



TROUBLE SHOOTING GUIDELINES

1. Work safely:

Always bring a fire extinguisher with you to the heater location, and always check the combustion chamber for raw fuel!. Do not fire a burner with a loaded chamber. Clean it up first. Better to be safe than sorry.

2. Talk to the customer:

Find out as much as you possibly can about the operating condition of the equipment prior to the service call. Ask if the furnace has been recently serviced, when was the last time it was cleaned, when was the last oil delivery, etc.

These types of questions can be valuable clues that may help determine why the equipment failed to operate.

3. Set the room thermostat:

Set for "HEAT," and raise the set point to its maximum setting.

4. Stick the tank:

This may seem like a waste of time (especially if the customer claims that they "just got a delivery the other day."), but it is a good habit to get into. I have wasted many hours over the years trying to get fuel units to pick up oil from empty tanks that were, "filled yesterday."

5. Now you are ready to begin working on the furnace itself:

Turn off the power switch and check the combustion chamber if you have not already done so. Clean up any raw fuel. The presence of raw fuel would be a good indication that there is oil up to the nozzle and that the problem lies somewhere in the ignition system. If the chamber is dry, feel the supply plenum (on forced air systems) or the water pipes (on boilers). In either case, they will be cold if the system has been down for any length of time. If they are hot to the touch, check to see if the equipment has shut down due to limit opening.

Likely problem areas would be an inoperative blower motor, dirty filters, or perhaps a bad circulator.

6. At this point you have been on the job site for about five minutes and may have already located the problem area:

If not, push the reset button on the primary control or stack switch. Make sure you have your fire extinguisher handy (just in case) and develop the habit of standing clear of the draft regulator and inspection port.

One of three things will happen. The burner motor will start and the burner will fire, the burner motor will start and the burner will not fire, or nothing at all happens.

7. If there is no response when pushing the reset, there is some sort of electrical problem with the equipment:

Use a voltmeter and confirm that there is voltage (usually 120 volts) to the primary control or stack switch. Disconnect the wires from the "T - T" terminals and jumper T to T on the control.

One a primary control, disconnect one of the yellow wires from the cad cell eye. Ambient light, a shorted eye, or a short in the wires from the cad cell will keep the burner from firing.

On stack controls, "step" the contacts by gently pulling and releasing the drive shaft. Try carefully jumping out the cold contacts.

Push the reset button on the burner motor, it may have tripped. At some point either the burner will fire or you will find the problem.

8. If the burner starts, but does not fire, turn it off after 10 seconds of operation:

Allowing the burner to run until the safety trips, may load the chamber with excess oil.

Disconnect the jet line (the line that connects the fuel unit to the nozzle line) from the nozzle line and direct it into a clear container.

Take enough oil (several ounces) so you can observe the sample for water or other contamination.

Install an oil pressure gauge in the nozzle line and check the pressure. On most systems the pressure should be set at 100 psi.

9. No oil at the jet line indicates some sort of delivery problem:

Check the coupling and confirm that the fuel unit drive shaft is turning.

Check vacuum. Very high vacuum indicates a restriction (or possibly a very long distance to the tank). No vacuum may indicate an air leak if the tank is below the burner.

Remove the side cover from the pump. Excessive dirt will require that the pump screen is cleaned and the pump may have to be replaced.

10. Good oil delivery at 100 psi and a clean oil sample indicates that the problem is in the oil burner itself:

Check the nozzle, the transformer, and the electrodes. The problem is somewhere in this area.

Conclusion:

These steps will allow you to work on any oil burner system with confidence. When working on any furnace, boiler, or mechanical system always look for logical procedures to follow that will allow you to quickly eliminate the unlikely areas and get right to the problem.

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