Sioux Industrial Water Heaters

Sioux has been a leading supplier of industrial water heaters since the 1960s. Sioux offers standard units ranging from 415,000 BTUs to 6,000,000 BTUs. Every heater is built to ASME Code, National Board registered, and built to last. These units are designed and built specifically for industrial use, with continual improvements made each year, providing the features and reliability you require.

Water Heater Quick Selection Guide

<table>
<thead>
<tr>
<th>Application</th>
<th>Ratings of Heater</th>
<th>Model</th>
<th>Includes Tank</th>
<th>Page</th>
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<td>Small to medium industrial operation</td>
<td>1 to 3 M BTU/hr</td>
<td>M</td>
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<td>Medium to large industrial operation</td>
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<tr>
<td>Operation with large electric service</td>
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<td>AE-HWP</td>
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</table>

Features and Benefits of Sioux Heaters

Sioux water heaters provide an instant and continuous supply of hot water. Operation is simple. Water is pumped through a heating coil, which is heated by an oil or gas burner. Outlet temperature and flow rate can be held at precise levels. Sioux water heaters feature heavy-duty steel construction.

Installation

- A service-rated disconnect is provided on each heater, eliminating the need to add another disconnect switch as required by the National Electrical Code. Increases safety and lowers installation cost.
- Unit is pre-plumbed and pre-wired. Just connect the water heater to required utilities and you’re ready to go.
- One day installation and set-up vs. as long as one to two weeks for other systems.
- Small footprint – using as little as 3’x 6’ (91.44cm x 182.88mm) floor space for M Series.
- All heaters include a pre-plumbed and pre-wired water circulation pump.

Operation

- Instantaneous and continuous supply of hot water within one minute of start up vs. up to three hours with other systems.
- Adjustable digital temperature control system that monitors and controls water storage tank temperature while in recirculation mode.
- Low flow indicator alerts customer of low water flow conditions.

Maintenance

- Valves are installed for easy deliming of the unit.
- Dual thermometers and pressure gauges provide indication of inlet and discharge water temperature and pressure, which is useful during operation and maintenance.
- Simple and complete draining of coil lowers maintenance costs, reducing down time. Draining reduces risk of damage due to freezing temperatures and minimizes corrosion, increasing coil life.

Quality

- High-quality power gas burner contains flame within combustion chamber, so performance does not vary with the weather. This design is ideal for all installations, including high altitude.
- Optimum combustion chamber provides high efficiency, a clean burn, and low emissions.
- Three-Pass Coil Design is superior to alternative heat transfer methods, giving simple, long-lasting performance which reduces fuel consumption, saving money.

Safety

- Power gas burner and gas train are UL Listed, and are built to ASME CSD-1 code.
- Insulation beneath the external steel jacket provides higher heater efficiency, reducing fuel consumption. Low temperature of steel outer jacket provides a higher safety level.
- Meets Section IV of the ASME code for hot water boilers, third-party inspected to ensure compliance.

Flexibility

- Modular units allow a minimal investment to start, with the option to expand your system as your operation grows.
- Combination oil and gas burners are available.
- Easy conversion from NG to LP, or LP to NG in less than five minutes and at no added cost. This feature allows the customer to change to the best available fuel source.
- Application flexibility. Can be run as either a once-through heater, or can be used with a storage tank.
**M Series**

**Simple Operation**

Designed to provide an instantaneous and continuous supply of hot water within one minute of start-up vs. up to three hours with other systems, the Sioux M Series has been a best seller from Sioux for over 40 years. The Sioux M Series’ three-pass coil design is superior to alternative heat transfer methods, giving simple, long-lasting performance which reduces fuel consumption, saving you money. Designed as modular units, the M Series of heaters allows you to make a minimal investment to start, with the option to expand your system as your operation grows. This also gives the heaters a small footprint. Coming pre-plumbed and pre-wired, these heaters are easy to install. Just connect the water heater to the required utilities, and you are ready to go. The entire system is mounted on a rugged steel skid for portability.

- Standard BTU ratings are 1, 2, or 3 million
- Standard primary electricals are 230V/3Ph/60Hz, 460V/3Ph/60Hz, 380V/3Ph/50Hz, 575/3Ph/60Hz, and 230/1Ph/60Hz
- Available in Oil, LP, Natural Gas or Combination
- Custom Designs Available
- Max Flow: 30 GPM @ 66°F Rise per 1M BTU
- Min Flow: 14 GPM @ 143°F Rise per 1M BTU

**HM Series**

**Reliable Hot Water**

Building on the success and popularity of the Sioux M Series, the HM Series continues the Sioux promise of simple operation and reliable equipment while providing enhancements requested by Sioux customers.

With a heat output of 1,700,000 (HM1.7) or 5,000,000 (HM5) BTU/hr and high water flow rates, the HM Series is designed to achieve tank temperatures up to 195°F quickly and accurately. The standard Variable Frequency Drive (VFD) allows for precise outlet water temperature control. Additionally, the horizontal design makes service and maintenance a snap due to the easy burner access. The entire system is mounted on a rugged steel skid for portability.

- Standard BTU ratings are 1.7 or 5 million
- Standard primary electricals are 230V/3Ph/60Hz, 460V/3Ph/60Hz, 380V/3Ph/50Hz, 575/3Ph/60Hz, and 230/1Ph/60Hz
- Available in Oil, LP, Natural Gas or Combination
- Custom Designs Available
- Max Flow for HM1.7: 100 GPM @ 34°F Rise
- Min Flow for HM1.7: 34 GPM @ 100°F Rise
- Max Flow for HM5: 380 GPM @ 27°F Rise
- Min Flow for HM5: 150 GPM @ 66°F Rise
Sioux Hybrid Water Heater

Maximizing the Benefits of Coil and Direct-Fired Heating Technologies

The 98.7% true efficiency Hybrid is unlike any other heater on the market. The Hybrid Heater maximizes the benefits of coil and direct-fired heating technologies, allowing it to efficiently reach 200°F without producing steam like other direct-fired heaters. The standard Variable Frequency Drive (VFD) allows for precise outlet water temperature control. The 3,000,000 or 6,000,000 BTU/hr Hybrid Heater is designed for large volume concrete plants with a water storage tank. The entire system is mounted on a rugged steel skid for portability.

- Standard BTU ratings are 3,000,000 or 6,000,000
- Standard primary electicals are 230V/3Ph/60Hz and 460V/3Ph/60Hz
- Available in Oil, LP, Natural Gas or Combination
- Custom Designs Available
- Max Flow for HHM3: 100 GPM @ 60°F Rise
- Min Flow for HHM3: 60 GPM @ 100°F Rise
- Max Flow for HHM6: 250 GPM @ 48°F Rise
- Min Flow for HHM6: 100 GPM @ 119°F Rise

Operation of the Hybrid Heater is simple: Please see the illustration above, and consider the flow of combustion gas (in red), and then the flow of water (in blue).
The Truth about Direct-Fired Water Heaters and Why the Sioux Hybrid Water Heater is Superior

Stack temperature does NOT provide an accurate measure of combustion efficiency. EFFICIENCY = energy output divided by energy input. This data is difficult to measure because of all of the variables: energy content of fuel used, fuel consumption, water temperature and flow, combustion air temperature and flow, electrical consumption, and other variables. Imagine if only 50% of the fuel was burned (for example from water drops contacting fuel prior to combustion), stack temperature would be low, but efficiency would be terrible, therefore, low stack temperature does not mean high efficiency.

- The SIOUX Hybrid Heater has been designed to maximize the benefits of coil and direct-fired technologies to create a high efficiency system that achieves third party tested, 98.7% true efficiency.

Heater efficiency should be measured at the typical operating temperature for your plant, which for most ready mix customers, is 160°F (71°C) to 180°F (82°C). Direct-fired units measure efficiency well below that temperature. Typical direct-fired heater efficiency is very poor at the higher water temperatures that are required, due to heating water into steam, which escapes out the exhaust.

- The SIOUX Hybrid Heater’s coil section of the design eliminates this problem because high temperatures are reached within the coil section where the water cannot escape as steam, so you can heat water to much higher temperatures, and maintain exceptional efficiency.

With a typical direct-fired unit operating in recirculation mode (where tank water is pumped through the heater to maintain tank temperature), the heater exhaust temperature soars well above the design limit, thereby discharging excessive steam to the atmosphere, resulting in totally unacceptable efficiency.

- The SIOUX Hybrid Heater has been designed specifically to recirculate to a water storage tank and maintain high efficiency. The ability to heat water to 200°F (93°C), and the use of a modulating burner make the Hybrid design ideal for maintaining tank water temperature.
**HWP Series**

**Hot Water Plant**

The HWP Series combines one or more of the rugged Sioux M or HM Series water heaters, circulation pump and atmospherically-vented water tank. The system also contains an additional pump to supply hot water from the storage tank. Tank includes liquid level sensor with inlet water solenoid valve, liquid level sight gauge, adjustable digital temperature control, thermometer, ladder, inspection hatch, and motorized exhaust stack damper. The entire system is mounted on a rugged steel skid for portability.

- Standard BTU ratings are 1, 1.7, 2, or 3 million
- Standard primary electricals are 230V/3Ph/60Hz and 460V/3Ph/60Hz
- Available in Oil, LP, Natural Gas or Combination.
- Standard with Industrial Circulation Pump(s) and Discharge Pump.
- Standard tank size is 1,000 or 2,500 gallons (3,785 or 9,464 liters). Other tank sizes are available.

**Sioux HWP-HM1.7**
- HM-1.7 water heater with 1,000 gallon (3784.4 liter) tank

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**PWP Series**

**Precision Water Plant**

The PWP Series combines a M or HM Series water heater, circulation pump and a smaller, 300 gallon atmospherically-vented water tank. The PWP has two pumps, one to circulate water through the heater and one to discharge water from the storage tank. Tank includes liquid level sensor with inlet water solenoid valve, liquid level sight gauge, adjustable digital temperature control, thermometer and motorized exhaust stack damper. The entire system is mounted on a rugged steel skid for portability.

- Standard BTU ratings are 1 or 1.7 million
- Standard primary electricals are 230V/3Ph/60Hz and 460V/3Ph/60Hz
- Available in Oil, LP, Natural Gas or Combination.
- Seven-Stage Circulation Pump and one Industrial Discharge Pump are standard.
- Standard tank size is 300 gallons (1,135.6 liters). Other tank sizes are available.

**Sioux PWP**
- M-1 water heater with 300 gallon (1,135.6 liter) tank
# Water Heater Specifications

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<thead>
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<td>1”</td>
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<td>2“ NPT</td>
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<td>1-1/2“</td>
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<td>230-460/3/60</td>
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<td>2“ NPT</td>
<td>2“ NPT</td>
<td>2</td>
<td>1,000 gal</td>
<td>3,786 ltr</td>
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<td>1”</td>
<td>1-1/2“</td>
<td>2”</td>
<td>3</td>
<td>1,000 gal</td>
<td>3,786 ltr</td>
<td>230-460/3/60</td>
<td>124x80x80</td>
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<td>HWP-3</td>
<td>3,000,000</td>
<td>3,360,000</td>
<td>90</td>
<td>1“</td>
<td>1-1/2“</td>
<td>2”</td>
<td>4</td>
<td>1,000 gal</td>
<td>3,786 ltr</td>
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<td>30</td>
<td>1”</td>
<td>1-1/2“</td>
<td>2”</td>
<td>2</td>
<td>2,500 gal</td>
<td>9,464 ltr</td>
<td>230-460/3/60</td>
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<td>PWP-1</td>
<td>1,000,000</td>
<td>1,120,000</td>
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<td>1-1/2“</td>
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<td>300 gal</td>
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<td>230-460/3/60</td>
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<td>1-1/2“ NPT</td>
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<td>2“</td>
<td>2</td>
<td>300 gal</td>
<td>1,136 ltr</td>
<td>230-460/3/60</td>
<td>Contact Factory for Details</td>
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Note: Heat output is approximate
Water Heater Performance

Options and Accessories

Draft Diverter/Damper Assembly — Exhaust assembly equalizes stack pressure and helps prevent cold air from entering stack (which may freeze heating coil). 12" (304.8mm) stack opening, 38" (965.2mm) high. One assembly required for each one-million BTU/hour heater module.

SA00153 Motorized Damper
SA00154 Motorized Draft Diverter/Damper—115 volt, electrically-operated.

Water Solenoid/Liquid Level Sensor — Valve and switch work in tandem to keep water at specified level in customer water tank.

FT00815 1" (25.4mm) Water Solenoid Valve
FT00816 2" (50.4mm) Water Solenoid Valve
FT00783 1-1/2" (25.4-38.1mm) Water Solenoid Valve
EC00303 Liquid Level Sensor Switch

Pumps — Circulating Pumps circulate water between water holding tank and heater. Loading Pumps move water from water heater tank to truck or other destination.

SA00105 Circulating Pumping Station, Seven-Stage, Centrifugal, 3 HP, 230/3/60 or 460/3/60.
SA00108 Discharge Pump, Single-Stage, Centrifugal, 5 HP, 230/3/60 or 460/3/60, Price Brand.

Rain Cap — Prevents precipitation from interfering with burner operation in outdoor applications. One rain cap is needed for each one-million BTU/hour heater module. Heavy-duty stainless steel construction on all models.

AC00696 12" (304.8mm) Rain Cap

Alternate Electricals — Electrical system other than listed standard. Contact factory.

Sioux Water Treatment System — Sioux’s Water Treatment System treats the water by sequestering (binding up) the dissolved scale-causing minerals. A sequestering agent (polyphosphate) is added to the water which binds with the scale-causing minerals and keeps them in solution form, thus preventing hard water scale. This significantly reduces scheduled deliming, and makes descaling of your coil easier and faster, increasing the life of your investment.

PM01503 Pulsation Pump
AC01109 30 gallon scale control
AC01246 55 gallon scale control
AC00421 Pre-filter with 140 mesh screen, recommended for use with sandy or dirty water

Sioux Biodegradable Liquid Descaler — Excellent at removing scale on systems with existing scale build-up. This biodegradable liquid is formulated to economically and effectively dissolve scale build up in your machines. Sioux Descaler can and should be used to remove scale build-up when needed on all hot water equipment including water heaters.

AC00555 5 gallon jug of liquid Sioux Descaler
AC00556 30 gallon drum of liquid Sioux Descaler
AC00794 55 gallon drum of liquid Sioux Descaler

Performance Chart Notes:
1. All ratings are based upon operation at 70°F (21.1°C) and at sea level conditions.
2. Derate 4% per each 1,000 feet (304.8m) altitude over 3,000 feet (914.4m).
All Electric Water Heaters
500,000 to 2 Million BTU

The heater is capable of heating water up to 200°F using up to four flanged heating elements enclosed in a 1,000 gallon mild steel tank. The heater uses 480/3/60 or 575/3/60 electricals. It includes a machine disconnect switch and a standard 5HP unload pump rated up to 150 GPM at 60 feet of head. Sioux’s all electric water heater produces zero emissions, making it an environmentally friendly choice.

All Electric Specifications

<table>
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<tr>
<th>Model</th>
<th>Electrical</th>
<th>Kw</th>
<th>Output BTU/hr</th>
<th>Operating Current @ 480V</th>
<th>Operating Current @ 575V</th>
<th>Inlet Pump</th>
<th>Discharge Pump</th>
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<tr>
<td>AE-HWP 0.5</td>
<td>480 or 575/3/60</td>
<td>152</td>
<td>500,000</td>
<td>190 Amps</td>
<td>150 Amps</td>
<td>3HP</td>
<td>5HP</td>
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<td>480 or 575/3/60</td>
<td>304</td>
<td>1,000,000</td>
<td>375 Amps</td>
<td>315 Amps</td>
<td>3HP</td>
<td>5HP</td>
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<td>456</td>
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<td>560 Amps</td>
<td>470 Amps</td>
<td>3HP</td>
<td>5HP</td>
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<td>780 Amps</td>
<td>650 Amps</td>
<td>3HP</td>
<td>5HP</td>
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Typical Installation

Shown is a typical installation of a Hybrid Water Heater. This is only an example to assist you in determining how a Sioux unit might fit into your operation.
What Makes Sioux Different?

Since 1939, Sioux has been helping customers in a wide range of industries solve challenging problems by engineering and manufacturing innovative, application-specific equipment. Proven durability and reliability make Sioux the best value for demanding applications.

Reliability Guarantee
Sioux offers the only twenty-year reliability guarantee in the industry which includes same day shipment of stock parts orders, and lifetime parts department support.

Conservative Design
Sioux does not undersize components such as motors, pumps, burners, frames or engines, which is common elsewhere.

Proven Performance
Sioux machines are dependable in the field. Combining high quality components with over 75 years of custom manufacturing experience and extensive engineering design capabilities allows Sioux to provide the industrial workplace with the best equipment for continuous operation.

Simple Operation
Sioux machines are designed to be simple to install, operate and maintain.

Safety
In addition to dependability and simple operation, operator safety is a top design consideration for all Sioux products.

Factory Testing
Every Sioux machine is thoroughly tested in our on-site testing facility before it leaves the factory.

Custom Capabilities
Sioux is well-known for its capability to design and build custom equipment, and has one of the highest ratios of engineering staff to total staff in the industry. Specialized options can be added to the unit to meet your specific needs. Some of these include trailer or portable mountings, nearly any voltage for overseas applications, water tanks, alterations for severe temperature or altitudes, custom sizes and more.