95M-200

Natural or Propane Gas-fired Modulating Condensing Boiler

Quick Guide
for Set-up and Operation

PN 240006282   Rev. A - 5/08

⚠ WARNING ⚠

Revise boiler control parameters only if you fully understand the purpose and result of the changes. Tampering with the control settings in this manual will void the warranty and can result in unreliable operation, with possible severe personal injury, death, or substantial property damage. Refer to PN240006105 Parameter Guide, for full details.

Setting Up the Boiler:

This boiler is designed to operate at the combustion levels in the table below. When setting up the boiler, make sure that the combustion results are within the parameters listed below. The rate will change with external variables such as ambient temperature, altitude and gas calorific value.

See manual 240006103 for more details on setting up the boiler.

Pressure Guidelines					
Fan Speed	**Minimum RPM**			**Maximum RPM**	
Fuel	Natural Gas	LP		Natural Gas	LP
Gas Line Inlet Pressure	N/A	N/A		At least 4" WC	At least 10" WC
Differential Pressure	0.3" WC			2.0" WC	
Note: Differential pressure values listed for comparison only. These values will change with vent length and altitude of installation.					

CombustionGuidelines						
	NaturalGas			**LP Gas**		
Temperature	%CO$_2$	%O$_2$	CO	%CO$_2$	%O$_2$	CO
70°F and up / 21°C and up	9.6% to 10%	3.9% to 3.2%	Less than 80 PPM	11.1% to 11.5%	4.1% to 3.4%	Less than 80 PPM
30°F to 70°F / -1°C to 21°C	9.3% to 9.6%	4.4% to 3.9%	Less than 80 PPM	10.8% to 11.1%	4.5% to 4.1%	Less than 80 PPM
30°F and below / -1°C and below	9.0% to 9.3%	5.0% to 4.4%	Less than 80 PPM	10.5% to 10.8%	4.9% to 4.5%	Less than 80 PPM

Flame SignalGuidelines		
Fan Speed	**Minimum RPM**	**Maximum RPM**
Flame Signal	Greater than 3.0 VDC	N/A

Venting Requirements:

Do not run the exhaust or combustion air vent pipe through an unheated space.

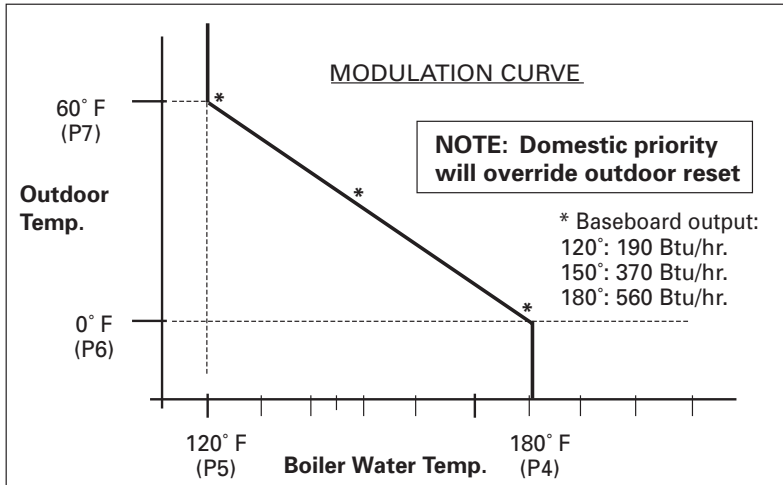*See manual 240005103 for details on vent pipe requirements.*

Select Parameter Definitions *(see manual 240006105 for full list) See pages 6 & 7 for Factory Settings*

PARAMETER	NAME	DESCRIPTION	DEFAULT VALUE	LOWER LIMIT	UPPER LIMIT
1	T3 Set	DHW target temperature (See Parameter 33)	150°F	68°F	158°F
2	DHW System	01 = ON	DISPLAY-01	N/A	N/A
3	CH System	01 = ON	DISPLAY-01	N/A	N/A
4*	T1 Top	Maximum target supply water temperature	180°F	68°F	182°F
5*	T1 Foot	Minimum target supply water temperature	120°F	60°F	140°F
6*	T4 Minimum	Outside temp at which the target supply temperature is at maximum	0°F	-4°F	50°F
7*	T4 Maximum	Outside temp at which the target supply temperature is at minimum	60°F	60°F	78°F
33	T Plus	This value plus parameter 1 equals the DHW set point.	30°F	0°F	54°F

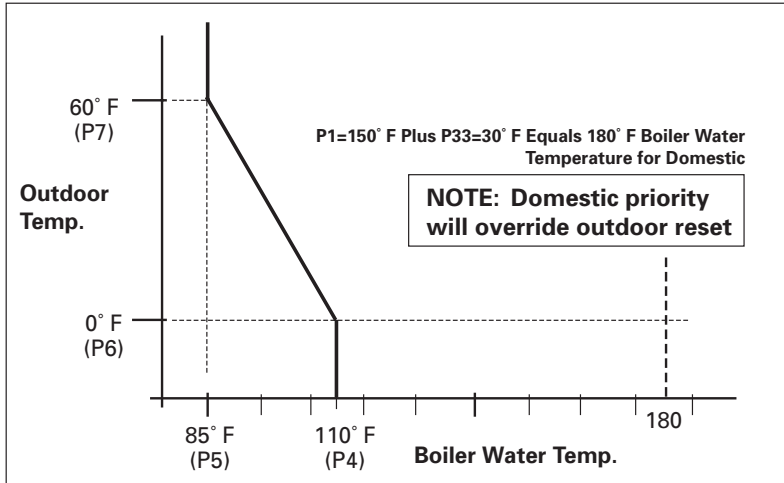**Parameters 4-7 define the boilers Outdoor Reset Curve. See pages 6 & 7 for examples of the Outdoor Reset Curve.*

EXAMPLE 1 (Factory Settings) P7, P6, P5 & P4
Outdoor Reset Overview

MODULATION CURVE

60° F
(P7)

**Outdoor
Temp.**

0° F
(P6)

**NOTE: Domestic priority
will override outdoor reset**

* Baseboard output:
120°: 190 Btu/hr.
150°: 370 Btu/hr.
180°: 560 Btu/hr.

120° F
(P5)   **Boiler Water Temp.**   180° F
(P4)

EXAMPLE 2 (Low Water Temperature System)
Radiant Outdoor Reset

Boiler Display Key Pad Operation:

Changing a parameter

Using the six buttons on the front of the boiler *(see next page for illustration)* and the proper code, the boiler can be both monitored and modified using the digital display.

Perform the following steps with the boiler powered on and in standby **[STBY]** mode: (STBY will appear only momentarily followed by 0.(boiler temp), i.e. 0.120

1. Press and hold the "STEP" button.
2. While holding the "STEP" button down, press and hold the "MODE" button.
3. Hold both buttons down together for several seconds until [CODE] appears on the display.
4. Release "STEP" and "MODE" buttons. [CODE] will stay lit on the display.

NOTE: If [CODE] is not displayed after several seconds, release "STEP" and "MODE" buttons and press "MODE" several times to return display to [STBY]. Then repeat steps 1-4 again.

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5. Press the "STEP" button once (C "xx" will appear, i.e. C 17)
6. Adjust the number displayed to [C-05] by using the "+" and "–" buttons.
7. Press the "STORE" button.

IMPORTANT: The boiler control will automatically exit [CODE] mode after 10 minutes of no activity.

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8. Press the "MODE" button several times until [PARA] is displayed.

9. Press the "STEP" button several times until [P-XX] is displayed. The XX represents the parameter that will be changed (i.e. P-05). The parameter's value will then be displayed.

10. Use the "+" or "−" buttons to set the desired value.

11. Press the "STORE" button. Steps 9-11 can now be repeated for additional parameter changes or continue to step 12 to exit.

12. Press the "RESET" button to exit.

Boiler Status and Soft Lockout Codes

See manual 240006104 for complete details on Boiler Status Codes and Soft Lockouts.

STANDBY MODE - BOILER SEQUENCE DISPLAY

After display shows Stby for a brief period, the first character shows boiler status, followed by boiler outlet water temp. If the burner is being held off due to a soft lockout, the display alternates between showing "9" followed by boiler outlet water temp. and "b" followed by the two-digit codes below. Soft lockout means the boiler will start again automatically if the condition is corrected or timed out

Press [RESET] button to restart boiler without waiting for timeouts below.					
First Digit	**Other Digits**	**Boiler Status**	**First Digit**	**Code #**	**Boiler is in soft lockout when "9" or "b" shown. Reason for boiler soft lockout is:**
0	Actual (measured) outlet water temperature	Standby - no call for heat	"9" alternating with "b"	_18	Outlet temp. too high (over 203°F). Burner off until outlet water temp. drops 9°F below target temp.
1		Pre-purge (10 seconds) or Post-purge (15 seconds)		_19	Return temp. too high (over 203°F). Burner off until both outlet and return water temp. drops 9°F below target temp.
2		Ignition			
3		Burner on for CH heating		_24	Return temp. higher than supply temp. Burner off waiting for correction.
4		Burner on for DHW heating		_25	Outlet water temp. rose too quickly. Burner off 10 min. (burner recycles, increasing wait 1 min. each attempt to max. 15 min.)
5		Checking airflow before prepurge		_26	Aquastat contacts open or LWCO contacts open or 3.5" pressure switch open.
6		Burner off because temperature setting has been reached		_29	Blower signal not 0 when it should be. Burner off until signal condition terminates.
7		Pump on after CH heating cycle for run-on of 10 seconds		_30	Temp. rise across boiler more than 100°F. Burner off for 2_ minute wait (plus 1 minute for each failed attempt, up to max. of 22 minutes each time).
8		Pump on after DHW heating cycle for run-on of 30 seconds		_61	Air pressure switch does not open.
H		Burner on, running in high fire mode (manually set for test)		_65	Waiting for blower to start.
L		Burner on, running in low fire mode (manually set for test)			

Hard Lockout Codes

See manual 240006104 for complete details on Hard Lockouts.

HARD LOCKOUT MODE

Boiler in hard lockout (requires manual RESET)

Display flashes first digit E		E	and last two digits (lockout code) *(see below)*		xx
Code	**Reason for hard lockout**		**Code**	**Reason for hard lockout**	
00	Flame detected on start-up		18	Supply water temp. higher than 200°F	
02	Ignition failed after 5 retries		19	Return water temp. higher than 190°F	
03	Gas valve disconnected		25	Outlet temp. increased too fast	
04	Power lost after lockout		28	No signal from blower; blower not running or defective blower motor	
05	Internal control failure		29	Blower signal not "0" when it should be	
06	Internal control failure		30	Max difference (b30) was too large for 20 successive times. Non adjustable default max delta set to 100°F.	
07	Internal control failure		31	Outlet temp. sensor short circuit	
11	Internal control error		32	Return temp. sensor short circuit	
12	Casting temperature switch open		36	Outlet temp. sensor open circuit	
13	Internal control failure		37	Return temp. sensor open circuit	
14	Internal control failure		44	Internal control failure	
15	Internal control failure		60	Internal error reading parameters	
16	Internal control failure		61	Air flow circuit failure	
17	Internal control failure		65	Not enough blower driving force	

Information Mode

See manual 240006104 for complete details on Information Mode.

INFORMATION MODE

Press [MODE] button 2 times from Standby Mode.				
Display shows Info until a key is pressed	**Info**	then displays Parameter, Flashing Dot, and Current Status.		**1.190**
Press and Hold Key(s) in BOLD [1]	**Duration**	**Result**		**Display**
[MODE] **[STEP]** [STORE] [+] [–]	**Tap**	Step to next parameter	**Measured outlet water temperature** (First digit shows 1 and dot flashes) [1]	**1.180**
			Return Water temperature (First digit shows 2 and dot flashes) [1]	**2.150**
(1) Digits after flashing dot show measured outlet temperature.			**This function not used** (First digit shows 3 and dot flashes) [2]	**3.-18**
(2) Digits after flashing dot show -18.			**Outside temperature** (First digit shows 4 and dot flashes) [3]	**4. 42**
(3) Digits after flashing dot show outside temperature.			**This function not used** (First digit shows 5 and dot flashes) [2]	**5.-18**
(4) Digits after flashing dot show target outlet temperature.			**Target outlet water temperature** (First digit shows 6 and dot flashes) [4]	**6.190**
(5) Digits after flashing dot show rate of change in °F per second.			**Outlet water temp. change over time** (First digit shows 7 and dot flashes) [5]	**7. 1**
(6) Digits after flashing dot show -32.			**Return water temp. change over time** (First digit shows 8 and dot flashes) [5]	**8. 1**
NOTE: *Display will show* **A-32** *if* **[STEP]** *is pressed after "***9***" appears.*			**This function not used** (First digit shows 9 and dot flashes) [6]	**9.-32**

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