



Condensing, High Efficiency Water Heaters (IW) and Boilers (IB)

User's Information Manual

Read all instructions thoroughly,
and perform regular maintenance
and service as directed. Keep this
manual on or near the boiler.



62417021 R00 Feb. 18, 2014

WARNING This manual is intended only for use by a qualified heating installer/technician. Read and follow this manual, all supplements and related instructional information provided with the boiler. Install, start and service the boiler only in the sequence and methods given in these instructions. Failure to do so can result in severe personal injury, death or substantial property damage.

WARNING **Do not use the boiler during construction.** Construction dust and particulate, particularly drywall dust, will cause contamination of the burner, resulting in possible severe personal injury, death or substantial property damage. The boiler can only be operated with a dust-free air supply. Follow the instruction manual procedures to duct air to the boiler air intake. If the boiler has been contaminated by operation with contaminated air, follow the instruction manual guidelines to clean, repair or replace the boiler if necessary.

CAUTION Affix these instructions near to the boiler. Instruct the building owner to retain the instructions for future use by a qualified service technician, and to follow all guidelines in the User's Information Manual.

SAFETY INSTRUCTIONS

WARNING: If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

- 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.

	<p>Water temperature over 125°F (51°C) can cause severe burns instantly or death from scalds.</p> <p>Children, disabled and elderly are at highest risk of being scalded.</p> <p>See instruction manual before setting temperature of water heater.</p> <p>Feel water before bathing or showering.</p> <p>Temperature limiting valves are available, see manual.</p>
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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.

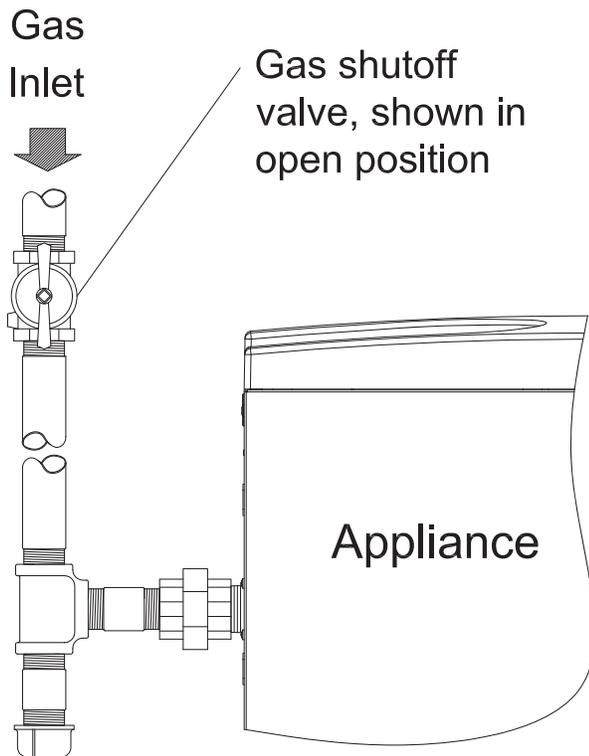
WHAT TO DO IF YOU SMELL GAS

- 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 push in or turn the gas control knob. Never use tools. If the knob will not push in or 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 (to the left) on this label.
2. Turn off all electric power to the appliance.
3. Set the main switch to zero.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
5. Close the manual gas shutoff valve turning the knob clockwise . Do not force.
6. 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 (to the left) on this label. If you don't smell gas, go to the next step.
7. Open the manual gas shutoff valve turning the knob counterclockwise .
8. Turn on all electric power to the appliance, and set the main switch to the on position.
9. Set an heating request following the installation manual.
10. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.

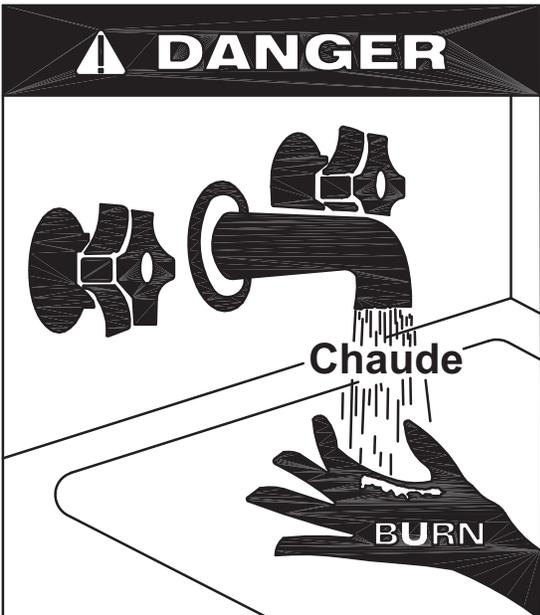
TO TURN OFF GAS TO APPLIANCE

1. Turn off all electric power to the appliance if service is to be performed.
2. Set the main switch to zero.
3. Close the manual gas shutoff valve turning the knob clockwise . Do not force.

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AVERTISSEMENT: Assurez vous de bien suivre les instructions données dans cette notice pour réduire au minimum le risque d'incendie ou d'explosion ou pour éviter tout dommage matériel, toute blessure ou la mort

- Ne pas entreposer ni utiliser d'essence ou ni d'autres vapeurs ou liquides inflammables à proximité de cette appareil ou de tout autre appareil.
- **QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ:**
 - Ne pas tenter d'allumer l'appareil.
 - Ne touchez à aucun interrupteur, ne pas vous servir des téléphones se trouvant dans le bâtiment
 - Appelez immédiatement votre fournisseur de gas de puis un voisin. Suivez les instructions du fournisseur.
 - Si vous ne pouvez rejoindre le fournisseur, appelez le service des incendies
- L'installation et l'entretien doivent être assurés par un installateur ou un service d'entretien qualifié ou par le fournisseur de gaz.

	<p>Un temperature de l'eau au dessus de 125°F (52°C), peut causer de graves brulures instantanément, ou la mort par échaudure.</p> <p>Les enfants, les personnes handicapées ou âgées sont plus à risque d'être échaudées</p> <p>Voir le manuel d'instruction avant de régler la temperature de l'eau sanitaire</p> <p>Sentir la temperature de l'eau sanitaire avant un bain ou une douche</p> <p>Limiteurs de temperature sont disponible voir le manuel</p>
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SAFETY INSTRUCTIONS

POUR VOTRE SÉCURITÉ LISEZ AVANT D'ALLUMER

AVERTISSEMENT: Quiconque ne respecte pas à la lettre les instructions dans le 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. Ne poussez ou tournez la manette d'admission du gaz qu'à la main; ne jamais utiliser d'outil. Si la manette reste coincée, ne pas tenter de la réparer; appelez un technicien qualifié. Le fait de forcer la manette ou de la réparer peut déclencher une explosion ou un incendie.

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.

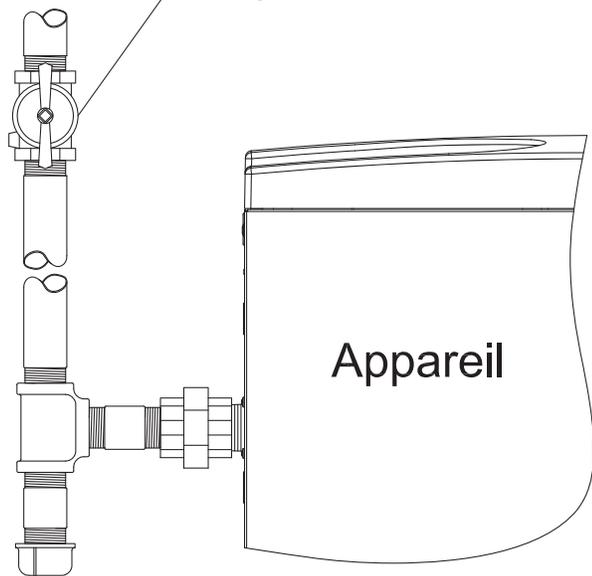
INSTRUCTIONS DE MISE EN MARCHÉ

Entrée

gaz



Robinet gaz
montré en
position ouvert



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. Positionner l'interrupteur sur zéro.
4. Cet appareil est muni d'un dispositif d'allumage qui allume automatiquement le brûleur. Ne tentez pas d'allumer le brûleur manuellement.
5. Fermer le robinet de l'admission du gaz tournant la manette dans le sens horaire .
6. 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.
7. Ouvrir le robinet de l'admission du gaz tournant la manette dans le sens antihoraire .
8. Positionner l'interrupteur sur un (I).
9. Tourner un demande de eau chauffe suivante le manuel d'installation.
10. Si l'appareil ne se 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. Coupez l'alimentation électrique de l'appareil s'il faut procéder à l'entretien.

2. Positionner l'interrupteur sur zéro (0).

3. Fermer le robinet de l'admission du gaz tournant la manette dans le sens horaire .

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SAFETY INSTRUCTIONS

WARNING!!!

Maintenance: at least once a year the user must call a Qualified installer for routine maintenance.

Failure to comply with these provisions can cause a fire or explosion causing property damage, personal injury, or death.

WARNING!!!

If the information in this manual is not followed exactly, can result in a fire or explosion causing property damage, personal injury, or death.

WARNING!!!

Qualified installer: qualified installer is an individual with specific, technical training in space heating systems, domestic hot water systems, fuel gas systems and electrical systems. This individual must have the legally required qualifications. Failure to comply with these provisions can cause a fire or explosion causing property damage, personal injury, or death.

WARNING!!!

Installation and Alterations: Only a Qualified installer must carry out the installation and calibration of the heater. Never modify the heater or its flue gas carrying components in any way. This heater must be properly vented. Failure to follow these instructions could result in personal injury or death!

WARNING!!!

Flue gas/air intake: You are only permitted to operate this appliance with the combustion air/flue gas system that has been specifically designed and approved. Failure to follow these instructions

could result in excessive levels of carbon monoxide which can cause severe personal injury or death!

WARNING!!!

Flue gas/air intake: Do not obstruct the air intake or vent pipe terminals. Failure to take proper precautions can result in excessive levels of carbon monoxide which can cause severe personal injury or death!

WARNING!!!

Flue gas/air intake terminals: Do not restrict or seal any air intake or outlet openings (terminals). Failure to follow these instructions could result in excessive levels of carbon monoxide which can cause severe personal injury or death!

WARNING!!!

Hazards and Your Safety - Hot Water Can Scald! Water temperature over 125°F (51°C) can cause severe burns instantly, or death from scalds. Children, the disabled, and the elderly are at highest risk of being scalded; see instruction manual before setting temperature at heater! Feel water before bathing or showering.

CAUTION!!!

In the event of a breakdown and/or malfunction of the heater, turn off the unit and do not make any attempt to repair it. The heater must be serviced exclusively by a Qualified installer using original spare parts. Failure to comply with this requirement may compromise the safety of the unit.

WARNING!!!

When servicing heater, to avoid electric shock, disconnect electrical supply before performing maintenance. Failure to do so can cause severe personal injury or death.

WARNING!!!

When servicing heater, to avoid severe burns, allow heater to cool before performing maintenance. Failure to do so can cause severe personal injury or death.

WARNING!!!

Should overheating occur or the gas supply fail to shut off, do not turn off or disconnect electrical supply to circulator. Instead, turn off the manual gas shut-off valve external to the appliance. Failure to follow these instructions could result in fire or explosion which can cause severe personal injury or death!

ATTENTION!!!

En cas de surchauffe ou si l'alimentation de gaz ne peut être coupée, ne pas couper ni débrancher l'alimentation électrique de la pompe. Fermer plutôt le robinet d'admission de gaz à l'extérieur de l'appareil

SAFETY INSTRUCTIONS

WARNING!!!

Do not use this appliance if any part has been under water. Immediately call a licensed authorized technician to inspect the appliance and to replace any part of the control system and any gas control, which has been under water. Failure to do so can cause severe personal injury or death.

ATTENTION!!!

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.

WARNING!!!

Ensure the heater and its controls are protected from dripping or spraying water during normal operation or service. Failure to do so can cause severe personal injury or death.

NOTICE! When calling or writing about the heater – Please have the heater model and serial number from the heater rating plate.

NOTICE! Any claims for damage or shortage in shipment must be filed immediately against the transportation company by the consignee.

CAUTION!!!

Do not use “homemade cures” or “heater patent medicines”. Serious damage to the heater, personnel, and/or property may result.

NOTICE! The manufacturer declines all liability, contractual or otherwise (warranty included), for any damage to people, animals property or this same appliance, caused by:

- a) - incorrect installation;
- b) - failure to comply with this or any other instruction provided by the manufacturer;
- c) - failure to comply with the applicable local and/or national regulations in force;
- d) - incorrect use of this appliance
- e) - inadequate or incorrect service
- f) - inadequate or incorrect maintenance.

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1 - CODE REQUIREMENTS

1.1 - Regulations and guidelines

- The installation must conform to the requirements of the authority having jurisdiction or, in the absence of such requirements, to:

- the latest edition of the ***National Fuel Gas Code, ANSI Z223.1/NFPA 54*** and or ***CAN/CSA B149.1, Natural Gas and Propane Installation Code;***

- the latest edition of the ***National Electric Code ANSI/NFPA 70*** and or ***Canadian Electrical Code Part 1 CSA C22.1.***

- Where required by the authority having jurisdiction, the installation must conform to the Standard for ***Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1***

NOTICE!

Install CO detectors per local regulations.

NOTICE!

IB Boiler version meets the safety and other performance requirements as specified in ANSI Z21.13 standard.

NOTICE!

IW Water heater version meets the safety and other performance requirements as specified in ANSI Z21.10.3 standard.

NOTICE!

IB boiler version: per DOE mandate, the operator control incorporates an automatic means (outdoor reset) of adjusting the boiler water temperature for hot water heating. The boiler must not operate without the automatic means enabled.

NOTICE!

IB boiler version: in accordance with Section 325 (f)(3) of the energy policy and conservation Act, this boiler is equipped with a feature that saves energy by reducing the boiler water temperature has the heating load decreases.

2 - GENERAL INFORMATION

2.1 - Key to symbols used

⚠ WARNING!!! Failure to follow these indications can cause an explosion, fire, extensive property damage, severe personal injury or death!

CAUTION!!! Failure to observe this indication may compromise the smooth running of the appliance or cause serious damage to individuals, animals or property.

NOTICE! Indicates special instructions on installation, operation, or maintenance that are important but not related to personal injury or property damage.

☞ Important indication symbol

2.2 - Manufactured by

RBI WATER HEATER
7555 Tranmere Drive
Mississauga, Ontario L5S 1L4 Canada
Phone: (905) 670-5888
Fax: (905) 670-5782
www.rbiwaterheaters.com

2.3 - Description of models:

XX **XXXX**

199 = maximum power input 199,000 Btu/hr (57,5 kW) and minimum 50,000 Btu/hr (14,7 kW).
399 = maximum power input 399,000 Btu/hr (117 kW) and minimum 50,000 Btu/hr (14,7 kW).
500 = maximum power input 500,000 Btu/hr (146,5 kW) and minimum 50,000 Btu/hr (14,7 kW).
750 = maximum power input 750,000 Btu/hr (220 kW) and minimum 50,000 Btu/hr (14,7 kW).
1000 = maximum power input 999,000 Btu/hr (292,8 kW) and minimum 50,000 Btu/hr (14,7 kW).

IB = Tankless fully modulating, gas-fired, condensing hot water boiler
IW = Tankless fully modulating, gas-fired, condensing potable water heater

3 - FUNCTION OVERVIEW

3.1 - Intended use and functions

3.1.1 Intended use and functions of the IB boiler

The boiler version, is designed to be used for central heating system for civil uses. Any other use is prohibited. The maximum output heat is always guaranteed for the production of domestic hot water since it is given priority over space heating demands. The boiler version can be connected to an indirect storage tank for the production of domestic hot water. The boiler version can also function directly with a radiant floor panel.

3.1.2 Intended use and functions of the IW water heater

The water heater version, is designed to warm domestic water (potable) for civil uses. Any other use is prohibited. This water heater must be connected to a storage water heater for the production of domestic hot water.

to 98% (IB boiler only)

Section applicable to boiler version only. When the outdoor reset is activated (an outside sensor is connected), the boiler always work at the maximum efficiency. It will automatically change the supply temperature in relation with the outdoor temperature (Outdoor reset).

The graph in Figure 3-1 shows an example on how it can work. This graph represents an installation where the supply and return temperatures are 139°F (60°C) and 115°F (46°C) respectively, and the outside temperature is 23°F (-5°C). The outdoor reset drives the boiler, to progressively reduce the supply temperature and thereby optimize the efficiency. It changes from 87% when outside is -10°F (-23°C), to 94.8% when outside is 23°F (-5°C) and up to 98% when the outside temperature rises up to 67°F (20°C).

3.2 - Efficiency up

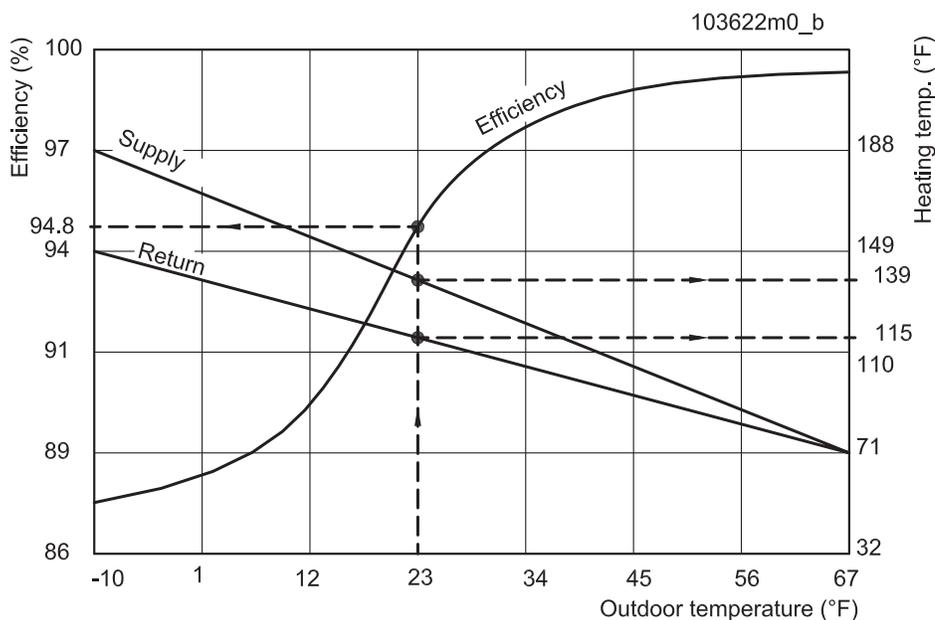


Figure 3-1 Outdoor reset control to optimize the efficiency

4 - INSTALLATION - Vent and combustion air

4.1 - Prevent combustion air contamination

Do not terminate vent/air in locations that can allow contamination of combustion air.

 **WARNING!!!** Contaminate combustion air will damage the boiler, resulting in possible severe personal injury, death or substantial property damage.

Ensure that the combustion air will not contain any of the follow contaminants.

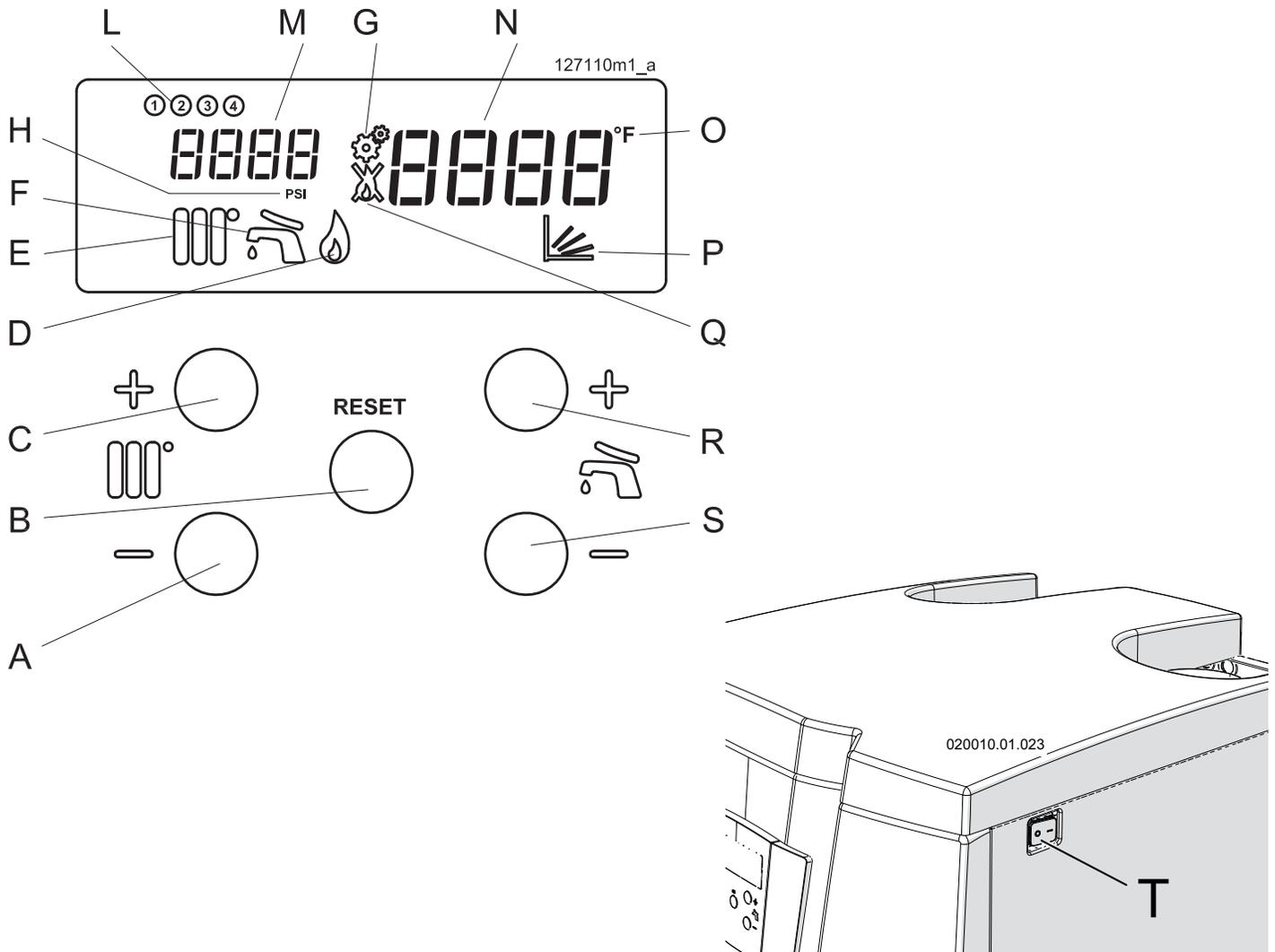
Products that may contaminated the air combustion:

- Permanent wave solutions;
- Chlorinated waxes/cleaners;
- Chlorine-based swimming pool chemicals;
- 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 pipe combustion air near sources of products that may contaminate the air combustion, like:

- Dry cleaning/laundry areas and establishments;
- Swimming pools;
- Metal fabrication plants;
- Beauty shops;
- Refrigeration repair shops;
- Photo processing plants;
- Auto body shops;
- Plastic manufacturing plants;
- Furniture refinishing areas and establishments;
- Remodeling areas;
- Garages with workshops.

5 - USE



- A - Key to reduce the supply water temperature;
- B - Multifunctional key: reset any lockouts; access to user and installer menu.
- C - Key to increase the supply water temperature;
- D - Flame icon, is present when the flame is present;
- E - Radiator icon. Present when heater is enabled to work. Blinking when heater working;
- F - Faucet icon. Present when an indirect water heater (coil water heater) is enabled. Blinking when an indirect water heater (coil water heater) is loading;
- H - Unit of measure of the water system pressure
- L - Burner unit indicators: Light when burner is burning; blinking when burner is in lockout or in blocking error
 - ① = Burner 1 (master)
 - ② = Burner 2
 - ③ = Burner 3
 - ④ = Burner 4
- M - Water pressure gauge and indicator of the parameters
- G - Icon indicating access to the installer menu
- N - Supply water temperature gauge and indicator of the parameters value
- O - Unit of measure of the temperature
- P - Icon displayed when the outdoor sensor is active
- R - Multifunctional key: increase the indirect water heater (coil water heater) temperature; scroll the parameters; increase the parameters' value;
- S - Multifunctional key: decrease the indirect water heater (coil water heater) temperature; scroll the parameters; decrease the parameters' value;
- T - On-Off Main power switch

Figure 5-1 Instrument panel

5 - USE

5.1 - Overview

The heater is pre-set with standard parameters. It is possible to consult the parameters by means of using the "Users' Menu" (see Section 5.11). During functioning display "N" of Figure 5-1, displays the supply temperature and display "M" (see Figure 5-1) shows the pressure of the heating system. The various operating statuses are shown with other icons as per Figure 5-1.

5.2 - Displays

During normal operations, the display remain permanently off, except appliance go in Lockout, or in Blocking error. In any case, pressing any key, display will light on and will stay light on for 5 minutes from the last pressing key.

5.3 - Start-up procedure

1. Open the manual gas shutoff valve;
2. switch on electric power to the heater;
3. If the display shows code Err 65, it means that the polarity has not been observed (Call service department to restore the situation, do not attempt to repair it);
4. press key  or  to setup the supply temperature desired, then press RESET key to save the changement.
5. press key  and  to setup the indirect water heater desired temperature, then press RESET key to save the changement.

The flame control appliance will start-up the burner.

If the burner fails to ignite within 60 seconds, the heater will automatically attempt ignition another four times, after which if it fails to start-up, it will shut down and the display will show

Loc 1 together icon .

Units models 399 up to 1000, because are multiburner, when the they go into any lockout or blocking error display will show the icon  and the corresponding burner icon in

fail (   or ) that blink.

Press the RESET key in order to re-set normal operating conditions. On units model 399 up to 1000, to restore the normal operating condition, press RESET key one time, diplay will show the type of lockout, than press again RESET key (to back in normal display mode, press and hold for at least 5 seconds RESET key).

The heater will automatically attempt another start-up.

CAUTION!!! If the appliance frequently shuts down, contact a qualified technician to restore normal running conditions. Do not attempt to repair it.

5.4 - IW supply water temperature adjustment

The water heater provides hot water at the temperature set by adjusting keys  or  as shown in Figure 14-1.

When the keys are pressed, the display, item "N" in Figure 5-1, shows the supply water setpoint being selected. The range within which the water can be set is 68°F (20°C) to 176°F (80°C).

WARNING!!! Water temperature over 125°F (51°C) can cause severe burns instantly or death from scalds. Children, disabled and elderly are at highest risk of being scalded. Feel water before bathing or showering.

5.5 - IB - Indirect water heater temperature adjustment

If the heater is installed to perform double service (heating and domestic hot water by an indirect water heater), to control the indirect water heater

temperature you have to use keys  - and . When the keys are pressed, the display, item "N" in Figure 5-1, shows the indirect water heater setpoint being selected. The range within which the indirect water heater can be set is 104°F (40°C) to 140°F (60°C).

WARNING!!! Water temperature over 125°F (51°C) can cause severe burns instantly or death from scalds. Children, disabled and elderly are at highest risk of being scalded. Feel water before bathing or showering.

5.6 - IB - Heating temperature adjustment

The boiler supply hot water at the temperature set by adjusting keys  or  as shown in Figure 5-1. The room thermostat turns the circulator pumps on in order to satisfy the heat demand of the rooms controlled by the thermostat. To maximize the heaters' performance, the heating temperature, should be set at a value that is just sufficient to maintain the desired temperature of the rooms. As the weather gets colder, progressively increase the heating water temperature by key .

When the weather gets milder turn the water temperature down.

5.7 - Delays, alarms and protective actions

To protect the life of the appliance, improve comfort, and maximize energy savings, the following timings have been incorporated into the control logic:

- a - Pump delay: each time the room thermostat is satisfied, the circulator pump continues to run for 4 minutes;
- b - DHW delay: each time the domestic hot water demand is satisfied, a 4 minutes delay must pass before the end of the service;
- e - Time delay in restarting the burner: in its normal functioning state, every time the burner stops, there is a delay time of 3 minutes before the boiler restarts again.

Once the heater has reached a temperature of 50 °F (10 °C), the heating pump will automatically come on. If the temperature falls below 41 °F (5 °C), the burner will light to prevent the heater from freezing.

5.10 - Display in energy saver mode

The display, in Figure 5-1, is switched off each time no key is touched for at least 5 minutes, with the exception of when it displays errors or settings.

5.8 - Circulator pump protection

During the summer months, the circulators pumps are run once a day for around 15 seconds to prevent it from seizing.

5.9 - Freeze protection

CAUTION!!! For the freeze protection function to work, the heater must remain connected to the electrical and gas supplies with DHW and central heating service switched to OFF

CAUTION!!! This freeze protection function is conceived to protect the heater only, not the heating system.

CAUTION!!! Because the heater's freeze protection function depends from the electrical supply and from the gas supply, it is mandatory install a safety device that alarm the user in a case the heater room will reach a temperature near 35°F (2°C)

5 - USE

5.11 - “Users’ menu”

Pressing RESET key for 2 seconds, you will enter the “Users’ menu”. When entering the “Users’ menu”, the display, item “M” in Figure 5-1, will

start showing parameters from 1000. Press keys  and  you can scroll all parameters inside this menu. All parameters into this “Users’ menu” can be consulted but not changed.

For unit models 399 up to 1000 parameters addressed to “Burner 1” are applicable for that burner only.

Parameter	Parameter’s description	Units
1001	Burner 1 supply temperature	°F
1002	Indirect water heater temperature	°F
1004	Outdoor sensor temperature	°F
1006	Burner 1 Flue gas temperature	°F
1007	Burner 1 Return temperature	°F
1008	Burner 1 Ionisation current	µA (micro ampere)
1009	State of the Local pump (and of the Burner 1 Motorized valve)	ON/OFF
1010	State of the CH pump	ON/OFF
1011	State of the DHW pump	ON/OFF
1012	Calculated CH setpoint (when outdoor sensor is activated) (only for 199 model; for 399, 500, 750 and 1000 models see Parameter 1107)	°F
1040	Burner 1 Actual Fan speed	rpm/min
1041	Burner 1 Ignition fan speed	rpm/min
1042	Burner 1 Low power fan speed	rpm/min
1043	Burner 1 High power fan speed	rpm/min
1051	Burner 1 Last lockout number	\
1052	Burner 1 Last Blocking error	\
1053	Burner 1 Number of flame failures	no
1055	Burner 1 Number of failed ignitions	no
1056	Burner 1 Total hours of operation	Hr x 10
1057	Burner 1 Total hours of operation or the indirect water heater	Hr x 10
1059	**Burner 1 Interval between Lockouts. May be: 1:MIN; 2:HRS; 3:DAY; 4:WK	
1060	**Burner 1 Interval between Blocking errors. May be: 1:MIN; 2:HRS; 3:DAY; 4:WK	
1062	Burner 1 Water flow	GPM
1101	MULTIBURNER: number of burners ON	n
1102	MULTIBURNER: header temperature	°F
1103	MULTIBURNER: any Burner into Lockout	/
1104	MULTIBURNER: any Burner into Blocking Error	/
1106	MULTIBURNER: system is in emergency mode	/
1107	MULTIBURNER: current multiburner setpoint	°F
1120	MULTIBURNER: burner 1 modulating level	%
1121	MULTIBURNER: burner 2 modulating level	%
1122	MULTIBURNER: burner 3 modulating level	%
1123	MULTIBURNER: burner 4 modulating level	%

** How to read the timer value:
 Eg: If it shows 1:29, it means 29 minutes;
 Eg: If it shows 2:12, it means 12 hours;
 Eg: If it shows 3:15, it means 15 days;
 Eg: If it shows 4:26, it means 26 weeks;

5 - USE

5.12 - Diagnostic

During normal operation display can show the below informations:

Parameter	Parameter description	Visualization on display "N" (see Figure 5-1)
	Heater is doing antifreezing protection	Supply temperature (°F)
	Light fixed = Indirect water heater enabled Blinking = indirect water heater loading	Supply temperature (°F)
	Light fixed = Hot water supply enabled Blinking = Hot water supply active	Supply temperature (°F)
<i>Loc</i>	Heater is in Lockout. Press RESET button to unlock the burner. If lockout happens frequently, ask for a qualified technical service	Lock out code
<i>Err</i>	Heater is in blocking error. It is possible to restore the normal operating conditions only resolving the problem. Ask for a qualified technical service.	Blocking error code

5.13 - Safety flue blocked pressure switch

This appliance is equipped with a safety flue blocked pressure switch that shut-off the unit when the flue exhaust vent pipe is blocked. If this pressure switch shuts off the unit (Loc 5 or Loc 25), do not attempt to place the heater in operation but contact a qualified service agency.
To reset the blocked vent shut off system, call a qualified service agency that will reset the unit after checking for any potential dangerous situation.

! WARNING!!! If the safety flue blocked pressure switch shuts off the system do not attempt to reset or repair the unit. It is mandatory to contact an Qualified service agency. Failure to comply with this requirement can result in excessive levels of carbon monoxide which can result in severe personal injury or death!

5.14 - Shuts heater down

1. Follow "To Turn Off Gas to Appliance" on page 3 of this manual.
2. Do not drain the system unless exposure to freezing temperatures will occur.
3. Do not drain the system if it is filled with an antifreeze solution.

5.15 - How to clean the appliance jacket

To clean the appliance jacket, use only a soft cloth dampened with water. Do not use aggressive or abrasive agents.

6.1 - Care and maintenance

This section must be brought to the attention of the user by the installer so that the user can make the necessary arrangements with a qualified service agency for the periodic care and maintenance of the boiler. User must check its boiler follow Table 6-1 column "User maintenance".

The installer must also inform the user that the lack of proper care and maintenance of this boiler and any fuel burning equipment may result in a hazardous condition.

Installer should discuss contents of this user's manual with the user.

A trained and qualified service technician should perform the inspection listed in these instructions before each heating season and at regular intervals.

performing any maintenance operations, shut the boiler off, close the manual gas shut-off valve and shut off electrical power to the heater. Follow the Operating Instructions outlined in the section "SAFETY INSTRUCTIONS" (Beginning of the manual).

 **WARNING!!!** Servicing, inspection and adjustment must be done by a trained technician in accordance with all applicable local and national codes. Improper servicing or adjustment could damage the boiler! Failure to comply with this warning can result in a fire or explosion causing property damage, personal injury or loss of life!

 **WARNING!!!** Never store combustible materials, gasoline or any product containing flammable vapors and liquids in the vicinity of the heater. Failure to comply with this warning can result in extensive property damage, severe personal injury or death!

 **WARNING!!!** Never obstruct the flow of combustion and ventilation air. Failure to provide adequate combustion air for this heater can result in excessive levels of carbon monoxide which can result in severe personal injury or death!

 **WARNING!!!** Before

Service and maintenance schedules

Service Technician	User maintenance
<p>Annual Startup:</p> <ul style="list-style-type: none"> - Address reported problems; - Check all piping for gas leaks; - Verify flue and air lines in good condition and sealed tight; - Check system water pressure/system piping/expansion tank; - Check control settings; - Check ignition and flame sense electrodes; - Check wiring and connections; - Perform start up checkout and performance verification; - Flame inspection; - Check flame signal; - Inspect combustion chamber. Clean and vacuum if necessary. Clean the heat exchanger if the flue temperature is 63°F (35°C) above return water temperature; - Clean condensate reservoir and fill with fresh water; - Clean air filter; - Check the capacity input; - Check relief valve; 	<p>Daily:</p> <ul style="list-style-type: none"> - Check heater area (Follow section 6.1.2); - Check pressure gauge (Follow section 6.1.3);
	<p>Monthly:</p> <ul style="list-style-type: none"> - Check vent piping and vent termination screen (Follow section 6.1.4); - Check air piping and air termination screen (Follow section 6.1.5); - Check relief valve (Follow section 6.1.1) - Check condensate drain system (Follow section 6.1.6); - Check any air vents on the system that no leaks are present
	<p>Periodically:</p> <ul style="list-style-type: none"> - Test low water cut-off (if used) (Follow section 6.1.9); - Reset low water cut-off button (if used) (Follow section 6.1.10)
	<p>Every six month:</p> <ul style="list-style-type: none"> - Check heater piping (gas and water) for leaks (Follow section 6.1.7);
	<p>End of season months:</p> <ul style="list-style-type: none"> - Shut boiler down (unless boiler used for domestic hot water) (Follow section 6.1.8);

Table 6-1 - Service and Maintenance Schedules

6.1.1 - Check relief valve

Inspect the relief valve and lift the lever to verify flow. Before operating any relief valve, ensure that it is piped with its discharge in a safe area to avoid severe scald potential. Relief valve should be re-inspected at least once every three years, by a licensed plumbing contractor or authorized inspection agency, to ensure that the product has not been affected by corrosive water conditions and to ensure that the valve and discharge line have not been altered or tampered with illegally.

Certain naturally occurring conditions may corrode the valve or its components over time, rendering the valve inoperative. Such conditions are not detectable unless the valve and its components are physically removed and inspected. This inspection must only be conducted by a plumbing contractor or authorized inspection agency – not by the user.

 **WARNING!!!** Failure to re-inspect the relief valve as directed could result in unsafe pressure buildup, which can result in severe personal injury, death, or substantial property damage.

6.1.2 - Check heater area

 **WARNING!!!** To prevent potential of severe personal injury, death, or substantial property damage, eliminate all materials discussed below from the heater vicinity and the vicinity of the heater combustion air inlet.

If contaminants are found: Remove products immediately from the area. If they have been there for an extended period, call a qualified service technician to inspect the heater for possible damage from acid corrosion.

If products cannot be removed, immediately call a qualified service technician to re-pipe vent and air piping and locate vent termination/air intake

away from contaminated areas.

1. Combustible/flammable materials -- Do not store combustible materials, gasoline or any other flammable vapors or liquids near the boiler. Remove immediately if found.
2. Air contaminants -- Products containing chlorine or fluorine, if allowed to contaminate the heater intake air, will cause acidic condensate in the heater. This will cause significant damage to the heater if allowed to continue. Read the list of potential materials listed in Section 4.1. If any of these products are in the room from which the heater takes its combustion air, they must be removed immediately or the heater combustion air (and vent termination) must be relocated to another area.

6.1.3 - Check pressure gauge

1. Make sure the pressure reading on the heater pressure gauge (item "M" of Figure 5-1) does not exceed the maximum working pressure. Higher pressure may indicate a problem with the expansion tank.
2. Contact a qualified service technician if problem persists.

6.1.4 - Check vent piping

1. Visually inspect the vent outlet termination to be sure it is unobstructed. Visually inspect the entire length of the flue gas vent piping for any signs of blockage, leakage, or deterioration of the piping. Notify your qualified service technician at once if you find any problems.

 **WARNING!!!** Failure to inspect the vent system as noted above and have it repaired by a qualified service technician can result in vent system failure, causing severe personal injury or death.

6 - MAINTENANCE

6.1.5 - Check air piping

1. Visually inspect the air inlet termination to be sure it is unobstructed. Inspect the entire length of air piping to ensure piping is intact and all joints are properly sealed.
2. Call your qualified service technician if you notice any problems.

6.1.6 - Check condensate drain system

1. Inspect the condensate drain line, condensate fittings and condensate trap for signs of weeping or leakage.
2. If you detect signs of leakage, immediately contact your qualified service technician to inspect the boiler and system.

6.1.7 - Check heater piping (gas and water)

1. If gas odor or leak is detected, immediately shut down the heater following the procedures on page 3. Call a qualified service technician.
2. Visually inspect for leaks around water piping. Also inspect the circulators, relief valve, and fittings. Immediately call a qualified service technician to repair any leaks.



WARNING!!!

Have leaks fixed at once by a qualified service technician. Failure to comply could result in severe personal injury, death, or substantial property damage.

6.1.8 - Shut boiler down

1. Follow "To Turn Off Gas to Appliance" on page 3 of this manual.
2. Do not drain the system unless exposure to freezing temperatures will occur.

6.1.9 - Test low water cutoff (if installed)

If the system is equipped with a low water cutoff, test the low water cutoff periodically during the heating season, following the low water cutoff manufacturer's instructions.

6.1.10 - Reset low water cut off button (If used)

Testing the low water cutoff shuts the unit off. Press the RESET button on the low water cutoff to turn the unit back on.



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