

Commercial Gas Water Heaters

CYCLONE® Mxi MODULATING

MODULATING BURNER ADVANCES THE CYCLONE TO HIGHER LEVELS OF EFFICIENCY

The full line of A. O. Smith Cyclone Mxi condensing water heaters has been designed to provide years of dependable service and feature industry leading technology. Models are available from 120,000 to 500,000 Btu/h and all deliver thermal efficiencies of 95% and higher. The unique helical coil heat exchanger limits weld joints for optimal service life while maximizing heat transfer.

Cyclone is the industry leader in high efficiency commercial water heating with over a quarter million Cyclones sold since 1996. The current Mxi modulating models adjust firing rate to the specific demand further increasing efficiency and money savings.

INTELLIGENT CONTROL SYSTEM WITH LCD DISPLAY

- Exclusive A. O. Smith designed control system
- · Provides detailed water heater status information
- Precise temperature control adjustable from 90 to 180 degrees
- Built-in diagnostics
- Run history information
- Cyclone water heaters are compatible with the iCOMM™ remote monitoring system. Call 1.888.928.3702 for more information.

SUBMERGED COMBUSTION CHAMBER, WITH HELICAL HEAT EXCHANGER COIL

- Positioned in the center of the tank, surrounded by water to virtually eliminate radiant heat loss from chamber
- · Direct spark ignition
- Spiral heat exchanger keeps hot burner gases swirling, uses centrifugal force to maximize efficiency of heat transfer to water in tank
- Spiral heat exchanger reduces lime scale from forming on water-side surfaces, which maintains energy efficiency over time

POWERED ANODES STANDARD ON ALL MODELS

- Provides long-lasting tank protection in varying water conditions
- · Powered anodes are non-sacrificial
- Automatically adjusts output needed to properly protect the tank

PERMAGLAS® ULTRA COAT™ GLASS LINING

- Glass coating is applied using a liquid slush coating technique to ensure uniform coating
- Heat exchanger coil is glassed both externally and internally for optimum protection

MECHANICAL VENTING VERSATILITY

- Conventional power venting or direct venting
- Vents vertically or through a sidewall
- Front located exhaust and condensate connections allow for easy install and access
- Vents with low cost PVC Schedule 40 intake and exhaust pipe. Approved for optional CPVC Schedule 40, Polypropylene and AL29-4C stainless steel vent materials

- Direct-vent intake and exhaust pipe can terminate separately outside building or through single opening, using concentric vent assembly
- Canadian installations require ULC S636 PVC/CPVC, ULC S636 Polypropylene and AL29-4C stainless steel pipe for intake and exhaust

HIGH EFFICIENCY MODULATING PRE-MIX POWERED BURNER

- Down-fired pre-mix burner provides optimum efficiency and quiet operation
- Top-mounted burner position prevents condensation from affecting burner operation

SPACE-SAVING DESIGN FOR INSTALLATION FLEXIBILITY

- 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
- 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
- All models are design certified by Underwriters Laboratories (UL), Inc., to ANSI Z21.10.3 - CSA 4.3 Standards
- Meets the thermal efficiency and standby loss requirements of the U.S. Department of Energy and current edition ASHRAE/IESNA 90.1
- Design-certified by Underwriters Laboratories to NSF standard 5 for 180°F (62°C) water
- Complies with SCAQMD Rule 1146.2 and other Air Quality Management Districts with similar requirements for low-NOx emissions
- ASME tank construction optional on 120-500 model sizes

3-YEAR LIMITED TANK / 1-YEAR LIMITED PARTS WARRANTY

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















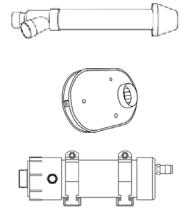






OPTIONAL KITS

- Optional Concentric Vent Kits
 - BTH-120 250 vent kit p/n 9006328005
- BTH-300 500 vent kit p/n 9008841005
- Optional Low Profile Termination Vent Kits
 - 3" Flush Mount Vent Kit p/n 9008933005
 - 4" Flush Mount Vent Kit p/n 9008934005
 - 6" Flush Mount Kit p/n 9008935005
- Optional Condensate Neutralization Kits
 - BTH-120-199 kit p/n 9007959005
 - BTH-250-500 kit p/n 9007960005



Vent Requirements for BTH 120(A) - 250(A)

Number of 90° Elbows	3 Inch Pipe	4 Inch Pipe				
Installed	Maximum Feet (Meters)	Maximum Feet (Meters)				
One (1)	45 feet (13.7 meters)	115 feet (35 meters)				
Two (2)	40 feet (12.2 meters)	110 feet (33.5 meters)				
Three (3)	35 feet (10.7 meters)	105 feet (32 meters)				
Four (4)	30 feet (9.1 meters)	100 feet (30.5 meters)				
Five (5)	N/A	95 feet (29 meters)				
Six (6)	N/A	90 feet (27.4 meters)				

Gas Line Connection Size

Model	Series	Natural Gas	Propane Gas				
BTH 120	200/201	3/4" NPT	3/4" NPT				
BTH 150	200/201	3/4" NPT	3/4" NPT				
BTH 199	200/201	3/4" NPT	3/4" NPT				
BTH 250	200/201	3/4" NPT	3/4" NPT				
BTH 300	200/201	1-1/2" NPT	1-1/2" NPT				
BTH 400	200/201	1-1/2" NPT	1-1/2" NPT				
BTH 500	200/201	1-1/2" NPT	1-1/2" NPT				

Vent Requirements for BTH 300(A) - 500(A)

Number of 90° Elbows	4 Inch Pipe	6 Inch Pipe					
Installed	Maximum Feet (Meters)	Maximum Feet (Meters)					
One (1)	65 feet (19.8 meters)	115 feet (35 meters)					
Two (2)	60 feet (18.2 meters)	110 feet (33.5 meters)					
Three (3)	55 feet (16.8 meters)	105 feet (32 meters)					
Four (4)	50 feet (15.2 meters)	100 feet (30.5 meters)					
Five (5)	45 feet (13.7 meters)	95 feet (29 meters)					
Six (6)	40 feet (12.2 meters)	90 feet (27.4 meters)					

Gas Pressure Requirements

Model Number	Manifold	Pressure	Minimum Su _l	oply Pressure	Maximum Supply Pressure				
Model Number	Natural Gas	Propane Gas	Natural Gas	Propane Gas	Natural Gas	Propane Gas			
BTH-120(A)	0"W.C. (0 kPa)	0"W.C. (0 kPa)	4.4"W.C. (1.10 kPa)	8.5"W.C. (2.12 kPa)	14"W.C. (3.49 kPa)	14"W.C. (3.49 kPa)			
BTH-150(A)	0"W.C. (0 kPa)	0"W.C. (0 kPa)	4.4"W.C. (1.10 kPa)	8.5"W.C. (2.12 kPa)	14"W.C. (3.49 kPa)	14"W.C. (3.49 kPa)			
BTH-199(A)	0"W.C. (0 kPa)	0"W.C. (0 kPa)	4.4"W.C. (1.10 kPa)	8.5"W.C. (2.12 kPa)	14"W.C. (3.49 kPa)	14"W.C. (3.49 kPa)			
BTH-250(A)	0"W.C. (0 kPa)	0"W.C. (0 kPa)	4.4"W.C. (1.10 kPa)	8.5"W.C. (2.12 kPa)	14"W.C. (3.49 kPa)	14"W.C. (3.49 kPa)			
BTH-300(A)	0"W.C. (0 kPa)	0"W.C. (0 kPa)	4.8"W.C. (1.19 kPa)	8.5"W.C. (2.12 kPa)	14"W.C. (3.49 kPa)	14"W.C. (3.49 kPa)			
BTH-400(A)	0"W.C. (0 kPa)	0"W.C. (0 kPa)	4.8"W.C. (1.19 kPa)	8.5"W.C. (2.12 kPa)	14"W.C. (3.49 kPa)	14"W.C. (3.49 kPa)			
BTH-500(A)	0"W.C. (0 kPa)	0"W.C. (0 kPa)	4.8"W.C. (1.19 kPa)	8.5"W.C. (2.12 kPa)	14"W.C. (3.49 kPa)	14"W.C. (3.49 kPa)			



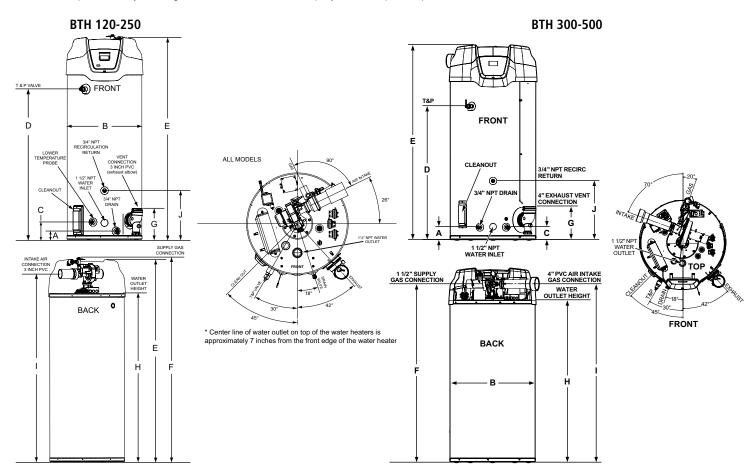
Commercial Gas

Madal				Dimensions											Approx.
Model Number	Approx. Capacity		Α	В	С	D	E	F	G	Н	-	J	LBS/KG	Weight Std	Shipping Weight ASME
BTH-120(A)	GPH	60	3	27.75	6.3	35	55.5	53.5	11.25	42.25	48.5	18.25	LBS	460	490
B1H-12U(A)	LPH	227	7.62	70.5	16	88.9	141	135.9	28.6	107.32	123.2	46.36	KG	208	220
DTII 150/A)	GPH	100	3	27.75	6.3	56.38	76	75.75	11.25	64	70	18.25	LBS	523	553
BTH-150(A)	LPH 379	379	7.62	70.5	16	143.2	193.04	192.4	28.6	162.6	177.8	46.36	KG	237	251
DTII 400/A)	GPH	100	3	27.75	6.3	56.38	76	75.75	11.25	64	70	18.25	LBS	523	553
BTH-199(A)	LPH	379	7.62	70.5	16	143.2	193.04	192.4	28.6	162.6	177.8	46.36	KG	237	251
DTU 250/A)	GPH	100	3	27.75	6.3	56.38	76	75.75	11.25	64	70	18.25	LBS	523	553
BTH-250(A)	LPH	379	7.62	70.5	16	143.2	193.04	192.4	28.6	162.6	177.8	46.36	KG	237	251
DTU 200/A)	GPH	119	4.75	33.12	4.75	52	75.75	73.75	12.75	63.13	69.25	23	LBS	855	855
BTH-300(A)	LPH	450.96	12.07	84.12	12.07	132.08	192.41	187.3	32.39	160.35	175.9	58.43	KG	387	387
DTII 400/A)	GPH	119	4.75	33.12	4.75	52	75.75	73.75	12.75	63.13	69.25	23	LBS	855	855
BTH-400(A)	LPH	450.96	12.07	84.12	12.07	132.08	192.41	187.3	32.39	160.35	175.9	58.43	KG	387	387
DTU 500/A)	GPH	119	4.75	33.12	4.75	52	75.75	73.75	12.75	63.13	69.25	23	LBS	855	855
BTH-500(A)	LPH	450.96	12.07	84.12	12.07	132.08	192.41	187.3	32.39	160.35	175.9	58.43	KG	387	387

Electrical characteristics-120V-60Hz A.C., 5.0 A

Propane gas models available

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



[&]quot;A" in model represents ASME construction



Recovery Capacity

		Inpu	ıt				U.S. GA	LLONS/	HR AND	LITRES	HR AT T	EMPER	ATURE F	RISE INC	DICTATE	D							
Model T Number	Type of Gas		kW	Thermal Efficiency	Approx.	°F	30°F	40°F	50°F	60°F	70°F	80°F	90°F	100°F	110°F	120°F	130°F	140°F					
		BTU/HR	KVV		Capacity	°C	17°C	22°C	28°C	33°C	39°C	44°C	50°C	56°C	61°C	67°C	72°C	78°C					
BTH-120(A)	Natural/	120,000	35	95%	60 U.S. Gals.	GPH	461	345	276	230	197	173	154	138	126	115	106	99					
D111-120(A)	Propane	120,000	33	95/0	227 Litres	LPH	1743	1308	1046	872	747	654	581	523	475	436	402	374					
BTH-150(A)	Natural/	150 000	44	98%	100 U.S. Gals.	GPH	594	445	356	297	255	223	198	178	162	148	137	127					
B1H-130(A)	Propane	pane 150,000 4	44	98%	379 Litres	LPH	2248	1686	1349	1124	963	843	749	674	613	562	519	482					
BTH-199(A)	Natural/	199,900	58	97%	100 U.S. Gals.	GPH	783	588	470	392	336	294	261	235	214	196	181	168					
DIN-133(A)	Propane		26		379 Litres	LPH	2965	2224	1779	1483	1271	1112	988	890	809	741	684	635					
DTU 250/A\	Natural/	250,000	250,000	350,000	250,000	250,000 73	73	72	96%	100 U.S. Gals.	GPH	970	727	582	485	416	364	323	291	264	242	224	208
BTH-250(A)	Propane	230,000	/3	90%	379 Litres	LPH	3670	2753	2202	1835	1573	1376	1223	1101	1001	918	847	786					
DTII 200/A)	Natural/	200,000	300.000 88	200 000 00	300,000	200 000	200 000	00	060/	119 U.S. Gals.	GPH	1164	873	698	582	499	436	388	349	317	291	269	249
BTH-300(A)	Propane	300,000	88	96%	451 Litres	LPH	4405	3304	2643	2202	1888	1652	1468	1321	1201	1101	1017	944					
DTII 400/A)	Natural/	200.000	0 117	95%	119 U.S. Gals.	GPH	1535	1151	921	767	658	576	512	460	419	384	354	329					
BTH-400(A)	Propane	399,900			451 Litres	LPH	5810	4358	3486	2905	2490	2179	1937	1743	1585	1453	1341	1245					
DTIL FOO(A)	Natural/	/ 100 000		050/	119 U.S. Gals.	GPH	1919	1439	1151	959	822	720	640	576	523	480	443	411					
BTH-500(A)	Propane	499,900	146	95%	451 Litres	LPH	7263	5448	4358	3632	3113	2724	2421	2179	1981	1816	1676	1556					

Recovery capacities are based on AHRI rated thermal efficiencies. For ASME construction add an "A" to the end of the model ex: BTH-120(A).

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

SPECIFICATION

(Natural or Propane) gas water heater(s) shall be A. O. Smith Cyclone Mxi model # ______ or equal, minimum 95% 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. Modulating gas burner that automatically adjusts the input based on demand. 2. Powered anodes that are non sacrificial and maintenance free. 3. Have seamless glass-lined steel tank construction, with glass lining applied to all water-side surfaces after the tank has been assembled and welded; 4. Meets the thermal efficiency and/or standby loss requirements of the U.S. Department of Energy and current edition of ASHRAE/IESNA 90.1; 5. Have foam insulation and a CSA Certified and ASME rated T&P relief valve; 6. Have a down-fired power burner designed for precise mixing of air and gas for optimum efficiency, requiring no special calibration on start-up; 7. Be approved for 0" clearance to combustibles. 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. All models are design certified by Underwriters 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 power venting using a (3" or 4") _ __ diameter PVC pipe for a total distance of (50 ft 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 (50 ft or 120 ft.) _____ equivalent feet of vent piping and (50 ft. or 120 ft.) _____ equivalent 300K - 500K BTU Input: For Standard Power Venting: Water heater(s) shall be suitable for standard power venting using a (4" or 6")____ for a total distance of (70 ft. 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 (70 ft or 120 ft.) equivalent feet of vent piping and (70 ft. 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.

For technical information, call 800-527-1953. A. O. Smith Corporation reserves the right to make product changes or improvements without prior notice.