IMPORTANT NOTICE
These instructions are intended for use by qualified personnel specifically trained and experienced in the installation of this type of heating equipment and related system components. Installation and service personnel may be required to be licensed in some states. Persons not qualified shall not attempt to install this equipment nor attempt repairs according to these instructions.

DANGER - SHOCK HAZARD
Make sure electrical power to the heater is disconnected to avoid potential serious injury or damage to components.

DANGER - PROPANE HAZARD
Make sure to determine if unit is propane and see special instructions on page 4.

SCOPE:
This version of the temperature control board has the capability of an integrated ignition module plus 3-wire temperature sensor. It is a direct replacement for the following models: 185B, 206A, 207A, 265B, 266A, 267A, 335B, 336A, 337A, 405B, 406A, 407A.

## MODELS
185B, 265B, 335B, 405B
PRODUCED NOV. 2003 THROUGH OCT. 2004
SERIAL # 0310 TO # 0410

## MODELS
206A, 266A, 336A, 406A
207A, 267A, 337A, 407A
PRODUCED NOV. 2004 THROUGH CURRENT
SERIAL # 0410 TO CURRENT

This Kit Includes:
- (1) PC Control Board
- (1) Remote Wire Harness
- (1) LCD Gasket
- (4) Screws #6 x 3/8”
- (1) Instructions
ACCESSING THE CONTROL BOARD

1. Turn off the power to the heater.
2. Turn off the gas to the heater.
3. B-Series: Remove front door by removing the 4 door panel screws shown in Fig. 1 and Fig. 2.
4. A-Series: Remove front door by removing the large door screw in front of unit as shown in Fig. 1.
5. Remove the four screws on the side of control panel. See Fig. 3 and Fig. 4.
6. Lay control panel forward toward you to access the back of the temperature control board.
REMOVING THE CIRCUIT BOARD

Make sure the power and gas are off.

1. Unplug all connectors from old circuit board. See Fig. 5.
2. Unplug keypad ribbon from old circuit board.
3. Remove screws as shown in Fig. 6.
4. Remove old circuit board.

Fig. 5

Fig. 6
**PROPANE HEATERS ONLY:**
**PREPARE NEW REPLACEMENT CONTROL PCB FOR INSTALLATION**

1. Locate the proper propane tab on the board as shown in Fig. 7.
2. Break off tab with pliers as shown in Fig. 8 & Fig. 9.

**Note:**
Requirements for Propane safety time vary by area. Check your local and state code regulations to determine whether your required Propane safety time is 15 seconds or 90 seconds.
MODELS 185B, 265B, 335B & 405B, Low NOx ONLY: PREPARE NEW REPLACEMENT CONTROL PCB FOR INSTALLATION

1. DO NOT break tab See Fig. 10 and Fig. 11.
2. No additional wiring or connections are necessary for Low NOx operation.
Low NOx MODELS 207A, 267A, 337A & 407A ONLY:
PREPARE NEW REPLACEMENT CONTROL PCB FOR INSTALLATION

1. Locate Low Nox tab and P-10 air switch terminal on the board as shown in Fig. 12 and Fig. 13.
2. Use pliers to break off the tab shown in Fig. 14.
3. Attach the wire from the air switch to the P-10 location shown in Fig. 15.
GASKET & NEW CIRCUIT BOARD NEW BEZEL INSTALLATION

Note: Disregard window gasket installation if already present.

1. Remove backing on gasket and install adhesive side on the control panel bezel as shown in Fig. 16 & Fig. 17.
2. Re-assemble with new board to plastic bezel using the three mounting screws as shown in Fig. 18.
DIGITAL THERMOSTAT CONTROLS

Thermostat operation
Your heater is equipped with a microprocessor-controlled thermostat that controls the pool or spa temperature by measuring the temperature of the water entering the heater. It monitors the water temperature and turns the heater on when it senses that the water temperature is below the set point. It is normal to experience small fluctuations in the return water temperature during the operation of the heater. The thermostat is calibrated with a very narrow tolerance to ensure accuracy of the set temperature. Thus, slight fluctuations in water temperature may cause your heater to cycle on and off frequently. This is not a problem. It will not harm the heater nor interfere with the thermostat’s ability to precisely control the temperature of the pool or spa.

THERMOSTAT CONTROL OPERATION
The pool heater thermostat, located on the upper front panel of the heater, controls the pool/spa water temperature. This control center contains a mode button, up and down temperature adjustment buttons, and an LCD display.

Mode Button
The MODE button functions as a means to turn the heater off or on in either the POOL or SPA setting. The LCD display indicates the mode the heater is in and the actual water temperature.

Temp Buttons
If the heater is in POOL or SPA mode, the desired water temperature (SETPOINT) will also be displayed and may be changed using the UP or DOWN buttons. A manual toggle switch is also provided right below the MODE button to allow the heater to be turned off.

Operation
In the POOL or SPA modes, the actual water temperature is displayed along with the desired water temperature (SETPOINT). If the heater is firing, a flame icon will be visible.

To adjust the setpoint temperature, make sure the control is in the appropriate mode (POOL or SPA) and push the UP or DOWN buttons.

Fault History File
To access the Fault History File, press the Mode button until the display reads OFF. Press both the “UP” and “DOWN” buttons at the same time (5-7 seconds) until the display changes and shows a fault code. The latest fault code will be displayed first. By pressing the “UP” or “DOWN” buttons, a series of faults will be displayed from the last (highest number) to the first (lowest number). If the buttons are not touched after 5-7 seconds, the display will return to its normal operation.
**Program Button**

1) To access the program screen, press the Mode button until the display reads OFF. Remove the four screws holding the control cover on. Swing control panel down so the back side of the board is visible (see page 30). Locate the Program Mode button as shown in the figure on pg. 32. Press the program button (5-7 seconds) until SETdef appears on the digital display. Release the program button.

2) Press the Mode button sequentially until the desired program event is reached. There are 5 different events that can be programmed. They appear in the sequence listed below:

- **SETdef**
  - Resets board to factory default settings.

- **RESfl**
  - Resets faults in the History File.

- **F/Cfff**
  - Change from Fahrenheit to Celsius.

- **SETspa104**
  - SPA setpoint maximum adjustment.

- **SETpool104**
  - POOL setpoint maximum adjustment.

**RESfl – Reset Fault History**

Refer to step one above to access the program screen. Press the Mode button until RESfl appears on the digital display. Press and hold both “UP” and “DOWN” buttons for 5-7 seconds until 2 dashes (--) appear. This operation resets the Fault History file to “0” and clears all the stored faults. Once this is done, reassemble the control panel.

**F/Cfff – Fahrenheit to Celsius**

Refer to step one above to access the program screen. Press the Mode button until F/Cfff appears on the digital display. The digital display is capable of displaying Celsius as well as Fahrenheit temperatures. The “UP” or “DOWN” buttons will select “F” or “C” on the temperature display. Choose the desired temperature scale. Once this is done, reassemble the control panel.

**SETspa104 – SPA Set Point Maximum Adjustment**

Refer to step one above to access the program screen. Press the Mode button until SETspa104 appears on the digital display. Using the “UP” and “DOWN” buttons will change the Maximum Temperature Setting to your desired value. The control can be set for a maximum of 107°F. Once this is done, reassemble the control panel.

**SETpool104 – POOL Set Point Maximum Adjustment**

Refer to step one above access into the program screen. Press the Mode button until SETpool104 appears on the digital display. Using the “UP” and “DOWN” buttons will change the Maximum Temperature Setting to your desired value. The control can be set for a maximum of 107°F. Once this is done, reassemble the control panel.

**SETdef – Default Settings**

Refer to step one above to access the program screen. SETdef should appear on the screen. If not, press the Mode button until SETdef appears on the digital display. Press and hold both “UP” and “DOWN” buttons for 5-7 seconds until 3 dashes (---) appear. This operation resets the operating program to its factory default values. Both the POOL and SPA setpoints will revert to 65°F (18.5°C) and both POOL and SPA maximum temperature settings will be 104°F (40.0°C). Once this is done, reassemble the control panel.
NOTE: The LCD temperature display may not agree with the temperature reading of your pool or spa thermometer. The heater reads the water temperature at the inlet. Due to the circulation characteristics of any pool or spa, the water temperature at the inlet to the heater may differ from that observed at a given location in the pool or spa.

DIAGNOSTICS
The digital thermostat models are equipped with on-board diagnostic controls. If there is a safety fault, a fault code will be displayed along with a service indication.

If the PRS fault code is displayed, it indicates that there is insufficient water flow through the heater. Make sure the pool filter and pump strainer are clean before calling a service representative.

READING A FAULT
The word “SERVICE” will flash on and off if the PC board detects a known fault. The fault will be displayed in three big letters on the lower left of the display.

STATUS CODES

<table>
<thead>
<tr>
<th>Display</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFH</td>
<td>Call for heat</td>
</tr>
<tr>
<td>CLK</td>
<td>Time clock</td>
</tr>
<tr>
<td>EOL</td>
<td>End of line test (Factory Use Only)</td>
</tr>
<tr>
<td>LON</td>
<td>Low NOx Unit</td>
</tr>
<tr>
<td>OFF</td>
<td>Off mode</td>
</tr>
<tr>
<td>PRO</td>
<td>Propane gas configured</td>
</tr>
<tr>
<td>REM</td>
<td>Remote control activated</td>
</tr>
<tr>
<td>SPK</td>
<td>Spark</td>
</tr>
<tr>
<td>SPR</td>
<td>Spare fault code indicator</td>
</tr>
</tbody>
</table>

PROGRAM MODES

<table>
<thead>
<tr>
<th>Display</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCC</td>
<td>Celsius setting</td>
</tr>
<tr>
<td>F/C</td>
<td>Change from Fahrenheit to Celsius</td>
</tr>
<tr>
<td>FFF</td>
<td>Fahrenheit setting</td>
</tr>
<tr>
<td>RES</td>
<td>Reset defaults</td>
</tr>
<tr>
<td>SET</td>
<td>Set point max adjustment</td>
</tr>
</tbody>
</table>

FAULT CODES

<table>
<thead>
<tr>
<th>Display</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>BD1</td>
<td>Board failure</td>
</tr>
<tr>
<td>EEP</td>
<td>Microprocessor error</td>
</tr>
<tr>
<td>FAN</td>
<td>Blower pressure failure</td>
</tr>
<tr>
<td>FFL</td>
<td>Flame sensing when pilot and gas valves are closed</td>
</tr>
<tr>
<td>GVC</td>
<td>Gas valve closed</td>
</tr>
<tr>
<td>GVO</td>
<td>Gas valve open</td>
</tr>
<tr>
<td>HL1</td>
<td>High limit switch #1 open</td>
</tr>
<tr>
<td>HL2</td>
<td>High limit switch #2 open</td>
</tr>
<tr>
<td>IGN</td>
<td>Ignition failure</td>
</tr>
<tr>
<td>ILO</td>
<td>Ignition lockout - Propane units only</td>
</tr>
<tr>
<td>PRS</td>
<td>Water pressure switch open</td>
</tr>
<tr>
<td>ROL</td>
<td>Heat roll-out safety switch open</td>
</tr>
<tr>
<td>SNS</td>
<td>Sensor failure, Water temp. below 36°F or above 110°F</td>
</tr>
<tr>
<td>VNT</td>
<td>Vent switch open - This is jumped from the factory.</td>
</tr>
</tbody>
</table>

NOTE: The LCD temperature display may not agree with the temperature reading of your pool or spa thermometer. The heater reads the water temperature at the inlet. Due to the circulation characteristics of any pool or spa, the water temperature at the inlet to the heater may differ from that observed at a given location in the pool or spa.
REMOTE CONTROL INSTALLATION AND OPERATION

CAUTION: Before installing remote controls to the digital thermostat model heaters read the following:
The digital thermostat model is remote-ready in most cases. The digital liquid crystal display (LCD) shows the actual pool
temperature, operating status, and service codes (See examples below). The touch pad on the control panel allows you
to select the desired pool or spa temperature. It also indicates when a remote system is controlling the heater by display-
ing REM in the display. When connecting the heater to a remote system, identify whether it is a two- or three-wire remote
system. Select the appropriate instruction listed below to properly install the remote to the heater.

REM OFF Mode Heating in the POOL Mode
75 OFF
Heating in the SPA Mode
75 SPA
REM
Remote Mode

REMOTE OPERATION
The digital model heaters are equipped with the ability to work with external remote controls. The supplied 7-pin re-

mote wiring connector supplies power out to either a toggle switch or the switch contacts of a third party remote. The re-

tote works by either making or breaking the circuit created by the remote wiring. Typically, a remote does not supply
power to the heater, it only provides a switching function to turn the heater On or Off. If your remote is supplying its

own voltage to the heater, it will not work with this heater and may damage the digital circuit board.

For operation of the heater using the onboard thermostatic controls with a time clock, see the “Time Clock / Fireman’s

Switch” section.

Note: Electrostatic Discharge (ESD) damage can be caused by direct or indirect contact with the wiring or circuit board. When one walks to the heater area, an electrostatic charge accumulates on the body. Contact of a finger allows the body to discharge, possibly causing device damage. This damage can be limited if the service person discharges himself, following ESD preventive/removal practices, and holds on to the heater enclosure for 5 seconds before proceeding.
REMOTE CONTROL WIRING

Important Installation Notes for Remote or External Wiring Configuration

- Remote wiring must be run in a separate conduit.
- Remote wiring must not be run parallel to high voltage lines.
- For runs of under 30 feet, remote wiring should have stranded conductors with a minimum of 22 AWG, 600V, cable twisting 1.5 to 2.5 in. lay and jacketed.
- For runs over 30 feet, the conductors should be a minimum of 20 AWG, 600V, cable twisting 1.5 to 2.5 inch lay that is shielded and jacketed.
- Maximum cable length is 200 feet.
- For both two- and three-wire remote systems, the provided 7-pin wiring connector must be utilized. Please refer to the wiring instructions.

NOTE: The remote wires must be connected to the 7-pin connector before the connector is plugged into the board.

2-Wire Remote Control (On-Off)

This application assumes that only one heating function (pool or spa) is required.

1. Turn on power to the heater.
2. For a 2-Wire Remote Control from a remote without its own sensor, push the mode button to the “POOL” or “SPA” mode and set the desired setpoint (eg. 102 °F for spa).
3. For a 2-Wire Remote Control from a remote with its own sensor, push the mode button “POOL” or “SPA” mode and set the temperature to the highest setting available on the control. The actual setpoint will be controlled by the remote control.
4. Turn the mode button to “OFF” and remove power from the heater.
5. On the "Remote Interface Harness", connect the BLUE wire to one side of the "REMOTE" switch and connect the other side to either the ORANGE/BLACK wire for "SPA" operation or the BLACK/ORANGE wire for "POOL" operation.
6. Attach wire nut on unused wire to the "Remote Interface Harness."
7. Install the "7-Pin Remote Interface Harness" to the P8 connector and turn power “On” to the heater.

See instructions on previous page to activate the remote control.

3-Wire Remote Control Using Three-Position Switch (Pool-Off-Spa, or Low-Off-High)

This application assumes that both heating functions (pool and spa) are required.

1. Turn on power to the heater.
2. Push the mode button to the "POOL" or "SPA" mode and set the desired temperature for each (eg. 80°F for Pool and 102°F for Spa).
3. Turn the mode button to "OFF" and remove power from the heater.
4. On the "Remote Interface Harness" connect the BLUE wire to one side of the "REMOTE" switch and connect the other side to either the ORANGE/BLACK wire for "SPA" operation and the BLACK/ORANGE wire for the "POOL" operation.
5. Install the "Remote Interface Harness" to the P8 connector and turn power "ON" to the heater.

See instructions on previous page to activate the remote control.