

CYCLONE[®] Xi

UP TO 96% THERMAL EFFICIENCY, DIRECT VENT

FEATURES

The A. O. Smith Cyclone Xi family of products represents the industry's most technologically advanced commercial water heaters. The innovative Cyclone Xi design takes performance to its highest level with efficiencies of 95% and 96%. Models are available from 120,000 BTUs up to 500,000 BTUs. In addition, the Cyclone Xi features an Intelligent Control System making it the smartest water heater in the industry.

Cyclone Xi provides outstanding hot water output, with dramatic savings on operating costs compared to units with standard 80% efficiency. A. O. Smith's leading-edge engineering delivers conventional power-vent or power direct-vent versatility, low NOx emissions and excellent space-saving characteristics. Powered anodes, standard on all Cyclone Xi models, provide superior tank protection for years of trouble free operation.

INTELLIGENT CONTROL SYSTEM WITH LCD DISPLAY

- Exclusive A. O. Smith designed control system
- Provides detailed water heater status information
- Precise temperature control
- Built-in diagnostics
- Run history information
- Cyclone water heaters are iCOMM™ compatible and can be monitored from remote locations. Call 1.888.WATER02 for more information.



SUBMERGED COMBUSTION CHAMBER, WITH HELICAL HEAT EXCHANGER COIL

- Positioned in center of tank, surrounded by water to virtually eliminate radiant heat loss from chamber
- Spiral heat exchanger keeps hot burner gases swirling, uses centrifugal force to maximize efficiency of heat transfer to water in tank
- Spiral shaped heat exchanger reduces the accumulation of lime scale; maintains higher efficiency performance over time.

POWERED ANODES STANDARD ON ALL MODELS

- Provides long-lasting tank protection in varying water conditions
- Anodes are of a permanent design and do not require replacement unless damaged

PERMAGLAS® ULTRA COAT™ GLASS LINING

- Exclusive process provides superior protection against corrosion
- Both sides of heat exchanger coil are lined for protection against flue gas condensate inside coil

MECHANICAL VENTING VERSATILITY

- Conventional power-venting or power-direct venting
- Vents vertically or through sidewall
- Direct-vent intake and exhaust pipe can terminate separately outside building, or through single opening, using concentric vent assembly
- Uses inexpensive PVC, CPVC or ABS pipe for intake and exhaust. Canadian installations require ULC S636 listed PVC or CPVC pipe for intake and exhaust.

HIGH EFFICIENCY PRE-MIX POWERED BURNER

- Down-fired pre-mix burner provides optimum efficiency and quiet operation
- Top-mounted radial burner design ensures optimum combustion efficiency

**BTH-120
through
BTH-500**



BTH-120-250



**ASME
(OPTIONAL)**



BTH-300-500



**ASME
(optional)**





Commercial Gas Water Heaters

OTHER CYCLONE Xi FEATURES

SPACE-SAVING DESIGN FOR INSTALLATION FLEXIBILITY

- Reduced footprint, ease of service, protection from water damage in case of flooding
- Easy to remove top cover for convenient access to serviceable parts
- 0" installation clearances on sides and rear, 1-1/2" installation clearance on top, 4" alcove installation clearance in front
- Handhole Cleanout of unit
- Handhole cleanout allows easy access to tank interior for cleaning
- 0" clearance to combustibles, approved for installation on combustible floors

CODES AND STANDARDS

- CSA certified and ASME rated T&P relief valve
- Maximum hydrostatic working pressure: 160 PSI
- BTH-120-250 Models are design-certified by CSA International, according to ANSI Z21.10.3 - CSA 4.3 Standards governing storage-type water heaters.
- BTH-300-500 Models are design-certified by Underwriter's Laboratories (UL), Inc., according to ANSI Z21.10.3 - CSA 4.3 standards governing storage-type water heaters.
- Meets or exceeds the thermal efficiency and standby loss requirements of the U.S. Department of Energy and current edition ASHRAE/IESNA 90.1
- Design-certified by Underwriter's Laboratories (UL), Inc. to NSF standard 5
- Complies with SCAQMD Rule 1146.2 and other Air Quality Management Districts with similar requirements for low NOx emissions
- ASME tank construction optional on all models.

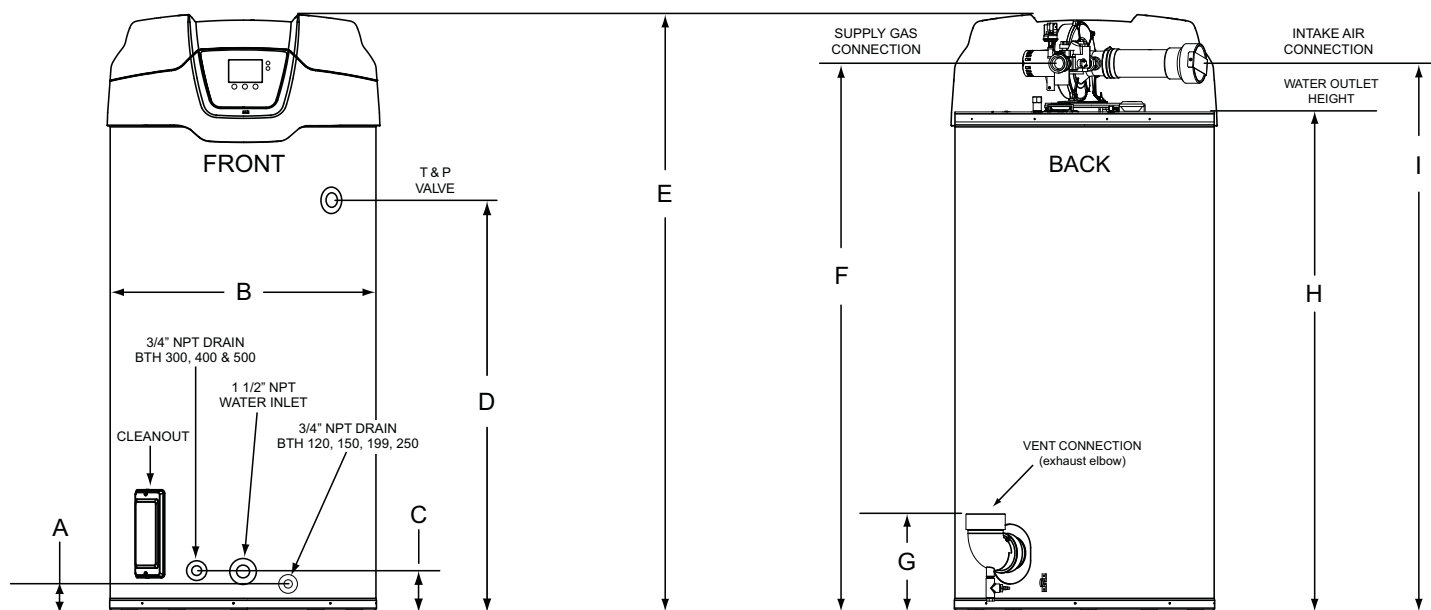
THREE-YEAR LIMITED TANK WARRANTY

- For complete warranty details, consult written warranty shipped with heater, or contact A. O. Smith (5-year extended warranty is optional).

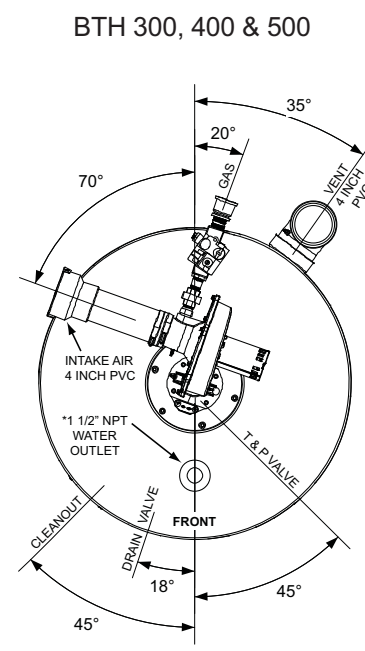
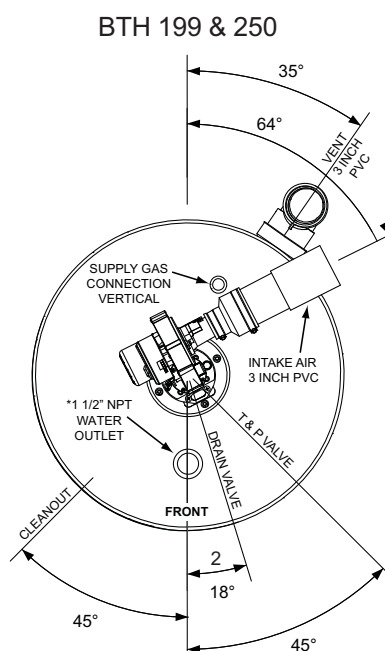
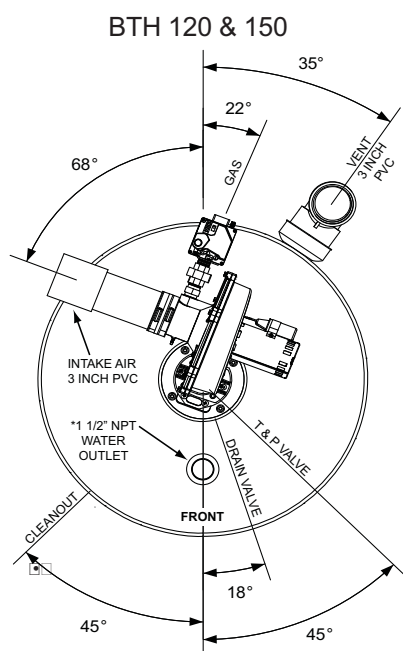
INSTALLATION CONSIDERATIONS

1. Condensate Drain – This is a fully condensing water heater and should be located near a drain to permit proper disposal of condensate.
2. Vent Termination – Exhaust gases of this water heater are less than 140°F. In cold climates water vapor in flue gases will condense into a cloud of vapor where the vent exits the building. This vapor can gradually discolor exterior building surfaces. Vent termination should be located where this vapor cloud and potential discoloration are not a concern. Extending the vent termination up to 6" from the wall helps vapor from being trapped along a building's face. To avoid this problem, the vent can be terminated on the roof. Always locate vent termination above the maximum snowline, and do not locate vent termination above a walkway.
3. Air Intake – In cold climates, air intake should be located at least four feet from the vent termination of the water heater and any other appliance vents that discharge moisture-laden air (such as clothes dryers). This will help prevent freeze-over of the intake screen required to prevent foreign objects from entering the intake pipe. Air intake should be located above the maximum snowline.
4. Blockage Sensors – The water heater is equipped with sensors to shut it down if blockage of vent or air intake occurs. The water heater control system will display detailed diagnostic information on the LCD screen to help service technicians quickly locate and correct the problem.
5. Noise – Vent terminal should be located away from bedroom windows or other areas where blower noise will be objectionable. Avoid venting into corners or confined areas, which will amplify sound. Anchoring intake or vent pipe to walls or ceilings can cause noise to be transmitted to living areas, and isolation mounts should be used where anchoring is required.
6. Optional Concentric Vent Kit - Helps to minimize unsightly wall/roof penetrations.
BTH-120 - 300 vent kit p/n 9006328005
BTH-400 - 500 vent kit p/n 9006144005

Commercial Gas Water Heaters



MODEL	DIMENSIONS									SHIP WEIGHT STD	SHIP WEIGHT ASME
	A	B	C	D	E	F	G	H	I		
	INCHES/CM	INCHES/CM	INCHES/CM	INCHES/CM	INCHES/CM	INCHES/CM	INCHES/CM	INCHES/CM	INCHES/CM		
BTH 120	3/7.62	27.75/70.5	6.3/16	35/88.9	55.5/141	48/121.9	11/27.9	42/106.7	47.5/120.6	460/208	490/222
BTH 150	3/7.62	27.75/70.5	6.3/16	55.5/141	75.5/191.8	68.5/174	11/27.9	63/160	69/175.3	555/252	595/270
BTH 199, 250	3/7.62	27.75/70.5	6.3/16	55.5/141	75.5/191.8	75.5/191.8	11/27.9	63/160	69/175.3	555/252	595/270
BTH 300, 400, 500	N/A	33.12/84.1	4.86/12.34	50.77/129	75.5/191.8	69/175.3	12/30.5	63/160	69/175.3	855/408	855/408



* Center line of water outlet on top of the water heaters is approximately 7 inches from the front edge of the water heater

For Technical Information and Automated Fax Service, call 800-527-1953. A. O. Smith Corporation reserves the right to make product changes or improvements without prior notice.

Commercial Gas Water Heaters



MAXIMUM EQUIVALENT VENT LENGTHS BTH 120 - 250

*Number of 90° Elbows Installed	3 Inch Pipe	4 Inch Pipe
	Maximum Feet (Meters)	Maximum Feet (Meters)
One (1)	45 feet (13.7 meters)	115 feet (35.0 meters)
Two (2)	40 feet (12.2 meters)	110 feet (33.5 meters)
Three (3)	35 feet (10.7 meters)	105 feet (32.0 meters)
Four (4)	30 feet (9.1 meters)	100 feet (30.5 meters)
Five (5)	-----	95 feet (29.0 meters)
Six (6)	-----	90 feet (27.4 meters)

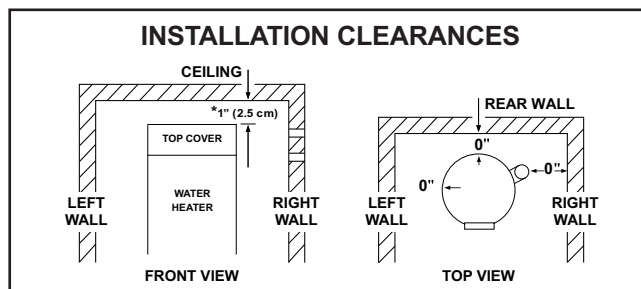
* Maximum number of 90° elbows allowed for the vent (exhaust) pipe is four (4) when installing 3 inch pipe and six (6) when installing 4 inch pipe. Maximum number of 90° elbows allowed for intake air pipe is four (4) when installing 3 inch pipe and six (6) when installing 4 inch pipe. Two (2) 45° elbows equal one (1) 90° elbow.

MAXIMUM EQUIVALENT VENT LENGTHS BTH 300 - 500

*Number of 90° Elbows Installed	4 Inch Pipe	6 Inch Pipe
	Maximum Feet (Meters)	Maximum Feet (Meters)
One (1)	65 feet (19.8 meters)	115 feet (35.0 meters)
Two (2)	60 feet (18.2 meters)	110 feet (33.5 meters)
Three (3)	55 feet (16.8 meters)	105 feet (32.0 meters)
Four (4)	50 feet (15.2 meters)	100 feet (30.5 meters)
Five (5)	45 feet (13.7 meters)	95 feet (29.0 meters)
Six (6)	40 feet (12.2 meters)	90 feet (27.4 meters)

* Maximum number of 90° elbows allowed for the vent (exhaust) pipe is six (6). Maximum number of 90° elbows allowed on the intake air pipe is six (6). Two (2) 45° elbows equal one (1) 90° elbow.

MINIMUM SUPPLY GAS LINE SIZE		
MODEL	NATURAL GAS	PROPANE GAS
BTH 120	1/2" NPT	1/2" NPT
BTH 150	3/4" NPT	3/4" NPT
BTH 199	3/4" NPT	3/4" NPT
BTH 250	3/4" NPT	3/4" NPT
BTH 300	1 1/4" NPT	1 1/4" NPT
BTH 400	1 1/4" NPT	1 1/4" NPT
BTH 500	1 1/2" NPT	1 1/4" NPT



*Minimum clearance to remove top cover

RECOVERY CAPACITY

MODEL	TYPE OF GAS	INPUT		Thermal Efficiency	U.S. Gallons/Hr and Litres/Hr at TEMPERATURE RISE INDICATED														
		BTUH	KW		Approx. Capacity	F°	30F°	40F°	50F°	60F°	70F°	80F°	90F°	100F°	110F°	120F°	130F°	140F°	
						C°	17C°	22C°	28C°	33C°	39C°	44C°	50C°	56C°	61C°	67C°	72C°	78C°	
BTH 120	NATURAL/PROPANE	120,000	35	95%	60 U.S. Gal	GPH	461	345	276	230	197	173	154	138	126	115</			



Commercial Gas Water Heaters

SUGGESTED SPECIFICATION

(Natural or Propane) gas water heater(s) shall be A. O. Smith Cyclone Xi model # _____ or equal, with up to 96% thermal efficiency, a storage capacity of _____ gallons, an input rating of _____ BTUs per hour, a recovery rating of _____ gallons per hour (gph) at 100°F rise and a maximum hydrostatic working pressure of 160 PSI. Water heater(s) shall: 1. Have seamless glasslined steel tank construction, with glass lining applied to all water-side surfaces after the tank has been assembled and welded; 2. Meet the thermal efficiency and standby loss requirements of the U. S. Department of Energy and current edition of ASHRAE/IESNA 90.1.3. Have foam insulation and a CSA Certified and ASME rated T&P relief valve; 4. Have a down-fired power burner designed for precise mixing of air and gas for optimum efficiency, requiring no special calibration on start-up; 5. Be approved for 0" clearance to combustibles.

Heater shall be supplied with maintenance-free powered anode.

The control shall be an integrated solid-state temperature and ignition control device with integral diagnostics, graphic user interface, fault history display, and shall have digital temperature readout.

1. The BTH-120-250 models are design-certified by CSA International, according to ANSI Z21.10.3 - CSA 4.3 standards governing storage-type water heaters. The BTH-300-500 models are design-certified by Underwriter's Laboratories (UL), Inc., according to ANSI Z21.10.3 - CSA 4.3 standards governing storage type water heaters; 2. Meet the thermal efficiency and standby loss requirements of the U. S. Department of Energy and current edition ASHRAE/IESNA 90.1. Complies with SCAQMD Rule 1146.2 and other air quality management districts with similar requirements for low NOx emissions.

120K-250K BTU Input:

For Standard Power Venting: Water heater(s) shall be suitable for standard power venting using a (3" or 4") _____ diameter PVC pipe for a total distance of (50ft. or 120 ft.) _____ equivalent feet of vent piping.

For Power Direct Venting: Water heater(s) shall be suitable for power direct venting using a (3" or 4") _____ diameter PVC pipe for a total distance of (50ft. or 120 ft.) _____ equivalent feet of vent piping and (50ft. or 120 ft.) _____ equivalent feet of intake air piping.

300K - 500K BTU Input:

For Standard Power Venting: Water heater(s) shall be suitable for standard power venting using a (4" or 6") _____ diameter PVC pipe for a total distance of (70ft. or 120 ft.) _____ equivalent feet of vent piping.

For Power Direct Venting: Water heater(s) shall be suitable for power direct venting using a (4" or 6") _____ diameter PVC pipe for a total distance of (70ft. or 120 ft.) _____ equivalent feet of vent piping and (70ft. or 120 ft.) _____ equivalent feet of intake air piping.

Operation of the water heater(s) in a closed system where thermal expansion has not been compensated for (with a properly sized thermal expansion tank) will void the warranty.

Water heater should incorporate the iCOMM™ system for remote monitoring, leak detection and fault alert.



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