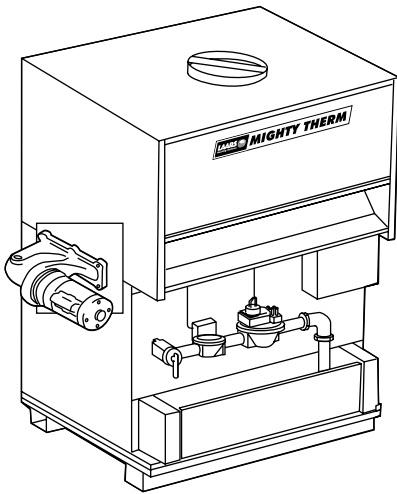


MIGHTY THERM®

Volume Water Heater



Date:

Project #:

Engineer:

Prepared By:

Bid Date:

VW	Volume Water Heater (circulating storage tank type)
PW	Volume Water Heater with pump
IW	Instantaneous Water Heater

Indoor Sizes 500-1825

Submittal Data **LAARS**
Heating Systems Company

Project Name:

Location:

Contractor:

Standard Equipment

- ASME 160 psi working pressure heat exchanger
- ASME "H" stamp
- Flanged water connections
- Glass-lined headers
- External water-side gaskets
- 125 psi (861 kPa) ASME rated pressure relief valve
- Pump, mounted and wired (PW / IW)
- Flow switch
- Temperature pressure gauge
- Manual "A" gas valve
- Manual pilot valve
- Pilot gas regulator
- Operating gas valve / gas pressure regulator
- Redundant safety gas valve
- Stainless steel burners
- Removable burner tray
- Built-in draft hood
- On/off toggle switch
- Power on light
- 115/24VAC transformer
- 24V control system
- 100% shut-off / lock-out ignition control
- 2-Amp fuse
- Terminal strip
- Operating control
- Manual reset high limit
- EM2 pump time delay (std on PW, opt on VW, N/A on IW)
- Covered control box

Boiler Data

Model:

- VW (no pump, for use with storage tank)
- PW (pump-mounted, for use with storage tank)
- IW (pump-mounted, for use w/o storage tank, must have adequate storage in recirculation piping)

Number of Units:

Firing Rate:

- On-off (n/a for IW)
- Two-stage (n/a for IW)
- Four-stage
- Motorized Modulation (n/a for IW)

Pump (PW & IW only):

- Normal Water
- Hard Water
- Soft Water

Ignition System:

- Spark pilot ignition U.S. (system 9)
- Spark pilot ignition Canada (system 11)

Fuel:

- Natural Propane

Heat Exchanger:

- Copper
- Cupro-Nickel
- Copper, Reversed
- Cupro-Nickel, Reversed

Water Trim:

- Glass-Lined Cast Iron
- Bronze Trim
- Full Bronze

Options:

- EM2 pump time delay (std on PW, n/a on IW)
- Low water cutoff

- Auto reset high limit
- External controller connections (n/a for on-off units)
- External controller connections with selector switch (n/a for on-off units)
- Alarm package with bell, mounted and wired
- Alarm package with dry contacts, mounted and wired
- CSD-1
- High & low gas pressure switches
- Additional safety valve
- Motorized safety valve with proof of closure
- Additional motorized safety valve with proof of closure
- LDS control package (adds motorized safety valve, high and low gas pressure switches, reversed heat exchanger and external controller connections)
- ASME "HLW" Stamp

Sizing Data

	Indoor Size	Input ¹	Output ¹	Shipping Weight ²	Input	Output ¹	Shipping Weight ²
		BTU/h	BTU/h	lbs	kW	kW	kg
□	500	500,000	405,000	612	147	119	278
□	600	600,000	486,000	702	176	142	319
□	715	715,000	579,150	750	209	170	340
□	850	850,000	688,500	830	249	202	377
□	1010	1,010,000	818,100	986	296	240	447
□	1200	1,200,000	972,000	995	352	285	451
□	1430	1,430,000	1,158,300	1080	419	339	490
□	1670	1,670,000	1,352,700	1175	489	396	533
□	1825	1,825,000	1,478,250	1270	535	433	576

NOTES: 1. Input and output must be derated 4% per 1000 feet above sea level when installed above 2000 feet altitude.
2. Units with pumps: Add 55lbs.

Accessories

□ Base for combustible flooring

Water Flow Data

Size	Hard Water			Normal Water			Soft Water		
	Flow Rate gpm	Head Loss ft	Temp Rise °F	Flow Rate gpm	Head Loss ft	Temp Rise °F	Flow Rate gpm	Head Loss ft	Temp Rise °F
500	90	15.7	8	68	9.9	11	45	5.0	17
600	90	15.9	10	68	10.0	14	45	5.1	20
715	90	17.8	12	68	11.0	16	45	5.3	24
850	90	18.1	15	68	11.1	20	45	5.4	30
1010	90	11.7	18	68	7.5	23	45	3.9	35
1200	90	12.2	21	68	7.8	27	68	7.8	27
1430	90	12.6	24	68	8.1	32	68	8.1	32
1670	90	13.0	28	68	8.3	37	68	8.3	37
1825	90	13.5	30	90	13.5	30	90	13.5	30

Size	Flow Rate l/m	Head Loss m	Temp Rise °C	Flow Rate l/m	Head Loss m	Temp Rise °C	Flow Rate l/m	Head Loss m	Temp Rise °C
500	341	4.8	4	257	3.0	6	170	1.5	9
600	341	4.8	6	257	3.0	8	170	1.6	11
715	341	5.4	7	257	3.4	9	170	1.6	13
850	341	5.5	8	257	3.4	11	170	1.6	17
1010	341	3.6	10	257	2.3	13	170	1.2	19
1200	341	3.7	12	257	2.4	15	257	2.4	15
1430	341	3.8	13	257	2.5	18	257	2.5	18
1670	341	4	16	257	2.5	21	257	2.5	21
1825	341	4.1	17	341	4.1	17	341	4.1	17

Pressure drop includes loss through 30 feet of pipe and normal fittings when heater is installed with storage tank. Pipe and fittings are assumed to be 2" NPT on sizes 500-850 and 2½" NPT on sizes 1010-1825.

Recovery Data

Indoor Size	Required Water Temperature Rise								
	40°F gph	50°F gph	60°F gph	70°F gph	80°F gph	90°F gph	100°F gph	120°F gph	140°F gph
500	1215	972	810	695	608	540	486	405	347
600	1459	1167	972	833	729	648	583	486	417
715	1738	1391	1159	993	869	773	695	579	497
850	2066	1653	1378	1181	1033	918	827	689	590
1010	2455	1964	1637	1403	1228	1091	982	818	702
1200	2917	2334	1945	1667	1459	1297	1167	972	833
1430	3476	2781	2318	1986	1738	1545	1391	1159	993
1670	4060	3248	2706	2320	2030	1804	1624	1353	1160
1825	4437	3549	2958	2535	2218	1972	1775	1479	1268
Indoor Size	22°C L/h	28°C L/h	33°C L/h	39°C L/h	44°C L/h	50°C L/h	56°C L/h	67°C L/h	78°C L/h
500	4595	3676	3063	2625	2297	2042	1838	1532	1313
600	5513	4411	3676	3151	2757	2450	2205	1838	1575
715	6570	5256	4380	3754	3285	2920	2628	2190	1877
850	7811	6249	5207	4463	3905	3471	3124	2604	2232
1010	9281	7425	6187	5303	4640	4125	3712	3094	2652
1200	11,027	8822	7351	6301	5513	4901	4411	3676	3151
1430	13,140	10,512	8760	7509	6570	5840	5256	4380	3754
1670	15,346	12,277	10,231	8769	7673	6820	6138	5115	4385
1825	16,770	13,416	11,180	9583	8385	7453	6708	5590	4791

NOTE: GPH = gallons per hour, L/h = Liters per hour

Electrical Data

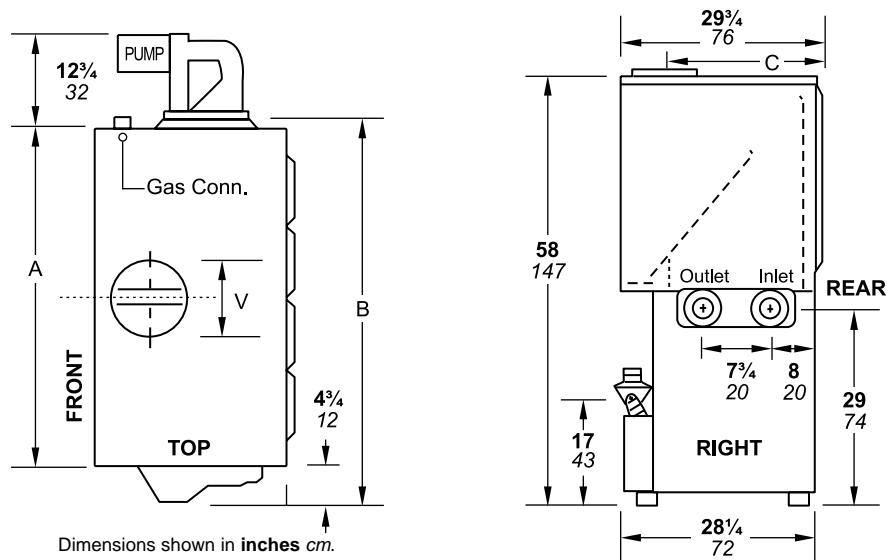
Model	Heater			Mounted Pump	Pump Delay Connection Rating ¹
	Volts	Phase	Amps		
VW (no pump)	115	Single	Less than 12	n/a	115V – Max 1HP or 230V – Max 3/4HP (pilot duty)
PW / IW (built-in pump)	115	Single	Less than 12	Included in Mighty Therm connection	Included in Mighty Therm connection ²

NOTES: 1. When ordered optionally.
2. Model IW does not use delay.

Pump Data

Sizes	PW & IW Water Heaters					
	Power (HP)			Current (Amps)		
	Soft	Normal	Hard	Soft	Normal	Hard
500	1/3	1/3	3/4	2.8	2.8	7.2
600	1/3	1/3	3/4	2.8	2.8	7.2
715	1/3	1/3	3/4	2.8	2.8	7.2
850	1/3	1/2	3/4	2.8	5.2	7.2
1010	1/3	1/2	3/4	2.8	5.2	7.2
1200	1/3	1/2	3/4	2.8	5.2	7.2
1430	1/3	1/2	3/4	2.8	5.2	7.2
1670	1/3	3/4	3/4	2.8	7.2	7.2
1825	3/4	3/4	3/4	7.2	7.2	7.2

Dimensional Data



Dimensions shown in inches cm.

Indoor Size	Gas Connection Size, inches NPT		Water Conn. Size in ¹	Dimensions ¹							
	Natural ²	LP ²		A		B		C		V	
				in	cm	in	cm	in	cm	in	cm
500	1	3/4-1	2	33 3/4	86	39 3/4	101	23 3/4	60	10	25
600	1	3/4-1	2	38 3/4	98	44 3/4	113	22 3/4	58	12	31
715	1	3/4-1	2	44 1/4	112	50 1/4	128	22 3/4	58	12	31
850	1-1 1/4	3/4-1 1/4	2	50 3/4	129	56 3/4	141	21 3/4	55	14	36
1010	1 1/4	1-1 1/4	2 1/2	58	147	64	163	20 3/4	53	16	41
1200	1 1/4	1-1 1/4	2 1/2	66 1/4	168	72 1/4	196	20 3/4	53	16	41
1430	1 1/4	1 1/4	2 1/2	76	193	82	208	19 3/4	50	18	46
1670	1 1/4-1 1/2	1 1/4	2 1/2	85 1/2	217	91 1/2	232	19 3/4	50	18	46
1825	1 1/4-1 1/2	1 1/4	2 1/2	92 1/4	234	98 1/4	249	19 3/4	50	18	46

NOTES: 1. Dimensions are nominal.

2. When two gas connection sizes are shown, the smaller applies to the standard gas train, while the larger applies to optional trains, such as four stage or motorized gas valves. Consult factory for exact specifications.

Clearances

Appliance Surface	Required Clearance From Combustible Material		Suggested Service Access Clearances	
	in	cm	in	cm
Water Side	12	30	24	61
Opposite Side	6	15	24	61
Top	30	76	12	30
Back	8	20	12	30
Front	Alcove		48	122
Vent	6*	15	6*	15

Dimensions in inches cm.

NOTES: All sizes must be installed on non-combustible floors or with base for combustible floors (certified base is available from Laars).

*1" if B-vent is used (refer to manufacturer's instructions).



Laars Heating Systems Company reserves the right to change specifications, components, features, or to discontinue products without notice.