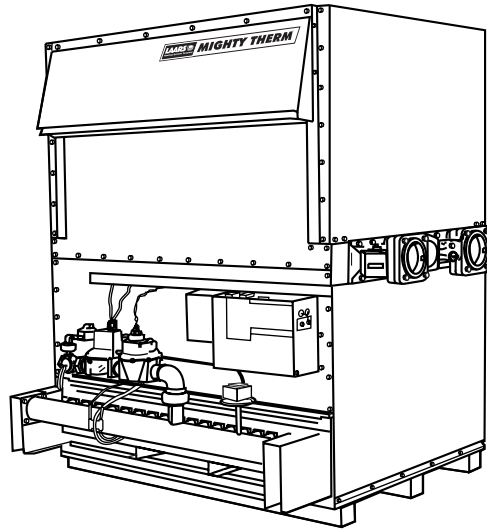


MIGHTY THERM®



Volume Water Heaters

VW | Volume Water Heater

Indoor Sizes 3050-5000

Submittal Data **LAARS**
Heating Systems Company

Date:

Project #:

Engineer:

Prepared By:

Bid Date:

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
- Flow switch
- Temperature pressure gauge
- Manual "A" gas valve
- Manual pilot valve
- Pilot gas regulator
- Manual shut-off valve
- Operating gas valve / gas pressure regulator
- Redundant safety gas valve
- High gas pressure switch(es)
- Stainless steel burners
- 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
- Auto reset high limit
- Covered control box

Boiler Data

Number of Units:

Firing Rate:

- ☐ On-off
- ☐ Two-stage
- ☐ Four-stage
- ☐ Motorized Modulation
- ☐ Motorized on-off
- ☐ Motorized two-stage

Fuel

- ☐ Natural
- ☐ Propane

Ignition System:

- ☐ Spark pilot ignition 24V system 18 (standard)
- ☐ Spark pilot ignition 120V system 04

Heat Exchanger

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

Heat Exchanger Configuration:

- ☐ Two-Pass
- ☐ Single-Pass

Options:

- ☐ EM² pump time delay
- ☐ Low water cutoff
- ☐ 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
- ☐ ASME CSD-1
- ☐ FM (available with ignition system 04 only)
- ☐ Low gas pressure switch
- ☐ Additional safety valve
- ☐ Motorized safety valve with proof of closure
- ☐ Additional motorized safety valve with proof of closure
- ☐ ASME "HLW" Stamp

Sizing Data

	Indoor Size	Input ¹	Output ¹	Shipping Weight	Input ¹	Output ¹	Shipping Weight
		MBTU/h	MBTU/h	lbs	kW	kW	kg
	3050	3050	2501	2100	894	733	953
	3500	3500	2870	2237	1026	841	1016
	4050	4050	3321	2555	1187	973	1160
	4500	4500	3690	3075	1319	1081	1396
	5000	5000	4100	3550	1465	1201	1612

NOTES: 1. Input and output must be derated 4% per 1000 feet above sea level when installed above 2000 feet altitude.
2. For other boiler ratings:

Boiler Horsepower: HP = $\frac{\text{Output}}{33.475}$

Radiation Surface: EDR sq. ft. = $\frac{\text{Output}}{150}$

Recovery Data

Size	Design Temperature Rise Across Boiler								
	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
3050	7506	6005	5004	4289	3753	3336	3002	2502	2145
3500	8613	6891	5742	4922	4307	3828	3445	2871	2461
4050	9967	7974	6645	5695	4983	4430	3987	3322	2848
4500	11074	8860	7383	6328	5537	4922	4430	3691	3164
5000	12305	9844	8203	7031	6152	5469	4922	4102	3516

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
3050	28373	22698	18915	16213	14186	12610	11349	9458	8106
3500	32559	26047	21706	18605	16279	14471	13024	10853	9303
4050	37675	30140	25117	21529	18838	16745	15070	12558	10764
4500	41861	33489	27908	23921	20931	18605	16745	13954	11960
5000	46513	37210	31008	26579	23256	20672	18605	15504	13289

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
3050	200*	6.1	22	150	11	29	200	18	22
3500	200*	6.3	25	150	11	34	200	19	25
4050	200*	6.7	29	150	12	39	200	20	29
4500	200*	6.9	32	180*	17	36	200	21	32
5000	200*	7.2	36	180*	18	40	200	22	36

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
3050	757*	1.9	12	568	3.4	16	757	5.5	12
3500	757*	1.9	14	568	3.4	19	757	5.8	14
4050	757*	2.0	16	568	3.7	22	757	6.1	16
4500	757*	2.1	18	681*	5.2	20	757	6.4	18
5000	757*	2.2	20	681*	5.5	22	757	6.7	20

* Numbers shown are for single pass heaters.
** Pressure drop includes loss through 30 feet of 4" pipe and a normal number of fittings.

Soft water = 1 to 7.5 grains per gallon
Normal water = 7.6 to 17 grains per gallon
Hard water = over 17 grains per gallon
17.1 parts per million = 1 grain per gallon

Clearances

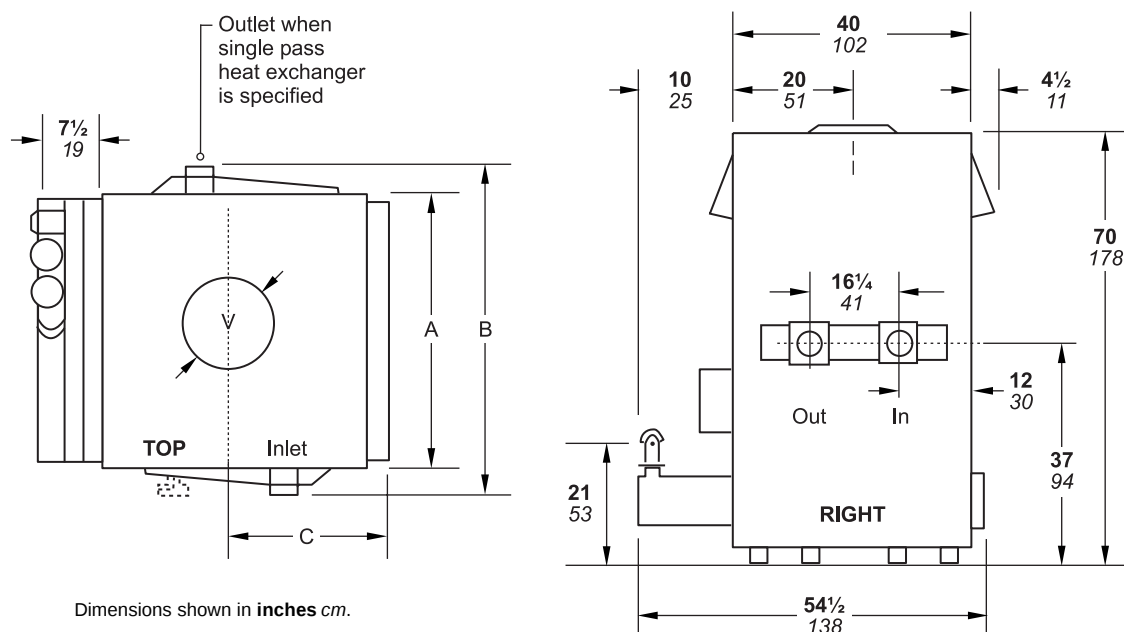
Appliance Surface	Required Clearance from Combustible Material	
	in	cm
Water Side	24	61
Opposite Side	24	61
Top	24	61
Back	24	61
Front	48	122
Vent	6*	15

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

Electrical Data

Model	Boiler			Mounted Pump	Pump Delay Connection Rating (when ordered optionally) 115V – Max 1HP or 230V – Max 3/4HP (pilot duty)
	Volts	Phase	Amps		
VW	115	Single	Less than 12	N/A	

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
3050	1 1/2-2	1 1/2	4	78	198	85 1/4	217	24 1/2	62	26	66
3500	2	1 1/2	4	88	224	95 1/2	243	24 1/2	62	28	71
4050	2-2 1/2	2	4	100 1/2	255	108	274	24 1/2	62	30	76
4500	2-2 1/2	2	4	110 1/2	281	118	300	24 1/2	62	32	81
5000	2-2 1/2	2	4	123	312	130 1/2	315	24 1/2	62	34	83

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.



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