

# Installation Guidelines



**Caprice**

This important information must be maintained to validate any warranty claims. Your NY Thermal Boiler must be serviced and cleaned seasonally to ensure years of safe, reliable comfort.

Boiler Model  Serial Number  Installation Address

Description	Cleaning						
	Installation	1	2	3	4	5	6
Date							
Technician							
Company							

Carbon Dioxide							
Oxygen							
Smoke							
Stack Temp.							
Room Temp.							
Net Temp. Rise							
Combustion Eff.							

Nozzle Make							
Angle							
Spray							

# Welcome to NY Thermal. . .

**Our customers know: when you choose NY Thermal, you choose the pinnacle in top quality furnaces and boilers! Our commitment to technicians means that, in addition to the best research, development and training programs available.**

**If you have any installation or service questions, please do not hesitate to contact our North America-wide technical service hotline: 506-657-6000.**

## **Delivery**

Be extremely careful to examine your components for damage, prior to delivery for the installation. Any claims of lost or damaged items must be reported to the transport company immediately.

## **Installation**

The boiler must be installed by a trained heating technician, in accordance with this manual and all local codes and regulations including CSA Standard B 139 and UL 726 installation code, and C22.1 electrical code. We, as the appliance manufacturer, hold no responsibility for the installation and maintenance of the boiler, except for the guidance supplied in this manual, which we hope will answer any questions.

# Air Supply

Allowances for combustion air must be supplied to the burner directly, due to the fact that the heating appliance consumes large volumes of air. In most instances one square inch of free unrestricted outside air for every 1000 BTU's input is sufficient, however compensations must be made depending on the tightness of the house; usually a 15% larger area is required. Do not place the heating appliance in, or adjacent to, a room where an exhaust fan is operating.

# Chimney

*(Note: not used on Through-The-Wall Venting Units)*

Sufficient draft by natural or mechanical means is necessary for ensuring optimal and consistent operation. The appliance should have a stack draft sufficient enough to support stable operation (See Draft Settings).

# Important

**Due to the high combustion efficiencies and low stack gas temperatures, great care must be taken to ensure that the chimney isn't subjected to gas condensation. The gas temperature where the flue pipe enters the chimney must be a minimum of 200°F.**

# Draft Regulator

A draft regulator must be used and set to regulate the draft of the boiler. Make sure that the damper is free to operate without sticking, for this will affect the boiler's combustion system. It is important that the draft be adequate because poor draft conditions will cause poor operation and a possibly hazardous condition.

# Specifications

## Draft Settings

The CAPRICE is designed to operate with a -.03" WC. draft in the flue breaching, therefore make sure that there is enough natural or mechanical draft to ensure proper operation. Due to design of the CAPRICE it may operate at a positive over fire pressure up to +.20 at a -.03 draft.

## Riello Burners with CAPRICE Boilers

Model	Input gph (US)	Delevan Nozzle 60B	Pump (psig)	Output MBH	CSA Efficiency	Recommended Burner Settings		
						Model	Air	Turbulator
C85	0.68	0.60	120	83	87.6%	F3	5.5	0
C95	0.75	0.65	135	93	89.0%	F3	5.5	1.0
C105	0.85	0.75	130	104	87.8%	F3	5.5	1.5
C125	1.00	0.85	140	123	88.2%	F5	3.5	1.0
C150	1.25	1.00	155	150	86.0%	F5	4.5	1.0
C180	1.50	1.25	145	178	85.1%	F5	7.5	4.0
C220	1.75	1.50	135	218	89.3%	F10	3.5	0.5
C230	1.85	1.50	150	229	88.8%	F10	4.0	1.0
C250	2.00	1.75	130	246	88.2%	F10	4.5	1.5
C275	2.25	1.75	165	275	87.6%	F10	4.0	2.0
C305	2.50	2.00	155	304	87.2%	F10	5.5	3.0
C340	2.80	2.25	155	339	86.9%	F10	6.5	4.5

## Beckett Burners with CAPRICE Boilers

Model Modèle	Input GPH Capacité	Output BTU Capacité	Pump (PSI) Pompe	Beckett AFG 50	Delevan Nozzle	Settings head shutter band		
C-85	.68	83,000	120	-	-	-	-	-
C-95	.75	93,000	135	MBL1 (LFB)	.65 70°B	-	8	1
C-105	.85	104,000	130	MBL1	.75 70°B	-	6.5	0
C-125	1.00	123,000	140	MBL1	.85 60°B	-	8	1
C-150	1.25	150,000	155	MDV1	1.0 60°B	2	8	1
C-180	1.5	178,000	145	MDV1	60°B	2	10	3
C-220	1.75	218,000	170	SV1	1.35 45°B	0	4	0
C-230	1.85	229,000	150	SV1	1.50 45°B	1	3	0
C-250	2.00	246,000	150	SV1	1.65 45°B	1	4	0
C-275	2.25	275,000	165	SV1	2.00 60°B	1.5	6	0
C-305	2.50	304,000	155	SV1	2.25 60°B	2	6	0
C-340	2.80	339,000	155	SV1	2.25 60°B	2.5	7	0

## Clearances

The clearances to combustibles for the CAPRICE Series are as follows:

Top	24" (61 cm)	Side	5" (12.4 cm)
Flue pipe	9" (22.8 cm)	Coil	15" (37 cm)
Floor	COMBUSTIBLE		

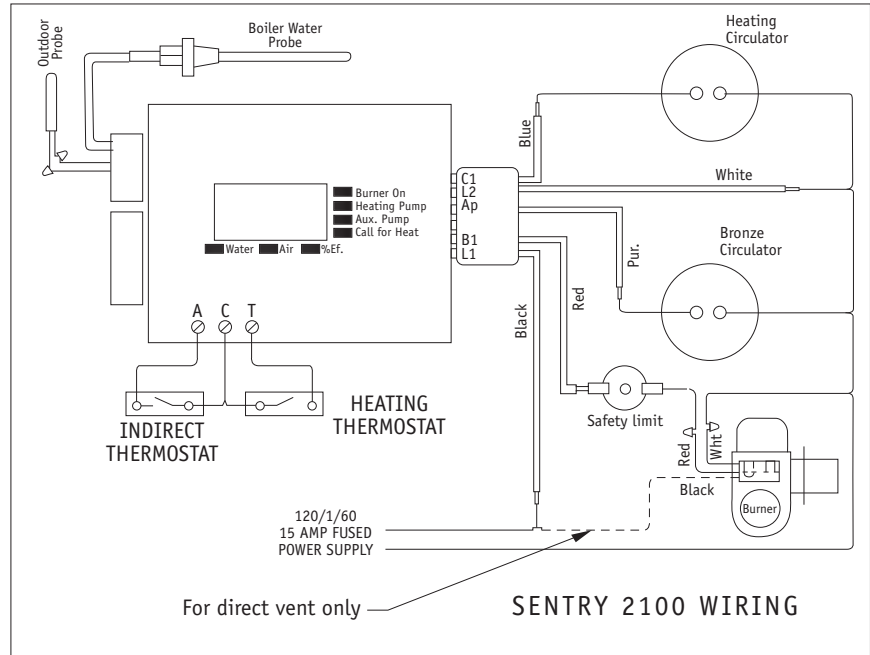
# Wiring

## Sentry 2100 Controllers

The Sentry controllers operate in two different modes, reset or conventional. The mode is automatically determined by the presence of the outdoor sensor. When the Sentry 2100 detects the presence of the outdoor sensor the controller will operate in Reset Mode. If the outdoor sensor is not installed, the controller will operate in Conventional Mode.

**Warning - A bad installation could ruin the Sentry and void your warranty.**

- Before providing 120 Volts, do a continuity check between all wires and ground to make sure that there are no electrical leaks that could damage the board.
- Do not use magnetic tip screwdriver near the Sentry board.
- Verify that the wires connected to the sentry TC and AC terminals are not grounded, or have any voltage applied to them, or voltage to ground (dry contact closure only).



# Operation

The control functions to three different modes of operation based upon the number of sensors used, or by the mode selected. The following is a brief explanation of the various modes:

## Conventional Mode

Standard configuration (Outdoor Sensor not Detected) - This operation is very similar to a conventional Triple Aquastat. Upon a call for heat (T-C Jumpered) the boiler maintains the Hi setpoint less the differential setting. The circulator activates at the low temperature, and deactivates if the water temperature falls 10°F below the Lo Setting (This establishes a priority for domestic hot water). When there is no call for heat (T-C Open) the burner maintains the Lo Setting cycling between (LO-10) and (( Lo +(Dif -10))).

## Reset Mode

Standard configuration (Outdoor Sensor Detected) - This operation is very similar to Conventional Mode except that the control automatically reduces the Hi setpoint based upon the outdoor Air temperature. Upon a call for heat (T-C Jumpered) the boiler maintains the calculated theoretical Hi setpoint less the differential setting. If the theoretical Hi setpoint is lower than the Lo setpoint, then the controller will ignore the theoretical Hi setpoint and the burner will operate to the Lo setting. The circulator activates at the Lo setting, and deactivates if the water temperature falls 10°F below the Lo Setting (This establishes a priority for domestic hot water). When there is no call for heat (T-C Open) the burner maintains the Lo Setting cycling between (LO-10) and (( Lo +(Dif -10))).

## ICS Mode - Indirect Cold Start *(Caution: This feature is for selected "cold start" boilers only).*

Activated by Menu option ICS, select ON to activate. - This operation is very similar to Conventional Mode or Reset mode depending upon the use of the outdoor sensor. The major difference for ICS Mode is that the burner only fires when there is a call for heat or a call for domestic (via an indirect water heater). Upon a call for heat (T-C Jumpered) the circulator immediately activates, and the burner maintains the theoretical Hi setpoint less the differential setting. Upon a call for domestic (A-C Jumpered) 120V is switched to Ap wire to activate an indirect circulator or valve. The burner maintains the Lo Setting, cycling between (LO-10) and (( Lo +(Dif -10))). If the water is or falls 10°F below the Lo Setting the heating pump deactivates, establishing a priority for the domestic hot water.



# Setting Sentry 2100 Operation

## Conventional Mode

Condition	Input State	
	T-T Open	T-T Closed
Burner On	Domestic Standby	Heating
Burner Off	LO-10	HI-Dif
Heat Circ. On	LO+(Dif-10)	HI
Heat Circ. Off	-	LO
	-	LO-10

## Determining Reset Temperature HI<sub>Calc</sub>

Once the control identifies the presence of a good outside sensor, the control will automatically reduce the HI setting, based upon the outdoor temperature. The calculated HI setpoint (HI<sub>Calc</sub>) is calculated as follows:

Example: Hi = 205, Air Temperature = 22 RES = 80

## Reset Mode

Condition	Input State	
	T-C Open	T-C Closed
Burner On	Domestic Standby	Heating
Burner Off	LO-10	HI <sub>Calc</sub> -Dif
Heat Circ. On	LO+(Dif-10)	HI <sub>Calc</sub>
Heat Circ. Off	-	LO
	-	LO-10

### RESET RATIO

$$= (\text{High Setting} - \text{RES}) / \text{RES}$$

$$= (205 - 80) / 80$$

$$= 1.56$$

### RESET TEMP. HI<sub>Calc</sub>

$$= [(\text{RES} - \text{Outdoor Air}) \times \text{Reset Ratio}] + \text{RES}$$

$$= [(80 - 22) \times 1.56] + 80$$

$$= [80] + 80$$

$$= 170^{\circ}\text{F}$$

## Domestic Hot Water

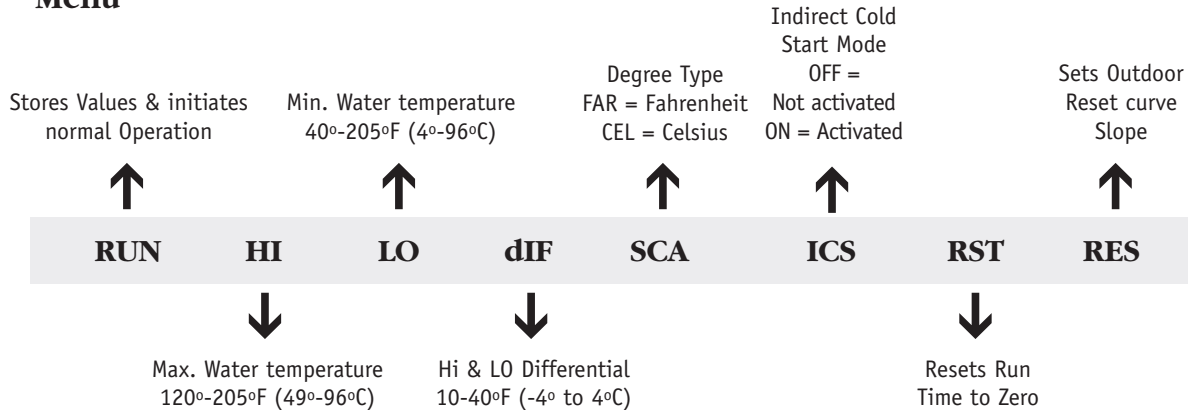
**Tankless Coil** - Water temperature is maintained in the boiler, to instantaneously heat domestic water as it passes through the coil. The Lo Setting must be high enough to achieve this (min. 170°F).

**Indirect Water Heater** - Water temperature is maintained in the boiler at the Lo setting. Closing A-C terminals activates Aux. Circ. and provides 120V out to Ap. This circulates water through the indirect to heat the tank. Note: If the calculated HI Setting is less than the LO setting, the LO will be used in place of the HI setting. **((ODYSSEY BOILERS ONLY))** ISC Mode can be turned ON, when the ISC is ON, the water temperature in the boiler is *not* maintained. When the A-C is closed, the indirect pump is activated, and the boiler fires to the Lo setting.

# Setting Sentry 2100 Control

Programming is accomplished by a series of three push buttons located on the bottom side of the control. °**Function** ↑ and ↓. To enter the programming mode, press the function key once. To scroll through the various menu options depress ↑ until the menu is displayed. To alter the value press **Function** once, and the current value will be displayed, then use the ↑ for up, and ↓ for down, until the desired value is obtained. To enter the selected value press **Function**, which will return to the menus. When all desired values are inputted, scroll to the RUN menu, and press **Function**, which exits the Programming Mode and initiates normal operation. A safety feature has been added to ensure that the control is not left in the Program Mode, the unit will flash all lights and display “OFF”, which means the unit was left in the program mode for more the 10 seconds without receiving an input. Press Function once to continue programming.

## Menu



***To start the control operation, you must return to RUN on the menu, and press Function. Normal operation will begin.***

# Recommended Settings

**Hi** . . . Finned Tube Baseboard & Air Handlers = 205°F, Cast Iron Rad. & Infloor = 150°F

**LO** . . . Heating only = 110°F, & Indirect Water Heater = 160°F

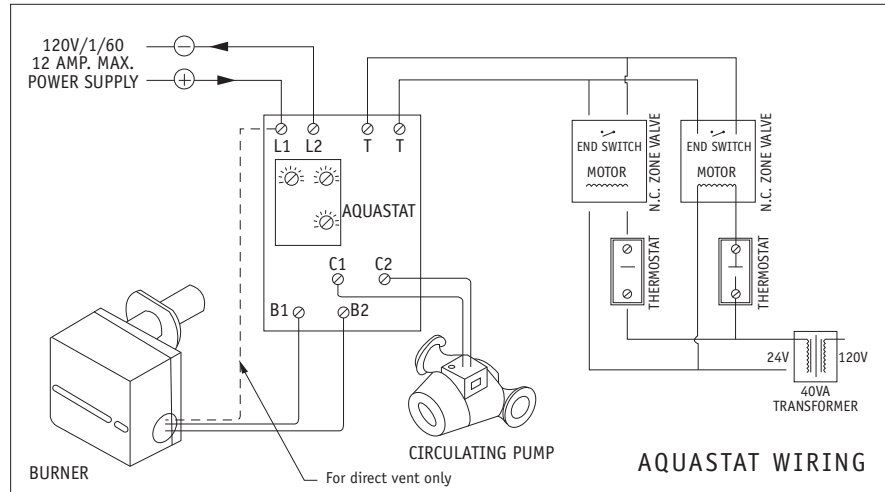
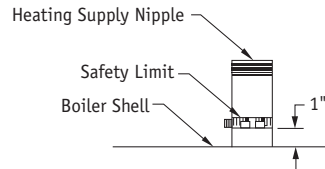
**Dif** . . . = 20°F, & use Outdoor Probe

## SAFETY LIMIT SENSOR

(Not used on Odyssey boilers)

For added protection the Sentry 2100 comes with an additional Hi limit sensor, which is connected, to the supply nipple using the gear clamp approximately 1" from the base of the boiler. This is a manual reset control. If this safety switch has to be reset, reduce the Hi setting by 5°F. If it persists, contact NY Thermal.

**DO NOT OVER TIGHTEN THE GEAR CLAMP.**



# Piping

The closed piping system must be in accordance with the piping illustration. All piping joints must be secure and water tight, or the boiler warranty is void.

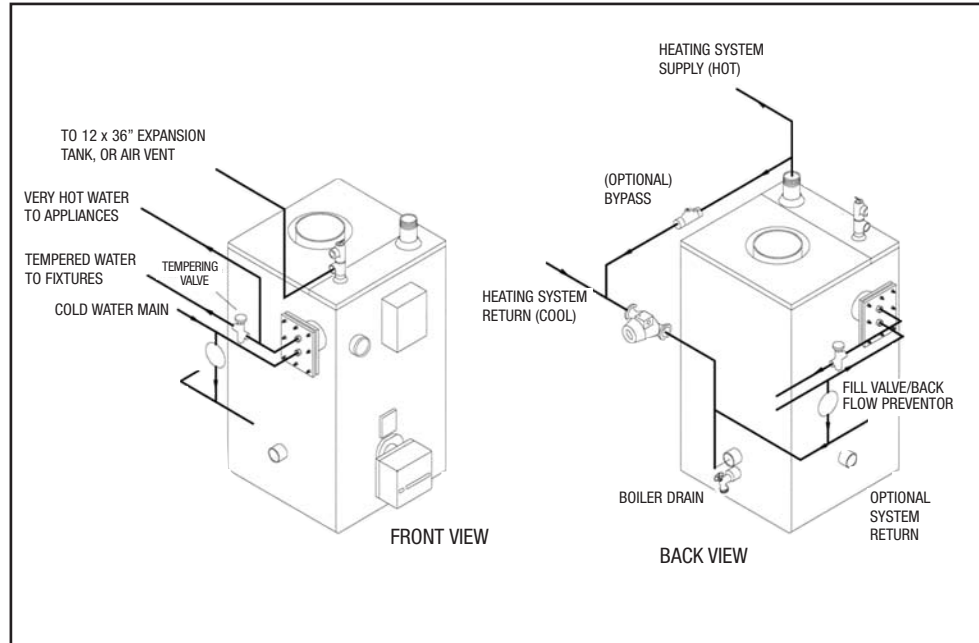
# Boiler venting

Hot water boilers are designed to operate with airless water in the system. The NY Thermal boilers are designed with a built-in air trap, to purge air at the 3/4" relief valve nipple. Venting of air must take place here, or the boiler warranty is void.

# Gauge

Your boiler is supplied with a temperature and pressure gauge, which is installed in the front of the boiler. (Sentry Boilers are on the coil plate).

## Specifications - CAPRICE Series



# Burner Installation

The NY Thermal boiler is designed to work with burners described in this manual. The use of other nozzles, and/or burners, may cause unsafe operation and will void any and all responsibility by NY Thermal for the safety and reliability of the system.

## Burner Settings

*(A Reliable, certified smoke pump is required to correctly set up this equipment.)*

The burner must be installed so the end of the blast tube is recessed inside the boiler burner tube by 1/4". For convenience, we have provided recommended air settings (see page 2) which can be used as a starting point for the burner set-up. These settings are guidelines and will require alteration due to installation and equipment variations. To accurately set the combustion system, first establish a stable firing condition with a #1 smoke spot, then slightly increase the air settings until a #0 smoke is obtained. Establish a minimum of three 5 minute burner cycles and repeat the smoke test - a #0 smoke should be detected. *Caution - All tests must be done with the burner covers or air intakes in place to simulate normal operation.*

## Important

**Due to the high combustion efficiencies and low stack gas temperatures, great care must be taken in ensuring that the chimney isn't subjected to gas condensation. The gas temperature where the Flue Pipe enters the chimney must be a minimum of 200°F.**

## Boiler Cleaning

At least once per year, the NY Thermal boiler is to be cleaned and serviced by a licensed burner technician, preferably in the fall months. (If the boiler is not used for extended periods of time, it must also be cleaned before being taken out of service.)

# Warranty

## What is Covered

We the manufacturer warrant to the original owner, that any parts or components of each new boiler will be supplied free of defects in material or workmanship. This warranty replaces any other warranty implied or expressed. All the durations, terms and conditions mentioned hereafter are for manufacturer defects due to material or workmanship only, and do not include misuse or normal wear of the equipment. Equipment returned for warranty consideration will be evaluated upon the condition of the part when examined by us or an authorized service representative. Due care must be taken during handling.

## Basic Coverage A

We will repair or replace any component supplied, but not manufactured by NY Thermal Corporation, that is found to be defective for a period of one (1) year, from date of installation, if found to be in concurrence with the original manufacturer's warranty.

## Basic Coverage B

We will repair or replace the pressure vessel or any component manufactured by NY Thermal Corporation, found to be defective for a period of five (5) years, from the date of installation, if found to be in concurrence with the recommended installation and terms and conditions of this warranty.

## Extended Coverage C

We feel so confident of the quality of the product, we will offer an extended warranty plan for the pressure vessel, if found to be defective for a period of twenty (20) years for the date of installation, if found to be in concurrence with the recommended installation and terms and conditions of this warranty.

This extended plan will credit the costs of repair or replacement of the unit from six (6) to ten (10) years, and on a pro-rated schedule ranging from 100% in year eleven (11) to a fraction of the selling price effective at that time, in year twenty (20). To receive this warranty, the boiler and installation must be registered with NY Thermal. The registration card must be filled out and returned to NY Thermal Corporation within one (1) year of purchase of the unit.

## Terms and Conditions

These terms and conditions void any of the preceding warranty statements:

1. Damage due to installation not in accordance with this manual and local codes and regulations.
2. Any repairs or replacements made without authorization or notification to the manufacturer.
3. This warranty does not cover the labour and shipping costs associated with installing a repaired or replaced boiler.
4. Installations determined to have any leaks in the entire heating system causing make up water to enter the system, eg. solder leaks, coil gasket leaks, frequent system drainage.
5. Decision of warranty repairs or replacements to boiler will be at the discretion of the manufacturer or authorized service representative.
6. This warranty is to the original owner only.

# What to do in the case of a Warranty Service Problem:

1. Contact your installing contractor or burner service company.
2. If your contractor or service representative requires further help, they will contact us directly.
3. If for any reason you cannot contact your contractor or service representative, contact us at 506-657-6000 to the attention of the service department.
4. Please realize that we as the boiler manufacturer will replace or credit the parts under warranty. Credits are at our cost, so do not purchase replacement parts from suppliers with hopes of receiving 100% credit. Thus it is recommended to receive all of your warranty parts from your authorized service representative or us directly, at no charge (if under the warranty coverage).
5. We are very concerned about the service which you receive, so if you have a complaint concerning the authorized service representative, we would very much appreciate your evaluation.

## For Service Contact:

Name \_\_\_\_\_

## Warranty Registration Form

Name \_\_\_\_\_

Address \_\_\_\_\_

City/Prov. \_\_\_\_\_

Boiler Model \_\_\_\_\_

Serial Number \_\_\_\_\_

Installer's Name \_\_\_\_\_

Date of Installation \_\_\_\_\_

**Return to:** NY Thermal Corporation  
31 Industrial Drive,  
Sussex, NB, E4E 2R7

Complete this form, photocopy  
and return to NY Thermal



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