

Low Profile Hot Water Unit Heaters

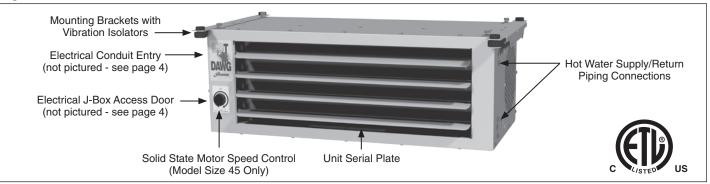






HOT DAWG H₂O[®] – LOW PROFILE HOT WATER UNIT HEATER

Figure 2.1 - Model HHD Standard Features

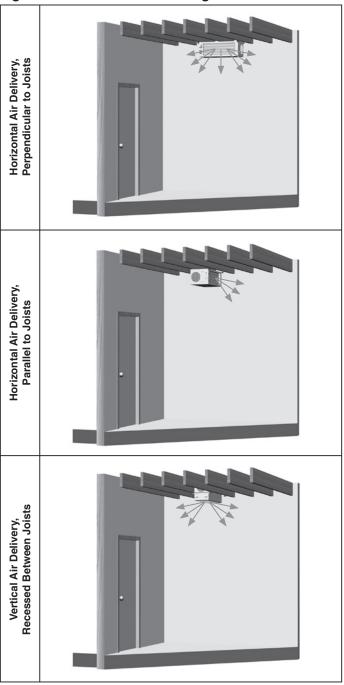


Note: Standard piping/electrical access side orientation shown.

Table 2.1 - Standard Features

	- 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.					
Ğ	Low profile design is ideally suited for residential garages, basements, vestibules, commercial, industrial, institutional installations. Non-potable water applications only.					
	Low profile, 18 gauge steel cabinet results in a clean appearance that maximizes head room.					
ı,	Cabinet pre-treated for prevention of rust and corrosion and finished with a durable electrostatically applied baked-on polyester powdercoat paint. Environmentally friendly.					
Cabinet	Attractive Hammertone Beige paint color.					
Cal	Horizontal adjustable air-deflector blades.					
	Fingerproof inlet air openings.					
	Side access piping and electrical (see "Mounting Flexibility" for info on reversing access side).					
	Two L-shaped mounting brackets (see "Mounting Flexibility" for mounting orientations).					
	Brackets designed to match up to standard 16" on-center joist spacing.					
ibility	Mounting orientation flexibility includes (refer to Figure 2.2):					
:lex	Horizontal air delivery, mounted parallel to joists.					
Mounting Flexibility	Horizontal air delivery, mounted perpendicular to joists.					
lour	Vertical air delivery, mounted between joists.					
Δ	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.					
Heating Coil	Copper tubes mechanically expanded into aluminum fins for maximum heat transfer.					
	1/2" NPT piping connections.					
He	Coils suitable for water pressures up to 150PSI and temperature up to 200°F.					
	Twin centrifugal blower wheels for quieter operation.					
Air	Dual shaft blower motor (115V/60Hz/1ph).					
2	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

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

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

	EWT, °F										
EAT, °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

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

Table 3.3 - Btu Correction Factors for Glycol ®

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

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 ${\mathfrak T}$

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

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

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.

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.

[®] 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.

HOT DAWG H₂O® – LOW PROFILE HOT WATER UNIT HEATER

Figure 4.1 - Model HHD Dimensions (inches)

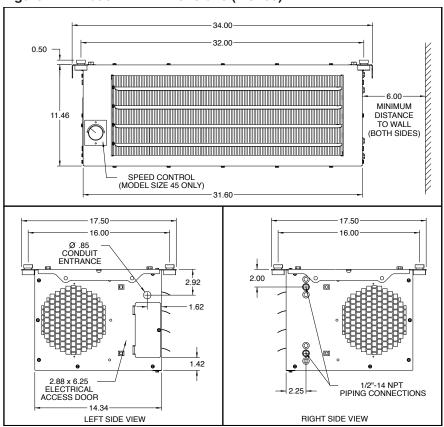


Table 4.1 - Unit Mechanical/Electrical Data

0	D. a substitution	Model Size				
Component	Description	30	45			
	Coil Type	High Capacity	High Capacity			
	Coil Rows	2	2			
Coil	Coil Face Area (ft²)	1.625	1.625			
	Coil Connections	½" NPT	½" NPT			
	Coil Volume (Gallons)	0.4	0.4			
	Diameter x Width (Inches)	5.75 x 7	5.75 x 7			
	Quantity	2	2			
	Motor to Blower Connection	Direct Drive	Direct Drive			
Blowers	High Speed (RPM)	1050	1625			
	Low Speed (RPM)	n/a ①	1090			
	High CFM	405	710			
	Low CFM	n/a ①	425			
	Motor Type	Shaded Pole	Permanent Split Cap			
	Shaft Arrangement	Double Shaft	Double Shaft			
Motor	HP	1/20	0.40			
	Voltage	115V/1ph/60Hz	115V/1ph/60Hz			
	Amps	2.1	4.6			
Shipping We	ight – Ibs. (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).



Commercial Products Group

Modine Manufacturing Company 1500 DeKoven Avenue Racine, Wisconsin 53403-2552 Phone: 1.800.828.4328 (HEAT)

Fax: 1.800.204.6011 www.modinehvac.com