

# EXPANDED TROUBLE SHOOTING GUIDE

FOR

CATCO CATALYTIC HEATERS



**CATCO**

**CATALYTIC HEATER COMPANY**

[www.catcoUSA.com](http://www.catcoUSA.com)



## **WARNING**

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

Before proceeding with this trouble shooting guide, it is advisable to review the operation and installation manual that is packaged with each CATCO catalytic heater.

## Catalytic Heater Will Not Start

### Gas Supply

1. If this is a new installation make certain that the fuel gas lines are aggressively and completely purged of air, liquid, and debris. Because of the small volume flowing through the heater, it can take a very long time to purge the lines with the heater gas train connected.
2. Verify gas pressure to the heater. Natural gas fueled heaters should receive 4 1/2 inches of water column pressure. LPG fueled heaters should receive 11 inches of water column pressure. It is important that this pressure be verified with a gauge or manometer. Check the pressure with gas flowing through the heater, not dead-headed. If the heater is equipped with a safety valve the button should be pressed fully in when verifying pressure. The best place to check the pressure of the heater is as close to the heater input as possible. Never rely on pressure reading more than approximately one foot away from the heater input as there can be significant line pressure drop at these extremely low pressures.
3. Verify that the heater orifice is not obstructed. The orifice is located inside of the ¼ npt nipple on the back of the heater.
4. Read the heater label to verify that the proper fuel is being used (Natural Gas or LPG)

### Electrical Supply

1. From the heater label, verify that you are using the proper starting voltage.
2. Verify that the voltage is as required. Check the voltage at the heater with power flowing through the heating element (under load).
3. Make sure that electrical power is applied per instructions in the manual and on the label. Once the heater is pre-heated and gas is sent into the heater, the electrical power should be continued per instructions so as to allow the heater enough time to be fully operating.

### Other Issues

1. If you observe steam or vapor emitted from the heater or from a vent in an enclosure, this is an indication that the pad material inside the heater is wet (water or other substance). The heater will not function properly. If the liquid is something that will evaporate and leave no residue, the heater might eventually dry itself enough to be functional. If contamination a non-flammable substance that will not leave a residue in the heater pad material, it is possible to "bake" the heater in an oven at about 250 °F for several hours to evaporate the liquid.
2. You might need to access the face of the catalytic heater. If the face of the heater shows significant discoloration, this indicates that the heater may be contaminated, preventing the free flow of gas to the catalyst pad at the face of the heater.
3. There must be an adequate source of combustion air for the heater to function.

## Catalytic Heater Seems to Start but Does Not Continue Operating

First, insure that the heater is actually operating and that the heat created is not from the heating element. There are several ways to verify this. First, if the heater is enclosed (such as in a Freeze Buster Instrument Gas Heater), you should be able to feel the hot and damp exhaust gas (CO<sub>2</sub> and water vapor) flowing out of the vent. Second, once the electrical power is disconnected, the heater back will cool off if the heater is not operating. Finally, if the face of the heater can be accessed, it is quite apparent when the heater is functioning because of the substantial radiant heat emitted from the face of the heater.

1. As detailed above, verify the gas supply and pressure.
2. As detailed above, verify that the heater does not show signs of contamination. The best way to observe this is to check the face of the heater. If it is discolored, this can indicate that there is contamination that is preventing the even flow of gas to the catalyst at the heater face. This can reduce performance of the heater to the point that it will not sustain the catalyst reaction.
3. Verify that the orifice is not partially obstructed
4. The heater must not be installed in such a way as to eliminate adequate combustion air.
5. If the heater is equipped with a thermocouple and safety valve a failure of one of these components can cause the heater to shut down. If you have access to the proper testing equipment you can test the thermocouple and safety valve. Thermocouples should produce between 10-15 millivolts when the heater is fully operating (with no electrical heating). The safety valve should remain open down to a load of 120 milliamps.

If no testing equipment is available, operation of the safety valve and thermocouple can be bypassed by temporarily securing the button in the open (down) position and starting the heater. If the heater is in a classified area the heater should be removed from the area and tested in a safe area. If the heater will operate for an extended time in this way, this indicates that the thermocouple and/or safety valve is not functioning properly.