

## CONSERVATIONIST® COMMERCIAL BOILERS

*Energy Saving Product*

### 82% THERMAL EFFICIENCY\*

#### FEATURES

**COMPLIANCE** – These models meet the thermal efficiency and standby loss requirements of the U.S. Department of Energy and current edition ASHRAE/IESNA 90.1.

**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. A great boiler for domestic hot water supply systems.

**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 surrounds the main burner and captures the radiant heat. A wrap of insulation on the outside of the coil retains the heat captured by the circulating water.

**COPPER HEAT EXCHANGER** – Directly above the coil and the main burner is a compact, horizontal, copper fin tube heat exchanger. The flue gases must pass through this efficient heat exchanger before leaving the boiler. This unique Burkay coil and heat exchanger design provide maximum heat transfer and proven field durability.

**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.

**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 heat exchanger and reduce the scale forming tendencies of motionless hot water.

**AUTOMATIC SAFETY CONTROLS AND ELECTRONIC IGNITION** – Proven pilot ignition system provides flame failure response in under one (1) second. 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" WC and activation of heater by external temperature control.

**OPTIONAL POWERED VENT HOOD** – for sidewall venting.

**WORKING PRESSURE** – ASME approved, hydrostatically tested and certified for 160 psi.

**LIMITED WARRANTY OUTLINE** – Consult written warranty or A. O. Smith.

\*Except model HW-399 is 81%.

## HW-300 THRU HW-670

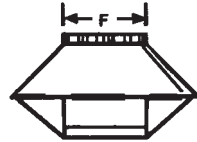
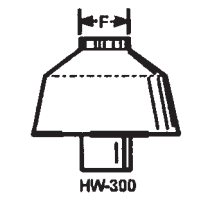
HW - INDOOR  
INSTALLATION  
ONLY



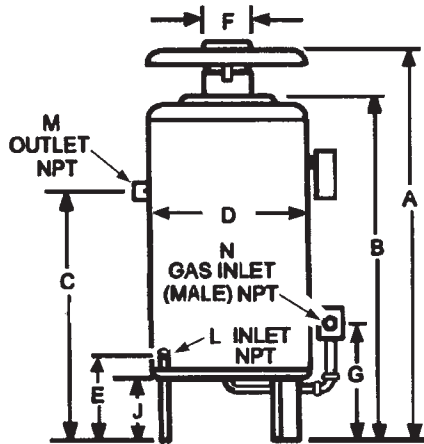
**FM**  
HW MODELS  
CERTIFICATION & APPROVAL



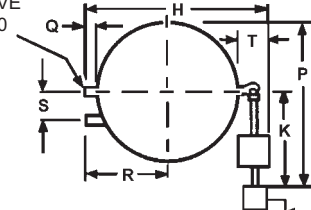
# Domestic Hot Water Boilers



HW/HWB-610 AND HW-670 NATURAL GAS ONLY



EXTRA OPENING FOR THERMOMETER AND RELIEF VALVE HW/HWB-520, 610 AND HW-670



LOCATION OF MANUAL MAIN SHUTOFF VALVE OUTSIDE JACKET WHEN CODE REQUIRE (NOT SUPPLIED)

TABLE 1 MODELS

DIMENSIONS IN INCHES	HWB/ HW-300	HWB/ HW-399	HWB/ HW-420	HWB/ HW-520	Prop. HWB/ HW-610/670	Nat. HWB/ HW-610/670
A Overall height	65 (1651)	57-1/8 (1451)	57-1/8 (1451)	68-5/16 (1735)	67 (1702)	64-3/4 (1645)
B Height to top of jacket	43-1/4 (1099)	45-1/8 (1146)	45-1/8 (1146)	56-1/4 (1429)	56-1/4 (1429)	56-1/4 (1429)
C Floor to center line water inlet	36 (914)	38-3/4 (984)	38-3/4 (984)	46 (1168)	46 (1168)	46 (1168)
D Diameter of jacket	25-1/4 (641)	27 (686)	27 (686)	27 (686)	27 (686)	27 (686)
E Floor to center line water outlet	12 (305)	12 (305)	12 (305)	12 (305)	12 (305)	12 (305)
F Draft diverter outlet diameter	8 (203)	10 (254)	10 (254)	10 (254)	12 (305)	12 (305)
G Floor to center line gas inlet	16-1/2 (419)	16-3/4 (425)	16-3/4 (425)	18 (457)	18 (457)	18 (457)
H Overall depth	29-5/8 (753)	31-1/2 (800)	31-1/2 (800)	36-1/2 (927)	36-1/2 (927)	36-1/2 (927)
J Support height	9 (229)	9 (229)	9 (229)	9(229)	9 (229)	9 (229)
K Width of control string (approx.)	14 (356)	14 (356)	14 (356)	11(279)	11 (279)	11 (279)
L Pipe size of water inlet (NPT)	1-1/4	1-1/2	1-1/2	2	2	2
M Pipe size of water outlet(NPT)	1-1/4	1-1/2	1-1/2	2	2	2
N Pipe size of gas inlet (NPT)	3/4	1	1	1	1	1
P Control string plus 1/2 jacket dia. (approx.)	26-5/8 (676)	27-1/2(699)	27-1/2 (699)	24-1/2 (622)	24-1/2 (622)	24-1/2 (622)
Q Water outlet to jacket	1 (25)	1 (25)	1 (25)	3-1/2 (89)	3-1/2 (89)	3-1/2 (89)
R Water inlet casting to center line of jacket	10-1/8 (257)	11-1/4 (286)	11-1/4 (286)	12 (305)	12 (305)	12 (305)
S Horizontal length between water inlet and outlet	5-3/8 (137)	5-1/2 (140)	5-1/2 (140)	5-3/4 (146)	5-3/4 (146)	5-3/4 (146)
T Control string from jacket	5 (127)	5 (127)	5 (127)	7 (178)	7 (178)	7 (178)
Approx. shipping weight lbs. (Kilograms)	240 (109)	291 (132)	291 (132)	361 (164)	361 (164)	361 (164)

NOTE: All dimensions in inches (millimeters) except pipe size which is NPT.

Model	Input Rating AGA BTUH Natural and Propane Gas	GPH	Temperature Rise - Degrees F												
			20	30	40	50	60	70	80	90	100	110	120	130	140
HW-300	300,000	GPH	1,484	989	742	594	495	424	371	330	297	270	247	228	212
HW-399	399,000	GPH	1,938	1,292	969	775	646	554	484	431	388	352	323	298	277
HW-420	420,000	GPH	2,067	1,378	1,034	827	689	591	517	459	413	376	345	318	295
HW-520	520,000	GPH	2,575	1,717	1,288	1,030	858	736	644	572	515	468	429	396	368
HW-670 Nat.	660,000	GPH	3,264	2,176	1,632	1,306	1,088	933	816	725	653	593	544	502	466
HW-670 LP	670,000	GPH	3,217	2,145	1,609	1,287	1,072	919	804	715	643	585	536	495	460

### SUGGESTED SPECIFICATION

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 an ANSI approved/accredited independent rating laboratory, capable of supplying \_\_\_\_ gph at 100°F temperature rise equipped to burn \_\_\_\_\_ gas, with input rating of \_\_\_\_ BTU/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 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, 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 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.

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.