

# WEIL-McLAIN



## HE II BOILER

## USER'S INFORMATION MANUAL

Boiler installation is not complete until these instructions have been reviewed with the user and are attached adjacent to the boiler. The user is defined as the person responsible for care and maintenance.

Maintenance as outlined in the minimum maintenance schedule can be performed by the user. Regular service by a qualified service agency and maintenance must be performed to assure maximum boiler operating efficiency.

**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 agency or the gas supplier.

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

## DANGER

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

## CAUTION

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

## WARNING

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

## NOTICE

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

# What Every User Should Know

## WARNING

To avoid electric shock, disconnect electrical supply before servicing.

To avoid severe burns, allow boiler to cool before servicing.

Do not block flow of combustion or ventilation air to boiler.

Should overheating occur or gas supply fail to shut off, do not turn off or disconnect electrical supply to boiler. Shut off gas supply outside the boiler and call your serviceman.

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.

Never use petroleum-based stop-leak compounds. Water seal deterioration will occur, resulting in leakage between sections.

## BOILER WATER:

1. DO NOT use "homemade cures" or "boiler patent medicines." Serious damage to boiler, personnel and/or property may result.
2. Continual fresh make-up water will reduce boiler life. Mineral build-up 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 make-up water.

Boiler water pH of 7.0 to 8.5 is recommended.

For unusually hard water areas (above 7 grains hardness) or low pH conditions (below 7.0), consult local water treatment company.

3. DO NOT add large amounts of cold water to hot boiler. Thermal shock can cause sections to crack.
4. DO NOT drain boiler during periods of shutdown unless system is exposed to freezing temperatures. DO NOT drain boiler if anti-freeze is used. Repeated filling and draining has same effect as make-up water.

## 5. Freeze protection (when used):

Use antifreeze especially made for hydronic systems. Inhibited propylene glycol is recommended. DO NOT use undiluted or automotive antifreeze.

50% solution provides protection to about -34°F.

Local codes may require a back-flow preventer or actual disconnect from city water supply.

Determine quantity according to system water content. Boiler water content is listed in boiler manual. Remember to add in expansion tank water content.

Follow antifreeze manufacturer's instructions.

## COMBUSTION AIR QUALITY:

When vent pipe for HE II is run through cold areas, **do not store or use** any of the following types of contaminating products **in or near** boiler area. They can contribute to shortened vent system life.

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  
 anti-static fabric softeners used in clothes dryers  
 chloride-type bleaches, detergents, and cleaning  
 solvents found in household laundry rooms  
 adhesives used to fasten building products  
 . . . . and other similar products

## WARNING

If any products listed above are found in or near boiler area:

remove products permanently.  
 or

call installer to investigate possibility of running vent pipe through warm area.

Failure to do so can contribute to shortened vent system life.

# Maintenance

## SUGGESTED MINIMUM MAINTENANCE SCHEDULE:

### Beginning of each heating season:

1. Annual service call by qualified service agency.
2. Check burners and flueways for sooting. Use a mirror and flashlight to look up from base through sections. Call service technician to clean if necessary.
3. Visually inspect venting system for proper function, deterioration or leakage.
4. Visually inspect base insulation. See page 7.
5. Check that boiler area is free from combustible materials, gasoline, and other flammable vapors and liquids.
6. Check for and remove any obstruction to the flow of combustion or ventilation air to boiler. This boiler will shut down if vent or air intake is blocked. If red PURGE light on control module is flashing, call a qualified service technician.
7. Follow "To Place in Operation," page 8.
8. Visually inspect burner flame. See page 8.
9. Check operation of safety devices. Refer to manufacturer's instructions.
10. Follow oil-lubricating instructions on circulator. Over-oiling will damage circulator. Water-lubricated circulators do not need oiling.
11. Visually inspect condensate drain trap and hose, if used, for proper operation or deterioration.
12. Check for leaks in boiler and piping. If found, immediately call service technician to repair.

#### WARNING

Never use petroleum-based stop-leak compounds. Water seal deterioration will occur, resulting in leakage between sections.

13. Oil blower motor with a few drops of S.A. E. 20 motor oil. See page 6.

### Daily during heating season:

1. Check that boiler area is free from combustible materials, gasoline and other flammable vapors and liquids.
2. Check for and remove any obstruction to the flow of combustion air to boiler. This boiler will shut down if vent is blocked. If red PURGE light on control panel is flashing, call a qualified service technician.

### Monthly during heating season:

1. Check for leaks in boiler and piping. If found, immediately call service technician to repair.

#### WARNING

Never use petroleum-based stop-leak compounds. Water seal deterioration will occur, resulting in leakage between sections.

2. Visually inspect burner flame. See page 8.
3. Visually inspect venting system for proper function, deterioration or leakage.
4. Check air vents for leakage.

### Periodically during heating season:

1. Check relief valve. Refer to manufacturer's instructions on valve.
2. Test low water cut-off, if used. Refer to manufacturer's instructions.
3. Visually inspect condensate drain trap and hose, if used, for proper operation or deterioration.

### Every 6 months:

1. Oil blower motor with a few drops of S.A.E. 20 motor oil. See detailed instructions, page 6.

### End of each heating season:

#### ANNUAL SHUT-DOWN PROCEDURE

1. Follow "To Turn Off Gas To Appliance" instructions. See pages 9 - 11 and use instructions according to type of gas valve.
2. DO NOT drain system unless exposure to freezing temperatures will occur. DO NOT drain system if antifreeze is used.

SEE PAGES 6 - 9 FOR DETAILED MAINTENANCE INSTRUCTIONS

# DETAILED MAINTENANCE INSTRUCTIONS

RATING LABEL AND  
CP NUMBER  
(ON JACKET  
LEFT PANEL)

BLOWER MOTOR

LIMIT CONTROL

CIRCULATOR

TRANSFORMER

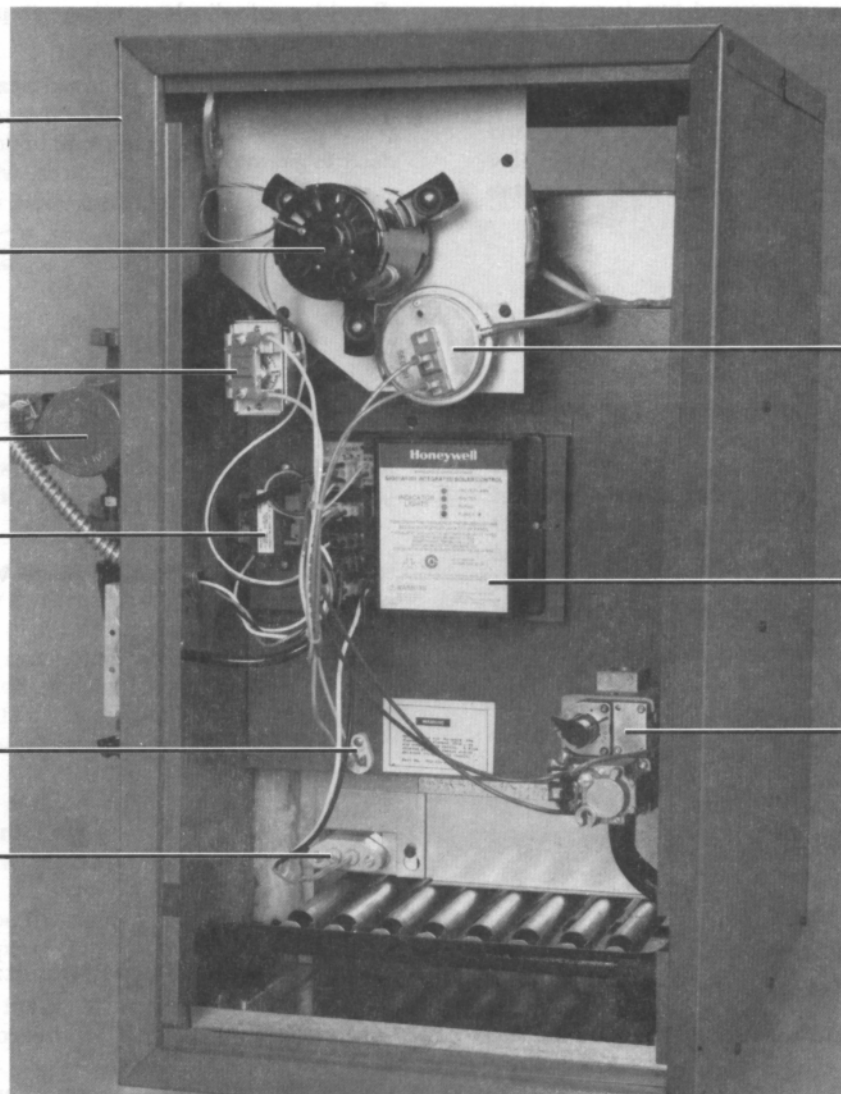
ROLLOUT  
THERMAL  
FUSE ELEMENT

IGNITOR

AIR PRESSURE SWITCH

CONTROL MODULE

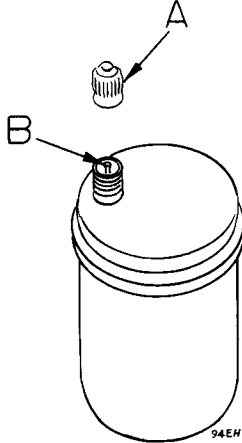
GAS VALVE



## DETAILED MAINTENANCE INSTRUCTIONS

### Automatic Air Vent:

Air is released when cap is unscrewed two turns. Automatic vents can be installed in air vent tapping on boiler or at high points in system.



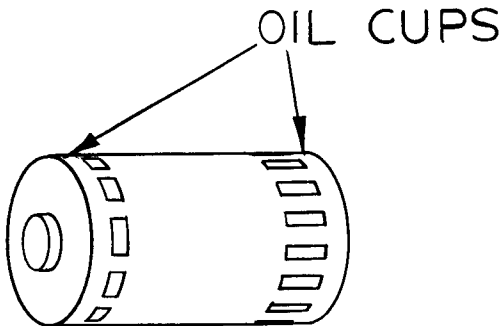
**AUTOMATIC AIR VENT**

#### Maintenance:

1. If leaking, remove cap A and briefly push valve B in by hand and then release to clean valve seat.
2. Replace cap A by twisting all the way onto valve B and then unscrew 2 turns.

### Blower Motor:

Operates blower wheel to mix combustion air and gas.



**BLOWER MOTOR**

#### Maintenance:

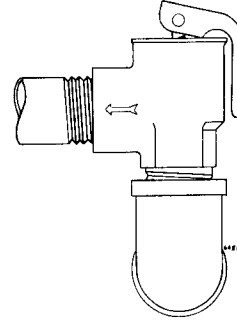
1. Shut off power to boiler.
2. Place a few drops of S.A.E. 20 motor oil in 2 blower motor oil cups. **Do not use common universal household oils.**
3. Restore boiler to original operating condition.

### Relief Valve:

Provides safe discharge through piping near floor or close to floor drain.

#### WARNING

To avoid scalding or water damage, relief valve must be piped near floor or close to floor drain. Do not pipe to any area where freezing temperatures could occur.



**WATER RELIEF VALVE**

#### Maintenance:

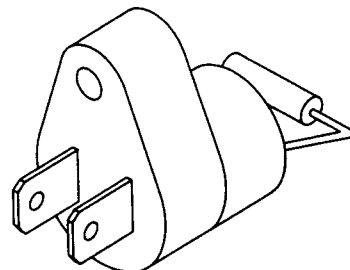
Refer to manufacturer's instructions on valve.

### Rollout Thermal Fuse Element:

Cuts off gas flow should flame rollout occur.

#### WARNING

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



**ROLLOUT THERMAL FUSE ELEMENT**

### **Circulator:**

Circulator provides forced water circulation through boiler and piping system.

### **Maintenance:**

See instructions on page 4, item 10 under "Beginning of Each Heating Season."

### **Combination Pressure/Temperature Gauge:**

Water pressure and temperature can be read on face of gauge. In general, cold water fill pressure is 12 psi for residential systems. As water heats, pressure will rise. Maximum pressure is 30 psi. Temperature will vary according to system and daily heating demands. The range will be from room temperature up to high limit control setting.

### **Expansion Tank:**

As water heats up, it expands. Tank provides a place for increased water volume. May be open, closed, or diaphragm type.

1. Open type - located above highest radiator or baseboard unit, usually in the attic or closet. Has a gauge glass and overflow pipe to a drain.
2. Closed type - Welded gas tight and piped to air vent tapping on boiler. Tank is partially filled with water, leaving an air cushion for expansion.
3. Diaphragm type - welded gas tight with a rubber diaphragm to separate air from water.  
May be located at any point in system, but usually close to the boiler.  
An air vent must be installed in air vent tapping on boiler when this type of tank is used. This eliminates air in system.  
Normal cold water fill pressure for a residential system is 12 psi. Tank pressure may be checked with an air pressure gauge. Heated water expansion causes the diaphragm to push against the air cushion, providing space for increased water volume.

### **Venting System:**

Inspect venting system at least once a month during heating season.

Check gas-tight seal at all vent pipe connections. Call service technician to correct any joints that are not gas-tight.

Inspect all parts of venting system for deterioration from corrosion, physical damage, sagging, etc. Call service technician to correct all conditions found.

### **Maintenance:**

If relief valve opens frequently, expansion tank may be waterlogged. Call a qualified service technician to drain tank and re-establish proper air cushion.

### **Base Insulation:**

Make sure base insulation is secure against all four sides of base. If insulation is damaged or displaced, call service technician immediately. DO NOT operate boiler.

### **CAUTION**

Ceramic fiber material used in base insulation can cause temporary skin, eye, and upper respiratory irritation. Use NIOSH or MSHA approved protection when installing or removing this material.

### **High Temperature Limit Control:**

In case of high boiler water temperature, control shuts down burner but lets circulator run as long as there is a call for heat. Limit should be set higher than the temperature needed for the system. Maximum setting is 220°F.

## Checking Burner Flame:

Proper burner flame, see below. Yellow-orange streaks may appear - caused by dust.

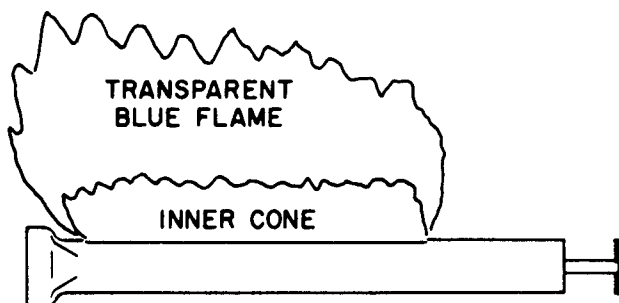
Improper burner flame:

Overfired - large flame.

Underfired - small flame.

Lack of primary air - yellow tipping on flames; sooting will occur.

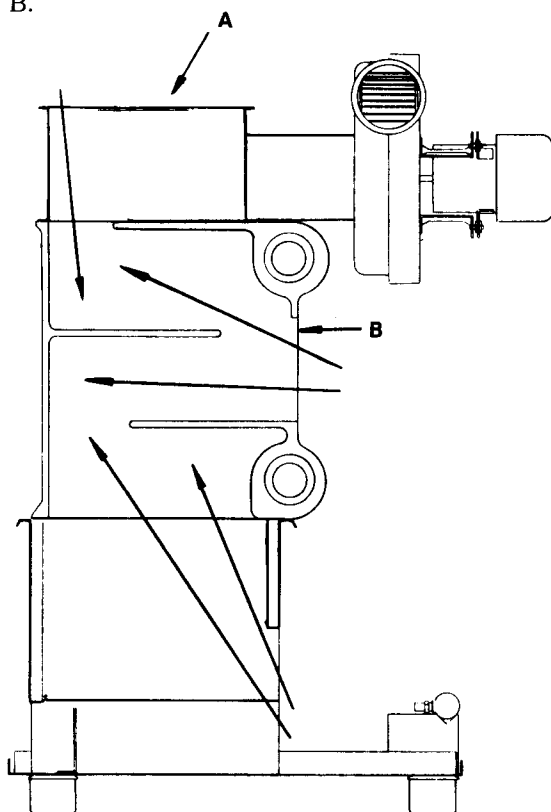
If improper flame is suspected, contact service technician or gas utility.



## Cleaning Boiler Heating Surfaces:

After each heating season, remove front access panel to inspect burners and flues. Use a mirror and flashlight to look up from base through sections. If soot is found, contact service technician to clean. **The following procedure should only be performed by a service technician.**

1. Shut down boiler.
2. Remove top, front and interior jacket panels.
3. Remove flue collector cover A and front cleanout cover B.



4. Remove burners. Vacuum or brush to remove dust or lint.

### NOTICE

When removing burners, be careful to not damage ignitor. Ignitor is fragile and can be damaged if hit by a burner.

5. Thoroughly clean heating surfaces with a flue brush.
  - a. Clean top through flue collector.
  - b. Clean middle through cleanout opening.
  - c. Clean bottom through base.
6. Remove soot from boiler.
7. Replace burners.

### DANGER

When replacing, burner tubes must be seated in slots in back with openings face up. Failure to do so will cause personal injury, death or substantial property damage.

8. Replace flue collector cover and cleanout cover. Reseal with silicone sealant.
9. Replace jacket panels.
10. Start boiler by following "To Place In Operation" below.
11. Check base insulation and burner flames for proper operation.

## Fill the System:

1. Close manual and automatic air vents and drain cock.
2. Fill to correct system pressure. Correct pressure will vary with each system. Normal cold water fill pressure for a residential system is 12 psi.
3. Open automatic air vent two turns.
4. Slowly feed water to boiler.
  - a. Starting on lowest floor, open air vents one at a time until water squirts out. Close vent.
  - b. Repeat with remaining vents.
5. Close manual water feed valve when correct boiler pressure is reached.

## To Place in Operation:

1. Verify boiler is filled with water.
2. Follow lighting instructions per pages 9-11 according to type of gas valve.
3. Check system piping for leaks. If found, call service technician to repair immediately.
4. Vent air from system. Repeat steps 4 and 5 under "Fill the System." Air in system can interfere with water circulation and cause improper heating.



## 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 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.

## WHAT TO DO IF YOU SMELL GAS

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

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

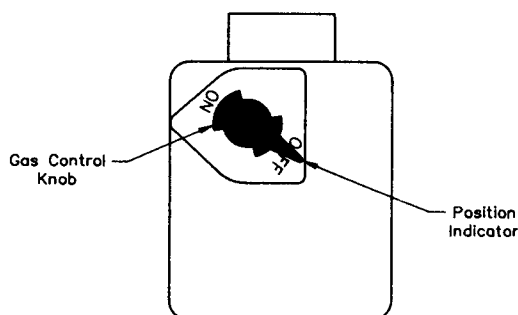
- C. Use only your hand to push in or turn the gas control knob or move the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
- D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

## OPERATING INSTRUCTIONS

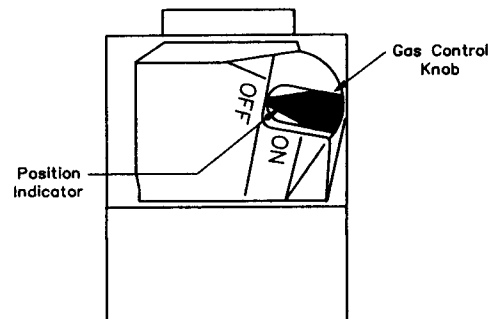
1. STOP! Read the safety information above.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.



NOTE: Use the picture that corresponds with your valve.



WHITE-RODGERS 36C



HONEYWELL VR8450



5. Push in gas control knob slightly and turn clockwise  to "OFF".  
NOTE: Knob cannot be turned to "OFF" unless knob is pushed in slightly. Do not force.
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you then smell gas, STOP! Follow "B" in the safety information above. If you don't smell gas, go to next step.
7. Turn gas control knob counterclockwise  to "ON."
8. Turn on all electric power to the appliance.
9. Set thermostat to desired setting.
10. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.
11. Replace control access panel.

5. Turn valve knob clockwise  from "ON" position to "OFF." Make sure knob rests against stop.
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you then smell gas, STOP! Follow "B" in the safety information above. If you don't smell gas, go to next step.
7. Turn valve knob counterclockwise  from "OFF" until it stops. Depress knob and continue rotating counterclockwise to "ON" position. Make sure knob rests against stop. NOTE: Knob cannot be turned to "ON" unless knob is pushed in slightly. Do not force.

## TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. To turn boiler "OFF" follow 5 in "Operating Instructions" above that corresponds with your valve.
4. Replace control access 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 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.

#### WHAT TO DO IF YOU SMELL GAS

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

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

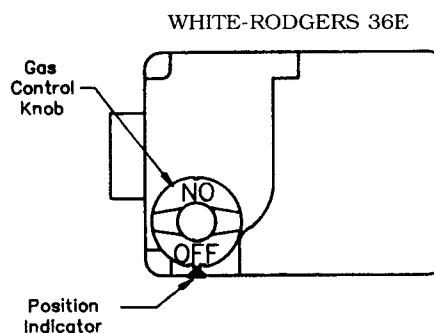
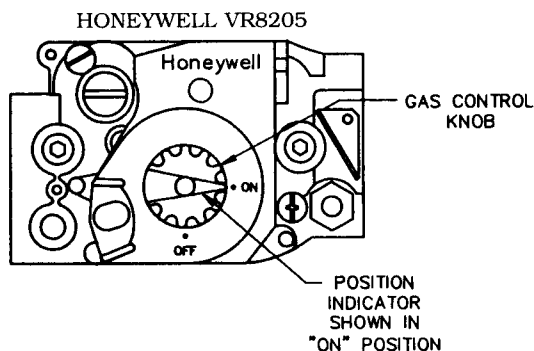
- C. Use only your hand to push in or turn the gas control knob or move the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

- D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

## OPERATING INSTRUCTIONS

1. STOP! Read the safety information above.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

NOTE: Use the picture that corresponds with your valve.



5. Turn gas control knob clockwise to "OFF".
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you then smell gas, STOP! Follow "B" in the safety information above. If you don't smell gas, go to next step.
7. Turn gas control knob counterclockwise to "ON."
8. Turn on all electric power to the appliance.
9. Set thermostat to desired setting.
10. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.
11. Replace control access panel.

5. Turn gas control knob to "OFF."
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you then smell gas, STOP! Follow "B" in the safety information above. If you don't smell gas, go to next step.
7. Turn gas control knob to "ON".

## TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. To turn boiler "OFF" follow 5 in "Operating Instructions" above that corresponds with your valve.
4. Replace control access 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 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.

## WHAT TO DO IF YOU SMELL GAS

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

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

- C. Use only your hand to depress or move the selector arm. Never use tools. If the selector arm will not depress or move by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

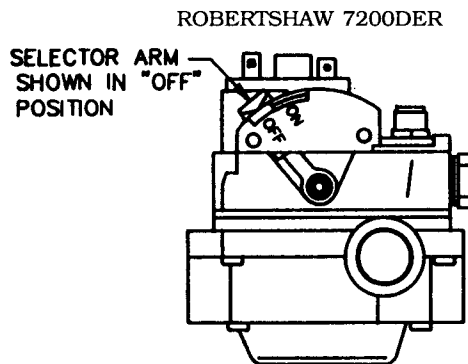
- D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

## OPERATING INSTRUCTIONS

1. STOP! Read the safety information above.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

5. Depress and move selector arm left ← to "OFF".  
NOTE: Selector arm cannot be moved from "ON" to "OFF" unless selector arm is pushed in slightly. Do not force.
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you then smell gas, STOP! Follow "B" in the safety information above. If you don't smell gas, go to next step.

7. Turn selector arm right → to "ON."



8. Turn on all electric power to the appliance.
9. Set thermostat to desired setting.
10. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.
11. Replace control access panel.

## TO TURN OFF GAS TO APPLIANCE

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

## COMMON PROBLEMS AND POSSIBLE SOLUTIONS:

COMMON SYMPTOMS	COMMON CAUSES	POSSIBLE CORRECTIONS
Rapid cycling - boiler turns on and off frequently.	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.
Frequent release of water through relief valve.	Expansion tank sized too small.	Call installer to check expansion tank operation and size.
	Flooded expansion tank.	Call installer to check expansion tank operation.
Need to frequently add make-up water.	Leaks in boiler or piping.	Have installer repair leaks at once to avoid constant use of make-up water. Make-up water can cause mineral deposits which, in turn, can cause boiler section failure. DO NOT use petroleum-based stop-leak compounds.
Popping or percolating noise heard in boiler.	Mineral deposits in sections due to constant use of make-up water.	Call installer to de-lime boiler, if necessary. In some cases, deposits will be too heavy to remove with de-liming procedures.
		Have installer repair leaks to eliminate need for constant make-up water.
	Incorrect pH of boiler water.	pH should be maintained between 7.0 to 8.5.
Metal flakes found in boiler base - flueway corrosion.	Contaminated combustion air supply. See page 3 in these instructions.	Remove any contaminating products. See page 3 in these instructions.
		Set high limit above 140°F. If high limit is already at 140°F., consult installer for bypass piping recommendations.
Some radiators or baseboard units do not heat or are noisy.	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 installer repair at once.
	High limit set too low.	Adjust high limit to higher setting.
Black Water Condition	Oxygen corrosion due to leaks in boiler and piping.	Have installer repair at once. Keep pH of water between 7.0 to 8.5.



**WEIL-McLAIN**  
A United Dominion Company

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