



## WAG SERIES TROUBLESHOOTING PROCEDURES

### **WARNING**

Before servicing this gas appliance, turn off all electric power supply and close all gas valves to the appliance. Failure to do so could result in fire, personal injury, or death.

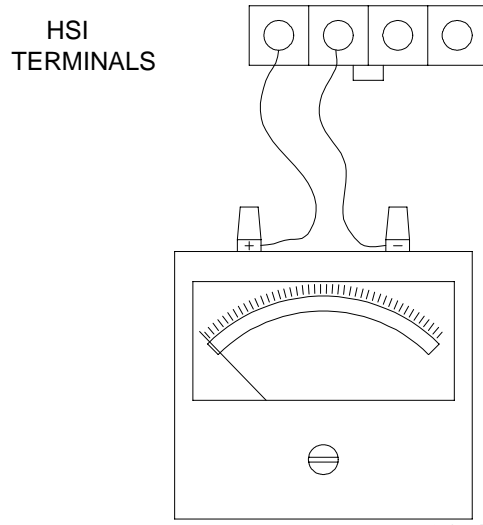
TURN ON 230 VOLT AC POWER SUPPLY — TURN UP THERMOSTAT — 0.20 AMP HEAT ANTICIPATOR SETTING

SYMPTOM	POSSIBLE CAUSES	HOW TO CHECK AND/OR CORRECT
Induced draft blower does not operate	Thermostat or thermostat wiring defective	Remove thermostat wires from the blower control board. Jumper terminals "R" and "W" on blower control board. If inducer blower starts: A. Check thermostat wiring B. Change thermostat
	No main power supply or 24 volt power supply	Remove low voltage wires from transformer to terminals "X" and "C" on the blower control. Check for 24 volts AC coming out of transformer. If there is no voltage present: A. Check for 230 volts AC at terminals "S2" and "N4". If there is not 230 volts, check power supply or breaker. B. If there is 230 volts present at terminals "S2" and "N4" but there is not 24 volts present at the transformer leads, the transformer must be replaced.
	Blower board defective	If 24 volts is not present at "X" and "C" on the board and 230 volts is present at "S1" and "N3" and there is no power at "N2" and "D1", the board must be replaced.
Pilot burner igniter does not warm up and glow red	Pressure switch is defective	Jumper out terminals normally open and common on the pressure switch. If igniter starts, check for: A. Blockage in the vent terminal. B. Excessive dirt, lint, soot or scale on induced draft blower wheel. C. Defective pressure switch. D. Check for any blockage in hose connecting pressure switch to the inducer assembly. E. Unplug pilot burner cable from gas valve. Measure voltage at gas valve HSI element output. (See Fig. 1) Nominal 24 volt. If there is not 24 volts, replace gas valve. If there is 24 volts, replace igniter/flame rod assembly.
	Gas valve is defective	
	Pilot assembly is defective	
Hot surface igniter glows red but there is no pilot ignition.	No gas supply	A. Ensure all gas cocks and gas valve are open. B. Ensure that the minimum gas supply pressure, stated on the furnace rating plate, is available just upstream of the gas valve. C. Ensure that the pilot tubing and pilot orifice has no obstructions which may impede gas flow.

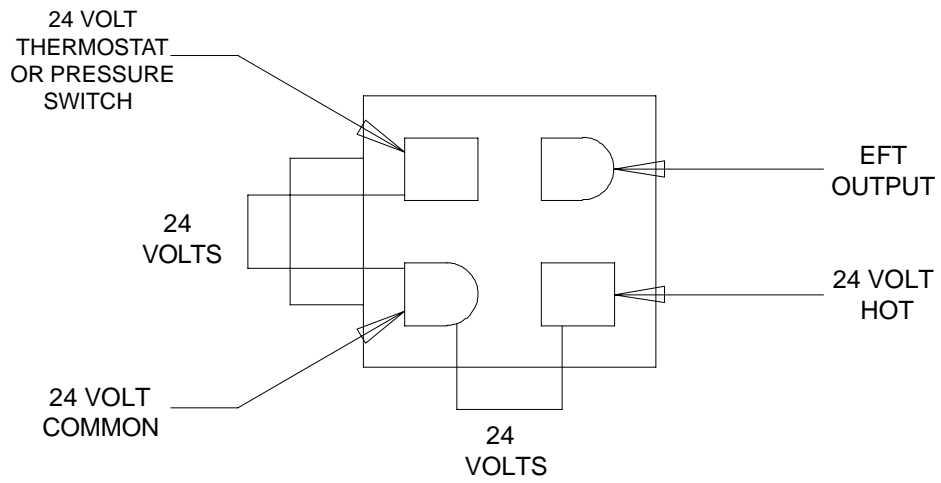
*NOTE: Before replacing any component of this unit, verify that all wiring is correct with the wiring diagram.*

SYMPTOM	POSSIBLE CAUSES	HOW TO CHECK AND/OR CORRECT
Hot surface igniter glows red but there is no pilot ignition. (continued from Page 1)	Defective ignition control	Check and make sure there is proper voltage at the control harness. (See Fig. 2) Voltage should be 24V between thermostat or pressure switch and 24V common, and 24V between the 24V common and 24V hot terminals. If either of these voltages are not present check: A. Line voltage power B. Low voltage transformer C. Limit control D. Thermostat E. Pressure switch F. Pressure switch G. Induced draft blower H. Measure voltage between 24V hot and 24V common leads to gas control. Must measure at least 19.5 VAC with igniter powered. See Fig. 2 to identify proper lead. This check <i>must</i> be done with the gas control connected and the igniter powered.
Hot surface igniter (HSI) lights the pilot but main burner does not light.	Defective gas control	A. Check that the pilot flame makes good contact with pilot burner flame rod. B. Check for good electrical connection through the pilot gas tubing. C. If both "A" and "B" above are good, replace the igniter/flame rod assembly.
	Gas flow obstructed	Check and make sure the main burner orifices are clear and free of obstructions.
	Low gas supply or defective gas valve	A. Ensure that all gas pressures are correct just upstream of the gas valve. B. Check and make sure there is 24V to the gas valve. If there is, replace gas valve.
Main burner lights, comfort air blower does not run.	Defective blower control board, blower motor or capacitor	After main burner ignition, wait approximately 60 seconds and check for 230V AC at terminals "N1" and "HEAT" on the blower control board. If there is no voltage, replace the board. If voltage is present, check capacitor. If capacitor is good, replace blower motor.
Main burner cycles on and off or stays off and the induced draft blower and comfort air blower do not stop.	Limit switch opening due to high outlet air temperature or defective control	Jumper terminals on both sides of each limit switch. If this corrects cycling problem check: A. Limit setting on control should be at setting specified on the furnace rating plate. B. Clogged or dirty filters. C. Static pressure on supply side not to exceed that specified on the rating plate. D. Inadequate return air sizing. E. Defective limit control.
	Flame roll-out switch attached to metal plate located above burner openings is open due to flame rolling out of combustion area caused by inadequate combustion air through the heat exchanger	The flame roll-out switch is a manual reset control. Check to make sure the switch has been reset. Check for blockage in the vent terminal and/or the induced draft blower.  If blockage is present, remove obstruction.  Also check for blockage in the heat exchanger fire passageways. Remove any blockage.
	Pressure switch defective or malfunctioning	Jumper out terminals normally open and common on the pressure switch, if this corrects cycling problem check: A. Blockage in vent terminal. B. Excessive dirt, lint, soot or scale on induced draft blower wheel. C. Defective pressure switch.
Comfort air blower does not stop	Defective blower control board	If comfort air blower continues to run for more than 2-3 minutes after the call for heat has been satisfied, the blower control board must be replaced.

**FIGURE 1**



**FIGURE 2**  
**END VIEW OF CONTROL HARNESS CONNECTOR**



# WAG SERIES

## UNDERSTANDING THE PRESSURE CONTROL

All WAG models are equipped with a pressure sensing device. This device performs the two important functions shown below:

- Prevents main burner operation in the event of inadequate combustion air or a failed combustion air blower.
- Prevents main burner operation in the event the vent terminal should become obstructed.

This pressure device is commonly referred to as a pressure switch. The switch consists of normally open contacts which close when a specified amount of negative pressure (vacuum) is applied to the mechanical side of the device. The switch will remain closed as long as the required amount of negative pressure is present. If that negative pressure or vacuum reduces below the required amount, the switch contacts will open, thus shutting down the unit. The source of this negative pressure is created within the combustion air blower housing, and is transferred from the blower housing to the pressure switch through a 3/16" diameter silicone tube. If any unusual restriction is applied any point downstream of the combustion air blower, the negative pressure or vacuum within the blower housing will decrease, opening the switch contacts and shutting down the unit.

All WAG series use the same pressure switch. The pressure switch contacts close at .45" W.C. and opens at .35" W.C.

## PRESSURE MEASUREMENT WITHIN THE SYSTEM

To measure the pressure within the system, a pressure gauge with a range of 0 to 1 inch water column in .02 inch W.C. increments is required.

This gauge is to be connected to the silicone tubing between the pressure switch and the combustion air blower. Refer to Figure 3.

A small plastic or copper tee and a 3/16" diameter piece of hose is used to connect the gauge between the combustion air blower and the pressure switch.

With the gauge in place, start the unit and monitor the pressure within the system. The ignition device will be activated once the pressure exceeds the switch contact close points shown above. As the furnace warms up, the pressure will drop about .2" W.C.

The pressure within the system should not drop to or below the switch contacts open point shown above. If the switch contacts open above or below the specified set point  $\pm .05$ " W.C., the switch must be replaced.

If the pressure within the system drops to the switch open set points, the following items should be checked:

1. Any obstruction in the vent terminal
2. Any excessive lint, dirt or scale on the combustion air blower wheel
3. Any obstructions or moisture inside the 3/16" silicone tubing

**FIGURE 3**

