



A Clariance Technologies Company

# ELECTRIC PRE-HEATER, OVERNIGHT HEATER AND FLUID HEAT TEST PROCEDURES

There are various configurations of electric pre-heaters and thermostiches available for the Fuel Pro/Diesel Pro. These include 12VDC pre-heaters, 24VDC pre-heaters, 120VAC overnight heaters/thermostiches, and combination pre-heater thermostiches. The voltage and wattage ratings are stamped either on the sheath or the hex of each component for identification.

## Equipment Needed

- A precision low resistance ohm meter capable of measuring 1/10th ohm or less.
- Current flow meter (clamp-on type for DC current).
- Ice, dry-ice, CO<sub>2</sub> or some means of chilling the thermostich.
- A flameless source of heat. (ie: infrared heat lamp, etc.)  
Note: A Vortex tube is a good tool to heat and cool for testing.

**⚠ DO NOT USE a test light that has a wire probe for any of these tests. If the wiring insulation is punctured, moisture and road salt can penetrate into the wires creating a corrosion issue and potential failure.**

## Draining the Fuel Pro/Diesel Pro

1. Shut off the engine and set the parking brake.
2. Attach a length of hose to the drain valve and place a receptacle under the Fuel Pro/Diesel Pro.
3. Loosen the vent cap on top of the clear housing. Open the drain valve and drain the fuel into the receptacle.
4. When the fuel is drained, close the drain valve.

## Pre-heater Operation Test

**⚠ DO NOT energize the heater outside of the Diesel Pro or Fuel Pro. It can become very hot.**

1. Disconnect the pre-heater from the harness.
2. Connect the ohm meter leads to the pins of the pre-heater. For heaters with one pin, connect to the pin and the bushing. Use the following to determine whether the pre-heater resistance value is in the acceptable range.

Pre-heater	Watts	Resistance Range (ohms)
12VDC (two pin)	250 W	0.6 to 0.8
12VDC (single pin)	250 W	0.6 to 0.8
12VDC (single pin)	150 W	0.8 to 1.1
12VDC (two pin)	150 W	0.8 to 1.1
24VDC (two pin)	250 W	2 to 2.5
24VDC (single pin)	250 W	1.8 to 2.3
24VDC (single pin)	150 W	3.6 to 4.1
24VDC (two pin)	150 W	3.6 to 4.1
120VAC	75 W	173 to 203
120VAC	37 W	369 to 411

Overnight Heater	Watts	Resistance Range (ohms)
120VAC	75 W	173 to 203
120VAC	37 W	369 to 411

## Combination Pre-heater Thermostich Performance Test

1. Disconnect the harness from the heater/thermostich combination unit.
2. Using one of the cooling methods listed under "Equipment Needed", reduce the temperature of the thermostich to below 40° F.
3. Connect the ohm meter leads to the pre-heater pins. Use Table 1 to determine whether the pre-heater resistance value is in the acceptable range.
4. Using one of the pre-heating devices listed under "Equipment Needed", raise the temperature of the combination pre-heater to 70°F. The ohm meter should read "open circuit" for the combination units.

## 12 VDC PTC/24VDC Performance Test

1. Disconnect the harness from the heater.
2. Connect the ohm meter leads to the pins of the heater. Use the following to determine whether the pre-heater resistance value is in the acceptable range.

PTC Heater	Watts	Resistance Range (ohms)
12VDC (PTC)	155 W	0.95 to 1.2 @ 77°F (25°C)
12VDC (PTC)	195 W	0.4 to 0.6 @ 77°F (25°C)
24VDC (PTC)	195 W	2.0-3.0 @ 77°F (25°C)