

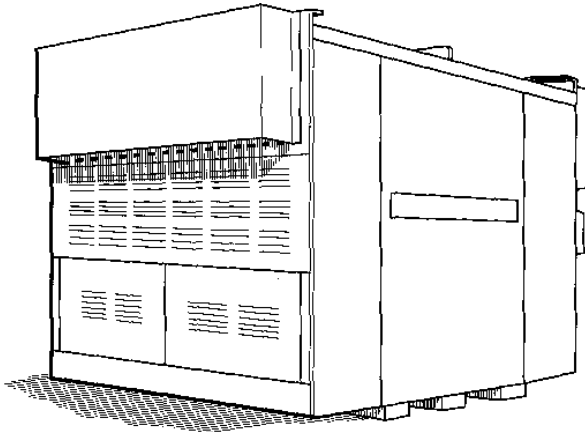
MIGHTY THERM®

Volume Water Heaters

VW | Volume Water Heater

Outdoor Sizes 2800-4500

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
- Certified for outdoor use
- 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)

- ☐ ASME CSD-1
- ☐ Low gas pressure switch
- ☐ Alarm package with bell, mounted and wired
- ☐ Alarm package with dry contacts, mounted and wired
- ☐ FM (available with ignition system 04 only)
- ☐ Additional safety valve
- ☐ Motorized safety valve with proof of closure
- ☐ Additional motorized safety valve with proof of closure
- ☐ ASME "HLW" Stamp

Sizing Data

Outdoor Size	Input ¹	Output ¹	Shipping Weight	Input ¹	Output ¹	Shipping Weight
	MBTU/h	MBTU/h	lbs	kW	kW	kg
2800	2745	2224	2600	804.3	651.6	1180
3200	3150	2552	2750	923.0	747.7	1249
3600	3645	2953	3175	1068.0	865.2	1441
4000	4050	3281	3380	1186.7	961.3	1535
4500	4500	3645	3970	1318.5	1068.0	1721

NOTE: 1. Input and output must be derated 4% per 1000 feet above sea level when installed above 2000 feet altitude.

Recovery Data

Design Temperature Rise Across Boiler									
Outdoor Size	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
2800	6807	5445	4538	3890	3403	3025	2723	2269	1945
3200	7779	6223	5186	4445	3890	3457	3112	2593	2223
3600	8752	7001	5834	5001	4376	3890	3501	2917	2500
4000	9724	7779	6483	5557	4862	4322	3890	3241	2778
4500	10939	8752	7293	6251	5470	4862	4376	3646	3126

Design Temperature Rise Across Boiler									
Outdoor 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
2800	25730	20582	17154	14704	12863	11435	10293	8577	7352
3200	29405	23523	19603	16802	14704	13067	11763	9802	8403
3600	33083	26464	22053	18904	16541	14704	13234	11026	9450
4000	36757	29405	24506	21005	18378	16337	14704	12251	10501
4500	41349	33083	27568	23629	20677	18378	16541	13782	11816

Water Flow Data

Outdoor 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
2800	200*	6.1	22	200	11	29	200	18	22
3200	200*	6.3	25	200	11	34	200	19	25
3600	200*	6.7	29	200	12	39	200	20	29
4000	200*	6.9	32	200	17	36	200	21	32
4500	200*	7.2	36	200	18	40	200	22	36

Outdoor 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
2800	757*	1.9	12	757	3.4	16	757	5.5	12
3200	757*	1.9	14	757	3.4	19	757	5.8	14
3600	757*	2	16	757	3.7	22	757	6.1	16
4000	757*	2.1	18	757	5.2	20	757	6.4	18
4500	757*	2.2	20	757	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	—	—
Back	24	61
Front	Open	
Vent	6*	15*

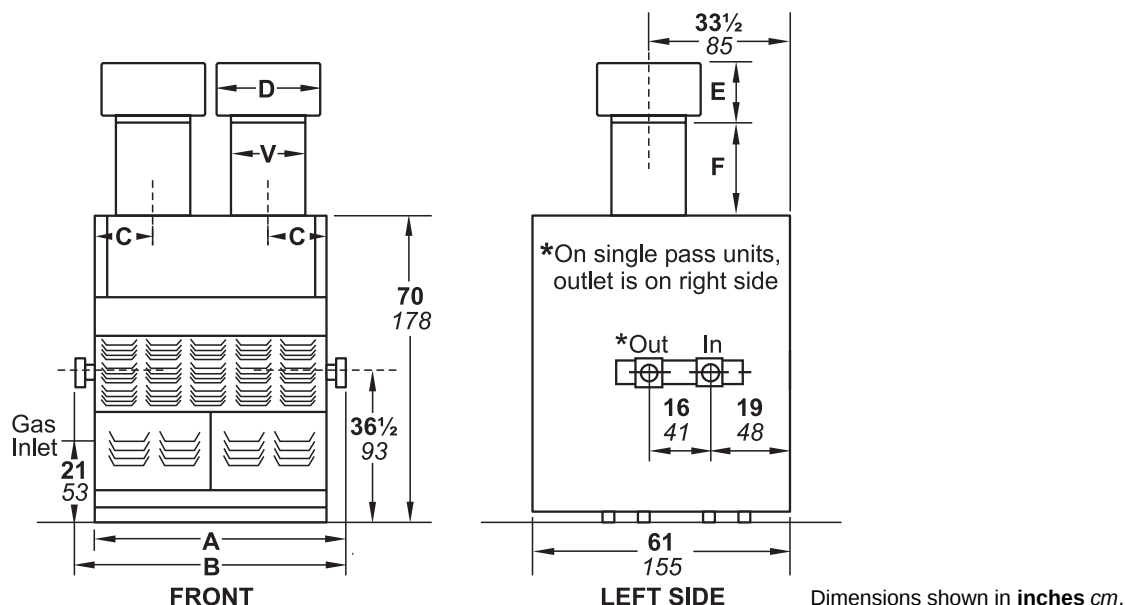
NOTES: All sizes must be installed on non-combustible floors or with base for combustible floors.

*Check local code requirements.

Electrical Data

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

Dimensional Data



Dimensions shown in **inches cm.**

Outdoor Size	Gas Connection Size		Water Conn. Size in ¹	Dimensions inches ¹						
	Natural ²	LP ²		A	B	C	D	E	F	V
2800	1½-2	1½	4	78	95½	20	28¾	15	24	18
3200	2	1½	4	88	105½	23	31½	16½	36	20
3600	2-2½	2	4	100½	118	29	31½	16½	36	20
4000	2½	2	4	110½	128	30½	34½	18	36	22
4500	2½	2	4	123	140½	34	37¾	19½	36	24

Outdoor Size	Gas Connection Size		Water Conn. Size cm ¹	Dimensions centimeters ¹						
	Natural ²	LP ²		A	B	C	D	E	F	V
2800	1½-2	1½	10	198	243	51	72	38	61	46
3200	2	1½	10	224	268	58	80	42	91	51
3600	2-2½	2	10	255	300	74	80	42	91	51
4000	2½	2	10	281	325	77	88	46	91	56
4500	2½	2	10	312	357	86	96	50	91	61

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.