

GWA

Gas-Fired Water Boilers



Control Supplement Spark-Ignited Pilot System

Hazard definitions

DANGER

Hazards that **will** cause severe personal injury, death or substantial property damage.

WARNING

Hazards that **can** cause severe personal injury, death or substantial property damage.

CAUTION

Hazards that **will or can** cause **minor** personal injury or property damage.

NOTICE

Special instructions on installation, operation or maintenance that are important but not related to personal injury or property damage.

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2 Sequence of operation	2
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4 Troubleshooting	6-10
5 Parts	11

WARNING

INSTALLER — Read all instructions before installing. Follow all instructions in proper order to prevent personal injury or death.

- U.S. only — GWA boilers **must** have dampers installed.
- Canada only — GWA boilers **may** have dampers installed.

WARNING

USER — Please read the following. Failure to comply could result in severe personal injury, death or substantial property damage.

- **Controls must only be installed and Control Supplement used by your qualified heating installer/service technician.**
- Please see the User's Information Manual for your reference.

WARNING

This supplement must only be used by a **qualified heating installer/service technician.** Failure to comply could result in severe personal injury, death or substantial property damage.

WARNING

Failure to adhere to the guidelines on this page can result in severe personal injury, death or substantial property damage.

NOTICE

When calling or writing about the boiler— Please have the boiler model number from the boiler rating label and the CP number from the boiler jacket.

WARNING

This control system is not offered for retrofit or conversion from standing pilot systems. The control system and instructions are intended only for factory-packaged boilers. Any attempt to apply the system components to a boiler shipped for use with a different control system will not be covered under boiler warranty and can cause severe personal injury, death or substantial property damage.

1 Boiler wiring

WARNING

For your safety, **turn off electrical power supply at service entrance panel before making any electrical connections** to avoid possible electric shock hazard. Failure to do so can cause severe personal injury or death.

NOTICE

Wiring must be N.E.C. Class 1.

If rollout thermal fuse element wire as supplied with boiler must be replaced, type **200 °C** wire or equivalent must be used. If other original wiring as supplied with boiler must be replaced, use only type **105 °C** wire or equivalent.

Boiler must be **electrically grounded** as required by National Electrical Code ANSI/NFPA 70-latest edition.

1. Bring supply wiring to boiler. Must be 14 gauge or heavier.
2. See wiring diagram on page 3. All wiring must be installed in accordance with:
 - **U.S.A.** — National Electrical Code and any other national, state or local code requirements.
 - **Canada** — CSA C22.1 Canadian Electrical Code Part 1 and any other national, provincial or local code requirements.

2 Sequence of operation

1. See Table 1 for “Operating Instructions” page number locations. Raise room thermostat to call for heat. Damper actuator will slowly open damper.
2. When damper is fully open, ignition control powers spark generator and opens pilot valve.

DANGER

Damper must be in open position when appliance main burners are operating. If damper is not in open position, flue products such as carbon monoxide will escape into the house, causing severe personal injury or death.

3. **If pilot does not light within 15 seconds** — Pilot valve is closed and spark generator is turned off. The ignition control initiates a five-minute wait period. If call for heat exists after five minutes, ignition sequence starts at Step 2.

If pilot and ignition control senses flame current — Main valve opens and spark generator is turned off.

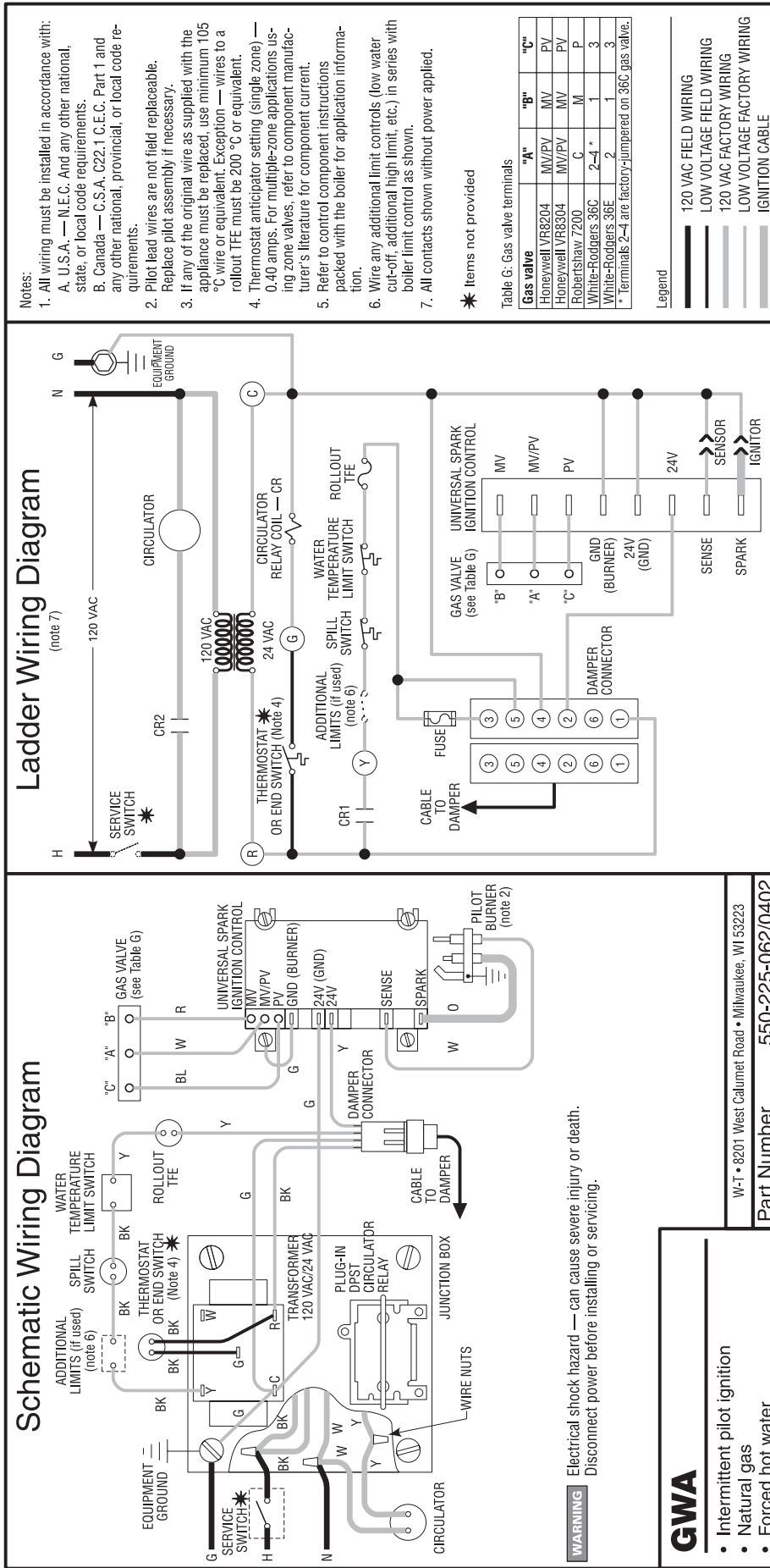
4. During main burner operation:
 - a. Ignition control monitors pilot flame current. If signal is lost, main valve is closed, spark generator activated and sequence returns to Step 3.
 - b. If power is interrupted, the control system shuts off pilot and main gas valves and restarts at Step 1 when power is restored.

Table 1 “Operating Instructions” locations

GWA spark-ignited pilot — With gas valve:	Page
Honeywell VR8204/VR8304	4
Robertshaw 7200	5
White-Rodgers 36E or 36C	4

5. Thermostat is satisfied — pilot and main gas valves are closed. Damper will close.
6. Boiler is now in the off cycle.
7. Repeat Steps 1-6 several times to verify operation.
8. Return thermostat to normal setting.
9. Set thermostat heat anticipator setting indicated in notes in wiring diagram. See Figure 1 on page 3.

Figure 1 Wiring diagram — Spark-ignited pilot system



3 Operating instructions

Gas valve — Honeywell VR8204 or VR8304 — White-Rodgers 36C or 36E

FOR YOUR SAFETY READ BEFORE OPERATING

WARNING If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

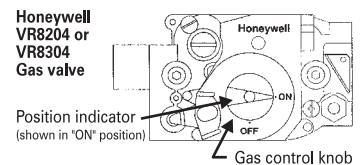
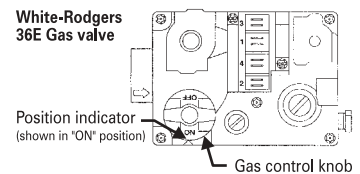
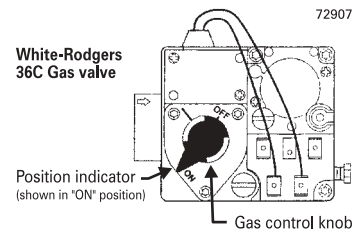
- A. This appliance is equipped with an ignition device which automatically lights the pilot. **Do not** try to light the pilot by hand.
- B. Before **OPERATING**, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor. See below.
- C. Use only your hand to depress or move the selector arm. Never use tools. If the selector arm will not depress or move by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
- D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control, which has been under water.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

OPERATING INSTRUCTIONS

1. **Stop!** Read the safety information above on this label. Vent damper operations below apply only to GWA boilers. Find vent damper manufacturer and model on vent damper nameplate.
2. Set the thermostat to lowest setting.
3. When equipped with **Effikal** vent damper **Model RVGP**, place service switch in **Hold Damper Open** position.
4. Turn off all electrical power to the appliance.
5. When equipped with **Johnson Controls** vent damper **Model M35**, manually rotate damper blade in direction of arrow to **Open** position indicated on damper assembly.
6. This appliance is equipped with an ignition device which automatically lights the pilot. **Do not** try to light the pilot by hand.
7. Turn gas control knob clockwise ↻ to **OFF**. (Press down on White-Rodgers 36C valve knob to turn.)
8. When equipped with vent damper, verify damper blade is in full open position.
9. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, **STOP!** Follow "B" in the safety information above. If you don't smell gas, go to the next step.
10. Turn gas control knob counterclockwise ↺ to **ON**. (Press down on White-Rodgers 36C valve knob to turn.)
11. Turn on all electric power to the appliance.
12. When equipped with **Effikal** vent damper, place service switch in **Automatic Operation** position.
13. Set thermostat to desired setting.
14. If the appliance will not operate, follow the instructions **To Turn Off Gas To The Appliance** and call your service technician or gas supplier.
15. Replace front panel.



TO TURN OFF GAS TO THE APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Remove front panel.
4. Turn gas control knob clockwise ↻ to **OFF**. Do not force. (Press down on 36C valve knob to turn.)
5. Replace front panel.

3 Operating instructions continued

Gas valve — Robertshaw 7200

FOR YOUR SAFETY READ BEFORE OPERATING

WARNING If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

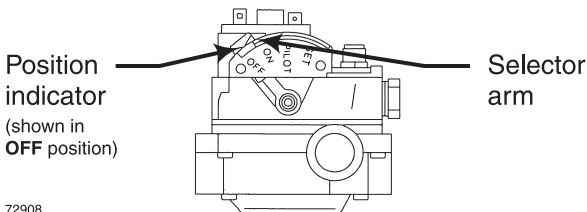
- A. This appliance is equipped with an ignition device which automatically lights the pilot. **Do not** try to light the pilot by hand.
- B. Before **OPERATING**, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor. See below.
- C. Use only your hand to depress or move the selector arm. Never use tools. If the selector arm will not depress or move by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
- D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control, which has been under water.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

OPERATING INSTRUCTIONS

1. **Stop!** Read the safety information above on this label.
2. Set the thermostat to lowest setting.
3. When equipped with **Effikal** vent damper **Model RVGP**, place service switch in **Hold Damper Open** position.
4. Turn off all electrical power to the appliance.
5. When equipped with **Johnson Controls** vent damper **Model M35**, manually rotate damper blade in direction of arrow to **Open** position indicated on damper assembly.
6. This appliance is equipped with an ignition device which automatically lights the pilot. **Do not** try to light the pilot by hand.
7. Depress and move selector arm to **OFF**. **Note:** Selector arm cannot be moved to **OFF** unless selector arm is depressed slightly. Do not force.
8. When equipped with vent damper, verify damper blade is in full open position.
9. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, **STOP!** Follow "**B**" in the safety information above. If you don't smell gas, go to the next step.
10. Move selector arm to **ON**.
11. Turn on all electric power to the appliance.
12. When equipped with **Effikal** vent damper, place service switch in **Automatic Operation** position.
13. Set thermostat to desired setting.
14. If the appliance will not operate, follow the instructions **To Turn Off Gas To The Appliance** and call your service technician or gas supplier.
15. Replace front panel.



TOTURN OFF GAS TO THE APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Remove front panel.
4. Depress and move selector arm to **OFF**. Do not force.
5. Replace front panel.

4 Troubleshooting

WARNING Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.

WARNING Never jumper (bypass) rollout thermal fuse element or any other device except for momentary testing as outlined in “Troubleshooting” charts. Severe personal injury, death or substantial property damage can result.

WARNING Burner access panel must be in position during boiler operation to prevent momentary flame rollout on ignition of main flame. Severe personal injury or substantial property damage will result.

Before troubleshooting:

- Have the following items:
 - Voltmeter that can check 120 VAC and 24 VAC.
 - Microammeter with a scale range of 0-10.
 - Continuity checker.
 - U-tube manometer.
- Check for 120 VAC (minimum 102 VAC to maximum 132 VAC) to boiler.
- Check for 24 VAC at secondary side of transformer.
- Make sure thermostat is calling for heat and contacts (including appropriate zone controls) are closed. Check for 24 VAC between thermostat wire nuts and ground.

Check the following:

- Wire connectors to control module are securely plugged in at module and originating control.
- Gas pressures:
 - With boiler off — 13" w.c. maximum natural or propane gas pressure upstream of gas valve.
 - With boiler on:
 - 5" w.c. minimum natural gas pressure or 11" w.c. propane gas pressure upstream of gas valve.
 - 3.5" w.c. minimum natural gas pressure or 10" w.c. propane gas pressure downstream tapping on gas valve — Can be adjusted by regulator on gas valve.

In event of vent damper failure:

Effikal vent damper

If troubleshooting chart recommends replacing actuator and actuator is not immediately available, damper blade can be fixed in an open position to allow boiler operation. Manually turning blade can cause actuator damage. Follow these instructions only in case of no heat or damper actuator malfunction.

- Move damper service switch to **Hold Damper Open** position. Apply call for heat to boiler. Damper blade should then rotate to open position and boiler will fire.
- If step 1 does not open damper, manually rotate damper blade to open position using wrench or pliers on flat shaft between damper and actuator. Boiler will fire. Verify that damper service switch is in **Hold Damper Open** position. (Figure 2)
- Do not leave vent damper permanently in this position.** Replace actuator immediately. If vent damper is left in open position, boiler will not operate at published efficiencies.

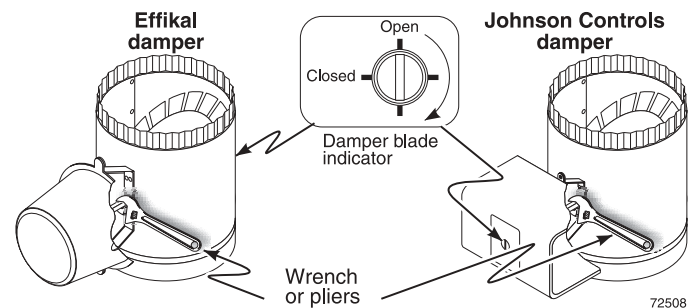
Johnson Controls vent damper

If troubleshooting chart recommends replacing actuator and actuator is not immediately available, damper blade can be fixed in an open position to allow boiler operation. Follow these instructions only in case of no heat or damper actuator malfunction. See Figure 2.

- Turn off power to boiler.

WARNING Failure to turn off power to boiler can result in severe personal injury, death or substantial property damage.
- See vent damper manufacturer's instructions for procedure to fix vent damper in open position.
- Turn on power to boiler.
- Using wrench or pliers on flat shaft section, manually rotate damper blade until green light turns on. Boiler will fire. (Figure 2)
- Do not leave vent damper permanently in this position. Replace actuator immediately. If vent damper is left in open position, boiler will not operate at published efficiencies.

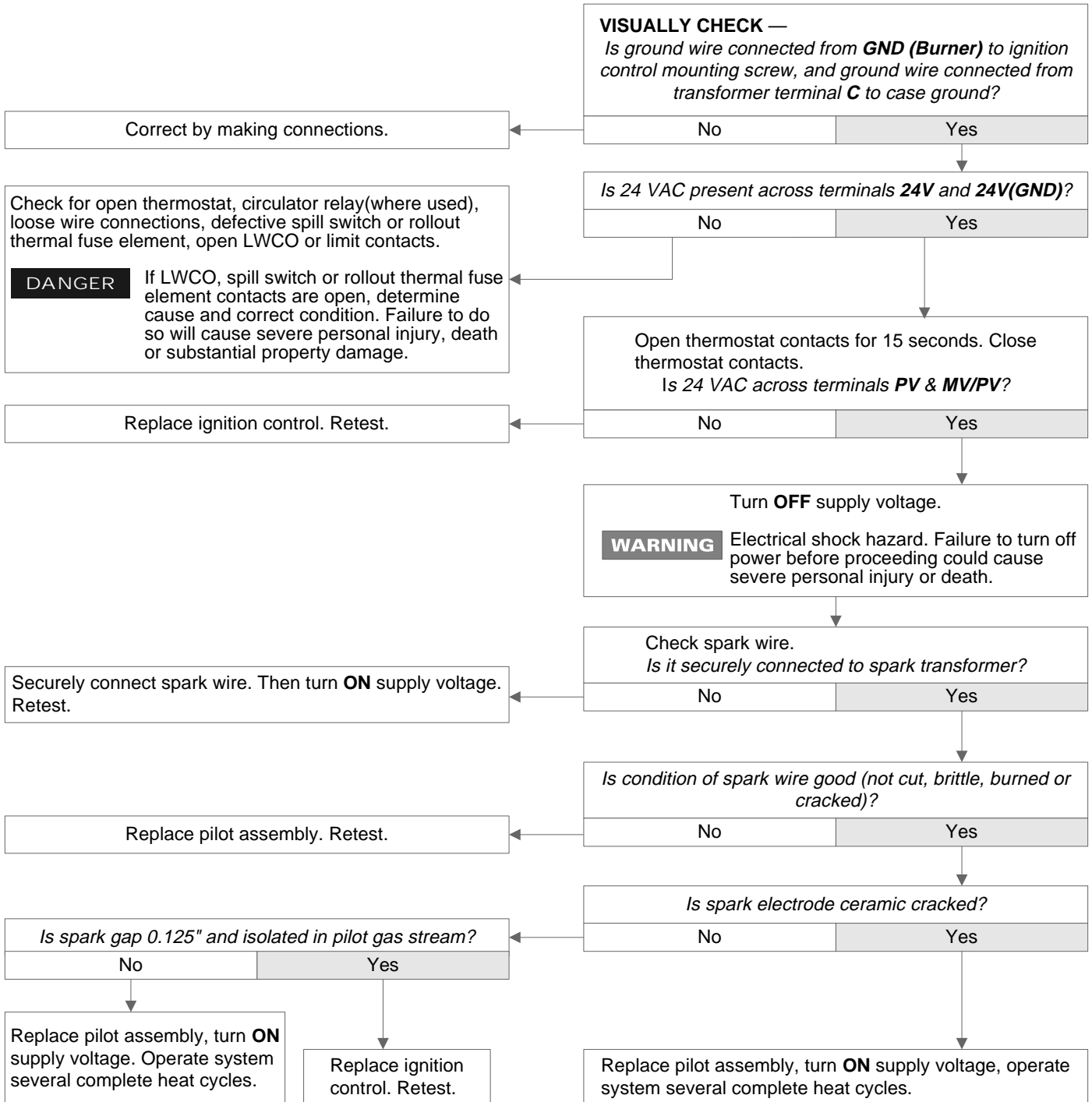
Figure 2 Manually opening vent damper



WARNING Verify proper operation after servicing. • See vent damper manufacturer's instructions packed with vent damper for additional information. Failure to comply could result in severe personal injury, death or substantial property damage.

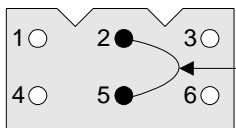
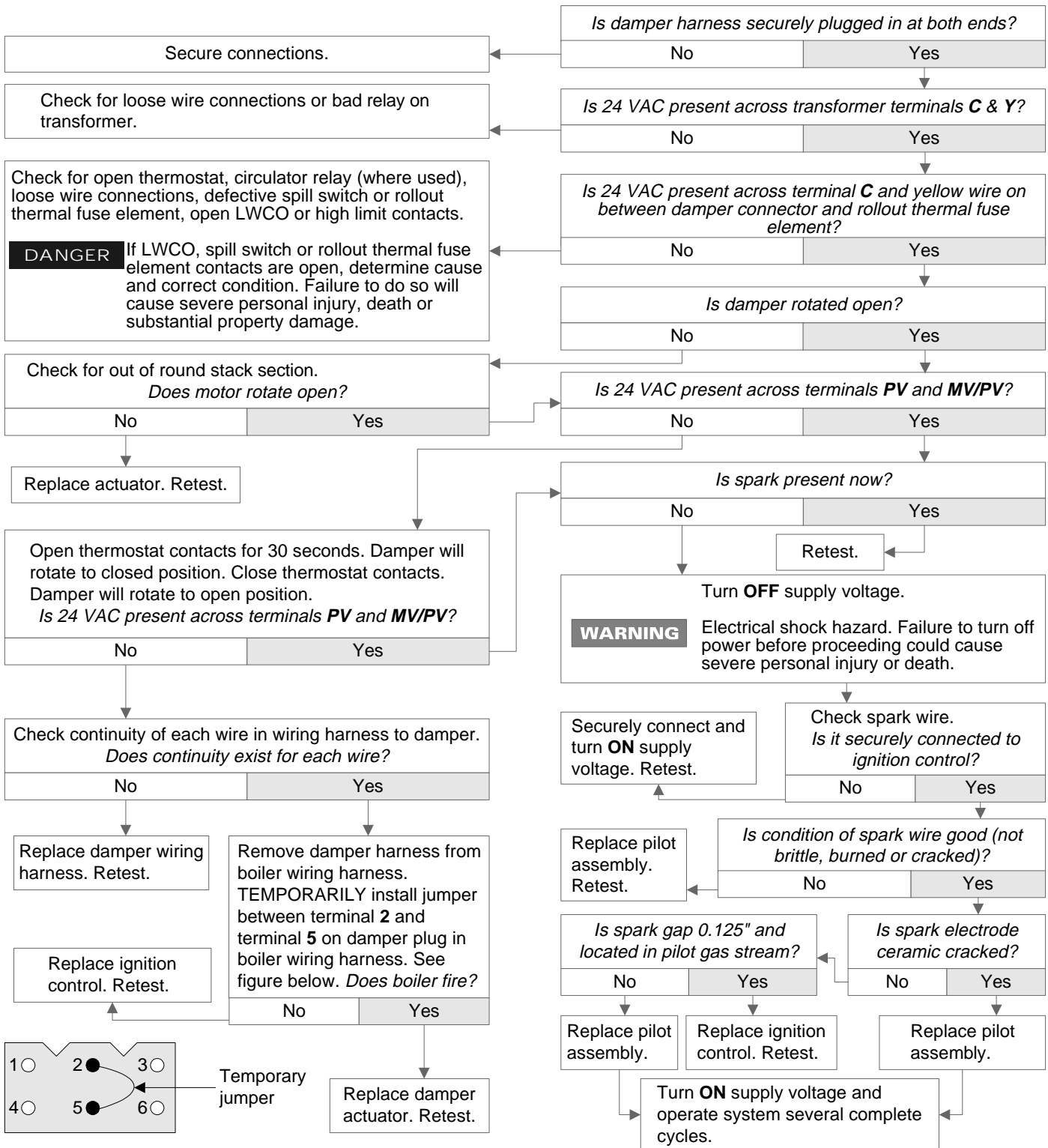
4 Troubleshooting continued

CHART 1: No spark — System (boiler without vent damper) does not work



4 Troubleshooting continued

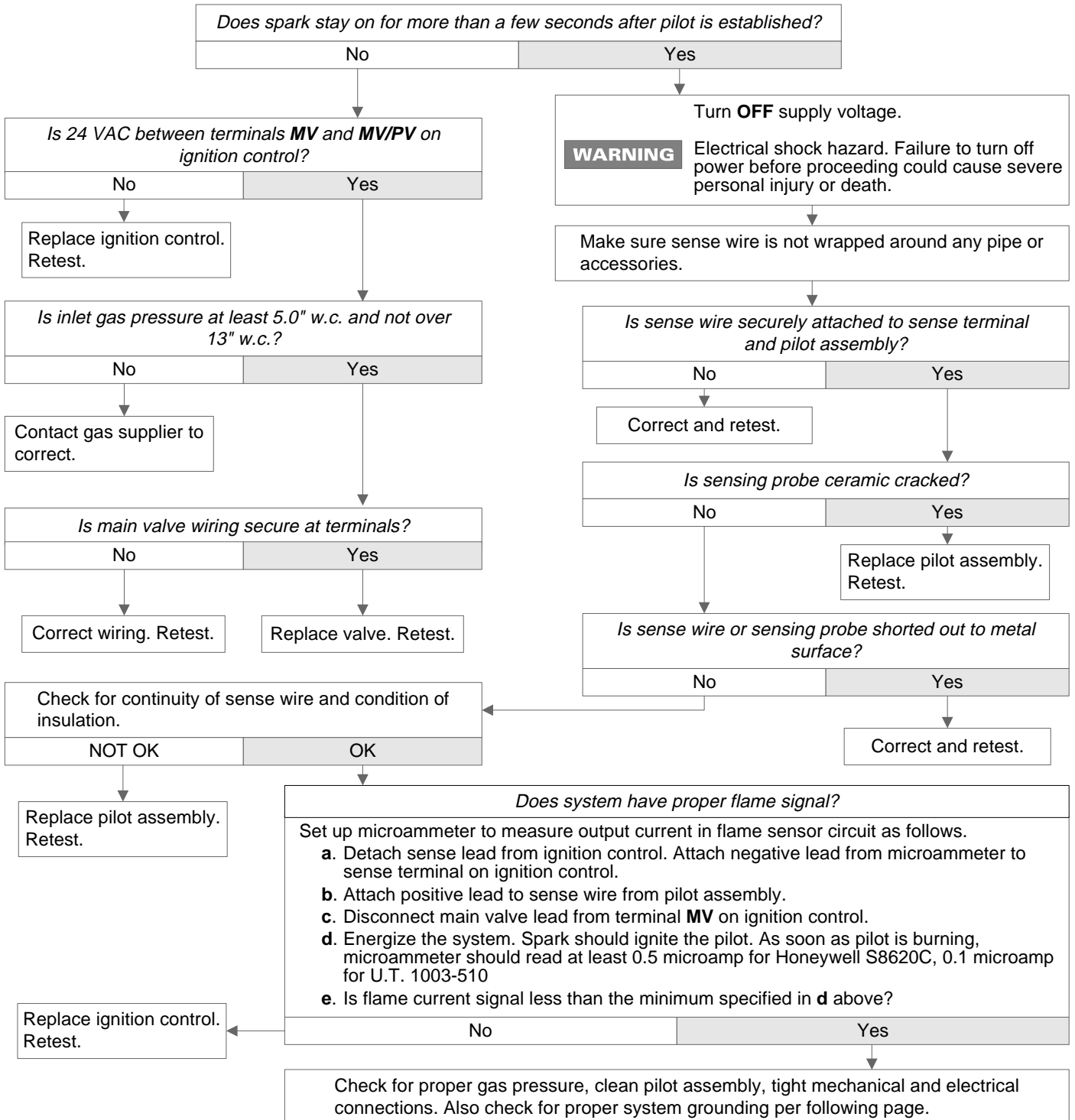
CHART 2: No spark — System (boiler with vent damper) does not work



WARNING Remove jumper after test. Failure to remove jumper could result in severe personal injury or death.

4 Troubleshooting continued

CHART 3: Pilot lights — Main valve will not come on (boiler with or without damper)



4 Troubleshooting continued

CHART 3: Pilot lights — Main valve will not come on — *continued from previous page*

Turn **OFF** supply voltage.

WARNING Electrical shock hazard. Failure to turn off power before proceeding could cause severe personal injury or death.

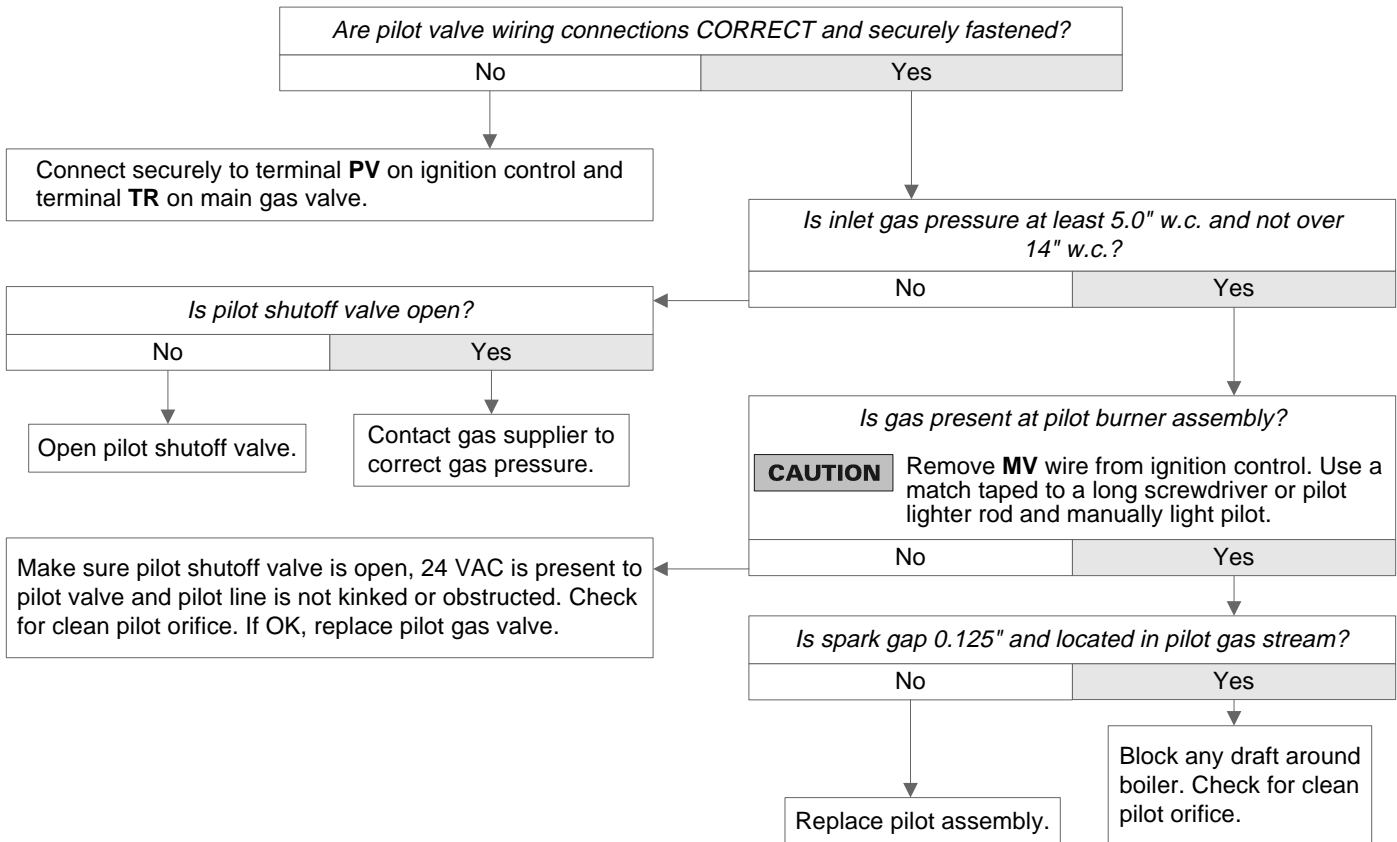
To check ignition system grounding (instruction for continuation of Chart 3)

Pilot assembly and ignition control must share common ground with main burner. Nuisance shutdowns are often caused by poor or erratic ground.

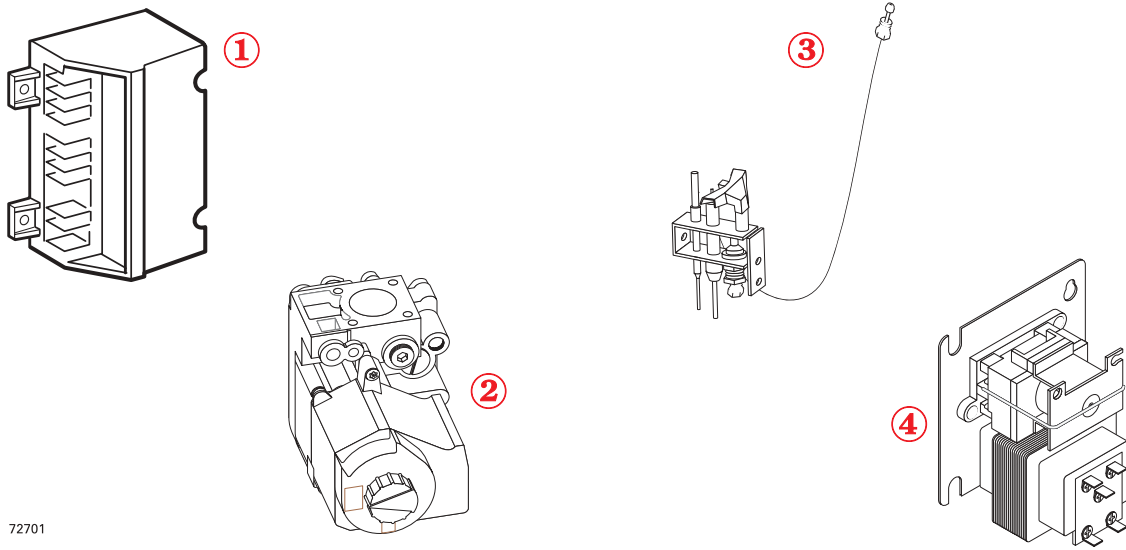
- Check for good metal-to-metal contact between pilot burner bracket and main burner, and between main burner and burner rest.

- Check ground lead from **GND (Burner)** terminal on ignition control to ignition control mounting screw and from **C** on transformer to transformer case ground. Make sure connections are clean and tight. If wire is damaged or deteriorated, replace with No. 18 gauge moisture-resistant, thermoplastic insulated wire with 105 °C minimum rating.

CHART 4: Spark is present — Pilot will not light (boiler with or without damper)



5 Parts



72701

Item number	Part description	Boiler models	Vendor	Vendor part number	Part number
1	Ignition Control	GWA-052 to GWA-245	Honeywell	S8620C1003	511-330-097WT
			United Technologies	1003-511	
2	Gas valve, ½" x ½", Natural gas	GWA-052 to GWA-175	Honeywell	VR8204A-2001	511-044-381WT
			Robertshaw	7200ER 7A0-A1B-042	
	White-Rodgers	36E36-266			
	Gas valve, ¾" x ¾", Natural gas	GWA-210 and -245	Honeywell	VR8304P-4348	511-044-382WT
3	Pilot assembly kit with orifice and aluminum pilot gas tubing	GWA-052 to GWA-245			511-330-166WT
not shown	Boiler wiring harness	GWA-052 to GWA-245			591-391-863WT
4	Transformer relay	GWA-052 to GWA-245			510-312-167WT



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