

Slant/Fin® VSL Boiler

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

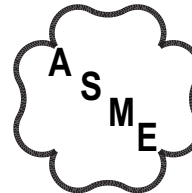
**DIRECT-VENT SEALED COMBUSTION CONDENSING BOILER
HOT WATER MODEL VSL II 90A - 250A
GAS-FIRED BOILER FOR NATURAL AND L.P. PROPANE GASES**

USER'S INSTRUCTIONS



WARNING!!! This manual must only be used by a qualified heating installer / service technician. Read all instructions, including this manual, before installing. Perform steps in the order given. Failure to comply could result in severe personal injury, death, or substantial property damage.

Save this manual for future reference.



H



62417023 R01 Feb. 12, 2015

Heating Contractor	Boiler Model Number
Adresse	Boiler Serial Number
Phone Number	Installation Date

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.

SAFETY INSTRUCTIONS

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.

- If you cannot reach your gas supplier, call the fire department.

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.

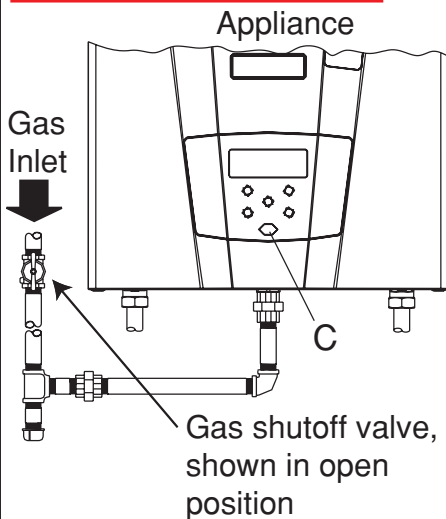
C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.



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.


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. Set the main switch "C" to the off position and turn off all electric power to the appliance.
3. This appliance is equipped with an ignition device which automatically lights the burner. **Do not try** to light the burner by hand.
4. Close the manual gas shutoff valve turning the knob clockwise . Do not force.
5. 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.
6. Open the manual gas shutoff valve turning the knob counterclockwise .
7. Turn on all electric power to the appliance, and set the main switch "C" to the on position.
8. Set an heating request following the installation manual.
9. 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 "C" to zero.
3. Close the manual gas shutoff valve turning the knob clockwise . Do not force.

SAFETY INSTRUCTIONS

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 gaz 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.

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

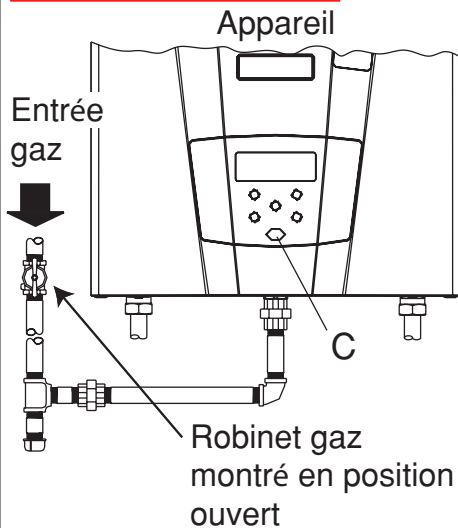
voisin. Suivez les instructions du fournisseur.

- 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



1. ARRÊTEZ! Lisez les instructions de sécurité sur la portion supérieure (à gauche) de cette étiquette.
2. Positionner l'interrupteur "C" sur off et coupez l'alimentation électrique de l'appareil.
3. Cet appareil est muni d'un dispositif d'allumage qui allume automatiquement le brûleur. **Ne tentez pas** d'allumer le brûleur manuellement.
4. Fermer le robinet de l'admission du gaz tournant la manette dans le sens horaire ↻.
5. 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.
6. Ouvrir le robinet de l'admission du gaz tournant la manette dans le sens antihoraire ↺.
7. Positionner l'interrupteur "C" sur la position d'allumage.
8. Tourner un demande de eau chauffe suivante le manuel d'installation.
9. 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 "C" sur eteint.

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

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 (52°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, contact a qualified installer 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.

TABLE OF CONTENTS

SAFETY INSTRUCTIONS	2
TABLE OF CONTENTS	8
1 - CODE REQUIREMENTS	9
1.1 - Regulations and guidelines	9
2 - GENERAL INFORMATION	10
2.1 - Key to symbols used	10
2.2 - Manufactured by	10
2.3 - Description of models:	10
3 - FUNCTION OVERVIEW	11
3.1 - Intended use and functions	11
3.2 - Efficiency up to 98%	11
4 - INSTALLATION - Vent and combustion air	12
4.1 - Prevent combustion air contamination	12
5 - USE	13
5.1 - Overview	14
5.2 - Displays	14
5.3 - Start-up procedure	14
5.4 - Indirect water heater temperature adjustment	14
5.5 - Heating temperature adjustment	14
5.6 - Delays, alarms and protective actions	15
5.7 - Circulator pump protection	15
5.8 - Freeze protection	15
5.9 - Display in energy saver mode	15
5.10 - "Users' menu"	16
5.11 - Diagnostic	17
5.12 - Safety flue blocked pressure switch	17
5.13 - Shuts heater down	17
5.14 - How to clean the appliance jacket	17
6 - MAINTENANCE	18
6.1 - Care and maintenance	18
6.1.1 - Check heater area	19
6.1.2 - Check pressure gauge	19
6.1.3 - Check vent piping	19
6.1.4 - Check air piping	19
6.1.5 - Check condensate drain system	19
6.1.6 - Check heater piping (gas and water)	19
6.1.7 - Shut boiler down	19
1. Follow "To Turn Off Gas to Appliance" on page 3 of this manual.	19
6.1.8 - Test low water cutoff (if used)	19
6.1.9 - Reset low water cut off button (If used)	19

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!

This appliance meets the safety and other performance requirements as specified in ANSI Z21.13 standard.

NOTICE!

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 operate with the automatic means enabled.

NOTICE!

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 as 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

See last page of the present manual.

2.3 - Description of models:

XXX XXXA

A = Tankless fully modulating gas fired hot water boiler (Wall hung installation).

90 = maximum input of 90,000 Btu/hr (26,40 kW).

130 = maximum input of 130,000 Btu/hr (38,1 kW).

150 = maximum input of 150,000 Btu/hr (44 kW).

200 = maximum input of 198,000 Btu/hr (58 kW).

250 = maximum input of 250,000 Btu/hr (73,2 kW).

XXX = Manufacturer's reference of fully modulating, gas-fired, condensing hot water boiler

3 - FUNCTION OVERVIEW

3.1 - Intended use and functions

The boiler is designed to be used for central heating systems for residential and light commercial use. Any other use is prohibited.

The boiler can be installed with a Direct Vent system or with a one pipe vent system using room air.

The boiler can be connected to an indirect water heater for the production of domestic hot water.

3.2 - Efficiency up to 98%

When the outdoor reset is activated (an outdoor 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 4-2 shows an example on how it can work.

This graph represents an installation where the supply and return temperatures are 139°F and 115°F respectively , and the outside temperature is 23°F. 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, to 94.8% when outside is 23°F and up to 98% when the outside temperature rises up to 67°F.

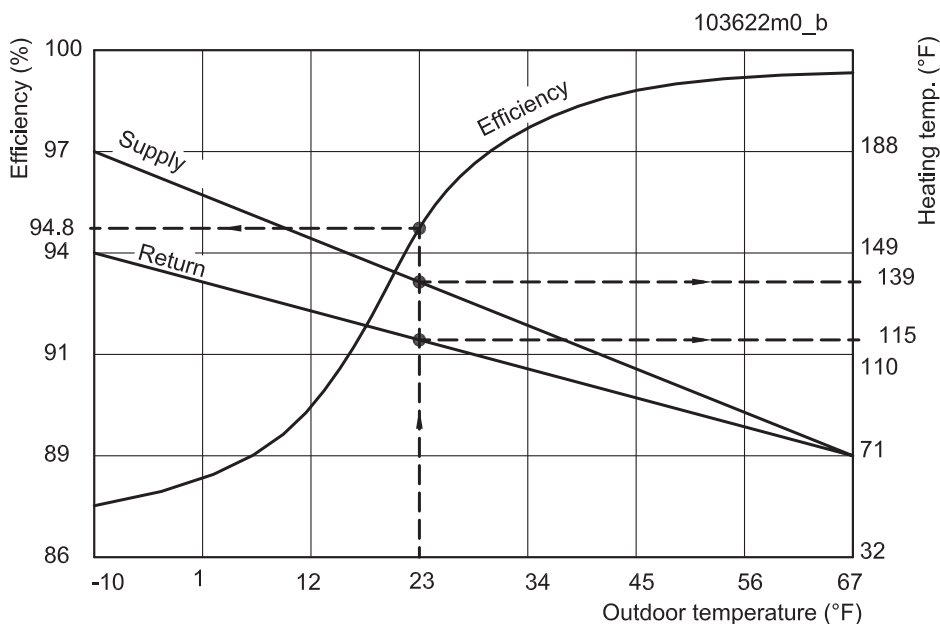



Figure 3-1 Outdoor reset control to optimize the efficiency

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.

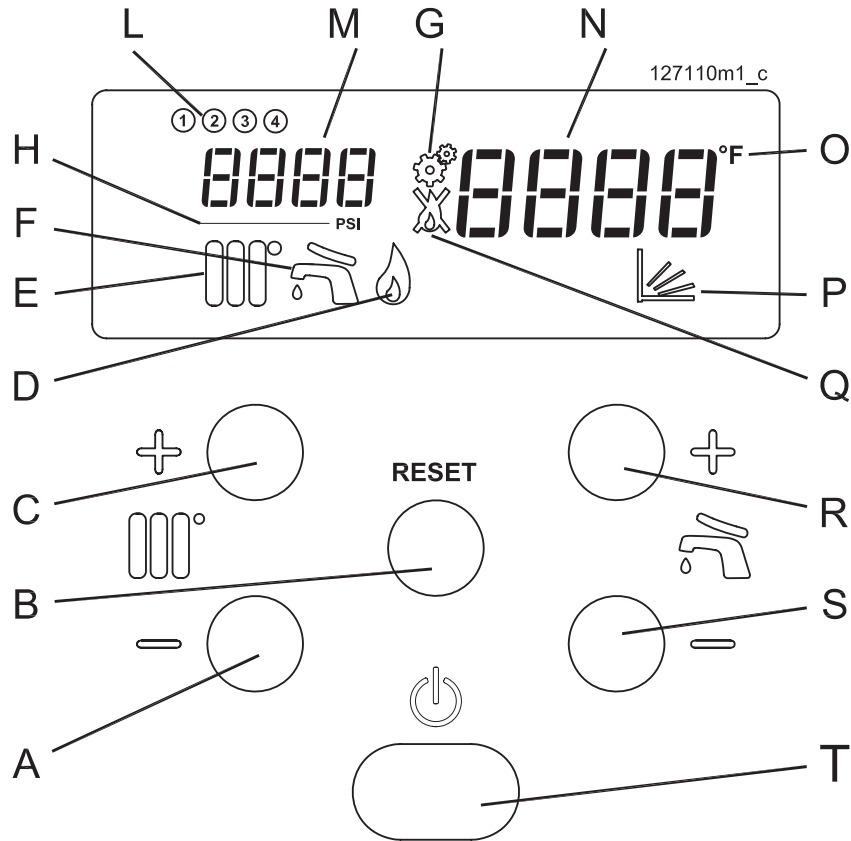
Products that may contaminated the air combustion:

- 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 heating is enabled to work. Blinking when heating is active;
- F - Faucet icon. Present when an indirect water heater is enabled to work. Blinking when an indirect water heater (coil water heater) is in load;
- H - Unit of measure of the water system pressure;
- L - Cascade boiler indicators: Light when boiler is burning; blinking when boiler is in lockout or in blocking error:

- ① = Boiler 1 (manager)
- ② = Boiler 2 (dependent)
- ③ = Boiler 3 (dependent)
- ④ = Boiler 4 (dependent)

- 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
- Q - Flame crossed icon: is present when the appliance is in lockout or blocking error condition
- R - Multifunctional key: increase the indirect water heater temperature; scroll the parameters; increase the parameters' value;
- S - Multifunctional key: decrease the indirect water heater temperature; scroll the parameters; decrease the parameters' value;
- T - On-Off Main power switch

Figure 5-1 Instrument panel

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 5.10). 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 a qualified technician 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.

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 .

Press the RESET key in order to re-set normal operating conditions. The boiler 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 - Indirect water heater temperature adjustment

If the boiler 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 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 - 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.

5.6 - 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 burner restarts again.

5.7 - Circulator pump protection

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

5.8 - Freeze protection

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

CAUTION!!! The freeze protection program in the boiler will only protect the boiler and not the entire heating system. If the system is shut down on a regular basis or has the potential to freeze additional measures must be taken to protect the system from freezing.

CAUTION!!! Do not deactivate the boiler freeze protection program. If the indoor air temperature of the building where the boiler is located drops to 40F or below it is the responsibility of the owner to take preventative measures to prevent the boiler and system from freezing.

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



5.9 - 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 - USE

5.10 - “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.

Parameter	Parameter’s description	Units
1001	Supply temperature	°F
1002	Indirect water heater temperature	°F
1004	Outdoor sensor temperature	°F
1006	Flue gas temperature	°F
1007	Return temperature	°F
1008	Ionisation current	µA (micro ampere)
1009	State of the Local pump	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 enabled)	°F
1040	Actual Fan speed	rpm/min
1041	Ignition fan speed	rpm/min
1042	Low power fan speed	rpm/min
1043	High power fan speed	rpm/min
1051	Last lockout number	\
1052	Last Blocking error	\
1053	Number of flame failures	no
1055	Number of failed ignitions	no
1056	Total hours of operation	Hr x 10
1057	Total hours of operation of the indirect water heater	Hr x 10
1059	**Interval between Lockouts. May be: 1:MIN; 2:HRS; 3:DAY; 4:WK	
1060	**Interval between Blocking errors. May be: 1:MIN; 2:HRS; 3:DAY; 4:WK	
1062	Water flow	GPM
1101	CASCADE: number of boilers ON	n
1102	CASCADE: header temperature	°F
1103	CASCADE: any boiler into Lockout	/
1104	CASCADE: any boiler into Blocking Error	/
1106	CASCADE: system is in emergency mode	/
1107	CASCADE: current cascade setpoint	°F
1120	CASCADE: boiler 1 modulating level	%
1121	CASCADE: boiler 2 modulating level	%
1122	CASCADE: boiler 3 modulating level	%
1123	CASCADE: boiler 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


5.11 - 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	Indirect water heater 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

5.12 - 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 2, Loc 5 or Loc 25), do not attempt to place the boiler 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 a 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!

5.13 - 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.

5.14 - 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 - MAINTENANCE

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.

! 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!

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 trap and fill with fresh water; - Check the capacity input; - Check relief valve; - Test low water cutoff (if used) (Follow Section 6.1.8); - Reset low water cut-off button (if used) (Follow Section 6.1.9) 	<p>Daily:</p> <ul style="list-style-type: none"> - Check heater area (Follow Section 6.1.1); - Check pressure gauge (Follow Section 6.1.2); <p>Monthly:</p> <ul style="list-style-type: none"> - Visually inspect vent piping and vent termination screen (Follow Section 6.1.3); - Visually inspect air piping and air termination screen (Follow Section 6.1.4); - Visually inspect condensate drain system (Follow Section 6.1.5); - Visually inspect the vent for signs of of damage <p>Every six month:</p> <ul style="list-style-type: none"> - Visually inspect heater piping (gas and water) for leaks (Follow Section 6.1.6); <p>End of season months:</p> <ul style="list-style-type: none"> - Shut boiler down (unless boiler used for domestic hot water) (Follow Section 6.1.7);

Table 6-1 - Service and Maintenance Schedules

6 - MAINTENANCE

WARNING!!!

Before 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).

6.1.1 - 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.

6.1.2 - 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.

6.1.3 - 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.

6.1.4 - 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.

6.1.5 - Check condensate drain system

1. Visually 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.

6.1.6 - 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.

6.1.7 - 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.

6.1.8 - Test low water cutoff (if used)

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.

6.1.9 - 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.

Slant/Fin

SLANT/FIN CORPORATION, Greenvale, NY 11548
Phone: (516) 484-2600, Fax: (516) 484-5921

www.slantfin.com

Canada: SLANT/FIN LTD/LTEE, Mississauga Ontario
Phone: 905-677-8400

www.slantfin.ca