

Master-Fit® Ultra-Low NOx Commercial Gas Tank-Type Water Heaters

FEATURES

82% thermal efficiency means lower operating costs.

FAN ASSISTED COMBUSTION - The blower is built into the Low NOx burner assembly for Ultra-Low NOx readings that comply with SCQAMD rule1146.2 of 14 ng/j or 20 ppm.

METAL VENTING - Rated Category I Appliance. Uses standard double wall type "B" vent. Can be commonly vented with other Category I appliances. Vent connects directly to the vent connector outlet. No Draft hood or barometric damper required. Perfect choice for retrofit and upgrade installations.

WATER CONNECTIONS - For ease of installation, all BTLs feature water connections on the top, front, and rear. "The Eliminator" inlet water connection eliminates harmful scale buildup, extending the life of the product. The front inlet connection must be used for the Eliminator benefits.

GLASSLINED TANK - Permaglas® Ultracoat is the proprietary ceramic coating developed by A. O. Smith's ceramic engineers specifically for the heater. It is applied after the complete tank has been assembled to give a seamless barrier against hot water corrosion.

INSTALLED COST SAVINGS - When multiple BTL units are exclusively used in a vent manifold, use the National Fuel Gas Code Table 13 Vent Sizing information to determine vent diameter and specifications. The BTL often uses a smaller vent diameter than a natural draft water heater which saves on installation cost.

FULLY AUTOMATIC DIGITAL CONTROLS WITH SAFETY SHUTOFF - Accurate, dependable control system. Features a two speed blower control for smooth main burner light-off. Manual reset gas shutoff device for added safety. Maximum inlet gas pressure is 14" W.C. Minimum gas pressure is 3.5" W.C. Natural Gas.

FOAM INSULATION - Saves fuel, helps reduce standby heat loss.

JACKET - Heavy gauge steel finished with a baked enamel finish over a bonderized undercoat.

EASY CLEANING - Handhole cleanout allows access for easy cleaning.

FULLY TESTED FOR SAFETY AND PERFORMANCE - Design certified by the Underwriters Laboratory for 180°F hot water service. Meets rigid requirements of the National Sanitation Foundation when equipped with optional leg kit. Certified for use on combustible flooring.

INTERMITTENT IGNITION DEVICE - Eliminates standing pilot. Provides flame failure response in less than one second. Spark ignitor and power ON/OFF switch.

EASY-TO-INSTALL - Completely factory-assembled. Only gas, water, vent and electric connections need be made. Provided with drain valve.

ANODES - CoreGuard™ long-life, stainless steel core anode rods.

PLUG KITS - Pipe nipples and caps are included to plug unused water connections.

APPROVAL RATINGS AND CERTIFICATION - All models meet ANSI Z21.10.3 - CSA 4.3 standards and the thermal efficiency and standby loss requirements of the U.S. Department of Energy and current edition of ASHRAE/IESNA 90.1.

OTHER FEATURES

- Integral automatic gas shutoff system prevents excessive water temperature
- CSA Certified and ASME Rated T&P Relief valve are factory-installed
- Maximum working pressure is 160 psi standard
- Adjustable thermostat with a 120-180°F range.
- All models certified up to 7,700 ft.

THREE YEAR LIMITED TANK / ONE YEAR LIMITED PARTS WARRANTY

- For complete warranty information, consult written warranty.

MODELS BTL 120-400(A)



Image shows
models 120-250(A)

GAS-FIRED



Low Lead Content



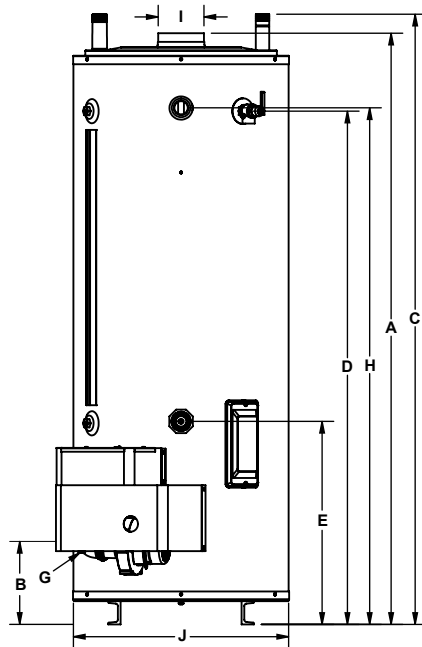
WATER QUALITY



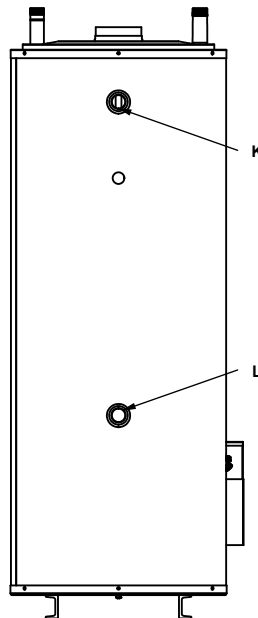
ROUGH-IN DIMENSIONS

BTL Models 120-250(A)

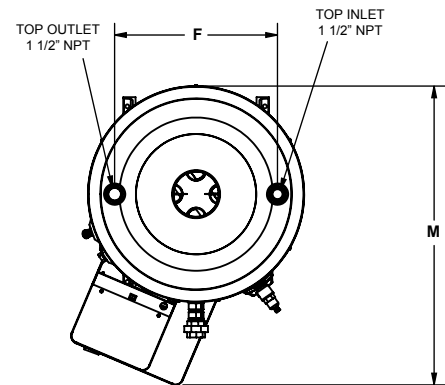
FRONT VIEW



BACK VIEW



TOP VIEW



ROUGH-IN DIMENSIONS

MODEL DIMENSIONS	BTL-120		BTL-154		BTL-180		BTL-199		BTL-250(A)	
	inches	cm	inches	cm	inches	cm	inches	cm	inches	cm
A	68 1/4	173.4	68 1/4	173.4	76	193.0	76	193.0	76	193.0
B	9 1/2	9 1/2	9 1/2	9 1/2	9 1/2	9 1/2	9 1/2	9 1/2	9 1/2	9 1/2
C	70 1/2	179.1	70 1/2	179.1	78 1/4	198.8	78 1/4	198.8	78 1/4	198.8
D	58 1/4	147.8	58 1/4	147.8	65 3/4	167.0	65 3/4	167.0	65 3/4	167.0
E	26 1/4	66.5	26 1/4	66.5	25 3/4	65.4	25 3/4	65.4	25 3/4	65.4
F	21	53.3	21	53.3	21	53.3	21	53.3	21	53.3
G	1/2 NPT		1/2 NPT		1/2 NPT		1/2 NPT		1/2 NPT	
H	58 1/2	148.8	58 1/2	148.8	66 1/4	168.3	66 1/4	168.3	66 1/4	168.3
I	6	15.2	6	15.2	6	15.2	6	15.2	6	15.2
J	27 3/4	70.5	27 3/4	70.5	27 3/4	70.2	27 3/4	70.2	27 3/4	70.2
K	1 1/2 NPT		1 1/2 NPT		1 1/2 NPT		1 1/2 NPT		1 1/2 NPT	
L	1 1/2 NPT		1 1/2 NPT		1 1/2 NPT		1 1/2 NPT		1 1/2 NPT	
M	38 1/2	97.8	38 1/2	97.8	38 1/2	97.8	38 1/2	97.8	38 1/2	97.8

"A" after model number designates ASME construction

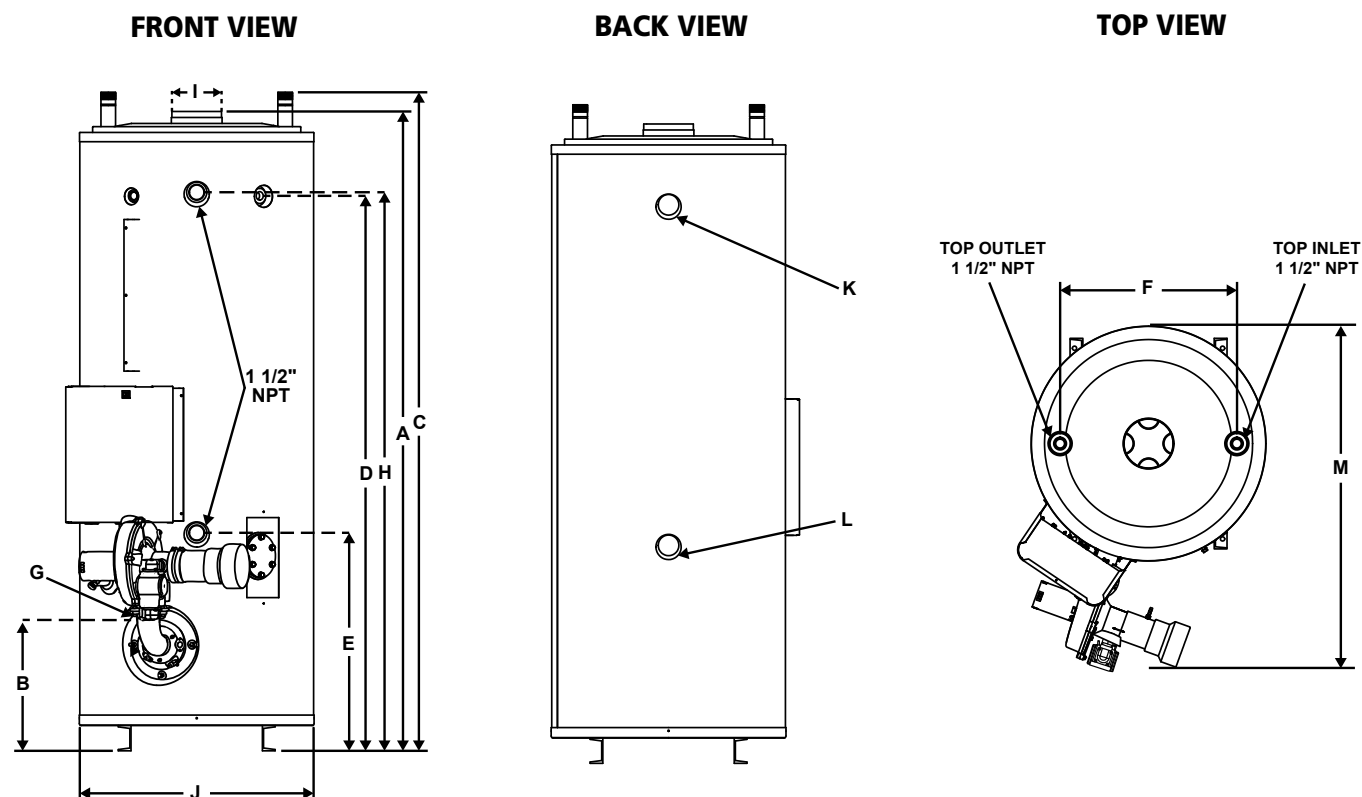
Dimensions and specifications subject to change without notice in accordance with our policy of continuous product improvement.

All models rated at 82% thermal efficiency

Models available for sale in California only

ROUGH-IN DIMENSIONS

BTL Models 275-400(A)



ROUGH-IN DIMENSIONS

MODEL DIMENSIONS	BTL-275(A)		BTL-310(A)		BTL-366(A)		BTL-400(A)	
	inches	cm	inches	cm	inches	cm	inches	cm
A	76	193	76	193	76	193	76	193
B	16 1/4	41.2	16 1/4	41.2	16 1/4	41.2	16 1/4	41.2
C	78 1/4	198.8	78 1/4	198.8	78 1/4	198.8	78 1/4	198.8
D	65 3/4	167	65 3/4	167	65 3/4	167	65 3/4	167
E	25 3/4	65.4	25 3/4	65.4	25 3/4	65.4	25 3/4	65.4
F	21	53.3	21	53.3	21	53.3	21	53.3
G	3/4 NPT		3/4 NPT		3/4 NPT		3/4 NPT	
H	66 1/4	168.3	66 1/4	168.3	66 1/4	168.3	66 1/4	168.3
I	6	15.2	6	15.2	6	15.2	6	15.2
J	27 3/4	70.5	27 3/4	70.5	27 3/4	70.5	27 3/4	70.5
K	1 1/2 NPT		1 1/2 NPT		1 1/2 NPT		1 1/2 NPT	
L	1 1/2 NPT		1 1/2 NPT		1 1/2 NPT		1 1/2 NPT	
M	41	104	41	104	41	104	41	104

"A" after model number designates ASME construction

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Commercial Gas Water Heaters

RECOVERY CAPACITIES, BASED ON 82% EFFICIENCY

	INPUT KBTUH	INPUT kW	U.S. GAL.	LITERS	EFF. %	U. S. GALLONS / HR. AND LITERS / HR. AT TEMPERATURE RISE INDICATED																
						Deg. F	36	40	50	54	60	70	72	80	90	100	108	110	120	126	130	140
						Deg. C	20	22	28	30	33	39	40	44	50	56	60	61	67	70	72	78
BTL 120	120,000	35	81	307	82	GPH	331	298	239	221	199	170	166	149	133	119	110	108	99	95	92	85
						LPH	1254	1129	903	836	752	645	627	564	502	451	418	410	376	358	347	322
BTL 154	154,000	45	81	307	82	GPH	425	383	306	283	255	219	213	191	170	153	142	139	128	121	118	109
						LPH	1609	1448	1159	1073	966	828	805	724	644	579	536	527	483	460	446	414
BTL 180	180,000	53	93	352	82	GPH	497	447	358	331	298	256	248	224	199	179	166	163	149	142	138	128
						LPH	1881	1693	1354	1254	1129	967	941	846	752	677	627	616	564	537	521	484
BTL 199	199,000	58	93	352	82	GPH	549	494	396	366	330	283	275	247	220	198	183	180	165	157	152	141
						LPH	2080	1872	1497	1386	1248	1070	1040	936	832	749	693	681	624	594	576	535
BTL 250(A)	250,000	73	93	352	82	GPH	690	621	497	460	414	355	345	311	276	248	230	226	207	197	191	177
						LPH	2613	2351	1881	1742	1568	1344	1306	1176	1045	941	871	855	784	746	723	672

	INPUT BTUH	INPUT kW	U.S. GAL.	LITERS	EFF. %	U. S. GALLONS / HR. AND LITERS / HR. AT TEMPERATURE RISE INDICATED																
						Deg. F	36	40	50	54	60	70	72	80	90	100	108	110	120	126	130	140
						Deg. C	20	22	28	30	33	39	40	44	50	56	60	61	67	70	72	78
BTL 275(A)	275,000	81	85	322	82	GPH	754	678	543	502	452	388	377	339	301	271	251	247	226	215	209	194
						LPH	2853	2567	2054	1902	1712	1467	1426	1284	1141	1027	951	934	856	815	790	734
BTL-310(A)	310,000	91	85	322	82	GPH	849	765	612	566	510	437	425	382	340	306	283	278	255	243	235	218
						LPH	3216	2894	2315	2144	1929	1654	1608	1447	1286	1158	1072	1052	965	919	890	827
BTL-366(A)	366,000	107	85	322	82	GPH	1003	903	722	669	602	516	501	451	401	361	334	328	301	287	278	258
						LPH	3797	3417	2734	2531	2278	1953	1898	1708	1519	1367	1266	1243	1139	1085	1051	976
BTL-400(A)	390,000	114	85	322	82	GPH	1069	962	769	712	641	550	534	481	427	385	356	350	321	305	296	275
						LPH	4046	3641	2913	2697	2427	2081	2023	1820	1618	1456	1349	1324	1214	1156	1120	1040

GAS AND ELECTRICAL CHARACTERISTICS

MODEL	GAS TYPE	GAS SUPPLY PRESSURE		VOLTS / HZ	AMPERES
		MINIMUM	MAXIMUM		
All Models	Natural	3.5" W.C. (0.87 kPa)	14" W.C. (3.48 kPa)	120 / 60	< 5

MODEL	CLEARANCE TO COMBUSTIBLES		CLEARANCE TO NON-COMBUSTIBLES	
	SIDES & REAR	TOP COVER	SIDES & REAR	TOP COVER
All Models	0"	12"	0"	12"

WATER CONNECTIONS IN INCHES						
MODELS	INLET			OUTLET		
	TOP	FRONT	BACK	TOP	FRONT	BACK
All Models	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2

	BTL-120		BTL-154		BTL-180		BTL-199		BTL-250(A)		BTL-275(A)		BTL-310(A)		BTL-366(A)		BTL-400(A)	
	lbs.	kg.	lbs.	kg.	lbs.	kg.	lbs.	kg.	lbs.	kg.	lbs.	kg.	lbs.	kg.	lbs.	kg.	lbs.	kg.
Approx. Shipping Weight STD	750	340	750	340	835	379	835	379	835	379	850	386	850	386	850	386	850	386
Approx. Shipping Weight ASME	-	-	-	-	-	-	-	-	880	399	900	408	900	408	900	408	900	408

NSF LEG KIT

- Meets NSF Standard 5 with optional leg kit - Part # 9008214005

SUGGESTED SPECIFICATION

Water Heater(s) shall be Model _____ as manufactured by A. O. SMITH, or equal. Water heater(s) shall be of glasslined design, and gas fired, equipped to burn natural gas and design certified by the Underwriter Laboratory under Volume III tests for commercial heaters for delivery of 180°F water, and meet or exceed the thermal efficiency and standby loss requirements of the U.S. Department of Energy and Current Edition of ASHRAE/IESNA 90.1. Heaters shall have an input rating of _____ and a recovery rating of _____ GPH at a temperature rise of 100°F with a storage capacity of _____ gallons. Heaters shall be equipped with 1 1/2" water inlet and outlet openings, a 2 3/4" x 3 3/4" boiler-type handhole cleanout and shall have a maximum working pressure of 160 psi. Water heater(s) shall be equipped with an integrated control system consisting of a 180°F adjustable thermostat with upper and lower sensing bulbs, which average the water temperatures at the top and bottom of the tank for maximum water temperature control. Heater(s) shall be provided with a manual reset gas shutoff device, anodes for cathodic protection and IID system. CSA Certified and ASME Rated T&P Relief Valve shall be furnished and installed by the factory. The heater shall be insulated with foam insulation or equal. The outer jacket shall have a baked enamel finish over a bonderized undercoating. All internal surfaces of the heater(s) exposed to water shall be glass-lined with an alkaline borosilicate composition that has been fused-to-steel by firing at a temperature range of 1400° to 1600°F. Heater tank shall have a 3 year limited warranty against corrosion or sediment buildup as outlined in the written warranty. Fully illustrated instruction manual to be included.