**Do Not Plug In Heater Without Water Covering The Element.**
**No Water = Burned Out Element**
**Always Use A Surge Protector When Powering With A Generator!**
****NEVER over fill a nitrous bottle!!****

## Operation

Fill with water to the bottom of the lower separator plate. The water level will be right below the top plate once two bottles are placed inside.
When plugged in the display will show the current temperature of the water at the sensor. The controller takes approx. 3 minutes to initially warm up.
If the unit has the heating element turned on, a small dot appears at the upper left of the temperature reading.
The actual temperature may drift over the set point by a few degrees on the initial heat cycle. This is normal; the temperature will stabilize at the set point after a few minutes.
Keeping the temperature set at 88-91$^{o}$F should keep a full bottle at approximately 950PSI. However, you may need to adjust depending on the weather, how long you normally spend in the lanes, your launch pressure and your purge procedure.
I like to allow the bottles to soak at least 30 minutes before using them, but they will get to temp a lot faster than that.
**NOTICE: All heaters are checked in house and therefore may have small water spots or a discolored heating element. This is normal.**

## To change set temperature:

Press and release the set button: “SP” will appear on the screen
Press set again: the set point will appear on the screen
Change the number to the desired setting using the up and down arrows.
Press set again to enter the value
The display will return to the actual temperature after one minute or press the set and down arrow at the same time (a little tricky at times)

## Spare Parts:

If the element happens to burn out, the replacement elements may be purchased at your local plumbing supply or home center. Ask for a 110V-1500W screw in the water heater element.

# Temp. Controller Info

**FRONT OPERATION**
**PUSH BUTTONS**


Pushing SET once gives access to the SP. Pushing for 8 seconds gives way to the requested code. After entering the correct code, all parameters are accessible. This button alternates between text parameters and their value. It validates the modified parameters. When pressed with DOWN, it exits parameter programming.

Pressing this arrow allows the user to go to the next parameter or increase the value viewed on the display. When pressed for 8 seconds, it activates or deactivates defrosting.

Pressing this arrow allows the user to go to the previous parameter or decreases the value viewed on the display. When pressed for 8 seconds, it activates or deactivates the continuous cooling cycle. When pressed simultaneously with SET, it exits the programming mode.

**SPECIFICATIONS**
**Probe Range**: -58 to 302°F (-50°to 150°C).
**Input**: PTC thermistor 1000Ω @ 25°C.
**Output**: 15A PTC SPDT relay @ 250 VAC resistive, 5A inductive.
**Horsepower Rating (HP):** 3/4 HP.
**Control Type:** ON/OFF.
**Power Requirements:** 110 VAC.
**Accuracy**: ±1°C.
**Display:** 3-digit, Red, 1/2˝ digits.
**Resolution:** ±1 digit.
**Memory Backup:** Nonvolatile memory.
**Ambient Operating Temperature**: 14 to 158°F (-10 to 70°C).
**Storage Temperature**: -4 to 176°F (-20°to 80°C).
**Weight**: 2.3 oz (65 g).
**Front Panel Rating:** NEMA 4X (IP65).
**Agency Approvals**: CE, URc, UR.

**PROGRAMMING PARAMETERS**
Access only to Set Point SP (without code protection):
•Press and release SET. SP text appears on the display.
•Press SET again. The real value is shown on the display.
•Modify the value using the UP and DOWN keys.
•Press SET and DOWN to quit programming, or wait 1 minute for the TIMEOUT.
Access to all parameters (code protected):
•Press SET for 8 seconds. The access code value 00 or 0 is shown on the display.
•Using the UP and DOWN buttons, set the code (factory-set code is 00).
•Press SET to enter the code. If it is correct, the first parameter label will be shown on the display (SP).
•Move to the desired parameter with the UP and DOWN keys.
•Press SET to see the value.
•Modify the value with the UP and DOWN keys.
•Press SET to enter it, and exit to text parameter.
•Press SET and DOWN to quit programming, or wait 1 minute for the TIMEOUT.

| | Description | Units | Range |
|---|---|---|---|
| SP | Set point | degrees | r1 to r2 |
| r0 | Differential or hysteresis | degrees | 1 to 20° |
| r1 | Lower value for set point | degrees | -50 to 150°C<br>-50 to 302°F |
| r2 | Higher value for set point | degrees | -50 to 150°C<br>-50 to 302°F |
| d0 | Heating or cooling control | option | Ht/Co |
| d2 | Time for defrosting | minutes | 0 to 59´ |
| d8 | Interval time between defrosting | hours | 0 to 24 |
| c0 | Minimum stop time for compressor | minutes | 0 to 59´ |
| c1 | Continuous cycle time | hours | 0 to 24 |
| c2 | ON time of fault cycle | minutes | 0 to 999 |
| c3 | OFF time of fault cycle | minutes | 0 to 999 |
| P1 | Ambient probe adjustment | degrees | -10° to 10° |
| P4 | Decimal point | option | yes/no |
| H5 | Parameter access code | numeric | 0 to 99 |
| H6 | Ambient probe type | option | ptc/ntc |
| t0 | Maximum temperature on display | degrees | -50 to 150°C<br>-50 to 302°F |

**PARAMETER DESCRIPTIONS**
**SP** = Set Point. Temperature wished to regulate the machine. Can vary from r1 to r2.
**r0** = Differential. Heating: If temperature is ≥ Set then out OFF. If temperature is ≤ Set then out OFF. Cooling: if temperature is > Set + r0 then out ON. If temperature is ≤ Set then out OFF.
**r1** = Lower Set Point Limit
**r2** = Higher Set Point Limit
**d0** = Heat or Cooling Control. Ht = heating control, Co = cooling control.
**d2** = Defrosting Time Remaining, in minutes. If d2 = 0, defrosting will not start.
**d8** = Interval Between Two Defrostings, in hours.
**c0** = Minimum time for compressor to be OFF. Minimum time from when the compressor stops till it connects again.
**c1** = Continuous Cycle Time. The remaining time for a continuous cold cycle.
**c2** = ON time of fault cycle, during probe error.
**c3** = OFF time of fault cycle, during probe error.
**P1** = Ambient Probe Calibration. Offsets degrees to adjust the ambient probe.
**P4** = Decimal Point. Display decimal point in normal operation. Always present in parameter menus.
**H5** = Access Code to Parameters. Factory-set as 00.
**H6** = Ambient Probe Type. Sets probe type to be NTC or PTC.
**t0** = Temperature Display Limit. Maximum temperature shown on the display, although the real temperature can be greater

# Nitrous Bottle Pressure Guide*

| Degrees Fahrenheit | Bottle Pressure (PSI) |
|---|---|
| 50 | 590 |
| 60 | 675 |
| 70 | 760 |
| 80 | 865 |
| 85 | 920 |
| 88 | 950 |
| 90 | 980 |
| 95 | 1040 |
| 109 | 1150 |

**WARNING**

EXPOSURE OF NITROUS BOTTLES TO TEMPERATURES IN EXCESS OF 110 F MAY CAUSE AN EXPLOSIVE FAILURE

We do not recommend ever heating a nitrous bottle to a pressure of over 1050 PSI.

* Nitrous Bottle Pressure Guide is only a reference!! The amount of nitrous in a bottle can greatly affect the temp to pressure results.