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-tired 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 to 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.
Table of contents

Hazard definitions and Note to the installer ................................................................. 2
Start-up .......................................................................................................................... 4
Department of Energy – Compliance ........................................................................... 5
Operation – Sequence .................................................................................................. 5-6
Control installation — EG-30 through EG-75 water boilers without tankless heaters .. 7-9
Control installation — EG-30 through EG-75 water boilers with tankless heaters ....... 10-11
Control installation — EG and PEG steam boilers with probe-type low water cutoff ... 12-13
Control installation — EG steam boilers with float-type low water cutoff ............... 14-15
Control installation — EGH water boilers without tankless heaters ....................... 16-17
Control installation — EGH water boilers with tankless heaters ......................... 18-19
Control Installation — EGH steam boilers with probe-type low water cut-off ......... 20-21
Control installation — EGH steam boilers with float-type low water cut-off .......... 22-23
Damper installation ...................................................................................................... 24
Checkout procedure .................................................................................................... 25
Operating instructions .................................................................................................. 26-30
Troubleshooting .......................................................................................................... 31-43
Replacement parts ....................................................................................................... 44
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 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 24.

3. **Pilot ignition:** Control module sparks the pilot and opens pilot valve in main gas valve.

   a. If pilot does not 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 25.

---

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

<table>
<thead>
<tr>
<th>STEPS</th>
<th>Call for Heat?</th>
<th>POWER</th>
<th>TSTAT</th>
<th>LIMIT</th>
<th>DAMPER</th>
<th>FLAME</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>(After Step 8, the cycle goes back to Step 1)</td>
<td>NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Standby</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Waiting for call for heat</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Call for heat</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Circulator on</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Limit circuit</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Limit controls closed</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Damper circuit</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Damper proven open</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Flame proven *</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Gas valve open</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Ignitor remains on</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Boiler producing heat</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Limit cycle</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Limit circuit open</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Gas valve closed</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Flame outage *</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Flame out</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Boiler recycles</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Thermostat satisfied</td>
<td>NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Circulator off</td>
<td>NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Circulator exercise routine</td>
<td>NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Circulator turns on for 30 seconds if boiler not operated for 30 days</td>
<td>NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* See Page 5, Items 3b for controls response to failure to prove pilot flame.

Control will lockout under the following conditions:
- 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:
- 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

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.

NOTICE

- 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.
Control installation

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

Legend for ladder wiring diagram

- **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

<table>
<thead>
<tr>
<th>Gas valve</th>
<th><em>A</em></th>
<th><em>B</em></th>
<th><em>C</em></th>
<th>Anticipator <em>amps</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Honeywell VR8204</td>
<td>MV/FV</td>
<td>MV</td>
<td>PV</td>
<td>0.6</td>
</tr>
<tr>
<td>Honeywell VR8304</td>
<td>MV/FV</td>
<td>MV</td>
<td>PV</td>
<td>0.8</td>
</tr>
<tr>
<td>White-Rogers 36E</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>0.64</td>
</tr>
<tr>
<td>White-Rogers 36C</td>
<td>2-4 *</td>
<td>1</td>
<td>3</td>
<td>0.7</td>
</tr>
</tbody>
</table>

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

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

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

**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 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 24

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

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

**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 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.

---

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

---

Part Number 550-142.796/0712
Control installation continued

**EG and PEG 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 13, and Figure 4.
   a. Attach junction box inside left jacket panel with #8-32 x 1/8” 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 24

**Figure 4** EG and PEG steam boilers with probe-type low water cut-off
Control installation continued

EG steam boilers with float-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 15 and Figure 5.
   a. Attach junction box inside left jacket panel with #8-32 x 1/8" 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 24

**Figure 5**  EG steam boilers with float-type low water cut-off
Control installation continued

EGH water boilers without tankless heaters

**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 17, and Figure 6.
   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.

Figure 6  EGH water boilers without tankless heaters
EGH 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 19, and Figure 7.
   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.
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 ½” 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 24

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

---

Part Number 550-142.796/0712
Control installation continued

EGH steam boilers with float-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 23, and Figure 9.
   a. Attach junction box inside left jacket panel with #8-32 x 3/8" 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.

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

**NOTICE** If not installing a vent damper, proceed to page 25.

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

**WARNING** Only dampers listed in the Replacement parts table on page 32 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, or 24" for 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

- Eiffel or Field Controls damper
  - Refer to vent manufacturer's instructions to install plug (shipped with damper) in damper hole.
- Johnson Controls damper

**Figure 11** Vent damper harness plug warning label

**WARNING**

LINE UP KEYWAY WHEN CONNECTING PLUGS.

FORCING A MISMATCH CAN CAUSE A HAZARDOUS CONDITION.

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.

**NOTE** Eiffel or Field Controls damper — Damper hold open switch must be in “Automatic Operation” position for system to operate properly.
Checkout procedure

1. See pages 26–30 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.

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

<table>
<thead>
<tr>
<th>Boilers with Honeywell Ignition control (control load of 0.20 amps is included in the values at right)</th>
<th>Gas valve</th>
<th>Without damper (amps)</th>
<th>With Effika damper (amps)</th>
<th>With Johnson damper (amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honeywell VR8200</td>
<td>0.70</td>
<td>0.80</td>
<td>0.90</td>
<td></td>
</tr>
<tr>
<td>Honeywell VH8300</td>
<td>0.90</td>
<td>1.00</td>
<td>1.10</td>
<td></td>
</tr>
<tr>
<td>Robertshaw 7200ER</td>
<td>0.60</td>
<td>0.70</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>Robertshaw 7000ERHC</td>
<td>0.90</td>
<td>1.00</td>
<td>1.10</td>
<td></td>
</tr>
<tr>
<td>White-Rodgers 36E</td>
<td>0.50</td>
<td>0.60</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>White-Rodgers 36C</td>
<td>0.80</td>
<td>0.90</td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>
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 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.

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.”

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.
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 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.

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. 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. Turn gas control knob clockwise to “OFF.” Do not force.
5. Replace front panel.

Part Number 550-142.796/0712
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 electrical 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.
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.

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 electrical 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.
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.
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 thermistor # and thermistor common.

<table>
<thead>
<tr>
<th>Sensor resistance values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp (°F)</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>32</td>
</tr>
<tr>
<td>40</td>
</tr>
<tr>
<td>50</td>
</tr>
<tr>
<td>60</td>
</tr>
<tr>
<td>70</td>
</tr>
<tr>
<td>80</td>
</tr>
<tr>
<td>90</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>110</td>
</tr>
</tbody>
</table>

**In event of vent damper failure:**

**Effiksl 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 32.

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.

**Figure 12** Supply temperature sensor
Troubleshooting – (EG & PEG water boilers)

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

5. **Do not leave vent damper permanently in this position.** Replace actuator immediately. If vent damper is left in open position, boiler will not operate at published efficiencies.

![Figure 13 Manually opening vent damper](image)

- **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.

<table>
<thead>
<tr>
<th>INDICATOR LIGHT</th>
<th>CONDITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER</td>
<td>120 VAC connection to boiler reversed.</td>
</tr>
<tr>
<td>Flash code 2*</td>
<td>Internal fault, microprocessor or memory.</td>
</tr>
<tr>
<td>Flash code 3*</td>
<td>Unused.</td>
</tr>
<tr>
<td>Flash code 4*</td>
<td>Unused.</td>
</tr>
<tr>
<td>Flash code 5*</td>
<td>Internal fault, water thermistors disagree.</td>
</tr>
<tr>
<td>Flash code 6*</td>
<td>Internal fault, gas valve circuit.</td>
</tr>
</tbody>
</table>

* 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.

<table>
<thead>
<tr>
<th>INDICATOR LIGHT</th>
<th>CONDITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER + TSTAT/CRC</td>
<td>High voltage detected on TSTAT circuit.</td>
</tr>
<tr>
<td>POWER + DAMPER</td>
<td>Damper stuck closed or unable to close end switch within 45 seconds from TSTAT call.</td>
</tr>
<tr>
<td>POWER + FLAME</td>
<td>Flame sensed without call for heat or cut of sequence during ignition trial.</td>
</tr>
</tbody>
</table>

**CAUTION Summary (Flashing LED’s)**

<table>
<thead>
<tr>
<th>INDICATOR LIGHT</th>
<th>CONDITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAMPER</td>
<td>Damper end switch opened after it had been proven closed.</td>
</tr>
<tr>
<td>LIMIT</td>
<td>Fault detected in temperature sensing hardware.</td>
</tr>
<tr>
<td>FLAME</td>
<td>Flame loss or flame not sensed during trial for ignition.</td>
</tr>
</tbody>
</table>

**Troubleshooting the control module**

See Figure 15, page 33, for location of harness plug receptacles and plugs on the control module.
Troubleshooting – (EG & PEG 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.

---

**Is POWER light off?**

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
</table>

---

**Is POWER light...**

<table>
<thead>
<tr>
<th>Flashing alone?</th>
<th>Flashing with another light?</th>
<th>On steady (NOT flashing)?</th>
</tr>
</thead>
</table>

---

**TSTAT/CIRC light flashing**

Chart 2

---

**Damper light flashing**

Chart 4

---

**FLAME light flashing**

Chart 5

Chart 6

For insufficient heat or no heat problem, go to Chart 6, page 39, if Power light is on steady, with no the light flashing.

---

**Is POWER light flashing now?**

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
</table>

---

- Usually indicates polarity on incoming 120 VAC power line is wrong.
- **▲ TURN OFF POWER ▲** at service switch or breaker, then reverse the HOT and NEUTRAL wires entering the boiler in the J-box.
- Restore POWER at service switch or breaker.

---

**Does voltmeter indicate 120 VAC?**

<table>
<thead>
<tr>
<th>Yes</th>
</tr>
</thead>
</table>

---

- Reconnect 120 VAC IN plug.
- Remove 120 VAC transformer PRIMARY plug (Figure 15, Item 3, page 33) on control module.
- Using voltmeter, check across top and bottom pins of 120 VAC IN plug.

---

**Does voltmeter indicate 24 VAC?**

<table>
<thead>
<tr>
<th>Yes</th>
</tr>
</thead>
</table>

---

- Reinstall 120 VAC transformer PRIMARY plug.
- Remove 24 VAC transformer plug (Figure 15, Item 3, page 33) on control module.
- Using voltmeter, check across pins of receptacle.

---

**Bullet should now operate normally.**

If problem persists, call your local Weil-McLain sales representative.
Troubleshooting – (EG & PEG 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

- Leave external boiler thermostat connection wires disconnected from boiler.
- Troubleshoot 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.

No

- 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

- Replace control module.
- Retest.

Yes

- Boiler should now operate per the normal sequence of operation shown in Figure 1, page 6.
Troubleshooting – (EG & PEG 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 and lights should come on.

<table>
<thead>
<tr>
<th>Does Vent Damper operate?</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
</tr>
<tr>
<td>Wait 45 seconds.</td>
</tr>
<tr>
<td>Does Vent Damper operate?</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Remove Damper plug (Figure 15, item 6, page 33) from plug receptacle of control module.</td>
</tr>
<tr>
<td>Place voltmeter leads across the top two pins (1 and 4) of the Damper receptacle.</td>
</tr>
<tr>
<td>Does the voltmeter indicate 24 VAC?</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Try reseating plug in module receptacle and restart.</td>
</tr>
<tr>
<td>If vent damper still does not work, replace vent damper assembly or actuator.</td>
</tr>
<tr>
<td>Retest.</td>
</tr>
<tr>
<td>Are the TSTAT/CIRC and LIMIT lights on steady?</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Replace control module.</td>
</tr>
<tr>
<td>Retest.</td>
</tr>
<tr>
<td>Make sure thermostat is calling for heat. If lights still don’t come on, see Chart 6, page 39.</td>
</tr>
</tbody>
</table>

- Wait 5 minutes. Is PRESS SWITCH light still flash?

- Yes
- No

- Boiler should be in normal operating sequence.
- Observe operation until thermostat is satisfied.

- Does vent damper actuator indicator show damper is open?

- No
- Yes

- Replace vent damper assembly or actuator.
- Retest.
- Remove damper wiring plug at damper and firmly reconnect.
- Recheck boiler operation.
- If problem persists replace vent damper assembly or actuator.
Troubleshooting – (EG & PEG 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 ▲ SHARE OFF POWER ▲, follow the instructions. Failure to follow instructions could result in severe personal injury, death or substantial property damage.

<table>
<thead>
<tr>
<th>Are manual main shutoff valve and gas valve open?</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
</tr>
<tr>
<td>• Leave main manual gas valve closed</td>
</tr>
<tr>
<td>• Turn off power to boiler at service switch or breaker.</td>
</tr>
<tr>
<td>• Wait at least 45 seconds.</td>
</tr>
<tr>
<td>• Turn on power to boiler.</td>
</tr>
<tr>
<td>• Restart boiler, following operating instructions in this manual or on the boiler label.</td>
</tr>
</tbody>
</table>

**Do FLAME and POWER lights still flash?**

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Replace control module.</td>
<td></td>
</tr>
<tr>
<td>• Retest.</td>
<td></td>
</tr>
</tbody>
</table>

**Are FLAME and POWER lights flashing?**

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Allow boiler to continue cycling.</td>
<td></td>
</tr>
</tbody>
</table>

**Turn off power to boiler at service switch or breaker.**

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Wait at least 45 seconds.</td>
<td></td>
</tr>
<tr>
<td>• Turn on power to boiler.</td>
<td></td>
</tr>
<tr>
<td>• Restart boiler, following operating instructions in this manual or on the boiler label.</td>
<td></td>
</tr>
<tr>
<td>• Look through the pilot inspection port to see if the pilot is burning.</td>
<td></td>
</tr>
</tbody>
</table>

**Is pilot burning?**

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Replace gas valve.</td>
<td></td>
</tr>
<tr>
<td>• Retest boiler.</td>
<td></td>
</tr>
</tbody>
</table>

**Are FLAME and POWER lights flashing?**

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Boiler should now operate normally.</td>
<td></td>
</tr>
<tr>
<td>• Original flashing FLAME light caused by gas valve not operating properly.</td>
<td></td>
</tr>
<tr>
<td>• See normal sequence of operation, Figure 1, page 6.</td>
<td></td>
</tr>
</tbody>
</table>

**TURN OFF POWER ▲ to boiler at service switch or breaker.**

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Open main manual gas valve.</td>
<td></td>
</tr>
<tr>
<td>• Turn on power to boiler at service switch or breaker.</td>
<td></td>
</tr>
<tr>
<td>• Restart boiler per operating instructions.</td>
<td></td>
</tr>
<tr>
<td>• Perform start-up procedures in boiler manual to verify proper operation.</td>
<td></td>
</tr>
</tbody>
</table>
Troubleshooting – (EG & PEG water boilers) continued

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

**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.

<table>
<thead>
<tr>
<th>Are manual main shut-off valve and gas valve open?</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
</tr>
<tr>
<td>• ▲ TURN OFF POWER ▲ to boiler at service switch or breaker.</td>
</tr>
<tr>
<td>• Open main manual shut-off valve and boiler gas valve (per Operating instructions in this manual). Wait at least 45 seconds.</td>
</tr>
<tr>
<td>• Turn on power at service switch or breaker. Allow boiler to cycle.</td>
</tr>
<tr>
<td><em>Does FLAME light flash now?</em></td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>• Boiler should be in normal operating sequence.</td>
</tr>
<tr>
<td>• Observe operation until thermostat is satisfied and blower has completed its post-purge cycle.</td>
</tr>
</tbody>
</table>

Verifying inlet gas pressure at gas valve:
- **Natural gas** – 5.0” w.c. min/14.0” w.c. max
- **Propane** – 11.0” w.c. min/14.0” w.c. max

<table>
<thead>
<tr>
<th>Is gas present at gas valve inlet and within above range?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

Contact gas supplier to correct pressure or gas supply.

**▲ TURN OFF POWER ▲** to boiler at service switch or breaker.

Verify pilot burner is securely attached to pilot bracket.
- Bracket is securely attached to cross-tie, and there is no corrosion on the the ground path for flame sense.
- Verify that pilot flame rod, flame rod ceramic and lead wire from control module to flame rod are in good condition.
- Correct any above problems, replacing pilot if burner or wiring is damaged.

If none of the above corrects problems, then replace the control module, reinstall base access panel, and retest.

- If none of the previous steps (including replacing pilot) correct the problem, then replace the control module, reinstall base access panel and retest.

- If the wiring from the control module to gas valve is intact, replace the control module and retest.

- Make sure ground wire terminal is securely fastened to control module mounting screw.

- Check the voltage across main gas valve terminals of the gas valve.
  - Is 24 VAC present there? |
  | Yes | No |

  - If the wiring from the control module to gas valve is intact, replace the control module.
  - Retest.

  - Check the voltage across main gas valve terminals of the gas valve.
  - Is 24 VAC present there? |
  | Yes | No |
Troubleshooting – (EG & PEG 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.

- Has it been at least 5 minutes since setting thermostat to call for heat? If not, wait 5 minutes. Is system heating?
- Is thermostat set to call for heat? Remove thermostat wires at boiler and check continuity across the two wires. If circuit isn’t closed, check external thermostat (zone valve, relay, etc.) wiring. Correct problems and retry.
- Reconnect external thermostat wiring at boiler.

**Is thermostat circuit closed (continuity across wires)?**

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Are all red lights off?</strong></td>
<td><strong>Boiler is in standby.</strong> Set thermostat to call for heat and recheck operation. <strong>Verify Sequence of operation, Figure 1, page 6.</strong></td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Wait 30 seconds. Are all red lights off?</strong></td>
<td><strong>Replace control module.</strong> <strong>Retest.</strong></td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
| **If you have sufficient heat – boiler should be in normal operating sequence. (See normal sequence of operation, Figure 1, page 6.**
- **If you have less than sufficient heat – is vent or combustion air piping free of blockage?** |
| No | Yes |
| **Correct conditions and recheck operation.** **See figure 1, page 6 for normal sequence of operation.** | **Contact your Weil-McLain sales representative.** |

- Wait for boiler water to cool to temperature 20 to 30 °F lower than temperature set on the limit switch.

**Are limit switch contacts closed?**

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
</table>
| **Replace limit switch.** **Retest.** | **Boiler water temperature exceeded setting on limit switch with thermostat calling for heat. Boiler is OK. (See normal sequence of operation, Figure 1, page 6.)** 
- **Also check operation of setting limit (should be above 140°F).** |

- **Check spill switch and rollout switch continuity – are switches closed?**

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reset spill switch, or replace rollout switch.</strong></td>
<td><strong>Check any other limit controls wired into the limit circuit. If all are OK, then replace control module.</strong> <strong>Retest.</strong></td>
</tr>
</tbody>
</table>

- **Is boiler System circulator operating?**

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
</table>

- **Remove CIRCULATOR harness plug from CIRCULATOR plug receptacle (Figure 15, Item 7, page 09). Check with voltmeter across pins of control module receptacle.**

**Does voltmeter show 120 VAC across pins?**

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Replace control module.</strong> <strong>Retest.</strong></td>
<td><strong>Repair/replace circulator. Retest.</strong> <strong>Repair/replace wiring. Retest.</strong></td>
</tr>
</tbody>
</table>

- **Wait 5 minutes**

**Is FLAME light on?**

| No | Yes |

- **Check limit switch contacts for continuity checker.**

**Are limit switch contacts closed?**

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
</table>

- **Replace control module.** **Retest.**

- **Is LIMIT light on?**

| No | Yes |

- **Check spill switch and rollout switch continuity – are switches closed?**

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
</table>

**DANGER**

- If rollout thermal fuse element or spill switch has opened, determine cause and correct condition. Failure to do so will cause severe personal injury, death or substantial property damage.
Troubleshooting – (steam boilers & EGH Water)

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

1. **VISUALLY CHECK** - Is ground wire connected from “GND (Burner)” to ignition control mounting screw; and ground wire connected from transformer Terminal “C” to case ground?
   - No
   - Yes

2. **Is the vent damper plug in place?**
   - No
   - Yes

3. **Check for open thermostat or circulator relay** (where used) or check for loose wire connections, defective spill switch or rollout thermal fuse element, or open LWCO or limit contacts.

   **DANGER** If LWCO, spill switch or rollout thermal fuse element contacts are open, determine cause and correct condition. Failure to do so will cause severe personal injury, death, or substantial property damage.

   • Replace ignition control

4. **Is 24VAC present across Terminals 24V & 24V(GND)?**
   - No
   - Yes

   - Replace damper plug and retest

5. **Open thermostat contacts for 15 seconds. Close thermostat contacts - is 24 VAC across terminals PV & MV/PV?**
   - No
   - Yes

   • Turn OFF supply voltage.

6. **Check spark wire, is it securely connected to spark transformer?**
   - No
   - Yes

7. **Is condition of spark wire good (not cut, brittle, burned, or cracked)?**
   - No
   - Yes

   • Replace pilot assembly.

8. **Is spark gap 0.125” and located in pilot gas stream?**
   - No
   - Yes

   - Replace pilot assembly, turn ON supply voltage, operate system several complete heat cycles.

9. **Is spark electrode ceramic cracked?**
   - No
   - Yes

   • Replace pilot assembly, turns ON supply voltage, operate system several complete heat cycles.

   - Replace ignition control.
Troubleshooting (steam boilers & EGH Water) continued

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

Is damper harness securely plugged in at both ends?

No | Yes
---|---

Secure connections.

Check for loose wire connections or bad relay on transformer.

No | Yes
---|---

Check for open thermostat or circ. relay (where used) or check for loose wire connections, defective spill switch or rollout thermal fuse element or open LWCO or high limit contacts.

DANGER If LWCO, spill switch or rollout thermal fuse element contacts are open, determine cause and correct condition. Failure to do so will cause severe personal injury death or substantial property damage.

Is 24VAC present across terminals C and Y on transformer?

No | Yes
---|---

Is damper rotated open?

No | Yes
---|---

Check for out of round stack section. Does motor rotate open?

Replace actuator.

No | Yes
---|---

Is 24VAC present across terminal C and yellow wire between damper connector and rollout thermal fuse element?

No | Yes
---|---

Open thermostat contacts for 30 seconds. Damper will rotate to closed position. Close thermostat contacts. Damper will rotate to open position.

Is 24VAC present at Terminals PV and MV/PV?

No | Yes
---|---

Is spark present now?

Yes | No
---|---

Turn off supply voltage.

Is spark wire, is it securely connected to ignition control?

No | Yes
---|---

Check continuity of each wire in wiring harness to damper. Does continuity exist for each wire?

No | Yes
---|---

Replace damper wiring harness.

Replace ignition control.

Remove damper harness from boiler wiring harness. TEMPORARILY install jumper between terminal 2 and terminal on damper plug in damper wiring harness. See Figure 14. Does boiler fire?

No | Yes
---|---

Replace pilot assembly.

Replace actuator.

Is condition of spark wire good (not brittle, burned, or cracked)?

No | Yes
---|---

Is spark electrode ceramic cracked?

No | Yes
---|---

Is spark gap 0.125" and located in pilot gas stream?

No | Yes
---|---

Replace pilot assembly.

Turn on supply voltage and operate system several complete cycles.

Replace ignition control.

FIGURE 14
CHART 9: PILOT LIGHTS — Main valve will not come on — With or without vent damper

Does spark stay on for more than a few seconds after pilot is established?

- **No**
  - Is 24VAC between terminals MY and PV on ignition control?
    - **No**
      - Replace ignition control.
    - **Yes**
      - Contact gas supplier to correct pressure.
  - **Yes**
    - Correct wiring.

- **Yes**
  - Make sure sense wire is not wrapped around any pipes or accessories.
    - Is sense wire securely attached to sense terminal and pilot assembly?
      - **No**
        - Correct.
      - **Yes**
        - Is sensing probe ceramic cracked?
          - **No**
            - Replace pilot assembly.
          - **Yes**
            - Is sense wire or sensing probe shorted out to a metal surface?
              - **No**
                - Correct.
              - **Yes**
                - Replace pilot assembly.

Correct wiring.

Replace gas valve.

check sense wire continuity. Check condition of insulation. Both OK?

- **No**
  - Replace pilot assembly.
- **Yes**
  - Set up microammeter to measure output current in flame sensor circuit as follows:
    a. Detach sense lead from ignition control. Attach negative lead from microammeter to sense terminal on ignition control.
    b. Attach positive lead to sense wire from pilot assembly.
    c. Disconnect main valve lead from terminal “MV” on ignition control.
  - d. Energize the system. Spark should ignite the pilot. As soon as pilot is burning, the microammeter should read at least 1.0 microamp for Honeywell S8620C control, or 0.1 microamp for United Technologies 1003-011-A control.
  - e. Is flame current signal less than the minimum specified in step “d” above?

- **No**
  - Replace ignition control.
- **Yes**
  - • Check for proper gas pressure.
  - • Clean pilot assembly.
  - • Tighten mechanical and electrical connections.
  - • Check for proper system grounding.
  - • See procedure to check grounding on next page.
Troubleshooting – (steam boilers & EGH Water) 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 set.
- 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

Are pilot valve connections correct and securely fastened?

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
</table>

Connect securely to terminals PV and MV/PV on ignition control.

Is inlet gas pressure at least 5.0" w.c. and no more than 14.0" w.c.?

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
</table>

Is manual hand valve open?

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
</table>

Open manual hand valve.

Contact gas supplier to correct gas pressure.

Make sure gas cock is in "ON" position and pilot line is not kinked or obstructed. Check for clean pilot orifice. If OK, replace the gas valve.

Is gas present at pilot burner assembly?

| CAUTION |
To check for gas at pilot — Remove the wire to "MV" on the ignition control. Use a match taped to a long screwdriver or pilot lighter rod to manually light the pilot. Does the pilot light?

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
</table>

Is spark gap 0.125" and located in pilot gas stream?

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
</table>

Replace pilot assembly.

- Block any draft around the boiler.
- Check for clean pilot orifice.
# 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.

<table>
<thead>
<tr>
<th>Description</th>
<th>Manufacturer / Mfr's part number</th>
<th>Weil-McLain part number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Damper assembly</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Field Controls GVD-5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Johnson Q35GD-2</td>
<td></td>
</tr>
<tr>
<td>6'' — EG-40, EG-45, PEG-40, PEG-45</td>
<td>Effikal RVGP-KS-68KF</td>
<td>381-800-476</td>
</tr>
<tr>
<td></td>
<td>Field Controls GVD-6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Johnson Q35GF-2</td>
<td></td>
</tr>
<tr>
<td>7'' — FG-50, FG-55, PFG-50, PFG-55</td>
<td>Effikal RVGP-KS-78KF</td>
<td>381-800-477</td>
</tr>
<tr>
<td></td>
<td>Field Controls GVD-7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Johnson Q35GH-2</td>
<td></td>
</tr>
<tr>
<td>8'' — EG-55, EG-75, PEG-65</td>
<td>Effikal RVGP-KS-88KF</td>
<td>381-800-478</td>
</tr>
<tr>
<td></td>
<td>Field Controls GVD-8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Johnson Q35 GK-2</td>
<td></td>
</tr>
<tr>
<td>9'' — EGH-85</td>
<td>Effikal RVGP-KS-98KF</td>
<td>381-800-445</td>
</tr>
<tr>
<td></td>
<td>Field Controls GVD-9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Johnson Q35GM-2</td>
<td></td>
</tr>
<tr>
<td>10'' — EGH-95, EGH-105</td>
<td>Effikal RVGP-KS-108KF</td>
<td>381-800-446</td>
</tr>
<tr>
<td></td>
<td>Field Controls GVD-10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Johnson Q35 GP-2</td>
<td></td>
</tr>
<tr>
<td>12'' — EGH-115, EGH-125</td>
<td>Effikal RVGP-KS-128KF</td>
<td>381-800-447</td>
</tr>
<tr>
<td></td>
<td>Field Controls GVD-12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Johnson Q35 GR-2</td>
<td></td>
</tr>
<tr>
<td><strong>Damper actuator</strong></td>
<td>Effikal RVGP</td>
<td>510-512-337</td>
</tr>
<tr>
<td><strong>Damper harness</strong></td>
<td>Weil-McLain</td>
<td>591-391-795</td>
</tr>
<tr>
<td><strong>UCS Ignition control</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Gas (Water boilers only)</td>
<td>Honeywell SS620C1003</td>
<td>511-330-097</td>
</tr>
<tr>
<td>Liquifed Petroleum (propane) Gas</td>
<td>United Technologies 1135-605</td>
<td>381-330-010</td>
</tr>
<tr>
<td>(Water boilers only)</td>
<td>United Technologies 1135-606</td>
<td>381-330-011</td>
</tr>
<tr>
<td><strong>Boiler wiring harness</strong> (in envelope assembly)</td>
<td>Weil-McLain</td>
<td>540-130-959</td>
</tr>
<tr>
<td>EG-30 through -75 water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EG-35 through -75 water with tankless heater</td>
<td></td>
<td>540-130-960</td>
</tr>
<tr>
<td>EG-34 through -75 steam, float LWCO</td>
<td></td>
<td>540-130-961</td>
</tr>
<tr>
<td>EG-30 through -75, PEG-30 through -65 steam, probe LWCO</td>
<td></td>
<td>540-130-962</td>
</tr>
<tr>
<td>EGH water without tankless heater</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EGH water with tankless heater</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EGH steam, float LWCO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EGH steam, probe LWCO</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pilot burner assembly</strong></td>
<td>Precision Speed Equipment PSE-NA16</td>
<td>511-330-218</td>
</tr>
<tr>
<td><strong>Gas valve, natural gas</strong></td>
<td>Honeywell VR8204A201</td>
<td>511-044-381</td>
</tr>
<tr>
<td>½'' x ½'', sizes 30 through 50</td>
<td>White-Rodgers 36E36-266</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rueter 110 kw 7200PER</td>
<td></td>
</tr>
<tr>
<td>¾'' x ¾'', sizes 55 through 75</td>
<td>Honeywell VR8324A4348</td>
<td>511-044-382</td>
</tr>
<tr>
<td></td>
<td>White-Rodgers 36C47-474</td>
<td></td>
</tr>
<tr>
<td>¾'' x 1'', sizes 85 through 95</td>
<td>Roberishaw 7000DERHC-S7C</td>
<td>511-044-286</td>
</tr>
<tr>
<td>1'' x 1'', sizes 105 through 125</td>
<td>Roberishaw 7000DERHC-S7C</td>
<td>511-044-287</td>
</tr>
</tbody>
</table>