

XP CIRCULATING WATER HEATER

The ENERGY STAR® Qualified A. O. Smith high efficiency condensing XP Water Heater utilizes a state-of-the-art heat exchanger and control technology to provide large volumes of hot water for demanding commercial and industrial potable hot water applications. The all stainless steel heat exchanger construction allows the XP Water Heater to operate in a continuous condensing mode while maximizing longevity and delivering up to 96% thermal efficiency.

The XP features a stainless steel heat exchanger that is built to ASME Section IV requirements. Fully modulating combustion with 5:1 turndown means the XP can fire as low as 20% of maximum input.

ADVANCED BURNER, LOW NOx COMBUSTION TECHNOLOGY

- Negative regulation (neg/reg) sealed combustion allows constant fan speed adjustment depending on the volume of fuel and air entering the burner.
- Fully modulating capability prevents energy-stealing short cycling and provides smooth system operation with higher overall system efficiencies.

ULTRA-LOW NOx OPERATION

- Complies with SCAQMD and other air quality districts requiring less than 20 ppm NOx

ADVANCED CONTROL SYSTEM

- Large touch screen display
- Unit run history and advanced diagnostics
- Water heater pump control
- Lead/Lag sequencing control
- Economy mode with programmable setback

FACTORY SUPPLIED ALL BRONZE PUMP AND TANK SENSOR

- Factory sized for proper flow between water heater and storage tank
- Factory supplied tank sensor for field installation
- Allows 50 equivalent feet of piping between water heater and tank.

CONDENSING STAINLESS STEEL HEAT EXCHANGER

- Designed for fully condensing operation throughout the heating range.
- All heating surfaces are 316L stainless steel to provide a long and trouble-free service life.
- Saves both fuel and operating cost with every heating cycle.
- Impervious to thermal shock.

DIRECT VENT FLEXIBILITY

- Up to 100 feet intake and 100 feet exhaust
- Approved venting with PVC, CPVC, Polypropylene or AL24-4C stainless steel
- Direct vent up to 100 equivalent feet of pipe.
- Sidewall or vertical.
- Lower installation cost with approved CPVC/PVC venting material.
- Approved for use with UL approved AL29-4C® stainless steel venting materials.

FACTORY START-UP INCLUDED

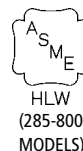
- Required for activating warranty and assuring maximum operating performance. Contact A. O. Smith to arrange a free certified start-up.

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

UP TO 96% THERMAL EFFICIENCY (AHRI CERTIFIED)

5-YEAR HEAT EXCHANGER WARRANTY

XP



These models are approved for potable water heating applications only and cannot be used in closed loop space/hydronic heating applications.

OTHER XP FEATURES:

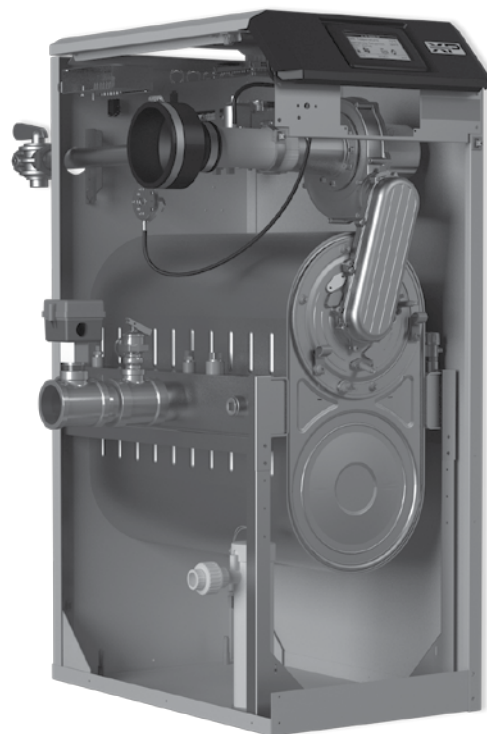
- CSA certified to the ANSI Z21.10.3-CSA 4.3 water heater standard
- Modulating burner with 5:1 turn down
- Direct spark ignition
- Internal lead/lag sequencing
- Vertical and horizontal direct venting
- Logs faults, run time, cycles
- Natural to LP conversion kit
- Enable/Disable
- ASME temperature and pressure relief valve (285-800 models)
- Low voltage terminal strip
- Condensate trap
- Zero clearance to combustible materials
- Automatic reset high-limit
- Leveling legs
- Factory supplied tank sensor
- Flow switch
- 5-Year limited heat exchanger warranty (see

warranty for details)

- 1-Year parts warranty (see warranty for details)

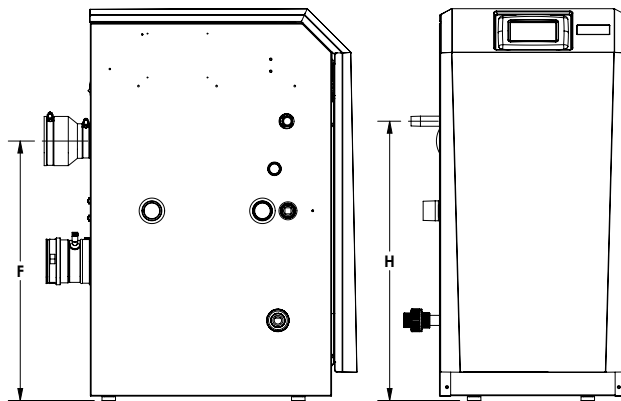
XP OPTIONS:

- Condensate neutralization kits
- Concentric vent kits
- Room air kits
- ModBus interface module
- BACnet field kit
- Vent termination kits
- Skid mounted systems

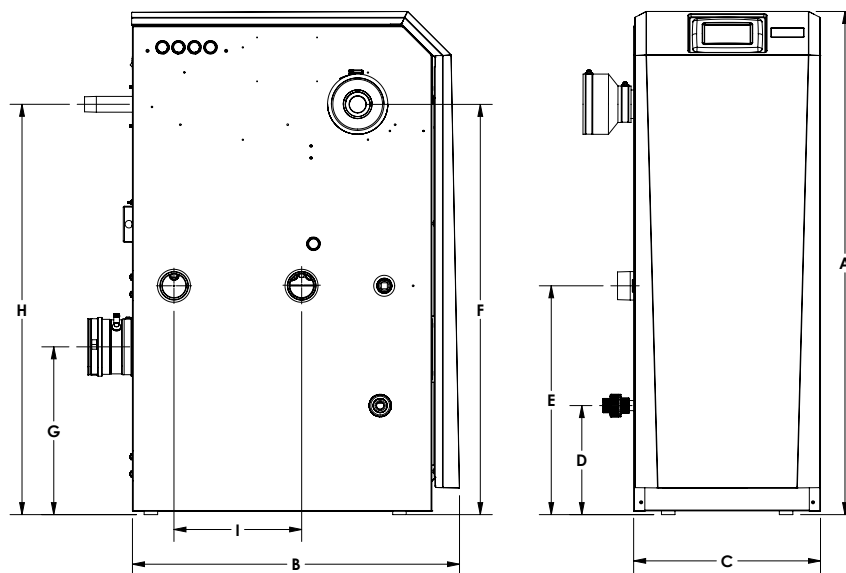


Recovery Capacities

Recovery Capacities				
Model Number	BTU/HR Natural Gas Input	Temperature Rise GPH		
		70	100	140
XWH-150	150,000	248	173	124
XWH-200	200,000	336	235	168
XWH-285	285,000	474	332	237
XWH-400	400,000	665	465	332
XWH-500	500,000	831	582	416
XWH-600	600,000	997	698	499
XWH-700	700,000	1,164	815	582
XWH-800	800,000	1,330	931	665



MODELS 150 - 200



MODELS 285 - 800

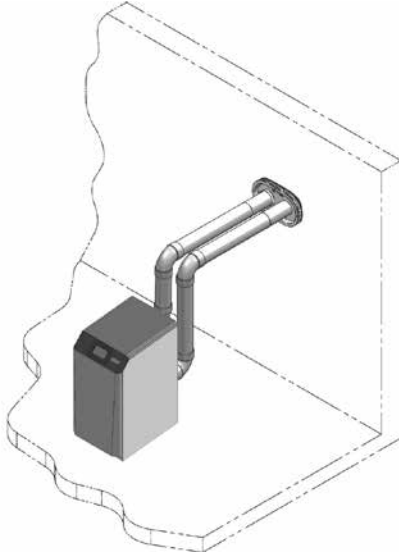
Rough In Dimensions

Model Number	Dimensions in Inches								
	A	B	C	D	E	F	G	H	I
XWH-150	32-3/4	18-1/4	15-1/2	6-3/4	15-3/4	21-1/2	11-1/2	23-1/4	3-3/4
XWH-200	32-3/4	22-1/4	15-1/2	6-3/4	15-3/4	21-1/2	11-1/2	23-1/4	9-1/4
XWH-285	42	20	15-1/2	9-1/4	19-1/4	34-1/4	14	31-1/2	3-3/4
XWH-400	42	27-1/4	15-1/2	9	19	34-1/4	14	34-1/4	10-3/4
XWH-500	42	31-3/4	15-1/2	9-1/4	19	32-3/4	14	36-1/4	10-3/4
XWH-600	42"	46-1/2	15-1/2	9-1/4"	19-1/4	36-1/2	14	33-1/4	10-3/4
XWH-700	42"	40-1/2	15-1/2	9-1/4	19-1/4	36-1/2	14	33-1/4	13-3/4
XWH-800	42"	45-1/2	15-1/2	9-1/4	19-1/4	36-1/2	14	33-1/4	13-3/4

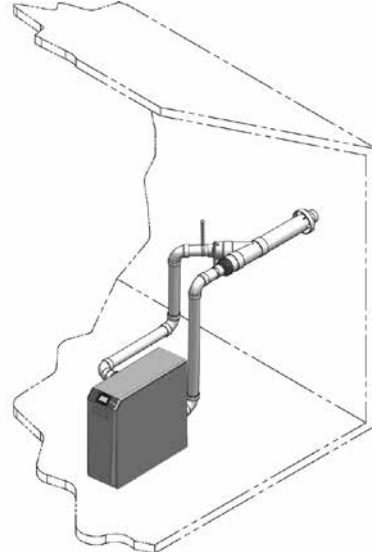
Dimensions and specifications subject to change without notice in accordance with our policy of continuous product improvement.

VERSATILE MULTI-VENTING CONFIGURATIONS

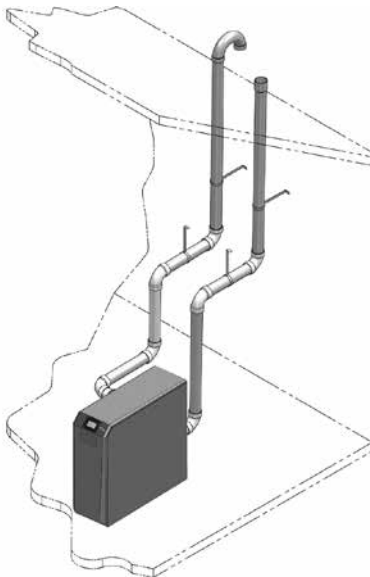
SIDEWALL AND VERTICAL OPTIONS



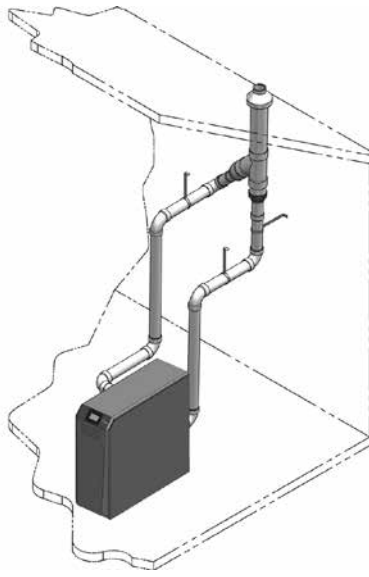
TWO-PIPE SIDEWALL TERMINATION



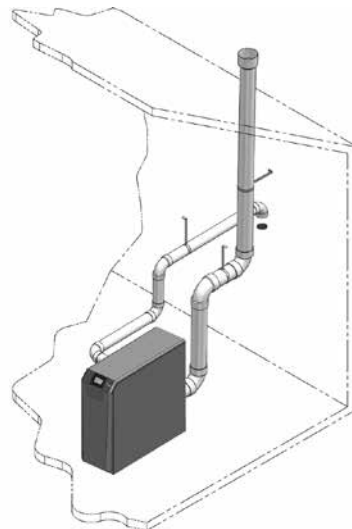
**PVC/CPVC CONCENTRIC SIDEWALL TERMINATION
(MODELS 150-600 ONLY)**



TWO-PIPE VERTICAL TERMINATION



**PVC/CPVC CONCENTRIC VERTICAL
TERMINATION (MODELS 150-600 ONLY)**



VERTICAL VENT, SIDEWALL AIR

Refer to installation manual for vent option details. These illustrations are for conceptual purposes only.



Automatic Circulating Water Heaters

AIR INTAKE/VENT PIPING SIZES

Model Number	Air Intake	Vent
150-200	3 inches	3 inches
285-600	4 inches	4 inches
700-800	4 inches	6 inches

SIDEWALL VENT KITS

Model Number	Kit Number	Vent Size
150-200	100274669	3 inch vent
285-600	100274670	4 inch vent
700-800	100274671	6 inch vent

OPTIONAL ROOM AIR KIT

Model Number	Kit Number	Description
150-200	100274659	Room Air Kit
285-800	100274661	Room Air Kit
400-800	100274662	Room Air Filter Kit

ELECTRICAL REQUIREMENTS

Model Number	Voltage/ Heater	Voltage/ Pump	Voltage/ Control	Total AMPS with Pump	Number of Electrical Connections
XWH-150	120	120	24	3.0	1
XWH-200	120	120	24	3.2	1
XWH-285	120	120	24	4.5	1
XWH-400	120	120	24	6.5	1
XWH-500	120	120	24	5.7	1
XWH-600	120	120	24	5.7	1
XWH-700	120	120	24	12.8	1
XWH-800	120	120	24	12.8	1

CONCENTRIC VENT KITS AND EQUIVALENT VENT LENGTHS

Model Number	Kit Number	Equivalent Vent Length
150-200	100274637	3 Feet
285	100274638	3 Feet
400	100274638	5 Feet
500-600	100274638	30 Feet

GAS PRESSURE REQUIREMENTS

Model Number	*MANIFOLD PRESSURE		MINIMUM SUPPLY PRESSURE		MAXIMUM SUPPLY PRESSURE	
	NATURAL GAS	PROPANE GAS	NATURAL GAS	PROPANE GAS	NATURAL GAS	PROPANE GAS
XWH-150	-0.22" W.C. (-0.054 kPa)	-0.23" W.C. (-0.057 kPa)	4" W. C. (1 kPa)	8" W. C. (2 kPa)	14" W. C. (3.49 kPa)	14" W. C. (3.49 kPa)
XWH-200	-0.39" W.C. (-0.09 kPa)	-0.39" W.C. (-0.09 kPa)	4" W. C. (1 kPa)	8" W. C. (2 kPa)	14" W. C. (3.49 kPa)	14" W. C. (3.49 kPa)
XWH-285	-0.68" W.C. (-0.17 kPa)	-0.71" W.C. (-0.18 kPa)	4" W. C. (1 kPa)	8" W. C. (2 kPa)	14" W. C. (3.49 kPa)	14" W. C. (3.49 kPa)
XWH-400	-1.45" W.C. (-0.36 kPa)	-1.40" W.C. (-0.35 kPa)	4" W. C. (1 kPa)	8" W. C. (2 kPa)	14" W. C. (3.49 kPa)	14" W. C. (3.49 kPa)
XWH-500	-0.20" W.C. (-0.05 kPa)	-0.20" W.C. (-0.05 kPa)	4" W. C. (1 kPa)	8" W. C. (2 kPa)	14" W. C. (3.49 kPa)	14" W. C. (3.49 kPa)
XWH-600	-2.17" W.C. (-0.54 kPa)	-2.72" W.C. (-0.67 kPa)	4" W. C. (1 kPa)	8" W. C. (2 kPa)	14" W. C. (3.49 kPa)	14" W. C. (3.49 kPa)
XWH-700	-2.97" W.C. (-0.74 kPa)	-3.58" W.C. (-0.89 kPa)	4" W. C. (1 kPa)	8" W. C. (2 kPa)	14" W. C. (3.49 kPa)	14" W. C. (3.49 kPa)
XWH-800	-3.50" W.C. (-0.88 kPa)	-4.30" W.C. (-1.1 kPa)	4" W. C. (1 kPa)	8" W. C. (2 kPa)	14" W. C. (3.49 kPa)	14" W. C. (3.49 kPa)

*The manifold pressure is the factory setting and is not adjustable. A negative pressure will be seen with just the blower running without the Gas Control Valve open.

RATINGS

Model Number	CSA INPUT MODULATION BTU/HR	Water Content Gallons	Water Connections	Gas Connections
XWH-150	30,000 - 150,00	1.3	1-1/4" NPT	1/2"
XWH-200	40,000 - 199,00	1.7	1-1/4" NPT	1/2"
XWH-285	57,000 - 285,00	2.4	2" NPT	3/4"
XWH-400	80,000 - 399,00	3.4	2" NPT	1"
XWH-500	100,000 - 500,00	4.2	2" NPT	1"
XWH-600	120,000 - 600,000	4.2	2" NPT	1"
XWH-700	140,000 - 700,000	5.0	2" NPT	1"
XWH-800	160,000 - 800,000	5.7	2" NPT	1"



Automatic Circulating Water Heaters

XWH SUGGESTED SPECIFICATION

The gas-fired automatic circulating water heater(s) shall be A. O. Smith XP model XWH_____ 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 ratio of 5:1. 2) The water heater shall bear the ASME "HLW" stamp and shall be National Board registered for 160 PSI working pressure. 3) The water heater(s) shall be equipped with a factory-installed 125# 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 by CSA International. 5) The water heater shall operate up to 96% thermal efficiency at full fire as certified with AHRI. 6) The water heater shall be certified for indoor installation and approved for installation on combustible floors.

The heat exchanger: 1) Shall be constructed of 316L stainless steel 2) There shall be no bolts, gaskets or "O" rings in the header configuration. 3) The fully condensing heat exchanger shall be designed to allow all condensate to be drained from the bottom of the heat exchanger to ensure that condensation does not collect or interfere with good water heater operation due to long periods of operation in the condensing mode. 4) The low water volume heat exchanger shall be immune to thermal shock. 5) The entire heat exchanger shall carry a five (5) year warranty.

Water Heater Pump: 1) The automatic circulating water heater(s) shall be supplied with a factory-sized all bronze circulating pump(s) sized for 50 equivalent feet of piping. 2) The pump shall be interfaced with and managed by the water heater's control and cycled as needed for most efficient operation.

Burner: 1) The water heater shall have a modulating burner capable of modulating between 20% and 100% fire while providing smooth starts and clean combustion. 2) The burner shall be a premix design, constructed of high temperature stainless steel and utilize a woven metal fiber mesh covering, be warranted for 5 years, and fire in a radial 360-degree flame pattern. 3) Burner ignition shall be by direct spark with flame monitoring via a flame sensor.

Water Heater Controls: 1) The water heater shall feature a touch screen display. 2) The control shall provide intuitive user operation and setup of the water heater. 3) The control shall display current inlet, outlet, and tank temperatures. 4) Data logging with run time/number of cycles and all faults shall be recorded. 5) The water heater shall be BMS ready with factory standard with onboard MODBUS protocol connections. 6) A remote tank temperature sensor shall be shipped loose with the unit to be installed in the storage tanks and allow remote tank temperature control and monitoring at the water heater. 7) The tank temperature set point and set point differential shall be adjustable and shall be maintained within +/-1 degree.

Venting: 1) The water heater shall be certified for direct horizontal through-the-wall venting or direct vertical venting; in addition to sidewall or conventional vertical venting. 2) The water heater shall be capable of horizontal sidewall or direct venting up to 100 equivalent feet without the aid of any optional sidewall vent fans or blowers. 3) The water heater shall be CSA approved for venting with PVC vent pipe. In addition the water heater shall be approved for use with UL approved AL29-4C stainless steel venting materials where local codes may require.

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 and ensuring proper operation.