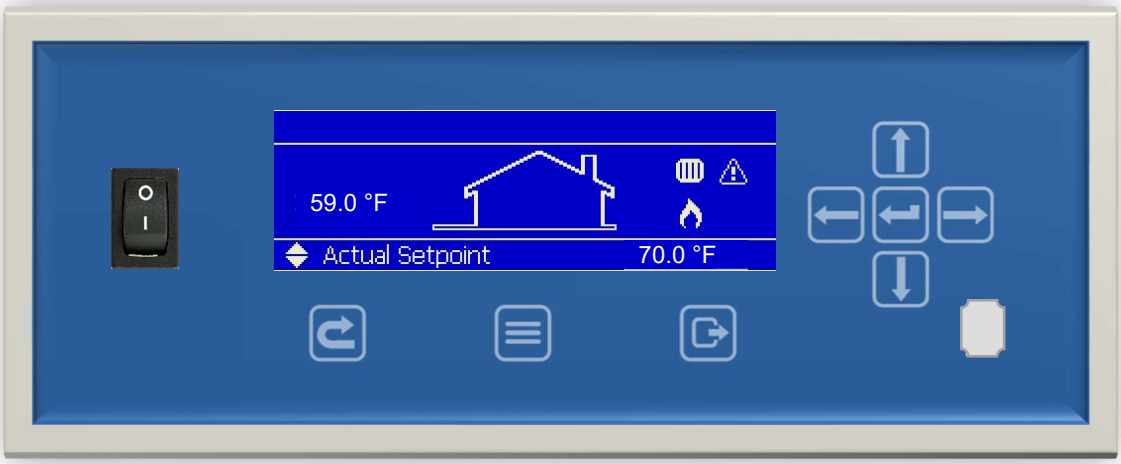
This manual must be left with owner and should be hung on or adjacent to the boiler for reference.

RESIDENTIAL BOILER MODELS
CH-80 / CH-100 / CH-120 / CH-150 / CH-180
CO-90 / CO-150 / CO-200

HIGH EFFICIENCY CONDENSING GAS BOILER

USER'S INFORMATION MANUAL



QUICK CONTENTS

WARNING:
If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

- WHAT TO DO IF YOU SMELL GAS

- **Do not try to light any appliance.**
- **Do not touch any electrical switch; do not use any phone in your building.**
- **Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions**
- **If you cannot reach your gas supplier, call the fire department.**

- Installation and service must be performed by a qualified installer, service agency or the gas supplier.

California Proposition 65 Warning: This product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

Heating Contractor	**Boiler Model Number**
Address	**Boiler Serial Number**
Phone Number	**Installation Date**

TABLE OF CONTENTS

IMPORTANT

READ ALL OF THE FOLLOWING WARNINGS AND STATEMENTS BEFORE READING THE INSTALLATION INSTRUCTIONS

DANGER

Danger Sign: indicates the presence of an imminently hazardous situation that will cause death, serious personal injury or substantial property damage.

WARNING

Warning Sign: indicates the presence of a hazardous situation which can cause death, serious personal injury or substantial property damage.

CAUTION

Caution Sign plus Safety Alert Symbol: indicates a hazardous situation which will or can cause minor or moderate personal injury or property damage.

CAUTION

Caution Sign plus a lightning bolt: indicates the risk of electric shock and the potential of hazards due to electric shock.

NOTICE

Notice Sign: indicates special instructions on installation, operation or maintenance that are important but not related to personal injury or property damage.

WARNING

This Boiler must be installed by a licensed and trained Heating Technician or the Warranty is void. Failure to properly install this unit may result in property damage, serious injury to occupants, or possibly death.

1 SAFETY GUIDELINES

FOR YOUR SAFETY READ BEFORE OPERATING

WARNING: If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

B. BEFORE OPERATING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

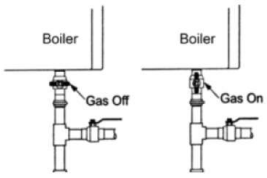
WHAT TO DO IF YOU SMELL GAS
- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

C. **Use only your hand to turn the manual gas shutoff valve. Never use tools. If the manual valve will not turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion**

D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

OPERATING INSTRUCTIONS

1. **STOP! Read the safety information above on this label.**
2. **Set the thermostat to the lowest setting**
3. **Turn off all electric power to the appliance**
4. This appliance does not have a pilot. it is equipped with an ignition device which automaticly lights the burner. Do not try to light the burner by hand.
5. The manual gas shut off is located beneath the appliance cabinet, in the gas piping.
6. **The manual gas shutoff valve is located beneath the appliance cabinet; turn the handle clockwise to the full OFF position (perpendicular to the gas piping).**



7. **Wait five (5) minutes to clear out any gas. Then smell for gas including near the floor. If you smell gas, STOP! Follow "B" in the safety information above on this label. If you don't smell gas, go to next step.**
8. **Turn manual gas shutoff valve counterclockwise to ON position (parallel to gas piping)**
9. Turn on all electric power to the appliance.
10. Set the thermostat to the desired setting.
11. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance"and call your service technician or gas supplier.

TO TURN OFF GAS TO APPLIANCE

1. **Set the thermostat to the lowest setting.**
2. **Turn off all electric power to the appliance if service is to be performed.**
3. **The manual gas shutoff valve is located beneath the appliance cabinet; turn the handle clockwise to the full OFF position (perpendicular to the gas piping).**

CONSIGNES DE SÉCURITÉ

POUR VOTRE SÉCURITÉ LISEZ AVANT DE METTRE EN MARCHE

AVERTISSEMENT: Quiconque ne respecte pas à la lettre les instructions dans la présente notice risque de déclencher un incendie ou une explosion entraînant des dommages, des blessures ou la mort.

A. Cet appareil ne comporte pas de veilleuse. Il est muni d'un dispositif d'allumage qui allume automatiquement le brûleur. Ne tentez pas d'allumer le brûleur manuellement.

B. AVANT DE FAIRE FONCTIONNER, reniflez tout autour de l'appareil pour déceler une odeur de gaz. Reniflez près du plancher, car certains gaz sont plus lourds que l'air et peuvent s'accumuler au niveau du sol.

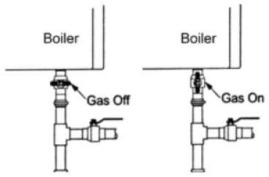
QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ
- Ne pas tenter d'allumer d'appareil.
- Ne touchez à aucun interrupteur ; ne pas vous servir des téléphones se trouvant dans le bâtiment.
- Appelez immédiatement votre fournisseur de gaz depuis un voisin. Suivez les instructions du fournisseur.
- Si vous ne pouvez rejoindre le fournisseur, appelez le service des incendies.

C. **N'utilisez que votre main pour tourner la vanne d'arrêt manuelle. N'utilisez jamais d'outils. Si la vanne manuelle ne tourne pas à la main, n'essayez pas de la réparer, appelez un technicien sevice qualifié. La force ou la tentative de réparation peut entraîner un incendie ou une explosion.**

D. N'utilisez pas cet appareil s'il a été plongé dans l'eau, même partiellement. Faites inspecter l'appareil par un technicien qualifié et remplacez toute partie du système de contrôle et toute commande qui ont été plongés dans l'eau.

INSTRUCTIONS DE MISE EN MARCHE

1. ARRÊTEZ! Lisez les instructions de sécurité sur la portion supérieure (à gauche) de cette étiquette.
2. Coupez l'alimentation électrique de l'appareil.
3. Réglez le thermostat à la température la plus basse.
4. Cette apparell ne comporte pas de veilleuse. Il intègre un dispositif d'allumage automatique du brûleur. N'essayez pas d'allumer manuellement le brûleur.
5. L'interrupteur de gaz principal se trouve directement sous la chaudière, sur la conduit d'alimentation en gaz.
6. L'interrupteur de gaz principal se trouve directement sous la chaudière. Tournez l'interrupteur de gaz principal dans le sens horaire pour couper l'alimentation en gaz.



7. Attendre cinq (5) minutes pour laisser échapper tout le gaz. Reniflez tout autour de l'appareil, y compris près du plancher, pour déceler une odeur de gaz. Si vous sentez une odeur de gaz, ARRÊTEZ ! Passez à l'étape B des instructions de sécurité sur la portion supérieure (à gauche) de cette étiquette. S'il n'y a pas d'odeur de gaz, passez à l'étape suivante.
8. **Tournez l' interrupteur de gaz principal dans le sens antihoraire en position ON (parallèlle à la tuyauterie de gaz)**
9. Mettez l'appareil sous tension.
10. Réglez le thermostat à la température désirée.
11. Si l'appareil ne se met pas en marche, suivez les instructions intitulées "Comment couper l'admission de gaz de l'appareil" et appelez un technicien qualifié ou le fournisseur de gaz.

Comment couper l'admission de gaz de l'appareil.

1. **Réglez le thermostat à la température la plus basse**
2. **Coupez l'alimentation électrique de l'appareil s'il faut procéder à l'entretien**
3. L'interrupteur de gaz principal se trouve directement sous la chaudière. Tournez l'interrupteur de gaz principal dans le sens horaire pourcouper l'alimentation en gaz.

CAUTION	This boiler is equipped with a pressure switch. In the event of a blocked vent the boiler will lockout. No attempt by the user/owner may be made to put the boiler back into operation. A qualified service technician must be notified of the issue. The boiler should only be reset by a qualified service technician after they have diagnosed and corrected the issued that caused the safety lockout of the boiler.

DANGER	Should overheating occur or the gas supply fail to shut off, do not turn off or disconnect the electrical supply to the circulator. Instead, shut off the gas supply at a location external to the appliance.

NOTICE	We recommend the installation of a carbon monoxide (CO) detector in the boiler room for all installations.

WARNING	WARNING: There are no user serviceable parts on this boiler. Warranty does not cover defects caused by attempts to service this boiler by someone other than a qualified gas service technician. These attempts could cause property damage, personal injury or loss of life.

DANGER	Do not use this boiler if any part has been under water. Immediately call a qualified service technician to inspect the boiler and to replace any part of the control system and any gas control which has been under water.

WARNING	**Avertissement**
WARNING: Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury (exposure to hazardous materials) * or loss of life. Installation and service must be performed by a qualified installer, service agency or the gas supplier (who must read and follow the supplied instructions before installing, servicing, or removing this boiler. This boiler contains materials that have been identified as carcinogenic, or possibly carcinogenic, to humans).	AVERTISSEMENT: Une installation, un réglage, une modification, une réparation ou un entretien non conforme aux normes peut entraîner des dommages matériels, des blessures (exposition à des matières dangereuses) ou la mort. L'installation et l'entretien doivent être effectués par un installateur ou un service d'entretien qualifié ou le fournisseur de gaz (qui doivent avoir lu les instructions fournies avant de faire l'installation, l'entretien ou l'enlèvement de la chaudière et les respecter. Cette chaudière contient des matériaux qui ont été identifiés comme étant cancérogènes ou pouvant l'être).

DANGER	**Scalding** Water temperatures over 125 ºF (52 ºC) can cause severe burns instantly, or death from scalds. Children, the disabled and the elderly are at the highest risk of being scalded. Feel water before bathing or showering. Read this manual entirely before setting domestic hot water setpoint(s).

WARNING	WARNING: **Crystalline Silica** - Certain components in the combustion chamber may contain this potential carcinogen. Improper installation, adjustment, alteration, service or maintenance can cause property damage, serious injury (exposure to hazardous materials) or death. Installation and service must be performed by a qualified installer, service agency or the gas supplier (who must read and follow the supplied instructions before installing, servicing, or removing this boiler. This boiler contains materials that have been identified as carcinogenic, or possibly carcinogenic, to humans).

2 INTRODUCTION

This manual is written for the User. The manufacturer is not accountable for any damage caused by failure to correctly follow these instructions. For service and repair purposes use only original spare parts. All documentation produced by the manufacturer is subject to copyright law. This manual is subject to change without notice.

2.1 Terms and abbreviations

In this manual the following terms and abbreviations are used:

A (Amp)	Ampère
bar	Unit of pressure
BCU	Burner Control Unit
BTU	British Thermal Unit
°C	Degree Celsius
CH	Central Heating / Heating Only
CO	1. Combi-boiler (CH & DHW) 2. Carbon monoxide
CO_2	Carbon dioxide
Combi	A boiler providing a combination of (hydronic) central heating and domestic hot water
DB	Domestic Boiler
DHW	Domestic Hot Water
°F	Degree Fahrenheit
LB	Digit-based Liquid Crystal Display Board
LCD	Liquid Crystal Display
LPG	Liquefied Petroleum Gas
MBH	1000 BTUs per hour
mg	Milligram
NO_x	Mono-nitrogen oxides
PB	Graphical Pixel Display Board
psi	Pounds per square inch, a unit of pressure
Pump	Circulator
RCF	Refractory Ceramic Fibers
RT	Room Thermostat
VAC	Volt Alternate Current
VDC	Volt Direct Current
W	Watt, a unit of power
wc	Water column

2.2 Maintenance and inspection

Maintenance and inspection of the boiler must be carried out at the following occasions:
• When a number of similar error codes and/or lock-outs appear.
• At least every 12 months maintenance must be done to ensure safe and efficient operation.
Damage caused by lack of maintenance will not be covered under warranty

2.2.1 *ON A CONTINUOUS BASIS*

- Do not store or use flammable vapors or liquids, such as gasoline, in the vicinity of the boiler.
- Do not store or use in the boiler room and keep the boiler area free from the following items
  - Spray cans containing chloro-/fluorocarbons
  - Ammonium and/or ammonium solutions
  - Permanent wave solutions (hair product)
  - Chlorinated waxes and/or cleaners
  - Swimming pool chemicals based on chlorine
  - Calcium chloride used for thawing
  - Sodium chloride used for water softening
  - Refrigerant leaks
  - Paint or varnish removers
  - Hydrochloric acid/muriatic acid
  - Cements and glues
  - Antistatic fabric softeners used in clothes dryers
  - Chlorine-type bleaches, detergents, and cleaning solvents found in household laundry rooms
  - Adhesives used to fasten building products and other similar products
- Do not expose the boiler to dust from construction or woodworking

2.2.2 *ON A MONTHLY BASIS*

- Visually inspect the venting system for proper size and horizontal pitch and determine there is no blockage or restriction, leakage, corrosion and other deficiencies which could cause an unsafe condition.
- Inspect around the exhaust vent and air inlet terminations outside the home for obstructions. Keep area clear of snow and debris. Inspect also for any gaps at the wall penetration(s) which could allow vented gasses to reenter the home.
- Visually inspect water and gas pipes for leaks.
- Visually inspect to see that the condensate trap not blocked and is filled with water.
- If there is a condensate neutralizer installed check to see if it has neutralizing media in it.
- Inspect the pressure reflief valve for signs of leakage
- If any problems are found during inspection notify a qualified service technician

2.2.3 *ON AN ANNUAL BASIS (EVERY 12 MONTHS)*

- Have a qualified service technician perform a complete service and maintenance of the boiler in accordance with the Installation, Operation, and Service manual.

⚠ **WARNING**	WARNING: Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury (exposure to hazardous materials) * or loss of life. Installation and service must be performed by a qualified installer, service agency or the gas supplier (who must read and follow the supplied instructions before installing, servicing, or removing this boiler. This boiler contains materials that have been identified as carcinogenic, or possibly carcinogenic, to humans)

⚠ **WARNING**	WARNING: **Crystalline Silica** - Certain components in the combustion chamber may contain this potential carcinogen. Improper installation, adjustment, alteration, service or maintenance can cause property damage, serious injury (exposure to hazardous materials) or death. Refer to Section 19 of the Installation, Operation and Service manual for information on handling instructions and recommended personal protective equipment. Installation and service must be performed by a qualified installer, service agency or the gas supplier (who must read and follow the supplied instructions before installing, servicing, or removing this boiler. This boiler contains materials that have been identified as carcinogenic, or possibly carcinogenic, to humans).

2.3 For installations in the Commonwealth of Massachusetts

The following local requirements apply in addition to all other applicable NFPA requirements:
For direct- vent boilers, mechanical-vent heating appliances or domestic hot water equipment, where the bottom of the vent terminal and the intake is installed below four feet above grade, the following requirements must be met:

1) If not present on each floor level where there are bedrooms, a carbon monoxide detector and alarm must be placed in a living area outside the bedrooms. The carbon monoxide detector and alarm must comply with the newest edition of NFPA 72
2) **A carbon monoxide detector and alarm must be located in the room that houses the boiler and/or equipment and must:**
   a) be powered by the same electrical circuit as the boiler and/or equipment so that only one service switch services both the boiler and the carbon monoxide detector;
   b) have battery back-up power;
   c) meet ANSI/UL 2034 Standards and comply with the newest edition of NFPA 72; and
   d) have been approved and listed by a Nationally Recognized Testing Lab as recognized under 527 CMR.
3) A product-approved vent terminal must be used, and if applicable, a product approved air intake must be used. Installation must be performed in strict compliance with the manufacturer's instructions. A copy of the installation instructions shall remain with the boiler and/or equipment at the completion of the installation.
4) A metal or plastic identification plate must be mounted at the exterior of the building, four feet directly above the location of vent terminal. The plate must be of sufficient size to be easily read from a distance of eight feet away and read "Gas Vent Directly Below".

For direct-vent boilers mechanical-vent heating boilers or domestic hot water equipment where the bottom of the vent terminal and the intake is installed higher than four feet above grade the following requirements must be met:

1) If not present on each floor level where there are bedrooms, a carbon monoxide detector and alarm must be placed in a living area outside the bedrooms. The carbon monoxide detector and alarm must comply with the newest edition of NFPA 72.
2) **A carbon monoxide detector must:**
   a) be located in the room where the boiler and/or equipment is located;
   b) be either hard-wired or battery powered or both; and:
   c) comply with the newest edition of NFPA 72.
3) A product-approved vent terminal must be used, and if applicable, a product- approved air intake must be used. Installation must be in strict compliance with the manufacturer's instructions. A copy of the installation instructions must remain with the boiler and/or equipment at the completion of the installation.

For installations in Massachusetts, code requires the boiler to be installed by a licensed plumber or gas fitter.

3 HOW TO USE YOUR BOILER

3.1 Functional introduction

The CH and CO boilers are central heating or combi boilers with a maximum high efficiency.
Such a performance can be reached by, amongst other things, using a special heat exchanger made of stainless steel. This allows the flue gases to cool down below the condensation point, thus releasing extra heat. This has an immediate positive impact on the efficiency.

3.2 Installation and settings

The installation of your boiler has been carried out by your installer with the utmost care and in accordance with the requirements. Your installer has made all the necessary settings in order to have your heating system perform in compliance with the mandatory standards as well as according to your wishes.

Your installer will have set a mode for your boiler.

The following modes are available for heating:
(All heating modes are available to both Heating Only (CH) and Combi (CO) boilers.)

CH mode 0 – Central Heating demand with thermostat control

CH mode 1 – CH with an outdoor temperature reset and thermostat control

CH mode 2 – Central Heating with full outdoor temperature reset

CH mode 3 – Central Heating with permanent heat demand

CH mode 4 – Central Heating with analog input control of setpoint

CH mode 5 – Central Heating with analog input control of power output

The following modes are available for hot water:
These modes are only available for Heating Only boilers (CH).

- DHW mode 0 – No Domestic Hot Water
- DHW mode 1 – Storage with sensor
- DHW mode 2 – Storage with thermostat

DHW mode 5 is the only mode available for Combi boilers (CO).

- DHW mode 5 – Instantaneous water heating with plate heat exchanger, DHW-out sensor and rotary switch

Following modes are not used. Contact your supplier for further information if necessary.

- DHW mode 3 – Instantaneous water heating with plate heat exchanger, flow switch and DHW-out sensor
- DHW mode 4 – Instantaneous water heating with plate heat exchanger and DHW-out sensor

Your boiler is now ready for use.

The installer must inform you about the basic instructions for using your boiler system and the installer must have handed over this user manual.

This manual provides you with all the necessary information for the daily use of your boiler.
You can manage your heating system by means of the display of the boiler.

4 DISPLAY AND BUTTONS

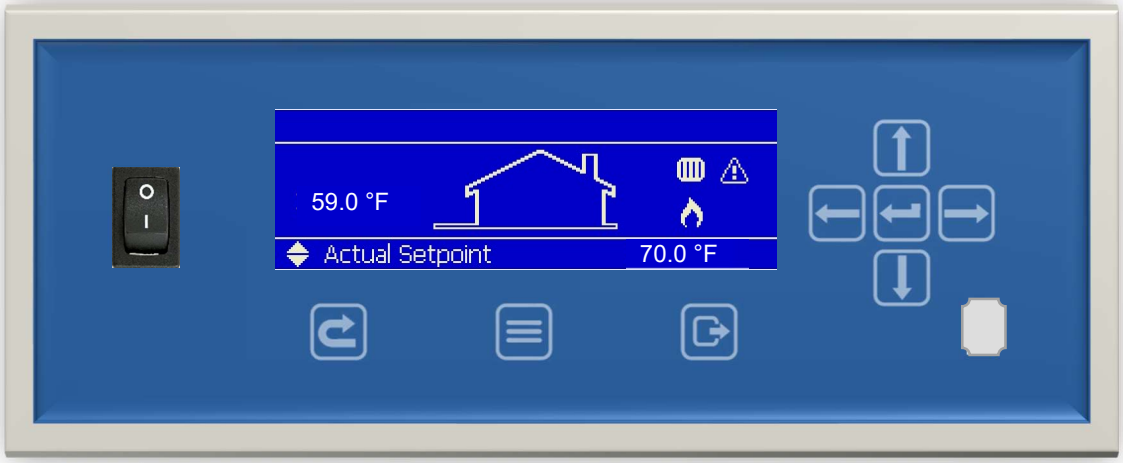


Figure 4.1

ON/OFF. On/off switch. Switches electrical power to the boiler

COMPUTER. Connector for computer cable

RESET. Reset lockout error

MENU. Enter the main menu

ESCAPE. Escape / Return to the status overview

RIGHT. Enter a menu item or confirm selection in Status overview (when directly setting Actual setpoint or DHW setpoint)

LEFT. Return to previous menu item or Status overview

UP. Directly select Actual setpoint of DHW setpoint in the Status overview, push RIGHT to confirm and use UP or DOWN to adjust value.

DOWN. Directly select Actual setpoint of DHW setpoint in the Status overview, push RIGHT to confirm and use UP or DOWN to adjust value.

ENTER. Confirm a setting or enter a menu item

Figure 4.2

4.1 Display icons

Icon	Description
	Central Heating demand
	Domestic Hot Water demand
	Indicates that the appliance burner is ON
	Cascade Emergency Mode active
	Error notification

Table 4.1

4.2 Screens and settings

When the appliance is started the following screen is displayed:

Figure 4.3

This screen is active during power up and will remain active until communication with the Main Control (the AL-BUS) has been established.

After communication has been established the following **Status overview** appears:

Heating Only boiler (CH)

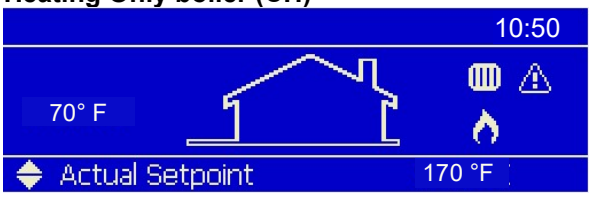


Figure 4.4

Heating & DHW boiler (CO)

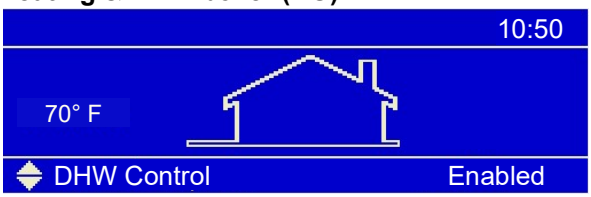


Figure 4.5

4.2.1 *DE-AERATION SEQUENCE*

The “De-Aeration” sequence is a safety function that starts at every power ON of the boiler and is used to remove the air from the heat-exchanger. The DAir sequence does not start after a general reset (like the locking error reset or 24 hours reset)

Figure 4.6

The display will show the following string during DAir sequence:

- “Dair Running”
- “Dair Error Water Pressure”

The De-Air sequence can be cancelled by pressing and holding the ENTER-button on the display for 5 seconds.

CAUTION	Do not bypass the Dair function upon initial startup of the water heater or when water has been added to the system. Bypassing the Dair function may cause damage to the heat exchanger which could cause the water heater to fail. Bypassing the Dair function could lead to overheating or under heating resulting in property damage.

4.3 Control panel menu structure

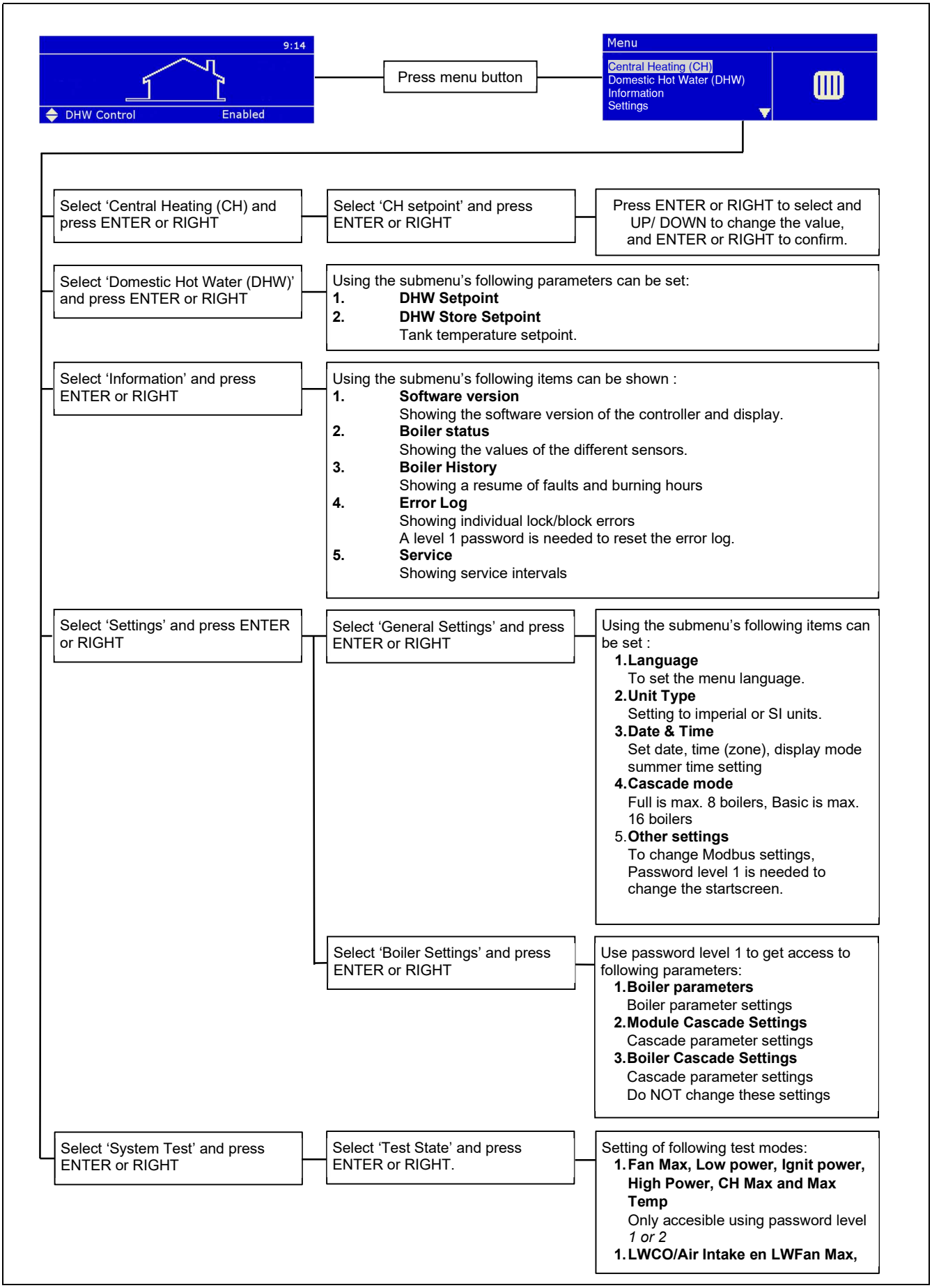


Figure 4.7

4.3.1 *SET ACTUAL SETPOINT/DHW SETPOINT DIRECTLY VIA THE STATUS OVERVIEW*

When CH is active, you can adjust the Actual setpoint directly on the bottom of the Status overview. When DHW is active, you can adjust the DHW setpoint directly on the bottom of the Status overview.

This means that when CH is active, you cannot set the DHW setpoint directly via the Status overview. When DHW is active, you also cannot set the Actual setpoint (CH setpoint) directly via the Status overview.

Press UP/DOWN ↑↓ to select the mode, then press ENTER ↵ or RIGHT → to confirm the mode and the Actual/DHW setpoint becomes directly settable. Use UP ↑ or DOWN ↓ to increase/decrease the setpoint.
Press ENTER ↵ or RIGHT → to confirm your alteration or press ESC ⎋ or LEFT ← to cancel.

A setpoint is only visible on the display when no error or alert is active. In case of an active error or alert, the bottom right part of the display is used to display the error or alert text.

4.3.2 *ENTERING THE MENU*

Enter the menu by pressing the MENU ☰ button once. The header in the display shows you are inside the main menu. While scrolling through the menu you will see that the selected menu item is shown in a white rectangle.

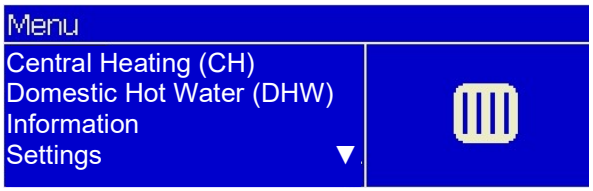


Figure 4.8

Enter a menu item by pressing ENTER ↵ or RIGHT →.
The header shows your location inside the menu, as seen in the following image:

If you are inside the menu (or a menu item) and want to return directly to the Status overview press MENU ☰ or ESC ⎋ If you want to go back one step in the menu press BACK/LEFT ← .

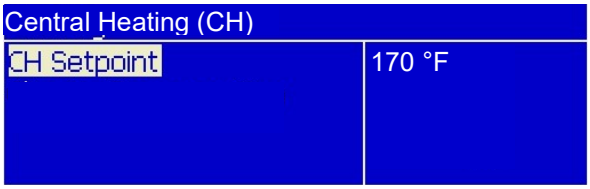


Figure 4.9

If CH-mode is set to:
CH mode 1 – CH with an outdoor temperature reset and thermostat control
or
CH mode 2 – Central Heating with full outdoor temperature reset
The following display will appear:

Figure 4.10

Enter a menu item by pressing ENTER ↵ or RIGHT →
The header shows your location inside the menu, as seen in the following image:

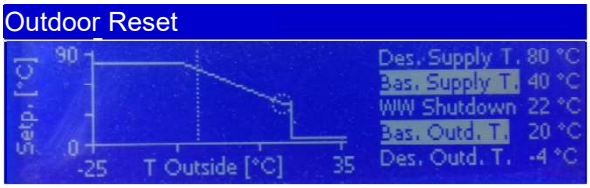


Figure 4.11

It now is possible to set the Outdoor reset curve by changing the parameters on the righthand of the screen.
If you are inside the menu (or a menu item) and want to return directly to the Status overview press MENU ☰ or ESC ⎋ If you want to go back one step in the menu press BACK/LEFT ← .

4.3.3 *PROTECTED MENU ITEMS*

Some menu items are protected and only accessible via a password*. The following password screen will appear:

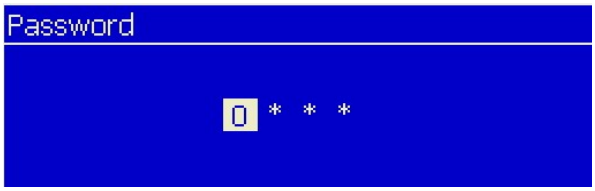


Figure 4.12

Users are only allowed to change parameters not needing a password.

⚠ **WARNING**	Changing protected/safety parameters may only be conducted by experienced, licensed boiler operators and mechanics. Hazardous burner conditions can occur due to improper operations which may result in property loss, physical injury, or death.

4.3.4 *LANGUAGE SETTINGS*

The display has a number of different language options, such as English, French, Chinese and Italian.
BE AWARE: DO NOT set the language to the Chinese Language if you are not familiar with this language. Contact your installer for instructions if the display is set to Chinese and needs to be reset to another language.
Please follow the following steps, which describe how to set the display to a specific language:

1. From the Status Overview, press the MENU ☰ button once
2. Select “Settings” (press UP/DOWN ↑↓ to highlight/select) and press the ENTER ↵ button
3. Select “General Settings” (press UP/DOWN ↑↓ to highlight/select) and press the ENTER ↵ button
4. Select “Language” (press UP/DOWN ↑↓ to highlight/select) and press the ENTER ↵ button
5. Select the desired language (press UP/DOWN ↑↓ to highlight/select) and press the ENTER ↵ button

Figure 4.13

4.4 Service reminder

The Service reminder will remind you that the appliance needs to be serviced. The "Service_Interval" is factory set at 2000 burn hours. When service is not done within this time, a service reminder will be shown:

- on the screen: "Service is required!" is displayed, alternating with the normal status display;

NOTICE	If the message “Service is required” is shown, the boiler will continue running, but maintenance must be carried out before this message is reset.

4.5 Menu structure display

Menu structure Display:	**Access level**	**Description:**
1. Central Heating (CH)	User	Enter the Central Heating (CH) menu
2. Domestic Hot Water (DHW)	User	Enter the Domestic Hot Water (DHW) menu
3. Information	User	Enter the Information menu
4. Settings	User	Enter the Settings menu
5. System Test	Installer	Enter the System Test menu (Installer only).

1. Central Heating (CH)	**min.**	**max.**	**Default**	**unit**	**Access level**	**Description:**
1.1 CH Setpoint	68 (20)	194 (90)	176 (80)	°F (°C)	Installer	Set the CH setpoint when CH mode is 0
1.2 Outdoor Reset					User	Enter the Outdoor Reset menu (when CH mode is 1 or 2)

1.2 Outdoor reset	**min.**	**max.**	**Default**	**unit**	**Access level**	**Description:**
Design Supply Temp	68 (20)	194 (90)	176 (80)	°F (°C)	Installer	Set CH setpoint when outdoor temperature equals Des. Outd. T.
Baseline Supply Temp	68 (20)	194 (90)	104 (40)	°F (°C)	Installer	Set CH setpoint when outdoor temperature equals Bas. Outd. T.
WW Shutdown	32 (0)	95 (35)	72 (22)	°F (°C)	Installer	Set outdoor temperature above which CH demand is locked.
Baseline Outdoor Temp	32 (0)	86 (30)	68 (20)	°F (°C)	Installer	Set the outdoor temperature at which CH setpoint is set to Bas. Supply T.
Design Outdoor Temp	-13 (-25)	77 (25)	23 (-5)	°F (°C)	Installer	Set the outdoor temperature at which CH setpoint is set to Des. Supply T.

2. Domestic Hot Water (DHW)	**min.**	**max.**	**Default**	**unit**	**Access level**	**Description:**
DHW Setpoint	104 (40)	160 (71)	122 (50)	°F (°C)	Installer	Set the DHW setpoint
DHW Store Setpoint	104 (40)	160 (71)	122 (50)	°F (°C)	Installer	Set the DHW store setpoint for DHW mode 1 and 2

3. Information	**min.**	**max.**	**Default**	**unit**	**Access level**	**Description:**
3.1 Software versions					User	Enter the Software Versions menu
3.2 Boiler Status					User	Enter the Boiler Status menu
3.3 Boiler History					User	Enter the Boiler History menu
3.4 Error Log					User	Enter the Error Log menu
3.5 Service					User	Enter the Service menu

3.1 Software versions	**min.**	**max.**	**Default**	**unit**	**Access level**	**Description:**
Display				xxxx	User	Display the software checksum
Boiler				Xxxx	User	Display the boiler software checksum
Device Group				xxxMN	User	Display the boiler group ID

3.2 Boiler status	min.	max.	Default	unit	Access level	Description:
Flow Temperature				°F (°C)	User	Actual supply flow temperature
Flow 2 Temperature				°F (°C)	User	Actual supply 2 flow temperature
Return Temperature				°F (°C)	User	Actual return flow temperature
DHW Temperature				°F (°C)	User	Actual DHW temperature
DCW Temperature				°F (°C)	User	Actual DCW temperature
Outside Temperature				°F (°C)	User	Actual outside temperature
Flue Temp				°F (°C)	User	Actual flue gas temperature
Flue 2 Temp				°F (°C)	User	Actual flue gas 2 temperature
System Temperature				°F (°C)	User	Actual system temperature
0-10 V Input				V	User	Input Voltage for control
Flowrate				l/min	User	Actual DHW flowrate
RT Input				open/clos	User	Actual RT input status
Water Pressure				psi (Bar)	User	Actual CH water pressure
Fan Speed				rpm	User	Actual fan speed
Ionization				µA	User	Actual ionization current
State					User	Actual burner state
Error				#	User	Actual internal error code
Calculated Setpoint				°F (°C)	User	Actual CH setpoint

3.3 Boiler history	min.	max.	Default	unit	Access level	Description:
Successful Ignitions				#	User	Display the number of successful ignitions
Failed Ignitions				#	User	Display the number of failed ignitions
Flame Failures				#	User	Display the number of flame losses
Operation Days				days.	User	Display the total time in operation
CH Burner Hours				hrs.	User	Display the amount of burn hours for CH
DHW Burner Hours				hrs.	User	Display the amount of burn hours for DHW

3.4 Error Log	min.	max.	Default	unit	Access level	Description:
Error Log					User	Display the complete error log
Filter Error Type					User	Set the error log filter
Clear Error Log					Installer	Clear the complete error log

3.5 Service	min.	max.	Default	unit	Access level	Description:
Service history					User	Display the service history
Burn hours since last service				hrs.	User	Display the burn hours since last service
Burn hours till service				hrs.	User	Display the hours remaining until next service
Operation Days				days.	User	Display the total time in operation

4 Settings	min.	max.	Default	unit	Access level	Description:
4.1 General Settings					User	Enter the General Settings menu
4.2 Boiler Settings					User	Enter the Boiler Settings menu

4.1 General settings	min.	max.	Default	unit	Access level	Description:
4.1.1 Language					User	Enter the Language menu
4.1.2 Unit Type					User	Enter the Unit Type menu
4.1.3 Date & Time					User	Enter the Date & Time menu
4.1.4 Cascade Mode					User	Enter the Cascade Mode menu
4.1.5 Other Settings					User	Enter the Other Settings menu

4.1.1 Language	min.	max.	Default	unit	Access level	Description:
English			English		User	Select the English language
Français					User	Select the French language

4.1.2 Unit type	min.	max.	Default	unit	Access level	Description:
Metric (°C, bar)				°C/bar	User	Select Metric units
Imperial (°F, psi)			°F/psi	°F/psi	User	Select Imperial units

4.1.3 Date & Time	min.	max.	Default	unit	Access level	Description:
Date				dd-mm-yy	User	Set the current date
Time				hh:mm	User	Set the current time
A. Time Zone Settings					User	Enter the time zone settings menu
B. Display Settings					User	Enter the display settings menu

A Time zone settings	min.	max.	Default	unit	Access level	Description:
Time Zone Correction					User	Set the time zone correction
Daylight Savings Time					User	Select the daylight savings time mode

B Display settings	min.	max.	Default	unit	Access level	Description:
Time Notation			24h	24h/12h	User	Select 24h or 12h time notation
Date Order					User	Select the date-format
Day of Month			2	1 or 2 digits	User	Select how the day of month is displayed
Month					User	Select how the month is displayed
Year			4	2 or 4 digits	User	Select how the year is displayed
Date Separation Character					User	Select the date separation character
Day of Week					User	Select how the day of week is displayed
Seconds			no	yes/no	User	Select if seconds are displayed

4.1.5 Other settings	min.	max.	Default	unit	Access level	Description:
Status Overview settings					User	Configure which information is shown on the Status overview
Modbus Address	0	255	1	-	User	Select the Modbus communication address
Modbus Stop bits	1	2	2	-	User	Select the number of Modbus communication stop bits

4.1.5.1 Status Overview Settings	min.	max.	Default	unit	Access level	Description:
Water pressure			On	-	User	Enable/disable the CH water pressure on screen
State			On	-	User	Enable/disable the burner state on screen
Temperature selection ID			On	-	User	Enable/disable the temp. selection ID[Tx] where x is the number of the selection.
Temperature selection					User	Select which temperature is displayed: Outside temperature [T0] Demand based [T1] (Flow or DHW temperature based on active demand) Flow temperature [T2] ; DHW temperature [T3] ; System temperature [T4] (module cascade flow/supply temp.) T5 N.A.

Table 4.2

5 ERROR INFORMATION

5.1 General

Errors can be divided in three groups:

- Manual reset locking errors (can only be reset by the reset button).
- Blocking errors (will disappear when error is gone).
- Warnings (will disappear when the warning is gone, not stored in the controls e2prom).

The boiler circulator will continue to run during most locking and blocking error codes. This is to prevent the freezing of the Central Heating circuit when the boiler is in error during the winter period. For some non-volatile lockouts the circulator will not be running, also see the error tables in this chapter for more details.

5.2 How an error is displayed

When an error occurs this error will be shown in the display.
The display will show the following icon.

Figure 5.1

Furthermore the error code and error type will be displayed as well as the date and time.

WARNING	If you cannot restart your boiler with the reset button, contact your installer. Maintenance and repairs must be carried out by a certified technician/installer.

5.3 Error logging

Errors will be logged for a stand-alone system or for a complete cascade system (based on the cascade settings). The display will monitor the error codes it receives from the boiler(s) and if an error code is a new error code the error will be stored in the error log. An error will be logged with a (real-time clock) time stamp (date and time) when the error was detected and a boiler ID of the boiler on which the error was detected.

The error log can be viewed from the error log menu, which is located in the information menu.

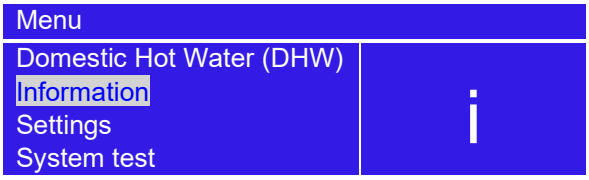


Figure 5.1

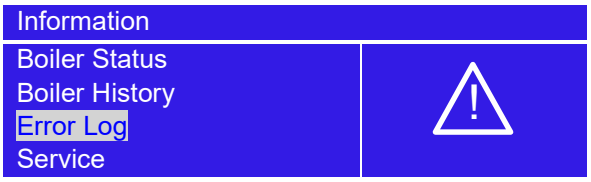


Figure 5.2

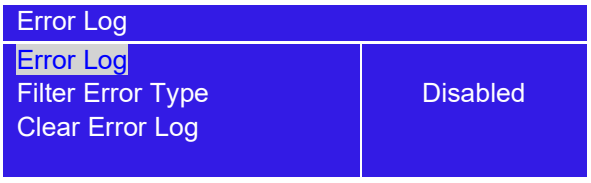


Figure 5.3

(Sub) Menu item	Description
Error Log	Show the error log (based on the selected filter options)
Filter Error Type	Filter errors based on the Error Type (Lockout/Blocking)
Filter Boiler ID (Cascade System only)	Filter errors based on Boiler ID (Managing, Dep2, Dep3, etc.)
Clear Error Log	Clear the error log (protected by password)

Table 5.1

When no filtering option is selected (Disabled) the error log will show all errors for that category. So, if both filters are disabled, the error log will show all the errors in the log.

Figure 5.4

The error log screen will show on the first line: Boiler ID for which boiler the error was detected (cascade system only), Error Code, (internal) Error Number, Error Type (Lockout/Blocking).
The second line will show the Error Description.
The bottom line will show the Time Stamp (date and time) when the error was detected (in the format as configured in the Date Time Settings menu), and also the selected error index from the total number of errors in the (filtered) error log. Only Time Stamp, Code and Description is displayed.

Example, see Figure 5.4 above.
A014 = Error code.
(14) = Error Number (tracking number, 1-15 errors are stored maximum).
Lockout = Error type.
Air Switch Not Closed = Error description.
Wed 04-11-2018 14:50 = Time stamp when the error occurred.

5.4 Boiler history

The last 15 lockouts and 15 blocking errors are stored in the boiler control. This boiler history can be shown via the Boiler History screen via the installer boiler status menu in one of the advanced displays.

- Successful ignitions
- Failed Ignitions
- Flame Failures
- Operation days
- CH Burner Hours
- DHW Burner Hours

5.5 Lockout codes

⚠ **WARNING**	If you cannot restart your boiler with the reset button, contact your installer. Maintenance and repairs must be carried out by a certified technician/installer.

Lock out code	Error	Description	Cause	Solving
0	EEPROM Read Error	Internal software error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
1	Ignition Error	Five unsuccessful ignition attempts in a row	no gas, wrongly adjusted gas valve	If the boiler does not start after Reset, contact your installer
2	GasValve Relay Error	Failure detected in the gas valve relay	short circuit in coil of the gas valve, water on wiring or gas valve	If the boiler does not start after Reset, contact your installer
3	Safety Relay Error	Failure detected in safety relay	safety relay is not working correctly	If the boiler does not start after Reset, contact your installer
4	Blocking Too Long Error	Control had a blocking error for more than 20 hours	blocking code active for more than 20 hours	Reset and check blocking code
5	Fan Not Running	Fan is not running for more than 60 seconds	electrical wiring not correctly connected, or fan is malfunctioning	If the boiler does not start after Reset, contact your installer
6	Fan Too Slow	Fan runs too slow for more than 60 seconds	electrical wiring not correctly connected, or fan is malfunctioning	If the boiler does not start after Reset, contact your installer
7	Fan Too Fast	Fan runs too fast for more than 60 seconds	electrical wiring not correctly connected, or fan is malfunctioning	If the boiler does not start after Reset, contact your installer
8	RAM Error	Internal software error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
9	Wrong EEPROM Signature	Contents of E2prom is not up to date	out dated E2prom	If the boiler does not start after Reset, contact your installer
10	EEPROM Error	Wrong safety parameters in E2prom	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
11	State Error	Internal software error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
12	ROM Error	Internal software error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
13	Air Switch Not Open	Air pressure switch not opening during pre-purge 0	electrical circuit is short circuited or APS is jammed	If the boiler does not start after Reset, contact your installer
14	Air Switch Not Closed	Air pressure switch not closing during pre-purge 1	no air transport to the burner; flue or air inlet is blocked or APS is jammed or air signal hose is not connected to the air intake pipe or water in hose.	If the boiler does not start after Reset, contact your installer

Lock out code	Error	Description	Cause	Solving
15	Max. Thermostat Lock Error	The external overheat protection is enabled or the T_Supply sensor measures a temp. of over Prot_Overheat_Temp - SGOverheat_Duplex_Tolerance for a period of Max_Value_Period	The heat exchanger thermal fuse has tripped; loose wire	If the boiler does not start after Reset, contact your installer
16	Max. Flue Lock Error	Flue temperature exceeded the maximum flue temperature	there is no water in the heat exchanger or flue gas sensor is malfunctioning or heat exchanger is overheated.	If the boiler does not start after Reset, contact your installer
17	Stack Error	Internal software error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
18	Instruction Error	Internal software error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
19	Ion Check Failed	Internal software error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
20	Flame Out Too Late Error	Flame still present 10 seconds after closing the gas valve	wrong earthing of BCU and boiler	If the boiler does not start after Reset, contact your installer
21	Flame Before Ignition	Flame is detected before ignition	wrong earthing of BCU and boiler	If the boiler does not start after Reset, contact your installer
22	Too Many Flame Failures	Three time flame lost during 1 demand	bad gas supply or CO_2 level is not correct or bad ignition rod	If the boiler does not start after Reset, contact your installer
23	Corrupted Error Number	RAM byte was corrupted to an unknown error code.	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
27	Filling Too Much	Too many automated filling attempts in a short time period	if output is programmed as filling valve and there are too many filling attempts	Check if there is a leak in the central heating system or if the boiler is leaking also check expansion vessel on internal leak
28	Fill Time Error	Filling takes too long	if output is programmed as filling valve and filling takes more than 10 minutes	Check if there is a leak in the central heating system or if the boiler is leaking also check expansion vessel on internal leak
29	PSM Error	Internal software error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
30	Register Error	Internal software error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
32	T. Exchange Diff Error	The 2 exchange sensors deviate too much for more than 60 seconds	there is not enough water flow through the heat exchanger	If the boiler does not start after Reset, contact your installer
33	LWCO/Air intake block	Low water cut off 1 error	there is no water in the heat exchanger or not electrically connected	If the boiler does not start after Reset, contact your installer
34	LWCO 2 Error	Low water cut off 2 error	there is no water in the heat exchanger or not electrically connected	If the boiler does not start after Reset, contact your installer
35	Air Switch Not Closed	Air pressure switch not closing during post-purge 1	no air transport to the burner after heat demand; flue or air inlet is blocked or APS is jammed or air signal hose not connected to the air intake pipe or water in hose	If the boiler does not start after Reset, contact your installer
36	Gas Pressure Error	Gas pressure switch open for more than E2_GPS_Timeout	loose cabling on terminal	check cable bridge between connections 24-25 (low voltage connections)

Table 5.2

5.6 Blocking codes

WARNING	If you cannot restart your boiler with the reset button, contact your installer. Maintenance and repairs must be carried out by a certified technician/installer.

Blocking code	Error	Description	Cause	Solving
100	WD Error Ram	Internal software error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
101	WD Error Rom	Internal software error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
102	WD Error Stack	Internal software error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
103	WD Error Register	Internal software error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
104	WD Error Xrl	Internal software error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
105	High Temp Error	T_Supply sensor measures over Stay_Burning_Temp for a period of Max_Value_Period.	not enough waterflow over heat exchanger	If the boiler does not start after Reset, contact your installer
106	Refhi Too Hi Error	Internal hardware error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
107	Refhi Too Lo Error	Internal hardware error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
108	Reflo Too Hi Error	Internal hardware error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
109	Reflo Too Lo Error	Internal hardware error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
110	Refhi2 Too Hi Error	Internal hardware error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
111	Refhi2 Too Lo Error	Internal hardware error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
112	Reflo2 Too Hi Error	Internal hardware error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
113	Reflo2 Too Lo Error	Internal hardware error	wrongly programmed BCU or PB	If the boiler does not start after Reset, contact your installer
114	False Flame	Flame is detected in a state in which no flame is allowed to be seen	wrong earthing of BCU and boiler	If the boiler does not start after Reset, contact your installer
116	Low Water Pressure Sensor	Low water pressure, occurs when the pressure drops below Minimal_Pressure, or when the pressure drops below 4.5 psi.	not enough water pressure	fill up the system and check if there are any water leakages
118	WD Communication Error	Watchdog communication error	wrong programmed BCU or PB	If the boiler does not start after Reset, contact your installer
119	T Return Open	Return sensor open	malfunctioning return sensor or not connected	If the boiler does not start after Reset, contact your installer
120	T Supply Open	Supply sensor open	malfunctioning supply sensor or not connected	If the boiler does not start after Reset, contact your installer
122	T DHW Open	DHW sensor open	malfunctioning DHW sensor or not connected	If the boiler does not start after Reset, contact your installer
123	T Flue Open	Flue sensor open	malfunctioning flue sensor or not connected	If the boiler does not start after Reset, contact your installer

Blocking code	Error	Description	Cause	Solving
125	T Outdoor Open	Outdoor sensor open	malfunctioning outdoor sensor or not connected or wrong CH-mode programmed	If the boiler does not start after Reset, contact your installer
126	T Return Shorted	Return sensor shorted	malfunctioning return sensor or short circuiting	If the boiler does not start after Reset, contact your installer
127	T Supply Shorted	Supply sensor shorted	malfunctioning supply sensor or short circuiting	If the boiler does not start after Reset, contact your installer
129	T DHW Shorted	DHW sensor shorted	malfunctioning DHW sensor or short circuiting	If the boiler does not start after Reset, contact your installer
130	T Flue Shorted	Flue sensor shorted	malfunctioning flue sensor or short circuiting	If the boiler does not start after Reset, contact your installer
132	T Outdoor Shorted	Outdoor sensor shorted	malfunctioning outdoor sensor or short circuiting	If the boiler does not start after Reset, contact your installer
134	Reset Button Error	Too many resets in a short time period	reset too many times by user or installer	Wait or disconnect and reconnect power supply
136	T_Exchange Block Error	Exchange temperature exceeded 194 ºF (90 ºC).	water temperature is above 194 ºF (90 ºC).	If the boiler does not start after Reset, contact your installer
155	WD Config Error	Watchdog fan configuration setting error	wrongly program-med BCU or PB	If the boiler does not start after Reset, contact your installer
162	Fill Warning	Error generated directly when pressure drops below Minimal_Pressure. Demand has stopped, but no error is to be stored at this time.	the water pressure is below the minimum pressure level	Refill the system until the pressure is above 1 bar or 14.5 psi
164	Ex. Low Flow Protection	Flow is too low, demand needs to be stopped with fan at ignition speed*, but no error needed to be stored at this time	not enough water flow through heat exchanger	If the boiler does not start after Reset, contact your installer
168	Flue Temperature Too High	Flue temperature is higher than set maximum	Flue side clogging of heat exchanger	Clean the heat exchanger, especially between the coils
169	ADC Unstable	ADC measurements detected too many unstable measurements	Defective sensor or unstable 0-10V input	Check sensors and 0-10V input

Table 5.3

5.7 Warnings

Warning no.	Warning	Description	Cause	Solving
200	Comm. Lost with module	Cascade System: Managing cascade control lost communication with one of the depending.	connection between cascaded boilers is interrupted or wiring is broken	Contact your installer
202	App. Selection Error	Unknown appliance model selected	wrongly programmed parameters	Contact your installer
203	Comm. Lost with boiler	Dual Cascade System: Managing cascade control lost communication with one of the depending.	connection between cascaded boilers is interrupted or wiring is broken	Contact your installer
204	T Outdoor Wrong	T_Outdoor sensor measures open/shorted	malfunctioning outdoor sensor or not connected or wrong CH-mode programmed	Contact your installer
205	T System Wrong	T_System sensor measures open/shorted	malfunctioning system sensor or not connected	Contact your installer
206	T Cascade Wrong	T_Cascade sensor measures open/shorted	malfunctioning cascade sensor or not connected	Contact your installer

Table 5.4

Your distributor: