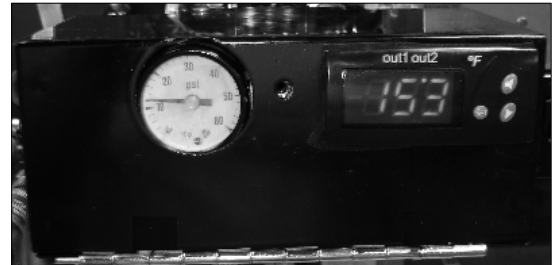


Digital Temperature Controller & Making Adjustments

OIL TEMPERATURE CONTROLLER: OPERATION & SETTINGS

This device is installed in the module cover box and controls the temperature to which the oil will be heated and the temperature that must be reached before the Fireye controller will be allowed to fire the burner. The control can be easily changed to accommodate different oils that require higher or lower preheat temperatures, for example vegetable oil, heavy oil and synthetic lubricants or lightweight oils like solvents. The readout as shown at left can be easily adjusted by depressing up and down arrow buttons. Refer to the recommended settings.



Oil Temperature & Pressure Settings

The INOV8 burner has been tested to burn fuel oils up to #6, and a variety of used petroleum based shop and vehicle oils. Testing has also been done on a variety of vegetable based oils, such as corn, soybean, and canola oils – both used and new. All of these oils make potential fuels but have different BTU values and flashpoints that require adjustments to the burner pressure and preheat temperature. It's also important to be aware that the preheat temperature showing on the LED readout is the temperature of the steel block in the module and not the direct temperature of the oil – which can be 30° to 50°F higher than the steel block temperature. If the oil being burned is not standard waste crankcase oil, oil analysis will determine the flashpoint and BTU value for proper setting of the oil temperature and pressure settings. The settings below are typical:

Type of Oil	*BTU/Gal	* Flashpoint in degrees F	Oil ** Pressure	SP1 Setting	SP2 Setting
<i>Petroleum based oils</i>					
Used crankcase - regular	147,000	240 - 350	9	150	110
Used crankcase – synthetic	140,000	440 - 507	11	170	120
Used crankcase with 10% gas	144,500	180	10	140	120
Used crankcase with 20% gas	142,000	120	10	Off	Off
90W gear lube	144,000	250 - 300	10	150	120
Transmission fluid	143,000	340 - 400	10	150	120
Hydraulic oil	144,000	336	10	150	120
Mineral oil	138,000	325 - 400	12	160	130
Mineral spirits	136,000	115	12	Off	Off
Jet fuel – JP 4	141,000	100 - 128	11	Off	Off
Fuel oil - #2 & diesel	140,000	126	12	Off	Off
<i>Non-petroleum based oils</i>					
B100	130,000	130	13	Off	Off
Crude soy	140,000	650	11	170	140
Glycerin (sample 1)	102,000	320	13	170	140
Glycerin (sample 2)	111,000	70	13	Off	Off
Used cooking oil	133,000	400 - 650	13	170	130

* Flashpoints and BTU values have been obtained from US Oil Chek analysis, data available from NFPA, and various MSDS publications and may not accurately represent all samples. Your oil should be tested to be sure of its flashpoint and BTU value. ** When adjusting oil pressure refer to instructions found in the Instruction Manual.

Adjusting the Temperature Controller

Two temperature settings control the preheat function; OUT1 maintains the temperature within 5 degrees of the set point, and OUT2 prevents the burner from firing with oil that is not yet at the set point temperature (also known as interlock). There are two basic factory set points based on the type of oil specified to be used as fuel.

	SP1	SP2
Petroleum based oils	150°F	120°F
Vegetable based oils	170°F	130°F

When making adjustments follow this procedure:

1. Press and release the SET button. The current value of OUT1 is displayed and the SP1 and the LED for the OUT1 lights blink. Press UP or DOWN to increase or decrease the value. The range of OUT1 temperature is 120°F to 180°F. Press SET to confirm the new value. This will then cause SP2 and the LED for OUT2 lights to blink.
2. Press UP or DOWN to increase or decrease the value of SP2 and press SET to confirm the new value and exit. The range of temperature for this setting is 100°F to 140°F.

Note: At least 20° F span must be between the OUT1 and OUT2 settings for this to function properly. Also be aware that when the preheater switch (see item #24 on the burner diagram for location) is in the OFF or "0" position, the lights on the temperature control will be off.



NOTE

Message Display

Under normal operation, the temperature of the probe will be displayed. Call INOV8 if any of the following messages appear:

- Err Memory reading error
- AH1 Maximum temperature alarm
- AL1 Minimum temperature alarm
- ooo Open probe
- --- Shorted probe