

# WEIL-McLAIN



**CG Series 12, CGX Series 2 and PFG Series 6  
Universal Control Systems (UCS)**

**Gas  
Control  
Supplement**

To complete boiler installation, follow:

- General Information, page 2
- Boiler Wiring, pages 3-5
- Vent Damper Installation, page 6
- Check-out Procedure, page 7
- Operating Instructions, pages 8-12

For additional help, see:

- Troubleshooting, pages 13-17
- Parts List, page 18

## **WARNING**

Controls must only be installed by and Control Supplement used by a qualified installer/service technician. Read all instructions before installing. Failure to follow all instructions in proper order can cause severe personal injury, death or substantial property damage.



## GENERAL INFORMATION:

This system is used on natural gas-fired boilers with or without dampers as shipped from the factory.

**IMPORTANT:** When calling or writing about the boiler, PLEASE GIVE THE MODEL listed on the boiler rating label AND THE CP NUMBER found next to the rating label.

### WARNING

This system is not offered for retrofit, or conversion from standing pilot systems. Any attempt to apply the system components to boilers 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.

The following defined terms are used throughout this manual. They bring attention to the presence of hazards of various risk levels, or to important information concerning the life of the product.

### DANGER

indicates presence of hazard which will cause severe personal injury, death or substantial property damage if ignored.

### CAUTION

indicates presence of hazard which will or can cause minor personal injury or property damage if ignored.

### WARNING

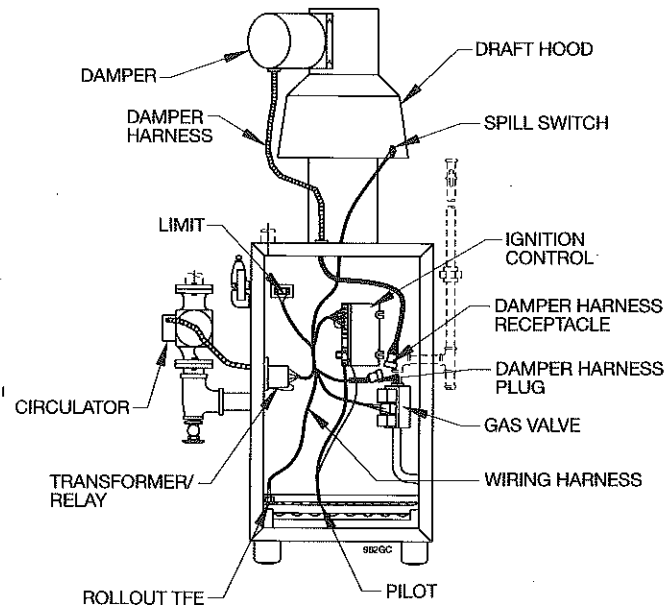
indicates presence of hazard which can cause severe personal injury, death or substantial property damage if ignored.

### NOTICE

indicates special instructions on installation, operation, or maintenance which are important but not related to personal injury hazards.

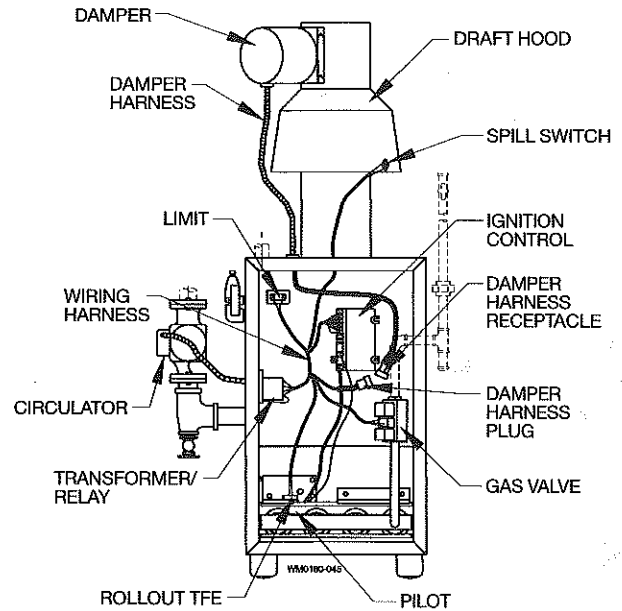
## Section A: Installation

1. Bring supply wiring to boiler. Must be 14 ga. or heavier. See pages listed below each Figure for appropriate wiring diagram.
2. Proceed to page 6.



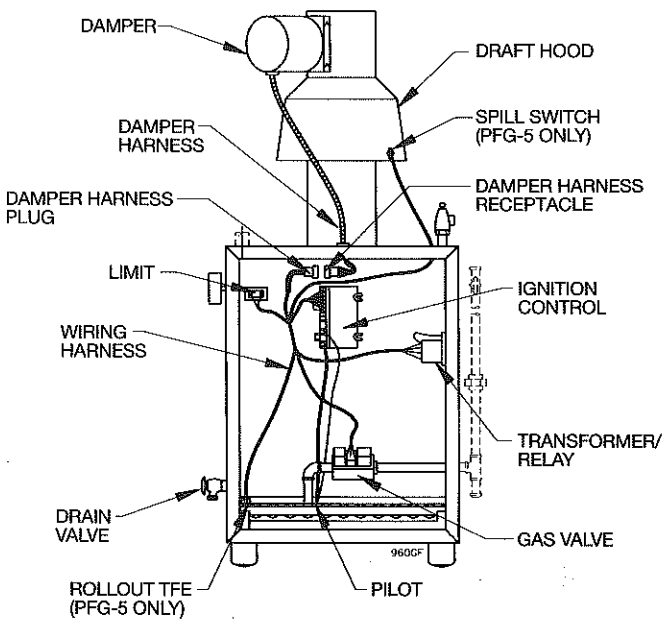
**CG Boilers**

Figure 1,  
see page 4



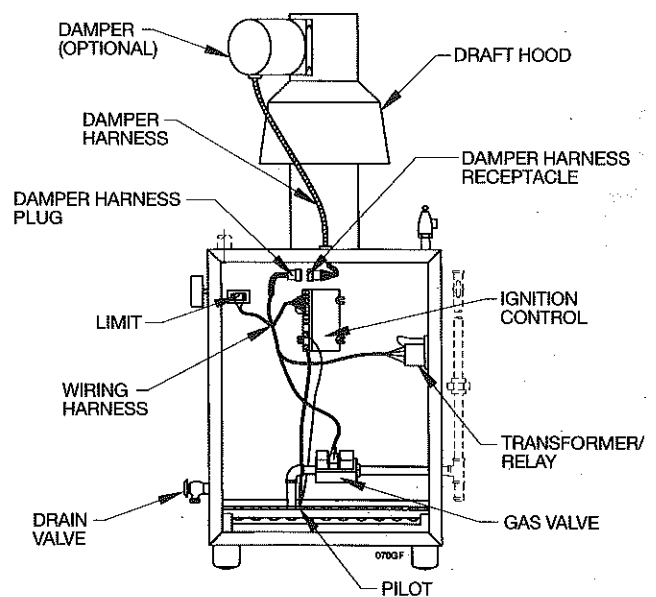
**CGX Boilers**

Figure 2,  
see page 4



**PFG 5 Boiler**

Figure 3,  
see page 4



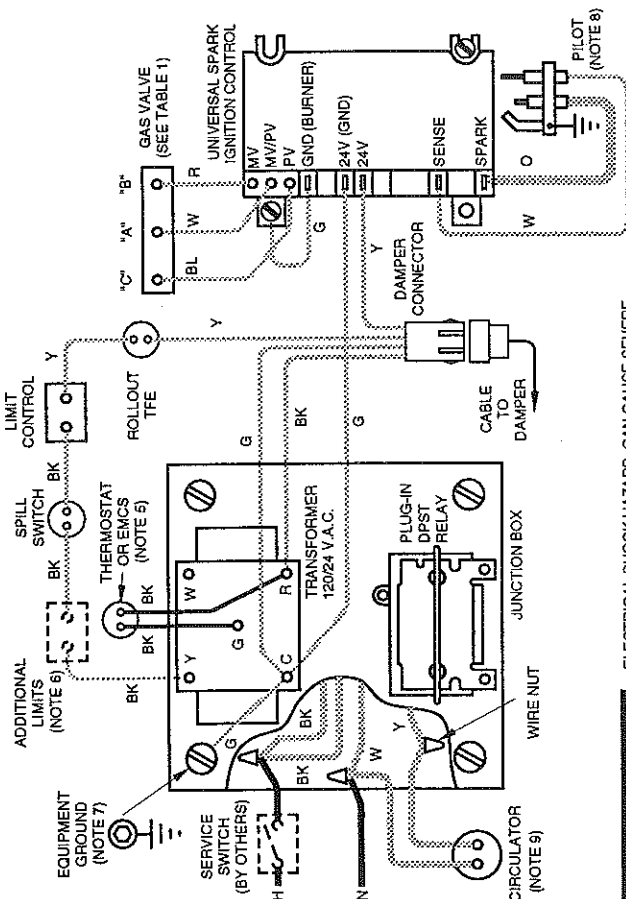
**PFG 6 thru 8 Boilers**

Figure 4,  
see page 5

# CGX, CG and PFG-5



## SCHEMATIC WIRING DIAGRAM



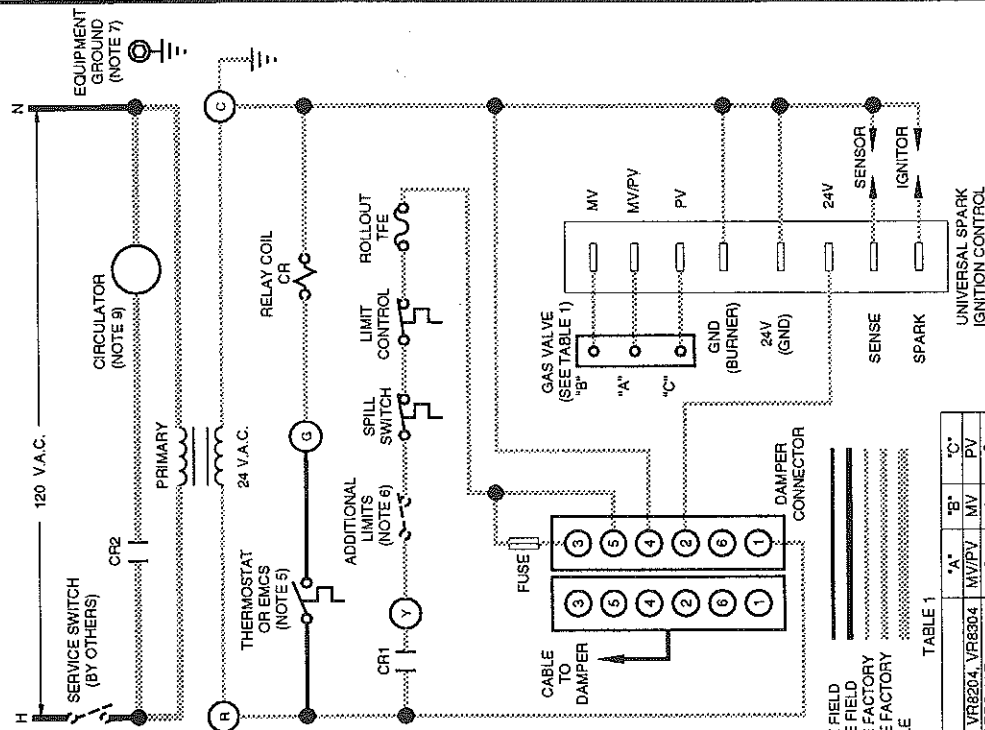
## WARNING

ELECTRICAL SHOCK HAZARD. CAN CAUSE SEVERE INJURY OR DEATH. DISCONNECT POWER BEFORE INSTALLING AND/OR SERVICING.

### NOTES:

1. ALL WIRING MUST BE INSTALLED IN ACCORDANCE WITH:  
A. U.S.A. - NATIONAL ELECTRICAL CODE AND ANY OTHER NATIONAL, STATE OR LOCAL CODE REQUIREMENTS.  
B. CANADA - C.S.A. C22.1 CANADIAN ELECTRICAL CODE PART 1 AND ANY OTHER NATIONAL, PROVINCIAL OR LOCAL CODE REQUIREMENTS.
2. ALL CONTACTS SHOWN WITHOUT POWER APPLIED-OFF SHELF CONDITION.
3. IF ORIGINAL ROLLOUT TFE WIRE AS SUPPLIED WITH THE APPLIANCE MUST BE REPLACED, TYPE 200°C WIRE OR ITS EQUIVALENT MUST BE USED. IF OTHER ORIGINAL WIRE AS SUPPLIED WITH THE APPLIANCE MUST BE REPLACED, TYPE 105°C OR ITS EQUIVALENT MUST BE USED.
4. REFER TO CONTROL COMPONENT INSTRUCTIONS PACKED WITH BOILER FOR APPLICATION INFORMATION.
5. THERMOSTAT - FOR SINGLE ZONE SYSTEMS, THERMOSTAT ANTICIPATOR SETTING IS 0.40 AMPS. FOR MULTIPLE ZONE SYSTEMS USING ZONE VALVES OR CIRCULATORS, REFER TO COMPONENT MANUFACTURER'S INSTRUCTIONS FOR APPLICATION WIRING AND THERMOSTAT ANTICIPATOR SETTING.
- EMCS - FOR EMCS CONNECTION IN PLACE OF THERMOSTAT, REFER TO EMCS INSTALLATION/OPERATING MANUAL.
6. LW/C.O., ADDITIONAL HIGH LIMIT, ETC., WIRED IN SERIES.
7. DENOTES FIELD INSTALLED CHASSIS GROUND.
8. PILOT LEADWIRES ARE NOT FIELD REPLACEABLE. REPLACE PILOT ASSEMBLY IF NECESSARY.
9. CIRCULATOR IS FIELD INSTALLED AND WIRED FOR PFG-5 BOILER.

## LADDER WIRING DIAGRAM



LOW VOLTAGE FIELD  
HIGH VOLTAGE FIELD  
LOW VOLTAGE FACTORY  
HIGH VOLTAGE FACTORY  
IGNITION CABLE

TABLE 1

GAS VALVE	"A"	"B"	"C"
HONEYWELL VR8204, VR8304	MV/PV	MV	PV
WHITE-RODGERS 36E	2	1	3
WHITE-RODGERS 36C	2-4	1	3
ROBERTSHAW 7200	C	M	P

\*FACTORY JUMPED

**CGX** 3 thru 6

**CG** 25 thru 8

**PFG** 5

- Intermittent Pilot
- Natural Gas
- Forced Hot Water



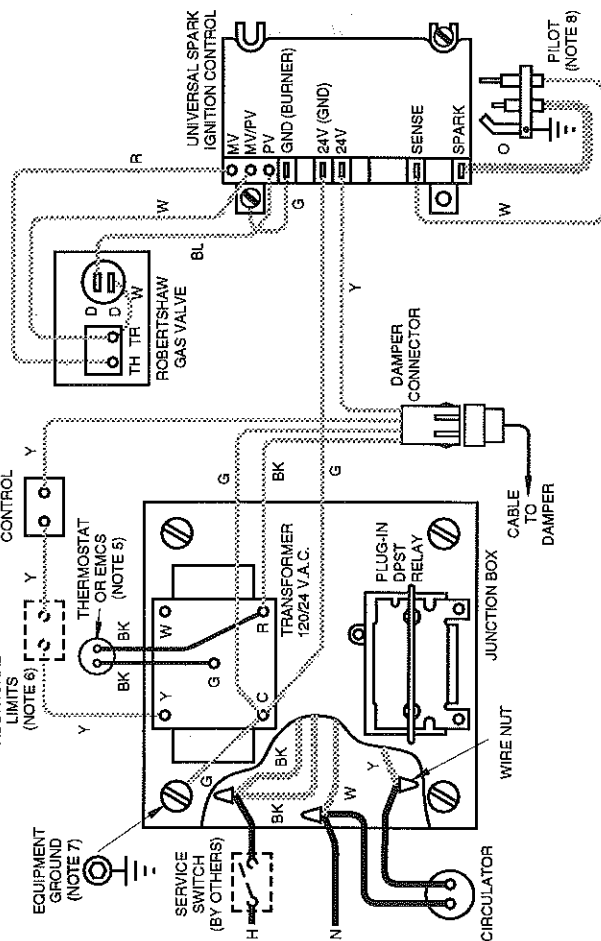
A United Dominion Company

Weil-McLain • 500 Blaine St. • Michigan City, IN 46360-2388

PART NUMBER 550-223-810/0196WM

# PFG 6 thru 8

## SCHEMATIC WIRING DIAGRAM



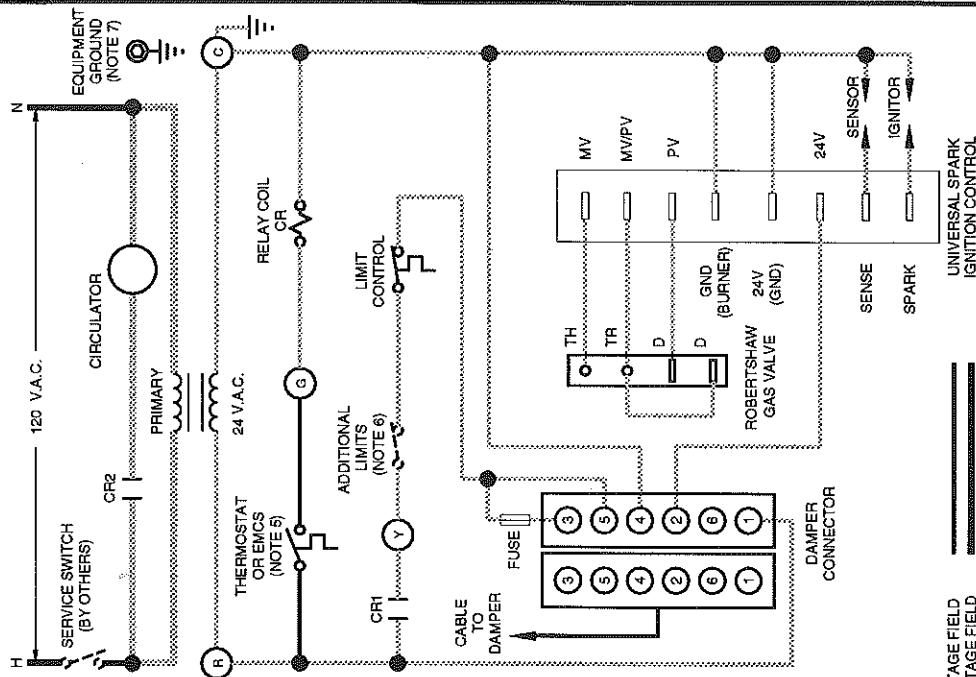
## WARNING

ELECTRICAL SHOCK HAZARD. CAN CAUSE SEVERE INJURY OR DEATH. DISCONNECT POWER BEFORE INSTALLING AND/OR SERVICING.

### NOTES:

- ALL WIRING MUST BE INSTALLED IN ACCORDANCE WITH:  
A. U.S.A. - NATIONAL ELECTRICAL CODE AND ANY OTHER NATIONAL, STATE OR LOCAL CODE REQUIREMENTS.  
B. CANADA - C.S.A. C22.1 CANADIAN ELECTRICAL CODE PART 1 AND ANY OTHER NATIONAL, PROVINCIAL OR LOCAL CODE REQUIREMENTS.
- ALL CONTACTS SHOWN WITHOUT POWER APPLIED-OFF SHELF CONDITION.
- IF ORIGINAL ROLLOUT THE WIRE AS SUPPLIED WITH THE APPLIANCE MUST BE REPLACED, TYPE 200°C WIRE OR ITS EQUIVALENT MUST BE USED. IF OTHER ORIGINAL WIRE AS SUPPLIED WITH THE APPLIANCE MUST BE REPLACED, TYPE 105°C OR ITS EQUIVALENT MUST BE USED.
- REFER TO CONTROL COMPONENT INSTRUCTIONS PACKED WITH BOILER FOR APPLICATION INFORMATION.
- THERMOSTAT - FOR SINGLE ZONE SYSTEMS, THERMOSTAT ANTICIPATOR SETTING IS 0.40 AMPS. FOR MULTIPLE ZONE SYSTEMS USING ZONE VALVES OR CIRCULATORS, REFER TO COMPONENT MANUFACTURER'S INSTRUCTIONS FOR APPLICATION WIRING AND THERMOSTAT ANTICIPATOR SETTING.  
EMCS - FOR EMCS CONNECTION IN PLACE OF THERMOSTAT, REFER TO EMCS INSTALLATION/OPERATING MANUAL.
- L.W.C.O., ADDITIONAL HIGH LIMIT, ETC., WIRED IN SERIES.
- ⊕ DENOTES FIELD INSTALLED CHASSIS GROUND.
- PILOT LEADWIRES ARE NOT FIELD REPLACEABLE, REPLACE PILOT ASSEMBLY IF NECESSARY.

## LADDER WIRING DIAGRAM



LOW VOLTAGE FIELD  
HIGH VOLTAGE FIELD  
LOW VOLTAGE FACTORY  
HIGH VOLTAGE FACTORY  
IGNITION CABLE

UNIVERSAL SPARK  
IGNITION CONTROL

# PFG 6 thru 8

- Intermittent Pilot
- Natural Gas
- Forced Hot Water



## WEL-McLAIN

A United Dominion Company

WEL-McLAIN • 500 Blaine St. • Michigan City, IN 46360-2988

PART NUMBER 550-223-811/0196WM



## Section B: Damper Installation

These boilers **must** have vent dampers:

- CG 25-8, CGX 3-6 and PFG 5 (U.S. only)

These boilers **may** have vent dampers:

- PFG 6-8 (U.S. only)
- CG25-8, CGX 3-6 and PFG 5-7 Canadian boilers

These boilers **must not** have vent damper:

- PFG 8 Canadian boiler

If not installing damper, proceed to page 7.

- NOTICE** Once damper is installed on boiler, boiler will not operate without a damper installed.

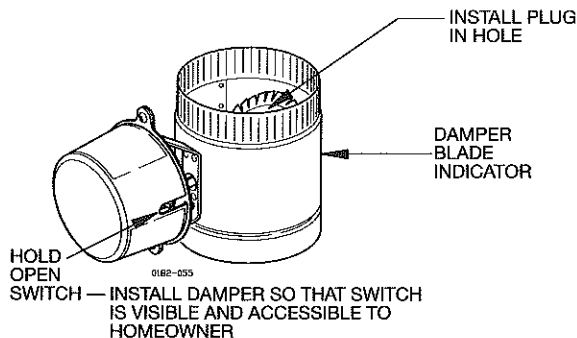
**WARNING** Only dampers listed on page 18 are approved for use on CG Series 12, CGX Series 2 or PFG Series 6 boilers. Any other damper installed can cause severe personal injury or death.

- Effikal and Johnson dampers – install plug (packed in damper carton of 4" thru 8" dampers) in hole in damper blade.
- Minimum clearances:
  - 6" between damper and combustible material.
  - CGX/CG – 35" between jacket top and combustible ceiling.
  - PFG – 48" between jacket top and combustible ceiling.

**DANGER** DO NOT modify draft hood or damper, or make another connection between draft hood and damper or boiler except as noted in #4 for CG/CGX. This will void A.G.A./C.G.A. certification and will not be covered by Weil-McLain warranty. Any changes will cause severe personal injury, death or substantial property damage.

- CGX/CG** – Install damper horizontally or vertically as shown in damper manufacturer's instructions. Damper must be installed so that it serves only one boiler, and so that damper blade indicator is visible to homeowner. See Figure 1 or 2 and Figure 5 or 6.

**PFG** – Damper must be installed directly on top of draft hood so that it serves only one boiler and so that damper blade indicator is visible to homeowner. See Figure 3 or 4 and Figure 5 or 6.



**Effikal Damper**  
**Figure 5**

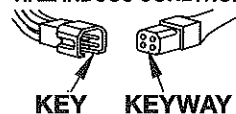
Where screws or rivets are used to secure damper to draft hood, they must not interfere with free movement of damper blade.

- Install damper harness between damper actuator and knock-out in jacket top panel. Use strain relief connectors and locknuts to secure both ends of damper harness. See Figure 1, 2, 3 or 4.

**CAUTION** Keep wiring harness clear of all hot surfaces.

### WARNING

LINE UP KEYWAY WHEN  
CONNECTING PLUGS.  
FORCING A MISMATCH  
CAN CAUSE A  
HAZARDOUS CONDITION.

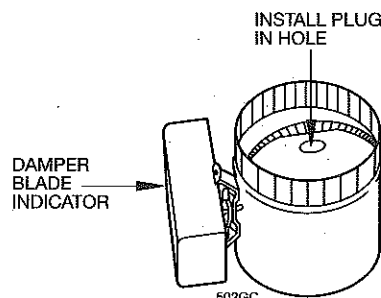


- Remove dummy receptacle from damper plug in boiler wiring harness. Plug damper harness receptacle into damper harness plug. See Figure 1, 2, 3 or 4.

**DANGER** Bypassing (jumping) damper will cause flue products such as carbon monoxide to escape into house. This will cause severe personal injury or death.

**CAUTION** After boiler has operated once, if either end of harness is disconnected, system shutdown will occur. Boiler will not operate until harness is reconnected.

- Effikal damper – damper "Hold Open" switch must be in "Automatic Operation" position for system to operate properly.
- Apply label shown in step 5 to damper, so that it is visible after installation.
- Proceed to page 7.



**Johnson Damper**  
**Figure 6**



## Section C: Check-Out Procedure

1. See Figure 7 for operating instructions page numbers. Raise room thermostat to call for heat. Damper actuator will slowly open damper (if provided).
2. When damper (if provided) 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 will escape into house, causing severe personal injury or death.

Gas Valve	Operating Instructions on page
Honeywell VR8204	8
Honeywell VR8304	8
White-Rodgers 36E	9
White-Rodgers 36C	10
Robertshaw 7200	11
Robertshaw 7000	12

**Figure 7**

3. a. 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.
- b. If pilot lights 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.
5. Thermostat is satisfied; pilot and main gas valves are closed. Damper (if provided) 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 on wiring diagram.



## CG, CGX and PFG-5 WITH HONEYWELL VR8204/VR8304 GAS VALVE

### 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.

#### 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.

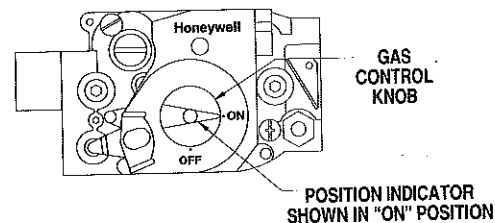
• If you cannot reach your gas supplier, call the fire department.

C. Use only your hand to turn the gas control knob. Never use tools. If the knob will not turn 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.

### 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. See Control Supplement for additional information.
4. Turn off all electric power to the appliance.
5. When equipped with Johnson vent damper Model M35, manually rotate damper blade in direction of arrow to OPEN position indicated on damper assembly. See Control Supplement for additional information.
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."
8. When equipped with vent damper, verify damper blade is in full open position. See Control Supplement for additional information.
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 on this label. If you don't smell gas, go to the next step.
10. Turn gas control knob counterclockwise  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 Appliance" and call your service technician or gas supplier.
15. Replace front panel.



### TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Turn gas control knob clockwise  to "OFF." Do not force.
4. Replace front panel.

550-223-041 (1192)





## CG 25-6 and CGX 3-6 WITH WHITE-RODGERS 36E GAS VALVE

### 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.

#### 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.

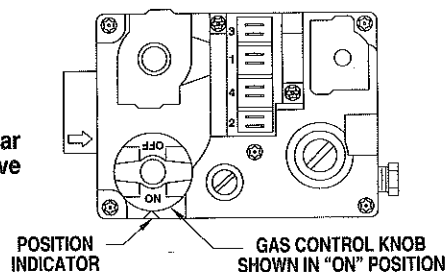
• If you cannot reach your gas supplier, call the fire department.

C. Use only your hand to turn the gas control knob. Never use tools. If the knob will not turn 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.

### 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. See Control Supplement for additional information.
4. Turn off all electric power to the appliance.
5. When equipped with Johnson vent damper Model M35, manually rotate damper blade in direction of arrow to OPEN position indicated on damper assembly. See Control Supplement for additional information.
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."
8. When equipped with vent damper, verify damper blade is in full open position. See Control Supplement for additional information.
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 on this label. If you don't smell gas, go to the next step.
10. Turn gas control knob counterclockwise  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 Appliance" and call your service technician or gas supplier.
15. Replace front panel.



### TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Turn gas control knob clockwise  to "OFF." Do not force.
4. Replace front panel.

550-223-042 (1192)



## CG 7-8 AND PFG-5 WITH WHITE-RODGERS 36C GAS VALVE

### 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.
  - If you cannot reach your gas supplier, call the fire department.
- 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.

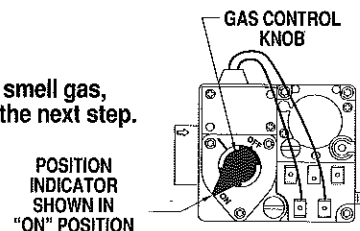
**WHAT TO DO IF YOU SMELL GAS**

  - 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.
- C. Use only your hand to depress or turn the gas control knob. Never use tools. If the knob will not depress or turn 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.


### 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. See Control Supplement for additional information.
4. Turn off all electric power to the appliance.
5. When equipped with Johnson vent damper Model M35, manually rotate damper blade in direction of arrow to OPEN position indicated on damper assembly. See Control Supplement for additional information.
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 gas control knob slightly and turn clockwise  to "OFF."

NOTE: Knob cannot be turned to "OFF" unless knob is depressed slightly. Do not force.
8. When equipped with vent damper, verify damper blade is in full open position. See Control Supplement for additional information.
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 on this label. If you don't smell gas, go to the next step.
10. Turn gas control knob counterclockwise  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 Appliance" and call your service technician or gas supplier.
15. Replace front panel.



### TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Depress gas control knob slightly and turn clockwise  to "OFF." Do not force.
4. Replace front panel.

550-223-043 (1192)



## CG 25-6 and CGX 3-6 WITH ROBERTSHAW 7200 GAS VALVE

### 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.
  - If you cannot reach your gas supplier, call the fire department.
- 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.

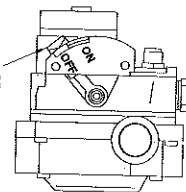
**WHAT TO DO IF YOU SMELL GAS**

  - 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.
- 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.

### 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. See Control Supplement for additional information.
4. Turn off all electric power to the appliance.
5. When equipped with Johnson vent damper Model M35, manually rotate damper blade in direction of arrow to OPEN position indicated on damper assembly. See Control Supplement for additional information.
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 from "ON" to "OFF" unless selector arm is pushed in slightly. Do not force.
8. When equipped with vent damper, verify damper blade is in full open position. See Control Supplement for additional information.
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 on this label. 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 Appliance" and call your service technician or gas supplier.
15. Replace front panel.

SELECTOR  
ARM  
SHOWN IN  
"OFF"  
POSITION



### TO TURN OFF GAS TO APPLIANCE

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

550-223-044 (1192)





## PFG 6-8 WITH ROBERTSHAW 7000 DERHC GAS VALVE

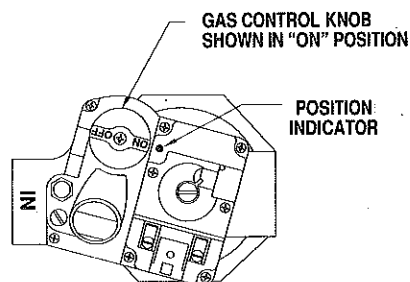
### FOR YOUR SAFETY READ BEFORE OPERATING

**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.  
  
**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.
- C. Use only your hand to turn the gas control knob. Never use tools. If the knob will not turn 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.

### 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. See Control Supplement for additional information.
4. Turn off all electric power to the appliance.
5. When equipped with Johnson vent damper Model M35, manually rotate damper blade in direction of arrow to OPEN position indicated on damper assembly. See Control Supplement for additional information.
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."
8. When equipped with vent damper, verify damper blade is in full open position. See Control Supplement for additional information.
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 on this label. If you don't smell gas, go to the next step.
10. Turn gas control knob counterclockwise  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 Appliance" and call your service technician or gas supplier.
15. Replace front panel.



### TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Turn gas control knob clockwise  to "OFF." Do not force.
4. Replace front panel.

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## Section D: Troubleshooting

### VERIFY PROPER OPERATION AFTER SERVICING

**WARNING** Never jumper (bypass) any device except for momentary testing as outlined in Troubleshooting Charts. Substantial property damage and/or severe personal injury could occur.

**DANGER** CG only – 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.

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

1. Before troubleshooting.
  - a. Have a voltmeter that can check 120VAC, 24VAC, a microammeter with minimum scale range of 0-25, and a continuity tester.
  - b. Check for 120VAC (min. 102 – max. 132) to boiler.
  - c. Check for 24VAC at secondary side of transformer.
  - d. Make sure thermostat is calling for heat and contacts (including appropriate zone controls) are closed. Check for 24VAC between thermostat wire nuts and ground.

#### IN EVENT OF ACTUATOR FAILURE

##### —EFFIKAL 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. See Figure 8.

1. 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.
2. If Step 1 above does not open damper, manually rotate damper blade to open position using wrench or pliers on flat shaft section. Boiler will fire. Verify that damper service switch is in "HOLD DAMPER OPEN" position.
3. Do not leave damper permanently in this position. Replace actuator immediately. If damper is left in open position, boiler will not operate at published efficiencies.

See damper manufacturer's instructions packed with damper for additional information.

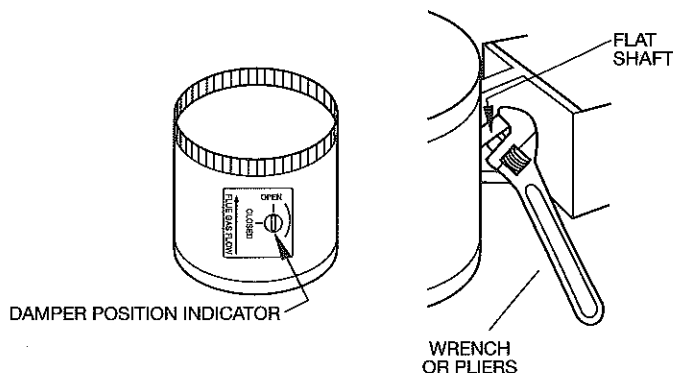


Figure 8

##### —JOHNSON DAMPER

If troubleshooting chart recommends replacing actuator, and actuator is not immediately available, damper blade can be fixed in open position to allow boiler operation. Follow these instructions only in case of no heat or damper actuator malfunction. See Figure 9.

- 1) Turn off power to boiler.

**WARNING** Failure to turn off power to boiler can result in severe personal injury, death or substantial property damage.

- 2) Remove damper actuator cover.
- 3) On PC board, move wire from A to B.
- 4) Turn on power to boiler.
- 5) Using wrench or pliers on flat shaft section, manually rotate damper blade until green light turns on. Boiler will fire.
- 6) Do not leave damper permanently in this position. Replace actuator immediately. If damper is left in open position, boiler will not operate at published efficiencies.

See damper manufacturer's instructions packed with damper for additional information.

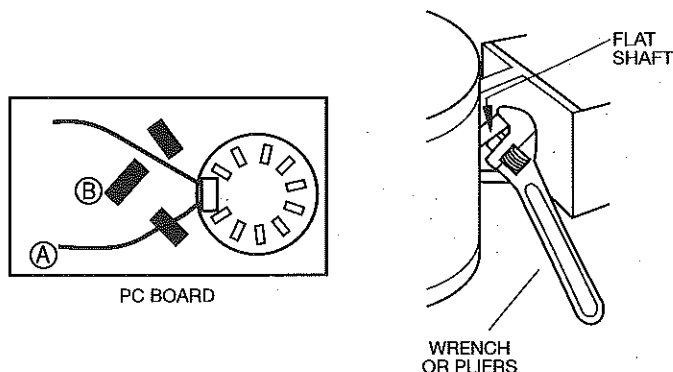
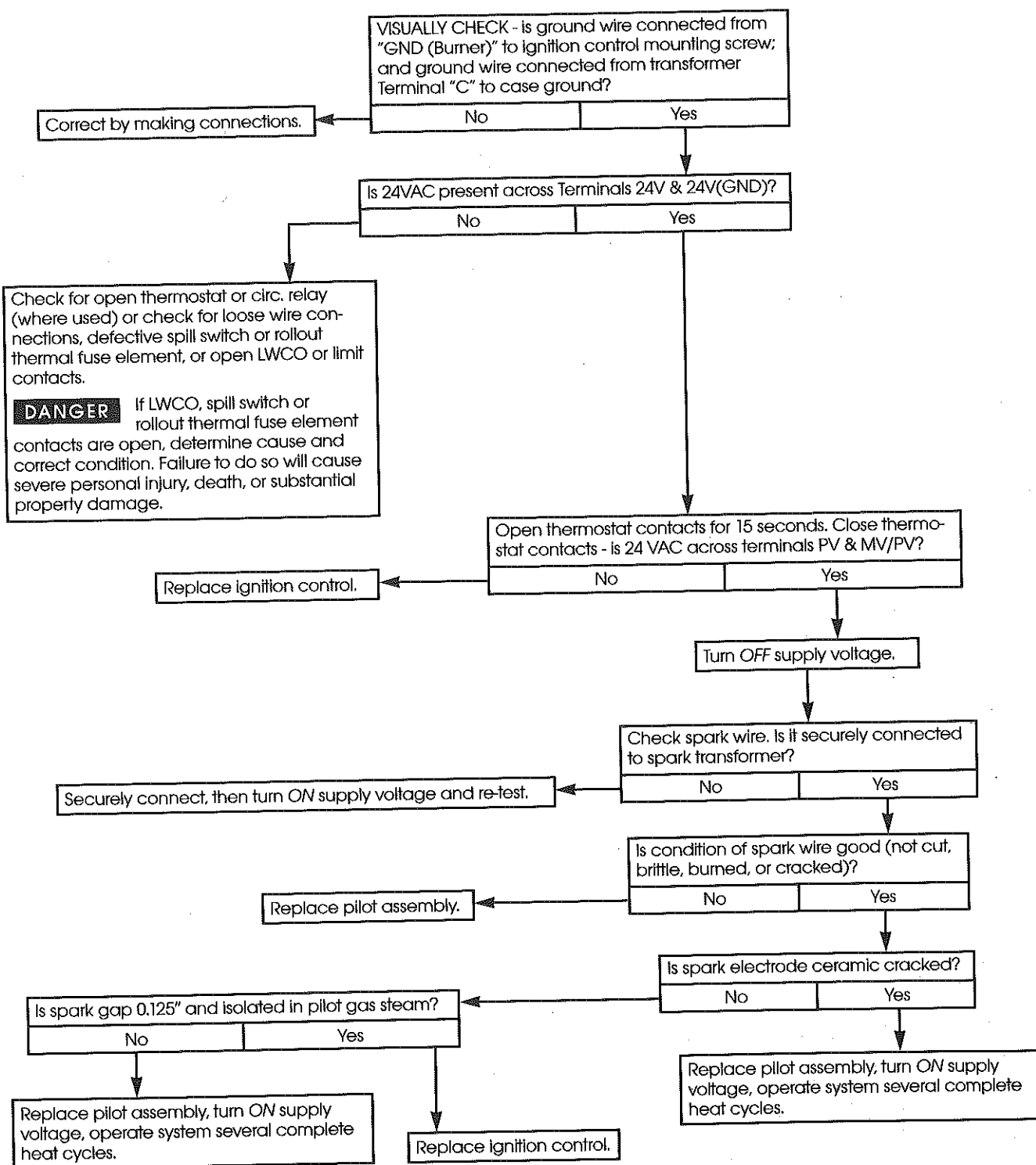


Figure 9



TABLE I: No Spark, System Does Not Work

Without Vent Damper



### TABLE II: No Spark, System Does Not Work

### With Vent Damper

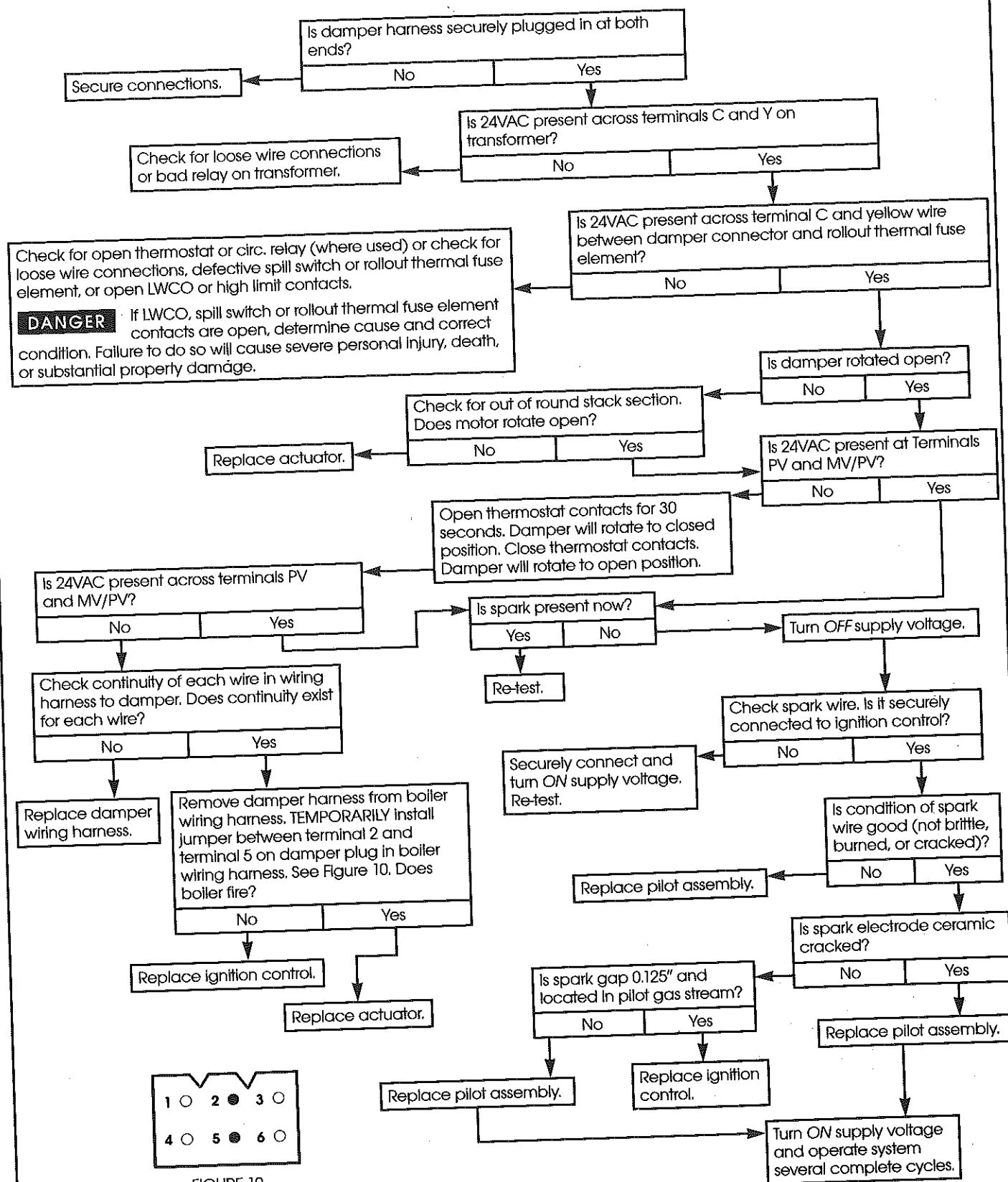
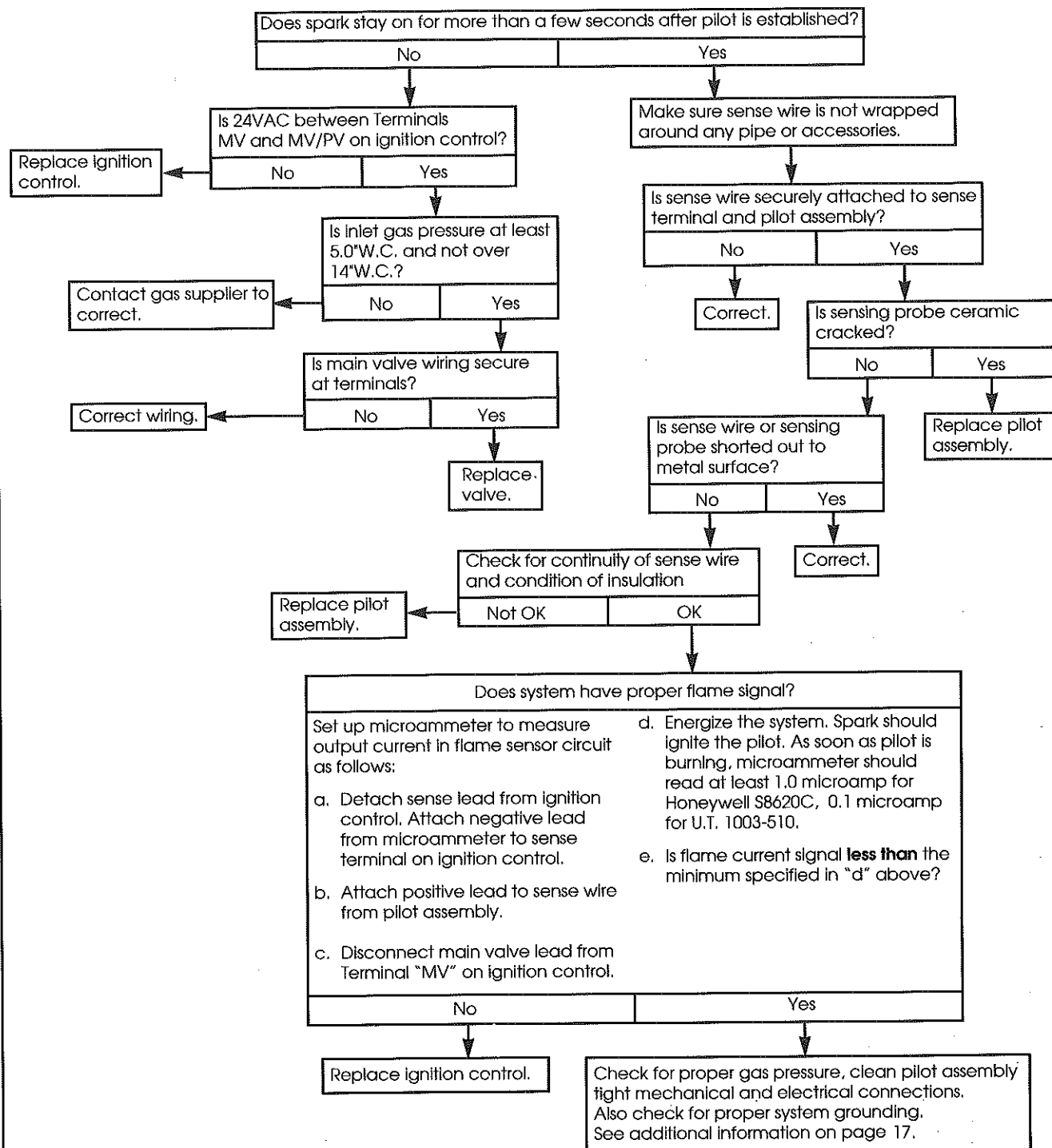


FIGURE 10



TABLE III: Pilot Lights, Main Valve Will Not Come On

With or Without Vent Damper





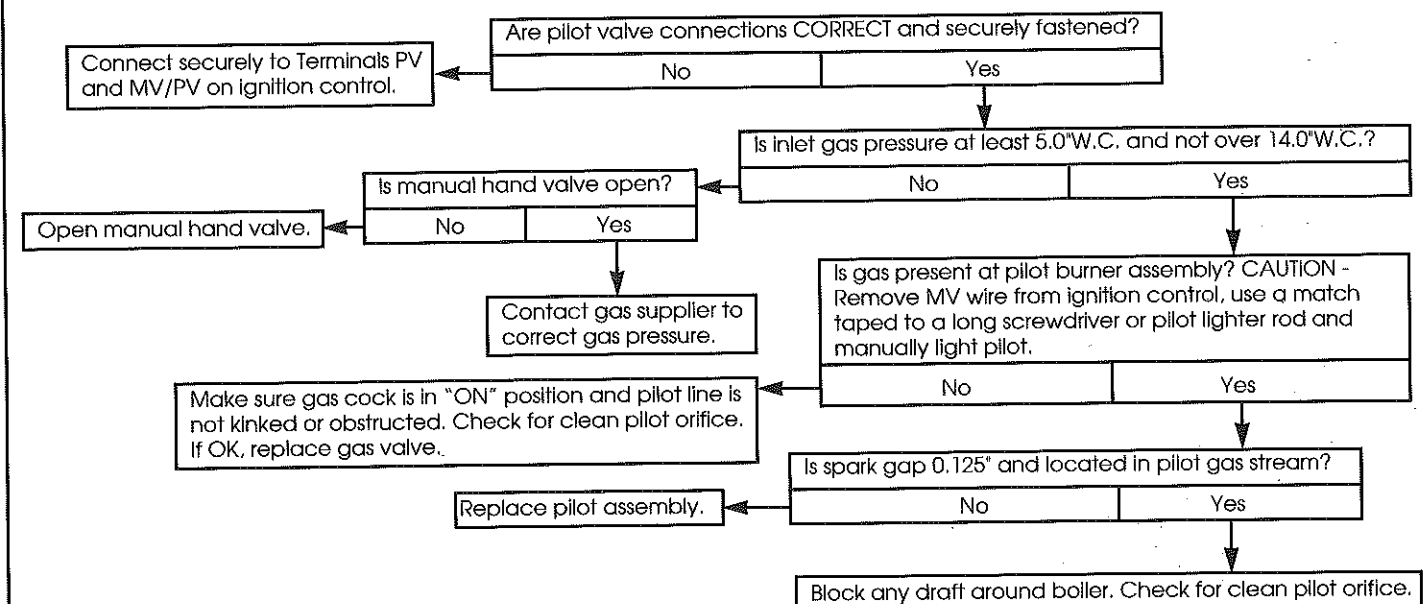
## TO CHECK IGNITION SYSTEM GROUNDING FOR TABLE III, PAGE 16.

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

- CG and PFG – Check for good metal-to-metal contact between pilot burner bracket and main burner, and between main burner and burner rest.
- CGX – Check for good metal-to-metal contact between pilot burner bracket and base front cross tie.
- 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 ga. moisture-resistant, thermoplastic insulated wire with 105°C minimum rating.

**TABLE IV: Spark is Present, Pilot Will Not Light**

### With or Without Vent Damper





## Section E: Parts

Part Description	Vendor Part Number	W-M Sales Reference No.
Damper Assembly		
4" (CG 25 and 3, CGX 3)	Effikal RVGP-KS-4BKF Johnson Q35GB-2 consisting of M35BC actuator and Y15 vent pipe	10C461
5" (CGX/CG-4)	Effikal RVGP-KS-5BKF Johnson Q35GD-2 consisting of M35BC actuator and Y15 vent pipe	10C462
6" (CGX/CG 5 and 6)	Effikal RVGP-KS-6BKF Johnson Q35GF-2 consisting of M35BC actuator and Y15 vent pipe	10C463
7" (CG 7 and 8, PFG-5)	Effikal RVGP-KS-7BKF Johnson Q35GH-2 consisting of M35BC actuator and Y15 vent pipe	10C464
8" (PFG-6)	Effikal RVGP-KS-8BKF Johnson Q35GK-2 consisting of M35BC actuator and Y15 vent pipe	10C478
9" (PFG 7-8)	Effikal RVGP-KS-9BF** Johnson Q35GM-2 consisting of M35BC actuator and Y15 vent pipe**	10C085
Damper Actuator	Effikal RVGP (Effikal Only) Johnson M35BE-1C (Johnson Only)	10C465 10C056
Damper Harness	Weil-McLain	10C321
UCS Ignition Control	Honeywell S8620C1003 United Technologies 1003-511	10C482
Pilot Burner Assembly	Johnson Controls Q90GE-1 consisting of J981LYW pilot and Y75AA-3 flame sensor	10C481
Boiler Wiring Harness, CG & CGX	Weil-McLain	10C632
Boiler Wiring Harness, PFG-5	Weil-McLain	10C647
Boiler Wiring Harness, PFG 6-8	Weil-McLain	10C649
Gas Valve 1/2"×1/2" CG 25-6, CGX 3-6	Honeywell VR8204A2001 White-Rodgers 36E36-266 Robertshaw 7200 IPER	10C488
Gas Valve 3/4"×3/4" CG 7 & 8, PFG 5	Honeywell VR8304P4348 White-Rodgers 36C74-474	10C489
Gas Valve 3/4"×1" PFG 6-7	Robertshaw 7000 DERHC-S7C	10C116
Gas Valve 1"×1" PFG-8	Robertshaw 7000 DERHC-S7C	10C117

\*\*Not for use on Canadian PFG-8 boilers.

### NOTICE

Only dampers listed above are approved for use on CG Series 12, CGX Series 2 and PFG Series 6 boilers. Any other damper installed can cause severe personal injury or death.