

User's Information Manual

User Operating Instructions

NOTICE

The manufacturer reserves the right to make product changes or updates without notice and will not be held liable for typographical errors in literature.

The surfaces of these products contacted by potable (consumable) water contain less than 0.25% lead by weight as required by the Safe Drinking Water Act, Section 1417.

NOTE TO CONSUMER:
PLEASE KEEP ALL INSTRUCTIONS
FOR FUTURE REFERENCE.



TRX

Residential Condensing Gas Boiler



Heat Exchanger Bears the ASME "H" Stamp

! 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 GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER BOILER.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any boiler.
- 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 provided by a qualified installer, service agency, or the gas supplier.

Improper installation, adjustment, alteration, service, or maintenance could void product warranty and cause property damage, severe personal injury, or death.

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

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 suppliers' instructions.

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

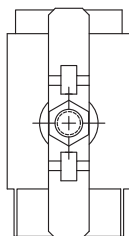
- C. Use only your hand to turn the gas control knob. Never use tools. If the handle will not turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

- 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.

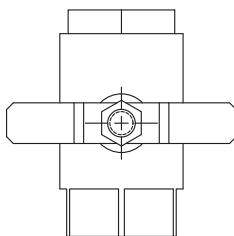
OPERATING INSTRUCTIONS

1. STOP! Read the safety information above.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

GAS VALVE
ON



GAS VALVE
OFF



5. Remove front cover.
6. Turn gas shutoff valve to "off". Handle will be across the piping, do not force.
7. Wait five (5) minutes to clear out any gas. If you then 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 gas shutoff valve to "on". Handle will be in line with piping.
9. Install Front Cover.
10. Turn on all electric power to appliance.
11. Set thermostat to desired setting.
12. 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 lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Remove Front Cover.
4. Turn gas shutoff valve to "off". Handle will be across the piping. Do not force.
5. Install Front Cover.

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WARNING

The combustion chamber insulation in this product contains ceramic fiber material. Ceramic fibers can be converted to cristobalite in very high temperature applications. The International Agency for Research on Cancer (IARC) has concluded, "Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1)." DO NOT, UNDER ANY CIRCUMSTANCES, OPEN THE COMBUSTION CHAMBER OF THIS BOILER! The combustion chamber of this boiler may be opened by a qualified service technician ONLY. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SUBSTANTIAL PROPERTY DAMAGE, SEVERE PERSONAL INJURY, OR DEATH.

SPECIAL ATTENTION BOXES

The following defined terms are used throughout this manual to bring attention to the presence of hazards of various risk levels or to important product information.

! DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in serious personal injury or death.

! WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in personal injury or death.

! CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in moderate or minor personal injury.

CAUTION

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

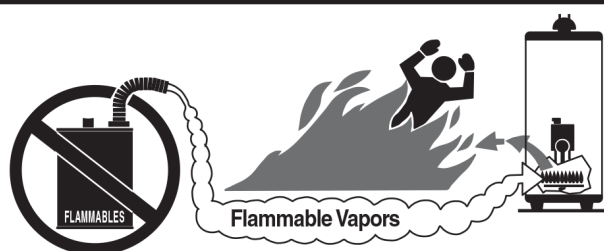
NOTICE

NOTICE is used to address practices not related to personal injury.

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! DANGER



! Vapors from flammable liquids will explode and catch fire causing death or severe burns.

Do not use or store flammable products such as gasoline, solvents or adhesives in the same room or area near the water heater.

Keep flammable products:

1. far away from heater,
2. in approved containers,
3. tightly closed and
4. out of children's reach.

Installation:
Do not install water heater where flammable products will be stored or used unless the main burner and pilot flames

Water heater has a main burner and pilot flame.
The pilot flame:

1. which can come on at any time and
2. will ignite flammable vapors.

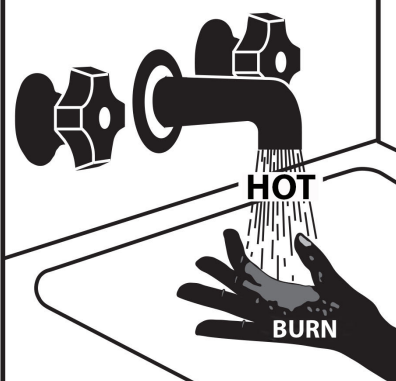
Vapors:

1. cannot be seen,
2. are heavier than air,
3. go a long way on the floor and
4. can be carried from other rooms to the pilot flame by air currents.

are at least 18" above the floor. This will reduce, but not eliminate, the risk of vapors being ignited by the main burner or pilot flame.

Read and follow water heater warnings and instructions. If owners manual is missing, contact the retailer or manufacturer.

! DANGER



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.
See instruction manual before setting temperature at water heater.
Feel water before bathing or showering.
Temperature limiting valves are available, see manual.

Part 1 - Product and Safety Information

WARNING

Proper care of this boiler is the user's / owner's responsibility. The user should carefully read and understand the Operating Information in this manual before operating this boiler.

User - Have this boiler serviced / inspected annually by a qualified service technician.

FAILURE TO ADHERE TO THE GUIDELINES AND WARNINGS IN THIS MANUAL CAN RESULT IN SUBSTANTIAL PROPERTY DAMAGE, SEVERE PERSONAL INJURY, OR DEATH.

DO NOT use this boiler if ANY part has been under water. Immediately call a qualified technician to inspect the boiler and replace any part of the control system or gas control which has been under water.

DO NOT power up the boiler unless the gas and water supply valves are fully opened. Make sure the fresh air intake pipe and exhaust vents are open and functional.

DO NOT attempt to install, repair, or service this boiler. Contact a qualified technician if the boiler needs repair or maintenance. Ask your gas supplier for a list of qualified service providers.

DO NOT attempt to disassemble this boiler. If repairs are required, contact a qualified service technician.

All safety devices must be tested by the installer / qualified service technician after the boiler is installed.

Always verify proper boiler operation with the qualified service technician after servicing.

The gas ignition system components must be protected from water (dripping, spraying, rain, etc.) during boiler operation and service (circulator replacement, condensate trap, control replacement, etc.)

DO NOT touch the exhaust vent or hot water pipes during boiler operation.

Combi models / boilers using indirect water heating: Always be careful when opening a hot water faucet or draining water from the boiler. Water temperature over 125°F can instantly cause severe burns or death from scalds. Children, disabled, and elderly are at the highest risk of being scalded. See Installation Manual before setting temperature at boiler. Feel water before bathing or showering!

This boiler features a factory installed overheating prevention device. This limit will shut down the boiler in the event that the boiler water temperature exceeds the set point of the limit control. Certain local codes require additional water temperature limiting devices.

A. Before Operating the Boiler

1. Check the Gas Type
When operating the boiler for the first time, ensure the connected gas type matches the boiler gas type. NTI boilers are factory set to operate on Natural Gas. BEFORE OPERATING WITH PROPANE the boiler must be converted to Propane operation by a qualified service technician, using the conversion kit specific to the boiler model.

DANGER

Attempting to operate this boiler on Propane when it has not been correctly converted to Propane operation will result in improper boiler operation resulting in property damage, personal injury, or death.

2. Check the Power (120V / 60 Hz)
Ensure the boiler is connected to a properly rated power supply.

WARNING

Failure to connect the boiler to the properly rated power supply described above (120V / 60Hz) could result in property damage, personal injury, or death.

3. Check the Automatic Feed Valve
Ensure the automatic feed valve to the boiler is providing the proper pressure to the central heating (CH) loop.
4. Check the Gas Shut-Off Valve
Ensure the manual gas shut-off valve is open. The boiler will not operate unless it is supplied with gas.

WARNING

It is the user's responsibility to know the location of the gas shut-off valve and how to operate it. Immediately close the gas shut-off valve if the boiler is subjected to fire, overheating, flood, physical damage, or any other damaging condition that might affect the operation of the unit. Have the boiler checked by a qualified technician before resuming operation.

Call a qualified service technician if repair of the gas pipeline or replacement of the gas regulator is necessary.

5. Check the area around the boiler.
Remove any combustible or flammable materials from the area around the boiler and do not hang anything from the exhaust vent pipe.

WARNING

DO NOT store flammable or combustible materials near this boiler. DO NOT use spray paint, hair spray, or any other flammable sprays near the boiler or near the exterior fresh air intake pipe termination. DO NOT place any items in or around the exterior exhaust vent termination and/or fresh air intake pipe that could restrict or block the flow in or out of the vent system.

Exhaust gas entering the living space can cause carbon monoxide poisoning. If exhaust gas should leak into the living space:

- Shut down the boiler.
- Close the gas valve.
- Open windows for ventilation.

Immediately call a qualified service technician to inspect the boiler and exhaust vent pipe. Any damages to the exhaust vent pipe should be repaired immediately.



B. Primary Water

- Do not attempt to clean the heating system. Call a qualified service technician for service.
- If you notice any leaks, immediately call a qualified service technician. Leaks in boiler or piping must be repaired at once.



C. Freeze Protection

WARNING

Closed loops that use glycol as heat transfer fluid must be serviced periodically. Glycol can break down over time, become acidic, and attack gaskets and seals in boilers. This can result in property damage, severe personal injury, or death.

Each glycol manufacturer has different recommendations for testing and replacement. Do not test glycol quality yourself. Have your qualified service technician check glycol quality during annual servicing. If you are unsure when your glycol was last tested, call a qualified service technician to test and replace glycol, if necessary.

DO NOT shut off the boiler for long periods of time during potentially freezing conditions. If the boiler must be shut off during potentially freezing conditions (is not to be used for an extended period of time), shut down the system and drain it of water. Shut off the gas and cold water supply valves.

Ensure exposed water pipes are thermally insulated to prevent damage due to freezing conditions. If the boiler is not to be used for an extended period of time during freezing conditions, shut down the system and completely drain the boiler.

If the water pipes should freeze, thaw the pipes with a hair dryer or other electric heating device. If this does not work, call a qualified service technician.



D. Combustion Air Contamination Prevention

DANGER

Do not operate the boiler if its combustion air intake is located in or near one of the areas or in the vicinity of products listed in Table 1. These areas will always contain hazardous contaminants that can form strong acids while passing through the burner and vent system. These acids will corrode the boiler's heat exchanger, burner components and vent system, resulting in flue gas spillage and/or water leakage, possible substantial property damage, severe personal injury, or death. If the boiler combustion air intake is located in any area likely to cause or contain contamination, or if products which would contaminate the air cannot be removed, the intake must be re-piped and terminated to another location.

DO NOT re-pipe ventilation system on your own. Call a qualified service provider for assistance.

Products to Avoid	Areas Likely to Have Contaminants
Spray cans containing fluorocarbons	Dry cleaning / laundry areas and establishments
Permanent wave solutions	Swimming pools
Chlorinated waxes / cleaners	Metal fabrication plants
Chlorine-based swimming pool chemicals	Beauty shops
Calcium chloride used for thawing	Refrigeration repair shops
Sodium chloride used for water softening	Photo processing plants
Refrigerant leaks	Auto body shops
Paint or varnish removers	Plastic manufacturing plants
Hydrochloric or Muriatic acid	Furniture refinishing areas and establishments
Cements and glues	New building construction
Antistatic fabric softeners used in clothes dryers	Remodeling areas
Chlorine-type bleaches, laundry detergents, and cleaning solvents	Garages and workshops
Adhesives used to fasten building products	

Table 1 - Products and Areas Likely to Have Contaminants

NOTE: DAMAGE TO THE Boiler CAUSED BY EXPOSURE TO CORROSIVE VAPORS IS NOT COVERED BY WARRANTY.

(Refer to the limited warranty for complete terms and conditions.)

Part 2 - Operating Instructions

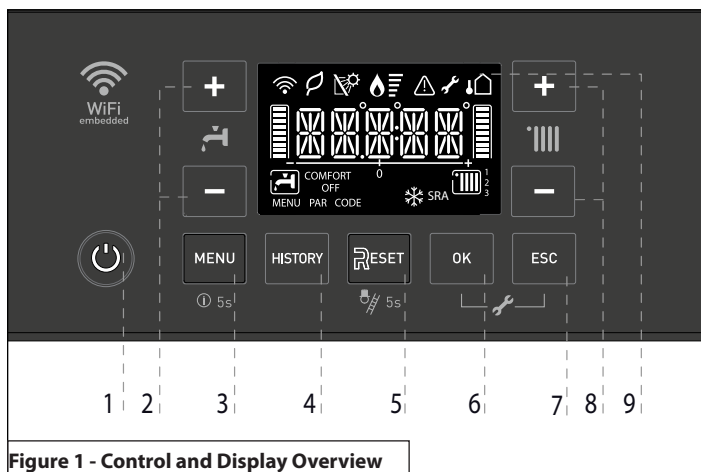


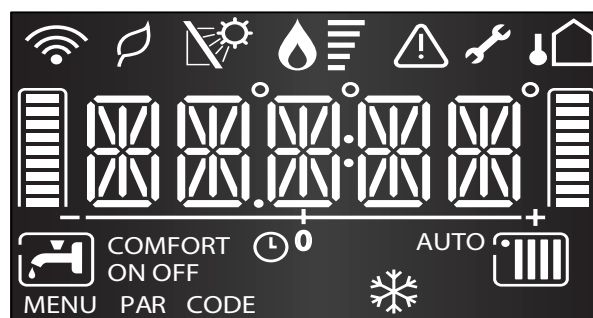
Figure 1 - Control and Display Overview

Item #	Description
1	ON / OFF Button (see NOTICE below)
2	Domestic Hot Water Adjustment Button +/-
3	MENU (short press = User Menu); (long press = Info Menu)
4	HISTORY Button - view last 10 errors
5	RESET Button (see NOTICE below)
6	OK – confirms menu selection
7	ESC – exits menu selection
8	Heating Temperature Adjustment Button +/-
9	Display

Table 2 - Control Descriptions

NOTICE

Operating Description	
	On / Off Button The button lights (white) when the boiler is electrically powered.
	On / Off Button The button is not lit in the event of an error or power failure.
	RESET BUTTON The button lights (red) in the event of a lockout error. After pressing the Reset button to clear an error condition, the button will flash for five (5) seconds.



Display Icon	Description
	Digits Indicating: - Boiler Status - Temperature indication (°F) with bar level - Error Codes (ERROR) - Press Reset Button Request (RESET) (boiler lockout) - Menu Settings
	Technical assistance request
	Flame detected with indication of power used
	CH Heating Operation Set
	CH Heating Operation Active
	DHW Operation Set
	DHW Operation Active
COMFORT	Hot Water Comfort Activated (Combi Only)
OFF	Boiler off with Antifreeze Function Active
	Antifreeze Function Active
AUTO	Automatic Temperature Control activated
	High Efficiency Operation (Low CH flow temperature)
	Solar inlet temperature probe connected - Optional
	Error signal - Display will also show a code and description
	Outdoor Sensor Connected - Optional
	WiFi Active

Table 3 - Display Icon Descriptions

A. Boiler Operation

- Do not block flow of the boiler exhaust vent or intake pipe.
- Should overheating occur or gas supply fail to shut off, do not turn off or disconnect electrical supply to the circulator. Instead, shut off the gas supply at a location external to the boiler following the instructions on page 2.
- Do not use this boiler if any part has been under water. Immediately call a qualified service technician to inspect the boiler and replace any part of the control system or gas control that has been under water.

! WARNING

OPERATING INSTRUCTIONS

- STOP! DO NOT use this boiler unless it is completely filled with water.
- Ensure electrical power to the boiler is powered OFF.
- This boiler is equipped with an ignition device which automatically lights the burner. DO NOT attempt to light the burner by hand.
- Turn the gas shut-off valve clockwise to the "OFF" position. Do not force.
- Wait five (5) minutes to clear out any gas. If you smell gas, STOP! Follow the information on page 2, this manual. If you don't smell gas, go to the next step.
- Turn manual gas shut-off valve to the "ON" position.
- Turn ON electrical power to the boiler.
- Generate a call for hot water by opening a hot water faucet in the system.
- If the boiler will not operate, follow the instructions on page 2 to turn off the gas to the boiler. Then call your qualified service technician or gas supplier.

B. Ignition Procedure

Press the ON/OFF button  on the control panel to switch on the boiler. The display shows:

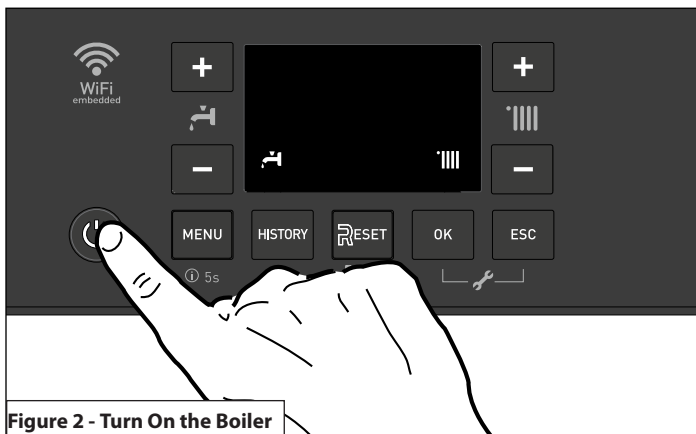
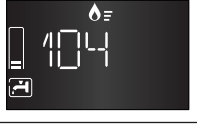


Figure 2 - Turn On the Boiler

Operating Mode

Stand-by	
CH request supply temperature displayed	
DHW request DHW setpoint displayed	

The ignition of the burner is indicated on the display by the symbol



. The dashes underneath indicate power level.

C. Central Heating (CH) Temperature Adjustment

It is possible to set the central heating (CH) temperature by pressing the buttons described in Figure 1, Item 8.

The CH temperature range is 68 - 113°F (low temperature) and 95 - 179°F (high temperature).

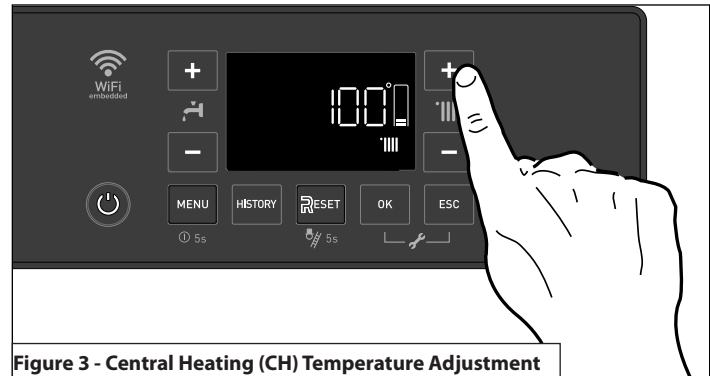


Figure 3 - Central Heating (CH) Temperature Adjustment

NOTE: The CH Setpoint cannot be changed by pressing the buttons item 8 (Figure 1) if an outdoor sensor is connected to the appliance. When using an outdoor sensor, the appliance will automatically change the CH target temperature based on the outdoor reset curve.

D. Domestic Hot Water (DHW) Temperature Adjustment

Not for non-COMBI using Aquastat

It is possible to set the domestic hot water (DHW) temperature by pressing the buttons described in Figure 1, Item 2.

The DHW temperature range is 97 - 140°F. The previously set value will flash on the display.

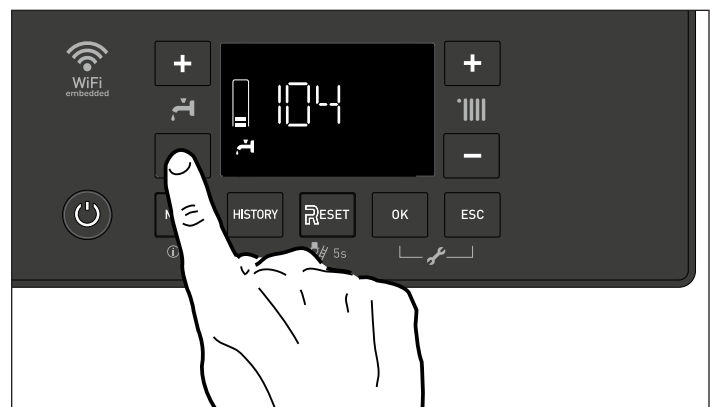


Figure 4 - Domestic Hot Water (DHW) Temperature Adjustment

Part 2 - Operating Instructions

DANGER

Hotter water increases the risk of scald injury. Scalding may occur within five (5) seconds at a setting of 140°F. Water temperature over 125°F can instantly cause severe burns or death from scalds. Children, disabled, and elderly persons are at the highest risk of being scalded. See instruction manual before setting temperature at the appliance. Feel water before bathing or showering.

WARNING

An ASSE 1017 or ASSE 1070 temperature limiting or mixing valve is recommended in installations servicing disabled or elderly persons, or children. Mixing valves do not eliminate the risk of scalding.

To avoid scalding:

- Set the water heater set point temperature as low as possible.
- Feel water before bathing or showering.
- If thermostatic valves are required, use devices specifically designed for such purpose. Install these devices in accordance with instructions provided by the manufacturer.

Failure to install a temperature limiting or mixing valve and follow these instructions could result in property damage, severe personal injury, or death due to scalds.

E. During Operation

1. Check for Gas Leaks

Frequently check the gas pipe and connections for leaks with a soapy solution. Gas is leaking if air bubbles appear during the test. Close the gas supply valve and call your gas supplier for inspection.

WARNING

After any repair of the gas pipeline or replacement of the gas regulator, call a qualified service technician to observe the installation and replacement before restoring power to the boiler. Failure to do so could result in a fire or explosion, substantial property damage, severe personal injury, or death.

2. Check Exhaust Vent and Intake Pipe for Proper Ventilation

Ensure there is sufficient ventilation while operating the boiler. Improper ventilation could result in premature boiler failure. Such failures ARE NOT covered by boiler warranty.

WARNING

Exhaust gas entering the living space can cause carbon monoxide poisoning. If exhaust gas should leak into the living space:

- Shut down the boiler.
- Close the gas valve.
- Open windows for ventilation.
- Ensure the CO detectors are operating properly.

Immediately call a qualified service technician to inspect the boiler and exhaust vent pipe. Any damages to the exhaust vent pipe should be repaired immediately. Failure to do so could result in a fire or explosion, substantial property damage, severe personal injury, or death.

WARNING

Breathing Hazard - Carbon Monoxide Gas



- Do not operate heater if flood damaged.
- Install vent system in accordance with local codes and manufacturers installation instructions.
- Do not obstruct heater air intake or exhaust. Support all vent piping per manufacturers installation instructions.
- Do not place chemical vapor emitting products near unit.
- According to NFPA 720, carbon monoxide detectors should be installed outside each sleeping area.
- Never operate the heater unless it is vented to the outdoors.
- Analyze the entire vent system to make sure that condensate will not become trapped in a section of vent pipe and therefore reduce the open cross sectional area of the vent.

Breathing carbon monoxide can cause brain damage or death. Always read and understand instruction manual.

LP-304

3. Burn Warning

Take caution when inspecting the boiler and its internal components, exhaust vent, and/or water pipes. These components can get extremely hot during operation.

WARNING

Storing flammable or combustible materials near this boiler could result in a fire or explosion, substantial property damage, severe personal injury, or death.

4. Combustibles and Flammable Material Warning

Do not store combustibles or flammable materials in the vicinity of this boiler. Do not hang anything from the exhaust pipe.

5. Check for Water Leaks

- Do not attempt to clean the heating system. Call a qualified service technician for service.
- Immediately call a qualified service technician if you notice any leaks. Leaks in boiler or piping must be repaired at once.

WARNING

DO NOT use this boiler for any purposes other than those specifically described by NTI (to provide central heating and domestic hot water). Using this boiler for unapproved purposes WILL VOID the warranty, and could result in substantial property damage, serious personal injury, or death.

F. User Menu

Press the MENU button to open the user menu.

To navigate within the menu or parameters, press the + and - buttons (or).

To change a parameter, select it by pressing the OK button.

To change the set value, press the + and - buttons (or).

Press the OK button to save.

To exit or save the changes, press the ESC button.

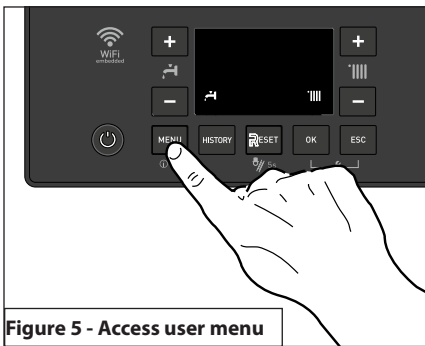


Figure 5 - Access user menu

For parameters 5 to 12 it is also possible to set / change the heating zone 2 (if available).

By pressing the HISTORY button after accessing the parameter, the number 1 or 2 of the selected zone appears next to the heating symbol: .

Continue to change the setting as described above.

Activate change with OK button, + / - buttons change the value, OK button for confirmation, ESC to return without change.			
1.	NTI Wi-Fi		
	WIFI	ON/OFF Wi-Fi	
	AP	Access point open for 10 minutes	
	SN	Shows Wi-Fi serial number (Not Appliance)	
	RESET	Delete Wi-Fi settings Disconnect user account	
	ITEMP	Set Internet weather (only without outdoor sensor)	
2.	Date and Time		
	The following values are displayed in a sequence. For setting, select OK and +/-.		
	Day (1-31)		
	Month (1-12)	(*) Press +/- button for setting hours	
	Year (year)	Press +/- button for setting the minutes)	
	Time (hh: mm) (*)	Press OK to confirm the entered data.	
5.	Automatic C.H. temperature control / AUTO function		
	OFF	AUTO function deactivated	
	ON	AUTO function Active (AUTO appears on the display)	
6.	Room temperature Day		
	only applicable if using NTI room sensor(s)		
7.	Room temperature Night		
	only applicable if using NTI room sensor(s)		
8.	Time programs – heating schedule		
	only applicable if using NTI room sensor(s)		
	0+24 h	Always active	
	P1	Family program	
	P2	Program no lunch	
	P3	Program with lunch	
	06-22 h	C.H. active from 06:00 to 22:00	
	P EXT	Time program defined by REMOCON room unit or NTI NET app.	
9.	Outdoor Heating Curve Slope		
	(only with AUTO function active)		
10.	Outdoor Heating Curve Parallel Shift		
	(only with AUTO function active)		
	Setting range + -7 at low temperature and + -14 at high temperature range (each step + or - 1.8°C)		
11.	Automatic summer / winter changeover		
	ON	Active	
	OFF	Function deactivated	
12.	Summer / winter changeover temperature		

Table 2 - User menu

Part 2 - Operating Instructions

G. INFO Menu

Press the MENU button for 5 seconds to access the **INFO** menu, navigate within the **INFO** menu with + and - (both possible,  or .

Attention: No values can be changed here, only information can be read! Changes can only be made in the user menu or in the specialist area.

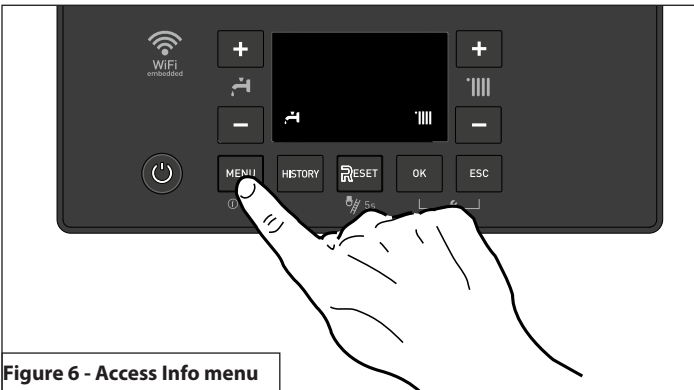


Figure 6 - Access Info menu

MENU INFO	PARAMETER
FLOOR Drying function remaining days (with Floor Drying function active)	857
Heating supply temperature [°F]	831
Heating return temperature [°F]	832
D.H.W. temperature [°F] (for boilers connected to an external storage with NTC probe)	840
Outdoor temperature (only with external sensor connected) [°F]	835
Room temperature (only with NTC room sensor connected) [°F] (Zone1 / 2)	430/530
Fan speed (%)	822
Heating outlet setpoint temperature [°F]	830
Exhaust flue temperature [°F]	834
Boiler power level [%]	878

Table 3 - Info menu

H. Date and Time

The control unit is equipped with a 365-day clock that displays the day, month, year and time.

In order to ensure correct operation of the boiler when using time programs, the date and time must be set correctly. If the boiler is connected to the Wifi application, the Internet time is automatically taken into account. Manual entry:

Day (1-31)

Months (1-12)

Year (2019)

Time (00:00)

Buttons  /   (item 2 - Figure 1)
for the hour setting

Buttons  /   (item 8 - Figure 1)
for setting minutes

I. Automatic CH Temperature Control (AUTO)

Automatic Temperature Control (AUTO) function allows the boiler to adapt to outdoor temperature conditions and the type of system in which it is installed.

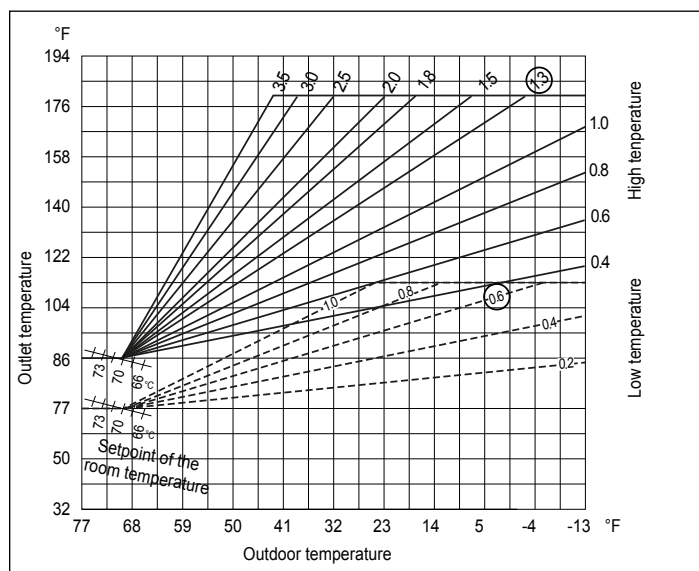
Contact a qualified service technician to inform you about the device and program the system to suit your needs.

If a room sensor (NTI accessory) is used, the boiler switches on / off according to the current measured room temperature.

To activate the AUTO Function, set to ON via the User Menu.

NOTICE

To detect changes in room temperature it is necessary to install an NTI Room Sensor. Other thermostats (not NTI) can only switch the boiler ON and OFF.



J. Outdoor Heating Curve Slope

The Outdoor Heating Curve represents the operation of the boiler when using an outdoor sensor.

The boiler control adjusts the supply temperature according to the outdoor temperature.

The lower the outdoor temperature, the higher the boiler supply temperature, and vice versa.

The supply temperature needed to efficiently satisfy a call for heat from a thermostat depends on the heating system and building conditions (building materials, insulation, etc.)

The slope of the Outdoor Heating Curve may be adjusted using the "CH curves Slope" parameter from the User Menu, in order to adapt the boiler supply temperature to the installation conditions.

A higher slope means that the maximum supply temperature is achieved a higher outdoor temperature.

NOTE: The boiler supply temperature is limited upwards by the fixed high limit

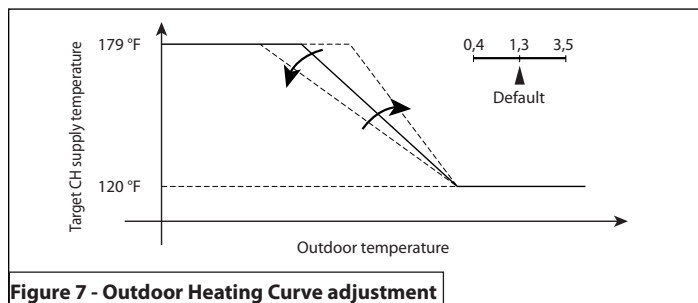


Figure 7 - Outdoor Heating Curve adjustment

K. Outdoor Heating Curve Parallel Shift

If the ambient temperature is too hot or cold, regardless of the outdoor temperature, use parallel shift to adjust the curve.

Depending on system conditions (settings on the boiler during installation), a setting range of +/- 12°F (at low temperature) or +/- 25°F (at high temperature) is possible.

The boiler will automatically shift the Outdoor Heating Curve depending on the outside temperature (when parameter 4.7.5 is set to 1 = ON (factory setting).

If parameter 4.7.5 is set to 0 (OFF), the curve can be shifted using the "CH curve parallel shift" parameter from the User Menu

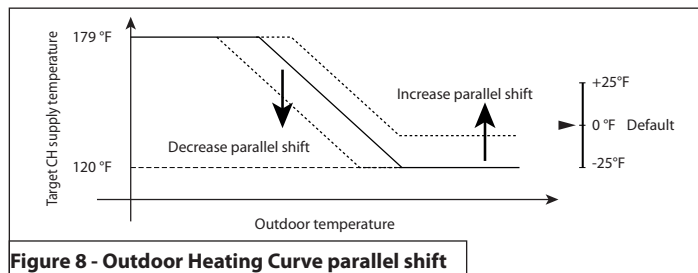


Figure 8 - Outdoor Heating Curve parallel shift

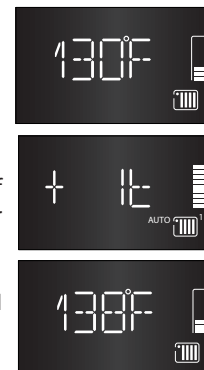
The User may also modify the heating curve shift by pressing the CH + and - buttons.

NOTE: This is only possible when parameter 4.7.5 is set to 0 (OFF).

Upon pressing the CH + or - buttons, the display shows the current CH target temperature for 5 seconds.

After 5 seconds the display shows the amount of shift, and allows the user to modify it by further presses of the CH + or - buttons.

After few seconds the display shows the new CH target and come back to the homescreen.



Part 2 - Operating Instructions

L. Room temperature Day /Night (Only applicable when using NTI room sensor)

The room temperatures (both zones 1/2) can be set to different setpoints. These setpoints become effective with the selected operating mode and the time program, so that different temperature levels can occur in each zone. The range of adjustable target values is limited by their interdependence, which can be seen in the accompanying graph.

Daily setpoint (comfort), factory setting 70°F

Night setpoint (reduced), factory setting 61 °F

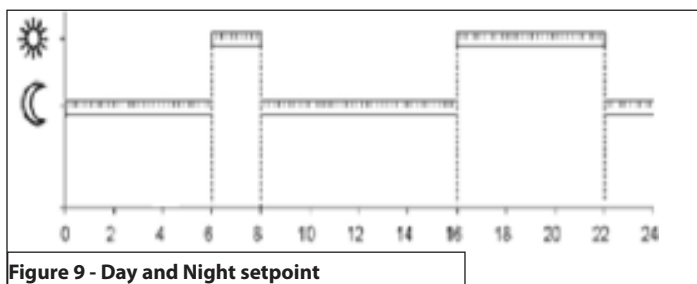


Figure 9 - Day and Night setpoint

M. Time programs – heating schedule (Only applicable when using NTI room sensor)

The end user can choose from five predefined time programs to heat according to his wishes. When a time program is activated, the boiler will operate in the desired time periods to maintain the room temperature at comfort temperature level. Outside these periods, the boiler operates at a reduced temperature level.

0-24h	Mo-Su	00:00 – 24:00		
P1 Family Program	Mo-Th	06:00 – 22:00		
	Fr-Sa	06:00 – 23:00		
	Su	07:00 – 22:00		
P2 Program without lunch	Mo-Th	06:00 – 08:00	16:00 – 22:00	
	Fr	06:00 – 08:00	15:00 – 23:00	
	Sa	07:00 – 23:00		
	Su	08:00 – 22:00		
P3 Program with lunch	Mo-Th	06:00 – 08:00	11:30 – 13:00	16:00 – 22:00
	Fr	06:00 – 08:00	11:30 – 23:00	
	Sa	06:00 – 23:00		
	Su	07:00 – 22:00		
6-22h	Mo-Su	06:00 – 22:00		
EXT	Time program defined by external source (app or room unit). The details can not be displayed on the boiler display.			
Time program defined by external source (app or room unit). The details can not be displayed on the boiler display.				

Table 4 - Time programs heating

NOTICE

Time programs heating are active only with NTI Room Thermostat or Sensor

N. Automatic summer / winter changeover

When this function is activated, the boiler automatically switches from “winter” mode (☀️) to “summer” mode (☀️), based on outdoor temperature conditions.

This means that the appliance can independently activate or deactivate the heating mode.

The criteria for the change are:

If the outdoor temperature is more than 1°F above the desired summer / winter switchover temperature during 5h (delay time), the boiler goes from winter to summer mode.

If the outdoor temperature is more than 1°F lower than the desired summer / winter switchover temperature during 5h (delay time), the boiler will go from summer to winter mode.

Summer / winter changeover temperature

External temperature criterion to switch from winter operation to summer operation, factory setting is 68 °F.

O. During Operation

1. Check for Gas Leaks
Frequently check the gas pipe and connections for leaks with a soapy solution. Gas is leaking if air bubbles appear during the test. Close the gas supply valve and call your gas supplier for inspection.

! WARNING

After any repair of the gas pipeline or replacement of the gas regulator, call a qualified service technician to observe the installation and replacement before restoring power to the boiler. Failure to do so could result in a fire or explosion, substantial property damage, severe personal injury, or death.

2. Check Exhaust Vent and Intake Pipe for Proper Ventilation
Ensure there is sufficient ventilation while operating the boiler. Improper ventilation could result in premature boiler failure. Such failures ARE NOT covered by boiler warranty.

! WARNING

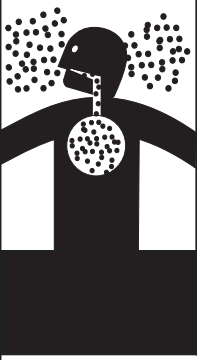
Exhaust gas entering the living space can cause carbon monoxide poisoning. If exhaust gas should leak into the living space:

- Shut down the boiler.
- Close the gas valve.
- Open windows for ventilation.
- Ensure the CO detectors are operating properly.

Immediately call a qualified service technician to inspect the boiler and exhaust vent pipe. Any damages to the exhaust vent pipe should be repaired immediately. Failure to do so could result in a fire or explosion, substantial property damage, severe personal injury, or death.

! WARNING

Breathing Hazard - Carbon Monoxide Gas



- Do not operate heater if flood damaged.
- Install vent system in accordance with local codes and manufacturers installation instructions.
- Do not obstruct heater air intake or exhaust. Support all vent piping per manufacturers installation instructions.
- Do not place chemical vapor emitting products near unit.
- According to NFPA 720, carbon monoxide detectors should be installed outside each sleeping area.
- Never operate the heater unless it is vented to the outdoors.
- Analyze the entire vent system to make sure that condensate will not become trapped in a section of vent pipe and therefore reduce the open cross sectional area of the vent.

Breathing carbon monoxide can cause brain damage or death.
Always read and understand instruction manual.

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3. Burn Warning
Take caution when inspecting the boiler and its internal components, exhaust vent, and/or water pipes. These components can get extremely hot during operation.

! WARNING

Storing flammable or combustible materials near this boiler could result in a fire or explosion, substantial property damage, severe personal injury, or death.

4. Combustibles and Flammable Material Warning
Do not store combustibles or flammable materials in the vicinity of this boiler. Do not hang anything from the exhaust pipe.
5. Check for Water Leaks
 - Do not attempt to clean the heating system. Call a qualified service technician for service.
 - Immediately call a qualified service technician if you notice any leaks. Leaks in boiler or piping must be repaired at once.

! WARNING

DO NOT use this boiler for any purposes other than those specifically described by NTI (to provide central heating and domestic hot water). Using this boiler for unapproved purposes WILL VOID the warranty, and could result in substantial property damage, serious personal injury, or death.

P. General Cautionary Statements

The boiler is protected from malfunctioning by means of internal checks performed by the electronic microprocessor PCB, which stops the boiler from operating if necessary. In the event of the boiler being shut off in this manner, a code appears on the display which refers to the type of shut-off and the reason behind it. There are two types of shut-off:

1. Blocking Error

A blocking error means the boiler will restart automatically as soon as the problem which caused the error clears or is removed; the error is indicated by the «ERROR» symbol which appears on the display followed by the error code. For example, if the boiler indicates a 110 error code, the error will clear automatically when the CH temperature decreases. The boiler will restart and operate normally.

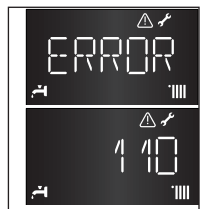


Figure 10 - Blocking Error Example

NOTE: Contact a qualified service technician if the error continues to occur.

In the event of **Error 108 - Shut-off due to insufficient water pressure inside the heating circuit** - turn the boiler off. Turn the external electric power to the OFF position. Shut off the main gas valve and contact a qualified service technician to check for any leaks of water.

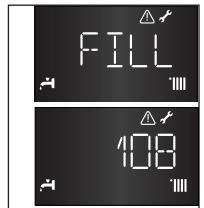


Figure 11 - Shut-Off Error for Low Water Pressure

2. Lockout Error

A lockout error means the boiler does not return to operation after the error condition goes away. The **Reset** button must be pressed on the control panel to restore boiler operation.

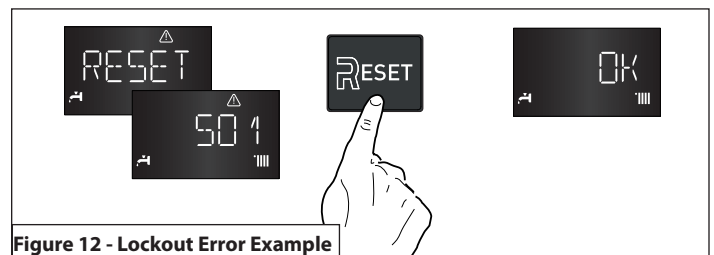


Figure 12 - Lockout Error Example

If the error condition occurs often contact a qualified service technician.

Part 2 - Operating Instructions

WARNING

Important

Contact a qualified service technician for assistance if a Lockout Error occurs frequently. Repeated Lockout Error conditions could indicate a serious error with the boiler or installation. Failure to contact a qualified service technician to troubleshoot the error could result in substantial property damage, serious personal injury, or death.

DANGER

If the boiler signals the error again after a reset, turn off the boiler. Move the external electric switch to the OFF position. Close the gas valve and contact a qualified service technician.

DO NOT attempt to repair or service this boiler. Contact a qualified service technician if the boiler needs repair or maintenance. Ask your gas supplier for a list of qualified service providers.

CAUTION

Ensure each zone valve connected to the boiler is open while the boiler is operating. Doing so ensures proper heating system operation.

WARNING

DO NOT wipe the boiler or control panel with a wet cloth. Doing so may result in an electric shock, substantial property damage, premature boiler failure, severe personal injury, or death.

DANGER

Be careful when opening a hot water faucet or draining water from the boiler. Water temperature over 125°F can instantly cause severe burns, or death, from scalds. Children, disabled, and elderly are at the highest risk of being scalded. See instruction manual before setting temperature at boiler. Feel water before bathing or showering!

Approximate Time / Temperature Relationships in Scalds

120°F	More than 5 minutes
125°F	1 1/2 to 2 minutes
130°F	About 30 seconds
135°F	About 10 seconds
140°F	Less than 5 seconds
145°F	Less than 3 seconds
150°F	About 1 1/2 seconds
155°F	About 1 second

Table 4 - Time and Temperature Relationship in Scalds

Part 3 - Maintenance Schedule



A. Owner Maintenance

Periodically

- Check area around the boiler.
- Check and remove any blockage from the outdoor exhaust vent and intake pipe terminations. DO NOT perform this maintenance if exhaust vent and intake pipe terminations are in difficult to reach locations.
- Check the CH loop pressure gauge. Normal CH pressure will range from 15 - 30 psi.

Monthly

- **VERY IMPORTANT:** Check / test carbon monoxide detectors to ensure proper operation per the manufacturer's instructions.
- Check exhaust vent and intake piping.
- Check exhaust vent and intake pipe bracing. Ensure bracing is undamaged and in good condition.
- Check the pressure relief valve.
- Check the condensate drain system.
- If applicable, check the condensate neutralizer and ensure it is full of condensate neutralizing marble chips.

Every 6 Months

Check boiler piping and gas supply piping for corrosion or signs of potential leakage.



B. Qualified Service Technician

The following maintenance should be performed by a qualified service technician annually:

General

- Attend to any reported problems.
- Inspect the interior of the boiler cabinet area; clean and vacuum if necessary.
- Clean the condensate trap and fill with fresh water.
- If applicable, check the condensate neutralizer and ensure it is full of condensate neutralizing marble chips.
- Check for leaks: Water, gas, flue, and condensate.
- Verify exhaust vent and intake piping are in good condition and sealed tight.
- Check exhaust vent and intake pipe bracing. Ensure bracing is undamaged and in good condition.
- Check boiler water pressure, piping, and expansion tank.
- Check control settings.
- Check ignition electrode. Sand off any white oxide. Clean and reposition.
- Check ignition and ground wiring.
- Check all control wiring and connections.
- Check burner flame pattern (stable and uniform).

Additional Items if Combustion or Performance is Poor

- Ensure boiler is connected to the proper gas type.
- Ensure boiler is connected to proper electrical power supply.
- Check the water valves and gas shut-off valve. Ensure all are fully open.
- Clean heat exchanger and flue ways.
- Remove burner assembly and clean burner head using compressed air only.

The qualified service technician should review service with the owner after the maintenance items are completed.

⚠ DANGER

The boiler must be inspected and serviced annually, preferably at the start of the heating season, by a qualified service technician. In addition, the maintenance and care of the boiler as outlined in this manual must be performed by the user/owner to assure maximum efficiency and reliability. Follow the maintenance procedures given throughout this manual. Failure to perform the service and maintenance or follow the directions in this manual could damage the boiler or system components, resulting in substantial property damage, severe personal injury, or death.

⤵ A. Daily Maintenance - To Be Performed by Owner

Check the Surrounding Area

⚠ DANGER

To prevent the potential of substantial property damage, severe personal injury, or death, eliminate the materials listed in Table 1 from the area surrounding the boiler and the vicinity of the combustion air intake. If contaminants are found:

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

If products cannot be removed, immediately call a qualified service technician to re-pipe the combustion air intake piping away from the contaminated areas.

Combustible/Flammable Materials

Do not store combustible materials, gasoline, or other flammable vapors or liquids near the boiler. If found, remove these materials immediately.

Air Contaminants

If allowed to contaminate combustion air, products containing chlorine or fluorine will produce acidic condensate that will cause significant damage to the boiler. Read the list of potential contaminants and areas likely to have these contaminants in Table 1. If any of these contaminants are in the room where the boiler is located, or combustion air is taken from one of the areas listed, the contaminants must be removed immediately or the intake pipe must be relocated to another area.

Check the Power Source

Make sure the power cord is properly connected. The main power line is connected to the manual switch box inside the boiler.

Check the Status of the Display Panel

Observe the Display Panel to ensure the boiler is powered on and check for any error codes. Clear any debris from the panel.

⚠ WARNING

Breathing Hazard - Carbon Monoxide Gas



- Do not operate heater if flood damaged.
- Install vent system in accordance with local codes and manufacturers installation instructions.
- Do not obstruct heater air intake or exhaust. Support all vent piping per manufacturers installation instructions.
- Do not place chemical vapor emitting products near unit.
- According to NFPA 720, carbon monoxide detectors should be installed outside each sleeping area.
- Never operate the heater unless it is vented to the outdoors.
- Analyze the entire vent system to make sure that condensate will not become trapped in a section of vent pipe and therefore reduce the open cross sectional area of the vent.

Breathing carbon monoxide can cause brain damage or death. Always read and understand instruction manual.

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Check Exhaust Vent and Intake Pipe Terminations

Verify that the boiler exhaust vent and intake pipe terminations are clean and free of obstructions. Remove any debris from the exhaust vent and intake pipe openings. If removing the debris does not allow the boiler to operate correctly, contact your qualified service technician to inspect the boiler and the vent system.

Ensure the Boiler Cabinet is Closed

Ensure the boiler cabinet is closed. The cabinet must be closed while the boiler is running.

Check Pressure Gauge

- Check the CH loop pressure gauge.
- Normal CH pressure will range from 15 - 30 psi.
- Boiler may not operate if pressure is lower than 15 psi.
- Higher pressure readings may indicate a problem with the expansion tank.
- Contact a qualified service technician if pressures are low or high, or if there is an issue with boiler operation.

⤵ B. Monthly Maintenance - To Be Performed by Owner

VERY IMPORTANT: Check / test carbon monoxide detectors to ensure proper operation per the manufacturer's instructions.

Check Exhaust Vent and Intake Piping

Visually inspect the exhaust vent piping for any signs of blockage, leakage, or deterioration of the piping. Inspect the exhaust vent bracing. Ensure bracing is undamaged and in good condition. Notify a qualified service technician immediately if any problems are found.

⚠ WARNING

Failure to inspect the venting system and have it repaired by a qualified service technician can result in vent system failure, causing severe personal injury or death.

Part 4 - Maintenance Procedures

Visually inspect the intake piping for any signs of blockage. Inspect the entire length of the intake pipe to ensure piping is intact and all joints are properly sealed. Inspect the intake pipe bracing. Ensure bracing is undamaged and in good condition. Notify a qualified service technician if any problems are found.

Check Pressure Relief Valves

- Visually inspect the primary pressure relief valves and discharge pipes for signs of weeping or leakage.
- If the pressure relief valves often weep, the expansion tank may not be operating properly. Immediately contact a qualified service technician to inspect the boiler and system.

Check Exhaust Vent Condensate Drain System

- While the boiler is running, check the discharge end of the condensate drain tubing. Ensure no flue gas is leaking from the condensate drain tubing by holding your fingers near the opening.
- If you notice flue gas leaking from the opening, this indicates a dry condensate trap. If problem persists, contact a qualified service technician to inspect the boiler and condensate line and refill the condensate trap.
- If applicable, check the condensate neutralizer and ensure it is full of condensate neutralizing marble chips.



C. 6 Month Maintenance - To Be Performed by Owner

Check Primary and Gas Piping

- Remove the boiler cover and perform a gas leak inspection following Operating Instructions, page 2, this manual. If gas odor or leak is detected, follow procedures on page 2. Call a qualified service technician.
- Visually inspect for leaks around the internal boiler water connections and around the heat exchanger. Visually inspect the external system piping, circulators, and system components 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 substantial property damage, severe personal injury, or death.

Operate Pressure Relief Valve

- Before proceeding, verify that the relief valve has been piped to a safe place of discharge, avoiding any possibility of scalding from hot water.

! WARNING

To avoid water damage or scalding due to relief valve operation, a discharge line must be connected to the valve outlet and directed to a safe place of disposal. This discharge line must be installed by a qualified service technician or heating/plumbing installer in accordance with the boiler installation manual. The discharge line must be terminated so as to eliminate possibility of severe burns or property damage should the valve discharge.

- Read the pressure gauges to ensure the system is pressurized. Normal CH pressure will range from 15 - 30 psi. Boiler may not operate if pressure is lower than 15 psi.
- Lift the relief valve top lever slightly, allowing water to relieve through the valve and discharge piping.
- If water flows freely, release the lever and allow the valve to seat. Watch the end of the relief valve discharge pipe to ensure that

the valve does not weep after the line has had time to drain. If the valve weeps, lift the lever again to attempt to clean the valve seat. If the valve does not properly seat and continues to weep, contact a qualified service technician to inspect the valve and system.

- Repeat the process on any other relief valves.
- If water does not flow from the valve when you completely lift the lever, the valve or discharge line may be blocked. Immediately shut the boiler down per instructions on page 2 and call a qualified service technician to inspect the valve and system.



D. Annual Maintenance - To Only Be Performed by a Qualified Service Technician

Check the Burner

The burner should be checked and cleaned only by a qualified service technician.

Clean the Combustion Chamber

Cleaning the boiler combustion chamber heat exchanger is a complicated procedure that should only be performed by a qualified service technician.

Check CH Loop Water Quality

Ensure CH Loop Water Quality is within the requirements in the installation manual.

Combi Models - Flush DHW Loop

The DHW loop may require more than annual cleaning depending on water quality, temperature, and usage.

NOTE: Flushing the boiler heat exchanger and CH and DHW loops are complicated procedures that should only be performed by a qualified service technician.

NOTE: Improper maintenance WILL VOID boiler warranty.

See boiler Installation Manual for list of Maintenance procedures as well as instructions for replacing components.

Review and perform the following initial diagnostic steps before calling a qualified service technician.

Problem	Possible Solution
Burner Does Not Ignite	Make sure the boiler is turned ON
	If the control panel display is blank, ensure the power cord is intact and plugged in. Check the circuit breaker or fuse box. Contact the electric utility.
	Make sure that the boiler is supplied with and full of water
	Make sure the water inlet and outlet and gas supply line valves are open
	Make sure the water lines are not frozen
Central Heating Is Too Hot or Not Hot Enough	Adjust the temperature setting on the thermostat or zone control / indirect water heater
	Adjust the temperature setting on the boiler
Water Is Too Hot or Not Hot Enough (Combi Models or Systems with Indirect Water Heaters)	Adjust the temperature setting on the boiler / indirect water heater
	Make sure the water inlet and outlet valves are open
Blower Continues to Operate After Combustion Stops	This is normal. The blower operates after combustion has stopped to vent the remaining exhaust gas from the flue.
White "smoke" can be seen coming out of the exhaust vent	This is normal. Depending on the outdoor temperature, water vapor can be produced as the exhaust is vented.

Table 5 - Troubleshooting Chart

Maintenance Notes

[illegible]

[illegible]



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