

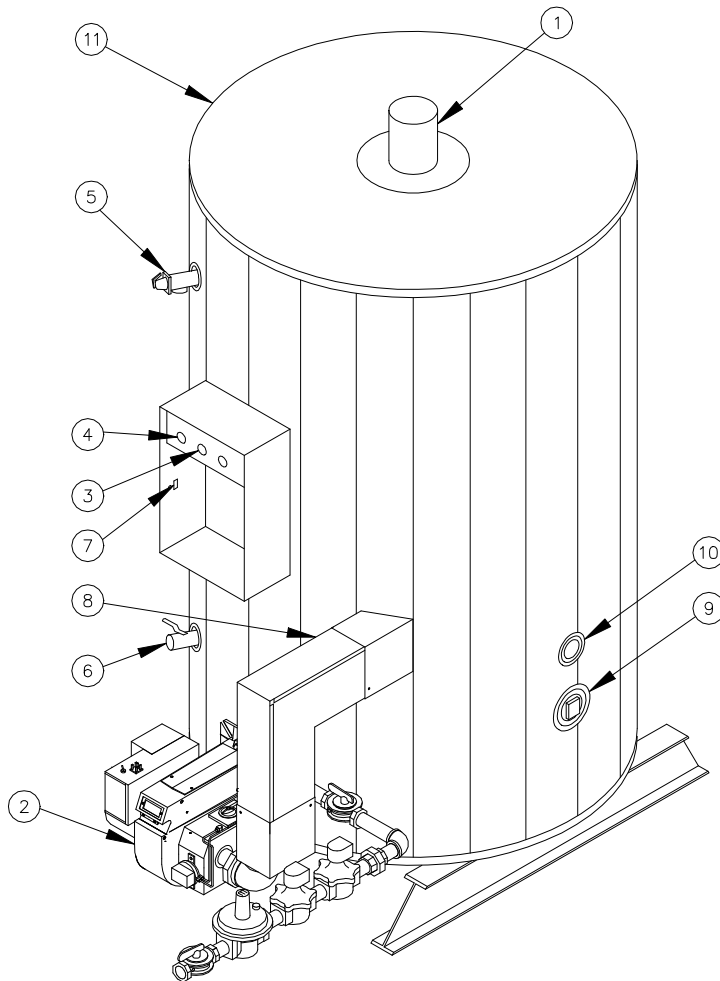
# INSTALLATION & MAINTENANCE MANUAL FOR

# MAXIM

## LOW NO<sub>x</sub> WATER HEATER

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#### FOR YOUR SAFETY WHAT TO DO WHEN 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 phone outside the building. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, CALL THE FIRE DEPARTMENT.

#### FOR YOUR SAFETY

DO NOT store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

#### FOR YOUR SAFETY

WARNING: Improper installation, adjustment, alteration, service, or maintenance can cause injury or property damage. Refer to this manual for assistance, or consult a qualified installer, service agency, or the gas supplier.

**TYPICAL CONSTRUCTION  
FIGURE 27-1**

- |   |  |
|---|--|
| 1. VENT STACK *                               | 7. CONTROL SWITCH(es) and FUSE(s)          |
| 2. BURNER (larger input shown)                | 8. FGR (above 400,000 Btu/h)               |
| 3. TEMPERATURE LIMITING DEVICE (set at 200°F) | 9. HANDHOLE CLEANOUT                       |
| 4. OPERATING THERMOSTAT (set at 120°F)        | 10. COLD WATER INLET and RETURN CONNECTION |
| 5. RELIEF VALVE                               | 11. HOT WATER OUTLET                       |
| 6. DRAIN                                      |  |

(\* NOT FURNISHED BY PVI)

**Important! Clearance to unprotected combustible material must be 8" min. at top, sides and rear, and 24" min. in front.**

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## START-UP PROCEDURES

**CAUTION: DO NOT RELIGHT PILOT OR START BURNER WITH COMBUSTION CHAMBER FULL OF GAS VAPOR, OR WITH VERY HOT COMBUSTION CHAMBER.**

1. Study the Installation & Maintenance manual for the burner carefully.
2. Fill the water heater tank with water. Open the relief valve or a nearby hot water faucet to allow air in the tank to escape. Be sure all connections into the tank are tight, as leaks at tank fittings will damage the insulation.
3. Follow the enclosed warnings on the water temperature control when setting the operating thermostats. The water

heater has three temperature controls. The top control is the temperature limiting device and should be set at 200°F. The lowest control is the operating thermostat and must be adjusted 10 degrees (10°) lower than the upper operating control. A common setting is 130°F for the upper operating control and 120°F for the operating thermostat. Your thermostat settings must take into account your application. To avoid scalds, follow the enclosed warnings on water temperature control when setting the thermostats.

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**CAUTION: ON MODELS WITH FLUE GAS RECIRCULATION (FGR), THE FGR DUCT AND PLUMBING WILL BE HOT DURING AND AFTER OPERATION. USE CARE TO AVOID CONTACT WITH SKIN WHILE MAKING ADJUSTMENTS.**

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**CAUTION: CONDUCT THE FOLLOWING GAS TRAIN LEAKAGE TEST BEFORE START-UP, ANNUAL INTERVALS AND PRIOR TO INVESTIGATING THE CAUSE OF ANY REPORTED OCCURRENCES OF DELAYED IGNITION.**

1. Using an appropriate bubble detection solution, thoroughly coat all gas train pipe connections. If any bubbles are detected, the leaking connection must be tightened, recoated and rechecked to assure stoppage of the leak.
2. Attach a manometer, to measure gas pressure, at the manual gas shutoff valve located just upstream of the gas train. Adjust gas train inlet pressure to the specified value (e.g. 14 in. W.C.), and tightly close the gas train manual shutoff valve closest to burner.
3. Reattach the manometer to the gas train manual shutoff valve at the burner and record the measured gas pressure in inches of water column (in W.C.). Measure gas pressure again after 15 minutes. If gas pressure has increased 0.5" W.C. or more, the gas leak must be isolated to one or more of the operating gas valves; for example, a solenoid actuated gas shutoff valve. After any leaking valve is replaced, the reassembled gas train must be leak tested again before start-up is attempted. **(NOTE: All gas valves removed because of suspected leakage must be returned to PVI Customer Service for disposition.)**

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## MAINTENANCE AND SAFETY INSPECTIONS

1. Establish a preventive maintenance program to assure a longer water heater life.
  2. The tank should be flushed at two- or three-month intervals depending on water conditions in your location. To flush, turn off electrical disconnect switch to prevent the burner from operating. Open the drain valve and allow water to flow through the tank until it runs clear. Close the drain valve and turn the electrical switch back on. Draining two or three gallons from the bottom of the tank on a weekly basis will also help prevent the accumulation of sediment. Water impurities consist of fine particles of soil or sand, which will settle out and form a layer of sediment on the bottom of the tank.
  3. A scale of lime will normally form during operation and will accumulate on the bottom of the tank. Lime is formed from the natural chemicals in the water, which precipitate out during heating cycles. Some water supplies contain more of these chemicals than others do and scale buildup will occur more rapidly. Other factors affecting scale buildup are the amount of hot water used and the temperature of the water. The more hot water that is used, the more fresh water containing scale-forming chemicals is brought into the tank. As the temperature of water increases, the rate of scale deposition will be increased.
  4. The tank will have a handhole for inspection and cleaning. (See Figure 17-1, page 1.) To inspect tank for scale buildup, remove the handhole cover. If scale is present, it can be loosened with a high pressure stream of water. The smaller pieces can be flushed through the drain and the larger pieces removed by hand through the handhole. The frequency of inspections will be determined by the rate of scale buildup. Intervals of 30-60 days are recommended.
  5. If a firetube leaks for any reason, consult factory for instructions.
- NOTE: Condensate coming from the tubes on a cold start is normal and does not indicate a leaking tube.**
6. Regularly inspect the bottom tubesheet. Inspect the SCALEGUARD® tubesheet insulator for holes or areas that may have pulled away from tubesheet. Repair or replace as required.

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### CARBON MONOXIDE WARNING:

**CAUTION: IMPROPER COMBUSTION MAY CAUSE SERIOUS INJURY.**  
PVI recommends a seasonal or annual combustion checkout be performed by a qualified service agency to ensure safe and efficient operation.

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### Periodic Inspection of Operational Components

Periodic inspection and checkout of the burner ignition, control system, and fuel valve operation (for tight close-off) should be made. Refer to the burner installation instruction for recommendations.

1. Examine the venting system at least once each year for proper connections, alignment and corrosion. The blower inlet will collect dust from the air during operation. Disconnect the power to the heater and clean the blower wheel when necessary. Inspect all parts and make replacements when necessary. Check wiring for loose connections and burned wires.

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## MAINTENANCE AND SAFETY INSPECTIONS (continued)

### Periodic Inspection of Operation Components (continued)

#### **CAUTION: THE RELIEF VALVE IS A PRIMARY SAFETY DEVICE.**

2. The temperature and pressure relief valve may be checked by slowly lifting the seat lever on top of the valve to determine its condition for safe operation. The openings inside the valve may become restricted by a buildup of scale and become inoperative. If the valve does not open and close properly when tested, it must be replaced. Replace the relief valve with like kind or one meeting the requirements stated on the rating decal located adjacent to the relief valve.
3. A table of periodic safety inspections is an attachment of this manual for ease of reference by the building service technician or licensed equipment operator. Since water heater designs vary, only some of these listed inspections may be appropriate for your particular model.
4. PVI strongly recommends the recording of significant events, such as maintenance or repair actions and safety inspections, and encourage the preparation of an event log for this purpose. All recorded events should be dated, fully described, and signed by the individual performing the service, repair, or inspection. (See Table 17-1, page 5 for sample of Inspection Record.)

**CALL YOUR PVI CUSTOMER SERVICE REPRESENTATIVE IF YOU HAVE ANY QUESTIONS. (1-800-784-8326)**

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### Instructions for Taking Water Heater Out of Service

Extended shutdown of the appliance and restarting are as follows:

- A. Turn off all power and fuel supplies.
- B. Drain and flush tank as previously discussed.
- C. Tag power switch(es) that fuel is off and tank is empty.
- D. Refill tank with water and turn fuel and power switch(es) on to restart. Reset all controls and conduct start-up of the appliance as discussed in the previous pages.

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## ELECTRICAL

1. Wiring to the unit should conform to the National Electrical Code or the code legally authorized in your locality. A fused disconnect switch should be used for water heater control. Service wiring connections of 120V, 1 phase, 60 Hz. are located in the enclosure on the water heater. (See Figure 17-2, page 6.)

**NOTE: Use only copper wire of proper sizing for incoming service. Damage resulting from use of aluminum wiring will be excluded from coverage under the warranty of this unit.**

