



LOW PROFILE HOT WATER UNIT HEATERS



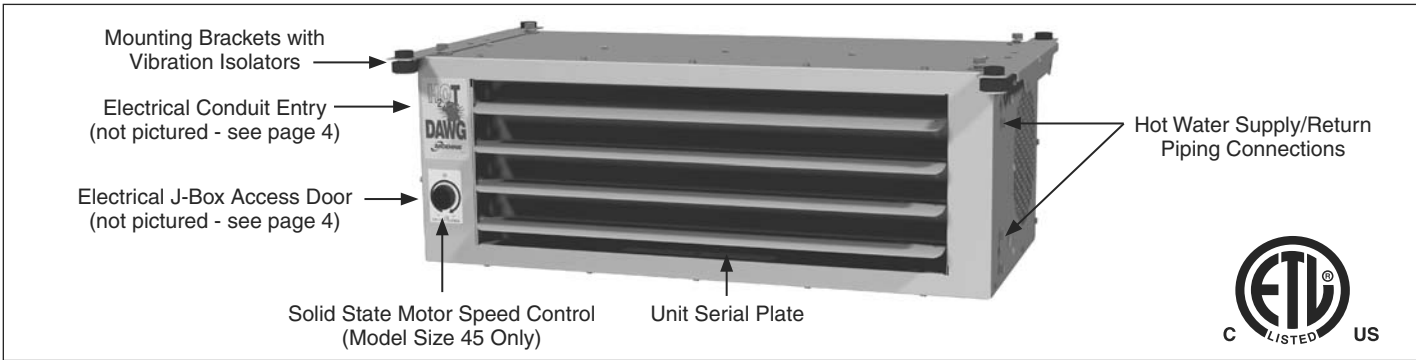
MODEL HHD30



MODEL HHD45

HOT DAWG H₂O® – LOW PROFILE HOT WATER UNIT HEATER

Figure 2.1 - Model HHD Standard Features

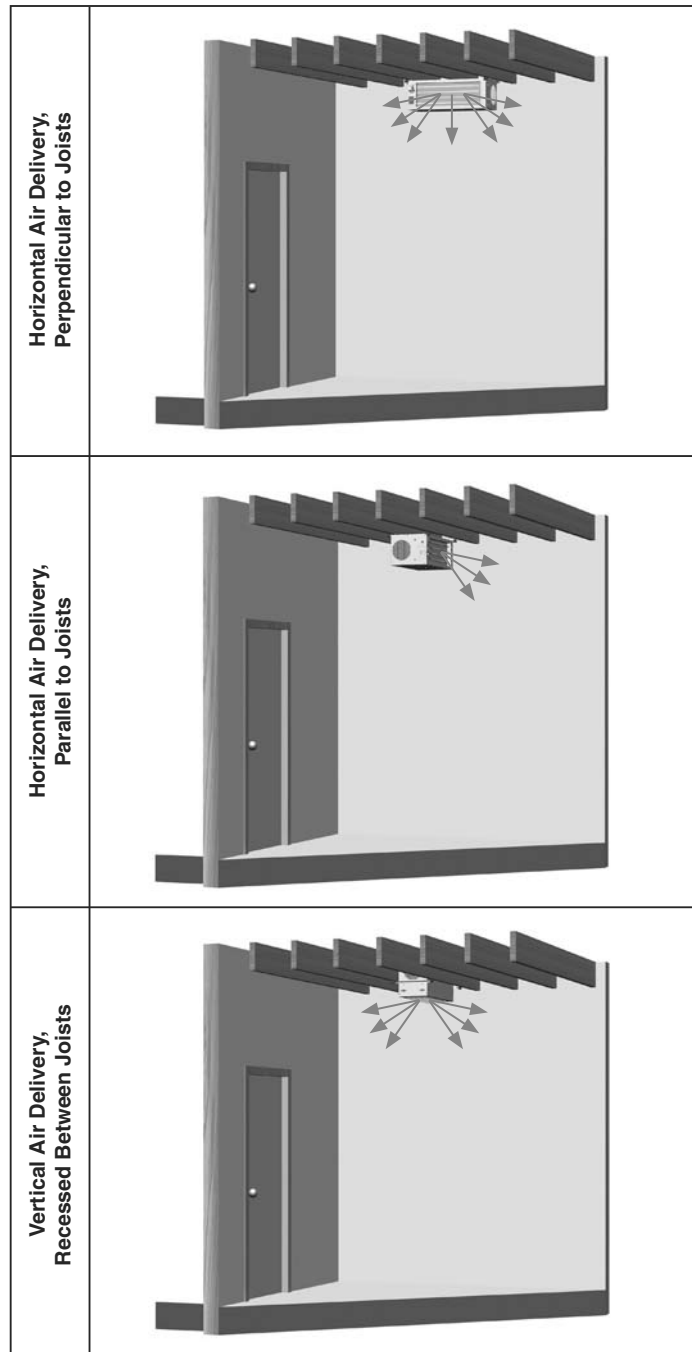


Note: Standard piping/electrical access side orientation shown.

Table 2.1 - Standard Features

	Feature
General	All units are listed by ETL as design certified for use in both the US and Canada to the UL 1995 - latest revision and CSA C22.2 No. 236 Standards for Heating and Cooling Equipment for safe operation, construction, and performance.
	Low profile design is ideally suited for residential garages, basements, vestibules, commercial, industrial, institutional installations. Non-potable water applications only.
Cabinet	Low profile, 18 gauge steel cabinet results in a clean appearance that maximizes head room.
	Cabinet pre-treated for prevention of rust and corrosion and finished with a durable electrostatically applied baked-on polyester powdercoat paint. Environmentally friendly.
	Attractive Hammertone Beige paint color.
	Horizontal adjustable air-deflector blades.
	Fingerproof inlet air openings.
	Side access piping and electrical (see "Mounting Flexibility" for info on reversing access side).
Mounting Flexibility	Two L-shaped mounting brackets (see "Mounting Flexibility" for mounting orientations).
	Brackets designed to match up to standard 16" on-center joist spacing.
	Mounting orientation flexibility includes (refer to Figure 2.2): <ul style="list-style-type: none"> • Horizontal air delivery, mounted parallel to joists. • Horizontal air delivery, mounted perpendicular to joists. • Vertical air delivery, mounted between joists.
Heating Coil	Electrical connections are standard on the left with piping on the right. Access sides can be easily reversed in the field by simply flipping the unit over.
	High capacity, 2-row hot water coil.
	Copper tubes mechanically expanded into aluminum fins for maximum heat transfer.
	1/2" NPT piping connections.
Air Mover	Coils suitable for water pressures up to 150PSI and temperature up to 200°F.
	Twin centrifugal blower wheels for quieter operation.
	Dual shaft blower motor (115V/60Hz/1ph).
	Factory supplied neoprene vibration isolators.

Figure 2.2 - Model HHD Mounting Orientations



HOT DAWG H₂O® – LOW PROFILE HOT WATER UNIT HEATER

Table 3.1 - Performance Data ① ②

Model Size	Airflow (CFM)	GPM	WPD (ft. Water)	Entering Water Temperature (60°F Entering Air Temperature)									
				120°F		140°F		160°F		180°F		200°F	
				Btu/Hr	WTD	Btu/Hr	WTD	Btu/Hr	WTD	Btu/Hr	WTD	Btu/Hr	WTD
30	405	1	0.6	11,900	25	15,800	33	19,800	41	23,700	49	27,700	58
		2	2.2	15,500	16	20,600	22	25,800	27	30,900	32	36,100	38
		3	4.7	17,200	12	22,900	16	28,600	20	34,400	24	40,100	28
		4	7.9	18,200	10	24,200	13	30,300	16	36,300	19	42,400	22
		5	12	19,600	8	26,100	11	32,600	14	39,200	16	45,700	19
45	710 (High Speed)	1	0.6	17,200	36	22,900	48	28,600	60	34,400	72	40,100	84
		2	2.2	22,400	23	29,900	31	37,300	39	44,800	47	52,300	55
		3	4.7	24,900	17	33,200	23	41,500	29	49,800	35	58,100	40
		4	7.9	26,400	14	35,100	18	43,900	23	52,700	27	61,500	32
		5	12	28,400	12	37,800	16	47,300	20	56,800	24	66,300	28
	425 (Low Speed)	1	0.6	11,900	25	15,900	33	19,900	41	23,900	50	27,900	58
		2	2.2	15,600	16	20,700	22	25,900	27	31,100	33	36,300	38
		3	4.7	17,300	12	23,000	16	28,800	20	34,600	24	40,300	28
		4	7.9	18,300	10	24,400	13	30,500	16	36,600	19	42,700	22
		5	12	19,700	8	26,300	11	32,800	14	39,400	16	46,000	19

① For conditions other than shown above, please refer to the Modine Breeze AccuSpec program for detailed performance data.

② Allowable water temperature range is 100°F to 200°F. Allowable indoor air temperature range is 40°F to 100°F. If temperatures below freezing are expected, provisions should be made to either drain the unit heater coil or utilize a continually circulating glycol solution.

Table 3.2 - Btu Correction Factors for Varying Entering Air and Entering Water Temperatures ③ ④ ⑤

EAT, °F	EWT, °F										
	100	110	120	130	140	150	160	170	180	190	200
40	0.439	0.512	0.585	0.658	0.731	0.805	0.878	0.950	1.024	1.097	1.170
50	0.361	0.434	0.506	0.578	0.651	0.723	0.795	0.867	0.940	1.012	1.084
60	0.286	0.357	0.429	0.500	0.571	0.643	0.714	0.786	0.857	0.929	1.000
70	0.212	0.283	0.353	0.424	0.494	0.565	0.636	0.706	0.777	0.848	0.918
80	0.140	0.210	0.279	0.349	0.419	0.489	0.559	0.629	0.699	0.768	0.838
90	0.069	0.138	0.207	0.276	0.345	0.414	0.483	0.552	0.621	0.690	0.759
100	0.000	0.068	0.137	0.205	0.273	0.342	0.410	0.478	0.547	0.615	0.684

③ For conditions other than shown above, please refer to the Modine Breeze AccuSpec program for detailed performance data.

④ Allowable water temperature range is 100°F to 200°F. Allowable indoor air temperature range is 40°F to 100°F. If temperatures below freezing are expected, provisions should be made to either drain the unit heater coil or utilize a continually circulating glycol solution.

⑤ To use correction factors, start with the 200°F EWT and 60°F EAT data from Table 3.1 and multiply by the factor shown in Table 3.2.

Table 3.3 - Btu Correction Factors for Glycol ⑥

Glycol Type	Glycol %	Solution Temp (°F)		
		100	150	200
Propylene	20	0.96	0.96	0.96
	30	0.93	0.93	0.93
	40	0.92	0.92	0.92
	50	0.88	0.89	0.89
	60	0.85	0.860	0.87
Ethylene	20	0.99	0.99	0.99
	30	0.96	0.96	0.96
	40	0.95	0.95	0.95
	50	0.93	0.94	0.94
	60	0.89	0.90	0.92

⑥ To use correction factors, multiply previously determined Btu performance by factor shown in Table 3.3.

Table 3.4 - CFM Correction for Varying Entering Air Temperatures ⑦

Entering Air Temperature (°F)					
40	50	60	70	80	90
1.040	1.020	1.000	0.982	0.964	0.945

⑦ To use correction factors, multiply CFM from Table 3.1 by factor shown in Table 3.4.

HOT DAWG H₂O® – LOW PROFILE HOT WATER UNIT HEATER

Figure 4.1 - Model HHD Dimensions (inches)

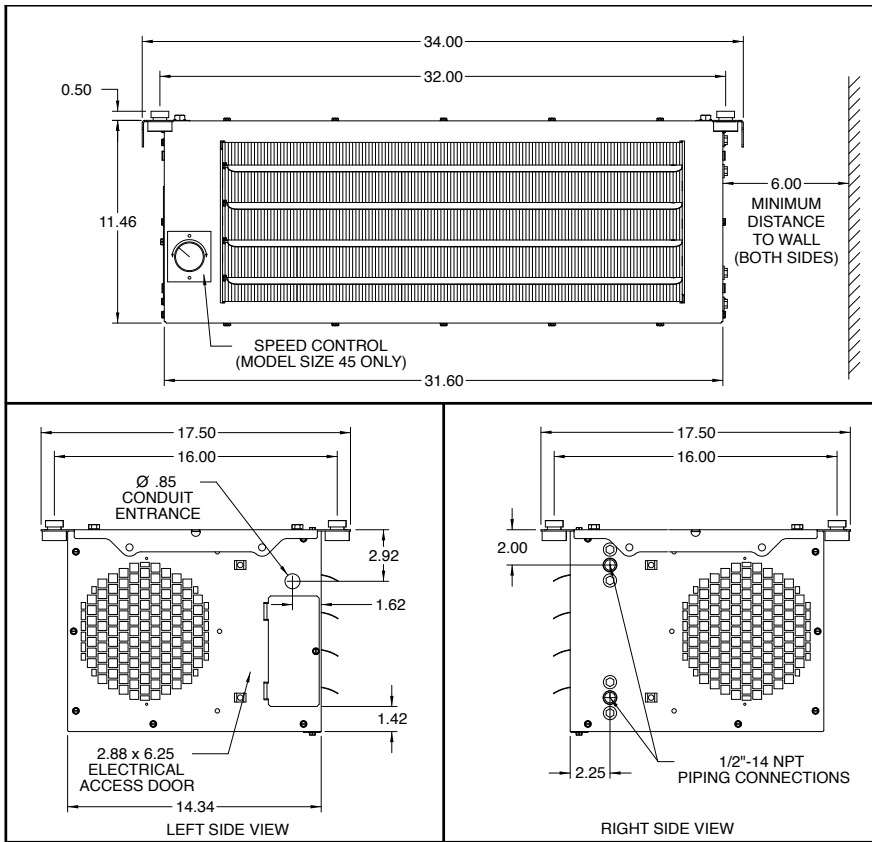


Table 4.1 - Unit Mechanical/Electrical Data

Component	Description	Model Size	
		30	45
Coil	Coil Type	High Capacity	High Capacity
	Coil Rows	2	2
	Coil Face Area (ft ²)	1.625	1.625
	Coil Connections	½" NPT	½" NPT
	Coil Volume (Gallons)	0.4	0.4
Blowers	Diameter x Width (Inches)	5.75 x 7	5.75 x 7
	Quantity	2	2
	Motor to Blower Connection	Direct Drive	Direct Drive
	High Speed (RPM)	1050	1625
	Low Speed (RPM)	n/a ①	1090
	High CFM	405	710
Low CFM	n/a ①	425	
Motor	Motor Type	Shaded Pole	Permanent Split Cap
	Shaft Arrangement	Double Shaft	Double Shaft
	HP	1/20	0.40
	Voltage	115V/1ph/60Hz	115V/1ph/60Hz
	Amps	2.1	4.6
Shipping Weight – lbs. (approximate)		70	73

① The solid state speed control is standard on model size 45 and not available on model size 30 (single speed only).



Modine Manufacturing Company

1500 DeKoven Avenue
 Racine, Wisconsin 53403-2552
 Phone: 1.800.828.4328 (HEAT)
 www.modinehvac.com