# MAXIM

ISO 9001

## POWER COMBUSTION STORAGE WATER HEATER

*Gas, Oil or Combination Gas/Oil*
*199,000 to 1,200,000 Btu/h*
*125 • 250 Gallon Tanks*

**Featuring...**

**AquaPLEX®**
ENGINEERED DUPLEX ALLOY

**No tank lining.**
**No anodes of any type.**

**81%**
**THERMAL EFFICIENCY**

**TANK AND FIRE TUBES FABRICATED ENTIRELY FROM AquaPLEX® DUPLEX ALLOY WITH A 15-YEAR CORROSION WARRANTY**

**NONFERROUS TANK CONNECTIONS**

**3-YEAR SCALE FAILURE WARRANTY**

***THE "HARD WATER" WATER HEATER***

**Designed as a free-standing storage heater requiring no field piping between a boiler and tank.**

**ASHRAE 90.1 compliant**

Intertek

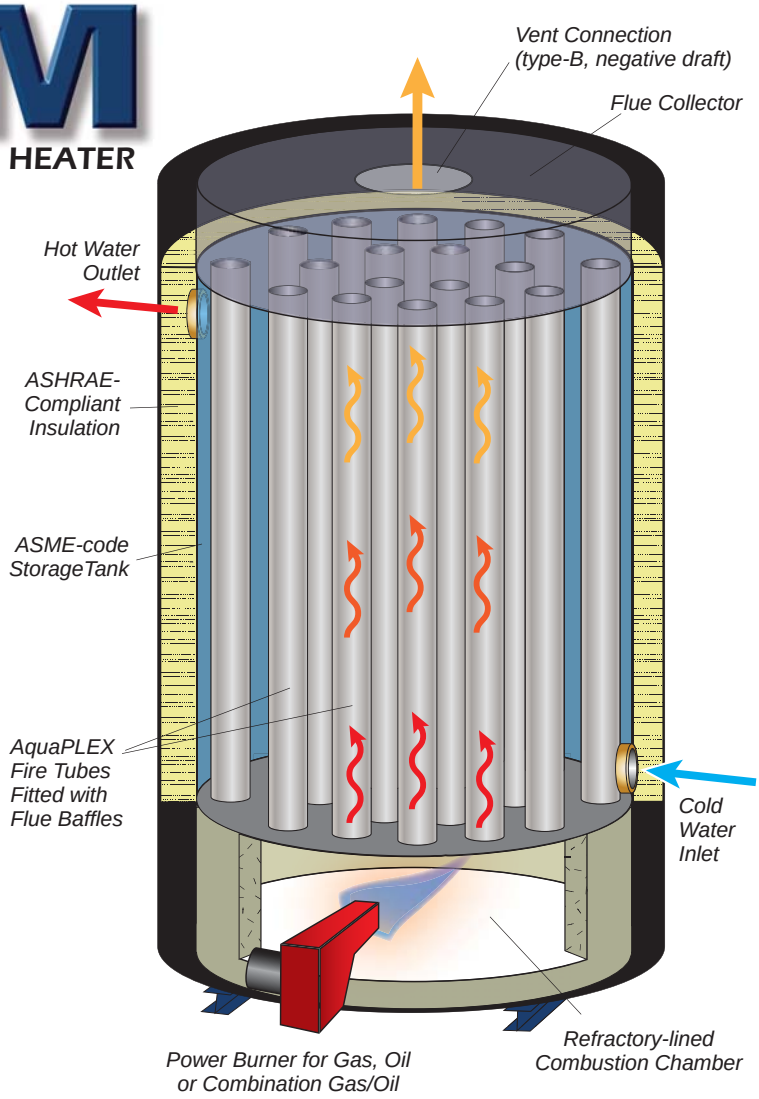
HLW

# MAXIM

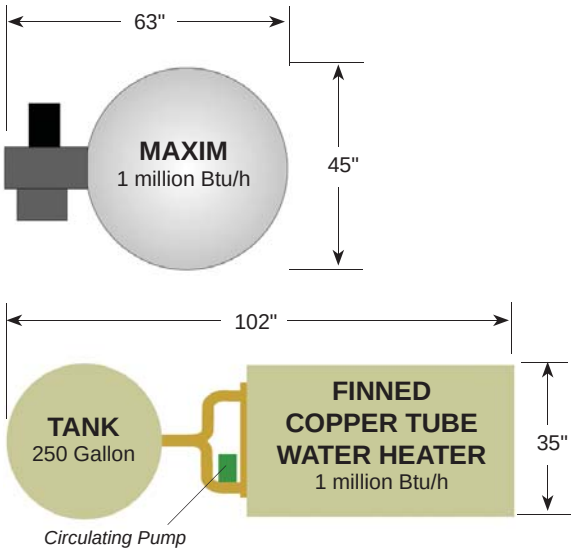
## POWER COMBUSTION STORAGE WATER HEATER

MAXIM is a fully packaged gas- or oil-fired vertical fire tube water heater. Combustion occurs below the water storage tank and the hot combustion gases move upward through the fire tubes transferring heat to the stored water. Baffles in the fire tubes create turbulence in the gases, forcing more frequent contact with the tube walls and helping to raise thermal efficiency to 83%. Combustion is provided by a power burner and monitored by an electronic flame safeguard. Water temperature and burner operation are controlled by submerged upper and lower operating thermostats and a submerged high limit control.

The storage tank is constructed and stamped in accordance with the ASME code for 150 psi maximum working pressure. The tank and the firetubes are fabricated entirely from AquaPLEX® duplex stainless steel alloy. MAXIM is fully insulated and jacketed and surpasses the latest ASHRAE standards for thermal efficiency and standby heat losses.




## Installation and Operating Comparison: MAXIM vs. Finned-tube Water Heaters




### Less Floor Space

Depending upon input, the amount of floor space occupied by MAXIM is from 20% to 50% less than the typical boiler-and-tank water heater.

### Lower Standby Losses

As a tank-type heater, MAXIM incorporates both a storage tank and a heating section in an integrated package. Competitors' finned-tube water heaters must be plumbed to a sidearm tank and require a pump to circulate water between these two components. Operating the pump can consume a few hundred dollars per year of electricity. MAXIM saves owners this hidden cost.

### Less Costly and Simpler Installation

Tank and finned-tube water heating systems are often field assembled. Frequently overlooked in the purchase price is the cost of the copper pipe, fittings, valves and labor required to connect the heater and tank. If the tank-to-heater piping is improperly sized or designed, it may impact the pump's ability to provide the proper flow through the heat exchanger and affect performance and longevity. If a low-temperature by-pass pipe is omitted, damage from condensation can also shorten the life of the heat exchanger.

MAXIM installation is far easier with water connections made only at the cold inlet, hot outlet, drain and relief valve. Also, as a tank-type heater, MAXIM is less prone to condensing.

# Exclusive manufacturing processes and design features for long service life even under the most difficult water conditions...

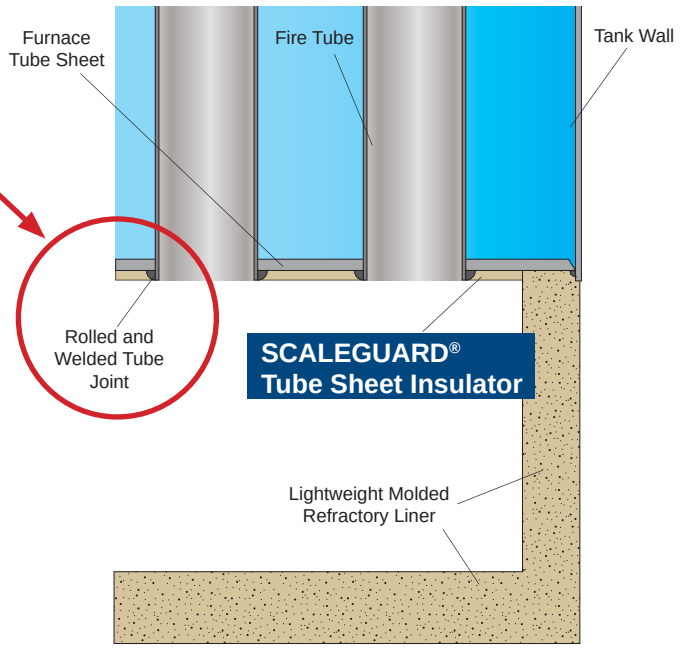
### Long-Life Tube Joint

The tube sheets are drilled or water-jet cut, and the fire tubes are rolled and robotically welded to the tube sheets. This is similar to the construction of ASME boilers.

### Tube Sheet Thermal Protection

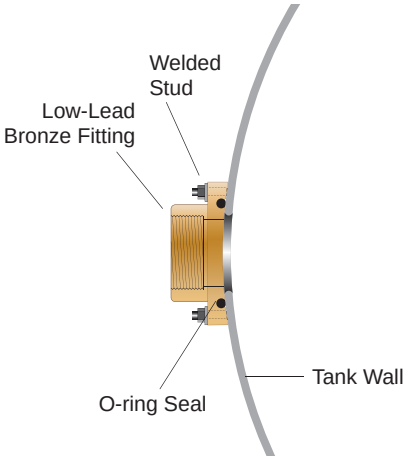
PVI's SCALEGUARD® tube sheet insulator protects against metallurgical failure that can result from scale buildup in the water heater. SCALEGUARD keeps the temperature of the furnace tube sheet below the critical ductile-to-brittle transition temperature by separating it from the heat of combustion. Because the tube sheet is not used as a heat transfer surface, scale buildup on the waterside has no heat trapping (and hence damaging) effect. In addition, because it's not a heat transfer surface, should scale form on the tube sheet it will not reduce thermal efficiency. A few additional fire tubes compensate for the heating surface lost by insulating the tube sheet.

Detail of MAXIM Combustion Chamber and Tube Sheet Construction




**AquaPLEX Fire Tubes**

All the fire tubes in a MAXIM water heater are solid AquaPLEX, an engineered duplex stainless steel alloy. Stronger than ordinary steel AquaPLEX is naturally resistant to corrosion in potable water and no additional material such as copper cladding or glass lining is required.




ASME tested and approved design

**Corrosion-Proof, Low-Lead Bronze, Threaded Tank Fittings**

The obvious advantage of this design is an inherently corrosion-proof fitting where other manufacturers use glass-lined or epoxy-lined steel fitttings. Lined fittings provide only temporary corrosion protection as is evident by the requirement to use dielectric nipples when connecting their heaters to copper piping.

## ... and a tank material so good that linings and anode rods are not required.

**100% AquaPLEX®**
**Unlined Duplex Stainless Steel**


The MAXIM storage tank, tube sheets and fire tubes are fabricated entirely from AquaPLEX, an engineered duplex stainless steel.

Fully pickle-passivated after tank fabrication, the AquaPLEX material is immune to corrosion in potable water and the vessel requires no supplemental linings or anode rods. All glass linings and many anodes erode away over time leaving the underlying carbon steel tank unprotected from water and corrosion.

AquaPLEX is also more suitable for potable water applications than the traditional 304L or 316L austenitic stainless steels. These materials contain the single austentitic grain structure. AquaPLEX, being a duplex stainless steel, contains both austenititc and ferritic grain structure. The ferritic structure provides for greater resistance to chloride stress corrosion cracking; a known weakness of austentitic stainless steel that can result when the water supply contains dissolved salts.

## STANDARD EQUIPMENT

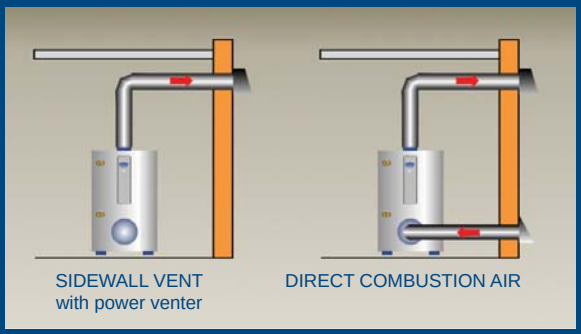
- 81% thermal efficiency per ANSI Z21.10.3, 83% thermal efficiency with 40°F entering water
- AquaPLEX® duplex alloy tank with a 15-year warranty (8 years full, 7 years prorated)
- 3-year scale failure warranty *
- First-year service policy *
- AquaPLEX duplex alloy fire tubes
- SCALEGUARD® tube sheet protection
- Non-ferrous, removable, replaceable tank fittings
- Power combustion burner with UL and FM compliant gas or oil train
- Electronic combustion sequencer and flame safeguard with spark ignition and pre-purge
- Flame status indicating and diagnostic lights (540 MBH and higher)
- Differential air pressure switch
- Adjustable immersion operating thermostat(s)
- High temperature limit control
- ASME-rated temperature and pressure relief valve
- Drain valve
- Heavy-density fiberglass insulation
- Steel jacket panels with powder coat finish
- Steel skids
- Barometric damper
- Hand-hole tank cleanout
- ASME stamped for 225 psi test pressure and 150 psi operating pressure
- ETL listed to U.S. and Canadian standards
- FM compliant
- ASHRAE 90.1 compliant
- Low-lead compliant

## OPTIONAL EQUIPMENT

- Electronic operating/temperature control with LED readouts and BAS connectivity using Modbus RTU protocol through RS-485 connection
- Gateways for BacNet or Lonworks
- CSD-1 compliant controls
- CSA-rated temperature and pressure relief valve(s)
- Air intake assembly for direct combustion air (for connection to ductwork supplied by others)
- LP gas operation

* see complete warranty or policy for details

**In addition to conventional venting, MAXIM offers...**




MAXIM

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## POWER COMBUSTION STORAGE WATER HEATER

## PERFORMANCE and DIMENSIONS

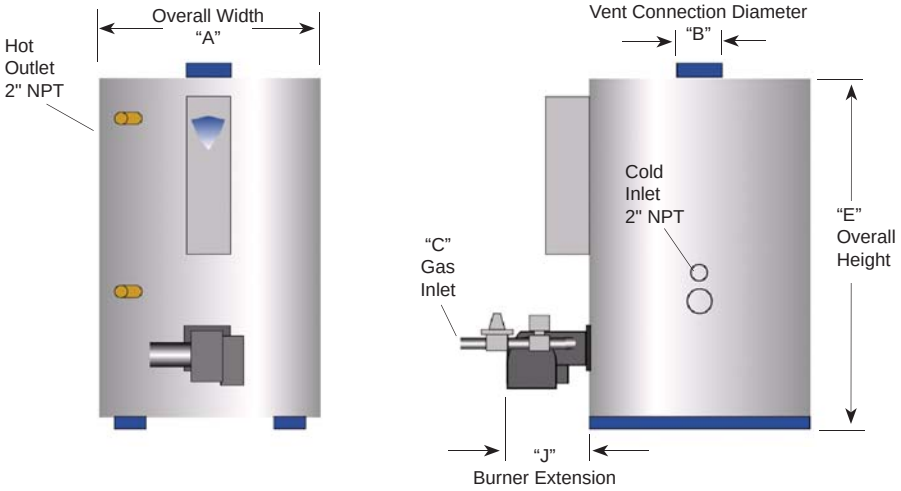
### MAXIM 125 Gallon Series

| Input MBtu/h | Recovery Rate (gallons per hour) | | Minimum Inlet Flow Gas Pressure inches W.C. | Approx. Gallons Storage | Dimensions (inches) | | | | | Blower Motor hp | Blower Motor hp | Blower Motor amps | Blower Motor amps | Approx. Shipping Weight (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 70 to 140°F① | 40 to 140°F② | | | A | B | C | E | J* | Gas | Oil | Gas | Oil | |
| 199 | 276 | 200 | 4.5 | 125 | 34-1/2 | 5 | 1/2 | 75 | 18 | 1/5 | 1/3 | 1.3 | 8 | 1020 |
| 270 | 376 | 270 | 4.5 | 125 | 34-1/2 | 6 | 3/4 | 75 | 18 | 1/5 | 1/3 | 1.3 | 8 | 1070 |
| 399 | 555 | 400 | 4.5 | 125 | 34-1/2 | 7 | 3/4 | 75 | 18 | 1/5 | 1/3 | 1.3 | 8 | 1120 |
| 540 | 751 | 540 | 4.5 | 125 | 34-1/2 | 8 | 1 | 82 | 18 | 1/3 | 1/2 | 8 | 10 | 1260 |
| 720 | 1001 | 720 | 4.5 | 125 | 34-1/2 | 10 | 1-1/4 | 82 | 18 | 1/3 | 1/2 | 8 | 10 | 1370 |
| 800 | 1113 | 800 | 4.5 | 125 | 34-1/2 | 10 | 1-1/4 | 82 | 18 | 1/3 | n/a | 8 | n/a | 1390 |

### MAXIM 250 Gallon Series

| Input MBtu/h | Recovery Rate (gallons per hour) | | Minimum Inlet Flow Gas Pressure inches W.C. | Approx. Gallons Storage | Dimensions (inches) | | | | | Blower Motor hp | Blower Motor hp | Blower Motor amps | Blower Motor amps | Approx. Shipping Weight (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 70 to 140°F① | 40 to 140°F② | | | A | B | C | E | J* | Gas | Oil | Gas | Oil | |
| 270 | 376 | 270 | 4.5 | 250 | 45 | 6 | 3/4 | 75 | 18 | 1/5 | 1/3 | 1.3 | 8 | 1470 |
| 399 | 555 | 400 | 4.5 | 250 | 45 | 7 | 3/4 | 75 | 18 | 1/5 | 1/3 | 1.3 | 8 | 1520 |
| 540 | 751 | 540 | 4.5 | 250 | 45 | 8 | 1 | 82 | 18 | 1/3 | 1/2 | 8 | 10 | 1600 |
| 720 | 1001 | 720 | 4.5 | 250 | 45 | 10 | 1-1/4 | 82 | 18 | 1/3 | 1/2 | 8 | 10 | 1710 |
| 800 | 1113 | 800 | 4.5 | 250 | 45 | 10 | 1-1/4 | 82 | 18 | 1/3 | n/a | 8 | n/a | 1810 |
| 1000 | 1391 | 1000 | 4.5 | 250 | 45 | 10 | 2 | 82 | 18 | 1/2 | 1/2 | 10 | 10 | 1870 |
| 1200 | 1669 | 1200 | 6 | 250 | 45 | 12 | 2 | 82 | 18 | 1/2 | 1/2 | 10 | 10 | 2000 |

① Recovery rate based on DOE 10 CFR 431 (ANSI Z21.10.3 @ 70°F to 140°F)
② Recovery based on 83% thermal efficiency with 40°F entering cold water
Oil inlet is 1/2" for all models.
For reduced NOx heaters, consult factory. Models with inputs 199 to 399 MBH are available with less than 55 ppm NOx.
For combination gas/oil heaters, consult PVI representative.




PVI reserves the right to change the design and specification without notice.

### STANDARD GAS PRESSURE REQUIREMENTS

SEE CHARTS FOR MINIMUM REQUIRED FLOW PRESSURE

MAXIMUM STATIC GAS PRESSURE 10.5" W.C

FOR GAS PRESSURE OUTSIDE OF THIS RANGE, CONTACT YOUR PVI REPRESENTATIVE.

INFORMATION IS FOR NATURAL GAS. FOR LP GAS, CONSULT FACTORY.

### STANDARD ELECTRICAL REQUIREMENTS

120 Volt, 60 Hz.
CONTROL CIRCUIT: 2 AMPS
SEE CHART FOR BLOWER MOTOR AMPS
FOR COMBINIATION GAS/OIL AMPS, CONSULT YOUR PVI REPRESENTATIVE

### VENTING REQUIREMENTS

CATEGORY I - NEGATIVE PRESSURE, NON-CONDENSING.
TYPE B VENTING (GAS)
OR TYPE L VENTING (OIL)
WITH -.02 TO -.06 W.C. DRAFT AT THE HEATER

FOR OTHER VENTING CONDITIONS, CONTACT FACTORY.


PVI INDUSTRIES, LLC • FORT WORTH, TX 76111 • (800) 784-8326 • www.pvi.com