



EG & PEG Series 5

EGH Series 5

Gas-Fired Boilers



Control supplement – Universal control systems

For additional information, refer to . . .

EG • PEG • EGH Boiler manual

for Natural or Liquefied Petroleum (Propane) gas
(tankless heater application optional)



This supplement must only be used by a qualified heating installer/service technician. **Before installing**, read all instructions, including this supplement, the boiler manual and any related documents. Perform steps in the order given. Failure to comply could result in severe personal injury, death or substantial property damage.



Please read this page first!

Hazard definitions

The following defined terms are used throughout these instructions to 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 hazards that **will cause severe** personal injury, death or substantial property damage.
- ⚠ WARNING** Indicates presence of hazards that **can cause severe** personal injury, death or substantial property damage.
- ⚠ CAUTION** Indicates presence of hazards that **will or can cause minor** personal injury or property damage.
- NOTICE** Indicates special instructions on installation, operation or maintenance that are important but not related to personal injury or property damage.

Note to the installer

- ⚠ WARNING** Controls must only be installed by a Weil-McLain distributor or other qualified installer/service technician in accordance with this Supplement and all applicable codes and requirements of the authority having jurisdiction. Read this Control Supplement completely before beginning the installation. If the information in this Supplement is not followed exactly, a fire, explosion, carbon monoxide emission or other hazardous conditions can result, causing severe personal injury, death or substantial property damage.
- ⚠ WARNING** This system is used on gas-fired boilers without vent dampers as shipped from the factory. This system is not offered for retrofit. 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.
- 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.



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Start-up



DO NOT proceed with boiler operation unless boiler and system have been filled with water and all instructions and procedures of previous manual sections have been completed. Failure to do so could result in severe personal injury, death or substantial property damage. Before starting the boiler, do the following:

- Read the Manual, Control Supplement and the **Operating instruction** procedure.
- Verify the boiler and system water level is correct (no more than 1/2 gauge glass or less than 1/4" above bottom of gauge glass). (steam boilers)
- Verify the boiler and system are **full of water**. (water boilers)
- Verify the **Start-up preparation** in Boiler manual have been completed.

EG & PEG water boilers

Adjust boiler control settings BOILER OPERATING TEMPERATURE

With power turned on, control module receives a signal from the temperature sensor and displays boiler temperature. The control knob labeled **BOILER TEMP** is used to adjust the operating temperature setpoint, turning clockwise to increase temperature setting and counterclockwise to decrease. When the knob is turned to adjust temperature the display will brighten to indicate adjustment mode. After temperature is set to desired value, display will dim after approximately 5 seconds to indicate measurement mode.

ADJUST BOILER OPERATING TEMPERATURE TO DESIRED SETPOINT

BOILER ECONOMY SETTING

To comply with Department of Energy regulations, the control module circulates available hot water before turning on the boiler to attempt to satisfy a call for heat. While attempting to satisfy the heat demand, the control module also monitors the boiler temperature changes via the temperature sensor and determines whether or not the available hot water will satisfy the demand, adjusting the time delay to turn on the boiler until it determines that additional heat will be needed. The knob labeled **ECONOMY ADJUST** provides an adjustment between maximize (MAX) and minimize (MIN) the delay. The maximum (MAX) adjustment position should be used to maximize energy savings. Turning the knob counterclockwise decreases the delay time and should only be used in the event that the heated space becomes uncomfortable.

ADJUST ECONOMY TO DESIRED POSITION (MAX IS THE PREFERRED SETTING)

IMPORTANT

In accordance with Section 325 (f) (3) of the Energy Policy and Conservation Act, this boiler is equipped with a feature that saves energy by reducing the boiler water temperature as the heating load decreases. This feature is equipped with an override which is provided primarily to permit the use of an external energy management system that serves the same function.

THIS OVERRIDE MUST NOT BE USED UNLESS AT LEAST ONE OF THE FOLLOWING CONDITIONS IS TRUE:

- An external energy management system is installed that reduces the boiler water temperature as the heating load decreases.
- This boiler is part of a modular or multiple boiler system having a total input of 300,000 BTU/hr or greater.
- This boiler is equipped with a tankless coil.



Department of Energy – Compliance

This boiler is equipped with a control system that automatically adjusts a time delay period to turn on the boiler during a call for heat. This is accomplished by circulating available hot water in the system while measuring water boiler water temperature changes. The control calculates a suitable delay based on temperature measurements and turns the boiler on only after it determines that the demand for heat cannot be satisfied with the available hot water,

Due to the wide variety of controls used in boiler installations, this control is also equipped with an adjustment for the calculated time delay period (ECONOMY ADJUST). In the MIN position, the time delay is zero and the IMPORTANT notice below must be observed:

IMPORTANT

In accordance with Section 325 (f) (3) of the Energy Policy and Conservation Act, this boiler is equipped with a feature that saves energy by reducing the boiler water temperature as the heating load decreases. This feature is equipped with an override which is provided primarily to permit the use of an external energy management system that serves the same function.

THIS OVERRIDE MUST NOT BE USED UNLESS AT LEAST ONE OF THE FOLLOWING CONDITIONS IS TRUE:

- An external energy management system is installed that reduces the boiler water temperature as the heating load decreases.
- This boiler is part of a modular or multiple boiler system having a total input of 300,000 BTU/hr or greater.
- This boiler is equipped with a tankless coil.

Operation – Sequence

NOTICE

Follow all procedures given in this manual and operating instructions when operating the boiler. Failure to do so could result in severe personal injury, death or substantial property damage.

1. **Standby:** With no call for heat, the vent damper and circulator are de-energized. No gas flows to pilot or main gas valve.
2. **Call for heat** (thermostat circuit closes):

For water boilers, while attempting to satisfy the heat demand, the control module monitors the boiler temperature changes via the temperature sensors and determines whether or not the available hot water will satisfy the demand, only running the circulator. If additional heat is needed, the sequence continues. When DHW (if used) calls for heat, sequence above is bypassed.

- a. Vent damper and circulator energized if pilot status acceptable. Vent damper drives open. When vent damper end switch makes circuit, ignition control begins pilot ignition attempt.
- b. Ignition control checks for false flame signal: If ignition control senses pilot signal when no pilot gas should be present, control will lockout, requiring reset procedure as given in **Figure 1**

3. **Pilot ignition:** Control module sparks the pilot and opens pilot valve in main gas valve.
 - a. If pilot does light and control module senses flame current, spark generator is turned off and main valve opens.
 - b. **Natural Gas** - If pilot does not light within 15 seconds, pilot valve is closed and spark generator is turned off. Control module waits 5 minutes, then attempts to ignite pilot again. This cycle will continue indefinitely if pilot ignition control does not sense pilot flame.



Operation – Sequence

4. **Main burner operation:**
 - a. Control module monitors pilot flame current. If signal is lost, main valve closes, spark generator activates and sequence returns to step 4.
 - b. If power is interrupted, control system shuts off pilot and main gas valves and restarts at step 1 when power is restored.
 - c. In the event the limit control shuts down the boiler — The control module closes the main gas valve, but keeps the circulator operating and the vent damper open.
5. **Thermostat satisfied** (thermostat circuit opens) — Pilot and main gas valves are closed — Vent damper is de-energized, and cycles to closed position. Circulator is shut off.
6. Boiler is now in the standby mode.
7. Thermostat anticipator setting: Set thermostat heat anticipator as instructed on page 21.

Figure 1 Ignition control module sequence of operation — status light indications — EG Water Only

STEPS	Call for Heat?	POWER	TSTAT CIRC	LIMIT	DAMPER	FLAME	Timing
<i>(After Step 8, the cycle goes back to Step 1)</i>							
1. Standby • Waiting for call for heat	NO						—
2. Call for heat • Circulator on	YES						—
3. Limit circuit • Limit controls closed	YES						—
4. Damper circuit • Damper proven open	YES						—
5. Flame proven * • Gas valve open • Ignitor remains on • Boiler producing heat	YES						15 sec
6. Limit cycle • Limit circuit open • Gas valve closed	YES						30 sec
7. Flame outage * • Flame out • Boiler recycles	YES						—
8. Thermostat satisfied • Circulator off	NO						15 sec
9. Circulator exercise routine • Circulator turns on for 30 seconds if boiler not operated for 30 days	NO						30 sec
		= ON = OFF					
* See Page 5, Items 3b for controls response to failure to prove pilot flame. Control will lockout under the following conditions: <ul style="list-style-type: none"> • Line voltage polarity is reversed • Stray voltage is sensed on thermostat line • Damper end switch not proven within 5 minutes from thermostat call for heat • Flame is sensed when it shouldn't be there 				Control will reset after these lockouts: <ul style="list-style-type: none"> • 1 hour waiting period • Opening and closing of thermostat circuit for 2 to 20 seconds • Removal of 120 VAC power for 2 to 20 seconds 			



Control installation

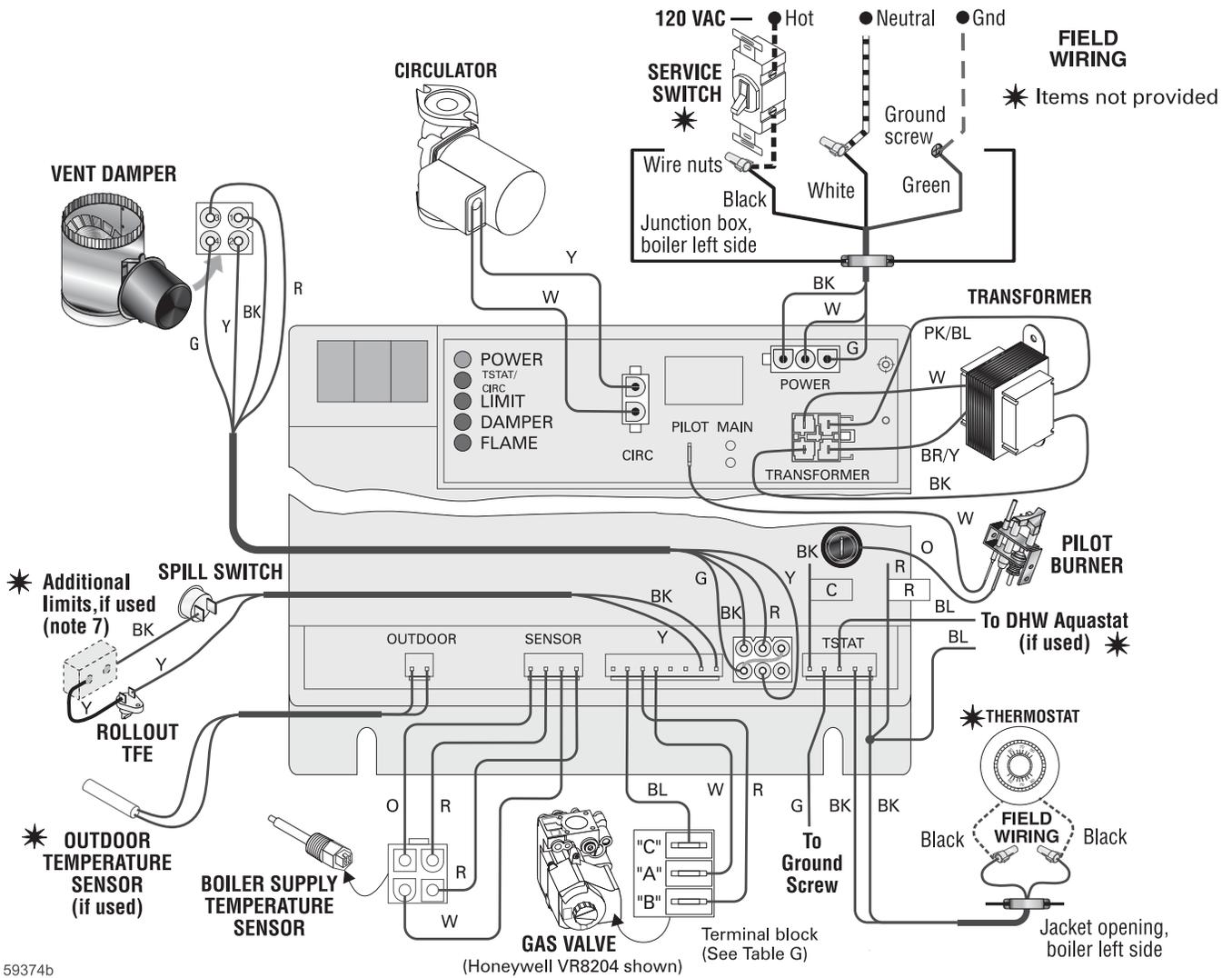
EG-30 through EG-75 water boilers without tankless heaters Schematic wiring diagram



DO NOT connect directly from 3-wire zone valves to the T-T terminals on the boiler. When using 3-wire zone valves, install an isolation relay. Connect the zone valve end switch wires to the isolation relay coil. Connect the isolation relay contact across the boiler T-T terminals. Failure to comply can result in damage to boiler components or cause unreliable operation, resulting in possible severe property damage.



- The control module is polarity-sensitive to the incoming 120 VAC power. If polarity is reversed, control will flash the **POWER** light when powered and will not cycle boiler.
- All contacts shown without power applied.
- Connector and status light locations/orientations may vary.



59374b



Control installation

EG-30 through EG-75 water boilers without tankless heaters

Ladder wiring diagram

⚠ WARNING **Electrical shock hazard** — can cause severe injury or death. Disconnect power before installing or servicing.

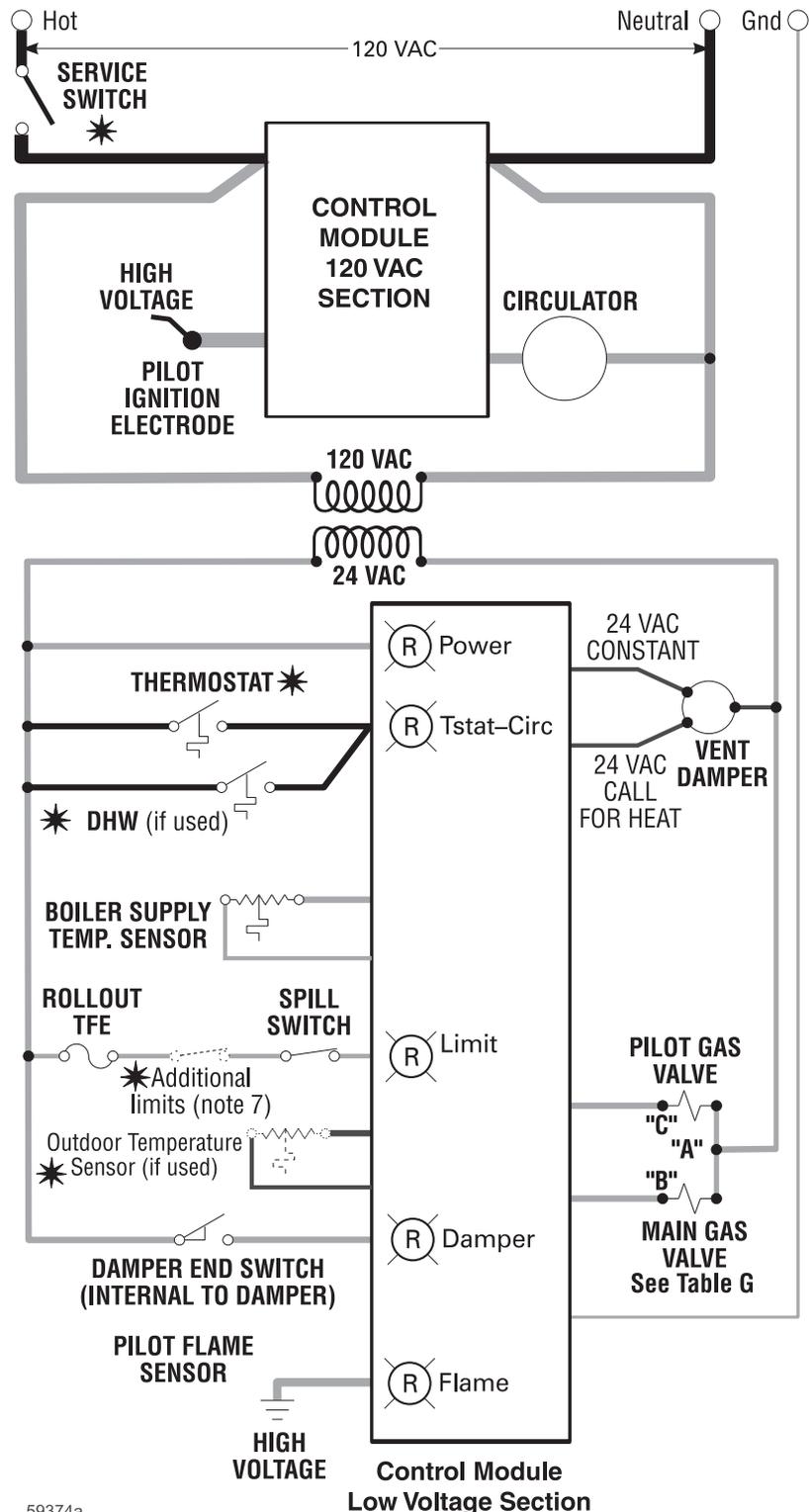
	120 VAC field wiring
	Low voltage field wiring
	120 VAC factory wiring
	Low voltage factory wiring
	High voltage spark ignition wiring
	Ground connectors

Table G: Gas valve terminals and anticipator settings

Gas valve	"A"	"B"	"C"	Anticipator amps
Honeywell VR8204	MV/PV	MV	PV	0.6
Honeywell VR8304	MV/PV	MV	PV	0.8
White-Rodgers 36E	2	1	3	0.64
White-Rodgers 36C	2-4 *	1	3	0.7

* Terminals 2-4 are factory-jumpered on the White-Rodgers 36C gas valve.

- All wiring must be installed in accordance with:
 - U.S.A. — N.E.C. And any other national, state, or local code requirements.
 - Canada — C.S.A. C22.1 C.E.C. Part 1 and any other national, provincial, or local code requirements.
- Pilot lead wires are not field replaceable. Replace pilot assembly if necessary.
- If any of the original wire as supplied with the appliance must be replaced, use minimum 105 °C wire or equivalent. Exception — wires to a rollout TFE must be 200 °C or equivalent.
- Thermostat anticipator setting (single zone) — see Table G for anticipator setting, depending on which gas valve is installed in boiler.
- For multiple zoning, use either zone valves or circulators. Refer to the component manufacturer's instructions and this manual for application and wiring suggestions.
- Refer to control component instructions packed with the boiler for application information.
- Wire any additional limit controls (low water cut-off, additional high limit, etc.) in series with boiler rollout TFE and spill switch as shown.



59374a



Control installation

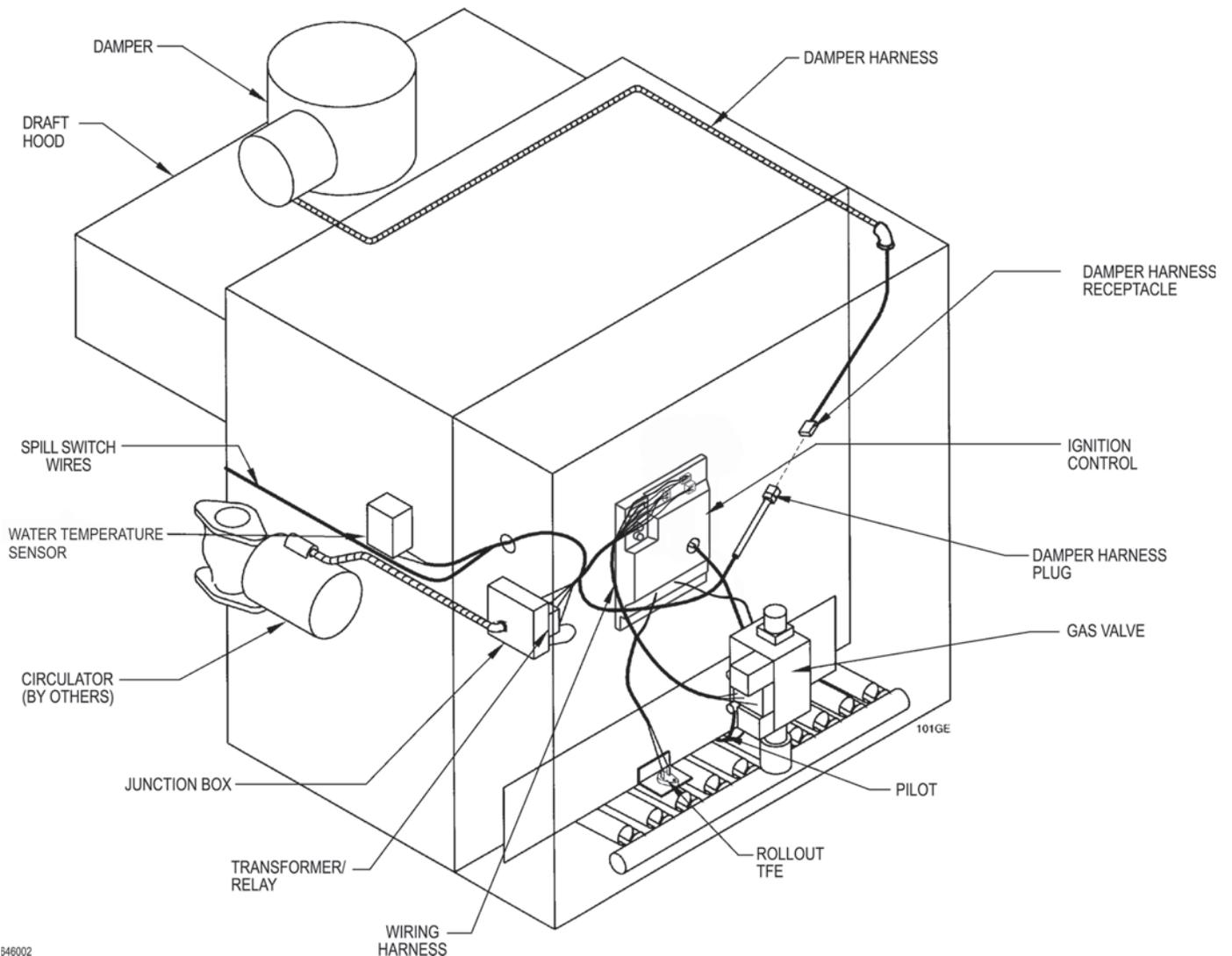
EG-30 through EG-75 water boilers without tankless heaters



For your safety, turn off electrical power supply and turn off external gas supply valve before attempting to work on the boiler. Failure to comply can cause severe personal injury, death or substantial property damage.

1. Mount and wire controls per wiring diagram, page 9, and Figure 2.
 - a. Attach junction box inside left jacket panel with #8-32 x 1/2" machine screws provided.
 - b. Install transformer with plug-in relay receptacle and relay.
 - c. Operating and limit circuit wiring must be 18 gauge or heavier.
2. Bring supply wiring to boiler. Must be 14 gauge or heavier.
3. Proceed to page 20.

Figure 2 EG-30 through EG-75 water boilers without tankless heaters



546002

Schematic Wiring Diagram

*** ADDITIONAL LIMITS (if used) (note 6)**

*** THERMOSTAT OR BCP (note 5)**

*** ELECTRICAL SHOCK HAZARD — can cause severe injury or death. Disconnect power before installing or servicing.**

Ladder Wiring Diagram

Notes

- All wiring must be installed in accordance with:
 - U.S.A. — N.E.C. And any other national, state, or local code requirements.
 - Canada — C.S.A. C22.1 C.E.C. Part 1 and any other national, provincial, or local code requirements.
- All contacts shown without power applied (off-shelf condition).
- 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.
- Refer to control component instructions packed with boiler for application information.
- Thermostat — For single-zone systems, set anticipator to 0.20 amps. For multiple-zone systems using zone valves or circulators, refer to component manufacturer's instructions for wiring and thermostat anticipator setting.
- BCP — For BCP connection in place of thermostat, refer to BCP installation/operation 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.

Legend

- 120 VAC FIELD WIRING
- LOW VOLTAGE FIELD WIRING
- 120 VAC FACTORY WIRING
- LOW VOLTAGE FACTORY WIRING
- IGNITION CABLE
- * Items not provided

EG 30 — 75

- Intermittent pilot
- Natural gas
- Forced hot water
- With tankless heater

Part Number 550-223-815/0406

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Control installation continued

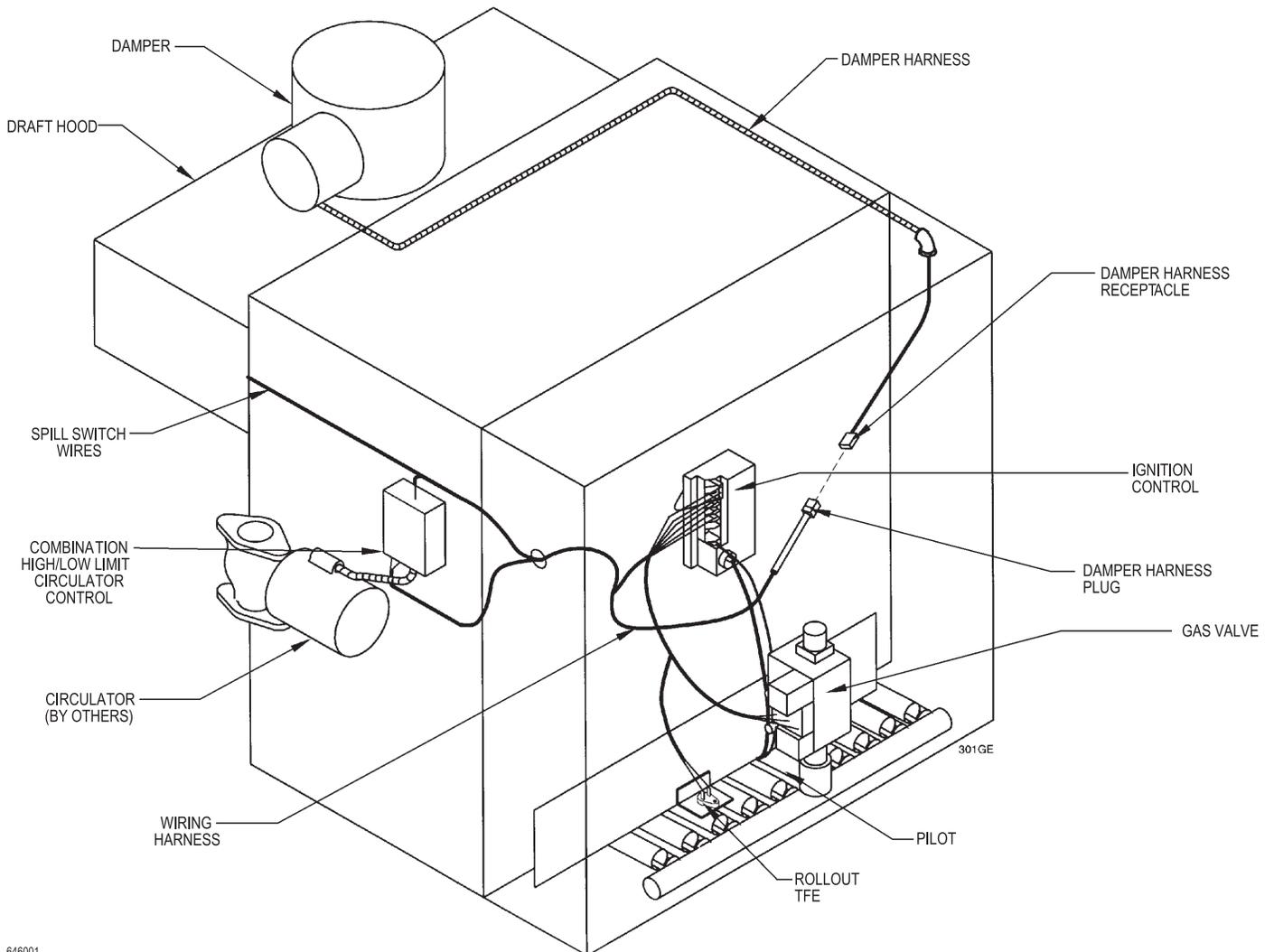
EG-30 through EG-75 water boilers with tankless heaters



For your safety, turn off electrical power supply and turn off external gas supply valve before attempting to work on the boiler. Failure to comply can cause severe personal injury, death or substantial property damage.

1. Mount and wire controls per wiring diagram, page 11, and Figure 3.
 - a. Install combination limit control and relay in tapping. See Boiler Manual control tapping table. Operating and limit circuit wiring must be 14 gauge or heavier.
2. Bring supply wiring to boiler. Must be 14 gauge or heavier.
3. Proceed to page 20.

Figure 3 EG-30 through EG-75 water boilers with tankless heaters



646001



Control installation continued

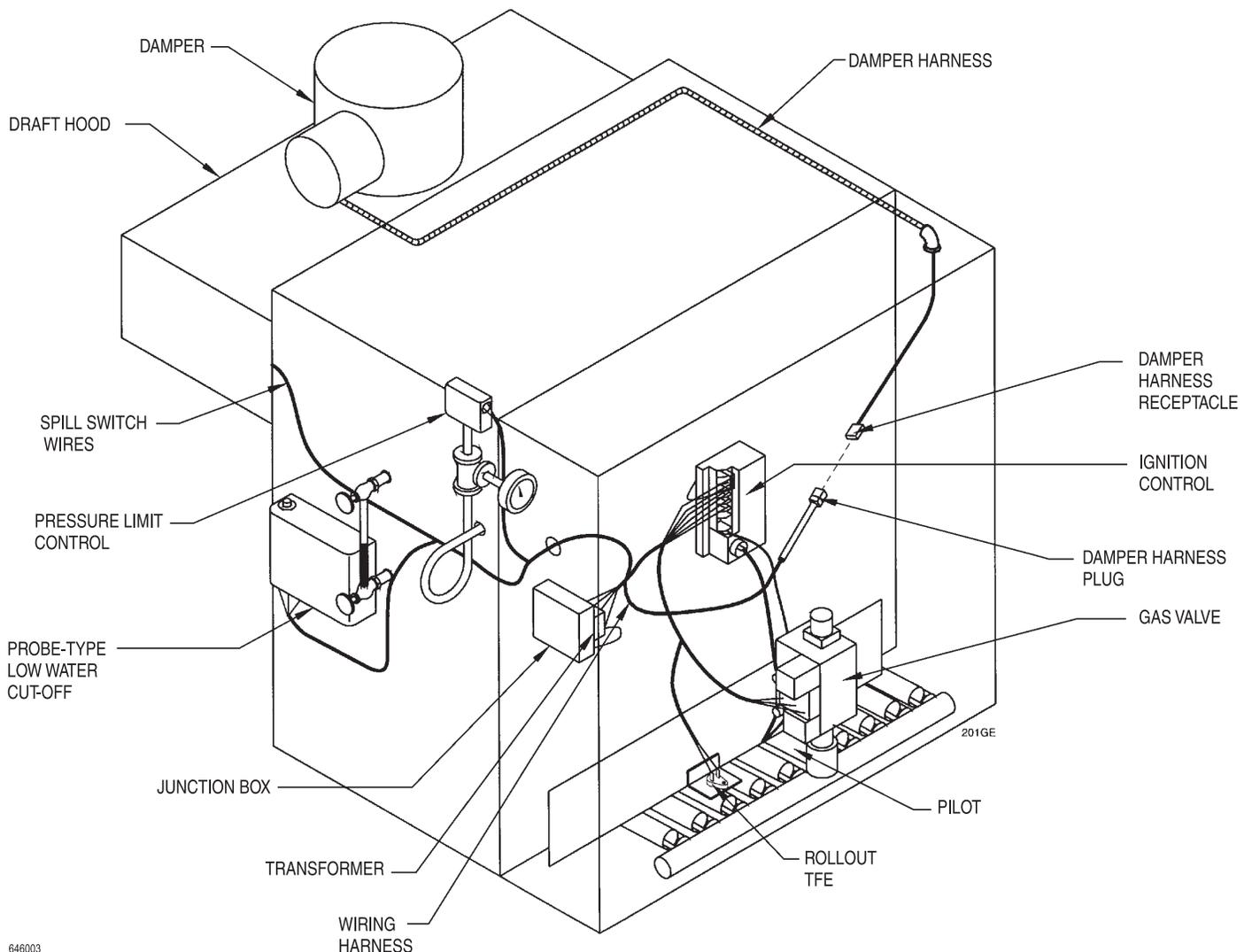
EG and PEG steam boilers with probe-type low water cut-off



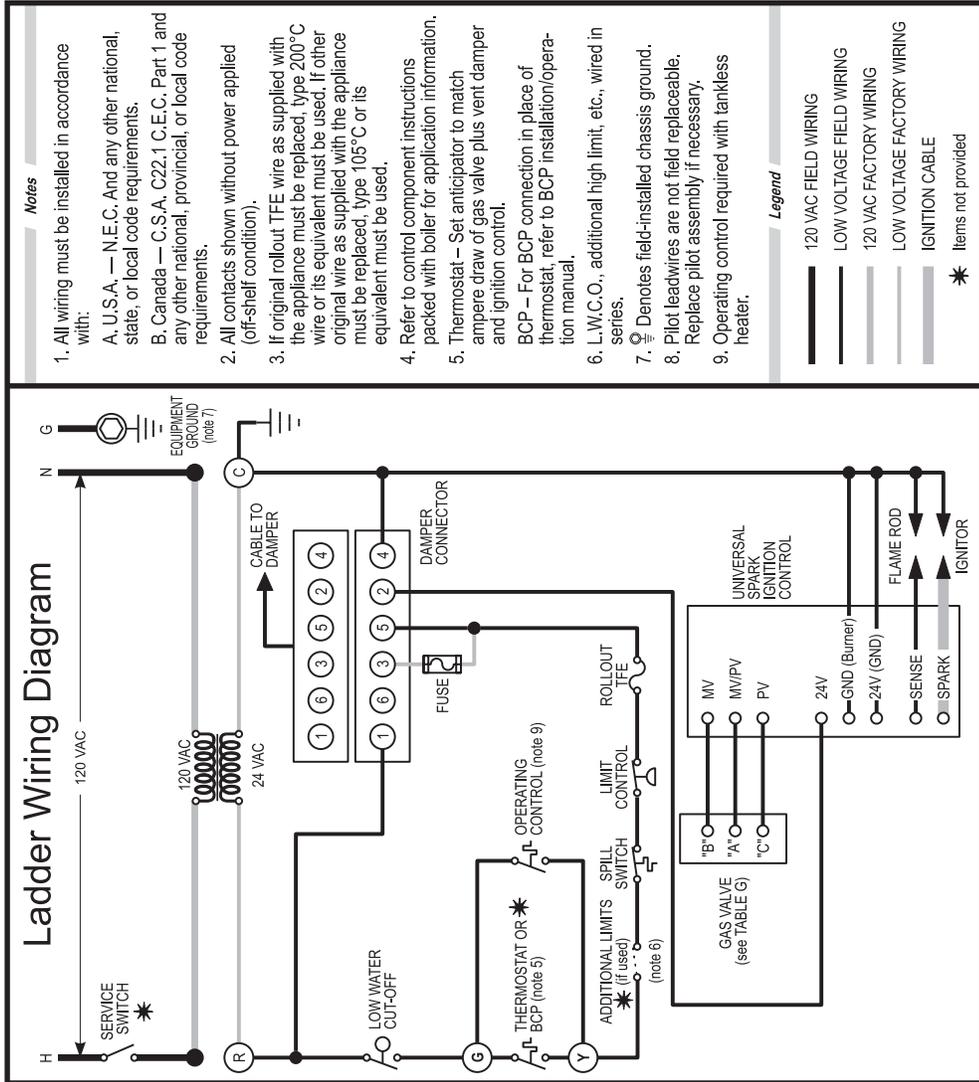
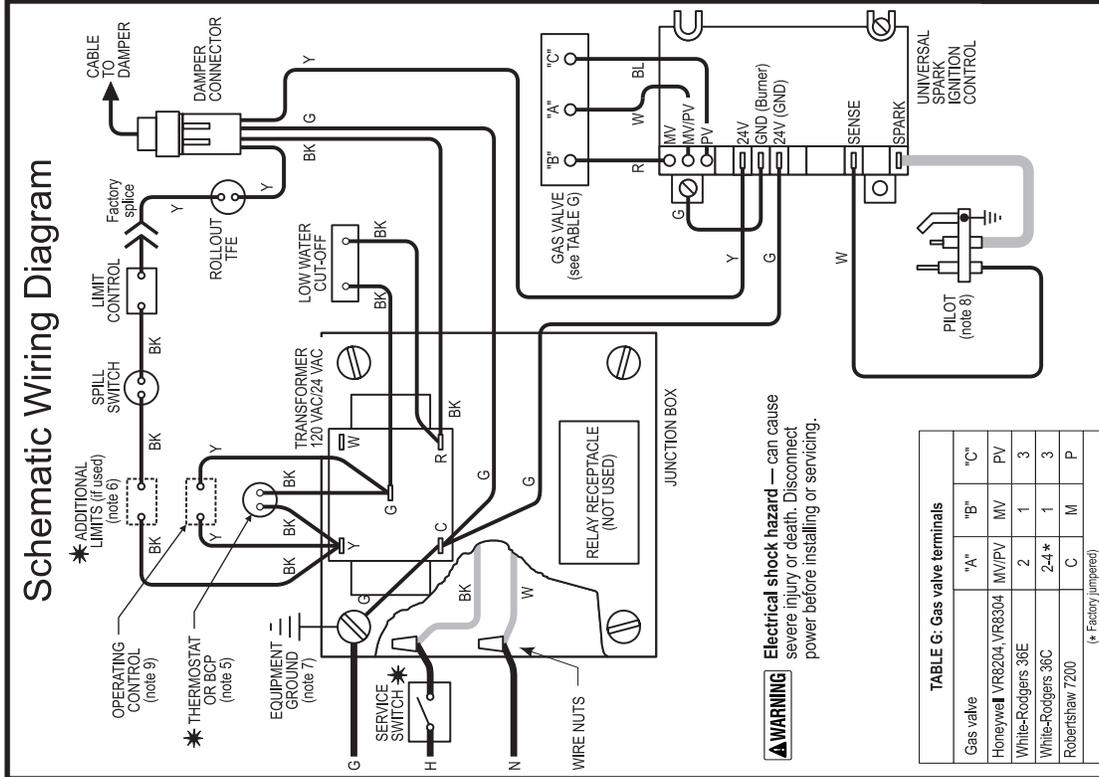
For your safety, turn off electrical power supply and turn off external gas supply valve before attempting to work on the boiler. Failure to comply can cause severe personal injury, death or substantial property damage.

1. Mount and wire controls per wiring diagram, page 13, and Figure 4.
 - a. Attach junction box inside left jacket panel with #8-32 x 1/2" machine screws provided.
 - b. Install transformer with plug-in relay receptacle and relay.
 - c. Operating and limit circuit wiring must be 18 gauge or heavier.
2. Bring supply wiring to boiler. Must be 14 gauge or heavier.
3. Proceed to page 20.

Figure 4 EG and PEG steam boilers with probe-type low water cut-off



646003



EG 30 — 75

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Part Number **550-223-813/0406**



Control installation continued

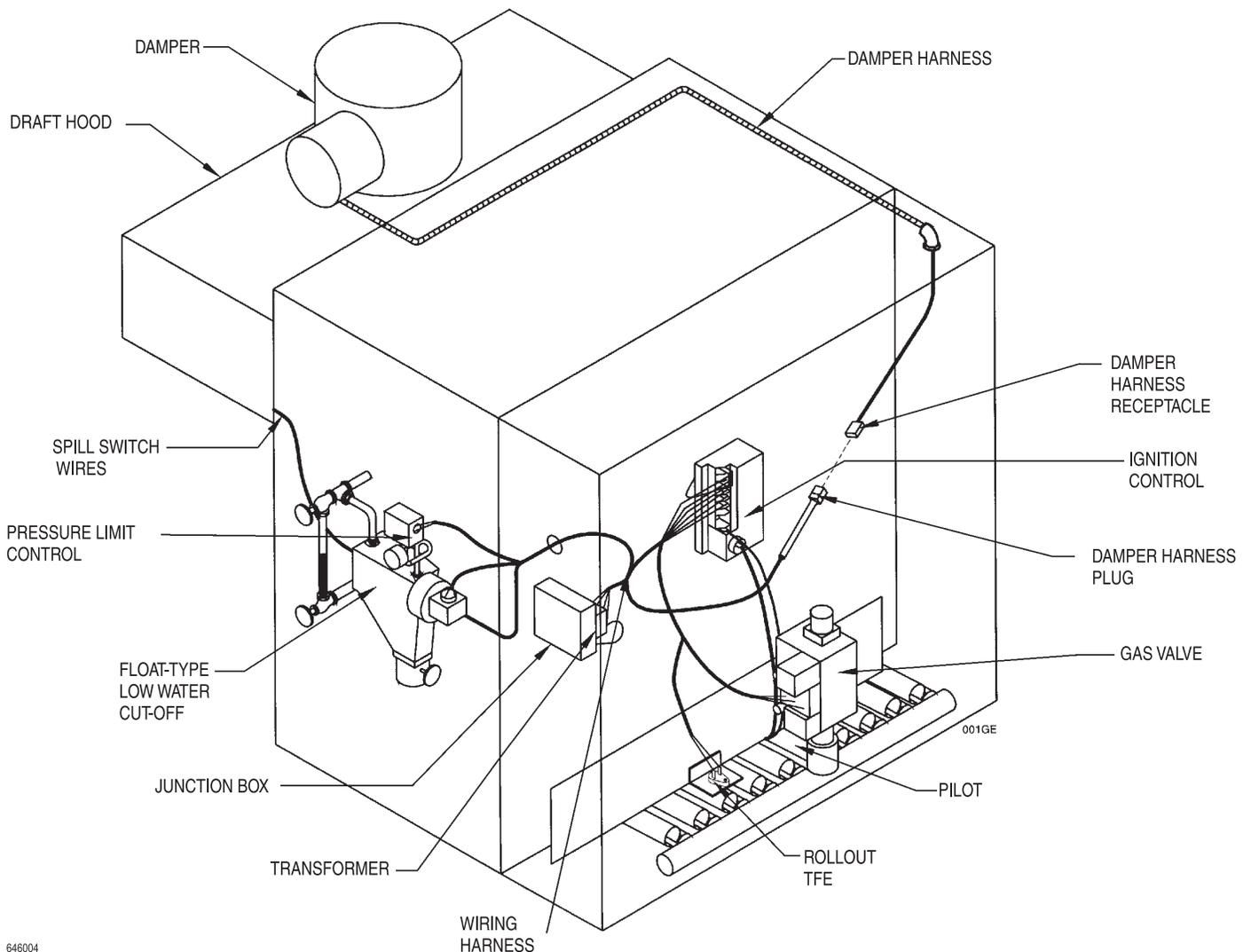
EG steam boilers with float-type low water cut-off



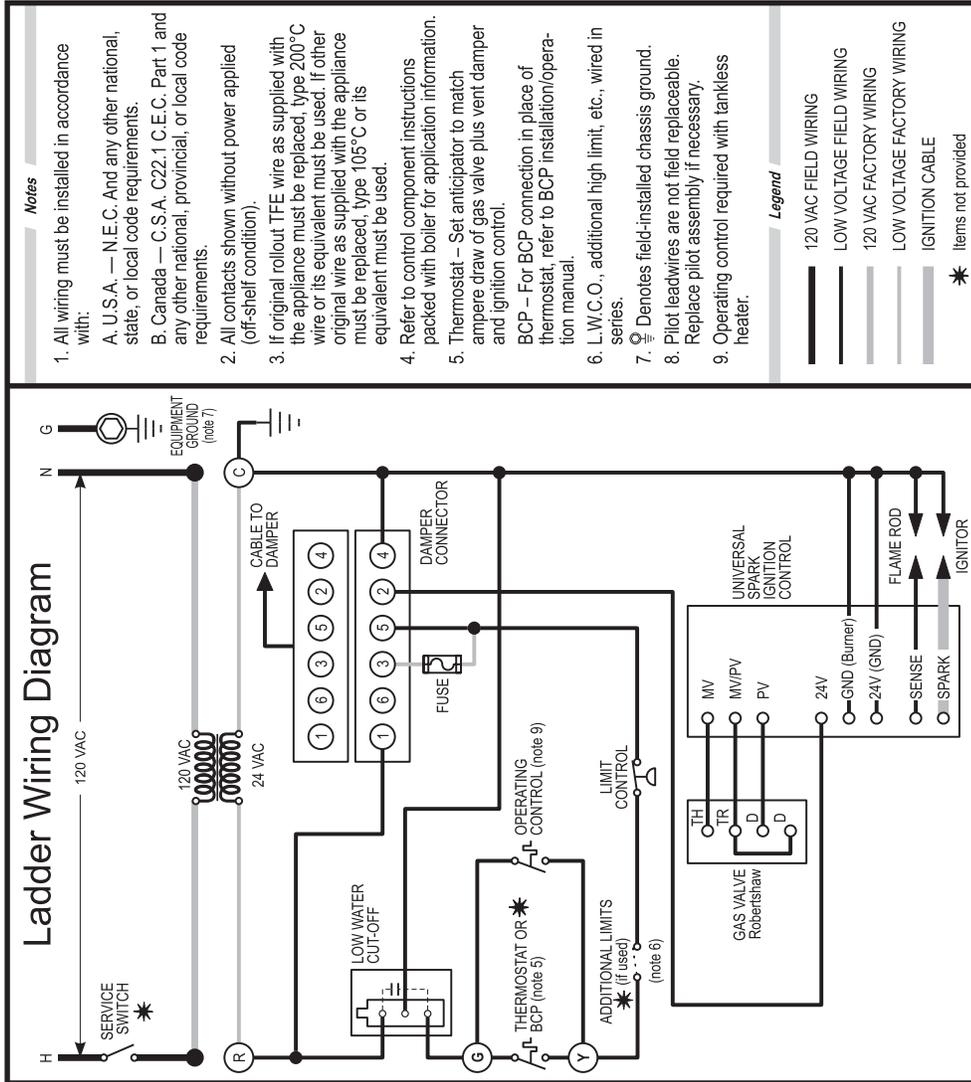
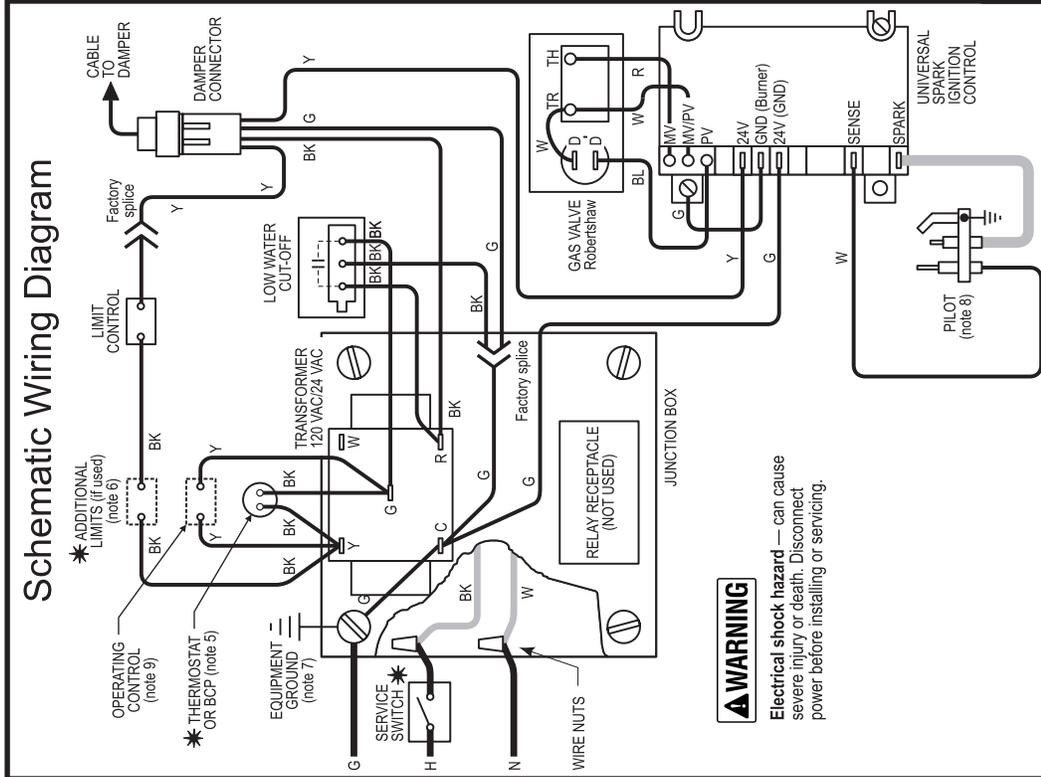
For your safety, turn off electrical power supply and turn off external gas supply valve before attempting to work on the boiler. Failure to comply can cause severe personal injury, death or substantial property damage.

1. Mount and wire controls per wiring diagram, page 15 and Figure 5.
 - a. Attach junction box inside left jacket panel with #8-32 x 1/2" machine screws provided.
 - b. Install transformer with plug-in relay receptacle and relay.
 - c. Operating and limit circuit wiring must be 18 gauge or heavier.
2. Bring supply wiring to boiler. Must be 14 gauge or heavier.
3. Proceed to page 20.

Figure 5 EG steam boilers with float-type low water cut-off



646004



EGH 85 — 125

- Intermittent pilot
- Natural gas
- Steam with or without tankless
- Probe-type low water cut-off

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 Part Number 550-223-818/1210



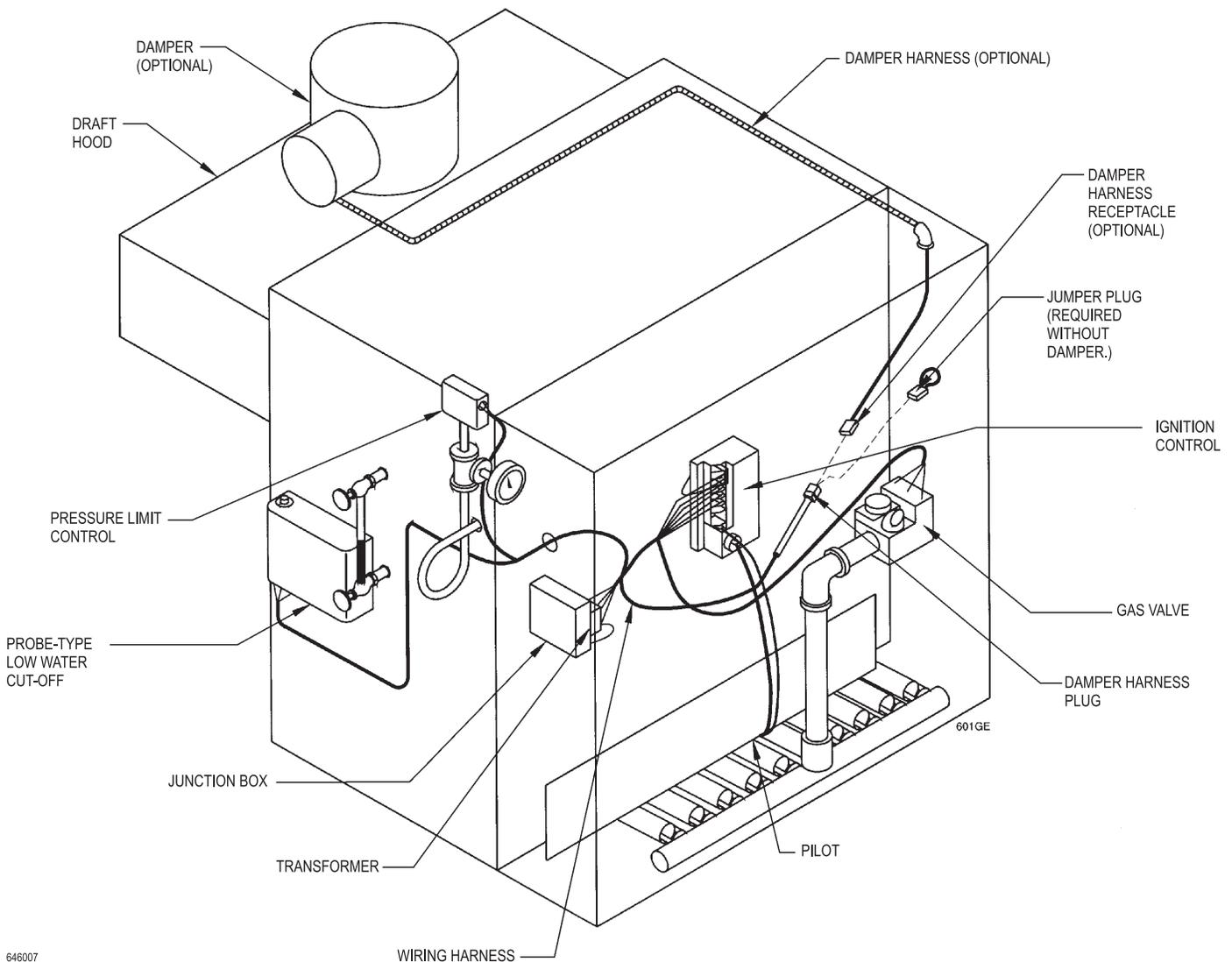
Control installation continued

EGH steam boilers with probe-type low water cut-off

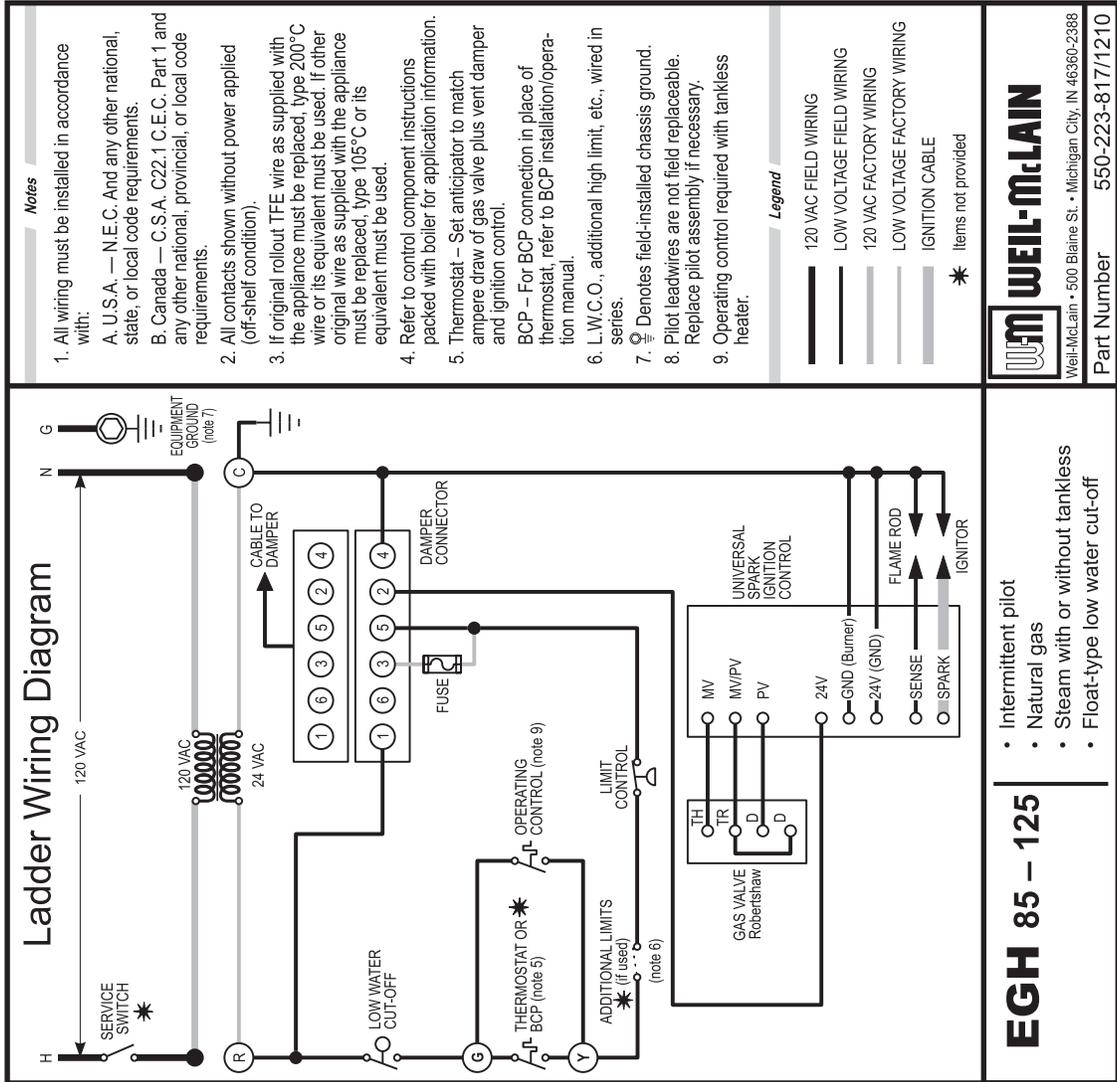
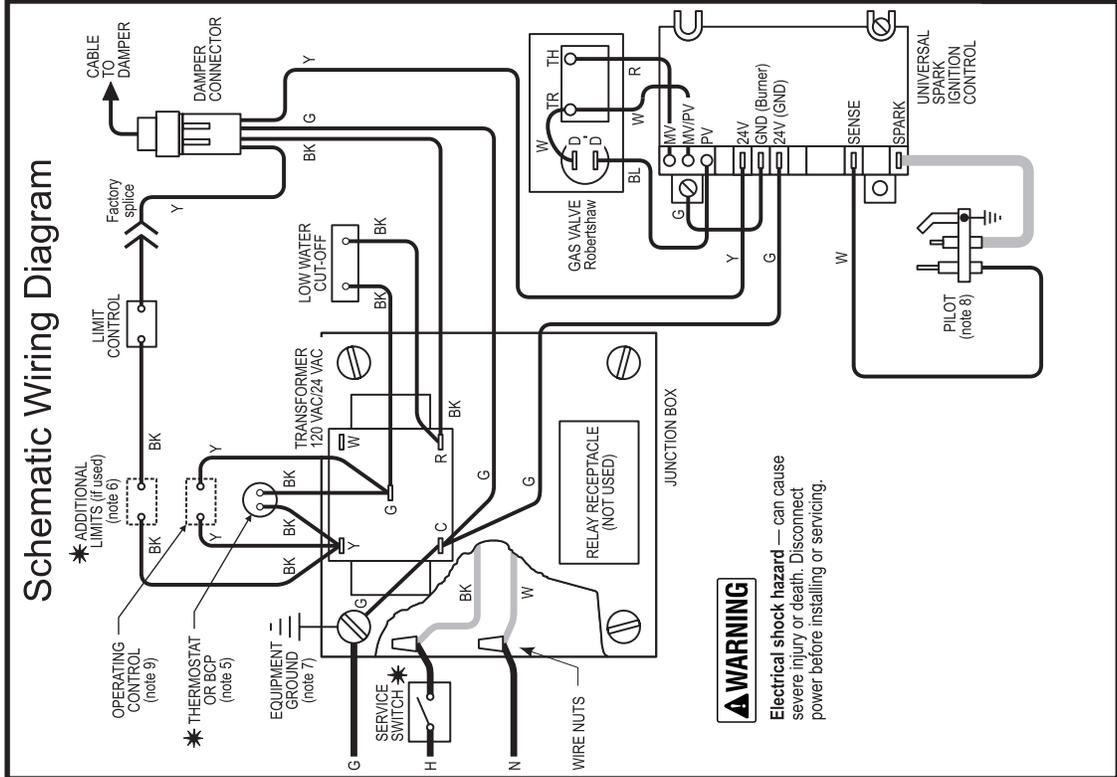
⚠ WARNING For your safety, turn off electrical power supply and turn off external gas supply valve before attempting to work on the boiler. Failure to comply can cause severe personal injury, death or substantial property damage.

1. Mount and wire controls per wiring diagram, page 21, and Figure 8.
 - a. Attach junction box inside left jacket panel with #8-32 x 1/2" machine screws.
 - b. Install transformer with plug-in relay receptacle and relay.
 - c. Operating and limit circuit wiring must be 18 gauge or heavier.
2. Bring supply wiring to boiler. Must be 14 gauge or heavier.
3. Proceed to page 20.

Figure 8 EGH steam boilers with probe-type low water cut-off



646007





Control installation continued

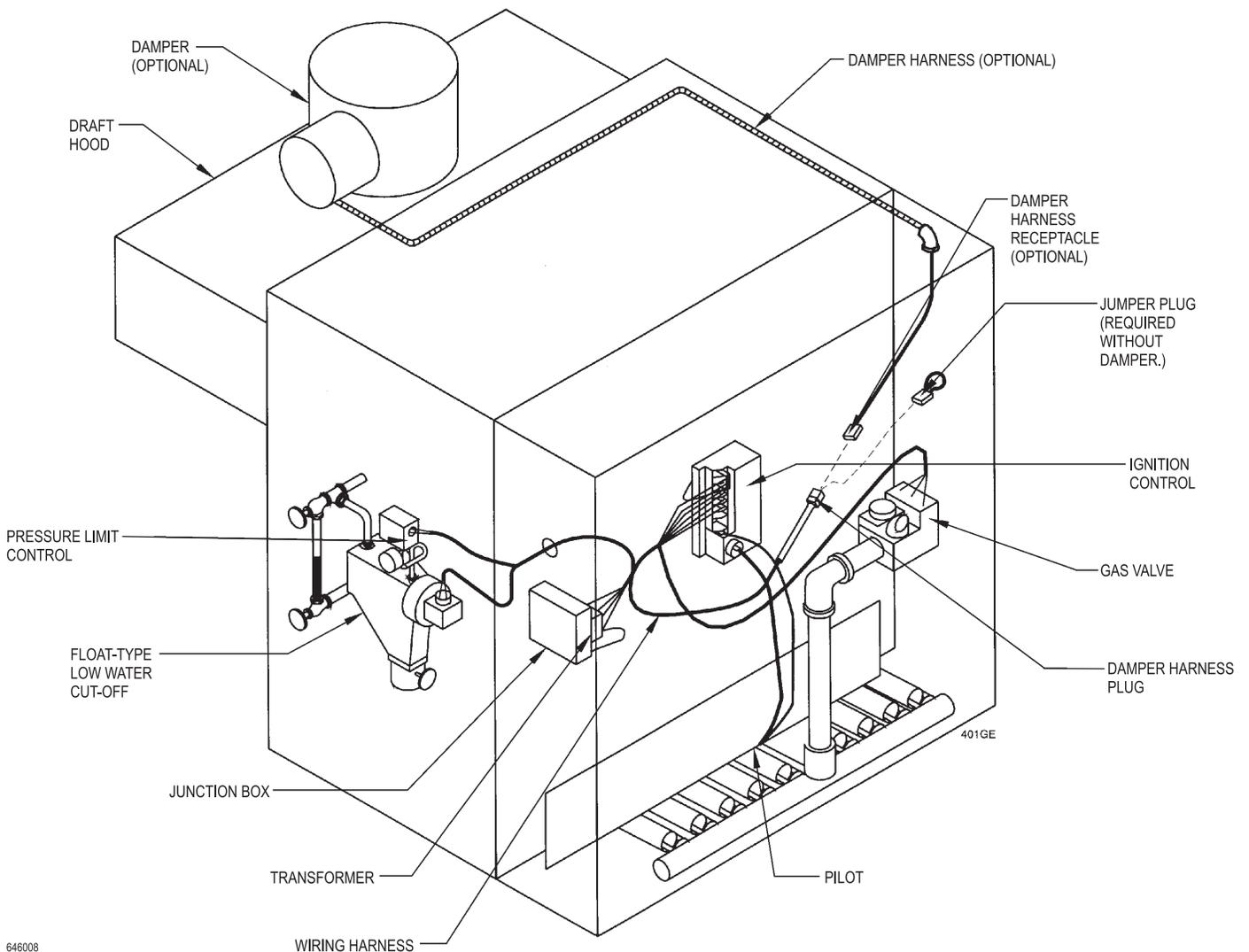
EGH steam boilers with float-type low water cut-off



For your safety, turn off electrical power supply and turn off external gas supply valve before attempting to work on the boiler. Failure to comply can cause severe personal injury, death or substantial property damage.

1. Mount and wire controls per wiring diagram, page 23, and Figure 9.
 - a. Attach junction box inside left jacket panel with #8-32 x 1/2" machine screws provided.
 - b. Install transformer with plug-in relay receptacle and relay.
 - c. Operating and limit circuit wiring must be 18 gauge or heavier.
2. Bring supply wiring to boiler. Must be 14 gauge or heavier.
3. Proceed to page 20.

Figure 9 EGH steam boilers with float-type low water cut-off



646008



Damper installation

- NOTICE** If not installing a vent damper, proceed to page 21.
- NOTICE** Once damper is installed, boiler will not operate without a damper installed.
- WARNING** Only dampers listed in the Replacement parts table on page 40 are approved for use on EG-30 through EG-75 Series 5 and PEG-30 through PEG-65 Series 5 using Universal Control Systems. Any other vent damper installed could cause severe personal injury or death.

The following boiler models must have damper installed:

- EG-30 through EG-65, natural or liquefied petroleum (propane) gas.
- PEG-30 through PEG-65, steam, natural gas.

The following boiler models may have damper installed:

- EG-75 and EGH-85 through EGH-125, natural or liquefied petroleum (propane) gas.

Minimum clearances to combustibles

Provide a minimum of 6" between the vent damper and any combustible material. (Provide a minimum of 46" between jacket top and combustible ceiling for EG/PEG and EGH.) See EG • PEG • EGH Boiler manual for complete clearance requirements.

Installation

- DANGER** Damper must be installed directly on top of draft hood so that it serves only that boiler. Do not modify draft hood or damper, or make another connection between draft hood and damper or boiler except as noted below. This will void CSA certification and will not be covered by Weil-McLain warranty. Any changes will cause severe personal injury, death, or substantial property damage.
1. Install plug (packed in damper carton of 4" through 8" dampers) in hole in damper blade.
 2. Install vent damper horizontally or vertically as shown in vent damper manufacturer's instructions. Vent damper must be installed so that it serves only one boiler and so damper blade indicator is visible to the user. See Figure 10.
 3. Screws or rivets used to secure the vent damper to the draft hood must not interfere with rotation of the damper blade.
 4. Install damper harness between damper actuator and knockout in jacket top panel. Use strain relief connectors and locknuts to secure both ends of the damper harness.

CAUTION Keep wiring harness clear of all hot surfaces.

Figure 10 Vent damper assemblies

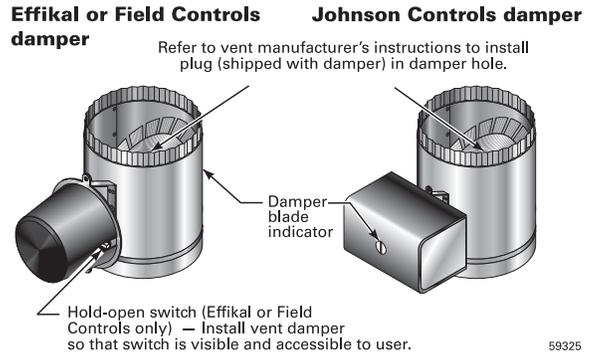
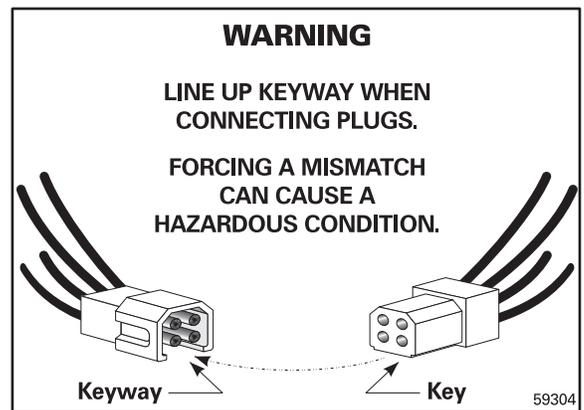


Figure 11 Vent damper harness plug warning label



5. Read and apply the harness plug warning label (Figure 11) so that it is visible after installation.
6. Plug damper harness receptacle into damper harness plug.

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

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

NOTICE **Effikal or Field Controls damper** — Damper hold open switch must be in "Automatic Operation" position for system to operate properly.



Checkout procedure

1. See pages 22–26 for “Operating instructions.”
2. Raise room thermostat to call for heat. Damper actuator will slowly open damper.
3. When damper is fully open, main gas valve will open and main burners will ignite.

⚠ DANGER Damper must be fully open before main burners light. If damper does not fully open, flue products will escape into house, causing severe personal injury or death.

4. Lower thermostat setting. Main burner flames will go out, then damper will close.
5. Repeat steps 1 through 3 several times to verify operation.
6. Return thermostat to normal setting.

Room thermostat anticipator settings

Water without tankless heater – 0.40 amps

Water with tankless heater – 0.20 amps

Steam – Select based on gas valve and damper. See table below.

Boilers with United Technologies Ignition control (control load of 0.10 amps is included in the values at right)	Gas valve	Without damper (amps)	With Effikal damper (amps)	With Johnson damper (amps)
	Honeywell VR8200	0.60	0.70	0.80
	Honeywell VR8300	0.80	0.90	1.00
	Robertshaw 7200ER	0.50	0.60	0.70
	Robertshaw 7000ERHC	0.80	0.90	1.00
	White-Rodgers 36E	0.40	0.50	0.60
	White-Rodgers 36C	0.70	0.80	0.90

Boilers with Honeywell Ignition control (control load of 0.20 amps is included in the values at right)	Gas valve	Without damper (amps)	With Effikal damper (amps)	With Johnson damper (amps)
	Honeywell VR8200	0.70	0.80	0.90
	Honeywell VR8300	0.90	1.00	1.10
	Robertshaw 7200ER	0.60	0.70	0.80
	Robertshaw 7000ERHC	0.90	1.00	1.10
	White-Rodgers 36E	0.50	0.60	0.70
	White-Rodgers 36C	0.80	0.90	1.00



Operating instructions – EG and PEG 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.

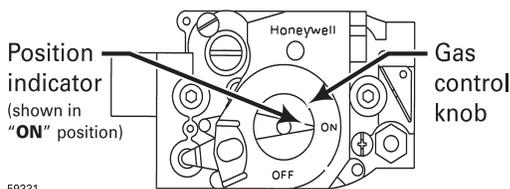
- | | |
|--|--|
| <p>A. This appliance is equipped with an ignition device which automatically lights the pilot. Do <u>not</u> try to light the pilot by hand.</p> <p>B. BEFORE OPERATING, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor. See below.</p> | <p>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.</p> <p>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.</p> |
|--|--|

WHAT TO DO IF YOU SMELL GAS

- | | |
|--|---|
| <ul style="list-style-type: none"> • Do not try to light any appliance. • Do not touch any electric switch; do not use any phone in your building. | <ul style="list-style-type: none"> • 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

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. STOP! Read the safety information above on this label. 2. Set the thermostat to lowest setting. 3. Turn off all electrical power to the appliance. 4. Remove front panel. 5. This appliance is equipped with an ignition device which automatically lights the pilot. Do <u>not</u> try to light the pilot by hand. 6. Turn gas control knob clockwise ↻ to "OFF." | <ol style="list-style-type: none"> 7. 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. 8. Turn gas control knob counterclockwise ↺ to "ON." 9. Turn on all electric power to the appliance. 10. Set thermostat to desired setting. 11. If the appliance will not operate, follow the instructions "To Turn Off Gas To The Appliance" and call your service technician or gas supplier. 12. Replace front panel. |
|--|---|



TO TURN OFF GAS TO THE APPLIANCE

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Set the thermostat to lowest setting. 2. Turn off all electric power to the appliance if service is to be performed. | <ol style="list-style-type: none"> 3. Remove front panel. 4. Turn gas control knob clockwise ↻ to "OFF." Do not force. 5. Replace front panel. |
|--|---|

550-223-041(0906)



Operating instructions – EG/PEG-30 through EG/PEG-50 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.

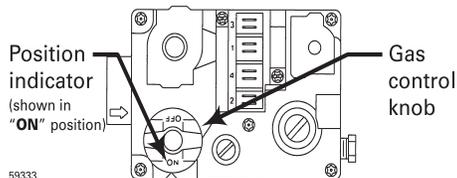
- | | |
|---|--|
| <p>A. This appliance is equipped with an ignition device which automatically lights the pilot. Do <u>not</u> try to light the pilot by hand.</p> <p>B. BEFORE OPERATING, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor. See below.</p> | <p>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.</p> <p>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.</p> |
|---|--|

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

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. STOP! Read the safety information above on this label. 2. Set the thermostat to lowest setting. 3. Turn off all electrical power to the appliance. 4. Remove front panel. 5. This appliance is equipped with an ignition device which automatically lights the pilot. Do <u>not</u> try to light the pilot by hand. 6. Turn gas control knob clockwise ↻ to "OFF." | <ol style="list-style-type: none"> 7. 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. 8. Turn gas control knob counterclockwise ↺ to "ON." 9. Turn on all electric power to the appliance. 10. Set thermostat to desired setting. 11. If the appliance will not operate, follow the instructions "To Turn Off Gas To The Appliance" and call your service technician or gas supplier. 12. Replace front panel. |
|---|--|



TO TURN OFF GAS TO THE APPLIANCE

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Set the thermostat to lowest setting. 2. Turn off all electric power to the appliance if service is to be performed. | <ol style="list-style-type: none"> 3. Remove front panel. 4. Turn gas control knob clockwise ↻ to "OFF." Do not force. 5. Replace front panel. |
|--|---|

550-223-042(0906)



Operating instructions – **EG/PEG-30 through EG/PEG-50 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.

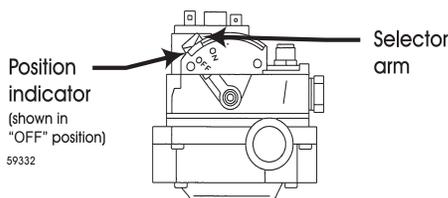
- A. This appliance is equipped with an ignition device which automatically lights the pilot. Do not try to light the pilot by hand.
- B. **BEFORE OPERATING**, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor. 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. Turn off all electrical power to the appliance.
4. Remove front panel.
5. This appliance is equipped with an ignition device which automatically lights the pilot. Do not try to light the pilot by hand.
6. Depress and move selector arm left ↶ to "OFF." Note: Selector arm cannot be moved to "OFF" unless selector arm is depressed slightly. Do not force.
7. 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.
8. Move selector arm right ↷ to "ON."
9. Turn on all electric power to the appliance.
10. Set thermostat to desired setting.
11. If the appliance will not operate, follow the instructions "To Turn Off Gas To The Appliance" and call your service technician or gas supplier.
12. 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. Depress and move selector arm to "OFF." Do not force.
5. Replace front panel.

550-223-044(0511)



Operating instructions – EG/PEG-55, EG/PEG-65, EG-75 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.
- 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 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.

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. Turn off all electrical power to the appliance.
4. Remove front panel.
5. This appliance is equipped with an ignition device which automatically lights the pilot. Do not try to light the pilot by hand.
6. 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.
7. 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.
8. Turn gas control knob counterclockwise ↺ to "ON."
9. Turn on all electric power to the appliance.
10. Set thermostat to desired setting.
11. If the appliance will not operate, follow the instructions "To Turn Off Gas To The Appliance" and call your service technician or gas supplier.
12. 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. Depress gas control knob slightly and turn clockwise ↻ to "OFF." Do not force.
5. Replace front panel.

550-223-043(0906)



Operating instructions – **EGH** with Robertshaw 7000DERHC 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.

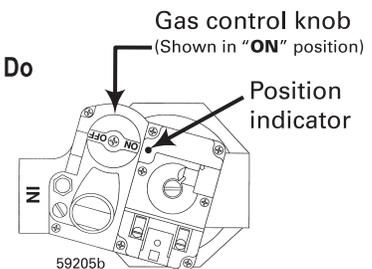
- A. This appliance is equipped with an ignition device which automatically lights the pilot. Do not try to light the pilot by hand.
- B. **BEFORE OPERATING**, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor. See below.
- 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.

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. Turn off all electrical power to the appliance.
4. Remove front panel.
5. This appliance is equipped with an ignition device which automatically lights the pilot. Do not try to light the pilot by hand.
6. Turn gas control knob clockwise ↻ to "OFF."
7. When equipped with vent damper, verify damper blade is in full open position.
8. 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.
9. Turn gas control knob counterclockwise ↶ to "ON."
10. Turn on all electric power to the appliance.
11. Set thermostat to desired setting.
12. If the appliance will not operate, follow the instructions "To Turn Off Gas To The Appliance" and call your service technician or gas supplier.
13. 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.
5. Replace front panel.

550-223-045(1209)



Troubleshooting

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

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

⚠ 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.

Before troubleshooting

1. Have a voltmeter that can check 120 VAC, 24 VAC, and a continuity tester.
2. Check for 120 VAC (minimum 102 to maximum 132) to boiler.
3. Make sure thermostat is calling for heat and contacts (including appropriate zone controls) are closed. Check for 24VAC between thermostat wire nuts and ground.

Supply temperature sensor

1. The boiler temperature sensor is a resistance-type device.
2. The Table, shows the correct value for the sensor at various temperatures.
3. Use the resistance values at 32°F, 60°F, 70°F and 212°F to measure the sensor resistance at known temperatures (ice point, room temperature and sea level boiling point). For ice point and boiling point, insert the sensor in water at that temperature. Use an ohmmeter to read resistance value between thermister # and thermistor common. (See Figure 15 for pin locations).

Figure 12 Supply temperature sensor

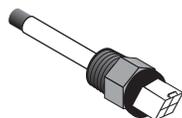


Table Supply temperature sensor resistance values

Sensor resistance values					
Temp (°F)	Sensor ohms		Temp (°F)	Sensor ohms	
	Min	Max		Min	Max
32	34265	37871	120	4517	4992
40	27834	30764	130	3698	4088
50	21630	23907	140	3043	3364
60	16944	18727	150	2517	2782
70	13372	14780	160	2091	2311
80	10629	11747	170	1744	1928
90	8504	9399	180	1461	1615
100	6847	7568	190	1229	1359
110	5545	6129	200	1038	1147

In event of vent damper failure:

Effikal or Field 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. **Manually turning blade can cause actuator damage.** Follow these instructions only in case of no heat or damper actuator malfunction.

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 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 13, page 32.).
3. **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 13, page 28.

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. Refer to vent damper manufacturer's instructions for procedure to fix vent damper in open position.
3. Turn on power to boiler.



Troubleshooting – (EG water boilers)

- Using wrench or pliers on flat shaft section, manually rotate damper blade until green light turns on. Boiler will fire (Figure 13).
- 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.

NOTICE

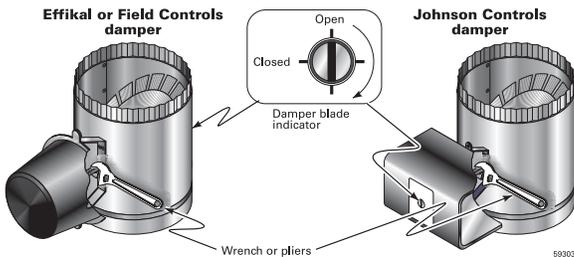
Make sure **ground wiring** is installed per wiring diagram. Good grounding is extremely important for proper operation.

Control indicator lights –

HARD LOCKOUT Summary (Flashing LED's)

MAY remove 120VAC power for more than 2 seconds to clear lockout OR ignition control will automatically restart sequence of operation after 1 hour waiting period after fault condition is cleared.

Figure 13 Manually opening vent damper



NOTICE

The information on this page and pages 33 through 39 apply only to spark-ignited pilot EG water boilers. These boilers are equipped with an ignition control module that has indicator lights to show control status. Charts 1 through 6, pages 30 through 35, help you identify problems based on indicator light conditions.

Figure 14 EG-water Ignition control module



Control module

WARNING

Solder or water splatter between plugs and circuit board can cause improper operation of control module. Place a shield over the boiler internal controls and components during installation. Failure to comply could result in severe personal injury, death or substantial property damage.

INDICATOR LIGHT

CONDITION

POWER

Flashes once per second

120 VAC connection to boiler reversed.

Flash code 2*

Internal fault, microprocessor or memory.

Flash code 3*

Unused.

Flash code 4*

Unused.

Flash code 5*

Internal fault, water thermistors disagree.

Flash code 6*

Internal fault, gas valve circuit.

* Flash code pattern: POWER LED flashes 2, 3, etc. times rapidly followed by 2 seconds off, then repeats.

ALL LED'S FLASHING

Failure to establish pilot flame after 4 attempts.

SOFT LOCKOUT Summary (Flashing LED's)

MAY remove 120VAC power for more than 2 seconds, cycle thermostat for between 2 and 20 seconds, OR ignition control will automatically restart sequence of operation after 1 hour waiting period.

INDICATOR LIGHT

CONDITION

POWER + TSTAT/CIRC

High voltage detected on TSTAT circuit.

POWER + DAMPER

Damper stuck closed or unable to close end switch within 45 seconds from TSAT call.

POWER + FLAME

Flame sensed without call for heat or out of sequence during ignition trial.

CAUTION Summary (Flashing LED's)

INDICATOR LIGHT

CONDITION

DAMPER

Damper end switch opened after it had been proven closed.

LIMIT

Fault detected in temperature sensing hardware.

FLAME

Flame loss or flame not sensed during trial for ignition.

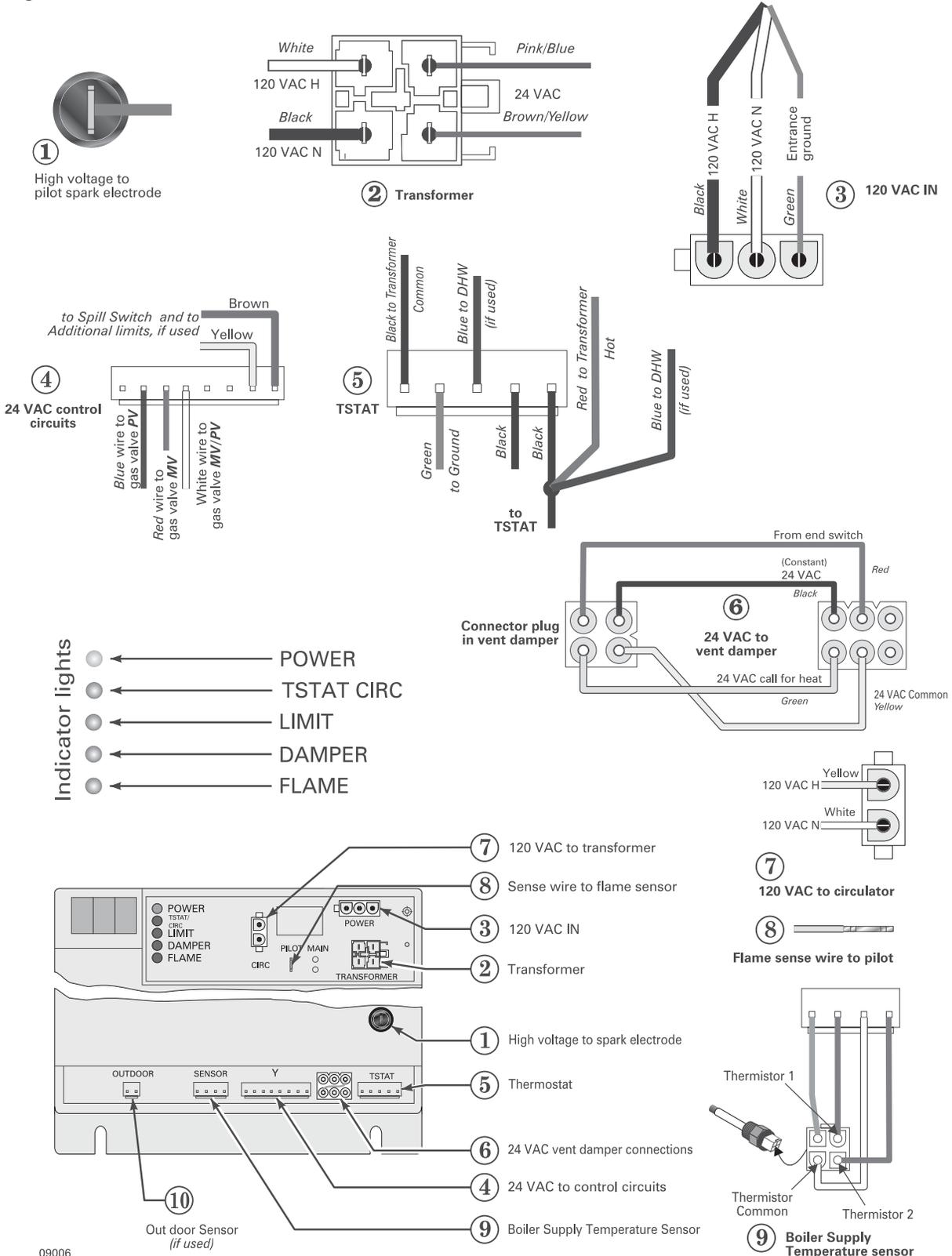
Troubleshooting the control module

See Figure 15, page 29, for location of harness plug receptacles and plugs on the control module.



Troubleshooting – (EG water boilers) continued

Figure 15 Control module connections



09006

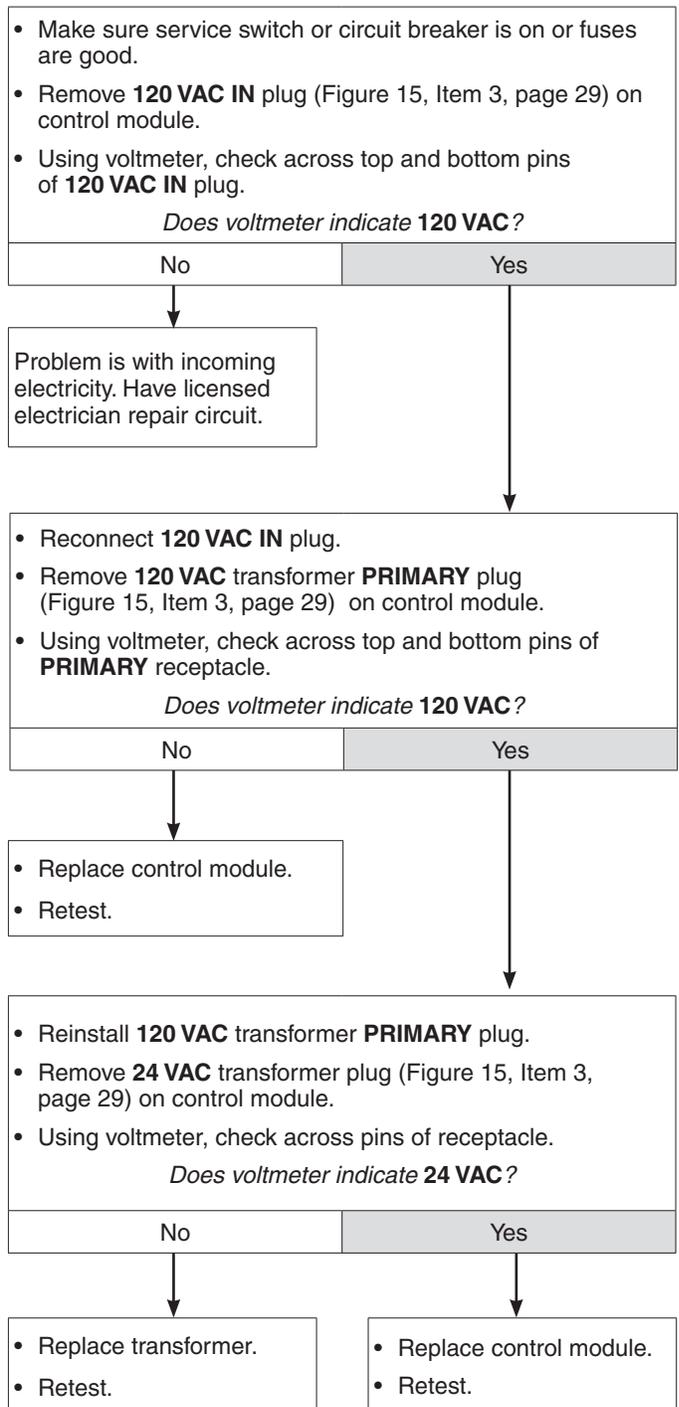
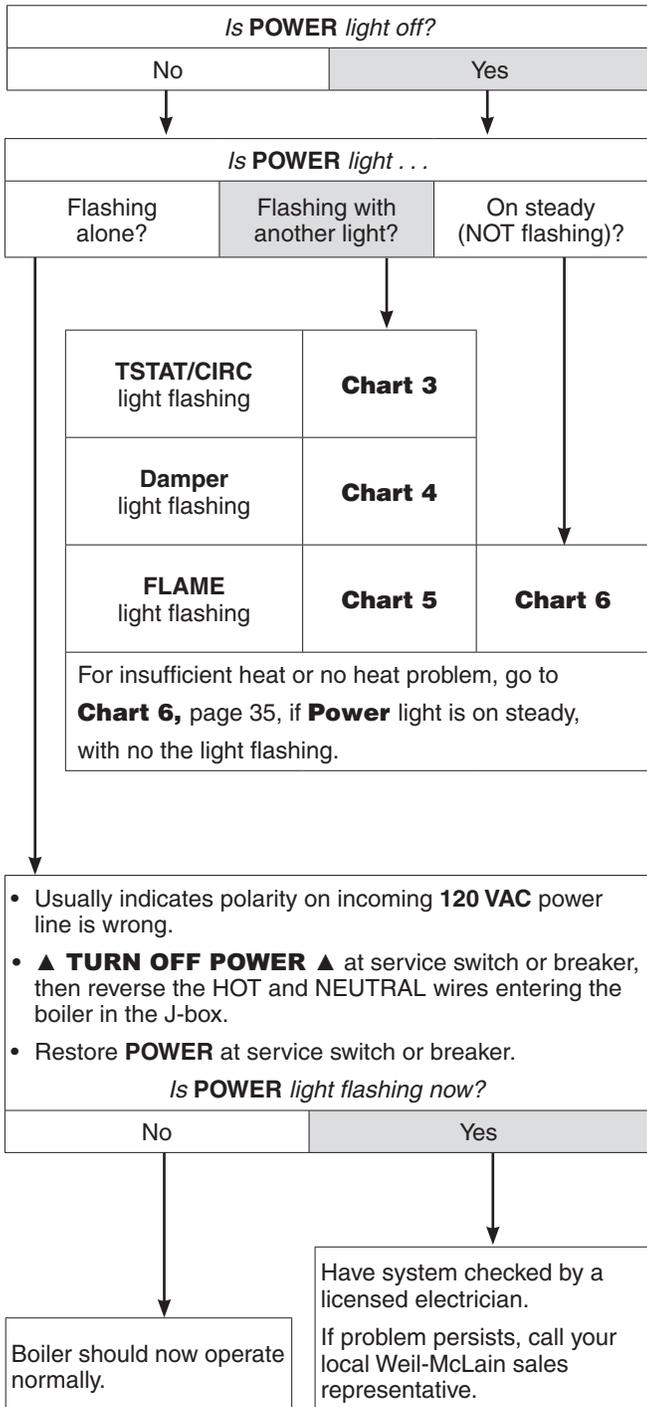


Troubleshooting – (EG water boilers) continued

CHART 1 – Spark-ignited pilot – Troubleshooting POWER light status

– Usually indicates reversed 120 VAC polarity if Power light flashes by itself –

⚠WARNING **Electrical shock hazard** — Wherever you see **▲ TURN OFF POWER ▲**, follow the instructions. Failure to follow instructions could result in severe personal injury, death or substantial property damage.





Troubleshooting – (EG water boilers) continued

CHART 2 – Spark-ignited pilot – TSTAT/CIRC & POWER light flashing

– Usually indicates 48 VAC on thermostat circuit (stray voltage) –

⚠️ WARNING **Electrical shock hazard** — Wherever you see **▲ TURN OFF POWER ▲**, follow the instructions. Failure to follow instructions could result in severe personal injury, death or substantial property damage.

- Disconnect the two external wires connected to the boiler thermostat leads. (two black low voltage leads in J-box).
- Connect a voltmeter across the two incoming wires. Close each thermostat, zone valve and relay in the external circuit one at a time and check the voltmeter reading across the wires.
- There should NEVER be a voltage reading.
- If a voltage does occur under any condition, check and correct the external wiring. (This is a common problem when using 3-wire zone valves.)
- Once the external thermostat circuit wiring is checked and corrected if necessary, reconnect the external thermostat circuit wires to the boiler thermostat wires and allow the boiler to cycle.

Did you find a voltage across the two external thermostat circuit wires?

Yes	No
-----	----



• Leave external boiler thermostat connection wires disconnected from boiler.

• Trouble shoot the external thermostat circuit until you find the source of the stray voltage. (Pay close attention to the wiring connections to 3-wire zone valves.)

• Correct the problem and repeat voltmeter test above, verifying there is no longer a voltage reading under any condition in the external thermostat circuit.

• If no voltage is found under any condition of the external thermostat circuit, connect the two boiler thermostat connection leads together (or jumper the boiler aquastat T-T terminals).

• Turn off power to the boiler for 1 minute.

• Turn on power and allow boiler to cycle.

Do the TSTAT and POWER lights still flash?

No	Yes
----	-----

• Boiler should now operate per the normal sequence of operation shown in Figure 1, page 6.

• Replace control module.

• Retest.



Troubleshooting – (EG water boilers) continued

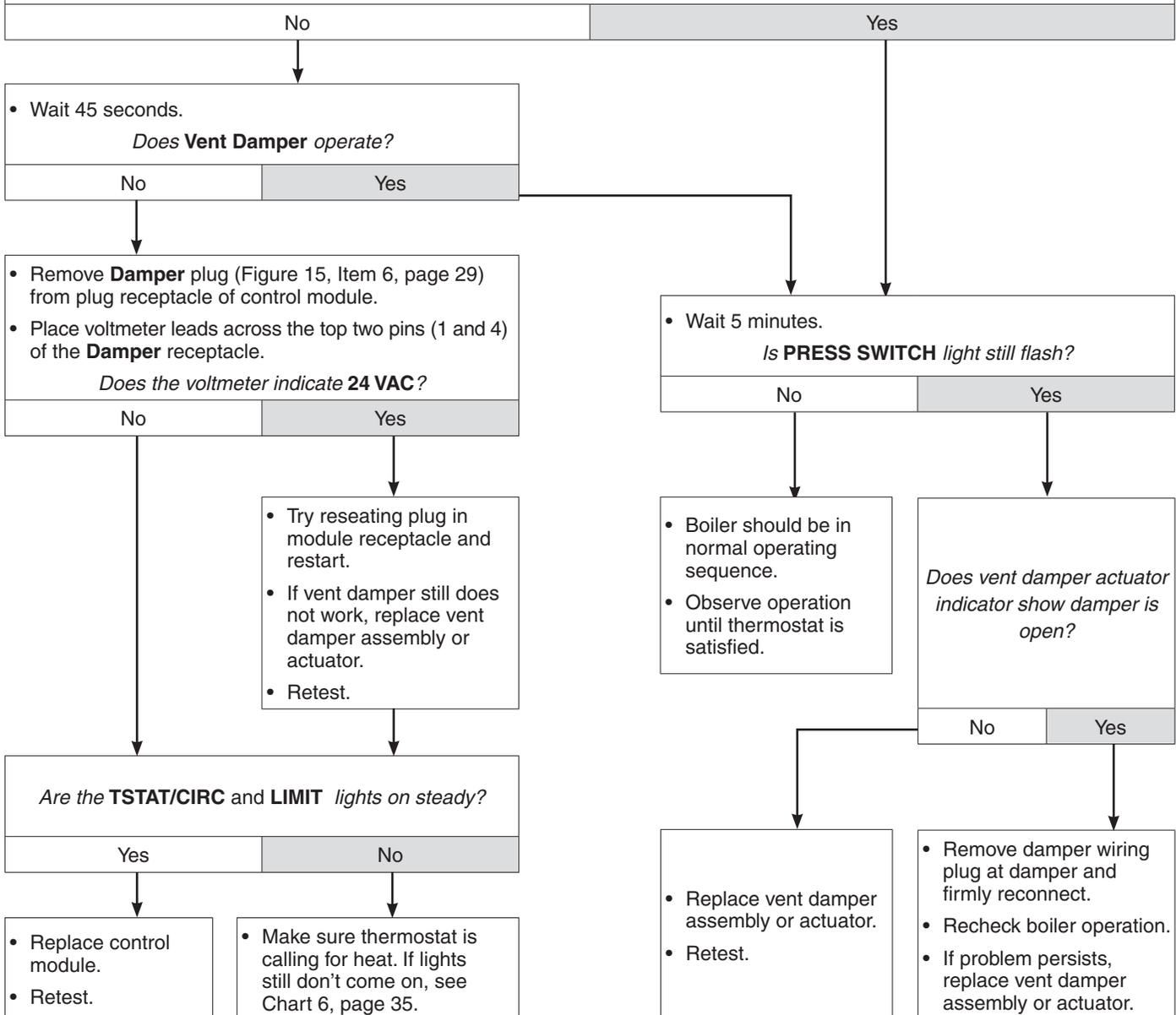
CHART 3 – Spark-ignited pilot – DAMPER light flashing

- If **POWER** light is flashing: Usually indicates vent damper failed to prove open within 5 minutes –
- If **POWER** light is steady: Usually indicates vent damper closed during run cycle –

⚠ WARNING **Electrical shock hazard** — Wherever you see **▲ TURN OFF POWER ▲**, follow the instructions. Failure to follow instructions could result in severe personal injury, death or substantial property damage.

- Reset boiler control by turning off power at service switch or turning down thermostat for at least 45 seconds.
- Thermostat should call for heat and appropriate zone valves open. The **TSTAT/CIRC** and **LIMIT** lights should come on.

Does Vent Damper operate?



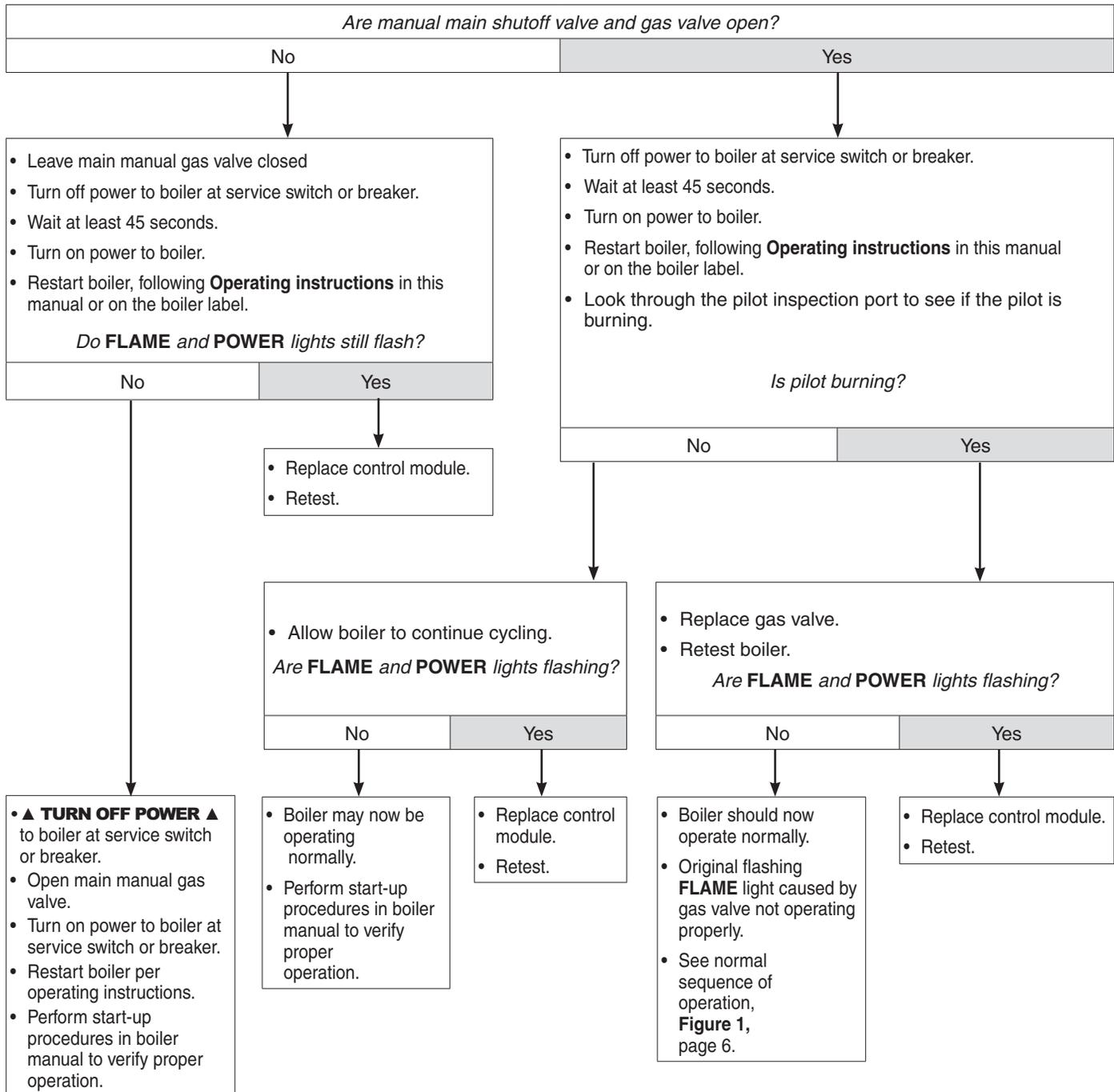


Troubleshooting – (EG water boilers) continued

CHART 4 – Spark-ignited pilot – FLAME & POWER light flashing

– Usually indicates flame sensed when it shouldn't be there –

⚠ WARNING **Electrical shock hazard** — Wherever you see **▲ TURN OFF POWER ▲**, follow the instructions. Failure to follow instructions could result in severe personal injury, death or substantial property damage.





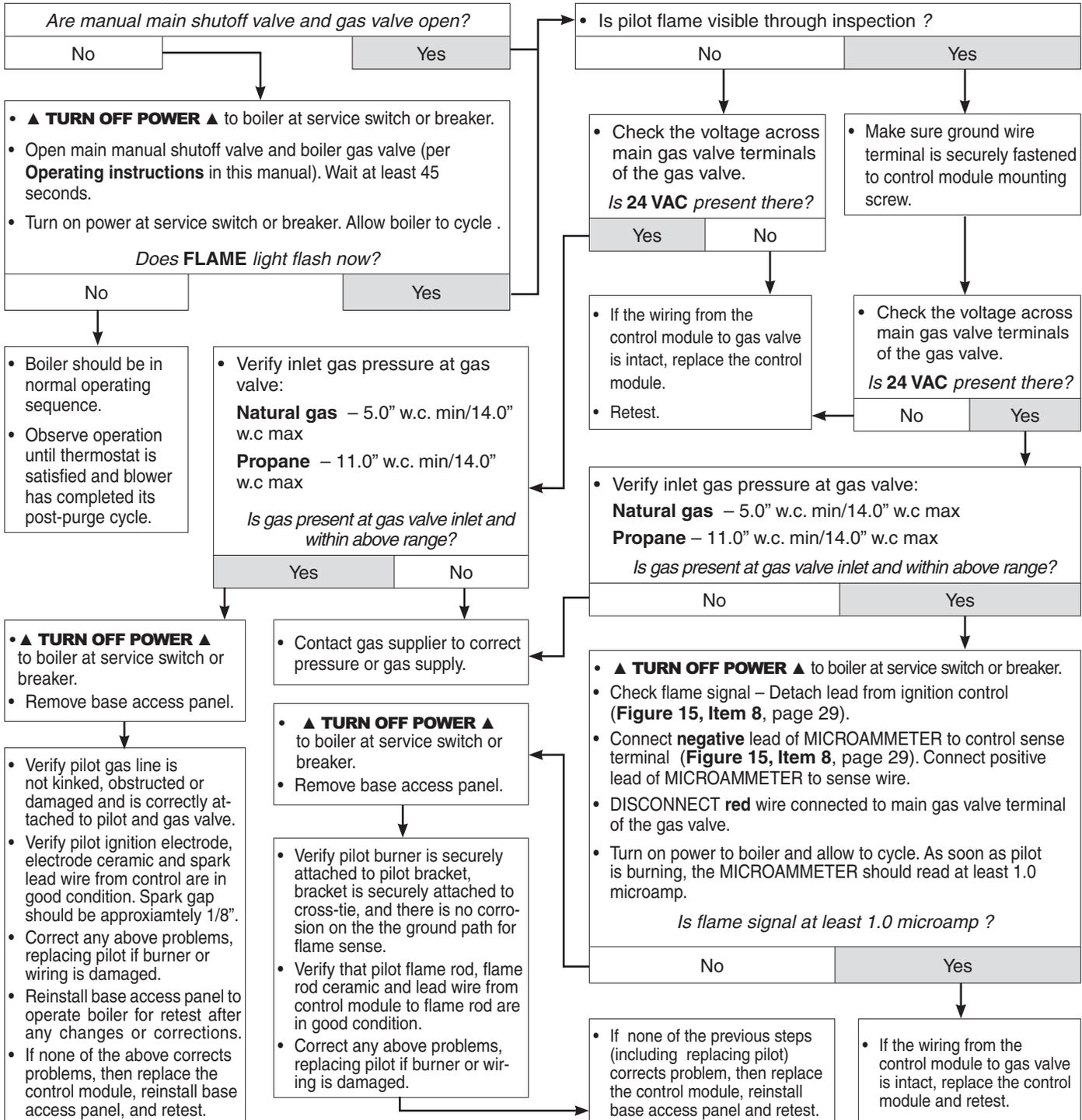
Troubleshooting – (EG water boilers) continued

CHART 5

– Spark-ignited pilot – **FLAME** light flashing and **POWER** light on steady
ALSO — Troubleshooting failure to establish main flame



Electrical shock hazard — Wherever you see **▲ TURN OFF POWER ▲**, follow the instructions. Failure to follow instructions could result in severe personal injury, death or substantial property damage.

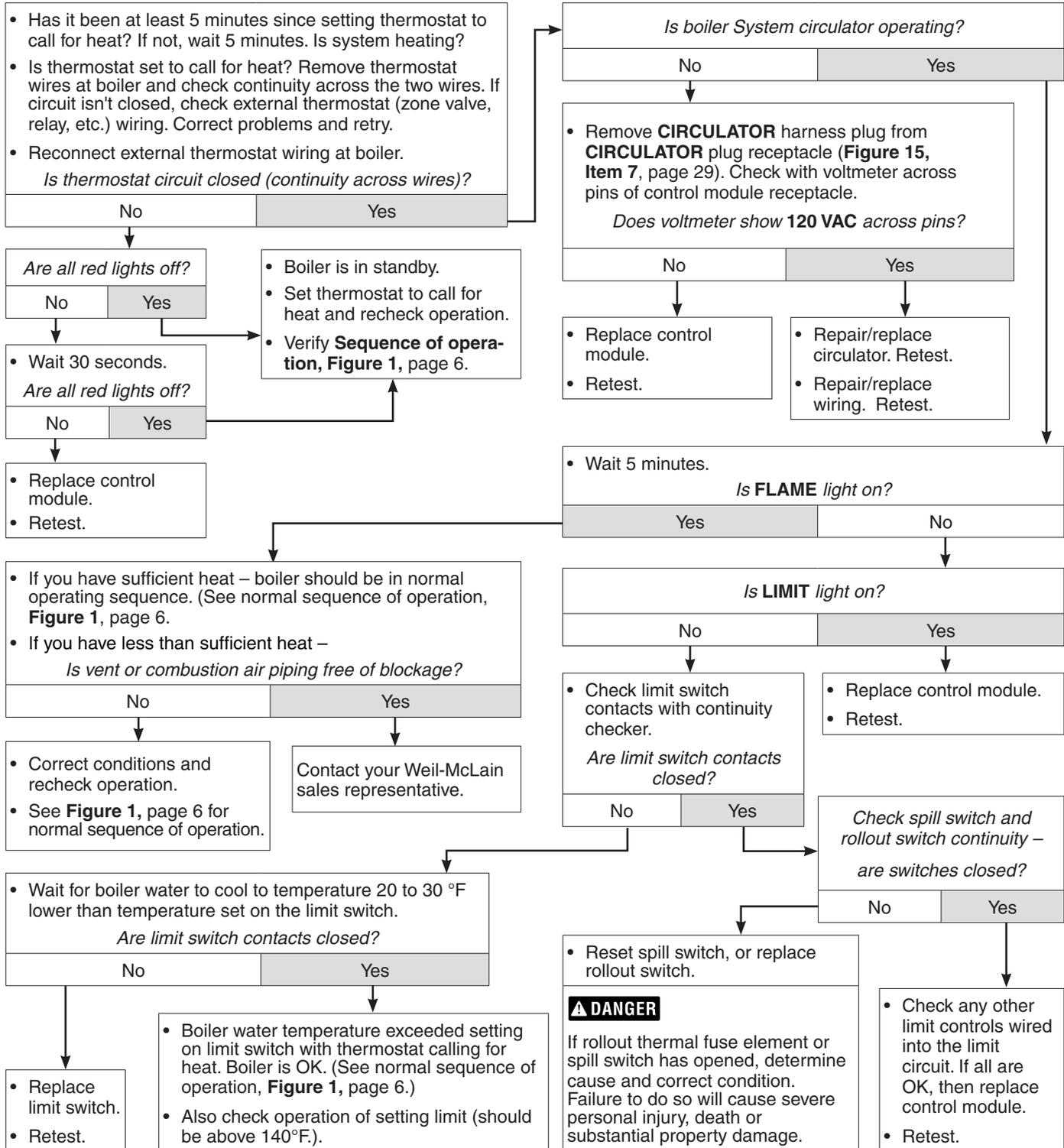




Troubleshooting – (EG water boilers) continued

CHART 6 – Spark-ignited pilot – Insufficient heat or no heat (POWER light on steady)

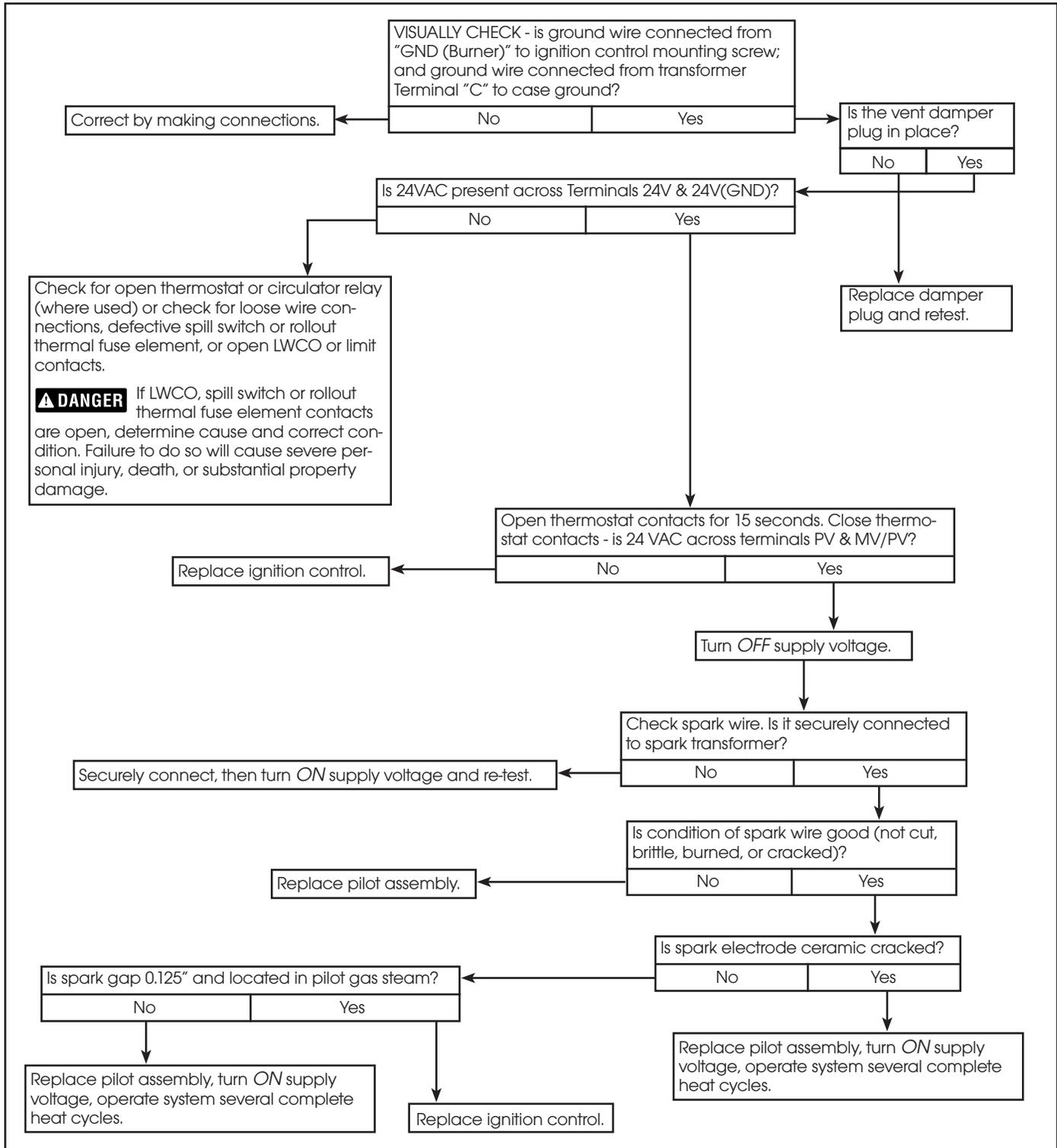
⚠️ WARNING Electrical shock hazard — Wherever you see **▲ TURN OFF POWER ▲**, follow the instructions. Failure to follow instructions could result in severe personal injury, death or substantial property damage.





Troubleshooting – (EG, PEG & EGH steam boilers)

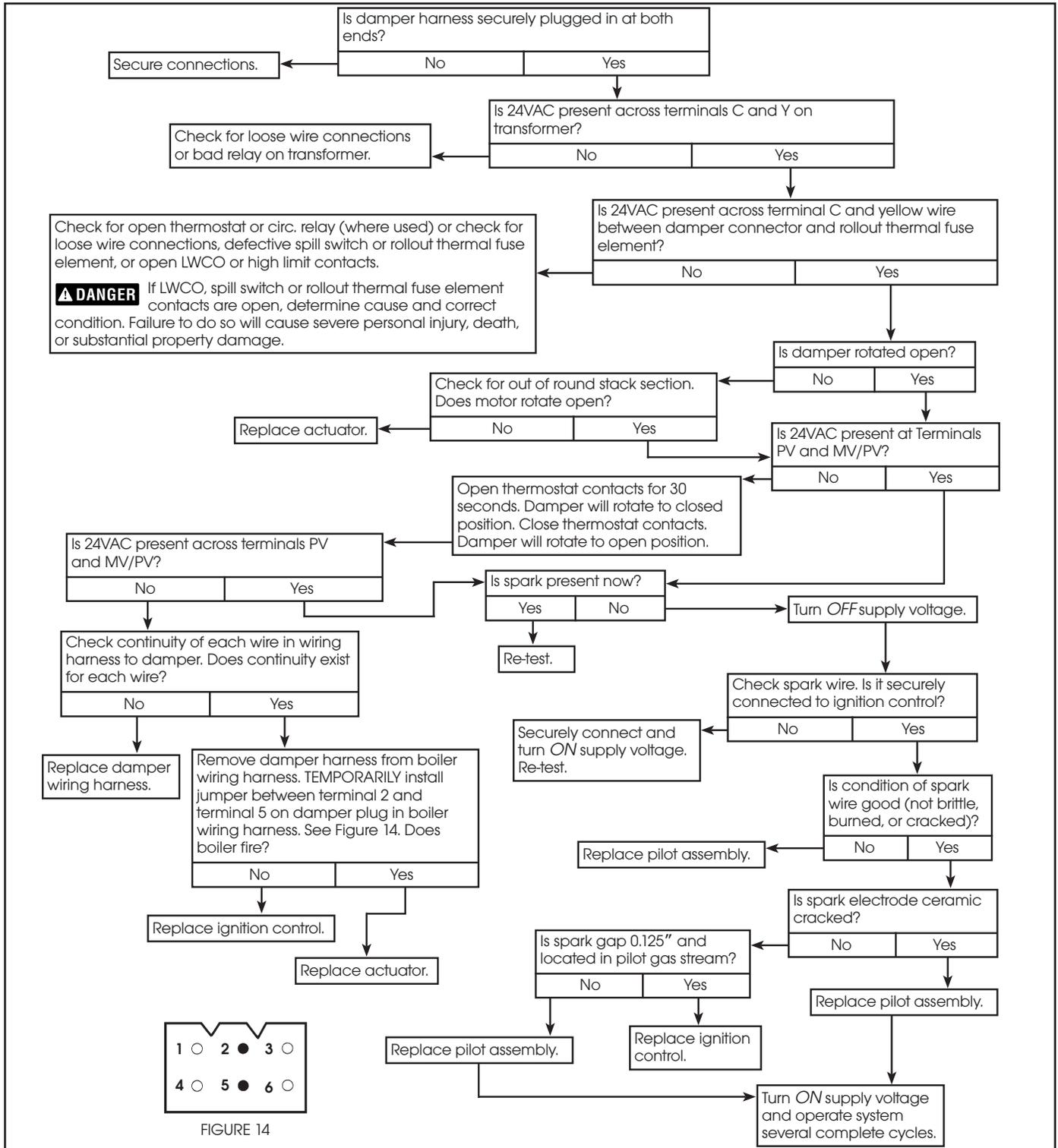
CHART 7: NO SPARK — System does not work — Without vent damper





Troubleshooting (EG, PEG & EGH steam boilers) continued

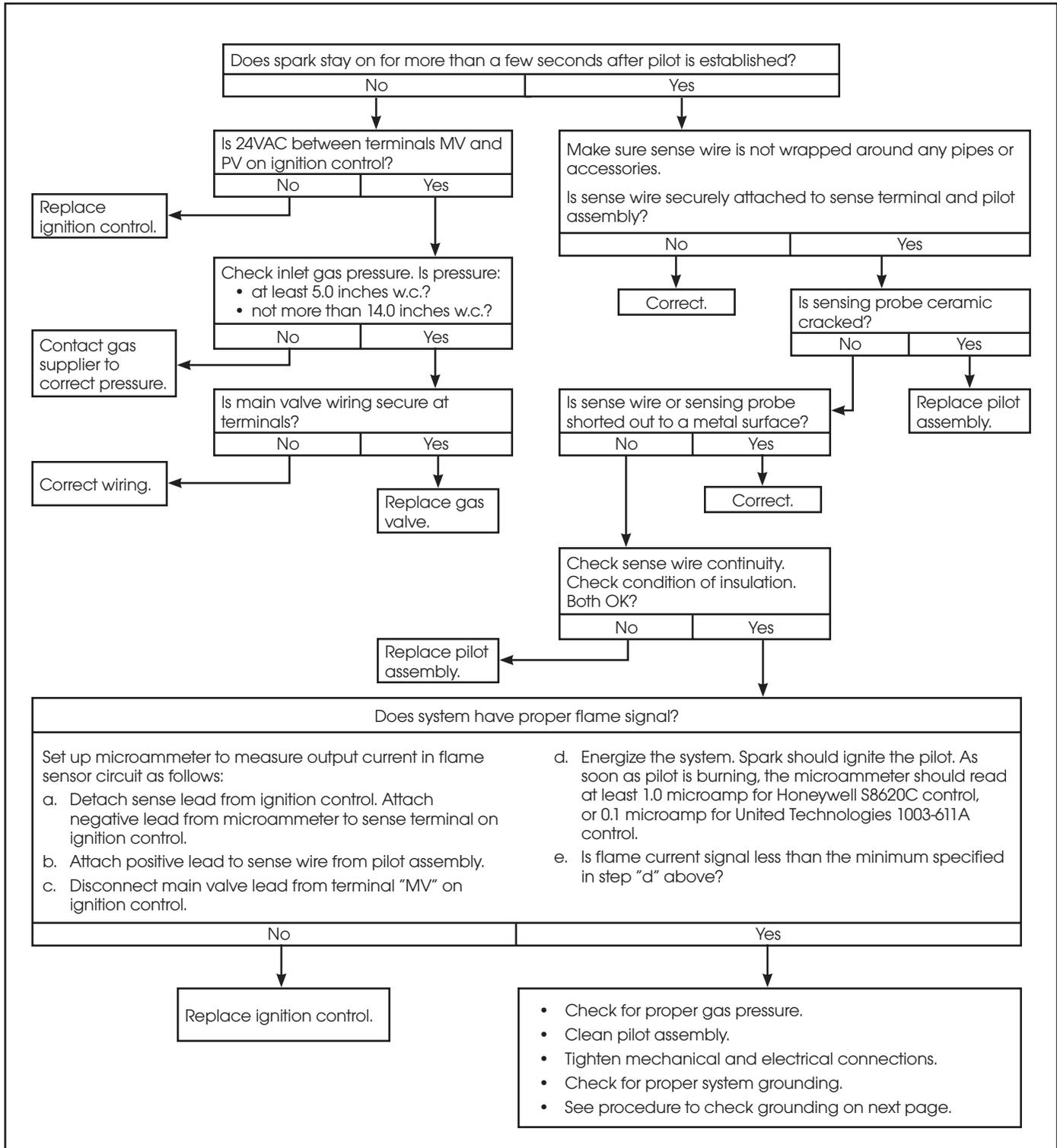
CHART 8: NO SPARK — System does not work — With vent damper





Troubleshooting – (EG, PEG & EGH steam boilers) continued

CHART 9: PILOT LIGHTS — Main valve will not come on — With or without vent damper





Troubleshooting – (EG, PEG & EGH steam boilers) continued

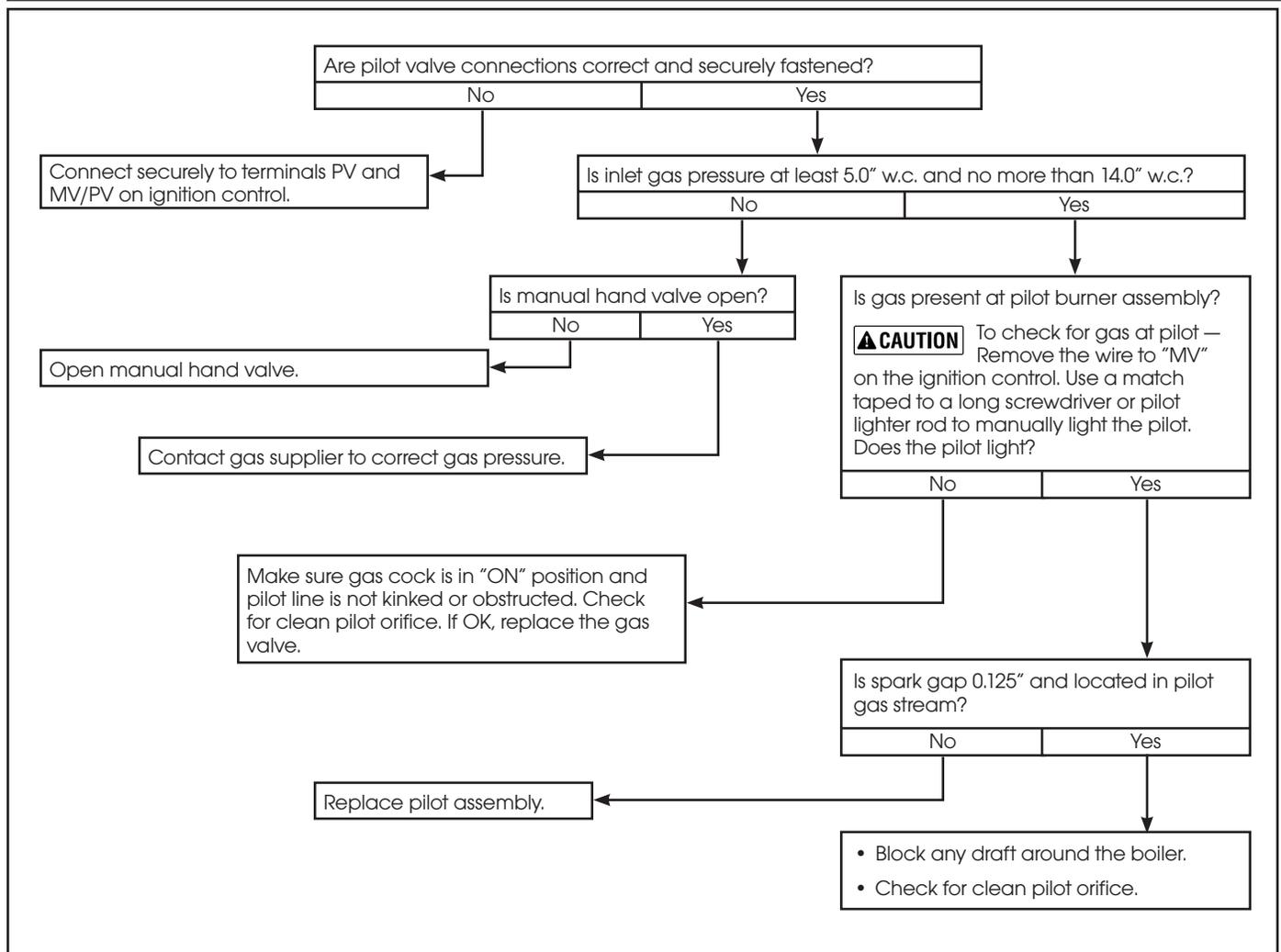
CHART 10 (continued): Procedure to check system grounding

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: PILOT LIGHTS — Main valve will not come on — With or without vent damper





Replacement parts

WARNING Only dampers listed below are approved for use on EG, PEG and EGH Series 5 boilers. Any other damper installed can cause severe personal injury or death.

Description		Manufacturer / Mfr's part number	Weil-McLain part number
Damper assembly	5" — EG-30, EG-35, PEG-30, PEG-35	Effikal RVGP-KS-5BKF Field Controls GVD-5 Johnson Q35GD-2	381-800-475
	6" — EG-40, EG-45, PEG-40, PEG-45	Effikal RVGP-KS-6BKF Field Controls GVD-6 Johnson Q35GF-2	381-800-476
	7" — EG-50, EG-55, PEG-50, PEG-55	Effikal RVGP-KS-7BKF Field Controls GVD-7 Johnson Q35GH-2	381-800-477
	8" — EG-65, EG-75, PEG-65	Effikal RVGP-KS-8BKF Field Controls GVD-8 Johnson Q35GK-2	381-800-478
	9" — EGH-85	Effikal RVGP-KS-9BKF Field Controls GVD-9 Johnson Q35GM-2	381-800-445
	10" — EGH-95, EGH-105	Effikal RVGP-KS-10BKF Field Controls GVD-10 Johnson Q35GP-2	381-800-446
	12" — EGH-115, EGH-125	Effikal RVGP-KS-12BKF Field Controls GVD-12 Johnson Q35GR-2	381-800-447
Damper actuator		Effikal RVGP	510-512-337
Damper harness		Weil-McLain	591-391-795
UCS Ignition control		Honeywell S8620C1003 United Technologies 1135-605 United Technologies 1135-606	511-330-097 381-330-010 381-330-011
Natural Gas (Water boilers only) Liquefied Petroleum (propane) Gas (Water boilers only)			
Boiler wiring harness (in envelope assembly)	EG-30 through -75 water	Weil-McLain	540-130-959
	EG-35 through -75 water with tankless heater		540-130-960
	EG-30 through -75 steam, float LWCO		540-130-961
	EG-30 through -75, PEG-30 through -65 steam, probe LWCO		540-130-962
	EGH steam, float LWCO		540-130-967
EGH steam, probe LWCO	540-130-968		
Pilot burner assembly		Precision Speed Equipment PSE-NA16	511-330-218
Gas valve, natural gas	1/2" x 1/2", sizes 30 through 50	Honeywell VR8204A2001 White-Rodgers 36E36-266 Robertshaw 7200IPER	511-044-381
	3/4" x 3/4", sizes 55 through 75	Honeywell VR8304P4348 White-Rodgers 36C74-474	511-044-382
	3/4" x 1", sizes 85 through 95	Robertshaw 7000DERHC-S7C	511-044-286
	1" x 1", sizes 105 through 125	Robertshaw 7000DERHC-S7C	511-044-287



Weil-McLain
500 Blaine Street
Michigan City, IN 46360-2388
<http://www.weil-mclain.com>