

XP PLUS

The A. O. Smith high efficiency condensing XP^{PLUS} water heater features the latest heat exchanger technology to deliver 98% Thermal Efficiency. The XP^{PLUS} now comes in models with 400,000 thru 4.0 million BTU/hr input rates to cover a wide range of heavy duty commercial and industrial applications. The XP^{PLUS} features an advanced control system with color touchscreen display. The control allows for the optional interface module, for Modbus or BACnet Communication.

The XP^{PLUS} is designed to match with an A. O. Smith storage tank for long life and high performance. Optional custom skid systems are available which provide a factory assembled and tested system specifically for your job.

The XP and XP^{PLUS} family of models now delivers a wide variety of commercial sizes and includes the latest technology to maximize energy efficiency and extended service life.

STAINLESS STEEL CONDENSING HEAT EXCHANGER

- Advanced 316L stainless steel condensing design. This new design heats water at a high 98% thermal efficiency, and offers easy accessibility to the burner, including a slide out door on sizes 1250 and up for added maintenance flexibility.
- Advanced NEG/REG combustion system achieves up to 10:1 turndown. The gas/air mixture is precisely controlled across the entire turndown range to produce ideal combustion and accurate heat transfer. The turndown ratio matches the heat demand to prevent short cycling or temperature overshoot.

ULTRA LOW NO_x OPERATION

- Complies with SCAQMD Rule 1146.2 (PWH400-2000) and Rule 1146.1 (PWH3000-4000), and other air quality management districts with similar requirements for low NO_x emissions

ADVANCED ELECTRONIC CONTROL

- Large touch screen user interface
- The latest in energy saving algorithms
- Includes remote tank temperature control to adjust tank temperature at the water heater – modulates the water heater to maintain tank set point temperature within +/-1 degree
- Water heater output control features up to 10:1 turndown ratio

ALL-BRONZE FACTORY SUPPLIED PUMP

- Designed to be wired and controlled by the water heater control
- Factory-sized for proper flow between water heater and storage tank
- Allows 50 equivalent feet of piping between water heater and tank

OPTIONAL OUTDOOR MODEL KITS

- Optional outdoor conversion kits available that include louvers on the side that replace the top air intake. The gas connection is routed through the side of the water heater and the touch screen receives a cover for protection.

DIRECT VENT FLEXIBILITY

- Direct vent up to 150 equivalent feet of pipe
- Sidewall or vertical
- Approved for either PVC, CPVC, Polypropylene or AL29-4C stainless steel vent pipe

FACTORY START-UP INCLUDED

- Required for activating warranty and assuring maximum operating performance for 1,000,000 BTUs and above. Contact your local sales representative or Authorized Start-Up Agent to arrange a FREE certified start-up.

MEETS THE THERMAL EFFICIENCY REQUIREMENTS OF THE U. S. DEPARTMENT OF ENERGY AND CURRENT EDITION ASHRAE/IES 90.1

98% THERMAL EFFICIENCY (AHRI CERTIFIED)

5-YEAR HEAT EXCHANGER LIMITED WARRANTY

- For complete information, consult written warranty or contact A. O. Smith



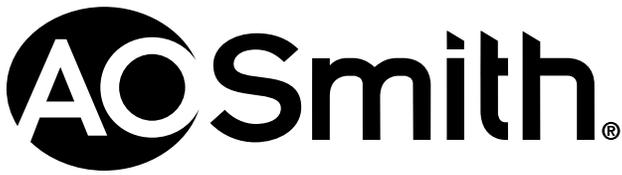


Automatic Circulating Water Heaters

Model Number	Btu/Hr Input	Thermal Efficiency	GPH 100°F Rise	Dimensions and Specifications												
				A	B	C	D	E	F	G	H	I	J	K	L	M
PWH0400NP	399,000	99%	479	45"	24"	30-1/2"	42-1/2"	29-3/4"	20-1/4"	12"	20"	38"	3-1/2"	10-1/2"	19-1/4"	20"
PWH0500NP	500,000	99%	600	45"	24"	30-1/2"	42-1/2"	29-3/4"	20-1/4"	12"	20"	38"	3-1/2"	10-1/2"	19-1/4"	20"
PWH0650NP	650,000	98%	772	45"	24"	41"	53"	30-1/2"	15-1/4"	12"	20"	38"	3-1/2"	10-1/2"	19-1/4"	20"
PWH0800NP	800,000	98%	950	45"	24"	41"	53"	30-1/2"	15-1/4"	12"	20"	38"	3-1/2"	10-1/2"	19-1/4"	20"
PWH1000NP	999,000	98%	1,187	45"	24"	48"	62"	30-1/2"	15-3/4"	12"	20"	38"	3-1/2"	10-1/2"	19-1/4"	20"
PWH1250NP	1,250,000	98%	1,485	51-1/2"	34"	49"	60"	5-1/2"	5-1/2"	13-1/2"	6-3/4"	46-3/4"	5-3/4"	19-3/4"	23"	22-1/2"
PWH1500NP	1,500,000	98%	1,782	51-1/2"	34"	52-3/4"	63-3/4"	4-1/2"	4-1/2"	13-1/2"	6-3/4"	46-3/4"	5-3/4"	19-3/4"	23"	22-1/2"
PWH2000NP	1,999,000	98%	2,375	51-1/2"	34"	65-1/2"	76-1/2"	7"	5-3/4"	14-3/4"	7-1/4"	46-3/4"	6-3/4"	18-3/4"	23"	22-1/2"
PWH3000NP	3,000,000	98%	3,564	67-1/4"	48-1/4"	79-3/4"	93-3/4"	4-3/4"	6-3/4"	17-3/4"	8-3/4"	60-1/4"	8-1/2"	25-1/2"	29-1/2"	40"
PWH4000NP	4,000,000	98%	4,752	67-1/4"	48-1/4"	96"	110"	5"	7-1/2"	17-3/4"	8-3/4"	60-1/4"	8-1/2"	25-1/2"	29-1/2"	40"

Model Number	Dimensions and Specifications				
	Gas Conn.	Water Conn.	Air Inlet	Vent Size	Shipping Weight
PWH0400NP	1"	2"	4"	4"	326
PWH0500NP	1"	2"	4"	4"	333
PWH0650NP	1-1/4"	2"	4"	6"	424
PWH0800NP	1-1/4"	2"	4"	6"	433
PWH1000NP	1-1/4"	2-1/2"	6"	6"	494
PWH1250NP	1-1/2"	2-1/2"	8"	8"	1,568
PWH1500NP	1-1/2"	2-1/2"	8"	8"	1,649
PWH2000NP	1-1/2"	2-1/2"	8"	8"	1,911
PWH3000NP	2"	4"	10"	10"	3,147
PWH4000NP	2-1/2"	4"	12"	12"	3,694

Change 'N' to 'L' for LP gas models. No deration on LP models. Performance data is based on manufacturer's test results.
 Add "O" at end of AWH1250-4000 model number for outdoor models.



Automatic Circulating Water Heaters

STANDARD FEATURES

Up to 99% Thermal Efficiency
Modulating Burner with Turndown
10:1 Turndown PWH0400NPM-PWH1000NPM
5:1 Turndown PWH1250NPM-PWH4000NPM
ENERGY STAR
Indoor/Outdoor Convertible
Direct-Spark Ignition
Low NOx Operation
Sealed Combustion
Low Gas Pressure Operation
Vertical & Horizontal Vent Termination
Category IV Venting up to 150 Feet
PVC, CPVC, Polypropylene or AL29-4C Vent Material
ASME Stainless Steel Heat Exchanger
Gasketless Design
160 psi Working Pressure
Stainless Steel or All Bronze
Circulating Pump
On/Off Switch
Adjustable High Limit with Manual Reset
High and Low Gas Pressure Switches w/Manual Reset (1250 - 4000)
Flow Switch
Air Inlet Filter
Inlet & Outlet Temperature Sensors
ASME Temperature & Pressure Relief Valve
Zero Clearance to Combustible Material
Approved for Combustible Floor Installation
1 Year Warranty on Parts
5 Year Limited Warranty (see warranties for details)

CONTROL FEATURES

SMART TOUCH™ Operating Control
Full-Color Touchscreen LCD Display
Built-in Cascading Sequencer for up to 8 Water Heaters
Building Automation Integration with 0-10 VDC Input
Password Security
Low Water Flow Safety Control & Indication
Inlet & Outlet Temperature Readout
Freeze Protection
Service Reminder
Time Clock
Data Logging
Hours Running
Ignition Attempts
Last 10 Lockouts
Programmable System Efficiency Optimizers
Night Setback
Water Heater Pump Control
Building Recirculation Pump Control
High Voltage Terminal Strip
120V/1PH/60 Hz (PWH0400-1500)
208V/3PH/60 Hz (PWH2000-3000)
480V/3PH/60 Hz (PWH4000)
Low Voltage Terminal Strip
24 VAC Auxiliary Device Relay
Auxiliary Proving Switch Contacts
Alarm on Any Failure Contacts
Pump Contacts
Runtime Contacts
Tank Thermostat Contacts
Tank Sensor Contacts

STANDARD PUMPS

1/2HP/120V/1PH/60Hz (PWH0400-650)
3/4HP/120V/1PH/60Hz (PWH0800-1000)
1HP/120V/1PH/60Hz (PWH1250-1500)
2HP/208V/3PH/60Hz (PWH2000)
5HP/208V/3PH/60Hz (PWH3000)
5HP/480V/3PH/60Hz (PWH4000)

OPTIONAL EQUIPMENT

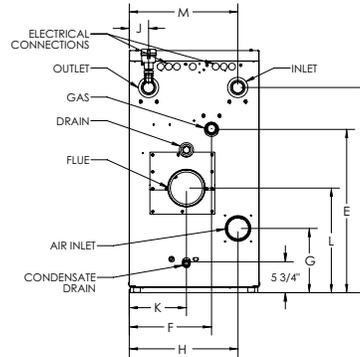
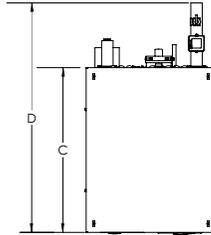
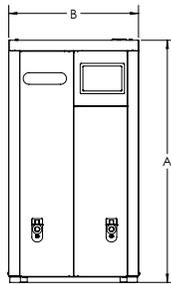
Audible Alarm
High & Low Gas Pressure Switches w/Manual Reset (PWH0400-1000)
Condensate Neutralization Kit
SMART TOUCH PC Software
Modbus or BACnet MSTP Communications
BMS Gateway to BACnet IP
Indoor to Outdoor Kits
Outdoor to Indoor Kits (PWH1250-4000)

CODES & REGISTRATIONS

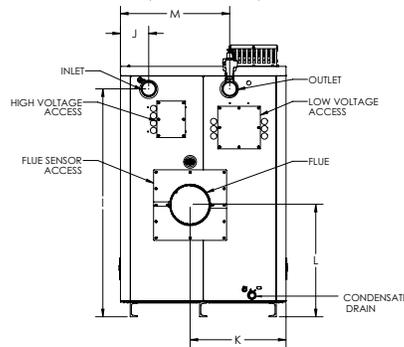
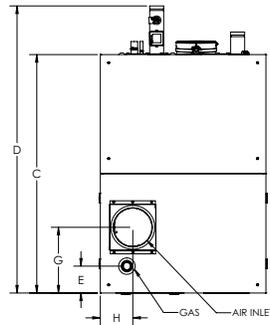
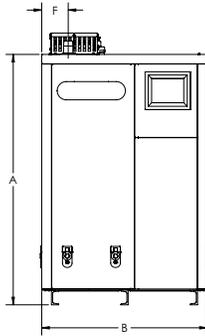
ASME Certified, "HLW" Stamp ANSI Z21.10.3 Certified

XP PLUS WATER HEATER DIMENSIONS AND SPECIFICATIONS

400-1000



1250-4000



PWH SUGGESTED SPECIFICATION

The gas-fired automatic circulating water heater(s) shall be A. O. Smith XP^{PLUS} model PWH _____ having an input rating of _____ BTU/hr and capable of supplying no less than _____ GPH at a 100°F temperature rise when fired with (Natural/Propane) gas. 1) The water heater shall be capable of full modulation with a turndown ration of 5:1. 2) The water heater shall bear the ASME ("HLW stamp models 400-2000, "H" stamp models 3000-4000) stamp and shall be National Board registered (CRN in Canada) for 160 PSI working pressure. 3) The water heater(s) shall be equipped with a factory-installed 150# PSIG ASME Pressure Relief Valve. 4) The water heater(s) shall be design-tested and certified to the ANSI Z21.10.3-CSA 4.3 Standards CSA International for models 400-2000 and ANSI Z21.13 for models 3000-4000. 5) The water heater shall operate up to 98% thermal efficiency at full fire as certified with AHRI. 6) The water heater shall be certified for indoor installation, or outdoor installation with kit, and be approved for installation on combustible floors.

The stainless steel combustion chamber shall be designed to drain condensation to the bottom of the heat exchanger assembly. A built-in trap shall allow condensation to drain from the heat exchanger assembly. The complete heat exchanger assembly shall carry a five (5) year limited warranty.

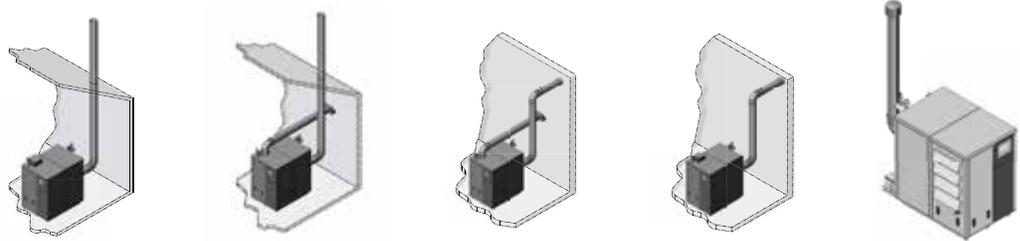
Water Heater Pump: 1) The automatic circulating water heater(s) shall be supplied with a factory-sized and wired all bronze circulating pump(s). 2) The pump shall be interfaced with and managed by the water heater's control and cycled as needed for most efficient operation.

The burner shall be a premix design and constructed of high temperature stainless steel to provide modulating firing rates. The WATER HEATER shall be supplied with a gas valve designed with negative pressure regulation and be equipped with a variable speed blower system, to precisely control the fuel/air mixture to provide modulating WATER HEATER firing rates for maximum efficiency. The WATER HEATER shall operate in a safe condition at a derated output with gas supply pressures as low as 4 inches of water column.

The WATER HEATER shall utilize a 24 VAC control circuit and components. The control system shall have an electronic display for water heater set-up, water heater status, and water heater diagnostics. All components shall be easily accessed and serviceable from the front of the jacket. The WATER HEATER shall be equipped with; a high limit temperature control certified to UL353, ASME certified pressure relief valve, outlet water temperature sensor, inlet water temperature sensor, a UL 353 certified flue temperature sensor, low water flow protection and built-in freeze protection. The manufacturer shall verify proper operation of the burner, all controls and the heat exchanger by connection to water and venting for a factory fire test prior to shipping.

The WATER HEATER shall have a Multi-Colored Graphic LCD touch screen display, password security, pump delay with freeze protection, and pump exercise. The WATER HEATER shall feature night setback for the domestic hot water tank and shall be capable of controlling a building recirculation pump while utilizing the night setback schedule for the building recirculation pump. The WATER HEATER shall have the capability to accept a 0-10 VDC input connection for BMS control of modulation or setpoint and enable/disable of the water heater, and a 0-10VDC output of water heater modulation rate. The WATER HEATER shall have a built-in cascading sequencer with modulation logic options of "lead lag" or "efficiency optimized". Both modulation logic options should be capable of rotation while maintaining modulation of up to eight water heaters without utilization of an external controller. Supply voltage for the PWH400 and PWH1500 WATER HEATER shall be 120 volt / 60 hertz / single phase. Supply voltage for the PWH1250 and PWH2000 WATER HEATER shall be 120 volt / 60 hertz / single phase. Supply voltage for the PWH2000 and PWH3000 WATER HEATER shall be 208 volt / 60 hertz / three phase. Supply voltage for the PWH4000 WATER HEATER shall be 480 volt / 60 hertz / three phase.

VERSATILE MULTI-VENTING CONFIGURATIONS



Direct or sidewall vent up to 150 feet with PVC, CPVC, Polypropylene or Stainless Steel. For detailed venting instructions review the XP PLUS water heater instruction manual at www.hotwater.com

PWH SUGGESTED SPECIFICATION

The WATER HEATER shall be installed and vented with a (select one):

(a) Direct Vent Sidewall system with a horizontal sidewall termination of both the vent and combustion air. The flue shall be PVC, CPVC, Polypropylene or Stainless Steel sealed vent material terminating at the sidewall with the manufacturers specified vent termination. A separate pipe shall supply combustion air directly to the WATER HEATER from the outside. The air inlet pipe may be PVC, CPVC, ABS, Galvanized, Dryer Vent, Polypropylene or Stainless Steel sealed pipe. The air inlet must terminate on the same sidewall with the manufacturer's specified air inlet cap. The WATER HEATER's total combined air intake length shall not exceed 100 equivalent feet. The WATER HEATER's total combined exhaust venting length shall not exceed 100 equivalent feet. Foam Core pipe is not an approved material for exhaust piping.

(b) Direct Vent Vertical system with a vertical roof top termination of both the vent and combustion air. The flue shall be PVC, CPVC, Polypropylene or Stainless Steel sealed vent material terminating at the roof top with the manufacturers specified vent termination. A separate pipe shall supply combustion air directly to the WATER HEATER from the outside. The air inlet pipe may be P PVC, CPVC, ABS, Galvanized, Dryer Vent, Polypropylene or Stainless Steel sealed pipe. The air inlet must terminate on the roof top with the manufacturer's specified air inlet cap. The WATER HEATER's total combined air intake length shall not exceed 150 equivalent feet. The WATER HEATER's total combined exhaust venting length shall not exceed 150 equivalent feet. Foam Core pipe is not an approved material for exhaust piping.

(c) Sidewall Vent with Room Air system with a horizontal sidewall termination of the vent with the combustion air drawn from the interior of the building. The flue shall be PVC, CPVC, Polypropylene or Stainless Steel sealed vent material terminating at the sidewall with the manufacturers specified vent termination. The WATER HEATER's total combined exhaust venting length shall not exceed 100 equivalent feet. Foam Core pipe is not an approved material for exhaust piping.

(d) Vertical Vent with Room Air system with a vertical rooftop termination of the vent with the combustion air drawn from the interior of the building. The flue shall be PVC, CPVC, Polypropylene or Stainless Steel sealed vent material terminating at the rooftop with the manufacturers specified vent termination. The WATER HEATER's total combined exhaust venting length shall not exceed 150 equivalent feet. Foam Core pipe is not an approved material for exhaust piping.

(e) Vertical Vent with Sidewall Air system with a vertical rooftop termination of the vent with the combustion air being drawn horizontally from a sidewall. The flue shall be PVC, CPVC, Polypropylene or Stainless Steel sealed vent material terminating at the roof top with the manufacturers specified vent termination. A separate pipe shall supply combustion air directly to the Water Heater from the outside. The air inlet may be PVC, CPVC, ABS, Galvanized, Dryer Vent, Polypropylene or Stainless Steel sealed pipe. The air inlet must terminate on a sidewall using the manufacturers specified air inlet cap. The WATER HEATER's total combined air intake length shall not exceed 150 equivalent feet. The WATER HEATER's total combined exhaust venting length shall not exceed 100 equivalent feet. Foam Core pipe is not an approved material for exhaust piping.

Standards: 1) The water heater shall have an independent laboratory rating for Oxides of Nitrogen (NOx) to meet the requirements of South Coast Air Quality Management District in Southern California and the requirements of Texas Commission on Environmental Quality. 2) The water heater shall built to and meet the ASME – CSD-1 code requirements as factory standard. 3) The water heater shall be compliant with California Code, Factory Mutual, Massachusetts Code and Kentucky Codes and standards.

Factory Start-Up: 1) The water heater manufacturer shall furnish, at no additional charge, the complete certified factory start-up that is required for activating the warranty.