



**WEIL-McLAIN®**

# **GOLD™ CGt**

Natural gas-fired water boiler  
with tankless heater

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## **User's Information Manual**

### **INSTALLER:**

Please take time to review this User's Information Manual with the boiler owner. Explain all maintenance and service procedures and the correct Lighting or Operating Instructions.

### **▲ WARNING**

If the information in this manual is not followed exactly, a fire or explosion may result, causing property damage, personal injury or loss of life.

Do not store or use **gasoline or other flammable vapors and liquids** in the vicinity of this or any other appliance.

### **WHAT TO DO IF YOU SMELL GAS**

- **Do not try to light any appliance.**
- **Do not touch any electrical 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.**

Installation and service must be performed by a qualified installer, service technician or the gas supplier.



## Please read this page first

### How to use this manual . . .

To . . .	Read/use . . .	Pages . . .
<b>Learn precautions</b>	Warnings and definitions	<b>1, 2, and 3</b>
<b>Prevent air contamination</b>	Read list of air contaminants you must avoid. <b>If found, either remove products permanently or isolate boiler and provide outside combustion air.</b>	<b>3</b>
<b>Identify boiler components</b>	The illustration on page 4, will show you the location of the main components.	<b>4</b>
<b>Maintain boiler</b>	Set up a <b>plan for maintaining the boiler</b> using the schedule included in this manual. Schedule an <b>annual start-up</b> by a qualified service technician before every heating season.	<b>5</b>
<b>Start — or — Shutdown boiler</b>	Use the <b>Operating instruction</b> sheet for the gas valve installed on your boiler. Ask your service technician if you are unsure which one.	<b>10</b>
<b>Troubleshoot common problems</b>	Use the common problems/solutions table to resolve typical heating system/boiler problems.	<b>11</b>

### Hazard definitions

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



Indicates presence of hazards that **will cause severe** personal injury, death or substantial property damage.



Indicates presence of hazards that **can cause severe** personal injury, death or substantial property damage.



Indicates presence of hazards that **will or can cause minor** personal injury or property damage.



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

### Boiler service and maintenance



The Boiler manual is for use only by a qualified heating installer/service technician. Refer only to this User's Information Manual for your reference. Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury (exposure to hazardous materials) or loss of life. Installation and service must be performed by a qualified installer, service agency or the gas supplier (who must read and follow the supplied instructions before installing, servicing, or removing this boiler. The boiler contains materials that have been identified as carcinogenic, or possibly carcinogenic, to humans).



# STOP!! – Read before proceeding



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



## Air contamination

- To prevent potential of severe personal injury or death, check for products or areas listed in table at right before installing boiler. If any of these contaminants are found:
  - remove contaminants permanently.
  - OR —
  - isolate boiler and provide outside combustion air. See national, provincial or local codes for further information.



## Service and maintenance

- To avoid electric shock, **disconnect electrical supply** before performing maintenance.
- To avoid severe burns, **allow boiler to cool** before performing maintenance.
- You must **maintain** the boiler as outlined in the manual and have the boiler **started up and serviced at least annually by a qualified service technician** to ensure boiler/system reliability.



## Boiler operation

- **Do not block flow of combustion or ventilation air** to boiler. This boiler is equipped with a control which will automatically shut down the boiler should vent be blocked. If vent or air blockage is easily accessible and removable, remove it. The boiler should attempt to restart within an hour. If blockage is not obvious or cannot be removed, have the boiler and system checked by a qualified service technician.
- Should **overheating occur or gas supply fail to shut off**, do not turn off or disconnect electrical supply to pump. Instead, **shut off the gas supply** at a location **external to the appliance**.
- **Do not use this boiler if any part has been under water.** Immediately call a qualified service technician to inspect the boiler and to replace any part of the control system and any gas control, which has been under water.
- **Have the building monitored when it is vacant** for an extended period. Safety controls can shut down the boiler at any time. The loss of heat can result in significant damage due to freezing.



## Boiler water

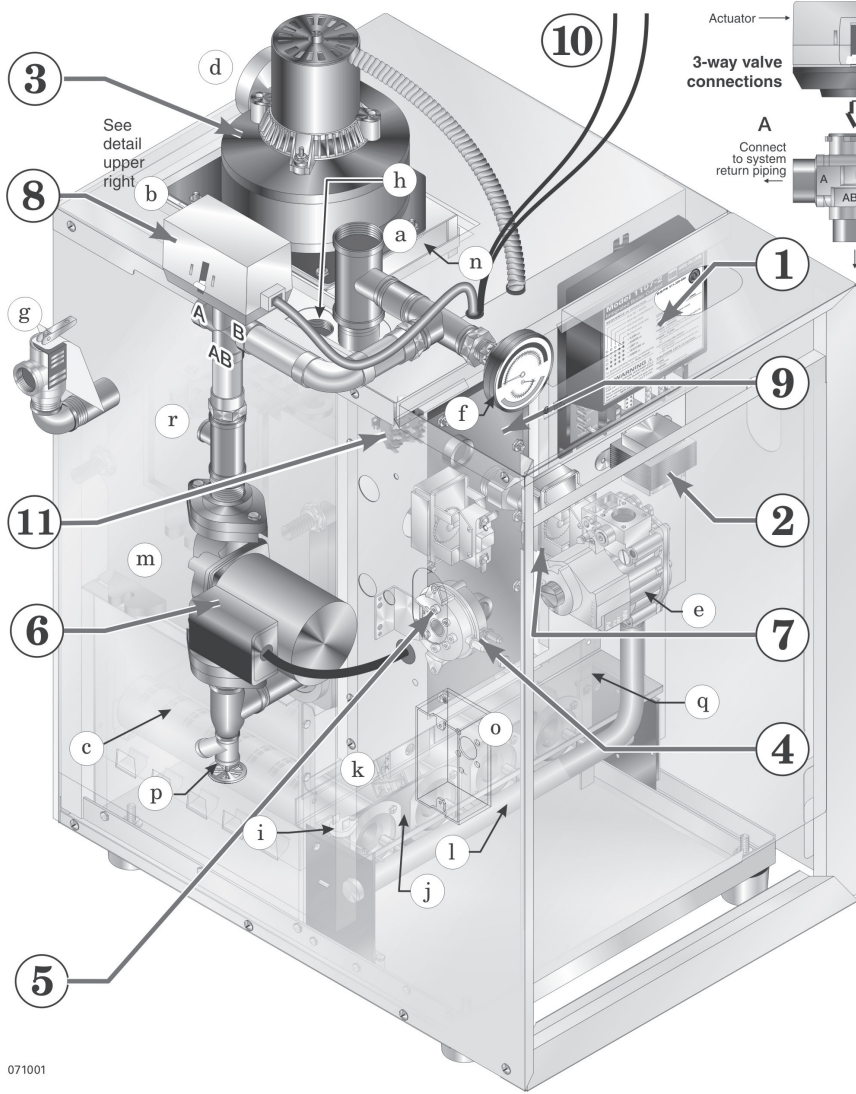
- **DO NOT use petroleum-based** cleaning or sealing compounds in boiler system. Water seal deterioration will occur, causing leakage between sections and damage to heating system components. This can result in substantial property damage.
- **DO NOT use “homemade cures” or “boiler patent medicines”.** Serious damage to boiler, personnel and/or property may result.
- Continual fresh **makeup water will reduce boiler life.** Mineral buildup in sections reduces heat transfer, overheats cast iron, and causes section failure. Addition of oxygen and other gases can cause internal corrosion. Leaks in boiler or piping must be repaired at once to prevent makeup water.
- **Do not add cold water to hot boiler.** Thermal shock can cause sections to crack.

Products to avoid
Spray cans containing chloro/fluorocarbons
Permanent wave solutions
Chlorinated waxes/cleaners
Chlorine-based swimming pool chemicals
Calcium chloride used for thawing
Sodium chloride used for water softening
Refrigerant leaks
Paint or varnish removers
Hydrochloric acid/muriatic acid
Cements and glues
Antistatic fabric softeners used in clothes dryers
Chlorine-type bleaches, detergents, and cleaning solvents found in household laundry rooms
Adhesives used to fasten building products and other similar products
Areas likely to have contaminants
Dry cleaning/laundry areas and establishments
Swimming pools
Metal fabrication plants
Beauty shops
Refrigeration repair shops
Photo processing plants
Auto body shops
Plastic manufacturing plants
Furniture refinishing areas and establishments
New building construction
Remodeling areas
Garages with workshops



# Boiler components

## CGt



- 1 Control module
- 2 Transformer
- 3 Inducer
- 4 Air pressure switch
- 5 High limit
- 6 Boiler circulator
- 7 Tankless heater low limit control
- 8 3-Way valve
- 9 Tankless heater
- 10 Wires to ambient temperature switch
- 11 Relay

- a supply to system
- b return from system
- c stainless steel burners
- d flue outlet
- e gas valve
- f pressure/temperature gauge
- g relief valve
- h air vent connection
- i flame rollout thermal fuse element (TFE)
- j burner holding bracket
- k pilot burner and bracket
- l gas manifold
- m cast iron boiler sections
- n flue collector
- o junction box
- p drain valve
- q burner shield
- r tee 1 x 1 x 1/2 NPT

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## Maintain boiler using schedule below

<b>Service technician</b> (covered in Boiler Manual — for use only by a qualified service technician)		<b>Owner maintenance</b> (see following pages for instructions)	
<b>ANNUAL START-UP</b>	<p><b>Inspect:</b></p> <ul style="list-style-type: none"> <li>• Reported problems</li> <li>• Boiler area</li> <li>• Air openings</li> <li>• Flue gas vent system</li> <li>• Pilot and main burner flames</li> <li>• Water piping</li> <li>• Boiler heating surfaces</li> <li>• Burners, base and inlet air box</li> </ul>	<b>Daily</b>	<ul style="list-style-type: none"> <li>• Check boiler area</li> <li>• Check air openings</li> <li>• Check boiler pressure/temperature gauge</li> </ul>
	<p><b>Service:</b></p> <ul style="list-style-type: none"> <li>• Oiled-bearing circulators</li> </ul>	<b>Monthly</b>	<ul style="list-style-type: none"> <li>• Check boiler interior piping</li> <li>• Check venting system</li> <li>• Check air vents</li> <li>• Check boiler relief valve</li> <li>• Check automatic air vents (if used)</li> </ul>
	<p><b>Start-up:</b></p> <ul style="list-style-type: none"> <li>• Perform start-up per manual</li> </ul>	<b>Periodically</b>	<ul style="list-style-type: none"> <li>• Test low water cutoff (if used)</li> </ul>
	<p><b>Check/test:</b></p> <ul style="list-style-type: none"> <li>• Gas piping</li> <li>• Cold fill and operating pressures</li> <li>• Air vents and air elimination</li> <li>• Limit controls and cutoffs</li> <li>• Expansion tank</li> <li>• Boiler relief valve</li> </ul>	<b>Every 6 months</b>	<ul style="list-style-type: none"> <li>• Operate relief valve</li> </ul>
	<p><b>Review:</b></p> <ul style="list-style-type: none"> <li>• Review with owner</li> </ul>	<b>End of season</b>	<ul style="list-style-type: none"> <li>• Shut down procedure</li> </ul>

### Tankless water heater

If boiler is used to supply domestic hot water, limit control should be set to supply adequate hot water. Weil-McLain tankless heaters are rated at 200°F boiler water temperature. To get rated output, set low limit at 200°F. Limit can be adjusted to meet system hot

water requirements. Lowering the setting will cause a slight variation in water temperature but will decrease burner on-off cycling. High limit should be set at least 20° above low limit.



# User maintenance procedures

## Boiler must be serviced & maintained

**WARNING**

The boiler should be inspected and started annually, at the beginning of the heating season, only by a qualified service technician. In addition, the maintenance and care of the boiler designated on page 6 and explained on the following pages must be performed to assure maximum boiler efficiency and reliability. Failure to service and maintain the boiler and system could result in equipment failure, causing possible severe personal injury, death or substantial property damage.

**NOTICE**

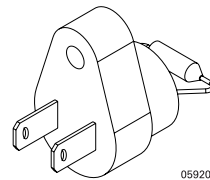
The following information provides detailed instructions for completing the maintenance items listed in the maintenance schedule, page 6. In addition to this maintenance, the boiler must be serviced and started up at the beginning of each heating season by a qualified service technician.

## Component information

### Rollout thermal fuse element

Cuts off gas flow should flame rollout occur. See **Figure 1**.

**Figure 1** Rollout thermal fuse element



**WARNING**

Do not attempt to place boiler in operation if rollout thermal fuse element cuts off gas flow. Immediately call a service technician. Failure to do so can cause severe personal injury, death or substantial property damage.

## ☐ Check daily . . . . .

### Boiler area

**WARNING**

To prevent potential of severe personal injury, death or substantial property damage, eliminate all materials as discussed below from the boiler vicinity. If found:

- Remove products immediately from the area. If they have been there for an extended period, call a qualified service technician to inspect the boiler and vent system for possible damage from acid corrosion.
  - If products cannot be removed, immediately call a qualified service technician to install an outside combustion air source for the boiler (if not already installed).
1. Combustible/flammable materials — Do not store combustible materials, gasoline or any other flammable vapors or liquids near the boiler. Remove immediately if found.
  2. Air contaminants — See listing of contaminants on page 3.

### Pressure/temperature gauge

1. Make sure the pressure reading on the boiler pressure/temperature gauge does not exceed 24 psig. Higher pressure may indicate a problem with the expansion tank or gauge.
2. Contact a qualified service technician if problem persists.

### Air openings

Verify that combustion and ventilation air openings to the boiler room and/or building are open and unobstructed.



## ☐ Check monthly . . . . .

### Boiler piping

Visually inspect for leaks around piping, circulators, relief valve and other fittings. Immediately call a qualified service technician to repair any leaks.



Have leaks fixed at once by a qualified service technician. Continual fresh makeup water will reduce boiler life. Minerals can build up in sections, reducing heat transfer, overheating cast iron, and causing section failure.



Do not use **petroleum-based cleaning or sealing compounds** in boiler system. Severe damage to boiler and system components can occur, resulting in possible severe personal injury, death or substantial property damage.

### Venting system

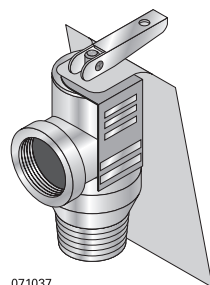


Failure to inspect the vent system as noted above and have them repaired by a qualified service technician can result in vent system failure, causing severe personal injury or death.

1. Visually inspect all parts of the flue gas venting system for any signs of blockage, leakage or joints or deterioration of the piping.
2. Notify your qualified service technician at once if you find any problem.

### Boiler relief valve

1. Inspect the boiler relief valve (see **Figure 2**) and the relief valve discharge pipe for signs of weeping or leakage.
2. If the relief valve often weeps:
  - The expansion tank may not be working properly.
  - Immediately contact your qualified service technician to inspect the boiler and system.



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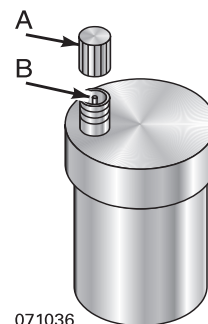
**Figure 2** Relief valve

### Check condensate drain system

1. Inspect condensate drain fittings and tubing. Verify that condensate can flow freely to drain.

### Automatic air vents (if used)

1. See **Figure 3**.
2. Remove the cap from any automatic air vent in the system and check operation by depressing valve **B** slightly with the tip of a screwdriver.
3. If the air vent valve appears to be working freely and not leaking, replace cap **A**, twisting all the way on.
4. Loosen cap **A** one turn to allow vent to operate.
5. Have vent replaced if it does not operate correctly.



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**Figure 3** Automatic air vent



**Check monthly** continued. . . . .

**Pilot burner flame**

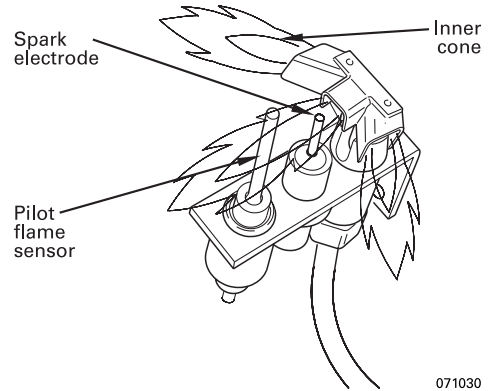
**Proper** pilot flame (see **Figure 4**):

1. Blue flame.
2. Inner cone engulfing pilot flame sensor.
3. Pilot flame sensor glowing cherry red.

**Improper** pilot flame:

1. Overfired — Large flame lifting or blowing past pilot flame sensor.
2. Underfired — Small flame. Inner cone not engulfing pilot flame sensor.
3. Lack of primary air — Yellow flame tip.
4. Incorrectly heated pilot flame sensor.

**Figure 4** Pilot burner and flame, typical



**Figure 5** Main burner flame, typical

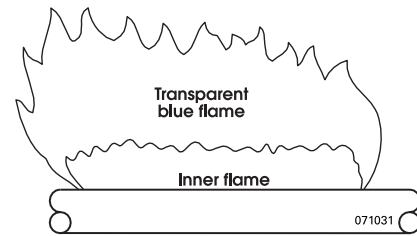
**Main burner flame**

**Proper** main burner flame (see **Figure 5**):

1. Yellow-orange streaks may appear (caused by dust).

**Improper** main burner flame:

1. Overfired — Large flames.
2. Underfired — Small flames.
3. Lack of primary air — Yellow tipping on flames (sooting will occur).



**Service periodically** . . . . .

**Test low water cutoff (if installed)**

If the system is equipped with a low water cutoff, test the low water cutoff periodically during the heating season, following the low water cutoff manufacturer's instructions.



## ☐ **Service every 6 months . . . . .**

### **Operate boiler relief valve**



To avoid water damage or scalding due to valve operation, a metal discharge line must be connected to relief valve outlet and run to a safe place of disposal. This discharge line must be installed by a qualified heating installer or service technician in accordance with the instructions in the **Boiler Manual**. The discharge line must be terminated so as to eliminate possibility of severe burns should the valve discharge.

1. Before proceeding, verify that the relief valve outlet has been piped to a safe place of discharge, avoiding any possibility of scalding from hot water.
2. Read the boiler pressure/temperature gauge to make sure the system is pressurized.
3. Lift the relief valve top lever slightly, allowing water to relieve through the valve and discharge piping.
4. If water flows freely, release the lever and allow the valve to seat. Watch the end of the relief valve discharge pipe to ensure that the valve does not weep after the line has had time to drain. If the valve weeps, lift the seat again to attempt to clean the valve seat. If the valve continues to weep afterwards, contact your qualified service technician to inspect the valve and system.
5. If water does not flow from the valve when you lift the lever completely, the valve or discharge line may be blocked. Immediately shutdown the boiler, following the instructions on the inside jacket top Lighting Instructions. Call your qualified service technician to inspect the boiler and system.

## ☐ **End-of-season shutdown . . . . .**

### **Follow boiler shutdown procedure**

1. Follow “**TOTURN OFF GASTO APPLIANCE**” on the **Operating instructions** on the inside of the jacket panel. You will also find these instructions on page 10 of this manual.  
Use the **Operating instruction** for the gas valve model installed on the boiler.
2. Do not drain system unless exposure to freezing temperatures will occur.
3. Do not drain the system if it is filled with an antifreeze solution.
4. Do not shut down boilers used for domestic water heating. They must operate year-round.



# Operating instructions

## • Gas valve – Honeywell VR8204 and White-Rodgers 36E

### FOR YOUR SAFETY READ BEFORE OPERATING



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

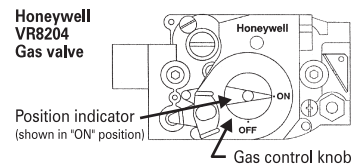
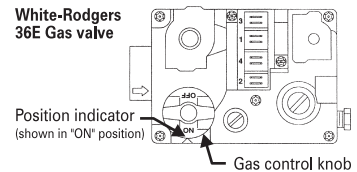
- A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. **Do not** try to light the burner by hand.
- B. Before **OPERATING**, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than 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 jacket front panel.
5. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner 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 APPLIANCE**" below and call your service technician or gas supplier.
12. Replace jacket front panel.



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### 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 jacket front panel.
4. Turn **Gas control knob** clockwise ↻ to **OFF**. Do not force.
5. Replace jacket front panel.



# Common problems and solutions

Symptom	Common Causes	Possible Corrections
<b>Rapid cycling – boiler turns on and off frequently</b>	Thermostat installed where drafts or heat affect reading	Locate thermostat on inner wall away from heat sources or cool drafts.
	Heat anticipator in thermostat adjusted incorrectly	Adjust thermostat per manufacturer's instructions.
	Incorrect limit setting	Set limit according to system needs. Maximum setting is 220°F. Increase limit setting to decrease cycling.
	Insufficient water flow through boiler	Check all valves to and from boiler. Return to proper setting. Confirm circulator size.
<b>Frequent release of water through relief valve</b>	Expansion tank sized too small	Call qualified service technician to check expansion tank operation and size.
	Flooded expansion tank	Call qualified service technician to check expansion tank operation.
	Inoperative limit control	Call qualified service technician to replace limit control.
<b>Need to frequently add makeup water</b>	Leaks in boiler or piping	Have qualified service technician repair leaks at once to avoid constant use of makeup water. Makeup water can cause mineral deposits which, in turn, can cause boiler section failure. Do not use petroleum-base stop-leak compounds.
<b>Black water condition</b>	Oxygen corrosion due to leaks in boiler and piping	Have qualified service technician repair at once. Keep pH of water between 7.0 to 8.5.
<b>Popping or percolating noise heard in boiler</b>	Mineral deposits in sections due to constant use of makeup water	Call qualified service technician to de-lime boiler, if necessary. In some cases, deposits will be too heavy to remove with de-liming procedures. Have qualified service technician repair leaks to eliminate need for constant makeup water.
	Incorrect pH of boiler water	Call qualified service technician to check pH level and correct. pH should be maintained between 7.0 to 8.5.
	Insufficient water flow through boiler	Check all valves to and from boiler. Return to proper setting. Confirm circulator size.
<b>Metal flakes found in vent outlet or vent – flueway corrosion</b>	Contaminated combustion air supply — See page 3 in this manual.	Remove any contaminating products. See page 3 in this manual. Provide outside air for combustion. Kit available through Weil-McLain distributor. Have qualified service technician pipe-up kit.
	Condensation of combustion gases in boiler sections	Have qualified service technician inspect system piping and controls to verify proper regulation of return water temperature.
<b>Some radiators or baseboard units do not heat or are noisy</b>	Air in system	Bleed air from system through air vents in radiators or baseboard units.
	Low system pressure	Fill to correct pressure. Check for leaks in boiler or piping. Have qualified service technician repair at once.
	High limit set too low	Adjust high limit to higher setting.
<b>Domestic water from tankless heater is hot then suddenly turn cold.</b> <b>OR</b> <b>Domestic water from tankless heater is always lukewarm.</b>	Mineral deposits insulate internal waterways of heater.	Have qualified service technician delime or replace coil.
	Boiler stop-leak compound has been added to boiler water and is insulating outside of coil.	Have qualified service technician remove and clean coil AND drain and flush boiler to remove stop-leak.
	Incorrect mixing valve setting for tankless heater.	Have qualified service technician adjust mixing valve setting.
	Domestic flow rate too high.	Have qualified service technician install flow check valve set to rating of tankless heater.
	Incorrect setting on tankless heater control.	Have qualified service technician raise tankless control setting. Adjust differential on tankless control to lower setting.
	3-Way valve does not work.	Have qualified service technician inspect the 3-way valve wiring, actuator and body. Check operation of valve. If actuator does not move when the boiler is shut off and there is a call for domestic water replace valve and actuator.



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