



# **LAARS<sup>®</sup>** **OMNITHERM<sup>®</sup>**

*Near Condensing  
Boiler and Volume Water Heater*

- Up to 7:1 Turndown Ratio
- Electronic Fuel-to-Air Ratio Control
- Up to 90% Thermal Efficiency
- Stainless Steel Heat Exchanger
- Indoor/Outdoor Rated
- LAARS LINC<sup>®</sup> Intuitive Touch Screen Controls
- Low Return Water Temperatures Allowed

**LAARS<sup>®</sup>**   
*Heating Systems Company*

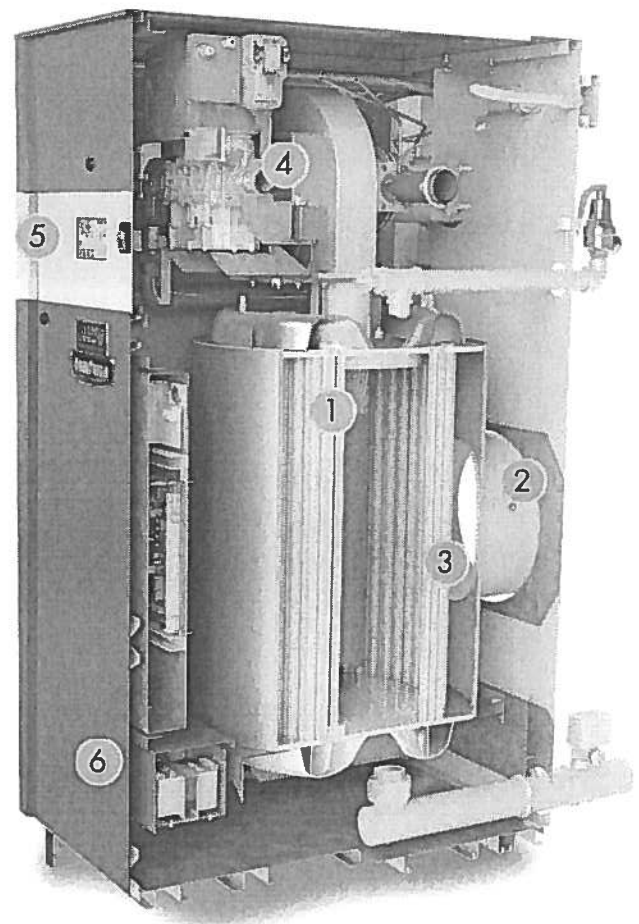
# OMNITHERM®

Laars OmniTherm Boilers and Volume Water Heaters include advanced features that bring tangible results to building owners. At the heart of the OmniTherm is a patent pending stainless steel corrosion resistant heat exchanger, industry leading Electronic Air-to-Fuel ratio combustion control and the advanced Laars Linc control platform. All of this has been combined for the first time in a near condensing heating platform intended for use in Category I, II, III or IV applications.

## Designed with Performance and Practicality in Mind

OmniTherm, the new measure for installation flexibility, stands in a performance class of it's own. It can as easily be applied in replacement applications as it can be in new installations.

- 1) Long Life, Stainless Steel Heat Exchanger:
  - Protects against heat exchanger corrosion and fouling
  - High efficiency levels
  - Allows for low temperature return water
- 2) Available for use with Category I, II, III or IV Venting Applications
- 3) Category I or III Low Temperature Operation
  - Unique heat exchanger design and control logic allow for return water temperatures down to 85°F without the need for an external mixing system
- 4) Up to 7:1 Combustion Turndown (Category II/IV)
  - Increases overall efficiency by properly matching load requirements with firing rates
- 5) Laars Linc Intuitive to Use Control System
  - Icon driven, easy to navigate menu structure
  - Large color touchscreen



- 6) Vertical Configuration
  - Small footprint takes up less floor space
  - Easily fits through doors and into tight mechanical rooms.

# THE LAARS OMNITHERM ADVANTAGE:

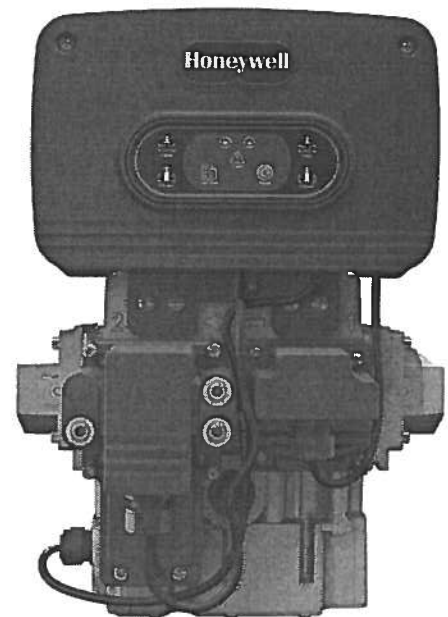
INDUSTRY  
LEADING  
TECHNOLOGY

## Electronic Air-to-Fuel Ratio Control Brings Performance to a Whole New Level

The OmniTherm is outfitted with the latest in temperature compensated mass flow combustion control technology. This technology offers one of the highest levels of combustion accuracy and performance available.

Optimized performance, reduced emissions, and reliable operation lower operational costs and increase savings.

- **Peak Performance:** Optimal combustion and low emission levels are achieved by maintaining the ideal gas density levels within the air-fuel mixture regardless of operational demands.
- **Maximized Efficiency Levels:** Electronic management of premix process maintains proper oxygen levels for ideal combustion.
- **High Efficiencies at All Firing Rates:** Real-time air-to-fuel ratio compensation control results in highest possible efficiencies throughout the entire turndown range.
- **Stable Performance:** Electronic mass flow sensors adjust to supply pressure fluctuations to improve performance stability as compared to traditional pneumatic valve technology.
- **Reliable Operation:** Drifting from original set points over time is eliminated, keeping the OmniTherm operating at peak efficiencies.
- **Quick Response Rate:** Real time measurements of pressure, air flow, gas density, and temperature are monitored for fast acting adjustments to heating demands.



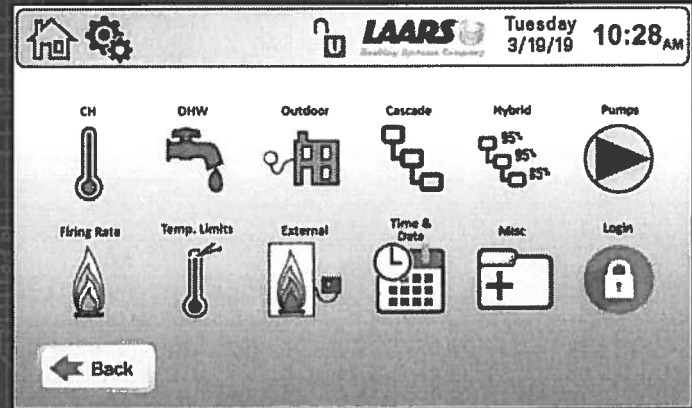
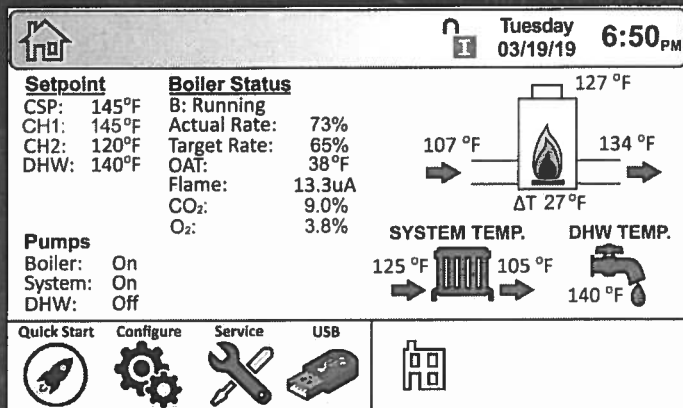
# LAARS LINC®

LAARS LINC CONTROLS  
ARE A STEP BEYOND  
SMART, THEY'RE  
INTUITIVE

# LAARS LINC®

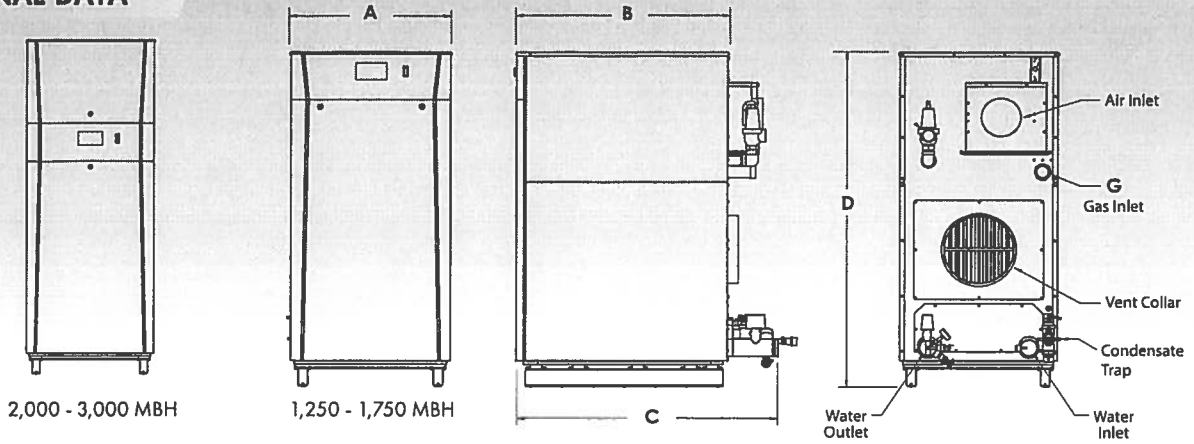
Powerful control logic is easily managed via icon driven, touch screen technology. The result is an intuitive to use control system with the intelligence to manage installations from the simple to the complex.

## ADVANCED EASE OF USE FUNCTIONALITY:



- **HOME SCREEN BOILER STATUS:** The home screen shows the operational status of the boiler; all set points, status of each pump, and boiler run status.
- **QUICK START CONFIGURATOR:** Simply touch the "Quick Start" icon on the home screen to access the most commonly-used parameters for systems that don't require advanced set up.
- **USB DATA CONNECTION:** The USB connection allows for easy transfer of parameter sets from one boiler to another and for the boiler's history data to be transferred to a USB memory device.
- **VARI-PRIME® PUMP CONTROL:** This unique fixed delta T control functionality is included on OmniTherm Category II and IV boilers and works in conjunction with a variable speed boiler pump. As the boiler's firing rate changes, the Vari-Prime control modulates the signal to a variable speed boiler pump to ensure a user-programmable temperature rise is maintained across the boiler. Pump electrical savings as high as 70% can be realized via this configuration vs. constant speed pump installations.
- **LAARS LINC CONTROL TO DISPLAY HANDSHAKE:** If for any reason a display or control board needs to be replaced, the parameter set is automatically transferred from the remaining display or control board to the replaced component. Parameters are stored on both the display and control to auto populate either one!
- **INTELLIGENT REDUNDANCY:** Laars Linc cascade logic includes a built-in redundancy; via either a lag unit's internal setpoint, or a configurable redundant leader. A bank of boilers will continue to operate even if the master control goes down, keeping buildings warm and hot water flowing!
- **AUTO CONFIGURING CASCADE:** Up to 8 units can be automatically configured by simply connecting the controls and selecting the master boiler. The intelligence of Laars Linc takes over to auto configure the remaining follower boilers. No need to register each follower!
- **MULTIPLE PUMP CONTROL:** System pump, boiler pump and domestic water pump operation, each with time delay.
- **BacNET MSTP AND MODBUS RTU ON BOARD**

## DIMENSIONAL DATA



NOTE: The unique design of this appliance requires connection to a condensate drain, including the Category I / III model.

Model	"A"		"B"		"C"		"D"		"G"	Water
	in.	(cm)	in.	(cm)	in.	(cm)	in.	(cm)	Gas Conn.	Inlet & Outlet
1250	24½	(62)	27	(69)	39	(99)	66	(168)	2"	2½"
1500	24½	(62)	27	(69)	39	(99)	66	(168)	2"	2½"
1750	32	(81)	43	(109)	53	(135)	69	(175)	2"	3"
2000	32	(81)	43	(109)	53	(135)	78	(198)	2"	3"
2500	32	(81)	43	(109)	53	(135)	78	(198)	2"	3"
3000	32	(81)	43	(109)	53	(135)	85	(216)	2"	3"

## ELECTRICAL DATA

Voltage	1250			1500			1750			2000			2500			3000		
	FLA	MCA	MOP	FLA	MCA	MOP	FLA	MCA	MOP	FLA	MCA	MOP	FLA	MCA	MOP	FLA	MCA	MOP
120V, 1 phase	9.4	11.8	20	9.4	11.8	20	9.2	11.5	20	9.2	11.5	20	N/A	N/A	N/A	N/A	N/A	N/A
208V, 1 phase	N/A	N/A	N/A	4.8	6.0	15	5.0	6.3	15	5.0	6.3	15	5.0	6.3	15	N/A	N/A	N/A
220/240V, 1 ph	N/A	N/A	N/A	4.8	6.0	15	4.8	6.0	15	4.8	6.0	15	4.8	6.0	15	N/A	N/A	N/A
208V, 3 phase	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.2	6.5	15	6.2	7.8	15
480V, 3 phase	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.2	2.8	15	2.7	3.4	15
600V, 3 phase	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8	2.3	15	2.2	2.8	15

## VENTING DATA

Model	General Air System Data				Category II and IV Vent Data								Category I and III Vent Data							
	Air Collar Size "E" and Ducted Air Pipe Size <sup>1</sup>		Maximum Ducted Air Pipe Length <sup>1</sup>		Vent Collar Size		Category IV Vent Pipe Size <sup>4</sup>		Maximum Category IV Vent Pipe Length <sup>4</sup>		Typical <sup>3,4</sup> Category II Vent Pipe Size		Vent Collar Size		Category III Vent Pipe Size <sup>4</sup>		Maximum Category III Vent Pipe Length <sup>4</sup>		Typical <sup>3</sup> Category I Vent Pipe Size	
	inches	cm	ft <sup>2</sup>	m	inches	cm	inches	cm	ft <sup>2</sup>	m	inches	cm	inches	cm	inches	cm	ft <sup>2</sup>	m	inches	cm
1250	6	15	100	30.5	6	15	6	15	100	30.5	12	30	12	30	6	15	100	30.5	12	30
1500	6	15	100	30.5	6	15	6	15	100	30.5	12	30	12	30	6	15	100	30.5	12	30
1750	8	20	100	30.5	8	20	8	20	100	30.5	14	36	14	36	8	20	100	30.5	14	36
2000	8	20	100	30.5	8	20	8	20	100	30.5	14	36	14	36	8	20	100	30.5	14	36
2500	8	20	100	30.5	8	20	8	20	100	30.5	16	41	16	41	8	20	100	30.5	16	41
3000	10	25	100	30.5	10	25	10	25	100	30.5	16	41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

- Intake air pipe may be single-wall galvanized steel pipe, 24 gauge minimum, and properly sealed.
- Equivalent Feet: To calculate, measure the linear feet of the pipe and add 5 ft (1.5m) for each elbow used.
- Category I and II vent pipe sizes shown are typical, but may not meet the requirements of every system.
- Category II, III, and IV vent pipe must be stainless steel complying with UL1738, and properly sealed.

# OmniTherm Models OCH and OCV for Category II & IV Venting

## BOILER SIZING DATA

OmniTherm Hydronic Model OCH (Category II & IV Vent)							
Model	Input Rate		Output Rate		Efficiency		Turndown Ratio
	MBH	kw	MBH	kw	% Thermal	% Combustion	
1250	1250	366	1098	322	87.8	87.7	5:1
1500	1500	440	1307	383	87.1	87.2	7:1
1750	1750	513	1523	446	87.0	86.7	7:1
2000	1999.9	586	1756	514	87.8	87.5	5:1
2500	2499.9	733	2193	643	87.7	87.0	7:1
3000	3000	879	2589	759	86.3	86.6	7:1

## VOLUME WATER HEATER SIZING DATA

OmniTherm Volume Water Heater Model OCV (Category II & IV Vent)							
Model	Input Rate		Output Rate		Efficiency		Turndown Ratio
	MBH	kw	MBH	kw	% Thermal	% Combustion	
1250	1250	366	1125	330	90		5:1
1500	1500	440	1335	391	89		7:1
1750	1750	513	1540	451	88		7:1
2000	1999.9	586	1800	527	90		5:1
2500	2499.9	733	2250	659	90		7:1
3000	3000	879	2610	765	87		7:1

## BOILER WATER FLOW REQUIREMENTS

Model	Temperature Rise																			
	20°F (11°C)				25°F (14°C)				30°F (17°C)				35°F (19°C)				40°F (22°C)			
	Flow		Headloss*		Flow		Headloss*		Flow		Headloss*		Flow		Headloss*		Flow		Headloss*	
	gpm	l/m	ft	m	gpm	l/m	ft	m	gpm	l/m	ft	m	gpm	l/m	ft	m	gpm	l/m	ft	m
1250	110	416	25.0	7.6	88	333	16.4	5.0	73	276	11.5	3.5	63	238	8.6	2.6	55	208	6.6	2.0
1500	131	495	34.8	10.6	105	397	22.9	7.0	87	329	16.0	4.9	75	284	12.1	3.7	65	246	9.1	2.8
1750	152	576	19.5	5.9	122	462	13.4	4.1	102	386	9.4	2.9	87	329	6.4	2.0	76	288	4.2	1.3
2000	176	666	24.9	7.6	140	530	16.6	5.1	117	443	11.8	3.6	100	379	8.5	2.6	88	333	6.2	1.9
2500	219	829	36.1	11.0	175	662	24.7	7.5	146	553	17.9	5.5	125	473	13.4	4.1	110	416	10.4	3.2
3000	259	980	65.2	19.9	207	784	40.7	12.4	173	655	28.1	8.6	148	560	20.4	6.2	129	488	15.6	4.8

\*Headloss is for boiler only (no piping)

## VOLUME WATER HEATER WATER FLOW REQUIREMENTS

Model	1-10 Grains Per Gallon Hardness						11-15 Grains Per Gallon Hardness					
	Flow Rate		Headloss*		Temp Rise		Flow Rate		Headloss*		Temp Rise	
	gpm	l/m	ft	m	°F	°C	gpm	l/m	ft	m	°F	°C
1250	85	322	16.1	4.9	26	14	104	394	23.6	7.2	21	12
1500	90	341	17.9	5.5	29	16	110	416	26.3	8.0	24	13
1750	120	454	12.9	3.9	25	14	150	568	19.6	6.0	20	11
2000	135	511	16.1	4.9	26	14	170	644	24.4	7.4	21	11
2500	140	530	17.2	5.2	31	17	170	644	24.4	7.4	26	14
3000	150	568	21	6.4	35	19	183	693	31.5	9.6	28	16

\*Headloss is for the heater only (no piping)

Allowable pH is 6.5 to 9.5

## VOLUME WATER HEATING RECOVERY DATA

Model	Temperature Rise													
	40°F (22°C)		50°F (25°C)		60°F (33°C)		70°F (39°C)		80°F (44°C)		90°F (50°C)		100°F (56°C)	
	gph	L/h	gph	L/h	gph	L/h	gph	L/h	gph	L/h	gph	L/h	gph	L/h
1250	3293	12463	2634	9971	2195	8309	1881	7122	1646	6232	1463	5539	1317	4985
1500	3920	14837	3136	11870	2613	9891	2240	8478	1960	7418	1742	6594	1568	5935
1750	4568	17290	3654	13832	3045	11527	2610	9980	2284	8645	2030	7684	1827	6916
2000	5268	19942	4214	15953	3512	13294	3010	11395	2634	9971	2341	8863	2107	7977
2500	6578	24899	5262	19919	4385	16599	3759	14228	3289	12449	2923	11066	2631	9959
3000	7767	29401	6214	23521	5178	19601	4438	16801	3884	14701	3452	13067	3107	11761

# OmniTherm Models ONH and ONV for Category I & III Venting

## BOILER SIZING DATA

OmniTherm Hydronic Model ONH (Category I & III Vent)*						
Model	Input Rate		Output Rate		Efficiency	
	MBH	kw	MBH	kw	% Thermal	% Combustion
1250	1250	366	1060	311	84.8	84.2
1500	1500	440	1259	369	83.9	83.3
1750	1750	513	1472	431	84.1	83.4
2000	1999.9	586	1668	489	83.4	84.0
2500	2499.9	733	2075	608	83.0	83.0

## VOLUME WATER HEATER SIZING DATA

OmniTherm Volume Water Heating Model ONV (Category I & III Vent)*					
Model	Input Rate		Output Rate		Efficiency
	MBH	kw	MBH	kw	% Thermal
1250	1250	366	1063	311	85
1500	1500	440	1260	369	84
1750	1750	513	1488	436	85
2000	1999.9	586	1720	504	86
2500	2499.9	733	2150	630	86

\* Category I & III venting achievable due to the on/off firing configuration of models ONH and ONV

## BOILER WATER FLOW REQUIREMENTS

Model	Temperature Rise																			
	20°F (11°C)				25°F (14°C)				30°F (17°C)				35°F (19°C)				40°F (22°C)			
	Flow		Headloss*		Flow		Headloss*		Flow		Headloss*		Flow		Headloss*		Flow		Headloss*	
	gpm	l/m	ft	m	gpm	l/m	ft	m	gpm	l/m	ft	m	gpm	l/m	ft	m	gpm	l/m	ft	m
1250	106	401	23.6	7.2	85	321	15.4	4.7	71	268	11.1	3.4	61	229	8.2	2.5	53	201	6.2	1.9
1500	126	476	33.0	10.1	101	381	21.9	6.7	84	318	16.1	4.9	72	272	12.0	3.7	63	238	9.0	2.7
1750	147	557	18.4	5.6	118	446	12.9	3.9	98	371	8.2	2.5	84	318	5.9	1.8	74	279	3.8	1.2
2000	167	631	24.4	7.4	133	505	15.7	4.8	111	421	11.2	3.4	95	361	7.8	2.4	83	316	5.9	1.8
2500	207	786	33.7	10.3	166	628	23.9	7.3	138	524	17.2	5.2	119	449	12.9	3.9	104	393	9.8	3

\*Headloss is for boiler only (no piping)

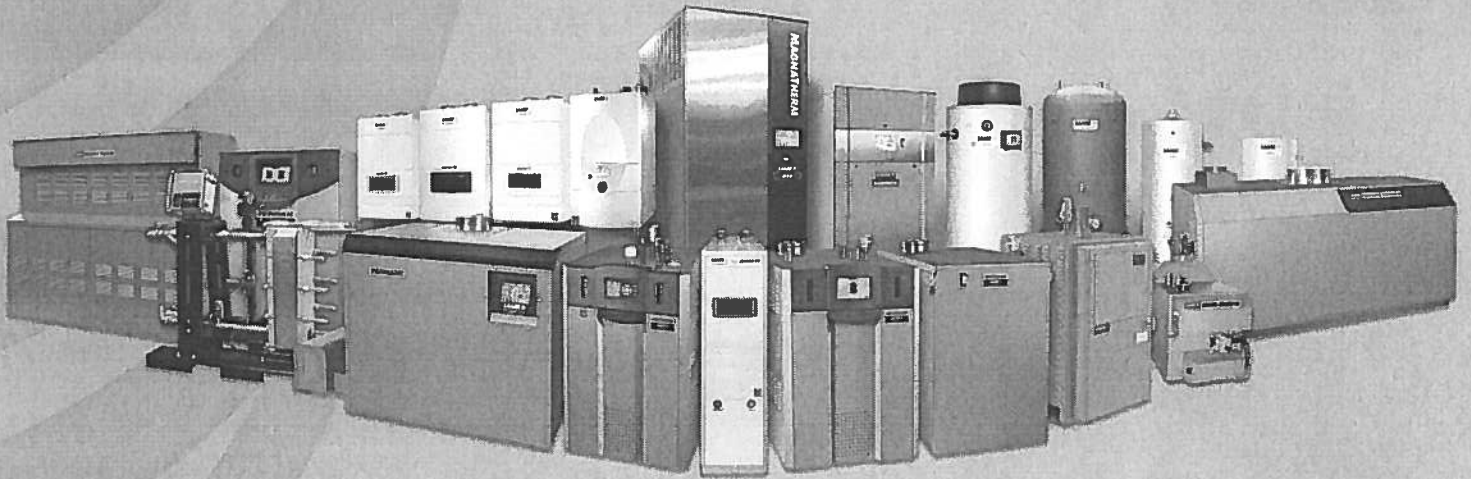
## VOLUME WATER HEATER WATER FLOW REQUIREMENTS

Model	1-10 Grains Per Gallon Hardness						11-15 Grains Per Gallon Hardness					
	Flow Rate		Headloss*		Temp Rise		Flow Rate		Headloss*		Temp Rise	
	gpm	l/m	ft	m	°F	°C	gpm	l/m	ft	m	°F	°C
1250	85	322	16.1	4.9	25	14	104	394	23.6	7.2	20	11
1500	90	341	17.9	5.5	28	16	110	416	26.3	8.0	23	13
1750	120	454	12.9	3.9	25	14	150	568	19.6	6.0	20	11
2000	135	511	16.1	4.9	25	14	170	644	24.4	7.4	20	11
2500	140	530	17.2	5.2	31	17	170	644	24.4	7.4	25	14

\*Headloss is for the heater only (no piping)  
Allowable pH is 6.5 to 9.5

## VOLUME WATER HEATING RECOVERY DATA

Model	Temperature Rise													
	40°F (22°C)		50°F (28°C)		60°F (33°C)		70°F (39°C)		80°F (44°C)		90°F (50°C)		100°F (56°C)	
	gph	L/h	gph	L/h	gph	L/h	gph	L/h	gph	L/h	gph	L/h	gph	L/h
1250	3188	12049	2550	9639	2125	8033	1821	6885	1594	6024	1417	5355	1275	4820
1500	3780	14288	3024	11431	2520	9526	2160	8165	1890	7144	1680	6350	1512	5715
1750	4463	16868	3570	13495	2975	11246	2550	9639	2231	8434	1983	7497	1785	6747
2000	5160	19504	4128	15603	3440	13003	2948	11145	2580	9752	2293	8668	2064	7802
2500	6450	24380	5160	19504	4300	16253	3686	13931	3225	12190	2867	10836	2580	9752



# **LAARS**

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