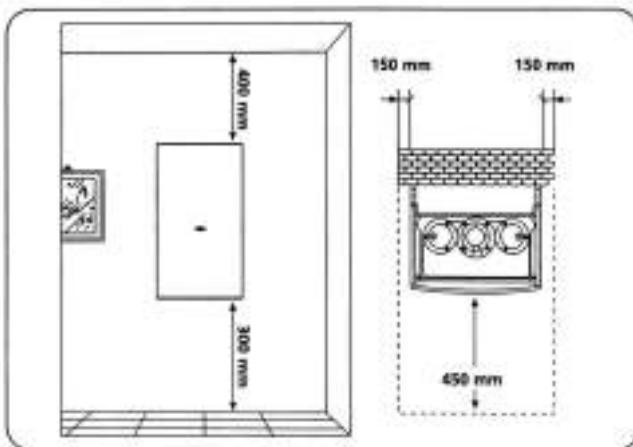
Wall mounted gas boilers work with natural gas, LPG and Propan; hence the installation of these items must be carried out by only authorised delaters.

IMPORTANT ISSUES

- Pipings must be cleaned before the installation of the unit.
- The gas connection of the unit must be done properly and controlled for any leakages.
- Hermetic boilers operate on closed burning chamber principle therefore the unit supplies the air from outside for burning then exhausts the burned gases o the environment.Hence the gas exhaust flue must be installed in connection with the outer environment.
- Gas flues must not be put in closed areas where there is no air circulation.
- Wall mounted boiler must be installed vertically on a firm wall.
- The unit must not be installed in connection with dirty and oily flue where the kitchen appliances are connected to.
- The below space dimensions must be maintained around the unit in order to provide the immediate service intervention during a failure or maintenance.
- Installation accesories provided along with the boiler(wall plug,screw and hooks) must be used during the installation.
- The proper installation checked by a spirit level is necessary for the healthy operation of the boiler.

SPACES TO BE LEFT DURING INSTALLATION

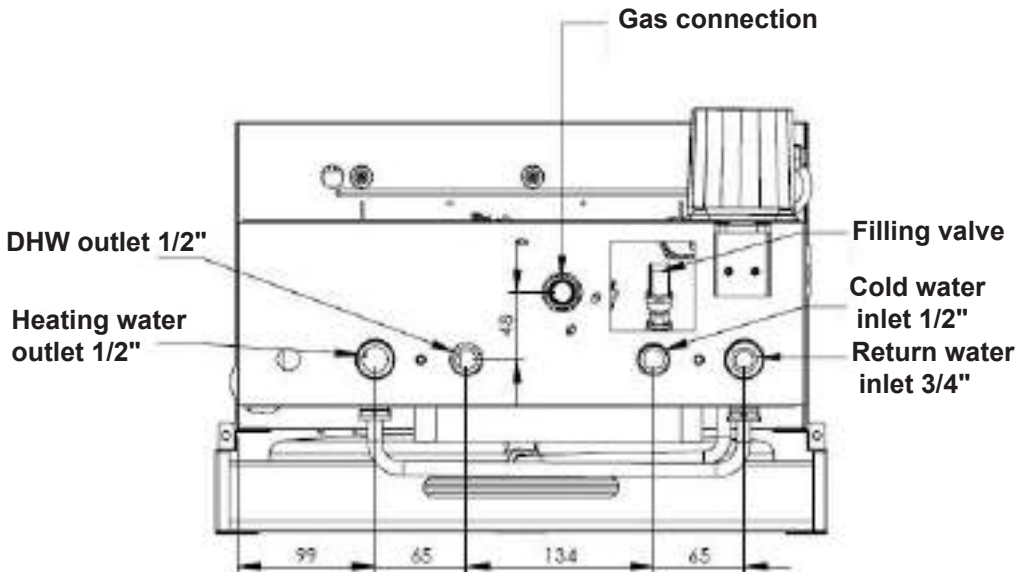
When there is a failure or a maintenance, in order to reach out to the inner components of the boiler, at least the below spaces must be maintained.The suggested spaces are minimum dimensions and can be increased accordingly.



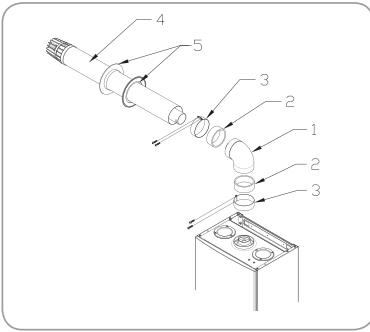
GAS HEATING AND HOT WATER SYSTEM INSTALLATION CONNECTIONS

- 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 for the DHW system to run, the minimum pressure level of the network must be 0,8 Bar.
- At heating function. in order to provide a good circulation, installation pipes must be selected accordingly and diameter structure must not be allowed at elbow passage. When selecting the pipe diameter, pipe resistance above the capacity of the pump must be abstained by the use of pump on heating system pressure curve.
- When there is a pressure increase at heating system, the security ventile operates in order to discharge the overt pressure.
- When radiator thermostatic valves are installed in the heating system and when the heat balance is provided at all isolated departments, if the thermostatic valves turns 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 and never should there be a use of flax or teflon. The gas inlet pressure mentioned in this book must be strictly obeyed.

INSTALLATION CONNECTION SCHEMA

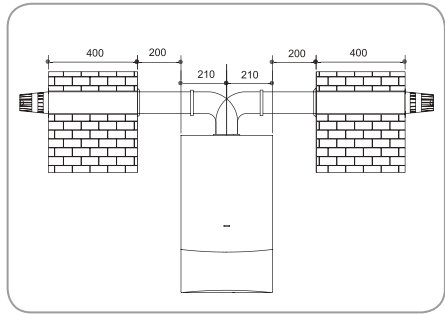


CHIMNEY CONNECTION

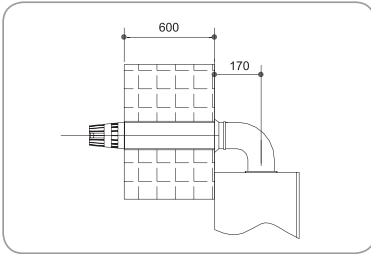


1. Elbow Set
2. Extra Pipe Joint
3. Clips 37 mm
4. Hermetic Chimney
5. Elastic Wall Badge

CHIMNEY CONNECTION SIDELONG



CHIMNEY CONNECTION BEHIND

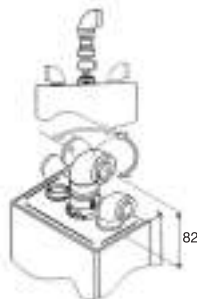
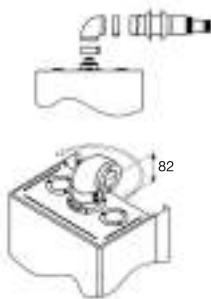


ATTENTION: Chimney must be installed downward- sloping way with $\%2$ angle in order to prevent leaking condensing water into the boiler.

Chimney shouldn't touch with flammable material, shouldn't 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 3 m. Otherwise get information from manufacturer.



Important: Air prosestat makes the boiler stop running for safety when there is possibility of failures inside chimney.

WATERFLOOD TO THE SYSTEM AND FOLLOWING WATER PRESSURE

Installation water pressure can be displayed digitally on LCD Screen. To display the pressure, place P1 Button as TEST, P2 Button as SUMMER on control panel (page 7). Water pressure will be displayed as bar.

In first waterflooding air from radiators must be taken. Please do the firstflooding in reference to these steps:

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

Attention: Rotate the water evacuation holes and place a pot under every purger in order to prevent damages of water.

2- Open the filling valve (page 11) which is placed underside of boiler and start filling water into the system.

3- Close all the pugers when blister-free water comes from purgers.

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

Attention: It is recommended to make first flooding at least 2 people. While one person is controlling the radiators and closing the pugors, other one can control the pressure by standing over the boiler and close the filling valve it is needed.

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

PUTTING INTO SERVICE

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

A)PRE- CONTROLS BEFORE PUTTING INTO SERVICE

1. The gas type and its pressure must be controlles.
2. Automatic purgor fuse on the circulation pump must be loosened.
3. The pressure inside the system must control 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 the radiator.
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.

B) FIRST OPERATING

Maktek Authorized Services must do the first operating to validate the guarantee conditions. These steps must be applied:

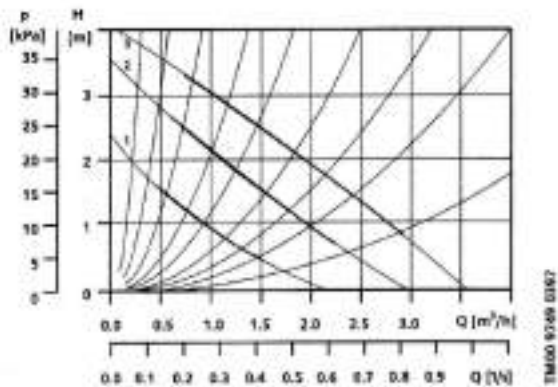
Be sure that fuse switch which makes energy connection of boiler, is open. If the boiler has waited for a long time after the installation in OFF mode without first operating, Authorized service must check the circulation pump in case of squeezing.

- Turn on all the valves on boiler and installation pipes.
- Closed circuit water pressure must be 1,5 bar (page 13)
- Choose the position of use with the help of P1 and P2 buttons on control panel (page 7 and 15).
- You can start using the boiler by making intended temperature settings at chosen position.

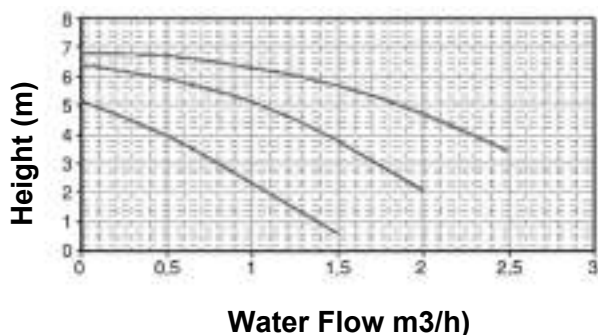
CIRCULATION PUMP PRESSURE CURVE

MAKTEK Boiler Circulation pump is 3 speed. Making circulation setting is possible according to resistance required by installation.

23-29 kW

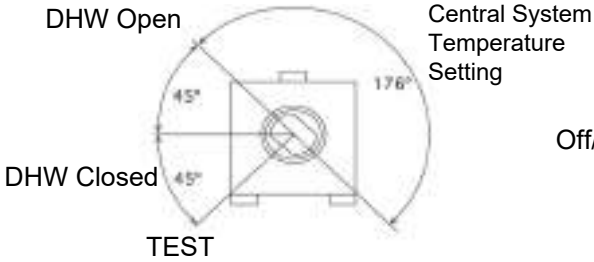


40kW

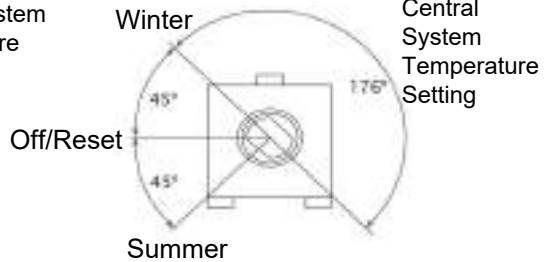


USAGE OF BOILER

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 gets the how water needed. Provides constant temperature comfort with full modulation system.

In wait state which hot water is not getting, 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 protecting functions below are in use:

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

When manually recetable error occurs, key placed to RECET condition and places previous position and reset operation is finished. In this condition OFF is displayed on LCD screen.



ATTENTION! Electricity, gas and water connections shouldn't be disconnected in order to run the freezing protection function and other automatic protection fuctions.

Attention!: If the boiler won't be used for a long time, noone 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 unusable 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 discharge completely by using the discharging valve which is at the bottom point of boiler heat system. Check the manometer while discharging the and be sure it is 0 value and water leaking from the discharging valve is completed.

WINTER MODE:

When the boiler is in this mode, it runs according to central system temperature set by P2 key (30-85'C). Boiler provides the adjusted temperature automatically. Provides constant temperature comfort with full modulation system. DHW production is primary at the winter mode. If it is required, DHW can be moved to OFF position and only central system heating running 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 is blinked on screen while adjusting.

After adjustment water temperature in boiler is displayed on boiler screen.



DOMESTIC WATER (DW) TEMPERATURE SETTING

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

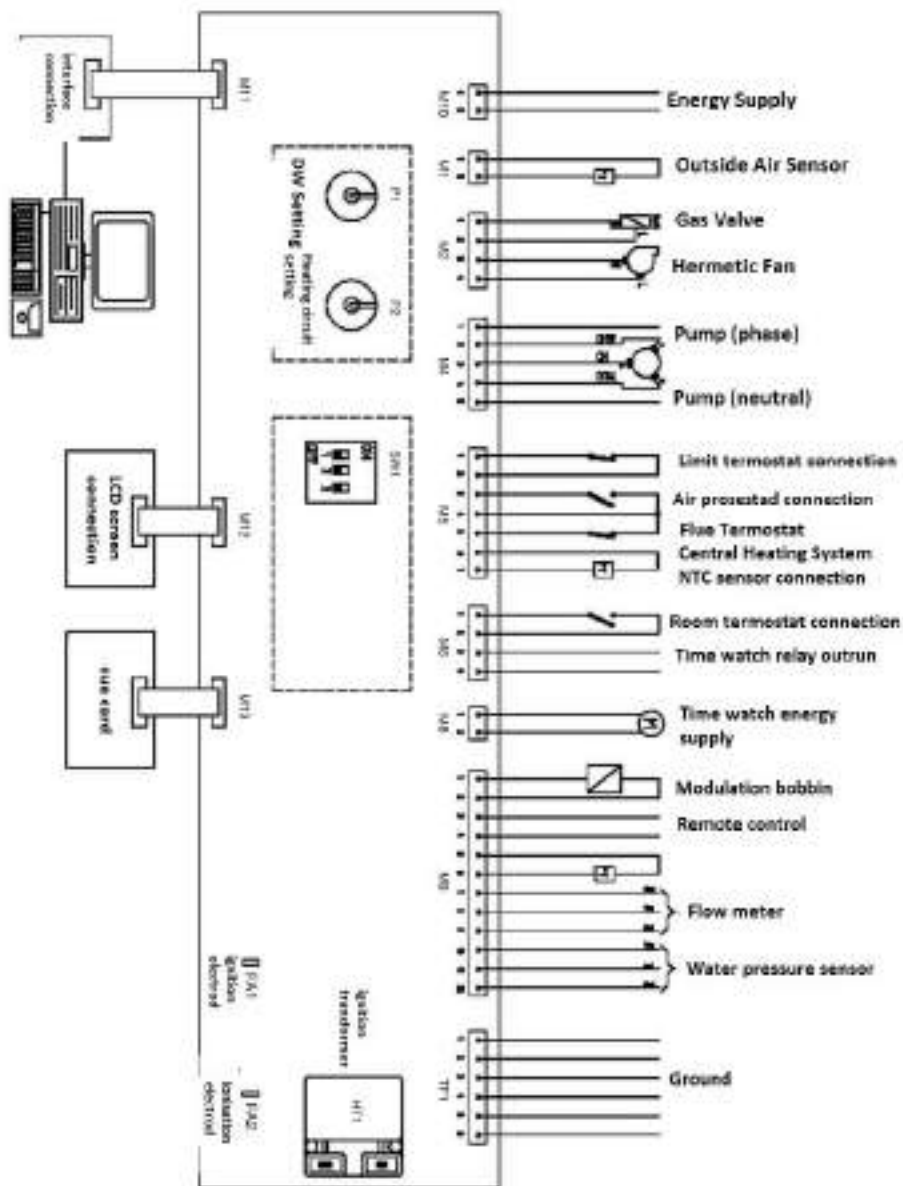
Adjusted temperature is blinked on screen while adjusting. When it is at adjusted degree, adjustment is recorded at the end of adjustment and adjustments is completed. After adjustment water temperature in boiler is displayed on boiler screen.



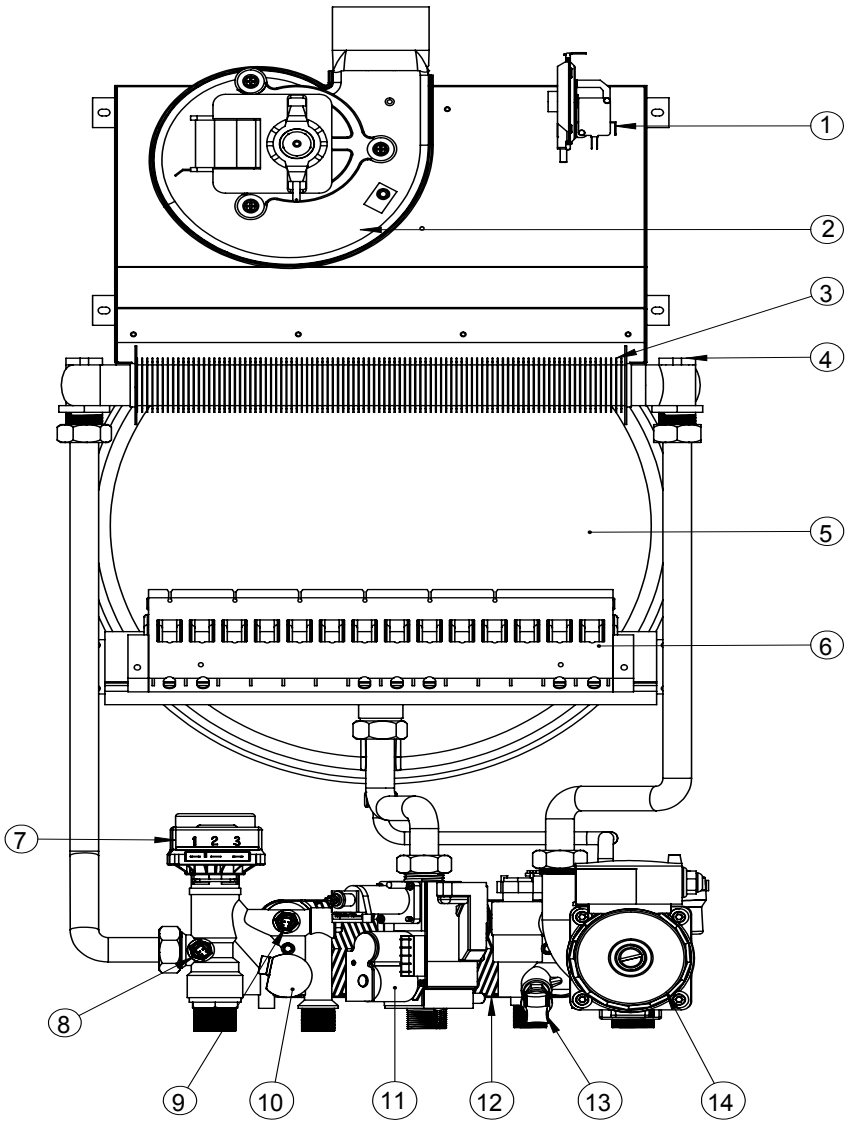
TECHNICAL SPECIFICATION TABLE

Technical Specs		23 kW	29 kW	40 kW
Boiler Type		Hermetic Boiler	Hermetic Boiler	Hermetic Boiler
Countries		AT,DK,EE,FI,GB,GR,IE,IT,LV,NO,PT,CZ,SK,SLO,SE,CH,RO,TR	AT,DK,EE,FI,GB,GR,IE,IT,LV,NO,PT,CZ,SK,SLO,SE,CH,RO,TR	AT,DK,EE,FI,GB,GR,IE,IT,LV,NO,PT,CZ,SK,SLO,SE,CH,RO,TR
Boiler Category		C12 - C32	C12 - C32	C12 - C32
Gas Type		II 2H 3B-P	II 2H 3B-P	II 2H 3B-P
Use of Gas		2H-G20(20 mbar) G31(31 mbar)	2H-G20(20 mbar) G31(31 mbar)	2H-G20(20 mbar) G31(31 mbar)
NOx class		3	3	3
Maximum Heat Capacity	kW	25	29	40
Minimum Heat Capacity	kW	13	12	16
Output from %100 Capacity	%	90,6	91,4	91,5
Nominal Natural Gas Consumption	m ³ /h	2,6	3,1	4,6
Freezing Safety Func. Starting Degree	°C	5	5	5
Domestic Hot Water Minimum Flow	l/dk	3	3	6
Domestic Hot Water Maximum Pressure	bar	6	6	6
Domestic Hot Water Minimum Pressure	bar	0,2	0,2	0,2
Expansion Tank Capacity	L	8	8	10
Expansion Tank Capacity Before Loading	bar	0,8	0,8	0,8
Max. Working Pressure (Heating Pressure)	bar	3	3	3
Nominal Natural Gas Pressure	mbar	20	20	20
Maximum Heating Water Temperature	°C	85	85	85
Minimum Heating Water Temperature	°C	30	30	30
Maximum Domestic Water Temperature	°C	60	60	60
Minimum Domestic Water Temperature	°C	30	30	30
Domestic Water Flow (ΔT=35°C)	l/dk	11	11	16
Volt/frequency	V/Hz	220/50	220/50	220/50
Power	W	125	125	140
Electricity Isolation Degree	IP	X4D	X4D	X4D

ELECTRICITY CONNECTION SCHEMA



HYDROLIC SCHEMA



- | | |
|-----------------------------|--|
| 1.Prostat | 8. Central heating circuit heat sensor |
| 2.Fan | 9.Hot water sensor |
| 3.Heating circuit exchanger | 10.Pressure gauge |
| 4.Maximum heat sensor | 11.Gas valve |
| 5.Expansion tank | 12.DHW exchanger |
| 6.Burner | 13.Filling valve |
| 7.Three Way Valve Engine | 14.Circulation pump |

SAFETY SYSTEMS OF BOILER

MAKTEK BOILER; is accompanied by all security measures necessary for your valuable user's comfort .

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 then readjust it the desired mode.Repeat this process until burning is provided,if this does not work, please call the authorised service.

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 made to the desired level by filling valve.You can view the pressure of the water flooded on the LCD screen. To do it, switch P2 key to M mode.

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 drops down to 60°C, the boiler will work again. If this failure occurs two times consequently, please call an authorised service.

4- ANTI CALCER SYSTEM

This system provides an indirect control against calcer formation. Whatever the DHW flow temperature, the water temperature in the heating system of the plate exchanger does not increase to 70°C, hence the occurrence of calcer is prevented.

5- PRECAUTION TO 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 temperature reaches 45°C, burners are switched off. In order for this system to run, the main fuse which the device is connected to, must be switched on and the heating system and DHW temperature setting key must be set to min.

6- When a sensor failure occurs in hot water system, E06/E12 warning code appears on LCD screen.

7- When a sensor failure occurs in heating system, E05 warning code appears on the LCD screen

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

9- If there is thermostatic valve 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.

GAS PRESSURE SETTING

MAKTEK BOILER GAS PRESSURE SETTINGS

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

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

Natural Gas injector diameter: 1.25mm

LPG/Propan Injector diameter: 0,75mm

Attention: Be sure about the resealing of the parts that were unsealed while gas modification operation. Make gas leakage test after operation.

		23 KW	29 KW	40 KW
NATURAL GAS	Maksimum gas pressure (mbar)	10	10	10
	Minimum gas pressure (mbar)	2	2	2
LPG	Maksimum gas pressure (mbar)	28	28	28
	Minimum gas pressure (mbar)	4	4	4

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 -

GUARANTEE CONDITIONS

This guarantee is for 3 years , starting from the date the boiler is first put into service. In order for this guarantee to be valid, first operation and periodical maintenance 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.
Manufacturer company cannot be held liable for any adverse situation as a result of non conformance.

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 inappropriate 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 over calcereous water in hot water system (ideal water hardness must be 15-20 French hardness).
- 7-First operations and interventions by people other than the auththorised service.
- 8-Damages as a result of installation and maintenances 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-Unavaiibility 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.

ATTENTION ! 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

Obey 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.

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. Soğuk çatılarda çatı arasına "TS 825 Binalarda Isı Yalıtım Kuralları" standartında belirtildiği şekilde ısı yalıtımı yapılmalıdır. Heat isolation must be done in cold roofs lofts up to TS 825 Binalarda Isı Yalıtım Kuralları " standards.
- 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 mesasurement 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

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.

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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