A.O. SMITH

Energy Saving Product

82% EFFICIENCY *

Meets or exceeds the requirements of ASHRAE/IES 90.1b-1992.

FEATURES

ALL NON-FERROUS WATERWAYS - All castings are made of Bronze or Brass. All water tubes are made from copper. Brazed joints or flare union construction make the heater immune to the effects of thermal shock and thermal cycling. The best boiler for hot water supply.

EFFICIENT COPPER COIL COMBUSTION CHAMBER - The combustion chamber is a heat exchanger formed from a two passage coil of tightly wound continuous copper tube. Water circulating through this coil captures radiant heat. A wrap of insulation on the outside of the coil retains the heat captured by the circulating water.

COPPER HEAT EXCHANGER - Extended surface copper tube having integral helical fins on the outside. The fins are extruded directly from the tube. Burkay design provides a liberal heat transfer surface directly above the flame.

BURKAY BURNER MAXIMIZES EFFICIENCY - The patented Burkay burner uses primary air injection at up to 72 individual orifices plus secondary entrainment of air. Approved for installation on combustible floors as shipped from factory.

GAS VALVES - Slow opening redundant gas valves ensure smooth light-off without flame roll-out or pilot outage. (Dual stage & modulation not available.)

THERMAL BALANCER - Patented pump delay system that allows boiler and pump to run simultaneously but delays pump shut off at end of heating cycle to remove usable heat from the heater and reduce the scale forming tendencies of motionless hot water.

AUTOMATIC SAFE CONTROLS AND ELECTRONIC IGNITION - Natural gas units have a proven pilot ignition system which provides flame failure response in under one (1) second. Propane models have a standing pilot system. Redundant high limit controls and gas valves assure safe shutoff in the event of overheating or flame failure. Requires 120V 60Hz, maximum inlet gas pressure of 14" W.C. and activation of heater by an external temperature control.

OPTIONAL POWER VENT KIT - For sidewall venting.

WORKING PRESSURE - ASME approved, hydrostatically tested and certified for 160 psi (1100 kPa).

* Model HW-399: 81% efficiency, Model HW-610: 80% efficiency.

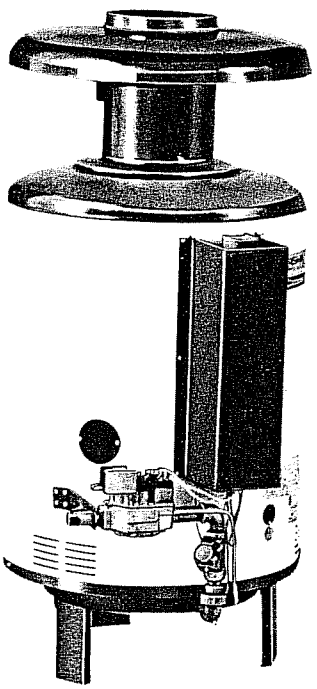
CONSERVATIONIST®

COMMERCIAL BOILERS

HW-300 THRU HW-610

Domestic Hot Water Supply

Not approved for instantaneous applications.



FOR UNITS BUILT FOR U.S.A.

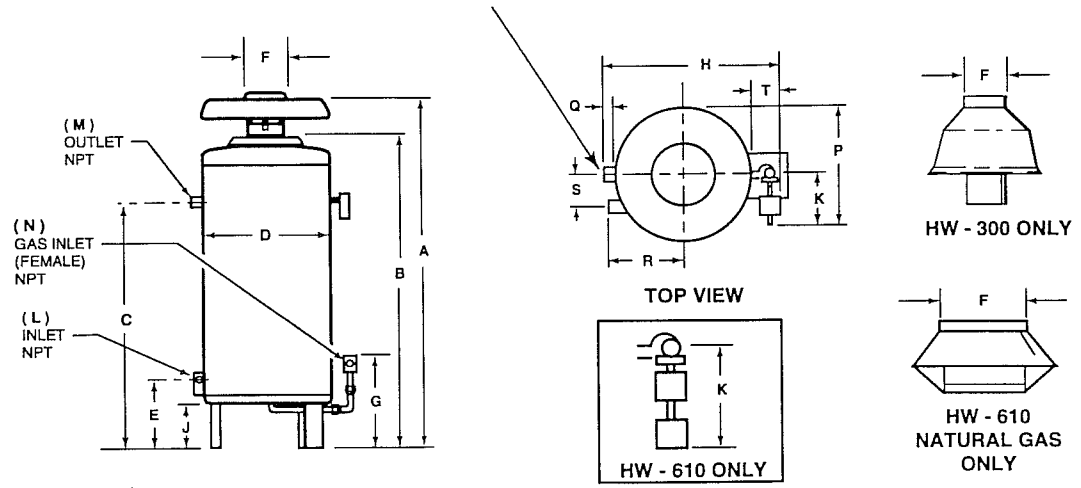
FOR UNITS BUILT FOR CANADA

HW MODELS CERTIFICATION & APPROVAL

LIMITED WARRANTY OUTLINE

If the heat exchanger modules should fail within 5 years, under the terms of the warranty; A.O. Smith will furnish a replacement part; installation, labor, handling and local delivery extra. **THIS OUTLINE IS NOT A WARRANTY.** For complete information, consult the written warranty or A.O. Smith Water Products Company.

NOTE:
TOP MANIFOLD HAS EXTRA OPENINGS FOR THERMOMETER 3/4" (19MM) AND RELIEF VALVE 1" (25MM) [HW-520 AND -610 ONLY]



ALL DIMENSIONS IN INCHES (MM)

Models	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	Approx. Ship. Wt. Lbs. (Kgs.)
HW-300	65 (1651)	43-1/4 (1099)	36 (914)	25-1/4 (641)	12 (305)	8 (203)	16-1/2 (419)	29-5/8 (753)	9 (229)	14 (356)	1-1/4 (32)	1-1/4 (32)	3/4 (19)	26-5/8 (676)	1 (25)	10-1/8 (257)	5-3/8 (137)	5 (127)	240 (109)
HW-399	57-1/8 (1451)	45-1/8 (1146)	38-3/4 (984)	27 (686)	12 (305)	10 (254)	16-3/4 (425)	31-1/2 (800)	9 (229)	14 (356)	1-1/2 (38)	1-1/2 (38)	1 (25)	27-1/2 (699)	1 (25)	11-1/4 (286)	5-1/2 (140)	5 (127)	291 (132)
HW-420	57-1/8 (1451)	45-1/8 (1146)	38-3/4 (984)	27 (686)	12 (305)	10 (254)	16-3/4 (425)	31-1/2 (800)	9 (229)	14 (356)	1-1/2 (38)	1-1/2 (38)	1 (25)	27-1/2 (699)	1 (25)	11-1/4 (286)	5-1/2 (140)	5 (127)	291 (132)
HW-520	68-5/16 (1735)	56-1/4 (1429)	46 (1168)	27 (686)	12 (305)	10 (254)	18 (457)	36-1/2 (927)	9 (229)	11 (279)	2 (51)	2 (51)	1 (25)	24-1/2 (622)	3-1/2 (89)	12 (305)	5-3/4 (146)	7 (178)	361 (164)
Propane HW-610	67 (1702)	56-1/4 (1429)	46 (1168)	27 (686)	12 (305)	12 (305)	18 (457)	36-1/2 (927)	9 (229)	11 (279)	2 (51)	2 (51)	1 (25)	24-1/2 (622)	3-1/2 (89)	12 (305)	5-3/4 (146)	7 (178)	361 (164)
Natural HW-610	64-3/4 (1645)	56-1/4 (1429)	46 (1168)	27 (686)	12 (305)	12 (305)	18 (457)	36-1/2 (927)	9 (229)	11 (279)	2 (51)	2 (51)	1 (25)	24-1/2 (622)	3-1/2 (89)	12 (305)	5-3/4 (146)	7 (178)	361 (164)

SPECIFICATIONS AND RECOVERY CAPACITIES
TEMPERATURE RISE

Model	INPUT BTUH (KW)	Temp. (C) Rise (F)	11 20	17 30	22 40	26 50	33 60	39 70	44 80	50 90	56 100	61 110	67 120	72 130	78 140
HW-300	300,000	LPH	5,505	3,670	2,753	2,202	1,835	1,573	1,376	1,223	1,001	1,001	918	847	786
	(88)	GPH	1,455	970	727	582	485	416	364	323	291	264	242	224	208
HW-399	399,000	LPH	7,322	4,882	3,661	2,929	2,441	2,092	1,831	1,627	1,464	1,331	1,220	1,127	1,046
	(116)	GPH	1,935	1,290	967	774	645	553	484	430	387	352	322	298	276
HW-420	420,000	LPH	7,708	5,138	3,854	3,083	2,569	2,202	1,927	1,713	1,542	1,401	1,285	1,186	1,101
	(123)	GPH	2,036	1,358	1,018	815	679	582	509	453	407	370	339	313	291
HW-520	520,000	LPH	9,543	6,362	4,771	3,817	3,181	2,727	2,386	2,121	1,909	1,735	1,590	1,468	1,363
	(152)	GPH	2,521	1,681	1,261	1,008	840	720	630	560	504	458	420	388	360
HW-610	610,000	LPH	11,194	7,463	5,597	4,478	3,731	3,198	2,799	2,488	2,239	2,035	1,866	1,722	1,599
	(179)	GPH	2,958	1,972	1,479	1,183	986	845	739	657	592	538	493	455	423

Recovery capacity ratings are heater performance at an assigned 76% thermal efficiency. Actual recoveries are higher.

NOTE: To compensate for the effects of high altitude areas above 2,000 feet (610m), input and output rating should be reduced approximately 4% for each 1,000 feet (305m) above sea level.

SUGGESTED SPECIFICATIONS

Boiler(s) for hot water supply purposes shall be Model(s) No. _____ as manufactured by A. O. Smith or an approved equal. Boiler(s) shall be gas-fired, and design certified by the Canadian Gas Association or an approved/accredited independent rating laboratory, capable of supplying _____GPH (LPH) at 100°F (56°C) temperature rise equipped to burn _____ gas, with input rating of _____BTUH(KW)/hr. and bearing the ASME code symbol. Boiler(s) shall be up flow type having all non-ferrous waterways, and employing a copper finned heat exchanger and a tightly wound copper coil combustion chamber with 160 psi (1100 kPa) working pressure rating. Boiler(s) shall be equipped with an electric gas valve of the step-opening type, an adjustable limit control which will break the electric circuit on temperature rise, intermittent ignition with one (1) second shutdown in the event of pilot flame failure (propane models equipped with standing pilots), a gas pressure regulator properly set for the gas to be supplied, and a coil limit switch for shut off in event of excessive water temperature, a thermal balancer, a certified draft diverter and a fully illustrated instruction manual. Certified for combustible flooring. Outer jacket shall be of baked enamel finish. The coil, heat exchanger and burner shall have a five year limited warranty as outlined in the written warranty.

A. O. Smith Enterprises Ltd.
Water Products Company
A Subsidiary of A. O. Smith Corporation
Stratford, Ontario

El Paso, Texas
McBee, South Carolina
Seattle, Washington
Veldhoven, The Netherlands

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