

INSTALLATION AND USER'S INSTRUCTIONS

MODEL NO. DGB-160MES/200MES/250MES/300MES/350MES



GASBOILER

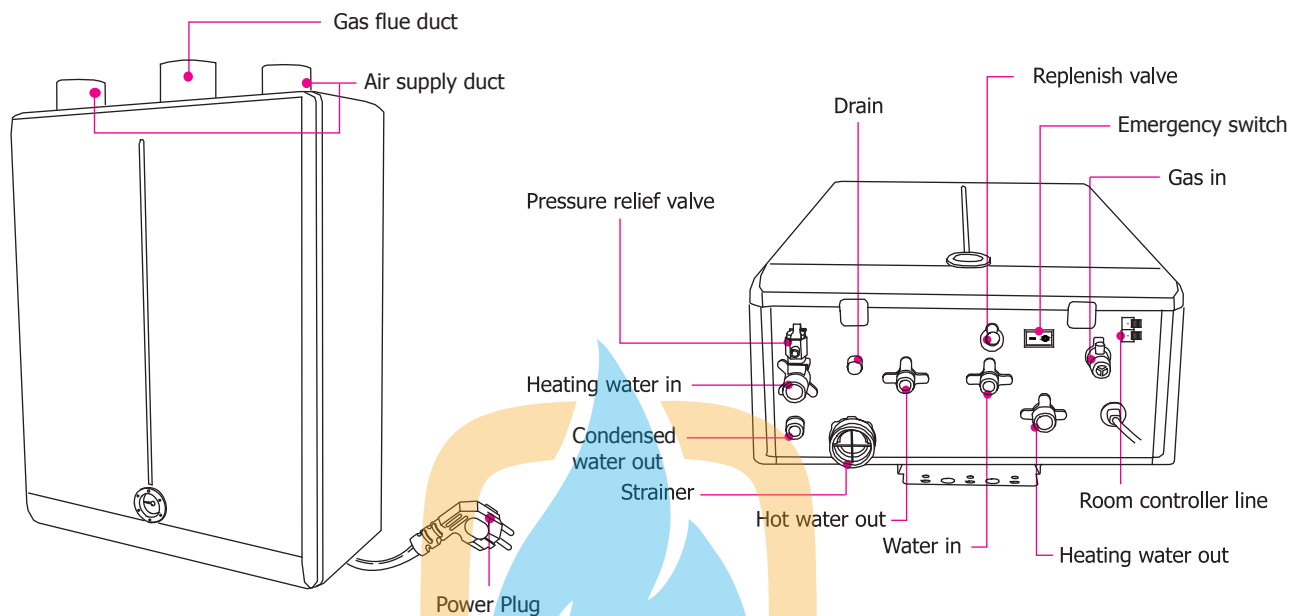


DAEWOO GASBOILER

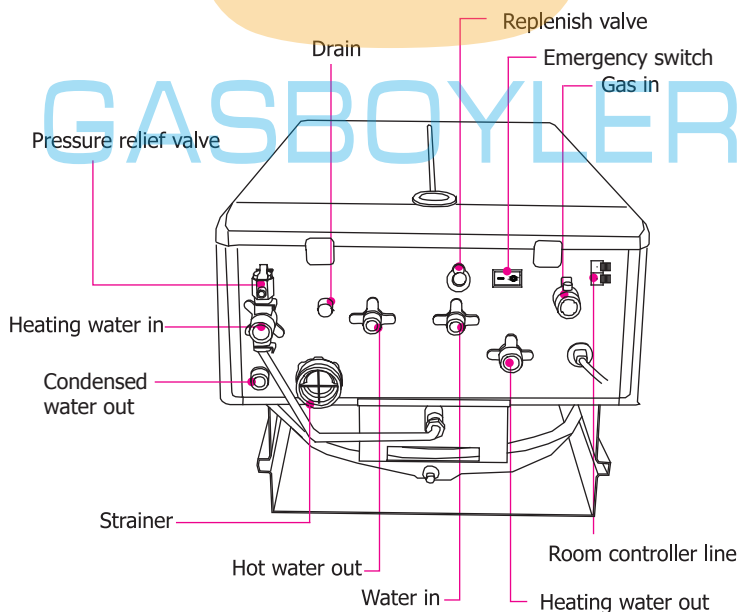
DAEWOO GASBOILER

General Description

Model No. DGB-160MES/200MES



Model No. DGB-250MES/300MES/350MES



Safety precautions

- It's essential to read, understand, and follow the recommendations on this manual before using this equipment.
- The cautions issued by this user's manual include critical information for your safety.

Please do not use the boiler for any purpose other than for heating and hot water. Failure to do so could result in serious injury, death, and/or property damage.

- The following words are used in this manual to denote the degree of seriousness of the individual hazards.

 Danger!	Used to indicate an imminent hazard which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.
 Warning!	Used to indicate a potential hazard situation which, if not avoided, could result in death or serious injury.
 Caution!	Used to indicate a potential hazard situation which, if not avoided, may result in minor or moderate injury.



MUST FOLLOW sign



DO NOT TOUCH sign



STOP sign



NO FLAMMABLES sign



DANGER, WARNING, CAUTION sign



Indicates "This appliance must be earthed"



Danger!

■ Check for gas leaks.

Please check for gas leaks often.



■ If there is any indication of a gas leak.

- Stop using the boiler immediately.
- Close the main gas shut-off valve and open all windows.
- Any spark can cause fire or explosion.
- Gas leaks may result in serious injury or death.
- Call gas supplier or service center to repair any leak at once.

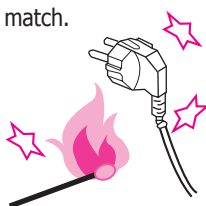


While airing out, never take the following actions

Do not use a lighter or a match.
Do not pull out the plug.



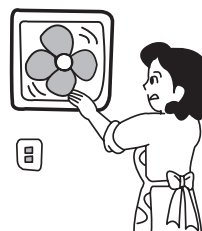
NO FLAMMABLES



Do not turn on/off any electric appliances such as a ventilator.



STOP



Safety precautions



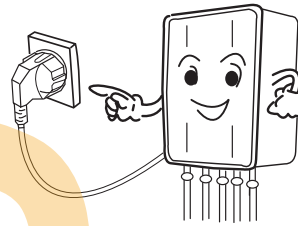
Warning!

■ Check the gas type.

- Do not use any gases other than the gas marked on the side of boiler.
- Improper use of gas may result in fire and explosion.
- Contact our service center if a change in gas type is necessary.

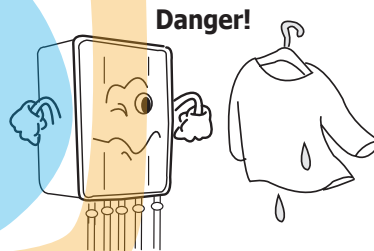
■ Keep plugged in at all times.

- Keep the boiler plugged in all the time, even when not in use. This allows the anti-freeze device to turn on the pump and the burner if necessary.



■ Do not use the boiler for any other purpose than for heating and hot water.

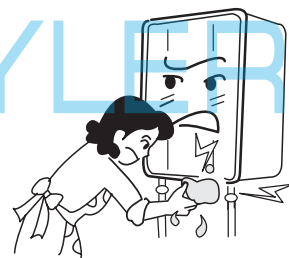
- If used for drying clothes, it may result in fire.
- Hot water from the boiler can not be used for food preparation.



Danger!

■ Beware of electric shock

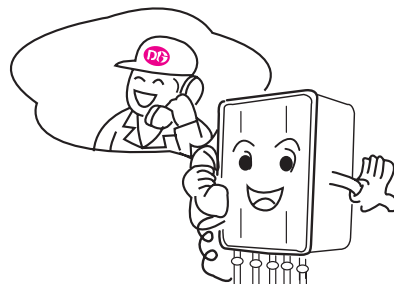
- Cleaning the boiler with anything wet may cause electric shock.
- Unplug the boiler while cleaning the boiler.



Caution!

■ Maintenance check

- Your boiler will work more reliably and efficiently if regularly serviced. We recommend an annual check. Call our service center for a safety check.



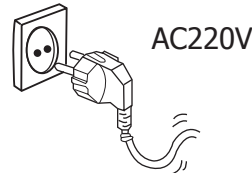
Points to check before using the boiler



Warning!

■ Check the power supply.

- This boiler is for AC220V only.
Use a power transformer if necessary (in the area of 110V).
Using current other than AC may cause electric shock or fire.



■ Check if the boiler is properly installed.

- The location chosen for the boiler must permit the provision of a satisfactory flue termination.
The location must also provide adequate space for servicing and air circulation around the boiler.
- Installation must be carried out solely by qualified technicians.
- Verify that the boiler vent discharge and air intake areas are clean and free of obstructions.
- The boiler must be mounted on a flat, vertical wall, which must be sufficiently robust to take the weight of the boiler.
- The boiler may be installed on a combustible wall, subject to the requirements of the Local Authorities and Building Regulations.



Warning!

■ Check flue gas venting system.

- Visually inspect entire flue gas venting system for blockage, deterioration or leakage.
- A gas leak may lead to gas poisoning.

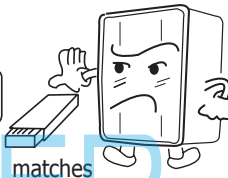
■ Never leave flammable materials in the immediate vicinity of the boiler.

- Flammable materials may result in fire and explosion.

thinner



gasoline



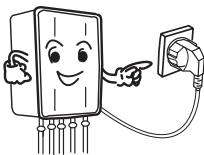
matches



■ Check if the boiler and heat radiator units are filled with water.

- After plugged in, if "E1" appears on the display of the room controller, the boiler is empty.
- If the display shows "E1", replenish the boiler with water.

● Plug in

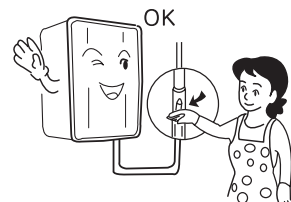


* If there is no water in the boiler, "E1" appears on the display of the room controller.

- Open the replenish valve, and the boiler will be replenished with water. (p. 35 for more details)

* When the boiler is replenished with water, "E1" on the display disappears.

● Open gas valve

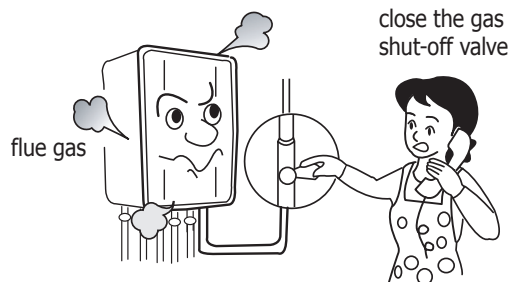


Cautions for use



Danger!

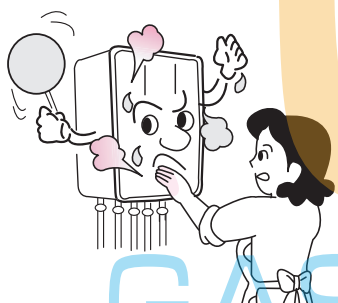
- **If a gas leak exists in room, or is suspected,** turn off the boiler and close the gas shut-off valve, and call a boiler installer or our service center. Improper exhaust of flue gas may lead to CO gas poisoning.



Caution!

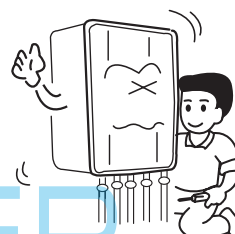
- **Do not touch the flue or pipes while the boiler is in operation.**

- While operating, the flue and pipes are extremely hot and can cause severe burns.



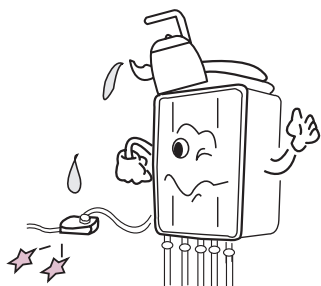
- **Installation or repair work must be done by a qualified boiler installer or service technician.**

- Failure to comply could result in severe personal injury, death or substantial property damage.



- **Do not leave anything on the boiler.**

- It may cause a short circuit or fire.



- **If there is any indication of a gas leak :**

- Stop using the boiler immediately and call boiler installer or our service center. Gas leaks may result in serious injury or death.
- Check the gas pipes and regulators for gas leaks often and if a gas leak exists or suspected, close the gas shut-off valve and call a gas supplier or our service center.



Danger!

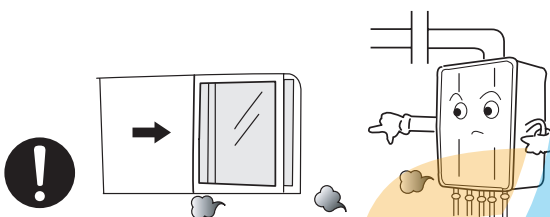
Cautions for use



Caution!

■ Keep any window near the gas flue closed.

- An open window may allow escaping exhaust gas to come into your home. This will lead to CO gas poisoning. If necessary to open a window for any reason, open the farthest window away from the flue gas.



■ When using hot water, be careful not to burn yourself.

- Always be careful when using hot water. Your hot water consumption may alter the temperature of the water you use.
- Be careful, and test the temperature of any water you use. Exercise caution when altering the flow of water, as this may change the water's temperature.



Be careful!
So hot!



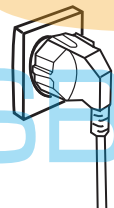
Caution!

Boiler anti-freeze function

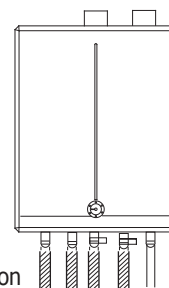
■ To prevent the pipes from freezing and bursting

- Keep the boiler plugged in at all times. When plugged in, the boiler's anti-freeze function maintains a minimum temperature to prevent the pipes from freezing.

AC220V



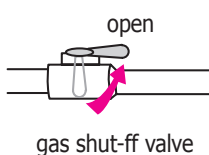
■ The pipes connected to the boiler must be insulated using more than 25mm thick insulation.



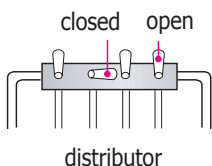
insulation

■ Even when you are away for a long time, leave the distributor valves and gas shut-off valve open.

- The anti-freeze function works only when the distributor valve is open.



gas shut-off valve



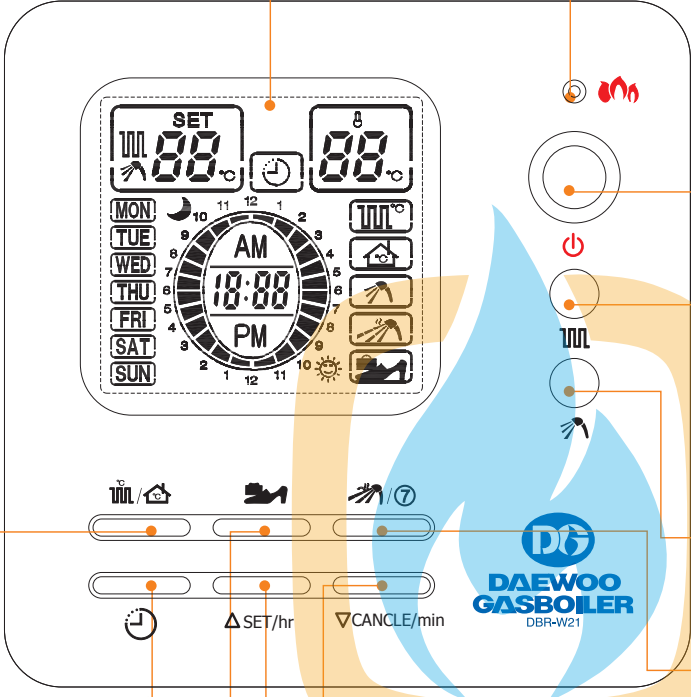
distributor

■ Boiler anti-freeze function

- If the water in the pipe gets too cold, the water-circulating pump starts operating automatically to it from freezing.
- If the temperature drops even further, the boiler starts combustion which will keep the pipes from freezing.
- For the auto-combustion to start, the boiler must be plugged in and filled with water. However, when the temperature sensor is out of order, the anti-freeze function will be inoperative.

Room Controller (DBR-W21)

Controls and Functions



Room controller display

Power lamp 🔥
The lamp turns on green color when the power is on and it turns off when the power is off. Both the lamp and Current temperature flicker when the boiler ignition does not work. The lamp turns on red color when the boiler is burning.

Power button ⏻
Press this button to turn the Room controller on or off.

Heating button 🔥
Press this button to control your heating. The "Set heating temperature" display will flicker for a few seconds and on.

Hot water button 🚿
Press this button to control your hot water. The "🚿" display will flicker for a few seconds and on.

Rapid hot water/Week button 🚿/🕒
When you need hot water quickly, press this button, and you can change a day of the week when you press this button again.

Heating timer button 🕒
Using this button, you can set 1~24 hours of a day of the week at which your boiler will turn on, you also use this button to initiate the process for setting the current time.

Cancel/Minutes/Reducing (▽) button

Set/Hour/Increasing (△) button

Going-out button 🏠
When you are away, press this button to prevent the boiler from freezing.

Heating water/Room temperature select button 🔥/🏠
When "Heating water" (the radiator icon) is selected, the temperature of the heating water is displayed. This function allows you to control the temperature of the water heating your home.
When "Room" (the house icon) is selected, the temperature of your home is displayed. This allows you to control your boiler's operation based on your home's temperature.

⚠ Caution!

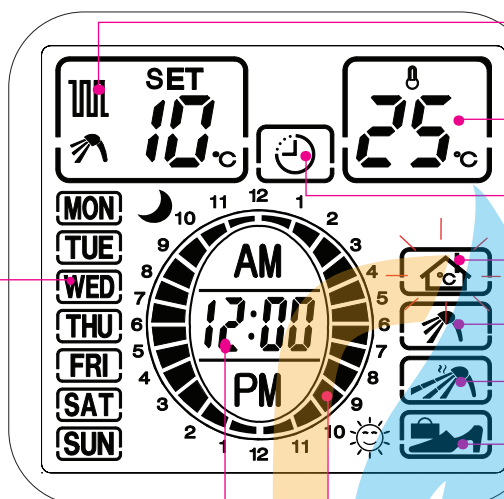
- After a power outage, the time of Room controller is operating normally within one hour, but the time of Room controller will stop after one hour, so you will set the time and day of the week of Room controller again.
- Previously programmed functions will remain unchanged.

Room Controller Display(DBR-W21)

■ When Room temperature(house icon) in temperature setting is selected,

- **Week indicator**

Shows a day of week when the week timer is selected.
(No display when use for 24 hours timer only.)



- **Set Room temperature display**

Shows the set room temperature that you desire.
(Set temperature can range from 5°C~40°C.)

- **Current temperature display**

Shows the current room temperature when you use heating,
or shows the current hot water temperature when you use hot water.

- **Heating timer indicator**

Shows when you press the Heating timer button.

- **Room temperature indicator**

Shows when the room temperature function
in temperature setting is selected.

- **Hot water indicator**

Shows when the Hot water function is selected.

- **Rapid Hot water indicator**

Shows when the Rapid hot water function is selected.

- **Going-out indicator**

Shows when Going-out (anti-freezing mode) is selected.

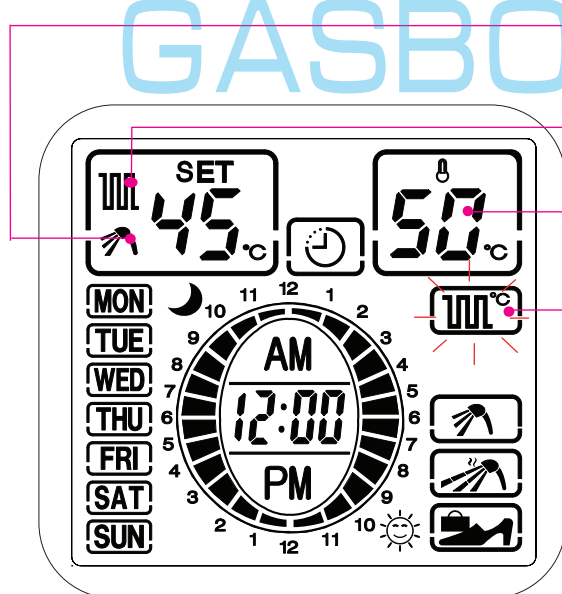
- **Current time display**

Shows the current time.

- **Heating timer indicator**

Scheduled times are set on an hourly basis.
The programmed set times are marked in black.

■ When Heating water temperature(radiator icon) in temperature setting is selected,



- **Set Hot water temperature display**

Shows when you press the Hot water button.
(Set temperature can range from 35°C~60°C.)

- **Set Heating water temperature display**

Shows the set heating water temperature that you desire.
(Set temperature can range from 45°C~80°C.)

- **Current temperature display**

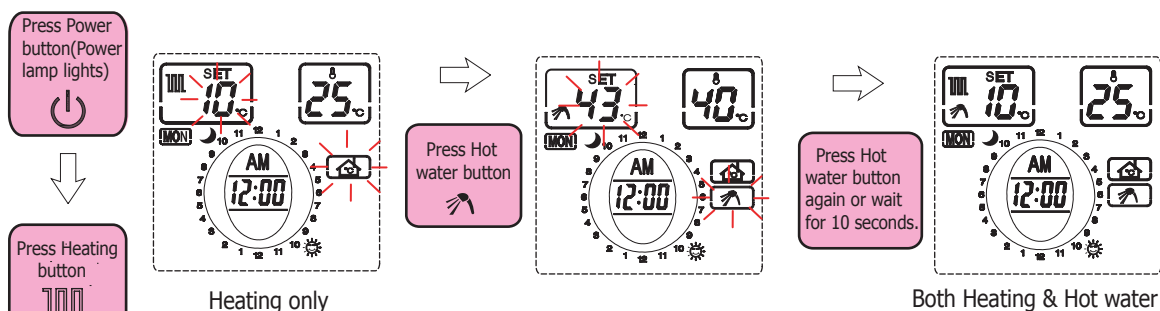
Shows the current heating water temperature when you use heating,
or shows the current hot water temperature when you use hot water.

- **Heating water temperature indicator**

Shows when the heating water temperature function
in temperature setting is selected..

How to use (DBR-W21)

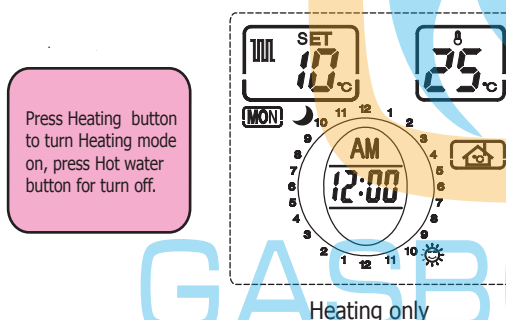
When using both Heating and Hot water



When using both heating and hot water

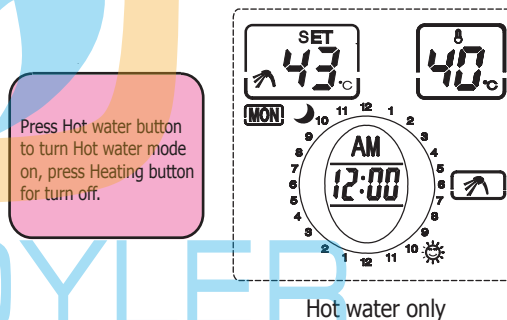
1. Heating mode is operative.
When using hot water, heating becomes temporarily inoperative.
2. Hot water mode is operative only when you use hot water.
When hot water is not in use, only heating mode is operative.

When using Heating only



1. Use Heating mode only when not using hot water.

When using Hot water only



1. Use Hot water mode when heating is not needed.
2. The boiler comes into operation only when using hot water. Heating mode is inoperative.

1. Heating temperature setting

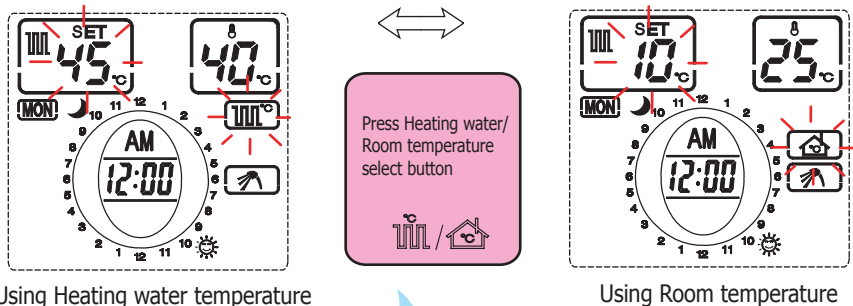
- Press $\triangle$ or ∇ button to set heating temperature. The set heating temperature display will flicker for about 10 seconds, after which your desired temperature is set.
- The setting range of room temperature : 5~40°C, the setting range of heating water temperature : 45~80°C

2. Hot water temperature setting

- Press Hot water mode button. When the Set hot water display flickers, press $\triangle$ or ∇ button to set the hot water temperature. The display will flicker for about 10 seconds, after which your desired temperature is set.
- The setting range of hot water temperature : 35~60°C

How to use (DBR-W21)

How to use Heating water/Room temperature



- By pressing Heating water/Room temperature select button, you can choose either heating water or room temperature. The Set temperature display and Heating water/Room temperature indicator flicker for about 10 seconds after which your choice is confirmed.
- When using room temperature setting, depending on the location of the room controller, temperature deviation may occur. To optimize temperature control, use Heating water temperature setting.

Notes

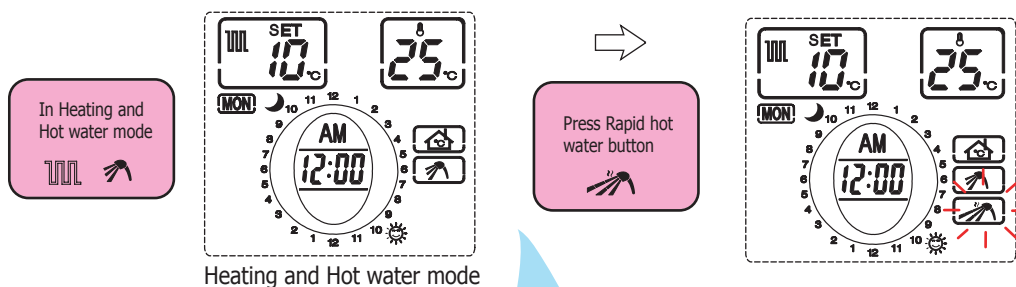
- This boiler uses a propotional control method designed to adjust the flame according to the difference between the set temperature and the current temperature.
- The table below shows the temperature differences which will cause either the boiler flame to be ignited, or extinguished.

	The temperature when the boiler flame is ignited	The temperature when the boiler flame is extinguished
When using Room temperature setting	1 °C lower than the set temperature	Any temperature higher than the set temperature
When using Heating water temperature setting	12 ~ 18 °C lower than the set temperature	7 °C higher than the set temperature

How to use (DBR-W21)

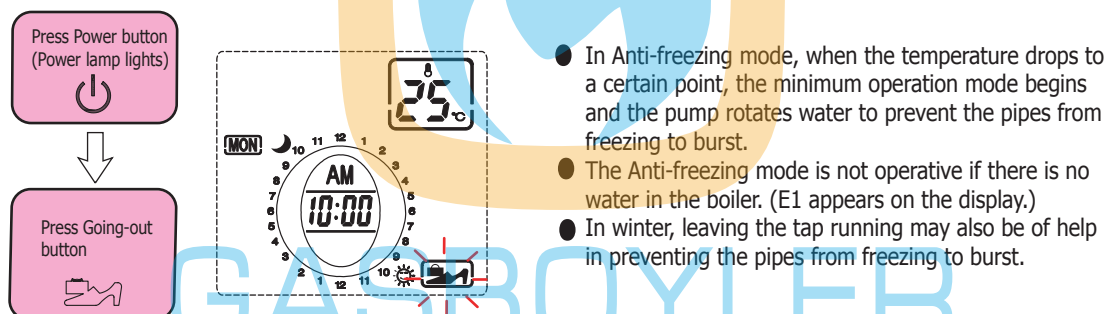
How to use Rapid hot water

- Press the Rapid hot water button one minute in advance before using hot water.
- If you press the Rapid hot water again, the Rapid hot water function will become inoperative.



- If you do not use hot water in Rapid hot water mode, the boiler goes into standby mode.
- After a certain period of time, the Rapid hot water function will become inoperative.

Going-out (Anti-freezing mode)

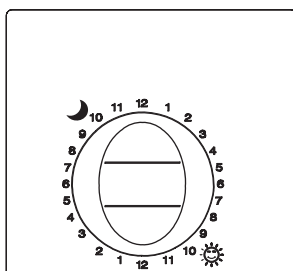


Cautions in using hot water

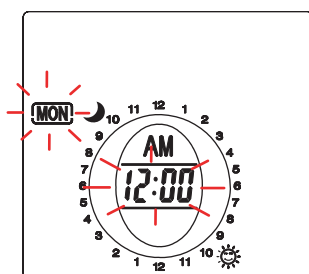
- You should set Hot water temperature about 50°C when you are using a little amount of hot water, and then you need to mix it with cold water.
- If you set Hot water temperature over 50°C, the temperature of hot water may be too high and cause burns, so that you need to mix it with cold water.
- For your safety, you cannot set Hot water temperature over 50°C when you are using Hot water. (Stop using Hot water, then you can set Hot water temperature over 50°C.)

How to use (DBR-W21)

Current time and week setting



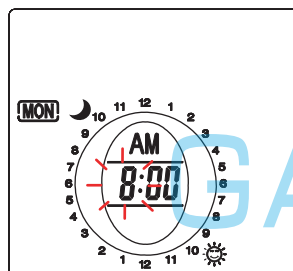
- Press Power button to turn off the boiler.



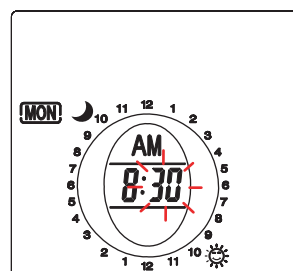
- Press Heating timer button for a couple of seconds.



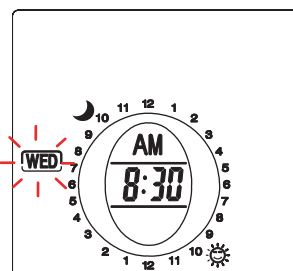
- The current set time and week flickers.



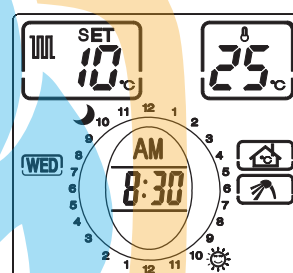
- Press Set/Hour/Increasing button to set the hour.



- Press Cance/Minute/Reducing button to set the minutes. "▽"



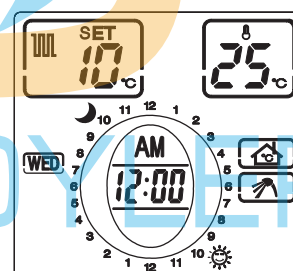
- Press Rapid Hot water/⑦ button to set the weeks.



- Press Heating timer button for a couple of seconds.



- The setting time and week are displayed when you turn on Room controller.



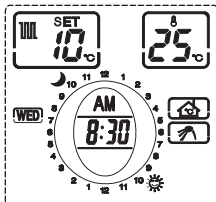
Caution !

- After a power outage, the current time of Room controller will be worked by internal battery.
- The internal battery will be charged automatically and if it is totally discharged, the current time of Room controller can be worked about 1 hour.
- When a power is on after it's failure, the current time will be reset to 12:00AM but the week will not be changed.
- If the current time is reset by more than 1 hour of a power off, it must be entered.

How to use (DBR-W21)

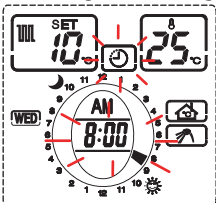
How to set Heating timer and week

1. Continuous Heating



- The Heating timer automatically turns the heating on and off at times you set. Press the Heating timer button "🕒", and you can newly set or change the times and weeks at which the boiler active.
- Using the Heating timer is energy efficient because the boiler operates only at the programmed heating time.
- In continuous heating (the Heating timer display is all white), the boiler operates and controls by a selected temperature in Room or Heating water. And when using Heating timer (the programmed times are marked in black), the boiler operates by Heating timer.

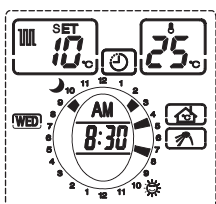
2. Heating timer setting



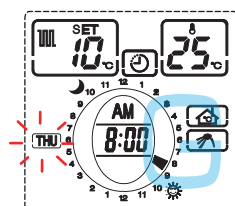
← Press Heating timer button "🕒"

- During the adjustment, the current time display will flicker.
- Cancel: If you press Cancel/min "▽" button, the Heating timer indicator moves clockwise and cancels the any previously set heating times. (marked white)
- Setting: If you press Set/hr "△" button, the Heating timer indicator moves clockwise and you can set heating times at specific hours. (marked black)
- Week timer change: (Only can select when using week timer)
 - The current time will flicker when press Heating timer button, and then the week timer can change by pressing Rapid hot water/week "🔥/🕒" button.
 - Press Heating timer button for 3 seconds, the Heating timer will change from week & 24 hours timer to 24 hours timer only or from 24 hours timer only to week & 24 hours timer.
- Exit: Press Heating timer button "🕒" to exit.

3. When using Heating timer



- The set heating times are marked black.
- The Heating timer can be only set at hour intervals.
- Heating lasts for 30 minutes and stops until the next set time.
- The heating temperature is controlled and maintained by the set temperature.



● How to set Week or 24 hours timer

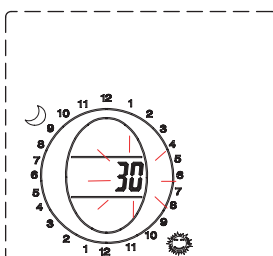
- You can use for Week & 24 hours timer when the week is displayed, but if the week is not displayed, you can use for 24 hours timer only.
- Press Heating timer button for 3 seconds, the Heating timer will change from week & 24 hours timer to 24 hours timer only or from 24 hours timer only to week & 24 hours timer.

How to change the time heating lasts

Press Power button
(Power lamp lights)



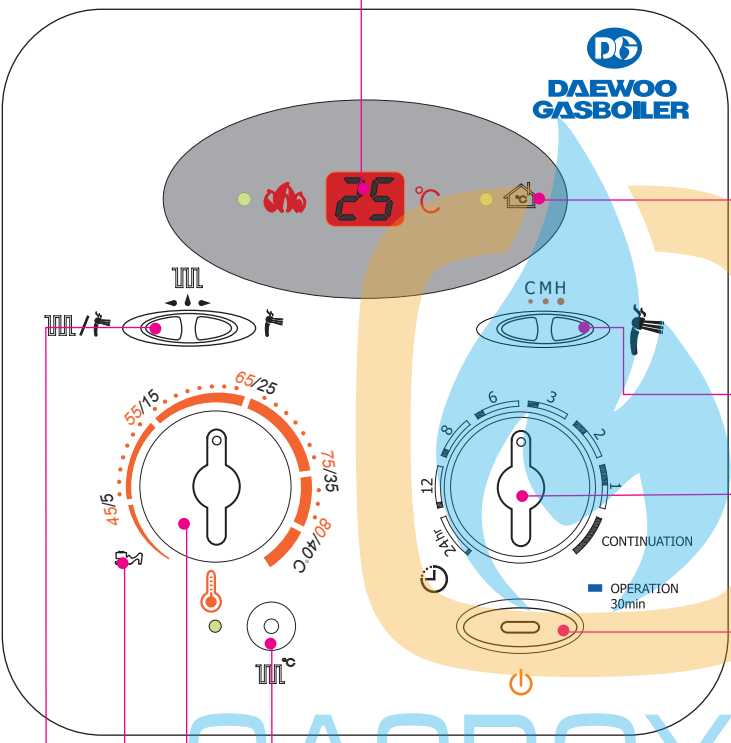
Press Going-out
button for 2 seconds



- Use when you want to change the length of time heating lasts.
 - You can change the default value of 30 minutes to 15,30,45 or 60 minutes.
1. Default value of "30" flickers.
 2. Press the △ button to choose the desired period.
 3. Press the Power button and the setting is completed.
(Each press changes the period by 15 minutes intervals.
(45 -> 60 -> 15 -> 30))

Room Controller (DBR-S21)

■ Controls and Functions



● Heating water / Room temperature
When Heating water is selected, the heating water temperature is displayed, when Room is selected the room temperature is displayed.

● Room temperature lamp
When Heating water temperature selection switch is off, room temperature lamp is on and indicate room temperature and boiler is operated by room temperature.

● Hot water temperature adjusting
You can adjust the hot water temperature from low "C" to high "H".

● Economy Heating timer
You can select to make an advance order to economy heating timer.

● Power button
To use the boiler, select on, otherwise, select off.

● Heating water temperature selection button
When it is on, heating water temperature lamp is on and display heating water temperature, and the boiler is operated by heating water temperature.

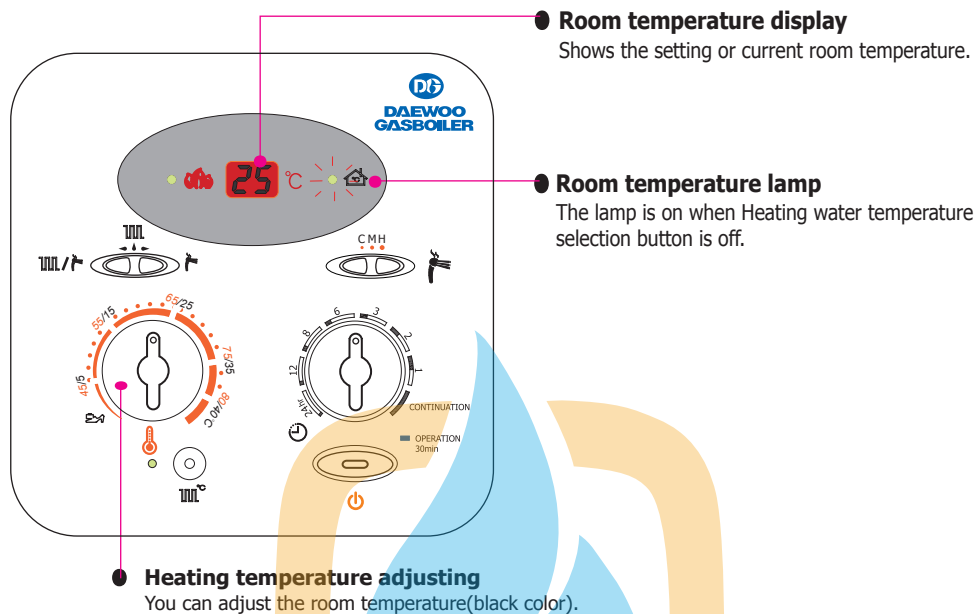
● Heating temperature adjusting
You can adjust the heating water (red color) and room (black color) temperature from cool to very hot.

● Going-out button
When you are going out, the boiler is operated to prevent freezing.

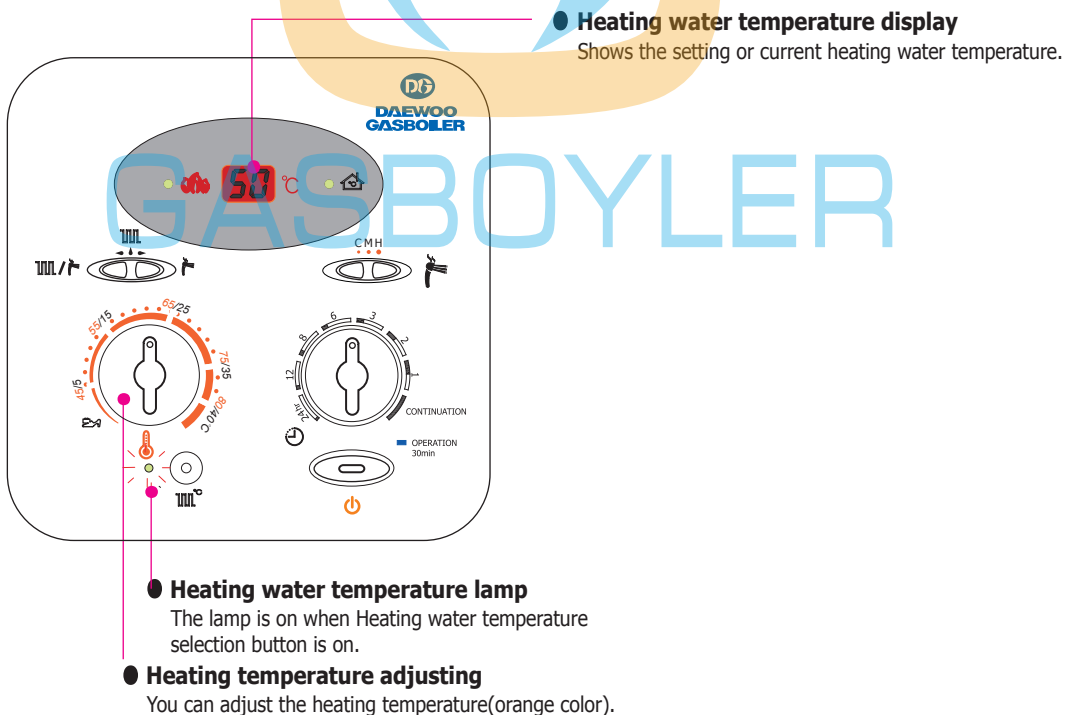
● Heating/Hot water, Heating only, Hot water only selection switch
You can use for both heating and hot water when Heating/Hot water () is selected, and you can use for heating only when Heating only () is selected, and you can use for hot water only when Hot water only () is selected.

Room Controller Display (DBR-S21)

■ When Room temperature is selected,



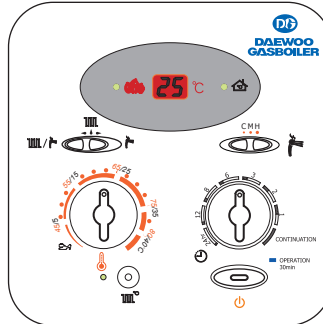
■ When Heating water temperature is selected,



How to use (DBR-S21)

When using both Heating and Hot water

Select Heating/Hot water selection switch to Heating/Hot water "H/H".



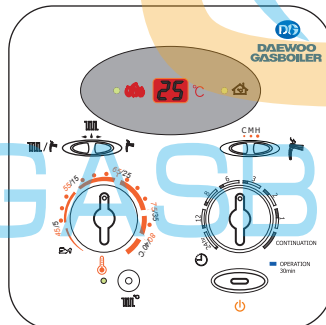
Both Heating & Hot water mode

In winter, to heat the room and use hot water at the same time.

1. Heating mode
The boiler's heating operates as the assigned temperature, and it will be automatically stopped while use hot water, and then it will be automatically operated while stop use hot water.
2. Hot water mode
When use hot water, the boiler will be automatically changed Hot water mode, and can use hot water.

When using Heating only

Select Heating/Hot water selection switch to Heating only "H".

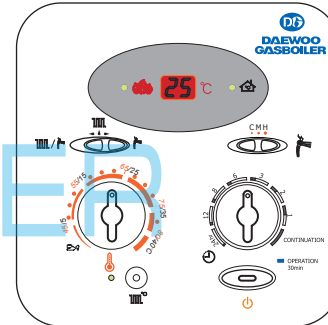


Heating only

1. Use Heating mode only when not using hot water.

When using Hot water only

Select Heating/Hot water selection switch to Hot water only "H/H".



Hot water only

1. In summer, only to use hot water, not to use heat the room.

1. Heating temperature setting

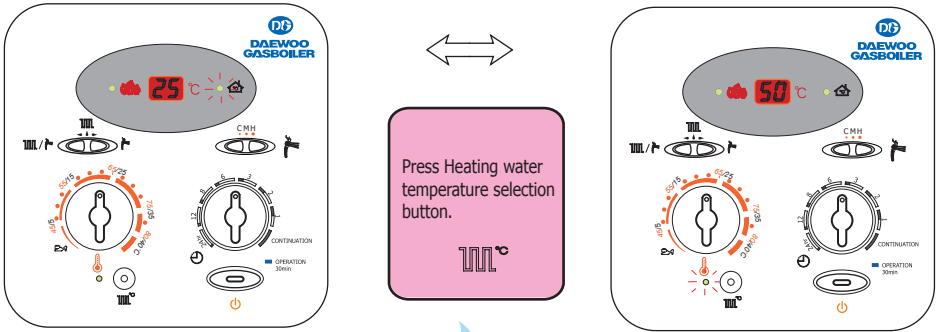
- Adjust Heating temperature adjusting to set heating temperature. The set heating temperature display will flicker for about 10 seconds, after which your desired temperature is set.

2. Hot water temperature setting

- Adjust Hot water temperature adjusting from low "C" to high "H".

How to use (DBR-S21)

How to use Heating water/Room temperature



- By pressing Heating water temperature selection button, you can choose either heating water or room temperature. The Set temperature display and Heating water/Room temperature display flicker for about 10 seconds after which your choice is confirmed.
- When using room temperature setting, depending on the location of the room controller, temperature deviation may occur. To optimize temperature control, use Heating water temperature setting.

Notes

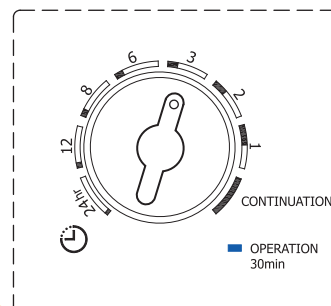
- This boiler uses a propotional control method designed to adjust the flame according to the difference between the set temperature and the current temperature.
- The table below shows the temperature differences which will cause either the boiler flame to be ignited, or extinguished.

	The temperature when the boiler flame is ignited	The temperature when the boiler flame is extinguished
When using Room temperature setting	1 °C lower than the set temperature	Any temperature higher than the set temperature
When using Heating water temperature setting	12 ~ 18 °C lower than the set temperature	7 °C higher than the set temperature

How to use (DBR-S21)

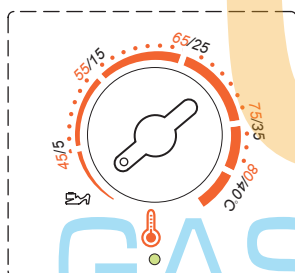
Economy Heating timer

- You can use when use for economy heating.
- Adjust Heating temperature adjusting to set heating temperature.
- Adjust Economy heating timer to set time for economy heating.
 - Continuation : Operate to heat continuously.
 - 1 ~ 24 hr : Operate to heat for 30 minutes and stop for the rest of times.
(For example, operate to heat for 30 minutes and stop for 2.5 hours repeatedly, when you select 3 hr.)



Selection 3 hr.

Going-out (Anti-freezing mode)



- In Anti-freezing mode, when the temperature drops to a certain point, the minimum operation mode begins and the pump rotates water to prevent the pipes from freezing to burst.
- The Anti-freezing mode is not operative if there is no water in the boiler. (E1 appears on the display.)
- In winter, leaving the tap running may also be of help in preventing the pipes from freezing to burst.

Cautions in using hot water

- If you use hot water too much, for example, several people use hot water at the same time in a different place, the water may not be hot enough, although you have the hot water to High " H ". This is because the amount of the water you use exceeds the capacity of the water that the boiler can heat in real time.
- If you control the amount of hot water you use, you can get hot water at all times even when the hot water temperature is set to Low " C ".
- If you are only using a little amount of water, the temperature of hot water may be so high that when using it you need to mix it with cold water. Be careful not to burn yourself.

Useful tips

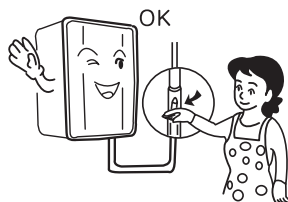
■ Error sign in Room controller

ERROR SIGN	TROUBLES	CHECK POINTS
E0	Room controller's temperature sensor failure	Room controller's temperature sensor
E1		
E2		
E3		
E4		
E5		
E6		
E7		
E8		
EE		

- When error sign appears in the display, exercise useful tips. If you still have trouble, call our service center.

When the boiler is not in use

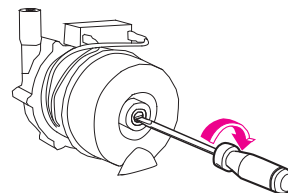
1. Turn off the power.
 2. Close the gas shut-off valve.
- But, leave the gas shut-off valve open in winter to prevent the boiler from freezing.



※ Leave the boiler plugged in all the time.

When the pump is not rotating

- If you have not used the boiler for a long period of time, the pump may not rotate.
- In the event of this, turn the inside groove clockwise 3 to 4 times with a screwdriver, and it will start rotating.



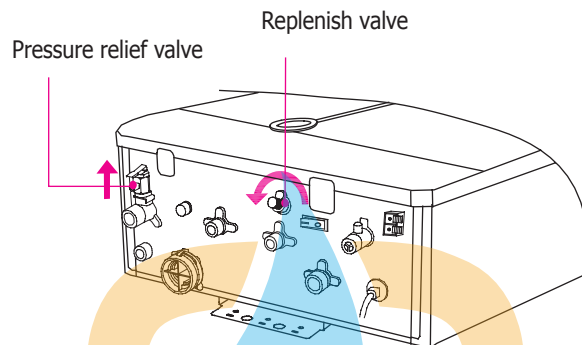
■ System to prevent pump sticking

The system to prevent pump sticking operates for about 5 minutes on a daily basis even when the boiler not in use.

Useful tips

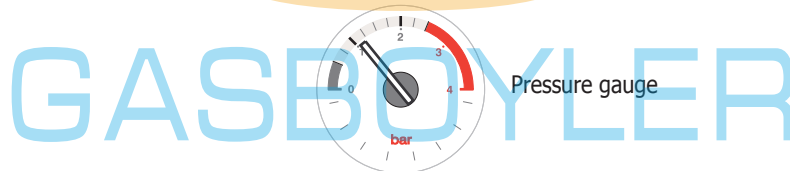
Checking Heating water pressure

- There is a Replenish valve and a Pressure relief valve below the boiler.



■ Check pressure gauge

- In case the pressure of heating pipes falls below 1kgf/cm^2 , open the replenish valve to refill the water to $1\sim 2\text{kgf/cm}^2$. (In case the water supply pressure is below 1kgf/cm^2 , fill the water to the full capacity.)
- If there is excessive pressure inside the heating pipes, the pressure relief valve automatically discharges the water inside the boiler to maintain optimal pressure level. In this case, you pull the pressure relief valve upward and it sends out the water until the pressure falls below 2kgf/cm^2 .
- Low pressure of heating pipes may disturb the circulation of heating water. (Usable minimum pressure is 0.2kgf/cm^2)



■ Pressure relief valve

- The pressure relief valve is a safety device which prevents the heating pipes from bursting or the boiler from malfunctioning.
- When the pressure is above $2.7\sim 3\text{kgf/cm}^2$, the pressure relief valve expels water to reduce the pressure inside the heating pipes and stops at the optimum level automatically.

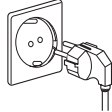
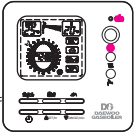
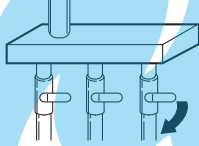
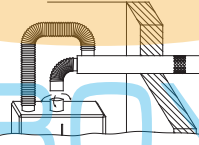
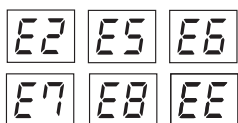


Caution

- You are careful not to burn yourself when you open the pressure relief valve because hot water may flow out.
- You need to use extra caution when you open the pressure relief valve because the high pressure heating water in pipes may shoot out.

Troubleshooting check list

※ Check the items below first, and then call our service center, if necessary.

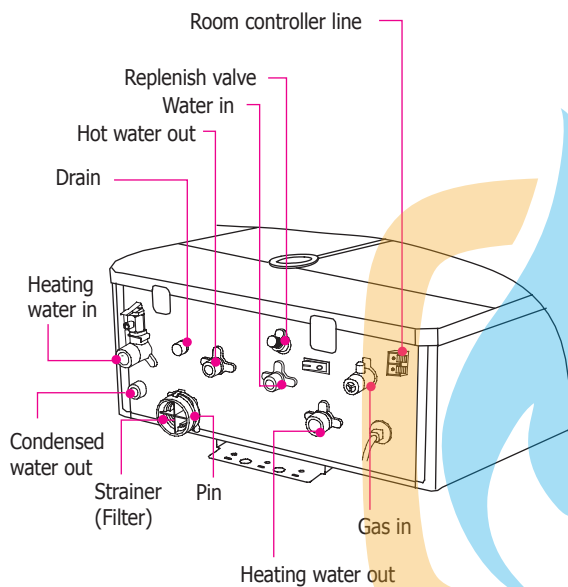
Problems	Troubleshooting
The boiler is not working.	   ● Have you turned on the power? ● Is it plugged in? ● Is the Room controller connected properly?
The boiler flame is not ignited. ● Indicator is flickering. ● Current temperature display is flickering.	  ● Have you opened the gas shut-off valve? ● Have you checked if the gas ran out? ● After checking the above, press the Power button.
"E3" is flickering in the display.	 ● Are there any foreign substances in the filter? ● Is the distributor valve open? ● Ensure that one of the distributor valves is open. ● After checking the above, turn the power off and on.
There is a smell of exhaust gas during combustion.	 ● Ensure the flue gas duct is not obstructed and is properly connected.
Water leaks from the boiler.	● If the boiler is operating for a long period time, it is normal for water to leak from the boiler. A drain hose should be connected to the sewer.
Hot water temperature is too low.	● Are several people using hot water at the same time? ● Set hot water temperature to maximum.
Hot water temperature is too high.	● Minimal use of hot water may lead to excessive temperature. ● Set hot water temperature to minimum.
	● Call our service center.



Caution How to clean the filter

- Before the boiler is installed or relocated, foreign substances inside the pipes must be cleaned out. Contaminants may shorten the life of the boilers, make noise, and/or reduce thermal efficiency.
- Clean the filter every six months and the pipes every two years.

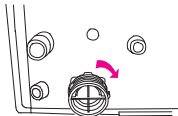
1. Unplug the boiler.
2. Close the water supply valve.



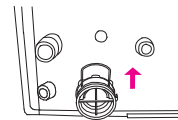
3. Turn the drain stopper counter-clockwise and pull downwards to open. The water in boiler (about 6 L) will come out. Be careful because it may be hot.



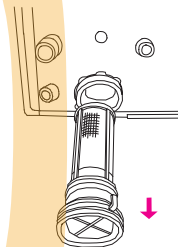
4. Turn the filter's fastener counter-clockwise.



5. Pull the pin of the filter upwards to separate.

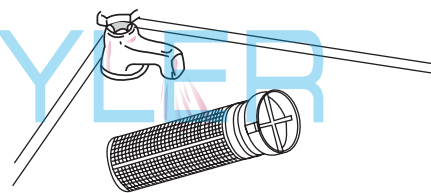


6. Pull the filter downwards to separate. Beware of any possible remaining hot water.



Caution

7. After cleaning, assemble the filter following the above steps in reverse. Insert the pin to affix the filter.



8. Put the drain stopper back in its original position.
9. Open the water supply valve.
10. Open the replenish valve until the pressure reaches 1~2kgf/cm².
11. Plug the boiler in.



Caution

- Turn the boiler off for at least an hour before cleaning the filter.
- The water in the boiler may be hot. You need to proceed with caution to ensure you do not scald yourself.

Installation instructions



Caution

To Installers !

- This boiler must be installed by a qualified boiler installer or service technician.
- Any damages caused by not installing the boiler in accordance with the recommendations made herein are the installer's responsibility.
- Improper gas piping may result in gas leakage, fire, and explosion.
- Improper air/flue duct may cause CO gas poisoning.
- Contaminants inside the pipes or sediments from underground water may cause damage to the boiler for which the manufacturer will not be held liable.
- Do not use antifreeze as it shortens the life of the boiler and may cause failure or breakdown.
- The installer must complete the installer's checklist and must keep a record of installation for five years.
- A copy of the installation record must be handed to the customer.
- The user must be educated by the installer on how to use the boiler.
- After installation, the manual must be kept with the user.



Caution

Before installing the boiler

- Check the gas type and power supply before installing the boiler.
- Do not damage the coating of the wire connected to the Room controller.

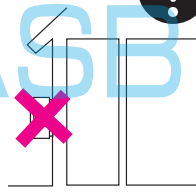


Warning

Boiler location

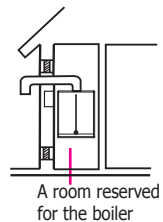
- **Do not install the boiler outdoors.**

Do not install the boiler outdoors where it can be frozen in winter. In unavoidable circumstances, make sure the boiler is installed with cold protective measures.



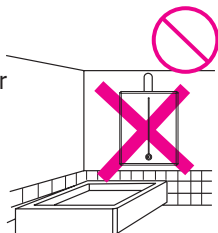
- **Install the boiler in the room reserved for the boiler only (FE type only).**

Any other location may cause exhaust gas to enter living spaces, leading to CO poisoning. (except FF type)



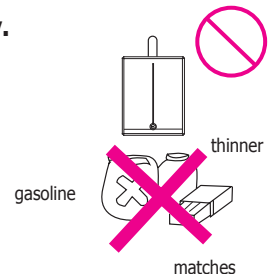
- **Do not install the boiler in enclosed areas.**

Lack of oxygen due to improper ventilation may result in asphyxiation and death.



- **No flammables nearby.**

Do not store flammables things near the boiler.



Installation instructions

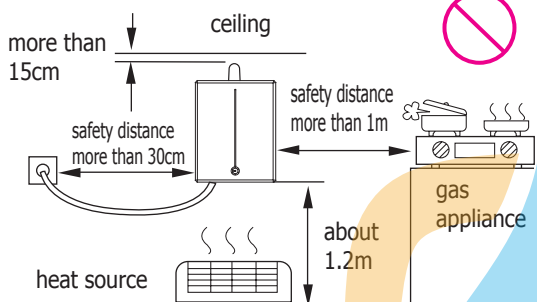


Warning

Boiler location

● Minimum clearance to combustion materials.

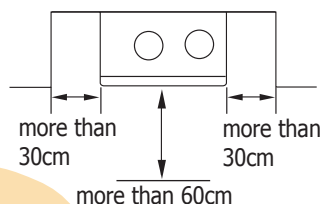
There must be at least 1m's clearance between the boiler and any other gas appliance. There must be at least 1.2m clearance below the boiler from any hot source. The electrical point must be at least 30 cm from the boiler.



This boiler is a hermetic tank type which allows for installation below the level of the boiler's exiting pipes.

● Minimum Service Clearance.

A distance of at least 60cm in front of the boiler must be provided for cleaning and servicing the boiler



The boiler must not be fitted on a combustible wall surface. In case the wall surface is combustible, attach incombustible materials to the wall before installation.

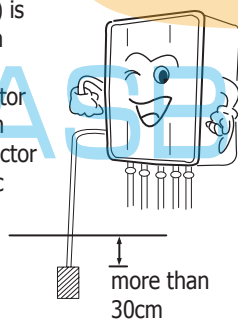


Earthing

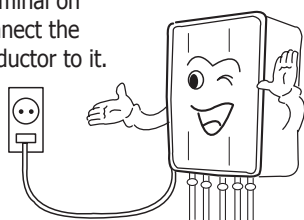
Electrical earthing (Grounding)

- Earthing (Electrical grounding) is necessary to prevent you from getting electrocuted. The boiler's grounding conductor must be earthed at least 30cm deep. Or the grounding conductor can be connected to a metallic water pipe.

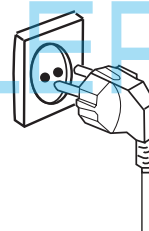
- The grounding conductor must be at least 1.15 mm² in diameter.



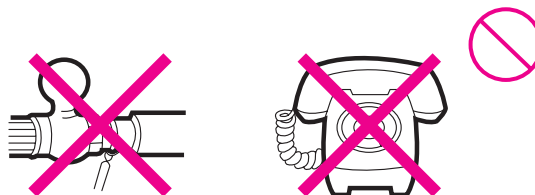
- If there is an earth terminal on an electrical point, connect the boiler's grounding conductor to it.



- When using an electrical point with an earth terminal, separate earthing is unnecessary.



- The boiler must not be earthed to a gas pipe, telephone line, or a lightning conductor.

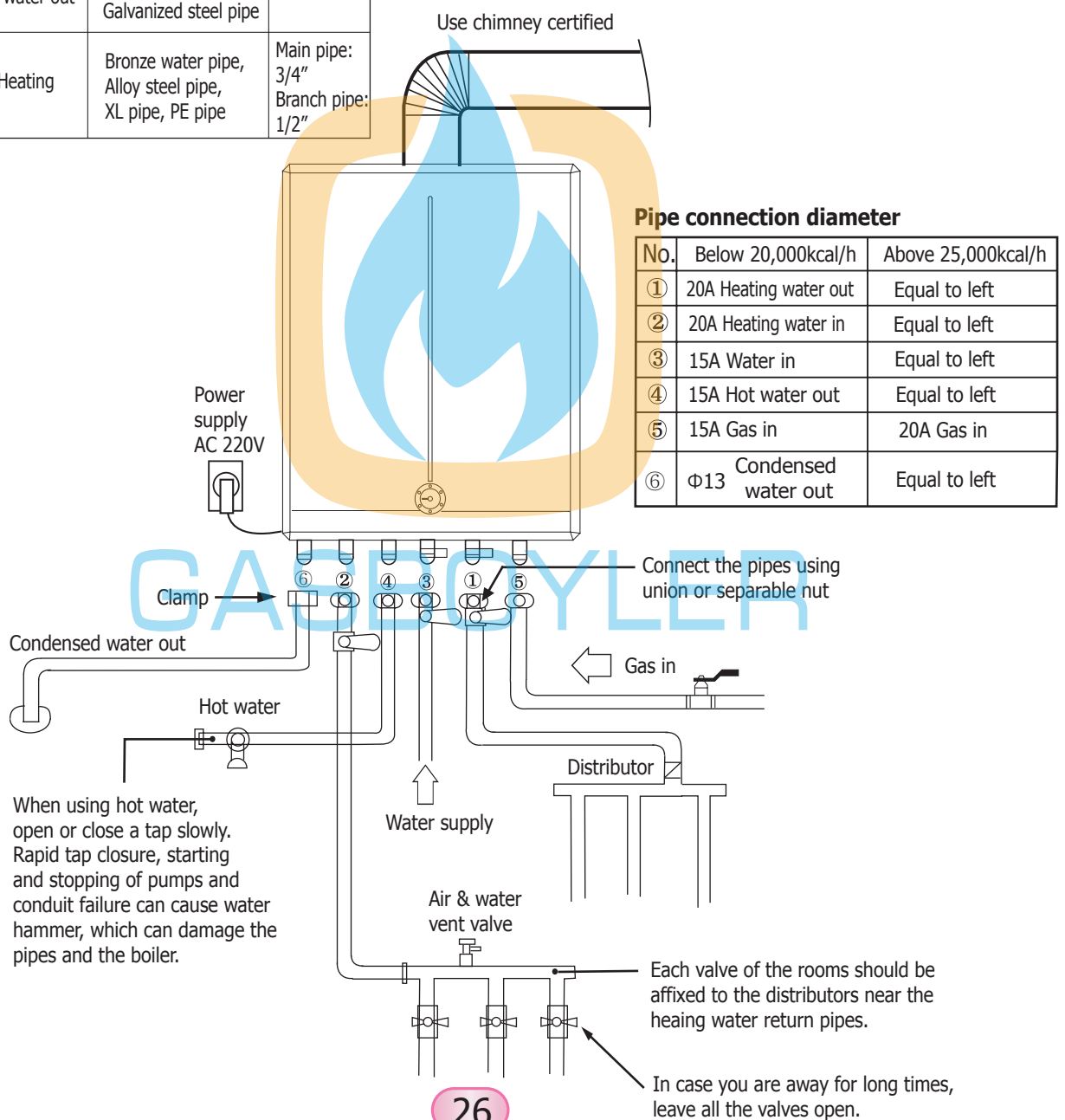


Installation instructions

How to install pipes

Components & Size

Sort	Components	Size
Gas	Metal pipes, Gasware, Metal flexible hose tested & certified	15A(1/2"), 20A(3/4")
Water in, Hot water out	Bronze water pipe, Alloy steel pipe, Galvanized steel pipe	15A(1/2")
Heating	Bronze water pipe, Alloy steel pipe, XL pipe, PE pipe	Main pipe: 3/4" Branch pipe: 1/2"



Installation instructions

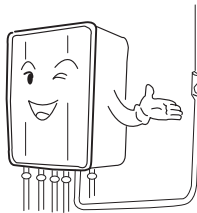


Caution

Piping

Gas piping

- Installation of gas pipes must be performed by gas professionals, or service provider.
- Ensure that the gas used, as indicated on the boiler, is the same as the gas supplied.
- The gas shut off valve needs to be located close to the boiler for easy access.
- Check if there is any gas leakage after pipe installation.

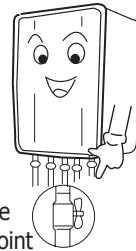


Install gas shut-off valve nearby

Water supply piping

- A shut-off valve is needed at the point where the water supply pipe starts.
- The water supply pressure must be above 0.2kgf/cm^2 (20kPa). If it is above 4.5kgf/cm^2 , use the pressure relief valve.
- Before installation, all foreign substances in the pipes must be removed and cleaned.
- Refrain from using underground, or well water. Instead, use water supplied by your local provider.

* If the water supply pressure is too low and an auto water supply pump is needed, do not install the pump in the boiler room. The pump's automatic function can cause a fire in the case of a gas leak.



Install a shut-off valve at the water intake point

Hot water piping

- Hot water pipes shall be as short and simple as possible and slanted $1/100 \sim 1/200$ for easy drainage.



Make hot water pipes simple

Heating water piping

- Heating water pipes should be installed in such a way that there are no pipe connections which make repairs hard and/or increase the possibility of leakage.
- Heating supply pipes and return pipes must be of the same size.
- The drain valve must be located at the lowest position of the piping so that heating water can be drained if necessary.
- When connected to radiators, an automatic or manual air vent device is necessary.



Caution

- Water supply, hot water, and heating pipes must be insulated using at least 25mm insulation.
- Attaching thermal heating elements to water supply and hot water pipes will help prevent winter freeze (optional).
- Do not insulate filter, air vent, or drain valves.

Installation instructions



Caution

Installation of flue system

Forced exhaust type : FE



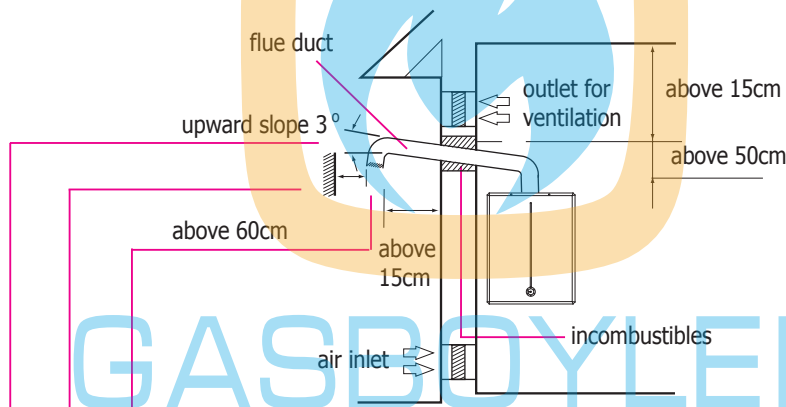
Install the boiler in a room reserved for the boiler only



Warning

- The forced exhaust type boiler must be installed in a room reserved for a boiler only.
- The boiler room means the space designated for a boiler only, separate from living spaces or spaces used for other purposes.
- The boiler room needs access to an air inlet and an outlet for ventilation.

The diameter of flue duct : $\Phi 80\text{mm}$



- Install a terminal guard to protect the terminal from mechanical damage from outside influences. (such as birds or rats)
- There must be no flammables within 60cm from the terminal. (within 30cm in case heat resistant boards are installed)
- A 3° upward slope is required to keep precipitation off.
- Make sure there is no hole within 60cm which allows flu gas to re-enter.
- Total length of ducts must be less than 5m, with no more than 3 turns. (not including the initial turn at the terminal / no ducts must be bent upwards)

Installation instructions



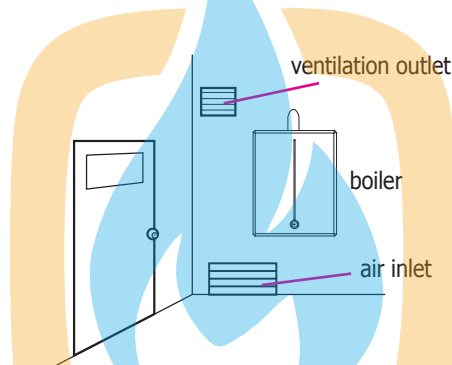
Caution

Installation of flue system

Forced exhaust type : FE

Air inlet and ventilation outlet

- Since fresh air (oxygen) is needed for combustion, an air inlet and a ventilation outlet must be installed.
- The air inlet and ventilation outlet must be located at points where air is well ventilated.
- The air inlet and ventilation outlet must be structurally distinct from the body of the boiler.
- The cross section area of air inlet and ventilation outlet must be larger than that of ducts.



Be cautious

- Use ducts made of stainless steel or materials which are heat and water resistant.
- If the gas flue ducts pass through walls made of flammable material, install incombustible boards on the walls to prevent fire.
- The ducts should be placed at a point at which you have easy access for maintenance.
- If, due to unavoidable circumstances, you must install them in the roof space or a concealed area, the ducts must be insulated with incombustible insulation. A minimum amount of space and ventilation for maintenance must always be preserved.
- You should use the ducts must be officially certified.



Warning



Must follow

- You should use the ducts must be officially certified.
- Do not use flexible aluminum ducts.
- The connection between the boiler and the exhaust gas duct must be fixed firmly so that it cannot be separated by external factors.
- Duct connections must be sealed using an O-ring and heat-resistant silicon (except plaster bandage) and exhaust gas leakage must be checked.
- Any damages caused by not installing the boiler in accordance with the recommendations made herein are the installer's responsibility.

Installation instructions



Caution

Installation for duct sharing

Forced exhaust type : FE

Duct sharing in a Communal Space

- 1) If the distance between the boiler and the duct shared by multiple boilers is more than 4 m, connect the gas flue ducts to the shared duct. If the distance is less than 4 m, the gas flue duct must be exhausted separately.
- 2) The effective cross sectional area of the shared duct must be at least the area calculated by the following formula.

$$A = Q \times 0.6 \times K \times F + P$$

※ The above A, Q, K, F, and P refer to the following:

A: Efficient cross sectional area of the shared flue duct(mm²), Q: Total heat input(kcal/h),

K: K-factor (Figure 1), F: proportion of simultaneous use of boilers (Figure 1),

P: Horizontal projected area of the gas flue duct(mm²)

[Figure 1] K-factor

When the cross sectional area is circular	1.0
When the cross sectional area is square	1.3
When the cross sectional area is rectangular	1.4

[Figure 2] Proportion of simultaneous use of boilers

Number of boilers	Simultaneous use ratio(F)	Number of boilers	Simultaneous use ratio(F)
1	1.00	11	0.80
2	1.00	12	0.80
3	1.00	13	0.80
4	0.95	14	0.79
5	0.92	15	0.79
6	0.89	16	0.78
7	0.86	17	0.78
8	0.84	18	0.77
9	0.82	19	0.76
10	0.81	20	0.76
		21	0.75

- 3) The shared duct must be installed vertically without a turn, and have a circular or rectangular cross section at below 1:1.4 ratio (width and height).
- 4) The number of the boilers connected to the shared duct on the same floor must be no more than 2.
- 5) The exhaust duct of a briquette stove or an oil-fired boiler must not be connected to the shared duct.
- 6) A conventional flue type boiler and a forced exhaust type boiler can not be connected to the same shared duct.
- 7) Install the FE type's terminal of gas flue duct which has a closed end with side ventilation holes.

Installation instructions



Caution

Installation of chimney

Forced draught balanced flue type : FF

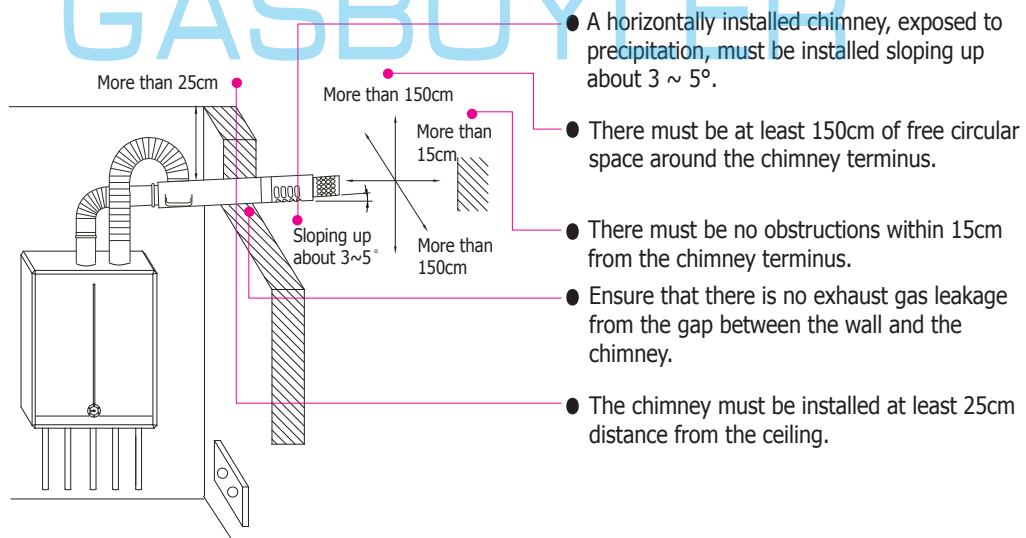


- The chimney (air and gas flue duct) must be officially certified.
- Do not change the shape or the structure.
- The maximum chimney length is 3m with no more than 2 elbows.
- The connection between the boiler and the gas flue duct must be fixed firmly so that they cannot be separated by the external factors.
- The connection between the ducts must be sealed using an O-ring and heat-resistant silicon (except plaster bandage) and exhaust gas leakage must be checked.
- The terminal of chimney connected to the air supply duct and gas flue duct must protrude outside the building and the holes on the terminal must not be blocked.
- Any damage caused by not installing the appliance in accordance with the recommendations made herein are the installer's responsibility.

Check if all the components listed below are in the chimney box (Chimney Model No. DGB-80E)

No.	Components	Q'ty	No.	Components	Q'ty
1	Chimney (Air and gas flue duct)	1	5	Wire band	2
2	Air socket	1	6	O-ring	3
3	Elbow	1	7	Air supply hose	1
4	Wall holder	2			

Cautions for the installation of chimney



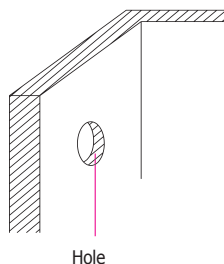
- A horizontally installed chimney, exposed to precipitation, must be installed sloping up about 3 ~ 5°.
- There must be at least 150cm of free circular space around the chimney terminus.
- There must be no obstructions within 15cm from the chimney terminus.
- Ensure that there is no exhaust gas leakage from the gap between the wall and the chimney.
- The chimney must be installed at least 25cm distance from the ceiling.

Installation instructions

How to install chimney

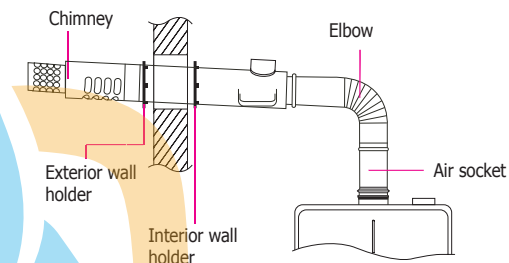
1. Drilling a hole in the wall

- Drill a hole in the wall after ensuring that there is no gas pipe, water pipe, or stud.



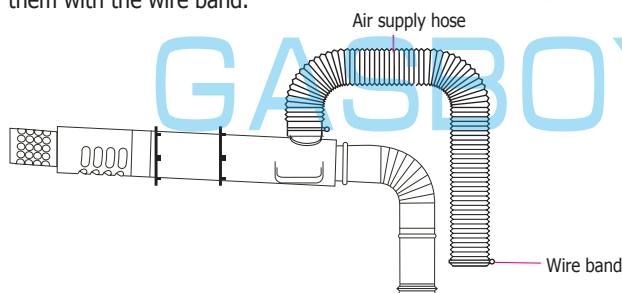
2. Assembling components

- Combine the elbow and the air socket using an O-ring. Insert the chimney in the interior wall holder, and connect the completed chimney to the boiler.
- Attach the exterior wall holder to the chimney on the building's exterior and affix it to the wall.
- The chimney should protrude about 30 cm from the exterior wall.



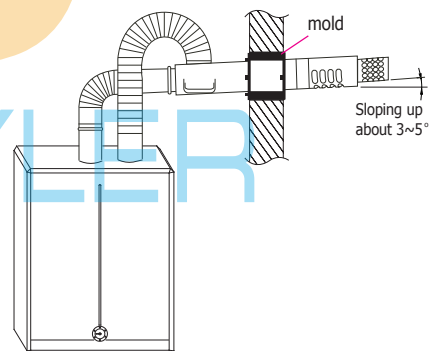
3. Fitting air supply hose and connecting to the boiler

- Connect air supply hose to the chimney and affix them with the wire band.
- Insert the air socket to the gas flue duct until you hear a "click" sound.
- Put the air supply hose to the air duct and affix them with the wire band.



4. Installing in the wall

- Attach the interior wall holder to the internal wall and tighten it with the wire band.
- Block the external wall with concrete to prevent rainwater inflow.



■ The dimensions of chimney

Diameter of connection(mm)	Diameter of duct (mm)	Hole in wall(mm)
Ø80	Flue gas duct Ø80 Air duct Ø110	More than Ø120

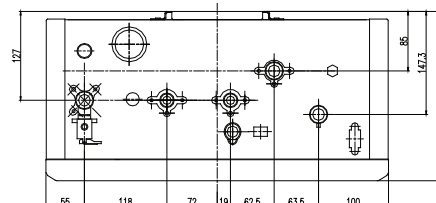
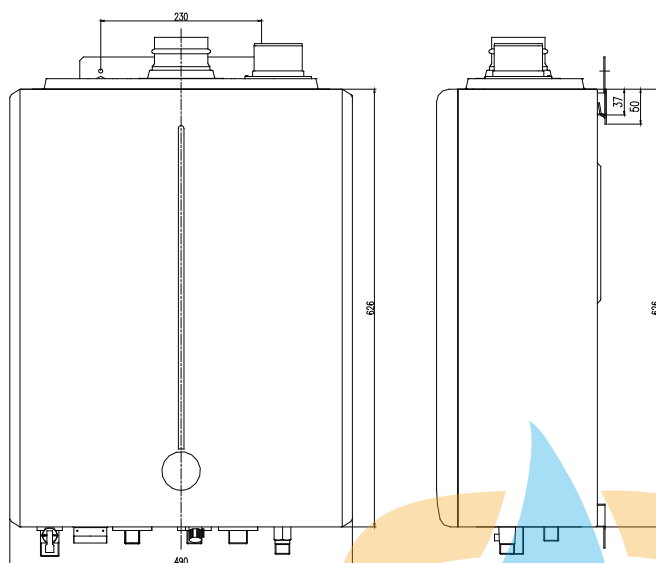
- Make sure the ducts slope up about 3 ~ 5°.



Warning

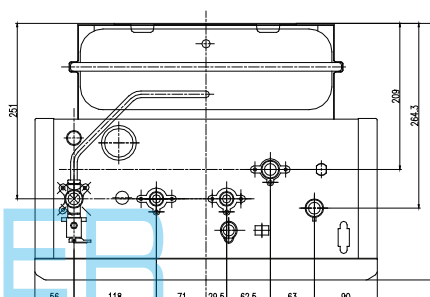
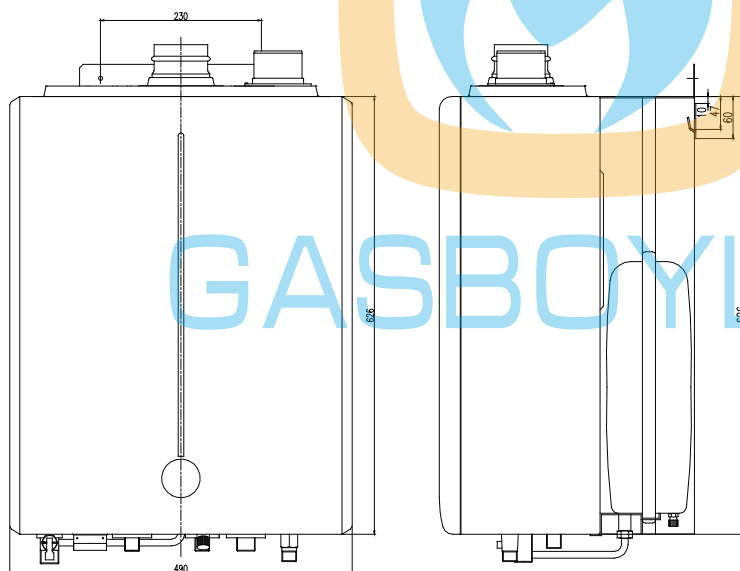
- Do not connect the chimney of the FF type boiler to existing ducts or shared exhaust ducts because it may cause incomplete combustion.
- The gas flue duct and air duct of the FF type boiler must be located at the same air pressure.

Appearance of boiler



Model No.
DGB-160,200MES

Connection pipes	Dimension
Heating water in	3/4"
Heating water out	3/4"
Water in	1/2"
Hot water out	1/2"
Gas in	1/2"
Gas flue duct	80mm
Air duct	110mm



Model No.
DGB-250,300,350MES

Connection pipes	Dimension
Heating water in	3/4"
Heating water out	3/4"
Water in	1/2"
Hot water out	1/2"
Gas in	3/4"
Gas flue duct	80mm
Air duct	110mm

How to install & connect the Room controller

Installation location & conditions

- The Room controller can be on the wall where it is easy to set or control the heating and hot water.
- The Room controller must be kept out of reach of children



Caution

Do not install where :

- there is moisture
- the temperature rises to 40°C or in direct sunlight.
- it is oily or dusty

Connecting the cable of Room controller

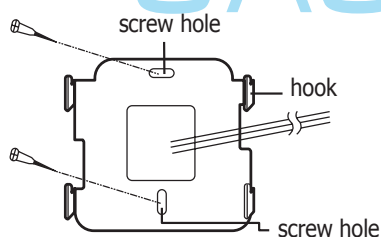


Caution

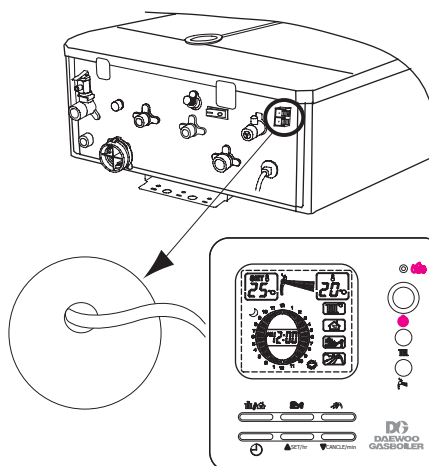
- The two PVC-sheathed cables must be used. If the cable peels and a short circuit occurs, the boiler may not operate properly.
- The room controller cable must have its own designated cable line. Do not connect the cable to AC 220V, it may cause fire. Do not tie the room controller cable to a AC220V cable or put them into the same cable pipe together, electrical noise can be generated.
- The length of the connections must be less than 50m. Otherwise, the room controller may be affected by external electrical noise and not work properly.
- There is no "+" or "-" in the room controller cable. Insulate the connections with insulating tape to prevent a shortcut, separation, or a fault current.

Mounting the Room controller

- Separate the holder from the room controller and affix it in to the wall with the 35mm screw provided .
- Hold the room controller down over the hook of the holder and pull it down. It will be attached to the wall.



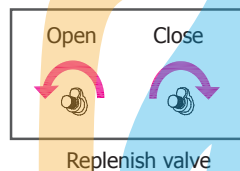
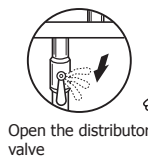
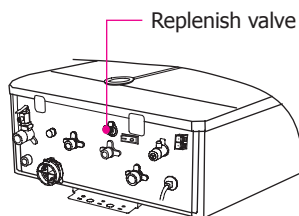
1. Fix the holder over the electrical box in the wall.
2. Connect the cables in the electrical box to the room controller.
3. Hold the room controller down over the hook of the holder and pull it down. It will be attached to the wall.



Conducting test runs

1. Open the distributor

- Open the distributor valve completely and the manual air-out valve of the distributor and the pipes.
- Close the gas shut-off valve.
- Open the replenish valve to fill the pipes with water.
- The heating water circulates as the air in the pipes dissipates.
- When the water comes out of the air-out valve, close the manual air-out valve.
- In case the heating water pressure is over 2kgf/cm^2 , close the replenish valve.



2. Fill the water

- Plug in the boiler.

1. Press the power button to turn on the boiler. "  "
2. Press the "Heating Water Temperature/Room Temperature" () & "  " & "Heating" () buttons at the same time.
3. "  " appears on the display when the boiler conducts a test run.

- Open the distributor valves one at a time and let out the air in the pipe of each room respectively adjust the heating water pressure to $1\sim 2\text{kgf/cm}^2$ referring to the pressure gauge.
- Open all the distributor valves.
- In case the heating water pressure is over 2kgf/cm^2 , pull the pressure relief valve to adjust the pressure to $1\sim 2\text{kgf/cm}^2$.
- Check if there is any water leakage from the heating water pipes and the water supply pipes.



3. Boiler combustion

- Open the gas shut-off valve.
- Press the power button to stop test runs.
- Press the power button to restart the boiler.

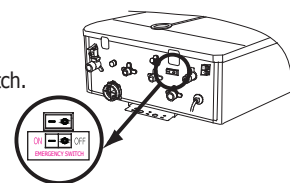


4. Ending test runs

- After test runs, adjust all functions you need.
- Keep the boiler plugged in.

How to use the Emergency switch

- Turn on the Emergency switch when you will not be able to use Room controller, if "E7"(communication error) is flickering in the Room controller.
- The boiler's heating operates for 72 hours continuously when you turn on the Emergency switch. (Setting temperature when the Emergency switch is on : Heating 60°C , Hot water 43°C)
- Turn off the Emergency switch when the Room controller have no problems and the boiler operates well.



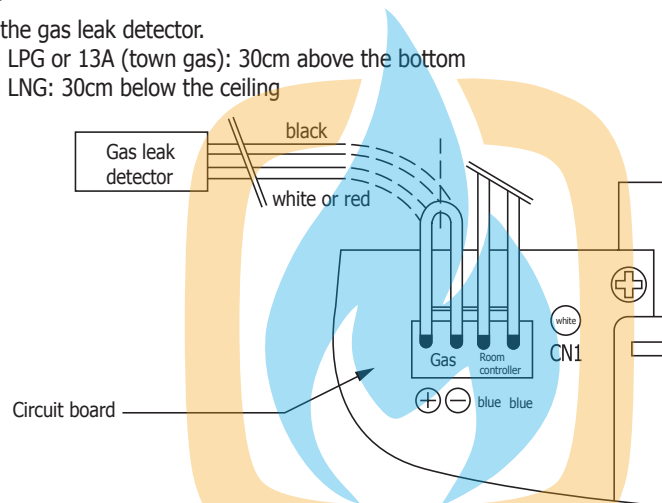


Caution Connecting Gas leak detector (optional)

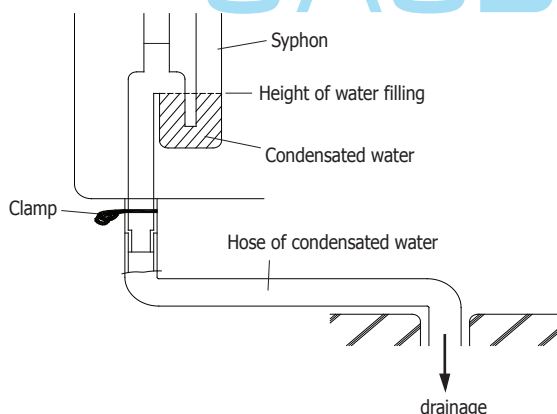
- Use DC6-12V for a gas leak detector. Otherwise, it may not work properly.
- Cut the white line on the upper right corner of the circuit board and connect the cable of the gas leak detector. (See the picture below)

How to connect

- Connect the white or red line of the gas leak detector to the white line (+) of the circuit board.
- Connect the black line of the gas leak detector to the white line (-) of the circuit board.
- Make sure the white (or red) line must be connected to (+), and the black line to (-). If not, the gas leak detector will not work.
- Location of the gas leak detector.
When using LPG or 13A (town gas): 30cm above the bottom
When using LNG: 30cm below the ceiling



Danger! How to install Hose of Condensed water



- During operation, this boiler will occur condensated water from the inside the boiler.
- The condensated water is acidic, so you must not to drink.
- The syphon (see the below drawing) must be always filled with water, but if not, the flue gas will be exhausted at the syphon.
- Connect the Hose of condensated water which is packed in the boiler to the union of condensated water-out tightly, and then the end of Hose must be connected to the drainage.
- If you use another Hose, you must use over inside diameter $\Phi 13$ of vinyl or plastic Hose.

Specifications

Model		DGB-160MES	DGB-200MES	DGB-250MES	DGB-300MES	DGB-350MES
Item						
Type		Instantaneous Gas fired boiler				
Use		Central heating / Domestic hot water				
Gas control type		Proportional gas control system				
Heating circulation type		Hermetic tank (Closed) type				
Heating output		8.1kW~18.6kW	8.1kW~23.3kW	11.6kW~29.1kW	11.6kW~34.9kW	11.6kW~38.4kW
Condensed Heating output (Supply / Return 50/30°C)		8.1kW~19.8kW	8.1kW~24.4kW	11.6kW~30.0kW	11.6kW~36.6kW	11.6kW~40.7kW
Hot water output		8.1kW~23.3kW		11.6kW~29.1kW	11.6kW~34.9kW	11.6kW~40.7kW
Hot water supply	Increased dT25	13.3 ℓ/min		16.7 ℓ/min	20.0 ℓ/min	23.3 ℓ/min
	Increased dT40	8.3 ℓ/min		10.4 ℓ/min	12.5 ℓ/min	14.6 ℓ/min
Min. water pressure on hot water		20kPa (0.2bar)				
Range of gas pressure		1~2.5kPa (10~25mbar)				
Gas input	Heating	8.4kW~20.0kW	8.4kW~24.9kW	11.8kW~30.5kW	11.8kW~37.1kW	11.8kW~41.0kW
	Hot water	8.4kW~24.9kW		11.8kW~30.5kW	11.8kW~37.1kW	11.8kW~41.0kW
Useful efficiency at Heating Output (Supply / Return 80/60°C)		97.3%	97.0%	98.5%	97.7%	97.4%
Useful efficiency at Heating Output (Supply / Return 50/30°C)		106.2%	106.3%	106.3%	106.2%	106.3%
Useful efficiency at Heating Output (Return 30°C)		106.4%		106.5%		
Power supply		AC 220V 50Hz				
Electrical input		115W	115W	115W	125W	135W
Size (WxHxD)		490 x 626 x 242 mm			490 x 626 x 365 mm	
Weight		24kg (Packed 26kg)			27kg (Packed 29kg)	
Duct diameter		Air inlet 110mm / Gas flue 80mm				
Piping	Gas	1/2"			3/4"	
	Water in/ Hot water out	1/2"			1/2"	
	Heating water in/ Heating water out	3/4"			3/4"	
Safety Devices		Anti-freezing device, Flame detector, Burner Safety device, Extinction safety device, Pressure relief device, Safety device for re-ignition, Fan malfunction detection device, Circulation pump stick guard device, Boiling guard safety device, Replenish device, Overheating guard device, Gas leak detector(optional)				
Accessories		Room controller, Installation plate, chimney(optional)				

Warranty

Warranty card

We warrant our goods as follows :

Please have the date of purchase written on the warranty card and keep it in a secure place as you have to present the card to get good service from us when asking for repair.

1. This product is manufactured under strict quality control and inspection processes.
2. When this product goes out of order under the normal use of customer, we will repair it free of charge during the warranty period.
3. Even during the warranty period, we will provide repair services for problems not covered under this warranty with reasonable charges.
4. Please show us the warranty card when you ask for repair service.
5. Please keep the warranty card securely as it is not reissued.

Make sure every details in the below form have been filled in.
Free repair service will be provided during warranty on the basis on this form



- Product name :
- Model :
- Serial No. :
- Warranty period :
For 2 years from the date of purchase
- Date of outgoing :
- Date of purchase :

- Seller
Address :
Telephone :
Name :
- Customer
Address :
Telephone :
Name :

MEMO.



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