PEERLESS® PINNACLE®

926 Upgrade Kit Supplement to the P125 Upgrade Kit Instructions

⚠ NOTICE

These instructions are intended as a supplement to the Peerless® P125 Control Board Upgrade Kit Instructions and are intended for use by a qualified boiler repair technician.

A. SCOPE

These instructions are intended to guide a qualified installer in upgrading the control system on a Pinnacle® boiler from an existing WHA Control Board to a new 926 Control Board. The following chart references 926 Upgrade Kits which replace P125 Upgrade Kits (now obsolete):

Boiler Model	P125 Upgrade Kit (Obsolete)	926 Upgrade Kit
PI-80	91447	91623
PI-140	91448	91624
PI-199	91449	91625

Note: These upgrade kits are for updating original Pinnacle® boilers (REV 0 to REV 1) only.

B. PARTS LISTS

The following parts are included in the upgrade kit. Be sure that all items are present before beginning the installation.

Stock Code	Description	Qty
PI615	926 Control Board (PI-80 R1)	1
PI616	926 Control Board (PI-140 R1)	
PI617	926 Control Board (PI-199 R1)	
91612	926 Display Module with Ribbon Cable	1
91629	Wiring Harness - PI-80	1
91630	Wiring Harness - PI-140/199	
91476	926 Spark Cable	1
91435	Supply/Return Temperature Sensor (10 KΩ)	2
91444	Edge Card Adapter Harness	1
91446	Blower Outlet Pressure Tap Boot	1
91445	Control Board Sub-base	1
6520	#8 x 1/2" Stainless Steel Pan Head Screw	6
91498	Blocked Vent Pressure Switch	1
91495	Tube to NPT Adapter	1
91508	PVC Tubing 18" Long	1
PI8066	P125 Control Board Upgrade Instructions	1
PI8141	926 Upgrade Instruction Supplement	1

⚠ WARNING

Installation of the primary safety ignition control is to be performed by qualified service personal in strict accordance with these instructions and all applicable codes and requirements of the authority having jurisdiction. The qualified person is responsible for proper installation of this kit. The installation is not complete until the operation of the appliance is checked using a combustion analyzer as specified in these instructions. Failure to comply may result in severe personal injury, death or major property damage.

⚠ WARNING

If the information in these instructions is not followed exactly, a fire, an explosion or production of carbon monoxide may result causing severe personal injury, death or major property damage.

STOP! READ THESE INSTRUCTION OR ANY WARRANTY ON THE APPLIANCE OR THE REPLACEMENT COMPONENT WILL BE VOID!

C. WIRING

The wiring diagram below shows the harness supplied with the upgrade kit.

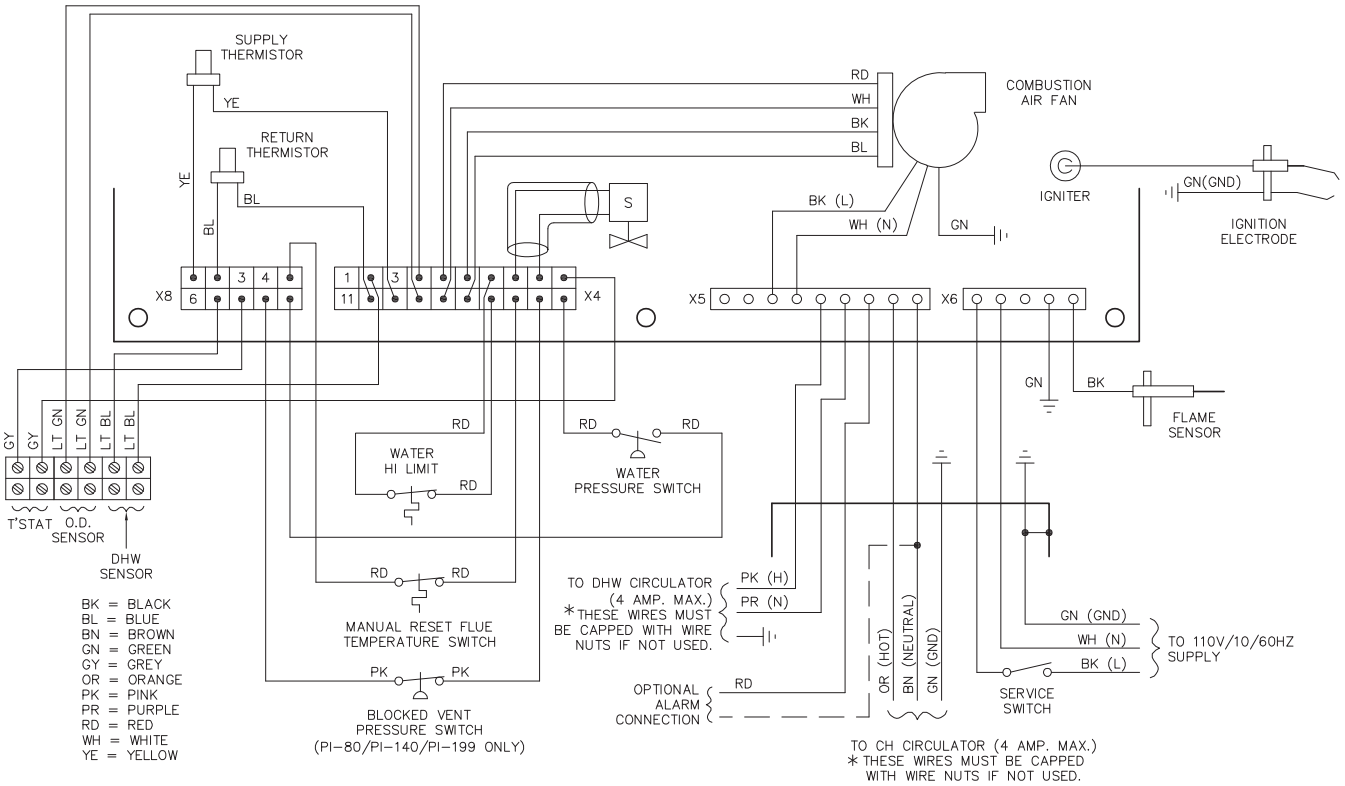

Figure 1: Wiring Harness – the following schematic supersedes Figure 1.3: Component Wiring Diagram, on page 3 of the P125 upgrade instructions.

1. The low voltage terminal strip should be assembled to the interior of the boiler cabinet with the screws provided. Connections for an outdoor sensor, a DHW sensor and the thermostat input are provided.

2. Note that that there are wires for a DHW Circulator that should be routed to the junction box. These wires carry line voltage under certain circumstances even if there is no domestic hot water requirement. Therefore, these wires must be capped if not in use.

D. CONTROL FUNCTIONS

1. This Pinnacle® boiler is equipped with a P825 Control Board. This control board with display module has the following functions:
   a. Shows the boiler supply (outlet) water temperature on the LED Display as default.

   b. Allows user to adjust the supply water set point, the set point differential, and change the display mode between Fahrenheit and Celsius.

   c. Provides Error and Fault Codes on the LED Display.

   d. Shows the supply and return temperatures, fan speed, flame signal (μA), boiler circulator status, boiler set point, total power on hours, boiler on hours, and the number of cycles.

   e. Allows manual control of the firing rate using the Service Mode.

2. *Default Display:* Under normal operating conditions the default display shows the temperature of the water supply (boiler outlet) to the system. This may be displayed in Fahrenheit or Celsius according to user preferences.

3. *Program Functions:* By using the S3 "Program" key, the settings shown in Table 1 may be programmed.
   a. To access the menu, stop any calls for heat. Wait for blower to stop. Press and hold the S3 "Program" key on the display module.

   b. The control will enter the Supply Set Point selection.

      i. The display will alternately show "C" and then the current set point temperature.

      ii. The set point may be adjusted by using the S1/- (to decrease) or S2/+ (to increase) keys on the display module.

⚠ NOTICE

If outdoor reset is used setpoint should be above Boiler Supply Design Temperature, Parameter 9. See Section E. "Installer Menu".

   c. Pressing the S3 "Program" key again will advance to the next adjustable value, Set Point Differential, and the display will alternate between "Ch" and the programmed value:

      i. The differential adjustment is the difference between the temperature that the boiler shuts down (high) and the temperature at which it re-starts (low).

Table 1: Program Functions

Description	Alternating Display Character	Allowable Range	Default
Supply Set Point	C	50°F to 201°F (10°C to 94°C)	180°F
Set Point Differential	Ch	5°F to 30°F (3°C to 17°C)	30°F
Indirect (DHW) Set Point	dE	104°F to 158°F (40°C to 70°C)	119°F
Not Applicable	dh	N/A	9
Measurement Units	t	C or F	F

ii. The differential may be set to values between 5°F (3°C) and 30°F (17°C) in 1°F increments.

iii. The boiler will always shut down at a temperature 7°F (4°C) above the set point. The differential temperature is then applied to this value.

iv. The set point differential may be adjusted by using the S1/- (to decrease) or S2/+ (to increase) keys on the display module.

d. Pressing the S3 “Program” key again will advance to the next adjustable value, Indirect (DHW) Set Point:

i. The display will alternate between “dE” and a numerical valued.

ii. If an optional indirect tank sensor is not installed, this value is not applicable.

iii. If an optional indirect tank sensor (91589) is installed, the set point may be adjusted by using the S1/- (to decrease) or S2/+ (to increase) keys on the display module.

e. Pressing the S3 "Program" key again will advance to the next adjustable value. The display will read "dh" and alternate with numerical value. This value is not applicable to the Pinnacle® boiler.

f. Finally, by pressing the S3 "Program" key again, the display will advance to the Measurement Units selection. The display will alternate between "t" and either "F" or "C" depending on the units selected. This value may be changed by using the S1/- or S2/+ keys on the display module.

g. Pressing the S3 "Program" key once more will exit the program mode and again display the supply temperature.

4. *Error Codes:* The LED Display will display error codes if the boiler is in a temporary fault condition. Table 8.1 in the Installation, Operation and Maintenance Manual shows Error Codes and descriptions. In some cases, if the temporary fault is not corrected within 60 seconds the controller will go into a Fault Code.

5. *Fault Codes:* A Fault Code indicates the controller is locked-out. Press the S4 "Reset" key to resume operation after repairing the problem. Table 8.2 in the Installation, Operation and Maintenance Manual shows Fault Codes for this control.

6. *Status Menu:* The status menu, as shown in Table 2, allows the installer to display the current boiler supply (outlet) temperature, return (intake temperature), fan speed, flame signal (μA), boiler circulator status, boiler set point, total power on hours, boiler on hours, and the number of cycles.
   a. To access this menu press and hold the S4 "Reset" key on the display module for 3 seconds.
   b. The display will alternate between "d1" and the value of the supply temperature.
   c. To scroll through the other status codes, simply press S4 "Reset" key again.
   d. To exit this menu, press the S3 "Program" key.

Table 2: Status Menu

Status Code	Description
d1	Supply (Outlet) Temperature
d2	Return (Intake) Temperature
d3	DHW (Indirect) Demand Status (0 = Open, 1 = Demand) [The DHW (Indirect) Temperature will be displayed if the sensor is attached*]
d4	Not Applicable
d5	Outdoor Temperature**
d6	Fan Speed (rpm ÷ 10) [ex. 200 = 2000 rpm]
d7	Ionization Current (Flame Signal)
d8	Central Heating Circulator Status (0 = Off, 1 = On)*
d9	DHW (Indirect) Circulator Status (0 = Off, 1 = On)*
d10	Bus Comm Status (co = connected, no = not connected)
d11	Central Heating Set Point
d12	Power On Time (Hrs ÷ 1000) [ex. 0.1 = 100 hrs]
d13	Central Heat On Time (Hrs ÷ 1000)
d14	DHW (Indirect) On Time (Hrs ÷ 1000)
d15	Successful Ignition Attempts (Attempts ÷ 1000) [ex. 0.1 = 100 attempts]

*Optional DHW (Indirect) Tank Sensor (91589) Required
**Only when Outdoor Sensor (91587) is connected

7. *Service Mode:* The Pinnacle® boiler can be operated in Service Mode to allow the installer to manually set the fan speed/input rate of the boiler.
   a. To enter service mode, press and hold the S2/+ key and the S3 "Program" key simultaneously.
   b. The display will alternately display "SER" and the fan speed in RPMs ÷ 10. As default, the fan speed will start at the ignition fan speed (this value is listed in Section 10, Dimensions and Ratings, for each boiler size).

c. The fan speed can be adjusted by using the S1/- key (to decrease speed) or S2/+ key (to increase speed) on the display module.

d. The fan speed will stay in this mode for 10 minutes or until the boiler reaches 7 degrees above the set point temperature.

e. To exit the Service Mode, press the S1/- and S2/+ keys simultaneously.

8. *Installer Menu:* The Pinnacle® boiler can be programmed to be controlled by an external analog input controlling set point temperature or fan speed. In addition, it can be programmed for a 6 minute step modulation sequence.
   a. To enter the installer menu, stop any calls for heat. Wait for blower to stop. Press and hold the S3 "Program" key and S4 "Reset" key simultaneously for 3 seconds. The display will show a blinking "000."

   b. Use the S1/- and S2/+ keys to change the display to read 825. Press and hold the S3 "Program" key to enter the installer menu. The display will alternate between 1, which represents the Parameter Number, and either 0 or 1, which represents the Function setting.

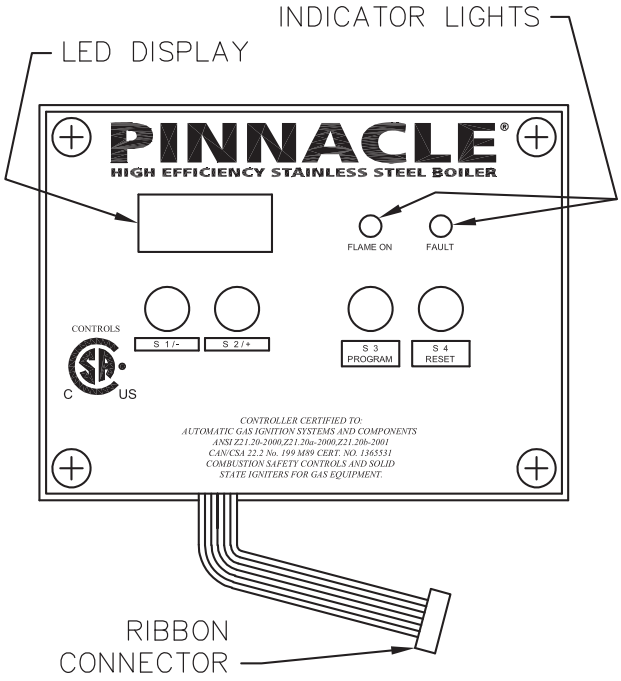

Figure 2: Display Module

c. Table 3 shows the Parameter numbers and Functions. Press S3 "Program" to advance through the parameters and use the S1/- and S2/+keys to change the function values. **Do not change to external input without external input device installed! Do not change Parameters 1, 2, 4 or 20!**

d. To exit the Installer Menu, press and hold the S4 "Reset" key for 3 seconds.

E. INSTALLER MENU

1. Parameters 8, 9, 10 and 11 in the Installer Menu (Table 3) define the heating calculation for outdoor reset operation. This is applicable only if the outdoor sensor is installed. When this sensor is installed the control will automatically recognize it and begin outdoor reset operation.

2. Parameters 8 and 9 define the design point of the heating calculation. The factory defaults are set such that if the outdoor temperature is 5ºF or below, the boiler target temperature will be 180ºF.

3. Parameters 10 and 11 define the "mild weather" reference point of the heating calculation. The factory defaults will drop the boiler supply target temperature to 95ºF when the outdoor temperature reaches 68ºF. If the outdoor temperature increases beyond 68ºF the boiler supply target temperature will continue to drop based on the slope of the heating calculation.

4. When the outdoor temperature is above the outdoor design temperature and below the mild weather outdoor reference temperature, the boiler target temperature will vary according to a straight line between the design point and the mild weather reference point. For example, if the outdoor temperature is at 32ºF the boiler target temperature will be 144ºF.

5. Figure 3 shows a graph of the heating calculation with the default design and mild weather reference point. It also illustrates how the boiler target temperature varies according to outdoor temperature.

6. The heating calculation operates only if an outdoor sensor is connected to the boiler. If the outdoor sensor is disconnected, the boiler will revert to standard setpoint operation.

⚠ NOTICE

The outdoor sensor may need to be temporarily disconnected in order to start up or service the boiler during mild weather.

7. Parameter 12 defines the minimum boiler supply target temperature.
   - If this temperature is above the mild weather boiler reference temperature, the boiler will continue to target this temperature even if the outdoor temperature exceeds the corresponding value. This may be used for kick space heaters or unit heaters that require a specified minimum water temperature to operate.
   - If this temperature is below the mild weather boiler reference temperature, the boiler will continue to target lower temperatures as the outdoor temperature increases by following the slope of the heating calculation.

8. Parameter 14 defines the maximum amount of time the DHW (Indirect) Circulator will take priority over the Boiler Circulator. If there is a continuous call for both indirect and space heating, the DHW and Boiler Circulators will alternate, each running for the maximum amount of time or until the call for heat ends.

Table 3: Installer Menu

Parameter No.	Function	Range	Default Value	Programmed Setting
1	Unavailable	N/A	de	No Change Allowed
2	Unavailable	N/A	149°F	No Change Allowed
3	Domestic Hot Water Temperature Setpoint (Available only if indirect tank sensor is installed)	95°F to 160°F (35°C to 71°C)	125°F	
4	Unavailable	N/A	36°F	No Change Allowed
5	Domestic Hot Water Temperature Differential (Available only if indirect tank sensor is installed)	1°F to 18°F (1/2°C to 10°C)	7°F	
6	Indirect Circulator Post Purge Time	0 to 60 minutes	0 minutes	
7	Warm Weather Shutdown Temperature	41°F to 122°F (5°C to 50°C)	68°F	
8	Outdoor Design Temperature	-49°F to 32°F (-45°C to 0°C)	5°F	
9	Boiler Supply Design Temperature	77°F to 201°F (25°C to 94°C)	180°F	
10	Mild Weather Outdoor Reference Temperature	32°F to 95°F (0°C to 35°C)	68°F	
11	Mild Weather Boiler Reference Temperature	32°F to 180°F (0°C to 82°C)	95°F	
12	Minimum Boiler Supply Target Temperature	32°F to 180°F (0°C to 82°C)	68°F	
13	Central Heating Circulator Post Purge Time	0 to 10 minutes	0 minutes	
14	Indirect Maximum Run Time	0 to 60 minutes	30 minutes	
15	Bus Address [0 Zone Master, 1-8 Cascade Slave] (Not Available)	0-8	0	
16	Internal/External Control Parameter: 0 = Internal Control; 1 = External Control	0-1	0	
17	External Input Type: 0 = Temperature; 1 = Modulation %	0-1	0	
18	Step Modulation: 0 = Disabled; 1 = Enabled	0-1	0	
19	Boiler Setpoint for Indirect Call for Heat	119°F to 180°F (48°C to 82°C)	180°F	
20	Unavailable	N/A	1	

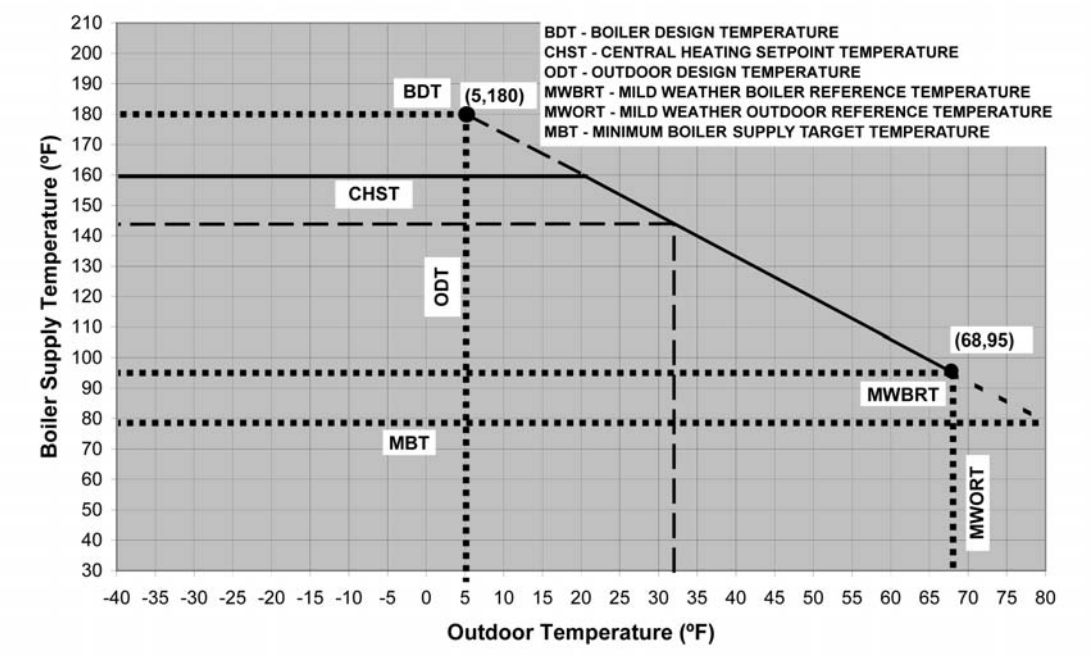

Figure 3: Central Heating Calculation (Factory Defaults)

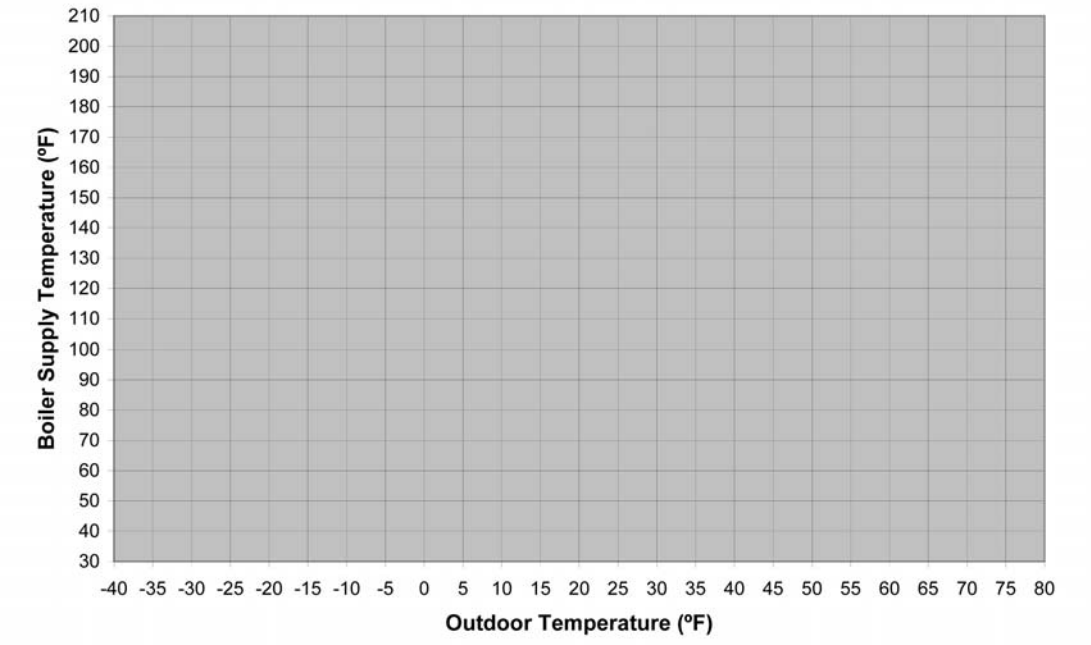

Figure 4: Central Heating Calculation (Installer Settings)

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