



2016 FULL-LINE POCKET CATALOG



MAGNATHERM



NEOTHERM



MIGHTY THERM2



MASCOT LX



Heating Systems Company

A subsidiary of **BRADFORD WHITE** Corporation

Built to be the Best™

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COMPANY HISTORY

In 1948, engineer Avy Miller formed Laars Engineering as a company dedicated to the concept of heating water quickly by passing the water through finned copper tube heat exchangers. Miller realized that moving water at high velocity through “low-mass” heat exchangers such as finned copper tubing, could heat water up to nine times faster than through cast iron vessels. Miller designed specialized manufacturing techniques to support this new concept, and the “low-mass” technology found a warm reception in the U.S. market.

First applied to the swimming pool heater market that emerged rapidly in California after WWII, the heat exchanger designs that Laars developed also proved to work well with space-heating boilers and hot water boilers. After all, if a Laars heat exchanger could work well with swimming pool water with all of the chemicals and impurities, it could work even better with clean domestic hot water and closed loop hydronic systems.

The Laars heat exchangers with their higher velocity water flow also solved another problem — that of scale build-up in the tubes. By controlling flow rates, lime and scale were prevented from forming on tube walls, thereby keeping the heat transfer process clean and efficient.

Today, Laars Heating Systems operates as a subsidiary of the Bradford White Corporation with manufacturing in Rochester, NH and a distribution center in Mississauga, Ontario, Canada. Laars serves a diverse base of customers located in many countries all over the globe, and Laars product lines have expanded over the years to cover the large range from 50,000 to 5,000,000 BTU's. Laars' residential and commercial products serve the hydronic, radiant floor heating, volume water heating, and industrial process markets with over 20 different product lines and many accessories and controls to support these primary lines. 800.900.9276

Electronic Literature Downloads

- Sales Brochures
- Installation/Operating Manuals
- User's Manuals
- Specification Sheets
- Submittal Documents
- Technical Discussions
- Warranty Sheets

Printed Literature Ordering

- Printed literature can be ordered easily online at www.laars.com.

Product Videos

- Learn about the latest boiler technology directly from Laars factory experts.
- View our Service Videos to get information regarding cleaning and maintenance of our product lines.



Volume Water Heater Sizing

- Properly size and specify Laars Volume Water Heaters via the online Laars sizing tool!

Parts Identification

- The Laars Parts ID portal allows you to identify the correct parts needed for repairs based on serial number. Make sure you get the correct part every time!

Partner Area

- Representatives and distributors are allowed access to their account, order, and shipping information along with bulletin notices and updates. A very powerful way to track your business with Laars.

Revit Drawings

Training Classes

VISIT – WWW.LAARS.COM TODAY!

LAARS HEATING SYSTEMS CUSTOMER CENTER

The Laars Customer Center is designed to educate HVAC professionals on hydronic systems and Laars' current and next generation heating technology. Flexibility in training content and techniques was the primary focus when building the facility and curriculum; here you are the most important person in the building.



KEY FEATURES

- **70-seat tiered classroom** that can be used as one large room or divided into two 35-seat classrooms.
 - **Hands-on training:** Laars boilers, water heaters, and pool heaters are located in front of each 35-seat classroom.
 - **Live-fired boilers during training sessions:** continuously operated equipment right in training room with BTU's as high as 2 million.
 - **State-of-the-art high-definition audio/video system:** Large screens above the equipment bays connect the classroom experience with the live-fired equipment.
- The projectors tie into **ceiling-mounted HD cameras** for **up-close views of the system components** for an **enhanced experience**.
- **The latest video conference hub technology:** Laars invested in cutting-edge equipment to provide live web-streaming of the training sessions and to record the classes for later viewing. This function offers flexibility for those that can't travel, and for follow-up training sessions after live sessions.
 - A large **café with adjacent large outdoor patio** is located just off the main lobby for catered meals and socializing after training.



TYPICAL CLASS AGENDA

Tuesday: 8:00 am factory tour followed by presentations, live-fire demos, and hands-on troubleshooting
Dinner will be served Tuesday night in the LAARS Cafe

Wednesday: 8am to 1:00 pm, dismissal after lunch

Laars will cover hotel for 2 nights, breakfast and lunch on Tuesday and Wednesday plus dinner on Tuesday at the LAARS Café.

We offer custom classes to fit your group's specific needs for contractors and engineers, from basic through advanced training. Or sign up and train in one of our standard service training programs.

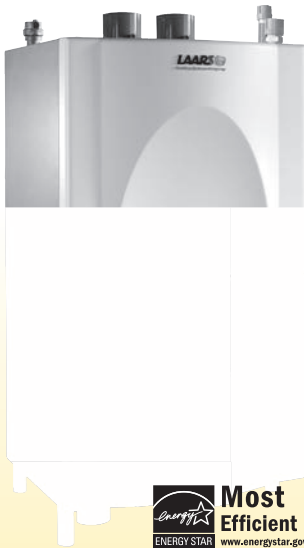
Standard service training is offered throughout the year, visit www.laars.com for details.

TYPICAL SERVICE TRAINING

Commercial Pennant and Mighty Therm2
Commercial and Residential NeoTherm
Commercial Rheos, NeoTherm LC, and MagnaTherm
Residential Endurance, Residential Mascot LX, ST, FT, and Mini-Therm
Understanding Controls

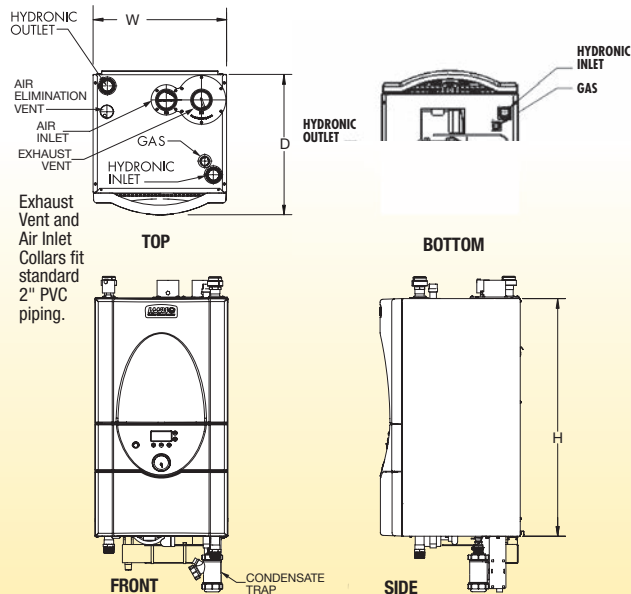
Sign up online at www.laars.com or contact your local representative for more information!

MASCOT® LX BOILER OR COMBINATION—WALL MOUNTED



The Mascot® LX is a wall mounted 50–220 MBH, space heating boiler. The 125, 150, and 175 MBH sizes are also offered as Combination Boilers to meet all of the heating and hot water needs of the smallest to largest homes.

- 95% AFUE efficiency
- Heating Sizes: 50, 75, 100, 125, 150, 175, and 220 MBH
- Combination Boiler Sizes: 125, 150, and 175 MBH
- Fully modulating 20% to 100%
- Quiet variable speed blower
- Pump Freeze Protection
- Ultra-Low NOx Emissions
- 2-year parts warranty
- 15-year heat exchanger warranty
- Natural or Propane Gas use
- Sleek, appliance-grade cabinet
- Lightweight, makes handling easy
- 150' of vent
- Stainless steel A.S.M.E. heat exchanger
- Stainless steel brazed plate DHW heat exchanger (combi models)
- Advanced water flow technology
- Laars integrated control system with temperature control, diagnostics, outdoor reset capability, and easy access for field wiring
- Unique, sealed condensate trap does not need to be primed at startup



MASCOT® LX SPECIFICATIONS

Model	Input		Output		Gas Connection	Water Connection	Shipping Weight	
	MBTU/h	kW	MBTU/h	kW	Size inches	Size inches	lbs.	kg
MLX 50	50	14.6	47.5	13.7	½ NPT	¾ NPT	88	40
MLX 75	75	21.9	71.3	20.6	½ NPT	¾ NPT	97	44
MLX 100	100	29.3	95.0	27.5	½ NPT	¾ NPT	112	51
MLX 125*	125	36.6	118.8	34.5	½ NPT	¾ NPT	126	57
MLX 150*	150	43.9	142.5	41.5	½ NPT	1 NPT	140	64
MLX 175*	175	51.6	166.3	48.3	½ NPT	1 NPT	153	69
MLX 220	220	64.4	209.0	60.6	½ NPT	1 NPT	161	73

*Available as Combination Boilers

Notes: For other boiler ratings:

$$\text{Boiler Horsepower: HP} = \frac{\text{Output}}{33,475}$$

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

Dimensions shown in **inches** *cm*

Combi Model	35°F Rise		45°F Rise		77°F Rise		DHW Connection Size
	GPM	l/m	GPM	l/m	GPM	l/m	in.
MLXCW125	6.8	24.6	5.3	20.1	3.1	11.7	½
MLXCW150	8.1	30.1	6.3	23.8	3.7	14.0	½
MLXCW175	9.5	36.0	7.4	28.0	4.3	16.3	½

Appliance Surface	Suggested Service Access Clearance	
	Inches	cm
Left Side	6	15
Right Side	6	15
Top	12	30
Closet, Front	6	15
Front	24	61
Vent	1	3

Certified by CSA for zero clearance to combustible materials on all sides

Dimensions						
Model	W		H		D	
	in.	cm	in.	cm	in.	cm
MLX50, 75	17	43	30½	78	15¼	39
MLX100	17	43	30½	78	18	46
MLX125	17	43	30½	78	18	46
MLX150, 175	17	43	35½	90	18	46
MLX220	17	43	38½	90	18	46

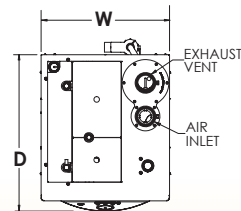
For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

MASCOT LX BOILER OR COMBINATION—FLOOR STANDING



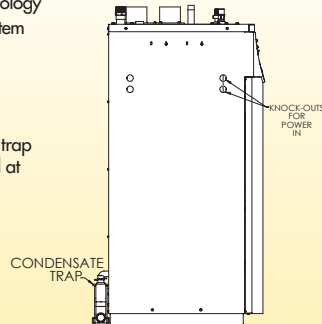
The Mascot® LX is a floor standing 50–220 MBH, space heating boiler. The 125, 150, and 175 MBH sizes are also offered as Combination Boilers to meet all of the heating and hot water needs of the smallest to largest homes.

- 95% AFUE efficiency
- Heating Sizes: 50, 75, 100, 125, 150, 175, and 220 MBH
- Combination Boiler Sizes: 125, 150, and 175 MBH
- Fully modulating 20% to 100%
- Quiet variable speed blower
- Pump Freeze Protection
- Ultra-Low NOx Emissions
- 2-year parts warranty
- 15-year heat exchanger warranty
- Natural or Propane Gas use
- Sleek, appliance-grade cabinet
- Lightweight, makes handling easy
- 150' of vent
- Stainless steel A.S.M.E. heat exchanger
- Stainless steel brazed plate DHW heat exchanger (combi models)
- Advanced water flow technology
- Laars integrated control system with temperature control, diagnostics, outdoor reset capability, and easy access for field wiring
- Unique, sealed condensate trap does not need to be primed at startup

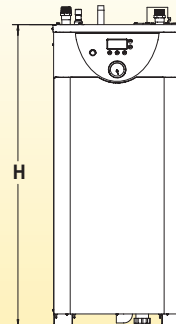


Exhaust Vent and Air Inlet Collars fit standard 2" PVC piping.

TOP



SIDE



FRONT

MASCOT LX SPECIFICATIONS

Model	Input		Output		Gas Connection	Water Connection	Shipping Weight	
	MBTU/h	kW	MBTU/h	kW	Size inches	Size inches	lbs.	kg
MLX 50	50	14.6	47.5	13.7	½ NPT	¾ NPT	88	40
MLX 75	75	21.9	71.3	20.6	½ NPT	¾ NPT	97	44
MLX 100	100	29.3	95.0	27.5	½ NPT	¾ NPT	112	51
MLX 125*	125	36.6	118.8	34.5	½ NPT	¾ NPT	126	57
MLX 150*	150	43.9	142.5	41.5	½ NPT	1 NPT	140	64
MLX 175*	175	51.6	166.3	48.3	½ NPT	1 NPT	153	69
MLX 220	220	64.4	209.0	60.6	½ NPT	1 NPT	161	73

*Available as Boilers and as Combination Boilers

Notes: For other boiler ratings:

Boiler Horsepower: HP = $\frac{\text{Output}}{33,475}$ Radiation Surface: EDR sq. ft. = $\frac{\text{Output}}{150}$

Combi Model	35°F Rise		45°F Rise		77°F Rise		DHW Connection Size
	GPM	l/m	GPM	l/m	GPM	l/m	in.
MLXCF125	6.8	24.6	5.3	20.1	3.1	11.7	½
MLXCF150	8.1	30.1	6.3	23.8	3.7	14.0	½
MLXCF175	9.5	36.0	7.4	28.0	4.3	16.3	½

Appliance Surface	Suggested Service Access Clearance	
	Inches	cm
Left Side	6	15
Right Side	6	15
Top	12	30
Closet, Front	6	15
Front	24	61
Vent	1	3

Certified by CSA for zero clearance to combustible materials on all sides

Dimensions

Model	W		H		D	
	in.	cm	in.	cm	in.	cm
50 Heat Only	17¼	43.6	37⅝	95.5	21	53.3
75 Heat Only	17¼	43.6	37⅝	95.5	21	53.3
100 Heat Only	17¼	43.6	40⅝	102.5	21	53.3
125 Heat Only	17¼	43.6	40⅝	102.5	21	53.3
125 Combi	17¼	43.6	40⅝	102.5	21	53.3
150 Heat Only	17¼	43.6	45¼	115.0	21	53.3
150 Combi	17¼	43.6	45¼	115.0	21	53.3
175 Heat Only	17¼	43.6	45¼	115.0	21	53.3
175 Combi	17¼	43.6	45¼	115.0	21	53.3
220 Heat Only	17¼	43.6	48½	123.1	21	53.3

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

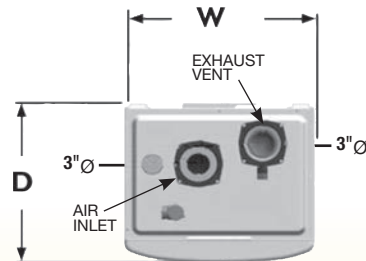
Mascot FT BOILER OR COMBINATION—WALL MOUNTED

10



The Mascot FT is a wall mounted 80 to 199 MBH space heating boiler. The larger sizes (120 - 199 MBH) are also offered as combination boilers to meet all of the heating and hot water needs of the smallest to largest homes. Powering the Mascot FT is an advanced fire tube heat exchanger that uses the latest in high efficiency, heating tube technology.

- 95% AFUE condensing efficiency
- Low pressure drop, fire tube heat exchanger design
- Modulation down to 20% of full fire (5:1 turndown)
- Low NOx system exceeds the most stringent regulations for air quality – 17ppm NOx
- Stainless steel heat exchanger with finned aluminum core fire tubes, welded construction
- Integrated stainless steel DHW indirect storage tank with priority for on-demand hot water
- Built-in condensate trap and drain, priming not required
- Blocked condensate pressure switch
- Electronic PID modulating control
- Direct spark ignition
- Customizable Freeze Protection
- Anti-short cycling
- Large user-interface and display
- Accepts external (0-10VDC) modulation signal
- Gas leak detection
- Outdoor reset (sensor included)
- Natural or Propane Gas use.
- Warranties: 10-Year limited* + 5-Year parts



Exhaust Vent and Air Inlet Collars fit standard 3" PVC piping.



Heating Only



Combi



*When used in a residential application

Mascot FT SPECIFICATIONS

Model	Input		Output		AFUE%	Gas Conn. Size	Heating Supply & Return Conn. Size	Shipping Weight	
	MBTU/h	kw	MBTU/h	kw				lbs.	kg
MFT080	80	23	74.4	22	95	¾ NPT	1 NPT	102	46
MFT100	100	29	93.0	27	95	¾ NPT	1 NPT	102	46
MFT120*	120	35	111.6	33	95	¾ NPT	1 NPT	108	49
MFT140*	140	41	130.2	39	95	¾ NPT	1 NPT	108	49
MFT175*	175	51	162.8	48	94.5	¾ NPT	1 NPT	118	54
MFT199*	199	58	189.0	55	94.5	¾ NPT	1 NPT	118	54

* Available as Boilers and as Combination Boilers

Notes:

1. For other boiler ratings:

$$\text{Boiler Horsepower: HP} = \frac{\text{Output}}{33,475} \quad \text{Radiation Surface: EDR sq.ft.} = \frac{\text{Output}}{150}$$

Combi Model	35°F Rise		45°F Rise		77°F Rise		Stored DHW		DHW Conn. Size
	GPM	l/m	GPM	l/m	GPM	l/m	Gallons	liters	
MFT120	5.9	22	4.8	18	3.0	11	0.5	1.9	¾ NPT
MFT140	7.1	27	5.5	21	3.5	13	0.5	1.9	¾ NPT
MFT175	8.7	33	6.9	26	4.3	16	0.5	1.9	¾ NPT
MFT199	10.0	38	8.0	30	4.7	18	0.5	1.9	¾ NPT

Combination boilers have a shipping weight of 10 lbs. more than the Heating Only unit of the same size.

Dimensions

Model	W		H		D	
	in.	cm	in.	cm	in.	cm
MFT080	17.3	44	29	74	14.9	38
MFT100	17.3	44	29	74	14.9	38
MFT120	17.3	44	29	74	14.9	38
MFT140	17.3	44	29	74	14.9	38
MFT175	19.6	50	32	81	16.2	41
MFT199	19.6	50	32	81	16.2	41

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

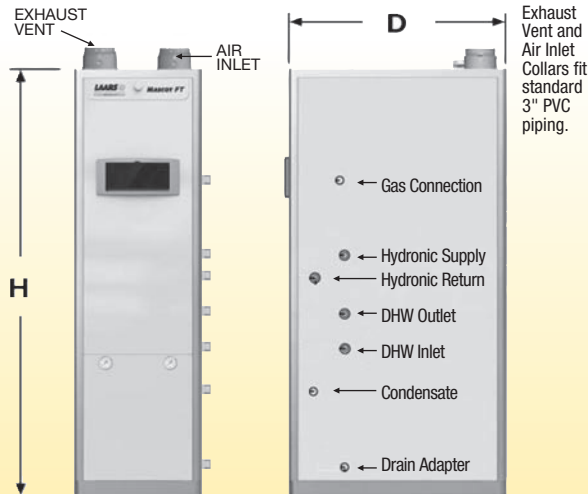
Mascot FT COMBI BOILER—FLOOR STANDING



The Mascot FT is a combination (heating and domestic hot water) boiler packed with features that easily satisfy the space heating and hot water needs of the modern home. Powering the Mascot FT is an advanced fire tube heat exchanger that uses the latest in high efficiency, heating tube technology.

- 95% AFUE condensing efficiency
- Integrated stainless steel DHW indirect 3 gallon storage tank with priority for on-demand hot water
- Low pressure drop, fire tube heat exchanger design
- Modulation down to 20% of full fire (5:1 turndown)
- Low NOx system exceeds the most stringent regulations for air quality – 17ppm NOx
- Stainless steel heat exchanger with finned aluminum core fire tubes, welded construction
- Built-in condensate trap and drain, priming not required
- Blocked condensate pressure switch
- Electronic PID modulating control
- Direct spark ignition
- Customizable Freeze Protection
- Anti-short cycling
- Large user-interface and display
- Accepts external (0-10VDC) modulation signal
- Gas leak detection
- Outdoor reset (sensor included)
- Natural or Propane Gas use.
- Warranties: 10-Year limited* + 5-Year parts

*When used in a residential application



MASCOT FT SPECIFICATIONS

Model	Input		Output		AFUE%	Gas Conn. Size	Heating Supply & Return Conn. Size	DHW Conn. Size	Shipping Weight	
	MBTU/h	kW	MBTU/h	kW		in.	in.	in.	lbs.	kg
MFTCF140	140	41	132	39	95%	1/2 NPT	1 NPT	3/4 NPT	170	77
MFTCF199	199	58	187	55	95%	1/2 NPT	1 NPT	3/4 NPT	180	82

Notes:

1. For other boiler ratings:

$$\text{Boiler Horsepower: HP} = \frac{\text{Output}}{33,475} \quad \text{Radiation Surface: EDR sq.ft.} = \frac{\text{Output}}{150}$$

Combi Model	35°F Rise		45°F Rise		77°F Rise		Stored DHW	
	GPM	l/m	GPM	l/m	GPM	l/m	Gallons	liters
MFTCF140	7.1	27	5.5	21	3.5	13	3.0	11.4
MFTCF199	10	38	8	30	4.7	18	3.0	11.4

Dimensions

Model	W in. cm	H in. cm	D in. cm
MFTCF140 and 199	15.7 40	52.5 133	26.8 68

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

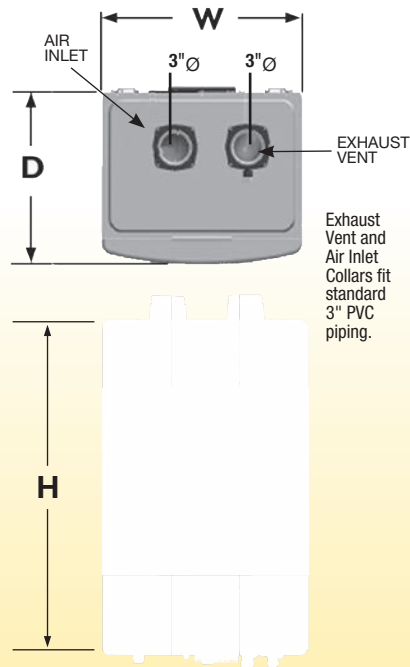
Mascot FT HYBRID WATER HEATER—WALL MOUNTED



The Mascot FT wall-mounted hybrid water heater is packed with features that easily satisfy hot water needs of the modern home. Powering the Mascot FT hybrid is an advanced fire tube heat exchanger that has 3.5 gallons of hot water available at all times.

- 95% thermal efficiency
- 5:1 Modulation
- Environmentally Friendly
- Low NOx emissions
- Vent up to 100 ft in PVC, CPVC & Polypropylene
- Natural Gas and Propane Models
- Easy-to-use dial and push button input system with large backlit display
- Functions are clearly displayed for quick set-up and diagnostics
- Quick access buttons for temperature control and status functions
- Rebate Eligible - check federal, state and local rebates
- Clean Burning Burner
- High Performance Blower
- Modulating Gas Valve
- Advanced Fire Tube Heat Exchanger
- Laars Integrated Control
- Warranties: 12-Year limited* + 5-Year parts

*When used in a residential application



MASCOT FT HYBRID SPECIFICATIONS

Model	Input		Output		Efficiency	Gas Conn. Size	Heating Supply & Return Conn. Size	DHW Conn. Size	Shipping Weight	
	MBTU/h	kW	MBTU/h	kW		in.	in.	in.	lbs.	kg
MFTWW150	150	44	143	42	95%	¾ NPT	¾ NPT	¾ NPT	90	40
MFTWW199	190	58	183	56	95%	¾ NPT	¾ NPT	¾ NPT	110	50

Notes:

1. For other boiler ratings:

$$\text{Boiler Horsepower: HP} = \frac{\text{Output}}{33,475} \quad \text{Radiation Surface: EDR sq.ft.} = \frac{\text{Output}}{150}$$

Model	35°F Rise		45°F Rise		77°F Rise		Stored DHW	
	GPM	l/m	GPM	l/m	GPM	l/m	Gallons	liters
MFTWW150	7.8	30	6.0	22	3.5	13	3.5	13.3
MFTWW199	11.2	42	8.5	32	5.0	19	3.5	13.3

Dimensions

Model	W		H		D	
	in.	cm	in.	cm	in.	cm
MFTWW150	19.7	50	32	81	16.3	41
MFTWW199	19.7	50	32	81	16.3	41

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

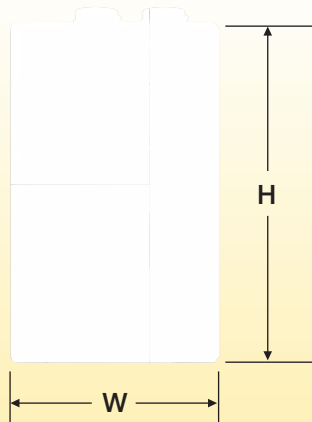
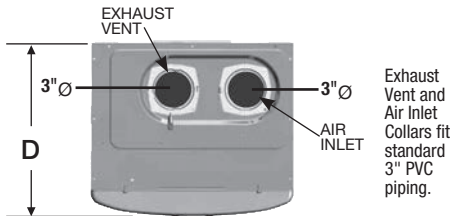
MASCOT ST TANKLESS WATER HEATER—WALL MOUNTED



The Mascot ST is a wall mounted condensing tankless water heater packed with features. An advanced stainless steel condensing heat exchanger using the latest in combustion technology powers the Mascot ST. The heat transfer tubes are constructed with corrosion-resistant stainless steel and are precisely aligned to maximize heat transfer.

- 0.96 Energy Factor
- 10:1 Modulation
- Environmentally Friendly
- Low NOx Emissions
- Reliable Stainless Steel Condensing Heat Exchanger
- Vent up to 100ft in PVC, CPVC & Polypropylene
- Natural Gas & Propane Models
- Easy-to-use dial and push button input system with large backlit display
- Functions are clearly displayed for quick setup and diagnostics
- Quick access buttons for temperature control and status functions
- Rebate Eligible - check federal, state and local rebates
- High Performance Blower
- Automatic Air Gas Mixer
- Advanced Condensing Heat Exchanger
- Laars Integrated Control
- Clean Burning Burner
- Warranties: 12-Year limited* + 5-Year parts

*When used in a residential application



Mascot *ST* SPECIFICATIONS

Model	Input		Output		Efficiency (Energy Factor)	Gas Conn. Size	Heating Supply & Return Conn. Size	DHW Conn. Size	Shipping Weight	
	MBTU/h	<i>kW</i>	MBTU/h	<i>kW</i>		in.	in.	in.	lbs.	<i>kg</i>
MSTWW150	150	44	143	42	0.96	3/4 NPT	3/4 NPT	3/4 NPT	100	45
MSTWW199	190	58	183	56	0.96	3/4 NPT	3/4 NPT	3/4 NPT	100	45

Notes:

1. For other boiler ratings:

$$\text{Boiler Horsepower: HP} = \frac{\text{Output}}{33,475} \quad \text{Radiation Surface: EDR sq.ft.} = \frac{\text{Output}}{150}$$

Model	35°F Rise		45°F Rise		77°F Rise		Stored DHW	
	GPM	<i>l/m</i>	GPM	<i>l/m</i>	GPM	<i>l/m</i>	Gallons	<i>liters</i>
MSTWW150	7.8	30	6.0	22	3.5	13	1.0	3.8
MSTWW199	11.0	42	8.5	32	5.0	19	1.0	3.8

Dimensions

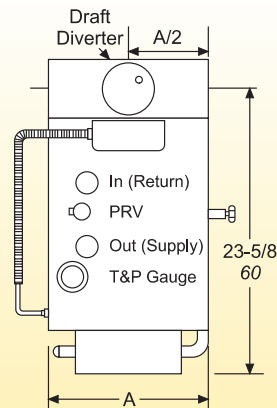
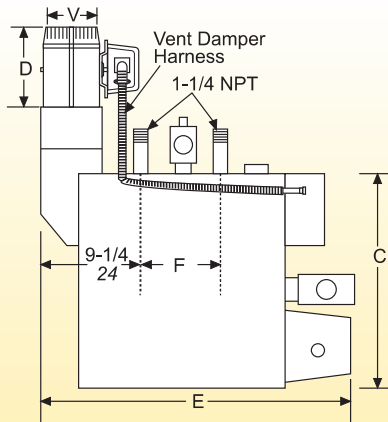
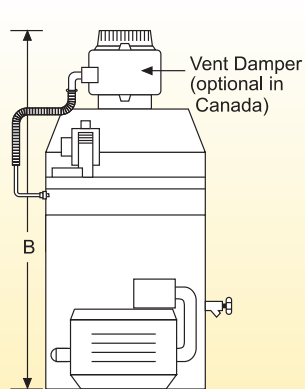
Model	W		H		D	
	in.	<i>cm</i>	in.	<i>cm</i>	in.	<i>cm</i>
MSTWW150	17.3	44	27.6	70	14.8	36
MSTWW199	17.3	44	27.6	70	14.8	36

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

MINI-THERM® JVS BOILER

The Mini-Therm® JVS boilers are well-known for economy, durability, and the capacity to keep the largest homes comfortable on the coldest days.

- Spark ignition
- Efficient up to 85% AFUE
- Built-in draft diverter and automatic vent
- Low-mass heat exchanger results in super-quick heating response
- Very compact to save space
- Easy to install, reliable, and proven in the field over many years
- Has a unique hybrid and two-pass heat exchanger design
- 20-Year pro-rated heat exchanger warranty



Dimensions shown in inches *cm*



MINI-THERM® JVS SPECIFICATIONS

Model	Input		Heat Capacity MBTU/h		Heat Capacity kW		AFUE %	
	MBTU/h	kW	JVS		JVS		JVS	
			Natural	Propane	Natural	Propane	Natural	Propane
JVS050	50	14.7	43	43	12.6	12.6	85.0	85.4
JVS075	75	22.0	64	64	18.8	18.8	85.0	85.2
JVS100	100	29.3	85	85	24.9	24.9	85.0	85.0
JVS125	125	36.6	106	106	31.1	31.1	85.0	85.0
JVS160	160	46.9	136	136	39.8	39.8	85.0	85.0
JVS225	225	65.9	191	190	56.0	55.7	85.0	85.0

Model	Dimensions												Water Conn. in.	Gas Conn. in.	Approx Weight lbs. kg			
	A		B		C		D		E		F						V	
	Inches	cm	Inches	cm	Inches	cm	Inches	cm	Inches	cm	Inches	cm					Inches	cm
JVS050	13 ³ / ₈	34	27 ³ / ₄	71	23 ⁵ / ₈	60	6	15	26 ¹ / ₂	67	7	18	4	10	1 ¹ / ₄	½	120	54
JVS075	13 ³ / ₈	34	27 ³ / ₄	71	24 ¹ / ₈	61	6	15	27 ¹ / ₂	70	7	18	5	13	1 ¹ / ₄	½	126	57
JVS100	16 ⁷ / ₈	43	28 ³ / ₄	73	24 ¹ / ₈	61	6	15	27 ¹ / ₂	70	7	18	5	13	1 ¹ / ₄	½	134	61
JVS125	16 ⁷ / ₈	43	28 ³ / ₄	73	23 ⁵ / ₈	60	6	15	27 ¹ / ₂	70	7	18	6	15	1 ¹ / ₄	½	138	63
JVS160	20 ³ / ₈	52	28 ³ / ₄	73	23 ⁵ / ₈	60	6	15	27 ¹ / ₂	70	7	18	6	15	1 ¹ / ₄	½	164	74
JVS225	20 ⁵ / ₈	65	31½	80	23¼	59	6¾	17	27½	70	8	20	7	18	1¼	¾*	181	82

*JVS 225 uses 1/2" NPT gas connection for propane

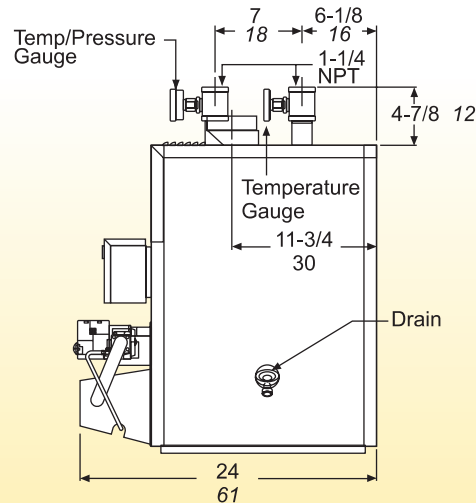
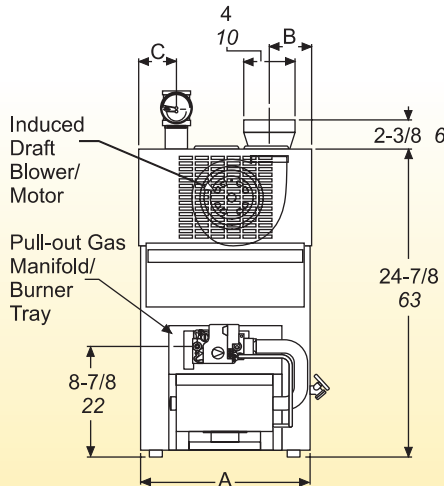
For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

MINI-THERM® JVH BOILER



Ideal for new homes or replacement boilers, the Mini-Therm® JVH is efficient, saving energy and money. The JVH boiler is equipped with a draft blower that permits side-wall or chimney venting and uses H.S.I. (hot surface ignition) to operate all six sizes.

- Hot surface ignition system
- Up to 83% AFUE
- Single-stage on/off firing mode
- Equipped with a blower
- Can be side-wall or chimney vented
- Compact models offer small footprint
- Easy to install, operate and maintain
- Has a unique hybrid and 2 pass heat exchanger design
- 20-Year pro-rated heat exchanger warranty



Dimensions shown in inches *cm*

MINI-THERM® JVH SPECIFICATIONS

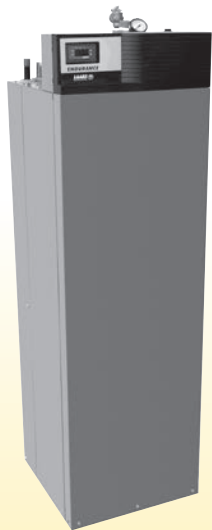
Model	Input		Heat Capacity MBTU/h		Heat Capacity kW		AFUE %	
	MBTU/h	kW	Natural	Propane	Natural	Propane	Natural	Propane
JVH050	50	14.7	41	42	12.0	12.3	83.4	84.0
JVH075	75	22.0	62	63	18.2	18.5	83.2	84.0
JVH100	100	29.3	82	83	24.0	24.3	82.4	84.0
JVH125	125	36.6	102	103	29.9	30.2	82.4	82.8
JVH160	160	46.9	131	132	38.4	38.7	82.3	82.4
JVH225	225	65.9	184	187	53.9	54.8	82.2	83.2

Model	Dimensions						Water Connection in.	Gas Connection in.	Approx Weight	
	A		B		C				lbs.	kg
	Inches	cm	Inches	cm	Inches	cm				
JVH050	13 ³ / ₈	34	3 ¹ / ₈	8	2 ⁷ / ₈	7	1 ¹ / ₄	1/2	120	54
JVH075	13 ³ / ₈	34	2 ¹ / ₄	6	2	5	1 ¹ / ₄	1/2	126	57
JVH100	16 ⁷ / ₈	43	5 ³ / ₄	15	2 ⁷ / ₈	7	1 ¹ / ₄	1/2	134	61
JVH125	16 ⁷ / ₈	43	5 ¹ / ₂	14	2	5	1 ¹ / ₄	1/2	138	63
JVH160	20 ³ / ₈	52	7 ¹ / ₄	19	2	5	1 ¹ / ₄	1/2	164	74
JVH225	20 ⁵ / ₈	65	10	26	2	5	1 ¹ / ₄	3/4*	181	82

*JVH 225 uses 1/2" NPT gas connections for propane.

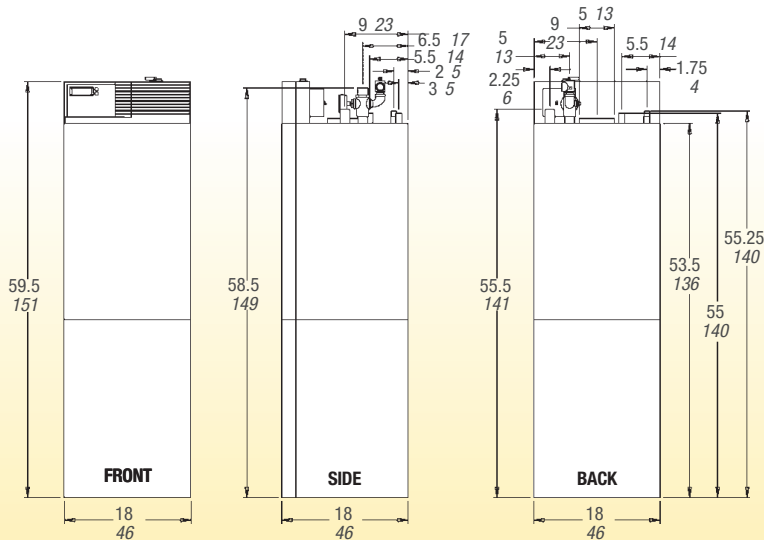
For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

ENDURANCE COMBINATION BOILER/WATER HEATER



Endurance is a gas-fired, fully modulating, sealed combustion combination boiler/water heater offered in two sizes: the 110 modulates from 61,800 to 108,200 BTU/hr., and the 175 modulates from 102,900 to 175,300 BTU/hr.

- 85%+ A.F.U.E
- Features a 20-gallon tank, heat exchanger, and low limit control
- Design certified and tested to ANSI standard Z21.13
- Designed and constructed in accordance with the ASME Boiler & Pressure Vessel Code, Sections II, IV, and IX
- Maximum working pressure — water 30 psi, ASME rated
- Hydrostatic test pressure at factory — 60 psi
- Natural or propane gas
- Minimum gas supply pressure — 4" w.c.
- Maximum gas supply pressure — 13" w.c.
- Sealed stainless steel combustion chamber
- Hot surface ignition
- Automatic burner modulation from 57% to full fire
- NO_x levels less than 25ppm
- Venting – Direct vent (sealed combustion with ducted combustion air in concentric vent) or Category IV
- Warranties: 20-Year heat exchanger + 10-Year tank warranty + 1-Year parts



Dimensions shown in **inches cm**



Low Limit Control
Not rated 272

ENDURANCE SPECIFICATIONS

Model	Input		Output		AFUE%	Continuous GPH @ 100°F Rise	Intermittent DHW Output @ 77°F Rise	NOx Levels ppm
	MBTU/h	kW	MBTU/h	kW				
EBP 110	61.8 to 108.2	18.1 to 31.7	53.7 to 94	5.7 to 27.5	85.5	114	4 gpm	<25
EBP 175	102.9 to 175.3	30.1 to 51.4	88.6 to 151	25.4 to 44.2	86.1	183	5 gpm	<25

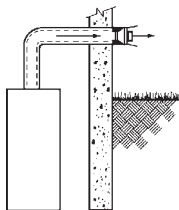
Appliance Surface	Minimum Clearance from Combustible Material		Suggested Serviceability Clearance	
	Inches	mm	Inches	mm
Back	1	25		
Left Side	1	25	6	152
Right Side	1	25	6	152
Front	1	25	18	457
Top (Alcove Install)	1	25		
Top (Closet Install)*	22	559		
Vent: Concentric, Direct	0	0		
Vent: Category IV	3	76		

*Minimum closet height 6'9" (206cm)

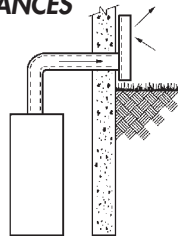
Dimensions shown in **inches mm**

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

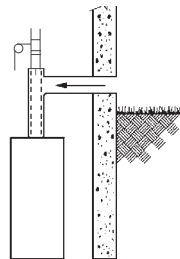
MINIMUM CLEARANCES



- Direct Vent
SEALED COMBUSTION**
1. Utilizes outside air for combustion.
 2. Horizontal vent lengths up to 15' with three 90° bends.



- Optional Vent Terminal-Direct Vent:**
1. For vent locations less than 16½" above grade.



- Alternative Vent**
1. Horizontal and vertical venting.
 2. Up to 50 equivalent feet.
 3. Can take combustion air from outside or from inside space.
 4. Vent material must meet code UL1738 (US) or ULC636 (Canada).

LAARS® COMBI HEAT™ WATER HEATERS

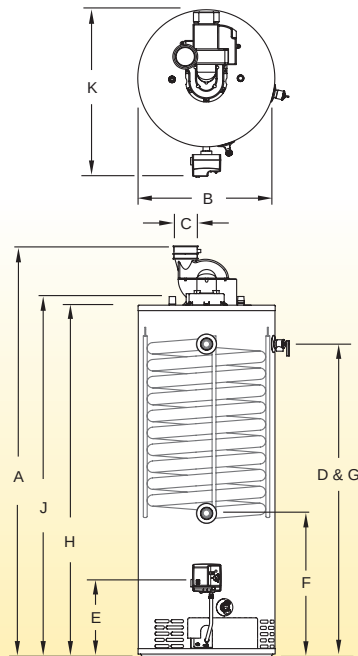


Laars® Combi Heat™ provides home space heating and potable hot water from a single energy-saving source. Combi Heat™ features a glass-coated, double-wall heat exchanger coil and is available in capacities of 50 and 75-gallons.

- Heat Exchanger is double wall, 1-1/2" O.D. glass coated steel coil
- Double wall coil ensures separation of potable water and heating fluid
- Up to 10 GPM flow, with less than 5 ft. of heat exchanger head loss
- Exclusive enamel tank and heat exchanger lining provides superior protection
- Fully Automatic Controls with built-in energy cut-off switch
- Built-in gas pressure regulation
- Heavy gauge steel automatically formed, rolled, and welded
- Thermostatic Mixing Valve supplied with unit
- Protective aluminum anode rod helps prevent corrosion
- Flue baffle maximizes heat absorption in tank and retards standby heat loss
- Factory-installed water inlet sediment reducing device prevents build up in tank
- 3/4" NPT factory-installed true dielectric waterway fittings to extend water heater life
- 2" Non-CFC foam insulation
- T&P Relief Valve installed
- Brass Drain Valve
- Design-Certified by CSA International
- 50-gallon model is FVIR compliant
- Warranties: 10-Year heat exchanger + 6-Year parts



Low Lead Content
NSF/ANSI 372



LAARS® COMBI HEAT™ SPECIFICATIONS

Model*	Capacity		Nat. MBTU/h Input	LP. MBTU/h Input	Recovery 90°F Rise*				A Floor to Vent Conn. in.	B Jacket Dia. in.	C Vent Size in.	D Floor to T&P Conn. in.	E Floor to Gas Conn. in.	F Floor to Exchanger Inlet in.	G Floor to Exchanger Outlet in.	H Floor to Heater Top in.	J Floor to Water Conn. in.	K Depth in.	Approx. Shipping Weight lbs
	U.S. Gal.	Imp. Gal.			Nat. U.S. Gal.	Nat. Imp. GPH	Nat. U.S. GPH	LP Imp. GPH											
LCH-504T10FBN	45	38	65	61	70	59	66	55	59 ¹ / ₄	22	4	50	13	28	50	56 ³ / ₈	57	24 ¹ / ₄	238
LCH-75T10BN	72	61	76	76	81	70	81	70	63 ³ / ₄	26	4	53	16	30 ⁷ / ₈	53	60 ¹ / ₄	61 ¹ / ₄	28 ¹ / ₂	328

Model	Capacity		Nat. kW Input	LP. kW Input	Recovery 50°C Rise		A Floor to Vent Conn. cm.	B Jacket Dia. cm.	C Vent Size cm.	D Floor to T&P Conn. cm.	E Floor to Gas Conn. cm.	F Floor to Exchanger Inlet cm.	G Floor to Exchanger Outlet cm.	H Floor to Heater Top cm.	J Floor to Water Conn. cm.	K Depth cm.	Approx. Shipping Weight kg
	Liters				Nat. Liters/ Hour	LP Liters/ Hour											
LCH-504T10FBN	170		19.1	17.9	265	250	150	56	10	127	33	71	127	143	145	62	108
LCH-75T10BN	272		22.3	22.3	317	317	177	66	10	135	41	78	135	153	156	72	149

*All propane heaters are equipped with a cast iron burner. To order a propane heater change suffix from "BN" to "CX"

Dimensions shown in **inches** *cm*

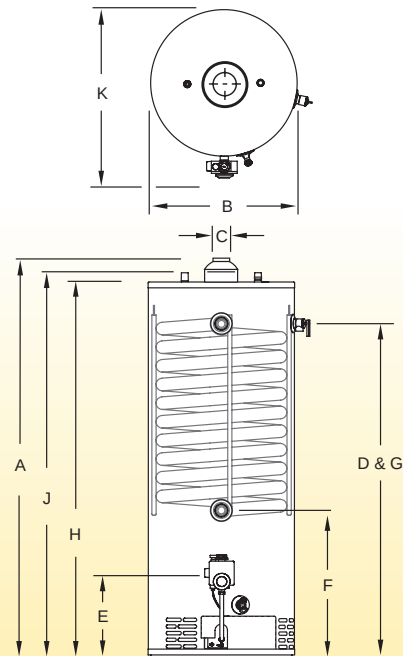
For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

LAARS® COMBI HEAT™ PV WATER HEATERS



Combi Heat™ PV (power-vented) water heaters feature a glass-coated, double-wall heat exchanger coil. These combination water and space heating products provide home space heating and potable hot water from a single energy-saving source.

- Heat Exchanger is double wall, 1-1/2" O.D. glass-coated steel coil
- Double wall coil ensures separation of potable water and heating fluid
- Powerful and quiet blower motor has high torque to minimize venting issues
- Spark to pilot ignition system
- Up to 10 GPM flow, with less than 5 ft. of heat exchanger head loss
- Exclusive enamel tank and heat exchanger lining provides superior protection
- Electronic Gas valve offers precise temperature control for higher first hour delivery
- Horizontal and vertical venting
- Electronic control LED display to aid in start-up and diagnostics
- Built-in gas pressure regulation
- Heavy gauge steel automatically formed, rolled, and welded
- Thermostatic Mixing Valve supplied with unit
- Protective aluminum anode rod helps prevent corrosion
- Flue baffle maximizes heat absorption in tank and retards standby heat loss
- Factory-installed water inlet sediment reducing device prevents build-up in tank
- 3/4" NPT factory-installed true dielectric waterway fittings to extend water heater life
- 2" Non-CFC foam insulation
- T&P Relief Valve installed
- Brass Drain Valve
- Design-Certified by CSA International
- 50-gallon model is FVIR compliant
- Warranties: 10-Year heat exchanger + 6-Year parts



LAARS® COMBI HEAT™ PV SPECIFICATIONS

Model*	Capacity		Nat. MBTU/h Input	LP. MBTU/h Input	Recovery 90°F Rise				A Floor to Vent Conn. in.	B Jacket Dia. in.	C Vent Size in.	D Floor to T&P Conn. in.	E Floor to Gas Conn. in.	F Floor to Exchanger Inlet in.	G Floor to Exchanger Outlet in.	H Floor to Heater Top in.	J Floor to Water Conn. in.	K Depth in.	Approx. Shipping Weight lbs
	U.S. Gal.	Imp. Gal.			Nat. U.S. Gal.	Nat. Imp. GPH	Nat. U.S. GPH	LP Imp. GPH											
LCH-TW50T10FBN	45	38	67	60	72	60	65	54	65 ¹ / ₂	22	3	50 ¹ / ₈	11 ³ / ₄	28	50	56 ³ / ₈	57 ³ / ₄	26 ¹ / ₄	245
LCH-TW75T10FBN	72	61	76	75	82	69	81	67	68 ³ / ₈	26	3	53	15	30 ⁷ / ₈	53	64 ¹ / ₄	61 ¹ / ₂	31	335

Model	Capacity		Nat. kW Input	LP. kW Input	Recovery 50°C Rise		A Floor to Vent Conn. cm.	B Jacket Dia. cm.	C Vent Size cm.	D Floor to T&P Conn. cm..	E Floor to Gas Conn. cm.	F Floor to Exchanger Inlet cm.	G Floor to Exchanger Outlet cm.	H Floor to Heater Top cm.	J Floor to Water Conn. cm.	K Depth cm.	Approx. Shipping Weight kg
	Liters				Nat. Liters/ Hour	LP Liters/ Hour											
LCH-TW50T10PBN	170		19.6	17.5	272	246	167	56	8	127	30	71	127	143	147	68	111
LCH-TW75T10BN	270		22.3	22.1	310	306	174	66	8	135	38	78	135	153	156	79	152

*All propane heaters are equipped with a cast iron burner. To order a propane heater change suffix from "BN" to "CX"

Dimensions shown in **inches** *cm*

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

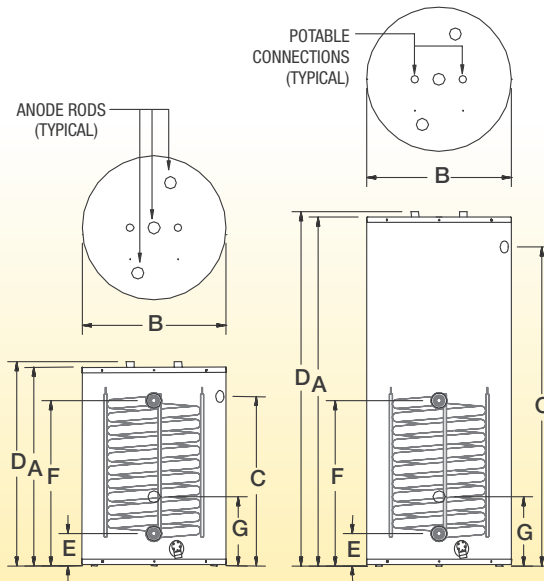
LAARS-Stor® RESIDENTIAL SINGLE-WALL INDIRECT WATER HEATER

28



The ingenious Laars-Stor® single wall was engineered to provide the lowest pressure drop, the highest hot water output, and the highest amount of effective actual heat transfer area of any indirect fired water heater in the industry.

- Single-Wall 1 1/2" O.D. enamel-coated heat exchanger (carbon steel coil)
- Coil with heat transfer area of 14.2 sq. ft. and a stored water volume of 2.7 Gal.
- Factory-installed sediment-reducing device helps to minimize build-up in tank
- Exclusive enamel lining formula for tank and heat exchanger provides superior protection
- Fast-acting Honeywell immersion aquastat for automatic temperature control
- 1" NPT supply and return connections are located on front of water heater
- 3/4" NPT factory-installed true dielectric fittings extend water heater life
- Three protective aluminum anode rods provide added protection
- T&P relief valve included
- Low restriction brass drain valve
- 2" Non-CFC foam insulation
- Warranties: 5-Year tank and 1 Year parts



LAARS-STOR® RESIDENTIAL SINGLE WALL SPECIFICATIONS

Model	Capacity			A		B		C		D		E		F		G		Shipping Weight	
	Imp. Gal.	U.S. Gal.	Liters	Height Floor to Heater Top in.	cm.	Jacket Diameter in.	cm.	Height Floor to T&P Conn. in.	cm.	Height Floor to Water Conn. in.	cm.	Height Floor to Exchanger Outlet in.	cm.	Height Floor to Exchanger Inlet in.	cm.	Height Floor to Aquastat in.	cm.	Approx. lbs.	kg.
LS-SW-2-30-L	25	30	114	33 ⁵ / ₈	85	22	56	28 ¹ / ₄	72	34 ³ / ₈	87	5 ³ / ₈	14	27 ¹ / ₂	70	11 ¹ / ₂	30	140	64
LS-SW-2-40R-L	32	38	143	41 ¹ / ₈	104	22	56	34 ³ / ₈	87	41 ⁷ / ₈	106	5 ³ / ₈	14	27 ¹ / ₂	70	11 ¹ / ₂	30	172	77
LS-SW-2-50R-L	40	48	182	46 ¹ / ₄	112	22	56	40 ¹ / ₈	102	47	119	5 ³ / ₈	14	27 ¹ / ₂	70	11 ¹ / ₂	30	180	82
LS-SW-2-65-L	50	60	227	59 ¹ / ₄	150	22	56	53 ¹ / ₈	135	60	152	5 ³ / ₈	14	27 ¹ / ₂	70	11 ¹ / ₂	30	196	89
LS-SW-2-80-L	62	75	284	59	150	24	61	52 ⁷ / ₈	135	59 ³ / ₄	152	5 ³ / ₈	14	27 ¹ / ₂	70	11 ¹ / ₂	30	224	102
LS-SW-2-120-L	97	116	439	62 ¹ / ₂	159	28 ¹ / ₄	72	55 ³ / ₄	142	63 ¹ / ₄	161	6 ³ / ₈	16	28 ¹ / ₂	72	11 ¹ / ₂	30	355	161

Meets or exceeds the insulating standards established under ASHRAE Standard 90.1b (current edition).

General: All units are certified at 300 psi (2068 kPa) test pressure and 150 psi working pressure (1034 kPa). All potable water connections are 3/4" (19mm) NPT on 8" (203mm) centers.

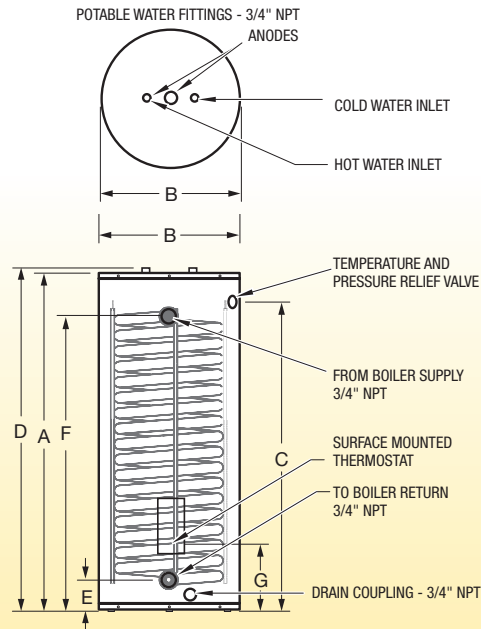
Dimensions shown in **inches** *cm*

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

LAARS-Stor® COMMERCIAL SINGLE-WALL INDIRECT WATER HEATER 30

Laars-Stor® single wall commercial models incorporate a super-efficient heat exchanger. Made of 1.5" diameter carbon steel tubing and coated with a glass-lining, it has a total heat surface area of 27.2 square feet.

- Single-Wall 1-1/2" O.D. enamel-coated heat exchanger (carbon steel coil)
- Coil with heat transfer area of 27.2 sq. ft. has a stored water volume of 5.0 Gal.
- Factory-installed sediment-reducing device helps to minimize build-up in tank
- Exclusive enamel lining formula for tank and heat exchanger provides superior protection
- Fast-acting Honeywell immersion aquastat for automatic temperature control
- 1" NPT supply and return connections are located on front of water heater
- 1" NPT factory-installed true dielectric fittings extend water heater life
- Three protective aluminum anode rods provide added protection
- T&P relief valve included
- Low restriction brass drain valve
- 2" Non-CFC foam insulation
- Warranties: 5-Year tank and 1-Year parts



Dimensions
shown in inches



LAARS-STOR® COMMERCIAL SINGLE WALL SPECIFICATIONS

Model	Capacity		A Floor to Heater Top	B Jacket Dia.	C Floor to T&P Conn.	D Floor to Water Conn.	E Floor to Exchanger Outlet	F Floor to Exchanger Inlet	G Floor to Aquastat	Approx. Shipping Weight
	U.S. Gal.	Imp. Gal.	in.	in.	in.	in.	in.	in.	in.	lbs
LS-SW65C5	58	48	59 ¹ / ₄	22	53 ¹ / ₈	60	5 ³ / ₈	47 ³ / ₄	11 ¹ / ₂	273
LS-SW80C5	73	61	59	24	52 ⁷ / ₈	59 ³ / ₄	5 ³ / ₈	47 ³ / ₄	11 ¹ / ₂	300
LS-SW120C5	114	95	62 ¹ / ₂	28 ¹ / ₄	55 ³ / ₄	63 ¹ / ₄	6 ³ / ₈	48 ³ / ₄	11 ¹ / ₂	422

Model	Capacity		A Floor to Heater Top	B Jacket Dia.	C Floor to T&P Conn.	D Floor to Water Conn.	E Floor to Exchanger Outlet	F Floor to Exchanger Inlet	G Floor to Aquastat	Approx. Shipping Weight
	Liters		mm.	mm.	mm.	mm.	mm.	mm.	mm.	kg
LS-SW65C5	220		1505	559	1349	1524	137	1213	292	124
LS-SW80C5	276		1499	610	1343	1518	137	1213	292	136
LS-SW120C5	431		1588	718	1416	1607	162	1238	292	191

Dimensions shown in **inches** *mm*

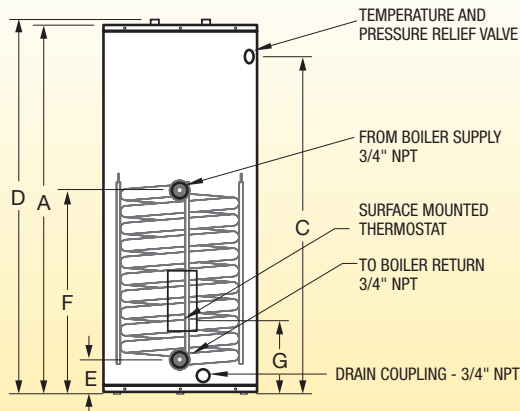
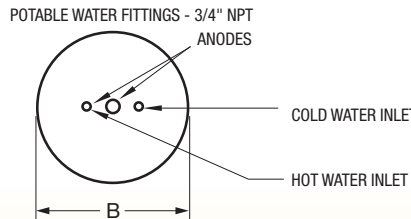
For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

LAARS-Stor2™ RESIDENTIAL DOUBLE-WALL INDIRECT WATER HEATER 32



The Laars-Stor2™ features a patented double-wall carbon steel heat exchanger coil coated with a glass-lining for corrosion resistance and long life. The Laars-Stor2™ supplies a first hour rating of 120 to 158 gallons per hour.

- Double wall 1-1/2" O.D. glass-coated steel coil heat exchanger with positive leak path
- Low Heat Exchanger Head Loss — up to 10 GPM flow with less than 5 ft. of head loss
- Factory-installed sediment-reducing device helps to minimize build-up in tank
- Heavy gauge steel tank automatically formed, rolled, and welded
- Exclusive enamel lining formula provides superior tank protection
- Fast-acting surface-mount thermostat for automatic temperature control
- 3/4" NPT supply and return connections are located on front of water heater
- 3/4" NPT factory-installed true dielectric fittings extend water heater life
- Two protective aluminum anode rods provide added protection
- Standby heat loss is less than 1/2°F per hour (ASHRAE 90.1b current standard)
- T&P relief valve included
- Low restriction brass drain valve
- 2" Non-CFC foam insulation
- Warranties: Limited lifetime tank and heat exchanger + 6-Year limited parts



Dimensions shown
in inches

LAARS-STOR2™ RESIDENTIAL DOUBLE WALL SPECIFICATIONS

Model	Capacity		A Floor to Heater Top	B Jacket Dia.	C Floor to T&P Conn.	D Floor to Water Conn.	E Floor to Boiler Outlet	F Floor to Boiler Inlet	G Floor to Thermostat	Approx. Shipping Weight
	U.S. Gal.	Imp. Gal.	in.	in.	in.	in.	in.	in.	in.	lbs
LS-DW240L-464	38	32	41	22	34 ³ / ₈	41 ⁷ / ₈	5 ³ / ₈	27 ¹ / ₂	11 ¹ / ₂	170
LS-DW250L-464	48	40	46 ¹ / ₄	22	40 ¹ / ₈	47 ¹ / ₄	5 ³ / ₈	27 ¹ / ₂	11 ¹ / ₂	180
LS-DW265L-464	64	54	59	22	53 ¹ / ₈	60	5 ³ / ₈	27 ¹ / ₂	11 ¹ / ₂	196
LS-DW280L-464	75	63	59	24	52 ⁷ / ₈	59 ³ / ₄	5 ³ / ₈	27 ¹ / ₂	11 ¹ / ₂	224

Model	Capacity		A Floor to Heater Top	B Jacket Dia.	C Floor to T&P Conn.	D Floor to Water Conn.	E Floor to Boiler Outlet	F Floor to Boiler Inlet	G Floor to Thermostat	Approx. Shipping Weight
	Liters		mm.	mm.	mm.	mm.	mm.	mm.	mm.	kg
LS-DW240L-464	144		1045	559	873	1083	137	699	292	76
LS-DW250L-464	182		1175	559	1019	1200	137	699	292	81
LS-DW265L-464	242		1505	559	1349	1527	137	699	292	86
LS-DW280L-464	284		1505	610	1343	1518	137	699	2922	102

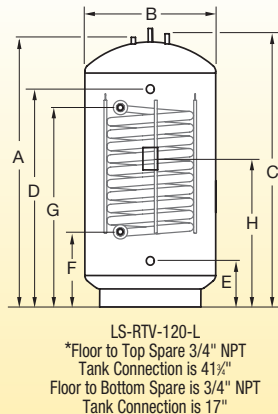
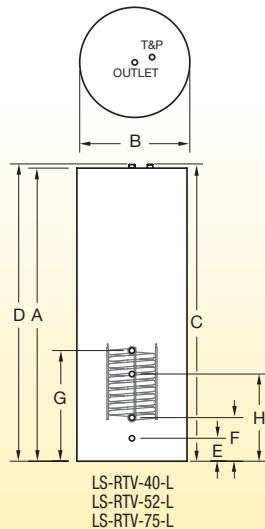
Dimensions shown in **inches** mm

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

LAARS-Stor[®] SS STAINLESS STEEL INDIRECT WATER HEATER

The Laars-Stor[®] SS utilizes a superior grade of stainless steel for the tank and the heat transfer coil. This construction is lightweight and also resists pitting while minimizing intergranular and stress corrosion. The Laars-Stor[®] SS models provide superior thermal conductivity for higher efficiency.

- Stainless steel tank and heat exchanger made from chromium molybdenum — titanium ferritic 444 stainless steel alloy
- 3/4" NPT female supply and return connections on front of water heater
- 1" NPT connections on LS-RTV-120-L
- Standby Heat loss less than 1/2°F per hour
- Brass Drain/Return Valve
- T&P Relief Valve Opening — all models have special tapping on top of tank.
- Form fitted and molded CFC-Free Polystyrene Insulation
- Steel Jacket
- Warranties: Limited lifetime tank and heat exchanger + 1-Year limited parts*



*When used in a residential application.

Dimensions shown in inches

LAARS-STOR[®] SS SPECIFICATIONS

	Capacity		A Floor to Heater Top	B Jacket Dia.	C Floor to T&P Conn.	D Floor to Hot Water Conn.	E Floor to Cold Water Conn.	F Floor to Exchanger Outlet	G Floor to Exchanger Inlet	H Floor to Aquastat	Approx. Shipping Weight
Model	U.S. Gal.	Imp. Gal.	in.	in.	in.	in.	in.	in.	in.	in.	lbs.
LS-RTV-40-L	40	33	35 ¹ / ₄	24	35 ¹ / ₂	35 ¹ / ₂	5	9 ¹ / ₂	24 ⁵ / ₈	19	83
LS-RTV-52-L	52	43	45 ⁵ / ₈	24	45 ⁷ / ₈	45 ⁷ / ₈	5	9 ¹ / ₂	28 ³ / ₈	19	93
LS-RTV-75-L	75	63	63 ⁷ / ₈	24	64 ¹ / ₈	64 ¹ / ₈	5	9 ¹ / ₂	28 ¹ / ₄	19	117
LS-RTV-120-L	119	100	62	31	60	48 ¹ / ₂	10 ¹ / ₄	16 ¹ / ₄	44 ³ / ₈	36	350

	Capacity		A Floor to Heater Top	B Jacket Dia.	C Floor to T&P Conn.	D Floor to Hot Water Conn.	E Floor to Cold Water Conn.	F Floor to Exchanger Outlet	G Floor to Exchanger Inlet	H Floor to Aquastat	Approx. Shipping Weight
Model	Liters		mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	kg.
LS-RTV-40-L	151		894	609	897	897	127	238	614	482	38
LS-RTV-52-L	197		1153	609	1163	1163	127	238	724	482	42
LS-RTV-75-L	284		1610	609	1628	1628	127	238	724	482	53
LS-RTV-120-L	450		1574	787	1524	1232	260	413	1127	914	159

Dimensions shown in **inches** *mm*

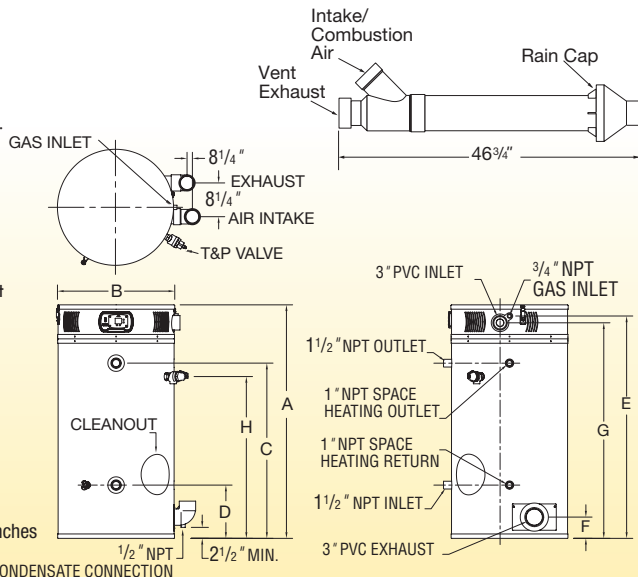
For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

U.H.E.™ COMMERCIAL WATER HEATER



Laars® U.H.E.™ has a remarkable thermal efficiency rating, as high as 99.1% — that makes this line of commercial water heaters the most efficient in its class. In addition, the Laars® U.H.E.™ is second-to-none in installation flexibility.

- Thermal Efficiency up to 99.1%
- Integrated Control system combines temperature control, diagnostic codes, and system ignition functions
- Direct Spark Ignition for improved operational dependability and durability.
- Premix Power Burner automatically increases or decreases fuel flow when a change in combustion air is detected
- Flexible venting vertically or horizontally with either 3" or 4" PVC, CPVC or ABS (not approved for Canada) vent pipe
- Approved for direct vent closed combustion applications approved for unbalanced venting
- 1" NPT side connections for space heating
- Sanitizing capability — temperature setting up to 180°F (82°C).
- Low NOx construction standard.
- ASME Code available on all models
- Three pass flue system — combustion gases moving at a high velocity.
- Submerged combustion chamber minimizes radiant heat loss and improves efficiency.
- Zero Inch Clearance for unsurpassed installation flexibility.
- Warranties: 3-Year tank + 1-Year parts



Dimensions shown in inches



U.H.E. SPECIFICATIONS

Model	Capacity		Input		1 ST Hour Delivery at 100°F Rise Gal.	GPH Recovery at Degree Rise*			Therm. Eff. %	A Floor to Top of Heater in.	B Jacket Dia. in.	C Floor to Hot Water Conn. in.	D Floor to Cold Water Conn. in.	E Floor to Gas Conn. in.	F Floor to Vent Conn. in.	G Floor to Air Intake Conn. in.	H Floor to T&P Conn. in.	Water Conn. Dia. in.	Gas Conn. Dia. in.	Relief Valve Open in.	Approx. Shipping Weight lbs.
	U.S. Gal.	Imp. Gal.	Nat. MBTU/h Input	LP MBTU/h. Input		40°F	100°F	140°F													
LUHE60T125E3N(A)	60	50	125	125	187	364	145	104	96	57	28 ¹ / ₄	42 ¹ / ₂	13	53 ¹ / ₂	5	52 ¹ / ₂	40	1 ¹ / ₂	3/4	3/4	570
LUHE60T150E3N(A)	60	50	150	150	211	423	169	121	93	57	28 ¹ / ₄	42 ¹ / ₂	13	53 ¹ / ₂	5	52 ¹ / ₂	40	1 ¹ / ₂	3/4	3/4	570
LUHE60T199E3N(A)	60	50	199.9	199.9	265	558	223	159	92	57	28 ¹ / ₄	42 ¹ / ₂	13	53 ¹ / ₂	5	52 ¹ / ₂	40	1 ¹ / ₂	3/4	3/4	570
LUHE100T150E3N(A)	100	83	150	150	250	450	180	129	99	77 ⁵ / ₈	28 ¹ / ₄	62 ¹ / ₂	13	74 ³ / ₄	5	73 ¹ / ₈	60	1 ¹ / ₂	3/4	3/4	900
LUHE100T199E3N(A)	100	83	199.9	199.9	309	597	239	171	99	77 ⁵ / ₈	28 ¹ / ₄	62 ¹ / ₂	13	74 ³ / ₄	5	73 ¹ / ₈	60	1 ¹ / ₂	3/4	3/4	900
LUHE100T250E3N(A)	100	83	250	250	364	735	294	210	97	77 ⁵ / ₈	28 ¹ / ₄	62 ¹ / ₂	13	74 ³ / ₄	5	73 ¹ / ₈	60	1 ¹ / ₂	3/4	1	900
LUHE100T300E3N(A)	100	83	300	300	405	836	335	239	92	77 ⁵ / ₈	28 ¹ / ₄	62 ¹ / ₂	13	74 ³ / ₄	5	73 ¹ / ₈	60	1 ¹ / ₂	3/4	1	900
LUHE100T399E3N(A)	100	83	399.9	399.9	521	1127	451	322	94	77 ⁵ / ₈	28 ¹ / ₄	63	13	73 ¹ / ₄	5	73 ¹ / ₈	60	1 ¹ / ₂	1	1	950

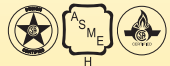
Model	Capacity		Input		1 ST Hour Delivery at 56°C Rise Liters	LPH Recovery at Degree Rise*			Therm. Eff. %	A Floor to Top of Heater mm.	B Jacket Dia. mm.	C Floor to Hot Water Conn. mm.	D Floor to Cold Water Conn. mm.	E Floor to Gas Conn. mm.	F Floor to Vent Conn. mm.	G Floor to Air Intake Conn. mm.	H Floor to T&P Conn. mm.	Water Conn. Dia. mm.	Gas Conn. Dia. mm.	Relief Valve Open mm.	Approx. Shipping Weight kg
	Liters		Nat. kW/Hr. Input	LP kW/Hr. Input		22°C	56°C	78°C													
LUHE60T125E3N(A)	227		36.6	36.6	708	1378	549	394	96.0	1448	718	1087	330	1359	127	1334	1016	38	19	19	259
LUHE60T150E3N(A)	227		43.9	43.9	799	1601	640	458	93.0	1448	718	1087	330	1359	127	1334	1016	38	19	19	259
LUHE60T199E3N(A)	227		58.6	58.6	1003	2112	844	602	92.0	1448	718	1087	330	1359	127	1334	1016	38	19	19	259
LUHE100T150E3N(A)	379		43.9	43.9	946	1703	681	488	99.1	1972	718	1588	330	1899	127	1857	1527	38	19	19	408
LUHE100T199E3N(A)	379		58.6	58.6	1170	2260	905	647	98.5	1972	718	1588	330	1899	127	1857	1527	38	19	19	408
LUHE100T250E3N(A)	379		73.2	73.2	1378	2782	1113	795	97.0	1972	718	1588	330	1899	127	1857	1527	38	19	25	408
LUHE100T300E3N(A)	379		87.9	87.9	1533	3165	1268	905	92.0	1972	718	1588	330	1899	127	1857	1527	38	19	25	408
LUHE100T399E3N(A)	379		117.2	117.2	1972	4266	1707	1219	93.0	1970	720	1600	330	1860	130	1860	1530	40	30	30	431

(A) ASME — All models are available with ASME construction by adding the A at end of model number string

Note: For propane, remove the 11th character E and change the 13th character to X in model number. Example: LUME60T125E3N(A) to LUME60T1253X(A)

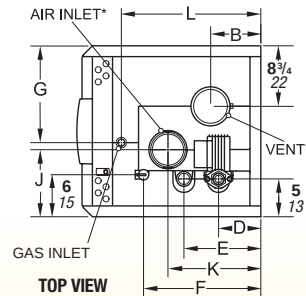
Dimensions shown in **inches mm**

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

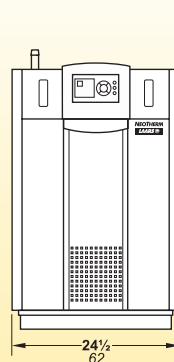


High in efficiency and low in emissions, the NeoTherm® condensing boiler from Laars Heating Systems is a fully packaged, space-saving hydronic solution. ENERGY STAR® Most Efficient rated, NeoTherm® offers 95%+ A.F.U.E. to make it everything a modern boiler should be — easy-to-use, easy on the environment, powerful, and compact.

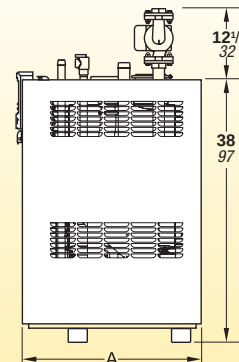
- Floor standing condensing boiler
- All connections are on top of unit
- Stainless steel heat exchanger
- Rated for alcove and closet installations
- Will qualify for Energy Rebates
- 95%+ AFUE
- Sealed combustion chamber
- Pre-mix stainless steel burner
- LAARS Integrated Control SystemSM
- 80 to 210MBH sizes
- Low NOx system exceeds the most stringent regulations for air quality — 10ppm NOx
- Horizontal or vertical direct vent
- Easy to use and easy on the environment
- Easy to service
- Warranties: 12-Year heat exchanger + 2-year parts



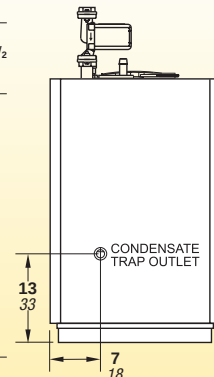
Dimensions are nominal and are shown in inches *cm*



FRONT VIEW



RIGHT SIDE VIEW



BACK VIEW

NEOTHERM® SPECIFICATIONS

Model	A		B		Water Inlet D		Water Outlet E		PRV Outlet F		G		J		K		L		Air Inlet Diameter*		Vent Diameter*	
	in	cm	in	cm	in	cm	in	cm	in	cm	in	cm	in	cm	in	cm	in	cm	in	cm	in	cm
NTH080	19 ^{1/2}	49	9 ^{1/2}	24	7 ^{1/2}	19	11	28	10 ^{3/4}	35	13 ^{3/4}	35	3 ^{1/2}	9	11 ^{3/4}	30	13 ^{1/2}	34	25 ^{1/4}	97	2	5
NTH105	19 ^{1/2}	49	8 ^{1/4}	21	6 ^{1/4}	16	11	28	14 ^{1/4}	36	14 ^{1/4}	36	3 ^{1/2}	9	11 ^{3/4}	30	13 ^{1/2}	34	25	97	2	5
NTH150	19 ^{1/2}	49	5 ^{1/2}	14	3 ^{1/4}	8	11	28	14 ^{1/4}	36	14 ^{1/4}	36	5	13	7 ^{1/2}	19	13 ^{1/2}	34	25	9	3	8
NTH210	26 ^{3/4}	68	5 ^{1/2}	14	3 ^{1/4}	8	18	45	14 ^{1/4}	36	14 ^{1/4}	36	5	13	7 ^{1/2}	19	20 ^{1/2}	52	25	9	3	8

*NeoTherm is shipped with adapters for the air and vent that accept standard pipe of the proper size and type

Model	AFUE%	Input		Output		Connections		Max Vent Length		Weight
		MBTU/h	kW	MBTU/h	kW	Water	Gas	2" Dia.	3" Dia.	lbs.
NTH080	95	80	23.4	74	21.7	1"	1/2"	40 ft.	100 ft.	181
NTH105	95	105	30.8	96	28.1	1"	1/2"	40 ft.	100 ft.	188
NTH150	95	150	44.0	138	40.4	1"	1/2"	n/a	100 ft.	201
NTH210	95	210	61.5	194	56.8	1"	1/2"	n/a	100 ft.	246

Dimensions shown in **inches** *cm*

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

NEOTHERM® COMMERCIAL MODULATING, CONDENSING BOILER

40

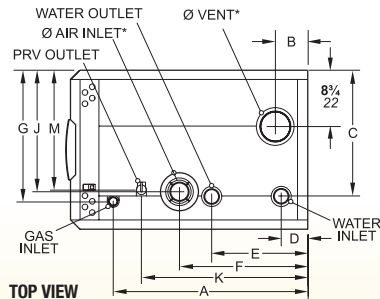


The NeoTherm commercial boiler is a direct vent, sealed combustion, condensing hydronic boiler with 95%+ thermal efficiency that modulates with a 5 to 1 turndown. It features an ASME stainless steel heat exchanger, spark ignition system, and low NOx emissions.

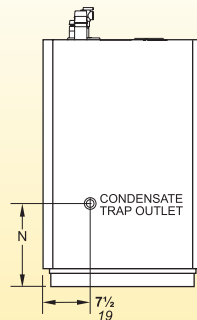
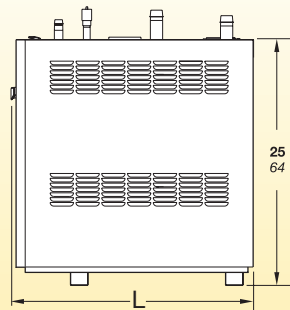
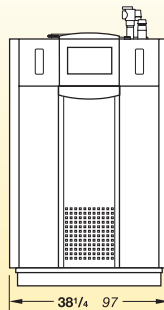
- Pre-mix stainless steel burner
- Large color touch screen
- 285 to 850MBH sizes
- Stainless steel heat exchanger with welded construction
- Low NOx system exceeds the most stringent regulations for air quality — 10 ppm NOx
- Horizontal or vertical direct vent
- Communicates with Building Automation Systems
- Vent and air pipe lengths of up to 100 equivalent feet (each)
- Built-in condensate trap
- Vent temperature cutoff feature
- Direct spark ignition system
- Indirect water heater priority
- Sensor for indirect domestic water tank
- 160 psi maximum working pressure
- Warranties: 10-year heat exchanger + 1-year parts



- High condensing efficiency
- Modulation down to 20% of full fire (5:1 turndown)
- Sealed combustion chamber



Dimensions shown in inches *cm*



NEOTHERM® SPECIFICATIONS

	L		A		B		C		D		E		F		G		J		K		M		N		Air Inlet*		Vent*	
Model	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm
NTH285	26 ³ / ₄	68	20 ¹ / ₄	52	7 ¹ / ₄	19	19 ¹ / ₄	49	6 ¹ / ₄	16	11 ¹ / ₄	29	13 ¹ / ₂	34	14	36	15	38	17	43	18 ³ / ₄	48	13	33	4 ¹ / ₂	11	4 ¹ / ₂	11
NTH399	31 ¹ / ₂	80	25	64	5 ¹ / ₄	13	19 ¹ / ₄	49	4 ¹ / ₄	11	14 ¹ / ₄	37	18 ¹ / ₂	47	19 ¹ / ₄	49	16 ¹ / ₂	42	21 ³ / ₄	55	18 ³ / ₄	48	13	33	4 ¹ / ₂	11	4 ¹ / ₂	11
NTH500	37 ³ / ₄	96	30 ¹ / ₄	77	5 ¹ / ₄	13	19 ¹ / ₂	50	4 ¹ / ₄	11	15 ¹ / ₂	38	20	51	20 ¹ / ₂	52	19	48	26	66	18 ³ / ₄	48	13	33	4 ¹ / ₂	11	4 ¹ / ₂	11
NTH600	37 ³ / ₄	96	29 ³ / ₄	76	5	13	19 ¹ / ₂	50	4 ¹ / ₄	11	15	38	20	51	3	8	19	48	26	66	18 ³ / ₄	48	8 ¹ / ₄	21	4 ¹ / ₂	11	4 ¹ / ₂	11
NTH750	51	130	35 ¹ / ₂	90	6	15	19 ¹ / ₂	50	5 ¹ / ₄	13	19	48	40 ¹ / ₂	103	3 ¹ / ₄	8	19	48	30 ³ / ₄	78	18 ³ / ₄	48	8 ¹ / ₄	21	4 ¹ / ₂	11	6 ¹ / ₂	17
NTH850	55 ¹ / ₄	130	39 ¹ / ₄	101	6	15	19 ¹ / ₂	50	5 ¹ / ₄	13	19	48	44 ³ / ₄	114	3 ¹ / ₂	9	19	48	35	89	18 ³ / ₄	48	8 ¹ / ₄	21	4 ¹ / ₂	11	6 ¹ / ₂	17

Dimensions are nominal and are shown in inches, cm

*NeoTherm is shipped with adapters for the air and vent that accept standard pipe of the proper size and type

Model	AFUE %	Thermal Efficiency %	Combustion Efficiency %	Input		Output		Connection Size (NPT)		Weight
				MBTU/h	kW	MBTU/h	kW	Water	Gas	
NTH285	95.0	n/a	n/a	285	83.5	264	78.8	1 ¹ / ₄ "	3/4 "	276
NTH399	n/a	96.5	96.5	399.9	116.9	386	109.9	1 ¹ / ₄ "	3/4 "	346
NTH500	n/a	95.0	95.0	500	146.5	475	139.2	1 ¹ / ₂ "	1 "	381
NTH600	n/a	95.3	96.0	600	175.8	572	167.0	1 ¹ / ₂ "	1 "	394
NTH750	n/a	96.6	96.6	750	219.8	724	208.9	2 "	1 ¹ / ₂ "	469
NTH850	n/a	95.7	95.7	850	249.1	813	236.7	2 "	1 ¹ / ₂ "	502

*NeoTherm is shipped with adapters for the air and vent that accept standard pipe of the proper size and type

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

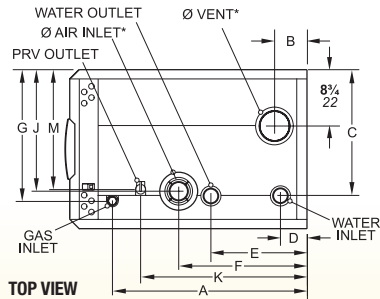
NEOTHERM® VOLUME WATER HEATER



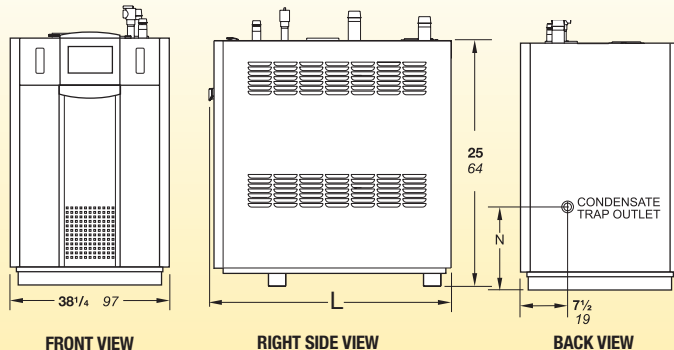
NeoTherm® is a direct vent, sealed combustion, volume water heater with very high efficiency (95%+). It features an ASME stainless steel heat exchanger, spark ignition system, and low NOx emissions for a package that's easy to use and easy on the environment.

- Easy to service
- Low NOx system (10ppm) exceeds the most stringent regulations for air quality
- Large color touch screen
- LAARS Integrated Control SystemSM
- Communicates with Building Automation Systems
- High-condensing efficiency
- 150 to 850MBH sizes
- Modulation down to 20% of full fire (5:1 turndown)
- Sealed combustion chamber
- Pre-mix stainless steel burner
- Horizontal or vertical direct vent
- Horizontal vent and air terminals
- Vent and air pipe lengths of up to 100 equivalent feet (each)
- Warranties: 8-Year pro-rated heat exchanger + 1-year parts

- All connections are on top of unit
- Stainless steel heat exchanger



Dimensions shown in inches cm



NEOTHERM® SPECIFICATIONS

Model	L	A	B	C	D	E	F	G	J	K	M	N	Air Inlet*		Vent*	
	in. cm	in. cm	in. cm	in. cm	in. cm	in. cm	in. cm	in. cm	in. cm	in. cm	in. cm	in. cm	in. cm	in. cm	in. cm	in. cm
NTV150	19 ¹ / ₄ 49	13 ¹ / ₄ 34	5 ¹ / ₄ 14	19 48	3 ¹ / ₄ 8	10 ³ / ₄ 28	7 ¹ / ₂ 19	14 ¹ / ₄ 36	19 ¹ / ₂ 49	7 ¹ / ₂ 19	15 ¹ / ₄ 39	13 33	3 7.6	3 7.6	3 7.6	3 7.6
NTV199	26 ³ / ₄ 68	20 ¹ / ₂ 52	5 ¹ / ₄ 14	19 48	3 ¹ / ₄ 8	17 ³ / ₄ 45	7 ¹ / ₂ 19	14 ¹ / ₄ 36	19 ¹ / ₂ 49	11 ³ / ₄ 30	15 ¹ / ₄ 39	13 33	3 7.6	3 7.6	3 7.6	3 7.6
NTV285	26 ³ / ₄ 68	20 ¹ / ₄ 11.5	7 ¹ / ₄ 19	19 ³ / ₄ 50	4 ¹ / ₄ 11	11 ¹ / ₄ 29	13 ¹ / ₂ 34	14 36	15 38	17 43	18 ³ / ₄ 48	13 33	4 ¹ / ₂ 11	4 ¹ / ₂ 11	4 ¹ / ₂ 11	4 ¹ / ₂ 11
NTV399	31 ¹ / ₂ 80	25 64	5 ¹ / ₄ 13	19 ³ / ₄ 50	4 ¹ / ₄ 11	14 ³ / ₄ 37	18 ¹ / ₂ 47	19 ¹ / ₄ 49	16 ¹ / ₂ 42	21 ³ / ₄ 55	18 ³ / ₄ 48	13 33	4 ¹ / ₂ 11	4 ¹ / ₂ 11	4 ¹ / ₂ 11	4 ¹ / ₂ 11
NTV500	37 ³ / ₄ 96	30 ¹ / ₄ 77	5 ¹ / ₄ 13	19 ³ / ₄ 50	4 ¹ / ₄ 11	15 ¹ / ₂ 38	20 51	20 ¹ / ₂ 52	19 48	26 66	18 ³ / ₄ 48	13 33	4 ¹ / ₂ 11	4 ¹ / ₂ 11	4 ¹ / ₂ 11	4 ¹ / ₂ 11
NTV600	37 ³ / ₄ 96	29 ³ / ₄ 76	5 13	19 ¹ / ₂ 50	4 ¹ / ₄ 11	15 38	20 51	3 8	19 48	26 66	18 ³ / ₄ 48	8 ¹ / ₄ 21	4 ¹ / ₂ 11	4 ¹ / ₂ 11	4 ¹ / ₂ 11	4 ¹ / ₂ 11
NTV750	51 130	35 ¹ / ₂ 90	6 15	19 ¹ / ₂ 50	5 ¹ / ₄ 13	19 48	40 ¹ / ₂ 103	3 ¹ / ₄ 8	19 48	30 ³ / ₄ 78	18 ³ / ₄ 48	8 ¹ / ₄ 21	4 ¹ / ₂ 11	4 ¹ / ₂ 11	6 ¹ / ₂ 17	6 ¹ / ₂ 17
NTV850	55 ¹ / ₄ 130	39 ³ / ₄ 101	6 15	19 ¹ / ₂ 50	5 ¹ / ₄ 13	19 48	44 ³ / ₄ 114	3 ¹ / ₂ 9	19 48	35 89	18 ³ / ₄ 48	8 ¹ / ₄ 21	4 ¹ / ₂ 11	4 ¹ / ₂ 11	6 ¹ / ₂ 17	6 ¹ / ₂ 17

*NeoTherm® is shipped with adapters for the air and vent that accept standard pipe of the proper size and type

Model	Thermal Efficiency %	Input		Output		Connection Size (NPT)		Weight
		MBTU/h	kW	MBTU/h	kW	Water	Gas	
NTV150	95	150	44	144	42	1 ¹ / ₄ "	1 ¹ / ₂ "	201
NTV199	97	199	58.3	193	57	1 ¹ / ₄ "	1 ¹ / ₂ "	246
NTV285	95	285	83.5	269	78.8	2 "	3 ⁴ / ₄ "	276
NTV399	96	399	116.9	375	109.9	2 "	3 ⁴ / ₄ "	346
NTV500	96	500	146.5	475	139.2	2 "	1 "	381
NTV600	97	600	175.8	576	167.0	2 "	1 "	394
NTV750	94	750	219.8	723	208.9	2 "	1 ¹ / ₂ "	469
NTV850	96	850	249.1	810	236.7	2 "	1 ¹ / ₂ "	502

Dimensions shown in **inches** cm

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

NEOTHERM® OUTDOOR, COMMERCIAL MODULATING, CONDENSING BOILER 44

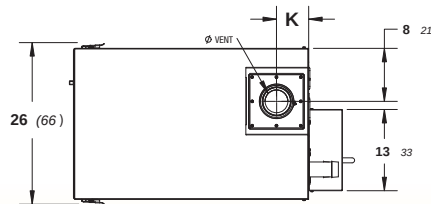


- High condensing efficiency
- Modulation down to 20% of full fire (5:1 turndown)
- Meets ANSI Z21.13-2013, section 5.26 boilers for outdoor installations
- Sealed combustion chamber
- Pre-mix stainless steel burner



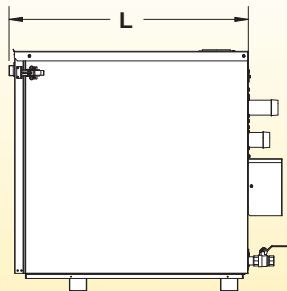
The NeoTherm commercial boiler is a direct vent, sealed combustion, condensing hydronic boiler with 95%+ thermal efficiency that modulates with a 5 to 1 turndown. It features an ASME stainless steel heat exchanger, spark ignition system, and low NOx emissions.

- Large color touch screen
- 285 to 850MBH sizes
- Stainless steel heat exchanger with welded construction
- Low NOx system exceeds the most stringent regulations for air quality — 10 ppm NOx
- Horizontal or vertical direct vent
- Communicates with Building Automation Systems
- Vent and air pipe lengths of up to 100 equivalent feet (each)
- Built-in condensate trap
- Vent temperature cutoff feature
- Direct spark ignition system
- Indirect water heater priority
- Sensor for indirect domestic water tank
- 160 psi maximum working pressure
- Warranties: 10-year heat exchanger + 1-year parts

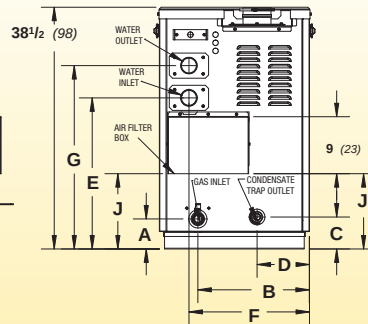


TOP VIEW

Dimensions shown in inches cm



RIGHT SIDE VIEW



BACK VIEW

NEOTHERM® OUTDOOR, COMMERCIAL MODULATING, CONDENSING BOILER SPECIFICATIONS

Model	A		B		C		D		E		F		G		J		K		L		Vent	
	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm
NTH285	6	15.5	11	28	5	13	17¼	43.8	24	61	19	48	28¼	72	12	30.5	7¼	18.4	27	68.6	4	11
NTH399	8	15.5	19½	50	7¼	20	17¼	43.8	24	61	19	48	28¼	72	12	30.5	6	15.2	31¼	80.5	4	11
NTH500	5	13	17¼	45	5	13	8¼	21	24	61	19	48	29¼	74	12	30.5	5½	14	38	96.5	4	11
NTH600	33½	85	3.0	8	5	13	8¼	21	24	61	19	48	29¼	74	12	30.5	5¼	14.6	38	96.5	4	11
NTH750	32¼	83.2	3.0	8	5¼	13.4	17¼	43.8	24	61	19	48	29¼	74	12	30.5	5¼	14.6	51¼	130	6	17
NTH850	32¼	83.2	3.0	8	5¼	13.4	17¼	43.8	24	61	19	48	29¼	74	12	30.5	5¼	14.6	55¼	141.5	6	17

Dimensions are nominal and are shown in inches, cm

*NeoTherm is shipped with adapters for the air and vent that accept standard pipe of the proper size and type

**Allowed only if the vent pipe is no more than 20 equivalent feet longer than the air pipe

Model	AFUE%	Thermal Efficiency %	Combustion Efficiency %	Input		Output		Connection Size (NPT)		Shipping Weight	
				MBTU/h	kw	MBTU/h	kw	Gas in.	Water in.	lbs	kg
NTH285	95.0	N/A	N/A	285,000	83.5	264,000	77.4	¾	1¼	299	136
NTH399	N/A	96.5	96.5	399,900	117.2	386,000	113.1	¾	1¼	364	165
NTH500	N/A	95.0	95.0	500,000	146.4	475,000	139.2	1	1½	419	190
NTH600	N/A	95.3	95.3	600,000	175.7	572,000	167.6	1	1½	426	193
NTH750	N/A	96.6	96.6	750,000	219.8	724,000	212.1	1½	2	481	218
NTH850	N/A	95.7	95.7	850,000	248.9	813,000	238.2	1½	2	503	228

*NeoTherm is shipped with adapters for the air and vent that accept standard pipe of the proper size and type

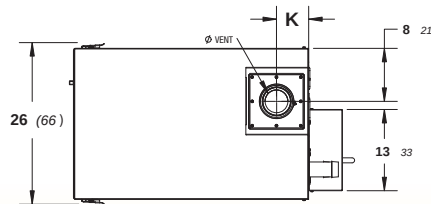
For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

NEOTHERM® OUTDOOR, VOLUME WATER HEATER



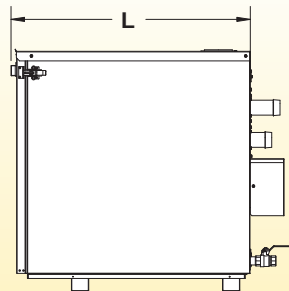
NeoTherm® is a direct vent, sealed combustion, volume water heater with very high efficiency (95%+). It features an ASME stainless steel heat exchanger, spark ignition system, and low NOx emissions for a package that's easy to use and easy on the environment.

- Easy to service
- Low NOx system (10ppm) exceeds the most stringent regulations for air quality
- Large color touch screen
- LAARS Integrated Control SystemSM
- Communicates with Building Automation Systems
- High-condensing efficiency
- 150 to 850MBH sizes
- Modulation down to 20% of full fire (5:1 turndown)
- Sealed combustion chamber
- Pre-mix stainless steel burner
- Horizontal or vertical direct vent
- Horizontal vent and air terminals
- Vent and air pipe lengths of up to 100 equivalent feet (each)
- Warranties: 8-Year pro-rated heat exchanger + 1-year parts
- Stainless steel heat exchanger
- Meets ANSI Z21.13-2013, section 5.24 wind test and section 5.30 rain test

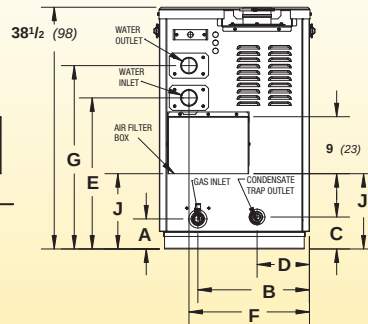


TOP VIEW

Dimensions
shown in
inches *cm*



RIGHT SIDE VIEW



BACK VIEW



NEOTHERM® OUTDOOR, VOLUME WATER HEATER SPECIFICATIONS

Model	A		B		C		D		E		F		G		J		K		L		Vent	
	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm
NTV150	6¼	16	11	28	13	33	17¼	43.8	23½	60	18	45.7	27	69	23½	60	5¼	13	20	60	3	7.6
NTV199/210	6¼	16	11	28	13	33	17¼	43.8	23½	60	18	45.7	27	69	23½	60	5¼	13	27	68.6	3	7.6
NTV285	6	15.5	11	28	5	13	17¼	43.8	24	61	19	48	28¼	72	12	30.5	7¼	18.4	27	68.6	4	11
NTV399	8	15.5	19½	50	7¼	20	17¼	43.8	24	61	19	48	28¼	72	12	30.5	6	15.2	31¼	80.5	4	11
NTV500	5	13	17¼	45	5	13	8¼	21	24	61	19	48	29¼	74	12	30.5	5½	14	38	96.5	4	11
NTV600	33½	85	3.0	8	5	13	8¼	21	24	61	19	48	29¼	74	12	30.5	5¼	14.6	38	96.5	4	11
NTV750	32¼	83.2	3.0	8	5¼	13.4	17¼	43.8	24	61	19	48	29¼	74	12	30.5	5¼	14.6	51¼	130	6	17
NTV850	32¼	83.2	3.0	8	5¼	13.4	17¼	43.8	24	61	19	48	29¼	74	12	30.5	5¼	14.6	55¼	141.5	6	17

Dimensions are nominal and are shown in inches, cm

*NeoTherm is shipped with adapters for the air and vent that accept standard pipe of the proper size and type

**Allowed only if the vent pipe is no more than 20 equivalent feet longer than the air pipe

Model	Thermal Efficiency %	Input		Output		Connection Size (NPT)		Shipping Weight	
		MBTU/h	kw	MBTU/h	kw	Gas in.	Water in.	lbs	kg
NTV150	95	150,000	44.0	142,500	41.7	½	1¼	228	103
NTV199/210	97	199,000	58.3	193,030	56.5	½	1¼	270	123
NTV285	95	285,000	83.5	270,750	79.3	¾	2	299	136
NTV399	96	399,000	116.9	383,040	112.2	¾	2	364	165
NTV500	96	500,000	146.5	480,000	140.6	1	2	419	190
NTV600	97	600,000	175.8	582,000	170.4	1	2	426	193
NTV750	94	750,000	219.8	705,000	206.4	1½	2	481	218
NTV850	96	850,000	249.1	816,000	238.9	1½	2	503	228

*NeoTherm is shipped with adapters for the air and vent that accept standard pipe of the proper size and type

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

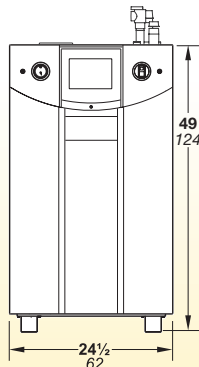
NEOTHERM® LC COMMERCIAL MODULATING, CONDENSING BOILER

48

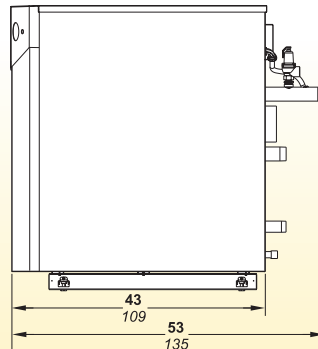


NeoTherm® is a direct vent, sealed combustion boiler, with very high efficiency. It features an ASME stainless steel heat exchanger, spark ignition system, and low NOx emissions for a package that's easy to use and easy on the environment.

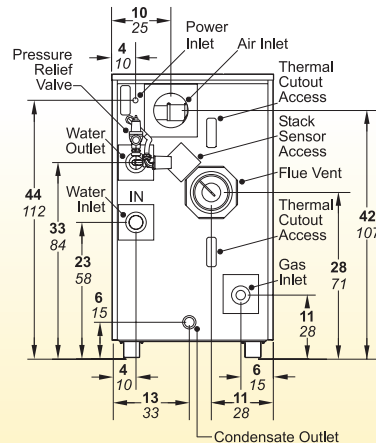
- Large color touch screen
- Stainless steel heat exchanger
- Easy to service
- LAARS Integrated Control SystemSM
- Communicates with Building Automation Systems
- High-condensing efficiency
- 1,000 and 1,200 MBH
- Modulation down to 10% of full fire (10:1 turndown)
- Sealed combustion chamber
- Pre-mix stainless steel burner
- Indoor and outdoor
- Horizontal or vertical direct vent
- Low NOx system (10ppm) exceeds the most stringent regulations for air quality
- Vent and air pipe lengths of up to 100 equivalent feet (each)
- Warranties: 10-Year heat exchanger + 1-Year parts



FRONT VIEW



SIDE VIEW



BACK VIEW

Dimensions shown in inches cm



NEOTHERM® SPECIFICATIONS

SIZING DATA

Model	Input		Output		Thermal Efficiency	Comb. Efficiency %	Gas Conn. Size	Water Conn. Size	Product Weight		Shipping Weight		Air Inlet	Vent
	MBTU/h	kW	MBTU/h	kW					lbs	kg	lbs	kg		
NTH 1000	999.9	293	942	276	94.2	94.2	1½	2	518	235	620	281	6	6
NTH 1200	1200	351	1136	333	95.1	94.7	1½	2	538	244	640	290	6	6

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		45°F		25°C	
	Flow gpm	H/L feet	Flow lpm	H/L m	Flow gpm	H/L feet	Flow lpm	H/L m	Flow gpm	H/L feet	Flow lpm	H/L m	Flow gpm	H/L feet	Flow lpm	H/L m	Flow gpm	H/L feet	Flow lpm	H/L m	Flow gpm	H/L feet	Flow lpm	H/L m
NTH 1000	95	30	359	9.0	75	20	283	6.0	62	15	234	4.5	54	11	204	3.3	48	9	182	2.7	42	7	159	2.1
NTH 1200	114	37	432	11.3	91	26	344	7.9	76	18	288	5.5	65	13	246	4.0	57	10	216	3.0	51	8	193	2.4

ELECTRICAL DATA

Model	Volts	Phase	Amps Nominal	Amps FLA	Pump Connections Ratings (Boiler, System, and DHW Pumps)
NTH 1000	120	Single	5	12	max 7.4 FLA
NTH 1200	120	Single	17	12	max 7.4 FLA

Dimensions shown in inches

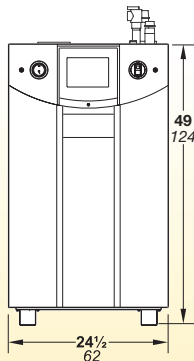
For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

NEOTHERM® LC VOLUME WATER HEATER

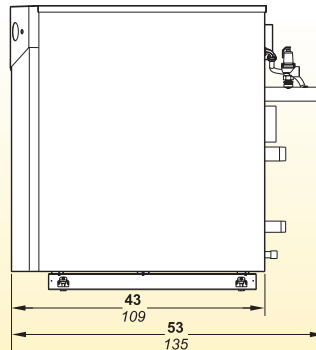


NeoTherm® is a direct vent, sealed combustion, volume water heater with very high efficiency. It features an ASME stainless steel heat exchanger, spark ignition system, and low NOx emissions for a package that's easy to use and easy on the environment.

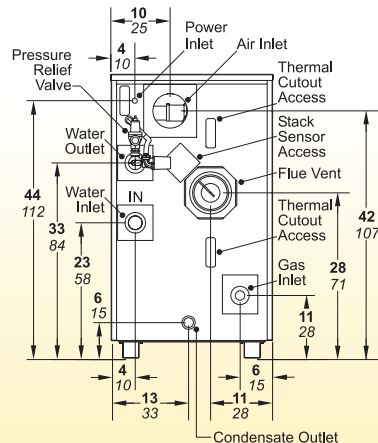
- Large color touch screen
- Stainless steel heat exchanger
- Easy to service
- LAARS Integrated Control SystemSM
- Communicates with Building Automation Systems
- High-condensing efficiency
- 1,000 and 1,200 MBH
- Modulation down to 10% of full fire (10:1 turndown)
- Sealed combustion chamber
- Pre-mix stainless steel burner
- Indoor and outdoor
- Horizontal or vertical direct vent
- Meets AB1953 low-lead standard
- Low NOx system (10ppm) exceeds the most stringent regulations for air quality
- Vent and air pipe lengths of up to 100 equivalent feet (each)
- Warranties: 8-Year pro-rated heat exchanger + 1-year parts



FRONT VIEW



SIDE VIEW



BACK VIEW

Dimensions shown in inches *cm*



NEOTHERM® SPECIFICATIONS

SIZING DATA

Model	Input		Output		Thermal Efficiency %	Gas Conn. Size Inches	Water Conn. Size Inches	Product Weight		Shipping Weight		Air Inlet Inches	Vent Inches
	MBTU/h	kW	MBTU/h	kW				lbs	kg	lbs	kg		
NTV 1000	999.9	293	952	278.9	95	1½	2	518	235	620	281	6	6
NTV 1200	1200	351	1140	333	95	1½	2	538	244	640	290	6	6

RECOVERY DATA

Model	Design Temperature Rise Across Boiler																	
	40°F gph	22°C L/h	50°F gph	28°C L/h	60°F gph	33°C L/h	70°F gph	39°C L/h	80°F gph	44°C L/h	90°F gph	50°C L/h	100°F gph	56°C L/h	120°F gph	67°C L/h	140°F gph	78°C L/h
NTV 1000	2857	10799	2286	8641	1905	7201	1633	6173	1429	5402	1270	4801	1143	4321	952	3599	816	3084
NTV 1200	3420	12927	2736	10369	2280	8641	1954	7407	1710	6482	1520	5761	1368	5185	1140	4319	977	3701

WATER FLOW REQUIREMENTS

Model	Temperature Rise			
	20°F Flow gpm		11°C Flow lpm	
NTV 1000	95	30	359	9.0
NTV 1200	114	37	430	10.8

Maximum water hardness of 10 grains per gallon allowed.

ELECTRICAL DATA

Model	Volts	Phase	Amps Nominal	Amps FLA	Pump Conn. Ratings
NTV 1000	120	Single	5	12	max 7.4 FLA
NTV 1200	120	Single	12	12	max 7.4 FLA

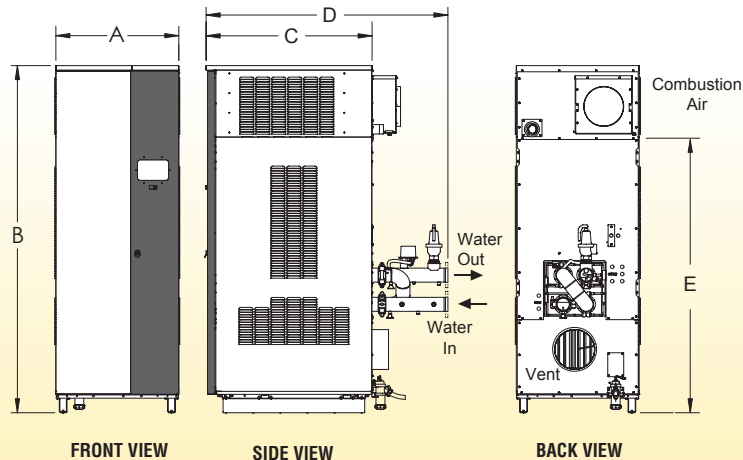
Dimensions shown in inches

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>



The Laars MagnaTherm® Commercial Modulating Condensing Boiler has everything to satisfy large input commercial applications. The unique VARI-PRIME™ variable speed boiler pump control optimizes three major variables of boiler operation: combustion, blower, and boiler pump efficiencies.

- Meets the most stringent NOx emission requirements
- Up to 99% thermal efficiency, condensing operation
- Indoor/Outdoor installation
- Large color touch screen allows for easy control and setup
- VARI-PRIME™ variable speed pump control matches system pump with boiler modulation to optimize efficiency
- Small footprint, slim vertical design, and removable top section help it fit into tight spots
- Forward mounted low voltage panel for easy wiring and troubleshooting
- Unique, sealed condensate trap does not need to be primed at startup
- Single or up to 8 boilers in a cascade installation
- Up to 100 feet of vent
- 439 Stainless Steel Heat Exchanger for increased corrosion resistance
- Advanced control system with temperature control, diagnostics, outdoor reset capability, and easy access for field wiring
- Warranties: 10-Year heat exchanger + 1-Year parts



MAGNATHERM® SPECIFICATIONS

DIMENSIONAL

Model	A		B		C		D		E 'Knock-down' Height		Water Connection	Gas Connection	Condensate Trap
	inches	cm	inches	cm	inches	cm	inches	cm	inches	cm	Groove Lock	(NPT)	Line
MGH1600	29.3	75	79	201	38.0	96	57.5	147	60.8	154	3"	2"	1"
MGH2000	29.3	75	79	201	38.0	96	57.5	147	60.8	154	3"	2"	1"
MGH2500	30.8	78	87	221	41.5	105	60.5	154	71.0	180	3"	2"	1"
MGH3000	30.8	78	87	221	41.5	105	60.5	178	71.0	180	3"	2"	1"
MGH3500	34.5	88	97	246	52.0	132	70.0	178	80.8	205	4"	2"	1"
MGH4000	34.5	88	97	246	52.0	132	70.0	178	80.8	205	4"	2"	1"

SIZING DATA

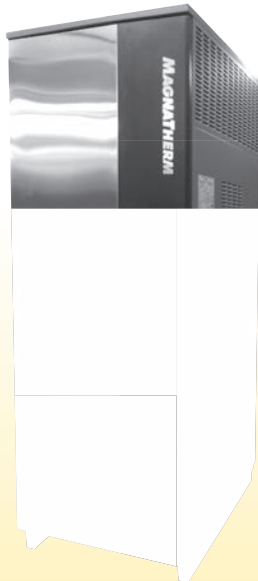
WATER FLOW REQUIREMENTS

Model	Input Rate	Output Rate	Boiler Thermal Efficiency	Combustion Efficiency	Product Weight	Shipping Weight	Vent Diameter	Vent Length	Temperature Rise															
									30°F		17°C		35°F		19°C		40°F		22°C					
	MBTU/h	kW	MBTU/h	kW	%	%	lbs	kg	lbs	kg	in (cm)	ft (m)	Flow gpm	H/L feet	Flow lpm	HL m	Flow gpm	H/L feet	Flow lpm	HL m	Flow gpm	H/L feet	Flow lpm	HL m
MGH1600	1600.0	469	1572	443	96	95	1390	630	1590	721	6 (15)	100 (30.5)	100	14	379	4.3	87	10	329	3	76	8	288	2.5
MGH2000	1999.9	586	1883	552	95	93.6	1390	630	1590	721	8 (20)	100 (30.5)	128	23.5	485	7.2	109	17.1	413	5.2	95	13.6	360	4.2
MGH2500	2499.9	732	2374	696	95	93.8	1785	810	1985	900	8 (20)	100 (30.5)	158	23.6	599	7.0	136	17.6	514	5.0	119	13.6	449	4.1
MGH3000	3000.0	879	2814	825	95	93.8	1785	810	1985	900	10 (25)	100 (30.5)	190	34.2	719	10.4	164	25.8	621	7.9	142	18.9	538	5.9
MGH3500	3500.0	1025	3317	972	95	93.6	2278	1033	2478	1124	10 (25)	100 (30.5)	222	30.6	839	9.0	190	23.6	719	7.0	166	18.6	629	6.0
MGH4000	4000.0	1172	3724	1091	95	93.1	2278	1033	2478	1124	12 (30)	100 (30.5)	255	38.2	965	11.6	218	28.5	825	8.7	190	22.5	71	6.9

Dimensions shown in **inches** *cm*

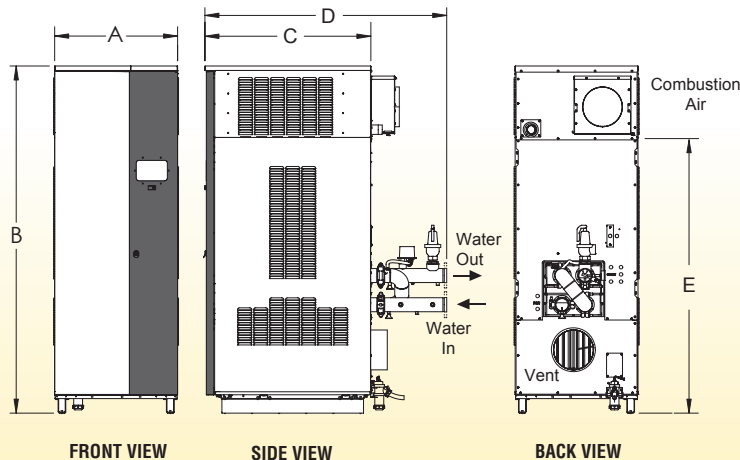
For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

MAGNATHERM® COMMERCIAL VOLUME WATER HEATER



The Laars MagnaTherm® Commercial Volume Water Heater has everything to satisfy large input commercial applications. 95%+ efficiency, small footprint, and easy to use controls.

- Meets the most stringent NOx emission requirements
- Up to 99% thermal efficiency, condensing operation
- Indoor/Outdoor installation
- Matches system pump with boiler modulation to optimize efficiency
- Large color touch screen allows for easy control and setup
- Small footprint, slim vertical design, and removable top section help it fit into tight spots
- Forward mounted low voltage panel for easy wiring and troubleshooting
- Unique, sealed condensate trap does not need to be primed at startup
- Single or up to 8 boilers in a cascade installation
- Up to 100 feet of vent
- 439 Stainless Steel Heat Exchanger for increased corrosion resistance
- Advanced control system with temperature control, diagnostics, outdoor reset capability, and easy access for field wiring
- Warranties: 10-Year heat exchanger + 1-Year parts



MAGNATHERM® SPECIFICATIONS

DIMENSIONAL

Model	A		B		C		D		E 'Knock-down' Height		Water Connection	Gas Connection	Condensate Trap
	inches	cm	inches	cm	inches	cm	inches	cm	inches	cm	Groove Lock	(NPT)	Line
MGV1600	29.3	75	79	201	38.0	96	57.5	147	60.8	154	3"	2"	1"
MGV2000	29.3	75	79	201	38.0	105	57.5	147	60.8	154	3"	2"	1"
MGV2500	30.8	78	87	221	41.5	96	60.5	154	71.0	180	3"	2"	1"
MGV3000	30.8	78	87	221	41.5	105	60.5	178	71.0	180	3"	2"	1"
MGV3500	34.5	88	97	246	52.0	132	70.0	178	80.8	205	4"	2"	1"
MGV4000	34.5	88	97	246	52.0	132	70.0	178	80.8	205	4"	2"	1"

SIZING DATA

WATER FLOW REQUIREMENTS

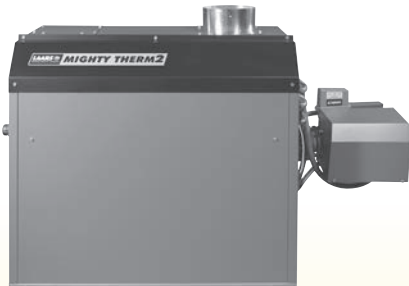
Model	Input Rate		Output Rate		Water Heater Thermal Efficiency %	Product Weight		Shipping Weight		Vent Diameter		Vent Length							
	MBTU/h	kW	MBTU/h	kW		lbs	kg	lbs	kg	in	(cm)	ft	(m)	Flow gpm	Temp Rise °F	H/L feet	Flow lpm	Temp Rise °C	H/L m
MGV1600	1600.0	469	1572	443	96	1390	630	1590	721	6	(15)	100	(30.5)	152	20	31.0	525	11.1	10.1
MGV2000	1999.9	586	1883	552	96	1390	630	1590	721	8	(20)	100	(30.5)	152	25	33.0	575	14	10.1
MGV2500	2499.9	732	2374	696	96	1785	810	1985	900	8	(20)	100	(30.5)	190	25	33.7	719	13.9	10.0
MGV3000	3000.0	879	2814	825	95	1785	810	1985	900	10	(25)	100	(30.5)	190	30	36.0	719	17	11
MGV3500	3500.0	1025	3317	972	96	2278	1033	2478	1124	10	(25)	100	(30.5)	222	30	30.6	839	17	9.0
MGV4000	4000.0	1172	3724	1091	96	2278	1033	2478	1124	12	(30)	100	(30.5)	224	34	30.0	848	19	9.1

Dimensions shown in **inches** *cm*

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

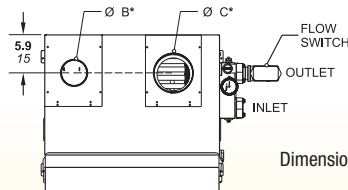
MIGHTY THERM® 2 RESIDENTIAL AND LIGHT COMMERCIAL BOILER

56

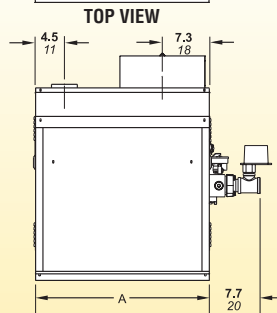


The Mighty Therm® 2, 200 – 400 series boiler operates at an environmentally friendly 85% efficiency with low NOx emissions. Easy to use, install, and maintain, it utilizes basic cap and bulb temperature controls and a low voltage terminal strip for simple troubleshooting.

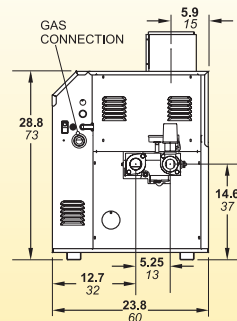
- Operates in altitudes up to 10,000 feet
- Ambient temperatures from -40°F to +140°F
- Tolerant of glycol systems
- Waterways able to operate in a maximum water hardness of 17 gpg
- Hydronic models supply temps from 130°F to 240°F
- Heat exchanger is removable from top, back, or front
- Washable air filter
- Gas supply right or left side (field convertible)
- Maintains efficiency and low NOx levels at low and high fire
- Fan-assisted combustion system
- Warranties: 10-Year heat exchanger + 1-Year parts
- Glass-lined cast iron or bronze headers and non-ferrous waterways.
- 10 finned tube heat exchanger design for quick and efficient heat transfer
- 85% Combustion efficiency, 84% Thermal efficiency
- NOx below 10 ppm
- 2-stage firing
- Immune to thermal shock down to 30°F



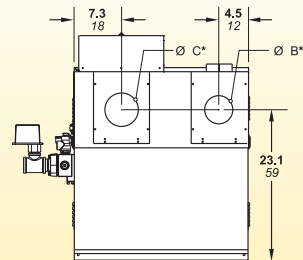
Dimensions shown in inches *cm*



FRONT VIEW



RIGHT SIDE VIEW



BACK VIEW



C US
Low Lead Content
N51-1000 1/12

ASME CERTIFIED
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MIGHTY THERM[®] 2 SPECIFICATIONS

Model	Input		Output MT2H		Gas Conn. Size Inches	Water Conn. Size Inches	Shipping Weight	
	MBTU/h	kW	MBTU/h	kW	MBTU/h	MBTU/h	lbs.	kg
MT2H0200	200	58.6	170	50.4	3/4 NPT	1 1/2 NPT	270	123
MT2H0300	299	87.9	255	74.7	3/4 NPT	1 1/2 NPT	300	136
MT2H0400	399	117.2	340	99.6	3/4 NPT	1 1/2 NPT	330	150

Model	A		Air Conn. B*		Vent Conn. C*		Horiz Vent Pipe	
	in.	cm	in.	cm	in.	cm	in.	cm
MT2H0200	20 1/2	52	4	10	5	13	4	10
MT2H0300	26 1/2	67	4	10	6	15	5	13
MT2H0400	33 1/2	85	6	15	7	18	6	15

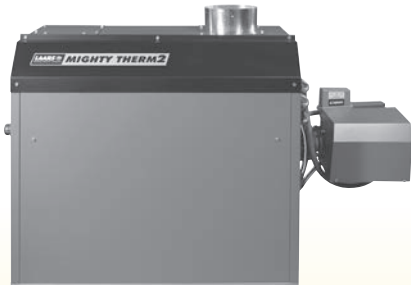
Dimensions shown in **inches** *cm*

EFFICIENCY DATA

Model	Thermal	Combustion Efficiency	A.F.U.E.
MT2H0200	N/A	N/A	85.1
MT2H0300	N/A	N/A	85.1
MT2H0400	85.3	83.4	N/A

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

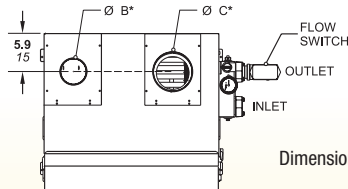
MIGHTY THERM® 2 RESIDENTIAL AND LIGHT COMMERCIAL VOLUME WATER HEATER



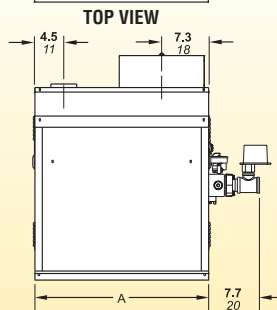
The Mighty Therm® 2, 200 – 400 series volume water heater operates at an environmentally friendly 85% efficiency with low NOx emissions. Easy to use, install, and maintain, it utilizes basic cap and bulb temperature controls and a low voltage terminal strip for simple troubleshooting.

- 85% Combustion efficiency, 85% Thermal efficiency
- NOx below 10 ppm
- 2-stage firing
- Immune to thermal shock down to 30°F
- Operates in altitudes up to 10,000 feet
- Ambient temperatures from -40°F to +140°F
- Tolerant of glycol systems
- Waterways able to operate in a maximum water hardness of 17 gpg

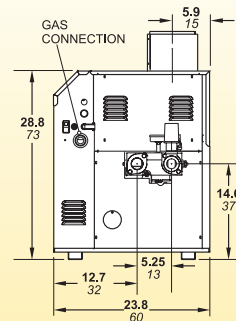
- Volume water heater models supply temps from 130°F to 200°F
- Heat exchanger is removable from top, back, or front
- Washable air filter
- Gas supply right or left side (field convertible)
- Maintains efficiency and low NOx levels at low and high fire
- Fan-assisted combustion system
- Warranties: 10-Year heat exchanger + 1-Year parts



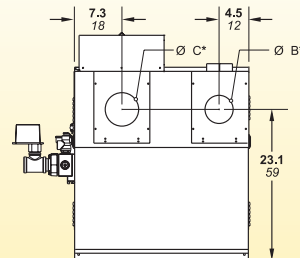
Dimensions shown in inches *cm*



FRONT VIEW



RIGHT SIDE VIEW



BACK VIEW



MIGHTY THERM[®] 2 SPECIFICATIONS

	A		Input		Output MT2V		Thermal Efficiency	Gas Conn.	Water Conn.	Air Conn. B*	Vent Conn. C*	Horiz Vent Pipe	Shipping Weight				
Model	in.	cm	MBTU/h	kW	MBTU/h	kW	%	Size Inches	Size Inches	in.	cm	in.	cm	in.	cm	lbs.	kg
MT2V0200	20 1/2	52	199.9	58.6	169.9	49.8	85	3/4 NPT	1 1/2 NPT	4	10	5	13	4	10	270	123
MT2V0300	26 1/2	67	300	87.9	255	74.7	85	3/4 NPT	1 1/2 NPT	4	10	6	15	5	13	300	136
MT2V0400	33 1/2	85	399.9	117.2	339.9	99.6	85	3/4 NPT	1 1/2 NPT	6	15	7	18	6	15	330	150

Temp Rise:	20°F 11°C				25°F 14°C				30°F 17°C				35°F 19°C			
Model	Flow gpm	H/L feet	Flow lpm	H/L m	Flow gpm	H/L feet	Flow lpm	H/L m	Flow gpm	H/L feet	Flow lpm	H/L m	Flow gpm	H/L feet	Flow lpm	H/L m
MT2V0200	17	1.6	64	0.5	14	1.0	53	0.3	11	0.7	42	0.2	10	0.5	38	0.2
MT2V0300	26	3.5	97	1.1	20	2.3	76	0.7	17	1.6	64	0.5	15	1.2	57	0.4
MT2V0400	34	6.3	129	1.9	27	4.0	102	1.2	23	2.8	87	0.9	19	2.1	72	0.6

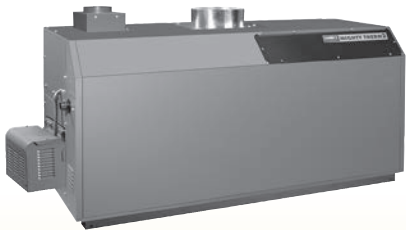
Model	HARD WATER						NORMAL WATER						SOFT WATER					
	Flow gpm	H/L feet	Temp Rise °F	Flow lpm	H/L m	Temp Rise °C	Flow gpm	H/L feet	Temp Rise °F	Flow lpm	H/L m	Temp Rise °C	Flow gpm	H/L feet	Temp Rise °F	Flow lpm	H/L m	Temp Rise °C
MT2V0200	45	7.3	8	170	2.2	4	35	4.4	10	133	1.3	6	23	1.9	15	87	0.6	8
MT2V0300	45	7.4	11	170	2.3	6	35	4.5	15	133	1.4	8	23	2.0	22	87	0.6	12
MT2V0400	45	7.4	15	170	2.3	8	35	4.5	19	133	1.4	11	23	2.0	30	87	0.6	17

*Air connections may be on top or back of the Mighty Therm[®] 2 and are field convertible.

Dimensions shown in **inches** *cm*

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

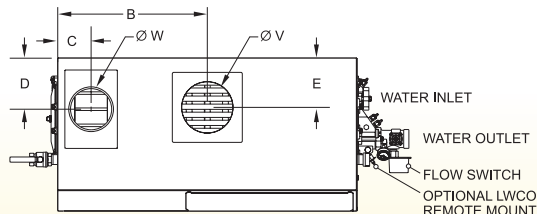
MIGHTY THERM® 2 COMMERCIAL HYDRONIC BOILER



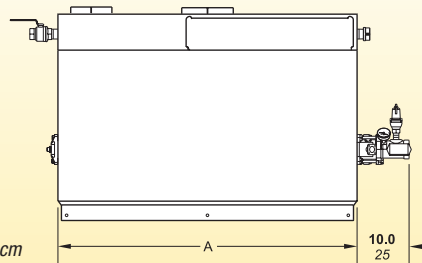
- Glass-lined cast iron or bronze headers and non-ferrous waterways.
- 10 finned tube heat exchanger design for quick and efficient heat transfer
- 85% Combustion efficiency, 84% Thermal efficiency
- NO_x below 10 ppm
- 2-stage firing
- Immune to thermal shock down to 30°F
- Operates in altitudes up to 10,000 feet

The Mighty Therm®2 boiler has been specifically designed to meet the needs of the replacement market by offering simple and straightforward controls with 2-stage firing. It features modular construction that separates the burner trays, gas train, and blower assembly.

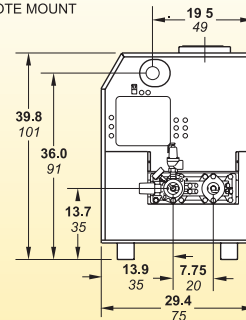
- Ambient temperatures from -40°F to +140°F
- Tolerant of glycol systems
- Waterways able to operate in a maximum water hardness of 17 gpg
- Hydronic models supply temps from 130°F to 240°F
- Heat exchanger is removable from top, back, or front
- Washable air filter
- Gas supply right or left side (field convertible)
- Maintains efficiency and low NO_x levels at low and high fire
- Fan-assisted combustion system
- Warranties: 10-Year heat exchanger + 1-Year parts



TOP VIEW



FRONT VIEW



RIGHT SIDE VIEW

Dimensions shown in inches cm



MIGHTY THERM® 2 SPECIFICATIONS

	Dimensions								Input MBTU/h	Output MBTU/h	Combustion Efficiency %	Thermal Efficiency %	Gas Connection Sizes inches	Water Connection Sizes inches	Air Conn. W	Vent Conn. V	Approx. Shipping Weight* lbs.	kg
Model	A	B	C	D	E													
MT2H0500	33 ³ / ₄ 85	16 ³ / ₄ 43	6 ¹ / ₂ 17	10 25	8 20			500	425	85.0	85.0	1 ¹ / ₄	2	6 15	8 20	425	193	
MT2H0750	45 ³ / ₄ 116	22 ³ / ₄ 53	6 ¹ / ₂ 17	10 25	9 ¹ / ₂ 24			750	638	85.0	85.0	1 ¹ / ₄	2	8 20	10 25	505	229	
MT2H1000	57 ³ / ₄ 147	28 ³ / ₄ 73	6 ¹ / ₂ 17	10 25	9 ¹ / ₂ 24			999	849	85.0	85.0	1 ¹ / ₄	2 ¹ / ₂	8 20	10 25	615	279	
MT2H1250	68 ¹ / ₄ 173	34 87	10 ¹ / ₄ 26	10 25	9 23			1250	1064	85.1	85.2	2	2 ¹ / ₂	12 30	12 30	675	306	
MT2H1500	78 ³ / ₄ 200	39 ¹ / ₂ 100	10 ¹ / ₄ 26	10 25	9 23			1500	1277	85.1	85.2	2	2 ¹ / ₂	12 30	12 30	760	345	
MT2H1750	89 ¹ / ₄ 227	44 ³ / ₄ 113	10 ¹ / ₄ 26	10 25	9 23			1750	1489	85.1	85.2	2	2 ¹ / ₂	12 30	14 36	825	375	
MT2H2000	99 ³ / ₄ 253	49 ³ / ₄ 127	10 ¹ / ₄ 26	10 25	9 23			1999	1701	85.1	85.2	2	2 ¹ / ₂	12 30	14 36	955	434	

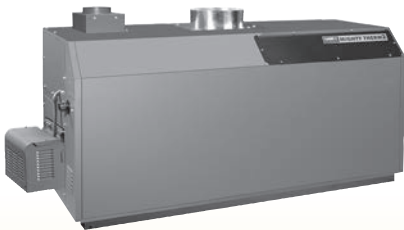
TEMPERATURE RISES IN DEGREES

Model	20°F		11°C		25°F		14°C		30°F		17°C		35°F		19°C	
	Flow GPM	H/L Feet	Flow lpm	H/L m	Flow GPM	H/L Feet	Flow lpm	H/L m	Flow GPM	H/L Feet	Flow lpm	H/L m	Flow GPM	H/L Feet	Flow lpm	H/L m
MT2H0500	43	1.7	161	0.5	34	1.1	129	0.3	28	0.9	107	0.3	24	0.7	92	0.2
MT2H0750	64	3.3	242	1.0	51	2.3	193	0.7	43	1.7	161	0.5	36	1.2	138	0.4
MT2H1000	85	5.0	321	1.5	68	3.6	257	1.1	57	3.1	214	0.9	49	2.2	184	0.7
MT2H1250	106	8.1	402	2.5	85	6.1	322	1.9	71	4.7	268	1.4	61	3.4	230	1.0
MT2H1500	128	10.0	483	3.0	102	7.2	386	2.2	85	5.5	322	1.7	73	4.2	276	1.3
MT2H1750	N/R	N/R	N/R	N/R	119	10.5	451	3.2	99	8.4	375	2.6	85	5.8	322	1.8
MT2H2000	N/R	N/R	N/R	N/R	136	12.5	515	3.8	113	10.4	429	3.2	97	8.3	368	2.5

Dimensions shown in **inches** *cm*

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

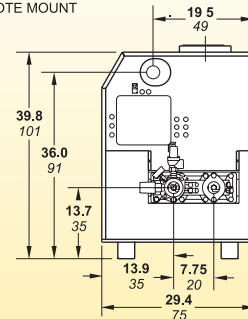
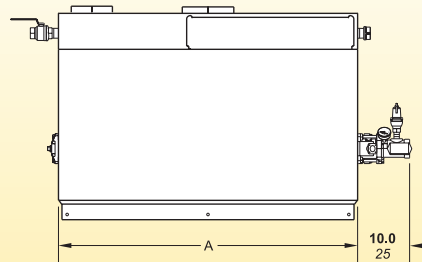
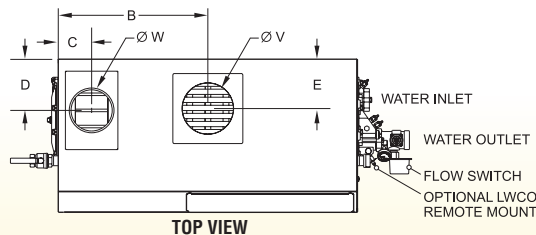
MIGHTY THERM®2 COMMERCIAL VOLUME WATER HEATER



- 84% Thermal efficiency
- NOx below 10 ppm
- 2-stage firing
- Immune to thermal shock down to 30°F
- Operates in altitudes up to 10,000 feet
- Ambient temperatures from -40°F to +140°F
- Tolerant of glycol systems
- Waterways able to operate in a maximum water hardness of 17 gpg

The Mighty Therm®2 volume water heater has been specifically designed to meet the needs of the replacement market by offering simple and straightforward controls with 2-stage firing. It features modular construction that separates the burner trays, gas train, and blower assembly.

- Volume water heater models supply temps from 130°F to 200°F
- Heat exchanger is removable from top, back, or front
- Washable air filter
- Gas supply right or left side (field convertible)
- Maintains efficiency and low NOx levels at low and high fire
- Fan-assisted combustion system
- 10-Year heat exchanger + 1-Year parts



Dimensions shown in inches cm



FRONT VIEW

RIGHT SIDE VIEW

MIGHTY THERM® 2 SPECIFICATIONS

Model	Dimensions										Input MBTU/h	Output MBTU/h	Thermal Efficiency %	Gas Connection Sizes inches	Water Connection Sizes inches	Air Conn. W	Vent Conn. V	Approx.			
	A		B		C		D		E									Shipping Weight*	lbs.	kg	
MT2V0500	33 ³ / ₄	85	16 ³ / ₄	43	6 ¹ / ₂	17	10	25	8	20	500	425	85	1 ¹ / ₄	2	6	15	8	20	425	193
MT2V0750	45 ³ / ₄	116	22 ³ / ₄	53	6 ¹ / ₂	17	10	25	9 ¹ / ₂	24	750	638	85	1 ¹ / ₄	2	8	20	10	25	505	229
MT2V1000	57 ³ / ₄	147	28 ³ / ₄	73	6 ¹ / ₂	17	10	25	9 ¹ / ₂	24	999	849	85	1 ¹ / ₄	2 ¹ / ₂	8	20	10	25	615	279
MT2V1250	68 ¹ / ₄	173	34	87	10 ¹ / ₄	26	10	25	9	23	1250	1064	85	2	2 ¹ / ₂	12	30	12	30	675	306
MT2V1500	78 ³ / ₄	200	39 ¹ / ₂	100	10 ¹ / ₄	26	10	25	9	23	1500	1277	85	2	2 ¹ / ₂	12	30	12	30	760	345
MT2V1750	89 ¹ / ₄	227	44 ³ / ₄	113	10 ¹ / ₄	26	10	25	9	23	1750	1489	85	2	2 ¹ / ₂	12	30	14	36	825	375
MT2V2000	99 ³ / ₄	253	49 ³ / ₄	127	10 ¹ / ₄	26	10	25	9	23	2000	1701	85	2	2 ¹ / ₂	12	30	14	36	955	434

RECOVERY DATA

Model	40°F gph	22°C L/h	50°F gph	28°C L/h	60°F gph	33°C L/h	70°F gph	39°C L/h	80°F gph	44°C L/h	90°F gph	50°C L/h	100°F gph	56°C L/h	120°F gph	67°C L/h	140°F gph	78°C L/h
MT2V0500	1276	4821	1020	3857	850	3214	729	2755	638	2411	567	2143	510	1929	425	1607	364	1378
MT2V0750	1915	7238	1532	5790	1277	4825	1094	4136	957	3619	851	3217	766	2895	638	2413	547	2068
MT2V1000	2548	9632	2038	7705	1699	6421	1456	5504	1274	4816	1132	4281	1019	3853	849	3211	728	2752
MT2V1250	3189	12054	2551	9643	2126	8036	1822	6888	1594	6027	1417	5357	1276	4821	1063	4018	911	3444
MT2V1500	3827	14464	3061	11571	2551	9643	2187	8265	1913	7232	1701	6429	1531	5786	1276	4821	1093	4133
MT2V1750	4464	16875	3571	13500	2976	11250	2551	9643	2232	8438	1984	7500	1786	6750	1488	5625	1276	4821
MT2V2000	5099	19274	4079	15419	3399	12850	2914	11014	2550	9637	2266	8566	2040	7710	1700	6425	1457	5507

Dimensions shown in **inches** *cm*

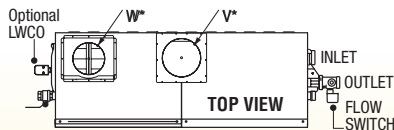
For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>



- 85% efficiency
- NOx below 10 ppm
- 2-stage, 3-stage, and 4-stage firing
- Immune to thermal shock down to 30°F
- Operates in altitudes up to 10,000 feet
- Ambient temperatures from -40°F to +140°F

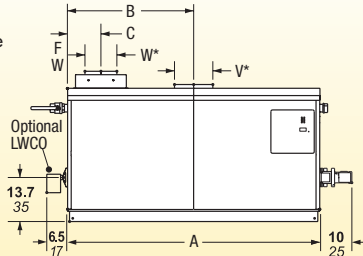
The Pennant® line of fan-assisted, modular boilers ranks among the industry's most versatile and environmentally friendly systems for hydronic applications. Available in 7 sizes from 500 to 2000 MBTU/h, Pennant® boilers deliver efficiency levels up to 85%.

- Tolerant of glycol systems
- Waterways able to operate in a maximum water hardness of 17 gpg
- Hydronic Models supply temps from 125°F to 220°F
- Modular construction: burner trays, gas train, blower assembly
- Glass-lined cast iron or bronze headers
- Heat exchanger uses efficient 10 finned-tube design
- Lightweight insulation
- Warranties: 10-Year heat exchanger + 1-Year parts

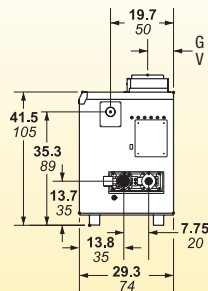


Non pump-mounted unit shown.

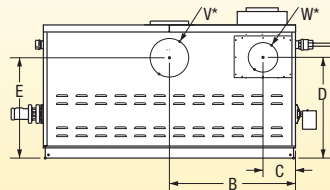
Dimensions shown in **inches** *cm*



FRONT VIEW



RIGHT SIDE VIEW



BACK VIEW



PENNANT® SPECIFICATIONS

	Dimensions							Input ^{1,3}	Output ^{1,3}	Combustion Efficiency	Thermal Efficiency	Gas Connection Sizes inches	Water Connection Sizes inches	Air Conn.	Vent Conn.	Horiz. Vent	Shipping Weight ²
Model	A	B	C	D	E	F	G	MBTU/h	MBTU/h	%	%	inches	inches	W	V	V	lbs. <i>kg</i>
PNCH0500	33 ¹ / ₂ 85	15 ³ / ₄ 40	5 ³ / ₄ 15	29 ³ / ₄ 76	33 ³ / ₄ 86	7 ³ / ₄ 20	8 ³ / ₄ 22	500	425	85.0	85.0	1 ¹ / ₄	2	6 15	8 20	6 15	425 193
PNCH0750	45 ¹ / ₂ 116	21 ³ / ₄ 55	5 ³ / ₄ 15	29 ³ / ₄ 76	33 ³ / ₄ 86	7 ³ / ₄ 20	8 ³ / ₄ 22	750	638	85.0	85.0	1 ¹ / ₄	2	8 20	10 25	8 20	505 229
PNCH1000	57 ¹ / ₂ 146	28 ³ / ₄ 73	5 ³ / ₄ 15	29 ³ / ₄ 76	33 ³ / ₄ 86	7 ³ / ₄ 20	7 18	999	849	85.0	85.0	1 ¹ / ₄	2 ¹ / ₂	8 20	10 25	8 20	615 279
PNCH1250	68 172	34 86	10 ¹ / ₈ 26	30 ³ / ₄ 78	31 ¹ / ₈ 79	8 ³ / ₄ 22	8 ³ / ₄ 22	1250	1064	85.1	85.2	2	2 ¹ / ₂	12 30	12 30	10 25	675 306
PNCH1500	78 ¹ / ₂ 199	39 ³ / ₄ 101	10 ¹ / ₈ 26	30 ³ / ₄ 78	31 ¹ / ₈ 79	8 ³ / ₄ 22	8 ³ / ₄ 22	1500	1266	85.1	85.2	2	2 ¹ / ₂	12 30	12 30	10 25	760 345
PNCH1750	89 226	44 ¹ / ₂ 113	10 ¹ / ₈ 26	30 ³ / ₄ 78	31 ¹ / ₈ 79	8 ³ / ₄ 22	8 ³ / ₄ 22	1750	1489	85.1	85.2	2	2 ¹ / ₂	12 30	14 36	12 30	825 375
PNCH2000	99 ¹ / ₂ 253	49 ³ / ₄ 126	10 ¹ / ₈ 26	30 ³ / ₄ 78	31 ¹ / ₈ 79	8 ³ / ₄ 22	8 ³ / ₄ 22	1999	1701	85.1	85.2	2	2 ¹ / ₂	12 30	14 36	12 30	955 434

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 55 lbs. (25kg).

3. For other boiler ratings:

Boiler Horsepower: HP = $\frac{\text{Output Radiation Surface: EDR sq. ft.} \times \text{Output IBR sq. ft.}}{33,475}$ = $\frac{\text{Net IBR Rating}}{150}$

TEMPERATURE RISES IN DEGREES

Model	20°F		11°C		25°F		14°C		30°F		17°C		35°F		19°C	
	Flow GPM	H/L Feet	Flow lpm	H/L m	Flow GPM	H/L Feet	Flow lpm	H/L m	Flow GPM	H/L Feet	Flow lpm	H/L m	Flow GPM	H/L Feet	Flow lpm	H/L m
PNCH0500	43	1.7	161	0.5	34	1.1	129	0.3	28	0.9	107	0.3	24	0.7	92	0.2
PNCH0750	64	3.3	241	1.0	51	2.3	193	0.7	43	1.7	161	0.5	36	1.2	138	0.4
PNCH1000	85	5.0	321	1.5	68	3.6	257	1.1	57	3.1	214	0.9	48	2.2	184	0.7
PNCH1250	106	8.1	401	2.5	85	6.1	322	1.9	71	4.7	269	1.4	61	3.4	231	1.0
PNCH1500	128	10.0	483	3.0	102	7.2	356	2.2	85	5.5	322	1.7	73	4.2	276	1.3
PNCH1750	N/R	N/R	N/R	N/R	119	10.5	451	3.2	99	8.4	375	2.6	85	5.8	322	1.8
PNCH2000	N/R	N/R	N/R	N/R	136	12.5	515	3.2	113	10.4	429	3.2	97	8.3	368	2.5

Dimensions shown in **inches cm**

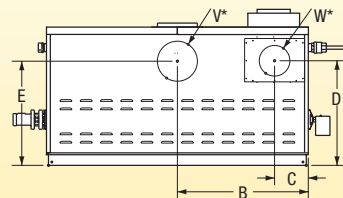
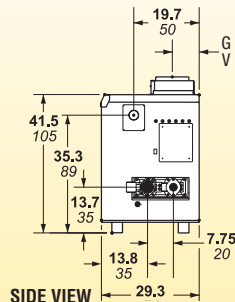
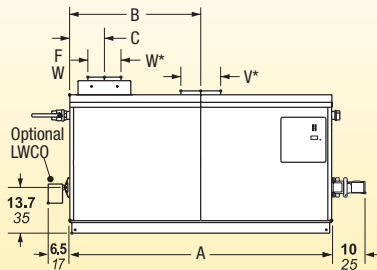
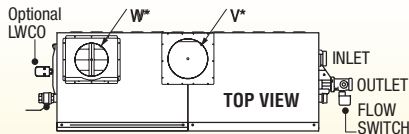
For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>



The Pennant® line of fan-assisted, volume water heaters ranks among the industry's most versatile systems for hot water applications. Available in 7 sizes from 500 to 2000 MBTU/h, Pennant® water heaters run and deliver efficiency levels up to 85%.

- Tolerant of glycol systems
- Waterways able to operate in a maximum water hardness of 17 gpg
- Volume Water Heater models supply temps from 125°F to 210°F
- Modular construction: burner trays, gas train, blower assembly
- Glass-lined cast iron or bronze headers
- Heat exchanger uses efficient 10 finned-tube design
- Lightweight insulation
- Warranties: 10-Year heat exchanger + 1-Year parts

- Up to 85% efficiency
- NOx below 10 ppm
- 2-stage, 3-stage, and 4-stage firing
- Immune to thermal shock down to 30°F
- Operates in altitudes up to 10,000 feet
- Ambient temperatures from -40°F to +140°F



PENNANT® SPECIFICATIONS

	Dimensions								Input ^{1,3}	Output ^{1,3}	Thermal Efficiency	Gas Connection Sizes inches	Water Connection Sizes inches	Air Conn.	Vent Conn.	Horiz. Vent	Shipping Weight ²	
Model	A	B	C	D	E	F	G	MBTU/h	MBTU/h					W	V	V	lbs.	kg
PNCV0500	33½ 85	15¾ 40	5¾ 15	29¾ 76	33¾ 86	7¾ 20	8¾ 22	500	425	85	1¼	2	6 15	8 20	6 15	425 193		
PNCV0750	45½ 116	21¾ 55	5¾ 15	29¾ 76	33¾ 86	7¾ 20	8¾ 22	750	638	85	1¼	2	8 20	10 25	8 20	505 229		
PNCV1000	57½ 146	28¾ 73	5¾ 15	29¾ 76	33¾ 86	7¾ 20	7 18	999	849	85	1¼	2½	8 20	10 25	8 20	615 279		
PNCV1250	68 172	34 86	10⅛ 26	30¾ 78	31⅛ 79	8¾ 22	8¾ 22	1250	1064	85	2	2½	12 30	12 30	10 25	675 306		
PNCV1500	78½ 199	39¾ 101	10⅛ 26	30¾ 78	31⅛ 79	8¾ 22	8¾ 22	1500	1266	85	2	2½	12 30	12 30	10 25	760 345		
PNCV1750	89 226	44½ 113	10⅛ 26	30¾ 78	31⅛ 79	8¾ 22	8¾ 22	1750	1489	85	2	2½	12 30	14 36	12 30	825 375		
PNCV2000	99½ 253	49¾ 126	10⅛ 26	30¾ 78	31⅛ 79	8¾ 22	8¾ 22	2000	1701	85	2	2½	12 30	14 36	12 30	955 434		

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 55 lbs. (25kg).

3. For other boiler ratings:

$$\text{Boiler Horsepower: HP} = \frac{\text{Output Radiation Surface: EDR sq. ft.} \times \text{Output IBR sq. ft.}}{33,475} = \frac{\text{Net IBR Rating}}{150}$$

RECOVERY DATA

Model	40° F GPH	22° C L/h	50° F GPH	28° C L/h	60° F GPH	33° C L/h	70° F GPH	39° C L/h	80° F GPH	44° C L/h	90° F GPH	50° C L/h	100° F GPH	56° C L/h	120° F GPH	67° C L/h	140° F GPH	78° C L/h
PNCV0500	1276	4821	1120	3857	850	3214	729	2755	638	2411	567	2143	510	1929	425	1607	364	1378
PNCV0750	1913	7232	1531	5786	1276	4821	1093	4133	957	3616	850	3214	765	2893	638	2411	547	2066
PNCV1000	2548	9633	2039	7707	1699	6422	1456	5505	1274	4817	1133	4281	1019	3853	849	3211	728	2752
PNCV1250	3189	12054	2551	9643	2126	8036	1822	6888	1594	6027	1417	5357	1276	4821	1063	4018	911	3444
PNCV1500	3827	14464	3061	11571	2551	9643	2187	8265	1913	7232	1701	6429	1531	5786	1276	4821	1093	4133
PNCV1750	4464	16875	3571	13500	2976	11250	2551	9643	2232	8438	1984	7500	1786	6750	1488	5625	1276	4821
PNCV2000	5099	19276	4080	15421	3400	12851	2914	11015	2550	9638	2266	8567	2040	7710	1700	6425	1457	5507

Dimensions shown in inches

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

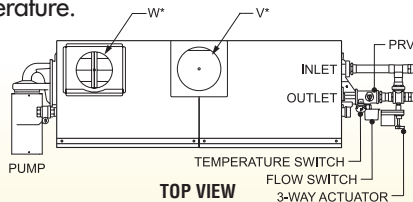
Low-TEMP PENNANT® LOW TEMPERATURE BOILER AND VOLUME WATER HEATERS



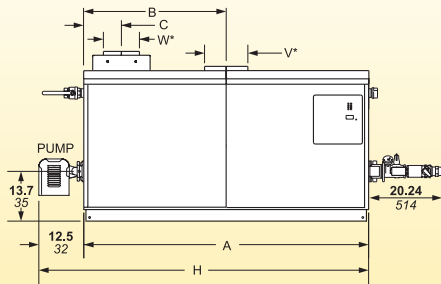
The Low Return Water Temperature Pennant® commercial boiler and volume water heaters eliminate the problem of condensation shortening the life of the heat exchanger. A factory mounted three-way valve and an automatic bypass system help to maintain a minimum boiler return temperature.

- Boiler operating control of 120°F (49°C).
- Heat exchanger condensation is prevented
- Long boiler life, even with rapid swings in the return water temperature
- Operates successfully with return water temperatures as low as 70°F (21°C)

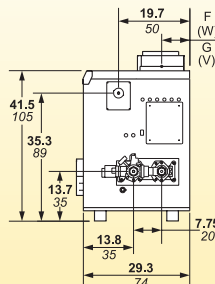
- Seven sizes available from 500 – 2,000MBH
- Perfect for backup to heat pump systems, radiant floor heating, snow melting systems, and low-temp baseboard systems
- Warranties: 10-Year heat exchanger + 1-Year parts



TOP VIEW

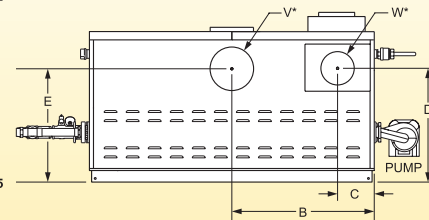


FRONT VIEW



SIDE VIEW

Dimensions shown in **inches** *cm*



BACK VIEW



LOW-TEMP PENNANT® SPECIFICATIONS

	A		B		C		D		E		F		G		H		Air Conn. W*		Vent Conn. V*		Horiz Vent Pipe	
Model	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm
PNCH0500	33½	85	15¾	40	5¾	15	29¾	76	33¾	86	7¾	20	8¾	22	46	117	6	15	8	20	6	15
PNCH0750	45½	116	21¾	55	5¾	15	29¾	76	33¾	86	7¾	20	8¾	22	58	147	8	20	10	25	8	20
PNCH1000	57½	146	28¾	73	5¾	15	29¾	76	33¾	86	7¾	20	7	18	70	178	8	20	10	25	8	20
PNCH1250	68	172	34	86	10¼	26	30¾	78	31⅞	79	8¾	22	8¾	22	80	203	12	30	12	30	10	25
PNCH1500	78½	199	39¾	101	10¼	26	30¾	78	31⅞	79	8¾	22	8¾	22	91	231	12	30	12	30	10	25
PNCH1750	89	226	44½	113	10¼	26	30¾	78	31⅞	79	8¾	22	8¾	22	101	256	12	30	14	36	12	30
PNCH2000	99½	253	49¾	126	10¼	26	30¾	78	31⅞	79	8¾	22	8¾	22	112	284	12	30	14	36	12	30

*Air and vent connections may be on top or back of the Pennant, and are field convertible.

Model	Input ¹ MBTU/h	Output ¹ MBTU/h	PNCH Combustion Efficiency %	PNCV Thermal Efficiency %	PNCH Thermal Efficiency %	Gas Connection Size Inches ²	Heater Water Connection Size Inches ²	Shipping Weight	
								lbs.	kg
PNCH0500	500	425	85	85.0	85.0	1 1/4	2	495	225
PNCH0750	750	638	85	85.0	85.0	1 1/4	2	575	261
PNCH1000	999	849	85	85.0	85.0	1 1/2	2	685	311
PNCH1250	1250	1064	85.1	85.0	85.2	2	2	730	331
PNCH1500	1500	1266	85.1	85.0	85.2	2	2	830	377
PNCH1750	1750	1489	85.1	85.0	85.2	2	2	880	400
PNCH2000	1999*	1701	85.1	85.0	85.2	2	2	1025	465

*The Input MBTU/h for the 2000 is 1999.0 (PNCH) / 2000.0 (PNCV)

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

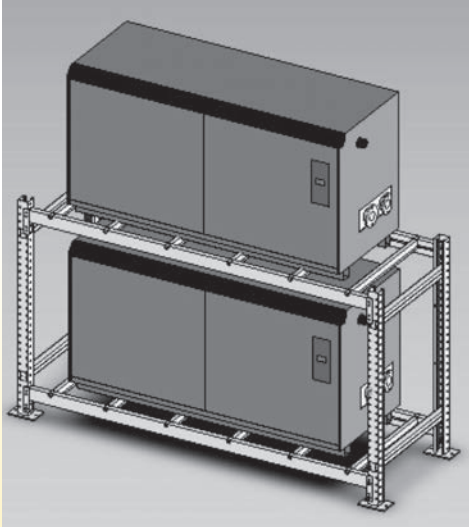
2. Units with pumps: Add 55 lbs. (25kg).

3. For other boiler ratings:

$$\text{Boiler Horsepower: HP} = \frac{\text{Output Radiation Surface: EDR sq. ft.}}{33,475} = \frac{\text{Output IBR sq. ft.}}{150} = \frac{\text{Net IBR Rating}}{150}$$

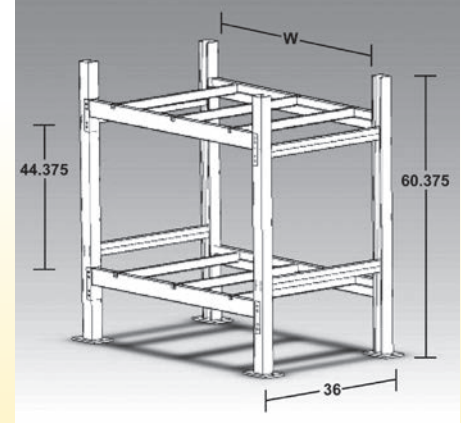
Dimensions shown in **inches** *cm*

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>



This solidly constructed rack system allows the stacking of two Pennant units, in-line without offset and accommodates venting and piping configurations. Pennant models with pumps mounted can be applied and will overhang on sides of rack.

- Maximizes floor space
- Doubles the heating capacity per square foot of floor space
- Easy to assemble
- Works with Pennant Hydronic Boilers or Volume Water Heaters
- Stack two units in-line without offset
- Accommodates venting and piping configurations
- Construction meets or exceeds California requirements and is Seismic Approved and Certified



W is inside dimension.

Dimensions shown in inches

RACKS FOR PENNANT® SPECIFICATIONS

Ass'y P/N	Dimension (inside) “W”	Models Used without Pump	Models Used with Pump	Weight lbs
CA000700	42	Pennant 500	——	183
CA000800	54	Pennant 750	Pennant 500	195
CA000900	66	Pennant 1000	Pennant 750	214
CA001000	84	Pennant 1250	Pennant 1000	230
CA001100	98	Pennant 1500, 1750	Pennant 1250	265
CA001200	108	Pennant 2000	Pennant 1500, 1750	275
CA001300	126	——	Pennant 2000	289

Note: Models with pumps mounted can be applied and will overhang on sides of rack.

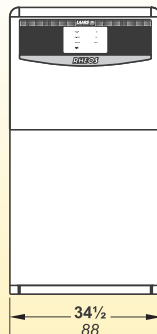


- Modulating proportional firing control system (50-100%)
- All waterways are copper or glass-lined
- Low-water cutoff with test light and manual reset button

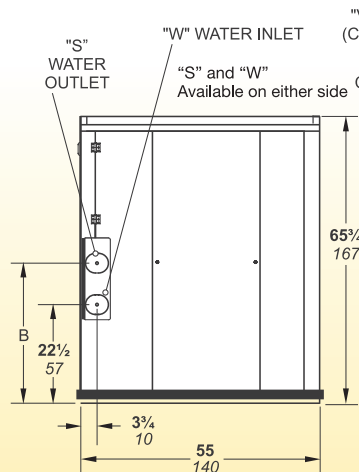
Rheos® boiler technology uses precise modulation electronics that sense conditions and automatically adjust the boiler performance to meet the required heating load. The Rheos® efficiency can cut fuel costs by as much as 30% over traditional boilers. Comes in 1200-2400 MBH.

- Manual reset high-limit
- Fits through a 36" doorway
- High gas pressure switch
- Low gas pressure switch
- Air pressure switch
- ASME CSD-1
- Water flow switch
- Vertical or horizontal venting options (Category IV)
- Pump time delay
- Low-fire start time delay
- 160 lb. w.p. heat exchanger
- 75 psi pressure relief valve (boiler)
- Warranties: 10-Year heat exchanger + 1-Year parts

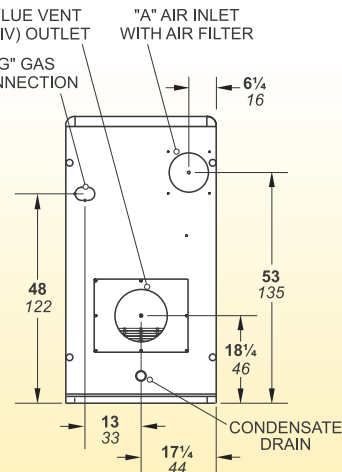
Dimensions
shown in
inches cm



FRONT VIEW



RIGHT SIDE VIEW



BACK VIEW



RHEOS[®] SPECIFICATIONS

Model	Input High Fire MBTU/h <i>kW</i>	Input Low Fire MBTU/h <i>kW</i>	Output High Fire MBTU/h <i>kW</i>	Output Low Fire MBTU/h <i>kW</i>	Combustion Efficiency %	Thermal Efficiency %	“G” Gas Connections Control Packages			Water Conn. W	Air Conn. A	Water Outlet B	Vent Conn. V	Shipping Weight lbs. <i>kg</i>
							Std, A, C, D, F, G NAT/LP NPT	B & E Nat NPT	B & E Nat NPT					
RHCH1200	1200 352	600 176	1032 302	516 151	86.4	86	1	1½	1½	2½	6 15	34¼ 87	6 15	1220 554
RHCH1600	1600 469	800 234	1376 403	688 202	86	86.3	1½	2	2	2½	8 20	34¼ 87	6 15	1265 574
RHCH2000	2000 586	999.5 293	1719 504	859.5 252	85.7	86.7	1½	2	2	3	8 20	34¼ 87	7 18	1295 588
RHCH2400	2400 703	1200 352	2064 605	1032 302	85.5	86.9	1½	2	2	3	8 20	32 81	10 25	1350 613

Dimensions shown in **inches** *cm*

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>



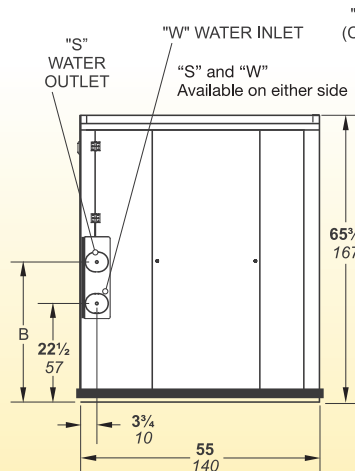
- Modulating proportional firing control system (50-100%)
- All waterways are copper or glass-lined
- Low-water cutoff with test light and manual reset button

- Manual reset high-limit
- Fits through a 36" doorway
- High gas pressure switch
- Low gas pressure switch
- Air pressure switch
- ASME CSD-1
- Water flow switch
- Vertical or horizontal venting options (Category IV)
- Pump time delay
- Low-fire start time delay
- 160 lb. w.p. heat exchanger
- 125 psi pressure relief valve (water heater)
- Warranties: 10-Year heat exchanger + 1-Year parts

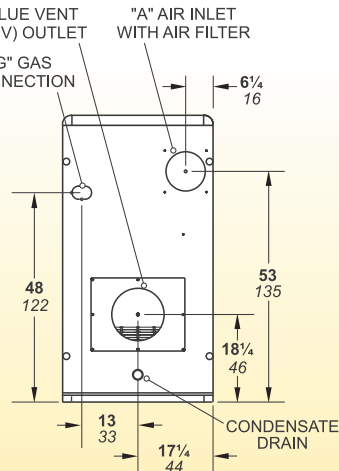
Dimensions
shown in
inches cm



FRONT VIEW



RIGHT SIDE VIEW



BACK VIEW



HLW

Low Lead Content
N514982 372

RHEOS® SPECIFICATIONS

Model	Input High Fire MBTU/h <i>kW</i>	Input Low Fire MBTU/h <i>kW</i>	Output High Fire MBTU/h <i>kW</i>	Output Low Fire MBTU/h <i>kW</i>	Thermal Efficiency %	“G” Gas Connections Control Packages			Water Conn. W	Air Conn. A	Water Outlet B	Vent Conn. V	Shipping Weight lbs. <i>kg</i>
						Std, A, C, D, F, G NAT/LP NPT	B & E Nat NPT	B & E Nat NPT					
RHCV1200	1200 352	600 176	1032 302	516 151	86	1	1½	1½	2½	6 15	34¼ 87	6 15	1220 554
RHCV1600	1600 469	800 234	1376 403	688 202	86	1½	2	2	2½	8 20	34¼ 87	6 15	1265 574
RHCV2000	2000 586	999.5 293	1719 504	859.5 252	86	1½	2	2	3	8 20	34¼ 87	7 18	1295 588
RHCV2400	2400 703	1200 352	2064 605	1032 302	86	1½	2	2	3	8 20	32 81	10 25	1350 613

RECOVERY DATA

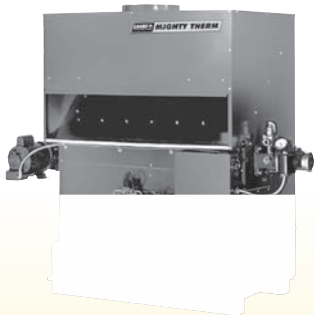
Model	40° F GPH	22° C L/h	50° F GPH	28° C L/h	60° F GPH	33° C L/h	70° F GPH	39° C L/h	80° F GPH	44° C L/h	90° F GPH	50° C L/h	100° F GPH	56° C L/h	120° F GPH	67° C L/h	140° F GPH	78° C L/h
RHCV1200	3061	11571	2449	9257	2041	7714	1749	6612	1531	5789	1361	5143	1224	4629	1020	3857	875	3306
RHCV1600	4082	15429	3265	12343	2721	10286	2332	8816	2041	7714	1814	6857	1633	6171	1361	5143	1166	4408
RHCV2000	5102	19286	4082	15429	3401	12857	2915	11020	2551	9643	2268	8571	2041	7714	1701	6429	1458	5510
RHCV2400	6100	23143	4898	18514	4082	15429	3499	13224	3061	11571	2721	10286	2449	9257	2041	7714	1749	6612

Dimensions shown in **inches** *cm*

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

MIGHTY THERM® AP INDOOR COMMERCIAL POOL HEATER

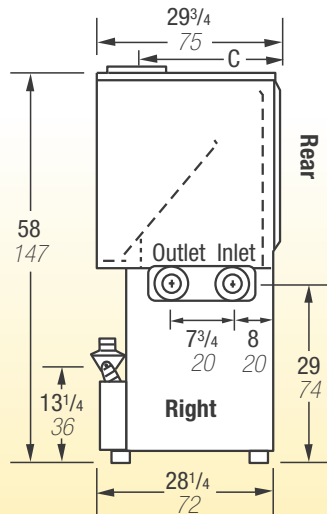
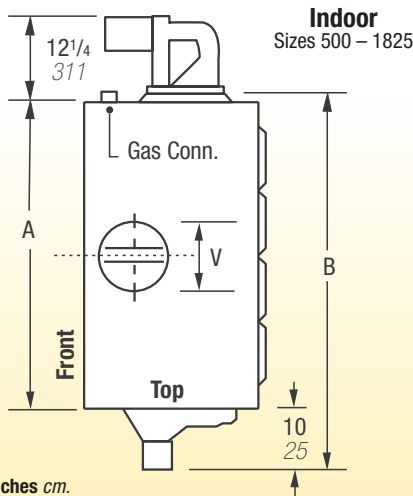
76



- Nine sizes available 500 – 1825MBH inputs
- Natural or propane gas models
- Electronic ignition
- Built-in draft diverter to simplify installation

Energy efficient and compact, Mighty Therm® Model AP indoor pool heating boilers (500 – 1825MBH) are designed for commercial, institutional, and large residential pools where economical performance and rapid heat-up are needed.

- Flow switch standard on all models
- Integral pump assures proper water flow
- Automatic gas valve
- Stainless steel burners, with slide-out burner tray for easy maintenance
- Electronic flame supervision
- Galvanized steel jacket with acrylic finish for long life
- High temperature refractory firebox liner — to 2000°F for greater efficiency
- Integral header flanges for easier serviceability
- Glass-lined or bronze headers for corrosion resistance
- Integral lined copper tube heat exchanger
- Warranties: 5-Year heat exchanger + 1-Year parts



Dimensions shown in **inches cm.**
All specifications subject to change.



MIGHTY THERM® AP 500 I-1825 INDOOR MODELS SPECIFICATIONS

Model	Dimensions ² inches <i>cm</i>								Input ¹		Output ¹		Gas Connection ² Size - inches NPT		Water Connection ² Size - inches NPT	Shipping Weight ³	
	A	B	C	V					MBTU/h	kW	MBTU/h	kW	Natural	LP		lbs	kgs
AP500 I	33 ³ / ₄	86	45 ¹ / ₄	115	23 ³ / ₄	60	10	25	500	147	405	119	1	3/4	2 ¹ / ₂	808	367
AP600 I	38 ³ / ₄	98	50 ¹ / ₄	128	22 ³ / ₄	58	12	30	600	176	486	143	1	3/4	2 ¹ / ₂	819	372
AP715 I	44 ¹ / ₄	112	55 ¹ / ₄	142	22 ³ / ₄	58	12	30	715	210	579	170	1	3/4	2 ¹ / ₂	873	396
AP850 I	50 ³ / ₄	129	62 ¹ / ₄	158	21 ³ / ₄	55	14	36	850	249	689	202	1	3/4	2 ¹ / ₂	945	429
AP1010 I	58	147	69 ¹ / ₂	177	20 ³ / ₄	53	16	41	1010	296	818	240	1 ¹ / ₄	1	2 ¹ / ₂	1041	473
AP1200 I	66 ¹ / ₄	168	77 ³ / ₄	197	20 ³ / ₄	53	16	41	1200	352	972	285	1 ¹ / ₄	1	2 ¹ / ₂	1199	544
AP1430 I	76	193	87 ¹ / ₂	222	19 ³ / ₄	50	18	46	1430	419	1158	339	1 ¹ / ₄	1 ¹ / ₄	2 ¹ / ₂	1280	581
AP1670 I	85 ¹ / ₂	217	97	246	19 ³ / ₄	50	18	46	1670	689	1353	396	1 ¹ / ₂	1 ¹ / ₄	2 ¹ / ₂	1445	656
AP1825 I	92 ¹ / ₂	235	103 ³ / ₄	264	19 ³ / ₄	50	18	46	1825	535	1478	433	1 ¹ / ₂	1 ¹ / ₄	2 ¹ / ₂	1570	713

Notes: 1. Input and output must be derated 4% per 1000 feet above sea level when installed above 2000 feet altitude. 2. Dimensions are nominal. 3. Integral pump included on sizes 500 – 1825.

Model	Temperature Difference Surface Area of Pools (sq. ft.)															
	10°F	6°C	15°F	8°C	20°F	11°C	25°F	14°C	30°F	17°C	35°F	19°C	40°F	22°C	45°F	25°C
AP500 I	3900	362	2600	242	1950	181	1560	145	1300	121	1115	104	975	91	870	81
AP600 I	4680	435	3120	290	2340	217	1870	174	1560	145	1340	124	1170	109	1040	97
AP715 I	5580	518	3720	346	2790	259	2230	207	1860	173	1595	148	1395	130	1240	115
AP850 I	6630	616	4420	411	3315	308	2650	246	2210	205	1895	176	1660	154	1475	137
AP1010 I	7880	732	5250	488	3940	366	3150	293	2625	244	2259	210	1970	183	1750	163
AP1200 I	9360	870	6240	580	4680	435	3745	348	3120	290	2675	249	2340	217	2080	193
AP1430 I	11155	1036	7435	691	5580	518	4460	414	3720	346	3190	296	2790	259	2480	230
AP1670 I	13025	1210	8685	807	6515	605	5210	484	4340	403	3720	346	3260	303	2895	269
AP1825 I	14235	1322	9490	882	7120	661	5695	528	4745	441	4070	378	3560	331	3165	294

Notes: 1. For high altitude pools, reduce the surface area figures shown in the charts by 4% for each 1000 ft. above sea level. (No derating is necessary up to 2000 ft. above sea level.) 2. Laars maintains a policy of continuous improvements and therefore reserves the right to change specifications without notice. 3. Sizing for outdoor pools is based on 3 1/2 mph average wind.

MIGHTY THERM® AP INDOOR COMMERCIAL POOL HEATER

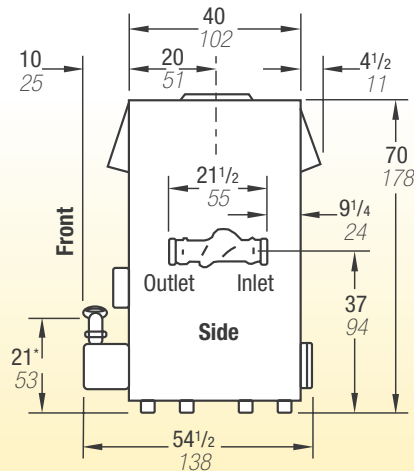
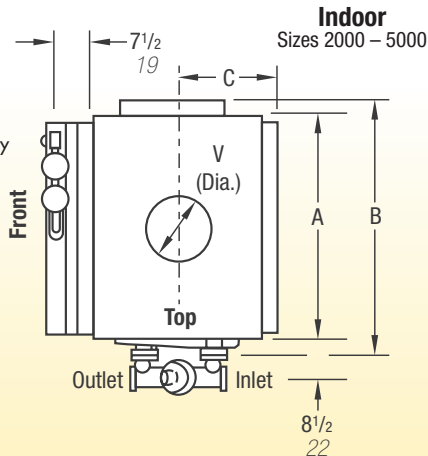
78



- Seven sizes available 2000 – 5000MBH inputs
- Natural or propane gas models
- Electronic ignition
- Built-in draft diverter to simplify installation
- Flow switch standard on all models

Energy efficient and compact, Mighty Therm® Model AP indoor pool heating boilers (2000 – 5000MBH) are designed for commercial, institutional, and large residential pools where economical performance and rapid heat-up are needed.

- Automatic gas valve
- Electronic flame supervision
- Galvanized steel jacket with acrylic finish for long life
- High temperature refractory firebox liner — to 2000°F for greater efficiency
- Integral header flanges for easier serviceability
- Glass-lined or bronze headers for corrosion resistance
- Integral lined copper tube heat exchanger
- Warranties: 5-Year heat exchanger + 1-Year parts



*29" for sizes 3500-5000.

Dimensions shown in inches cm.
All specifications subject to change.



MIGHTY THERM® AP 2000 I-5000 I INDOOR MODELS SPECIFICATIONS

Model	Dimensions ² inches <i>cm</i>								Input ¹		Output ¹		Gas Connection ² Size - inches NPT		Water Connection ² Size - inches NPT	Shipping Weight ³	
	A	B	C	V					MBTU/h	kW	MBTU/h	kW	Natural	LP		lbs	kgs
AP2000 I	55 ¹ / ₂	141	73	185	24 ¹ / ₂	62	22	56	2000	596	1639	480	1 ¹ / ₂	1 ¹ / ₄	4	1950	885
AP2450 I	65 ¹ / ₂	166	83	211	24 ¹ / ₂	62	24	61	2450	718	2009	589	1 ¹ / ₂	1 ¹ / ₂	4	2100	913
AP3050 I	78	198	95 ¹ / ₂	243	24 ¹ / ₂	62	26	66	3050	894	2501	733	2	1 ¹ / ₂	4	2250	1022
AP3500 I	88	224	105 ¹ / ₂	268	24 ¹ / ₂	62	28	71	3500	1025	2870	841	2	1 ¹ / ₂	4	2510	1140
AP4050 I	100 ¹ / ₂	255	118	300	24 ¹ / ₂	62	30	76	4050	1186	3321	973	2	2	4	2750	1249
AP4500 I	110 ¹ / ₂	281	128	325	24 ¹ / ₂	62	32	81	4500	1318	3690	1081	2 ¹ / ₂	2	4	2900	1317
AP5000 I	123	312	140 ¹ / ₂	357	24 ¹ / ₂	62	34	86	5000	1465	4100	1201	2 ¹ / ₂	2	4	3200	1453

Notes: 1. Input and output must be derated 4% per 1000 feet above sea level when installed above 2000 feet altitude. 2. Dimensions are nominal. 3. Integral pump included on sizes 500 – 1825.

Model	Temperature Difference Surface Area of Pools (sq. ft.)															
	10°F	6°C	15°F	8°C	20°F	11°C	25°F	14°C	30°F	17°C	35°F	19°C	40°F	22°C	45°F	25°C
AP2000 I	16400	1524	10935	1016	8200	819	6560	609	5465	508	4685	435	4100	381	3645	339
AP2450 I	20090	1866	13395	1244	10045	933	8035	746	6695	622	5740	533	5025	467	4465	415
AP3050 I	25010	2323	16675	1549	12505	1162	10000	929	8335	744	7145	664	6255	581	5560	517
AP3500 I	28700	2666	19135	1778	14350	1333	11480	1066	9565	889	8200	764	7175	667	6380	593
AP4050 I	33210	3085	22140	2057	16605	1543	13285	1234	11070	1028	9490	882	8300	771	7380	686
AP4500 I	36900	3428	24600	2285	18450	1714	14760	1371	12300	1143	10545	980	9225	857	8200	762
AP5000 I	41000	3809	27335	2539	20500	1904	16400	1524	13665	1269	11715	1088	10250	952	9110	846

Notes: 1. For high altitude pools, reduce the surface area figures shown in the charts by 4% for each 1000 ft. above sea level. (No derating is necessary up to 2000 ft. above sea level.) 2. Laars maintains a policy of continuous improvements and therefore reserves the right to change specifications without notice. 3. Sizing for outdoor pools is based on 3 1/2 mph average wind.

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

MIGHTY THERM[®] AP OUTDOOR COMMERCIAL POOL HEATER

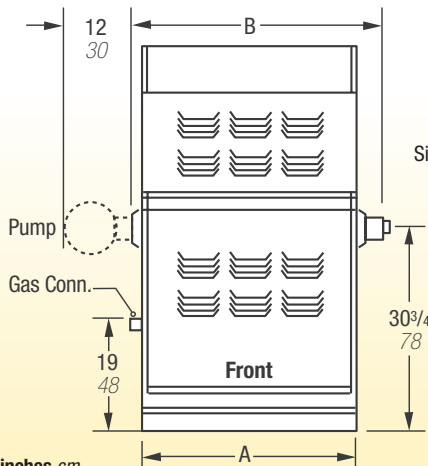
80



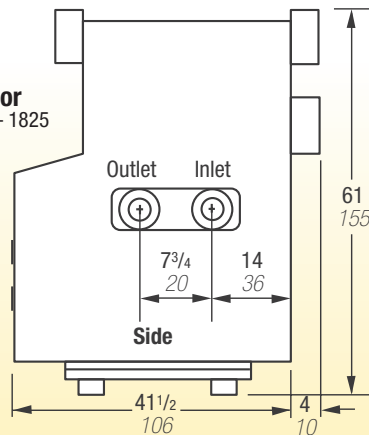
Energy efficient and compact, Mighty Therm[®] Model AP outdoor pool heating boilers (500 – 1825MBH) are designed for commercial, institutional, and large residential pools where economical performance and rapid heat-up are needed.

- Nine sizes available 500 – 1825MBH inputs
- Natural or propane gas models
- Electronic ignition
- Built-in draft diverter to simplify installation
- Flow switch standard on all models
- Integral pump assures proper water flow

- Automatic gas valve
- Stainless steel burners, with slide-out burner tray for easy maintenance
- Electronic flame supervision
- Galvanized steel jacket with acrylic finish for long life
- High temperature refractory firebox liner — to 2000°F for greater efficiency
- Integral header flanges for easier serviceability
- Glass-lined or bronze headers for corrosion resistance
- Integral lined copper tube heat exchanger
- Warranties: 5-Year heat exchanger + 1-Year parts



Outdoor
Sizes 500 – 1825



Dimensions shown in **inches cm.**
All specifications subject to change.



MIGHTY THERM® AP 500 E-1825 E OUTDOOR MODELS SPECIFICATIONS

	Dimensions ² inches <i>cm</i>				Input ¹		Output ¹		Gas Connection ² Size - inches NPT		Water Connection ² Size - inches NPT		Shipping Weight ³	
Model	A		B		MBTU/h	<i>kW</i>	MBTU/h	<i>kW</i>	Natural	LP			lbs	<i>kgs</i>
AP500 E	33 ³ / ₄	86	45 ¹ / ₄	115	500	147	410	1120	1	³ / ₄		2 ¹ / ₂	855	388
AP600 E	38 ³ / ₄	98	50 ¹ / ₄	128	600	176	492	144	1	³ / ₄		2 ¹ / ₂	949	431
AP715 E	44 ¹ / ₄	112	55 ¹ / ₄	142	715	210	586	172	1	³ / ₄		2 ¹ / ₂	1050	477
AP850 E	50 ³ / ₄	129	62 ¹ / ₄	158	850	249	697	204	1	³ / ₄		2 ¹ / ₂	1100	499
AP1010 E	58	147	69 ¹ / ₂	177	1010	296	828	243	1 ¹ / ₄	1		2 ¹ / ₂	1240	563
AP1200 E	66 ¹ / ₄	168	77 ³ / ₄	197	1200	352	984	288	1 ¹ / ₄	1		2 ¹ / ₂	1410	640
AP1430 E	76	193	87 ¹ / ₂	222	1430	419	1173	344	1 ¹ / ₄	1 ¹ / ₄		2 ¹ / ₂	1570	713
AP1670 E	85 ¹ / ₂	217	97	246	1670	689	1370	401	1 ¹ / ₂	1 ¹ / ₄		2 ¹ / ₂	1622	736
AP1825 E	92 ¹ / ₂	235	103 ³ / ₄	264	1825	535	1497	439	1 ¹ / ₂	1 ¹ / ₄		2 ¹ / ₂	1725	783

Notes: 1. Input and output must be derated 4% per 1000 feet above sea level when installed above 2000 feet altitude. 2. Dimensions are nominal. 3. Integral pump included on sizes 500 – 1825.

Model	Temperature Difference Surface Area of Pools (sq. ft.)															
	10°F	6°C	15°F	8°C	20°F	11°C	25°F	14°C	30°F	17°C	35°F	19°C	40°F	22°C	45°F	25°C
AP500 E	4000	372	2665	248	2000	186	1600	149	1330	124	1140	106	1000	93	885	82
AP600 E	4800	446	3200	297	2400	223	1920	178	1600	149	1370	127	1200	111	1065	99
AP715 E	5720	531	3810	354	2860	266	2285	212	1905	177	1630	151	1430	133	1270	118
AP850 E	6800	632	4530	421	3400	316	2720	253	2265	210	1940	180	1700	158	1510	140
AP1010 E	8080	751	5385	500	4040	375	3230	300	2690	250	2305	214	2020	188	1795	167
AP1200 E	9600	892	6400	595	4800	446	3840	357	3200	297	2740	255	2400	223	2130	198
AP1430 E	11440	1063	7625	708	5720	531	4575	425	3810	354	3265	303	2860	266	2540	236
AP1670 E	13360	1241	8905	827	6680	621	5344	496	4450	413	3815	354	3340	310	2965	275
AP182	14600	1356	9730	904	7300	678	5840	543	4865	452	4170	387	3650	339	3240	301

Notes: 1. For high altitude pools, reduce the surface area figures shown in the charts by 4% for each 1000 ft. above sea level. (No derating is necessary up to 2000 ft. above sea level.) 2. Laars maintains a policy of continuous improvements and therefore reserves the right to change specifications without notice. 3. Sizing for outdoor pools is based on 3 1/2 mph average wind.

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

MIGHTY THERM® AP OUTDOOR COMMERCIAL POOL HEATER

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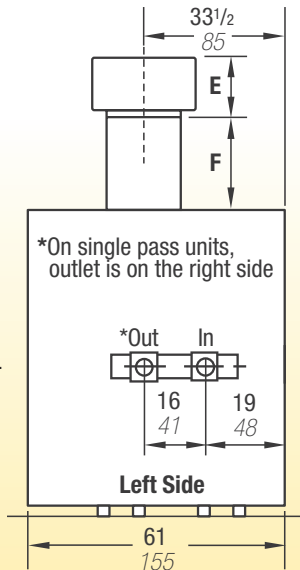


Energy efficient and compact, Mighty Therm® Model AP outdoor pool heating boilers (2200 – 4500MBH) are designed for commercial, institutional, and large residential pools where economical performance and rapid heat-up are needed.

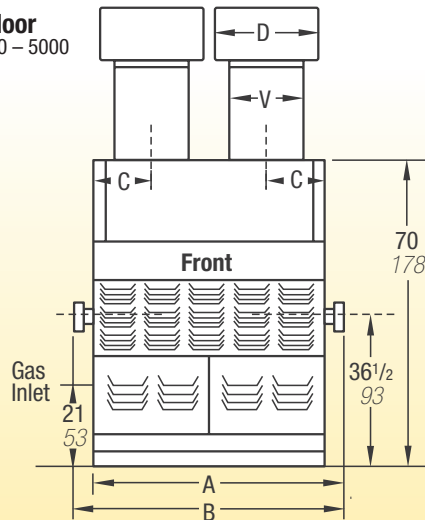
- High temperature refractory firebox liner — to 2000°F for greater efficiency
- Integral header flanges for easier serviceability
- Glass-lined or bronze headers for corrosion resistance
- Integral lined copper tube heat exchanger
- Warranties: 5-Year heat exchanger + 1-Year parts

- Six sizes available 2200 – 4500MBH inputs
- Natural or propane gas models
- Electronic ignition
- Built-in draft diverter to simplify installation
- Flow switch standard on all models
- Automatic gas valve
- Electronic flame supervision
- Galvanized steel jacket with acrylic finish for long life

Dimensions shown in **inches cm**.
All specifications subject to change.



Outdoor
Sizes 2200 – 5000



MIGHTY THERM AP 2200 E-4500 E OUTDOOR MODELS SPECIFICATIONS

	Dimensions ² inches <i>cm</i>											Input ¹		Output ¹		Gas Connection ² Size - inches NPT		Water Connection ² Size - inches NPT	Shipping Weight ³				
Model	A		B		C		D		E		F		V		MBTU/h	kW	MBTU/h	kW	Natural	LP		lbs	kgs
AP2200 E	65½	166	83	211	16	41	28¼	72	15	38	24	61	18	46	2205	646	1786	523	1½	1¼	4	2320	1053
AP2800 E	78	198	95½	243	20	51	28¼	72	15	38	24	61	18	46	2745	804	2223	651	1½	1½	4	2500	1135
AP3200 E	88	224	105½	268	23	58	31½	80	16½	42	36	91	20	51	3150	923	2552	748	2	1½	4	2840	1289
AP3600 E	100½	255	118	300	29	74	31½	80	16½	42	36	91	20	51	3645	1068	2952	865	2	2	4	3175	1142
AP4000 E	110½	281	128	325	30½	77	34½	88	18	46	36	91	22	56	4050	1187	3281	961	2½	2	4	3940	1789
AP4500 E	123	312	140½	357	34	86	37¾	96	19½	50	36	91	24	61	4500	1319	3645	1068	2½	2	4	3790	1721

Notes: 1. Input and output must be derated 4% per 1000 feet above sea level when installed above 2000 feet altitude. 2. Dimensions are nominal. 3. Integral pump included on sizes 500 – 1825.

Model	Temperature Difference Surface Area of Pools (sq. ft.)																	
	10°F	6°C	15°F	8°C	20°F	11°C	25°F	14°C	30°F	17°C	35°F	19°C	40°F	22°C	45°F	25°C	50°F	28°C
AP2200 E	17861	1659	11907	1106	8930	830	7144	664	5954	553	5103	474	4465	415	3969	369	3572	332
AP2800 E	22235	2066	14823	1377	11117	1033	8894	826	7412	689	6353	590	5559	516	4941	459	4447	413
AP3200 E	25515	2370	17010	1580	12758	1185	10206	948	8505	790	7290	677	6379	593	5670	527	5103	474
AP3600 E	29525	2743	19683	1829	14762	1375	11810	1097	9842	914	8436	784	7381	689	6561	610	5905	549
AP4000 E	32805	3048	21870	2032	16403	1524	13122	1219	10935	1016	9373	871	8201	762	7290	677	6561	610
AP4500 E	36450	3386	24300	2257	18225	1693	14580	1354	12150	1129	10414	967	9113	847	8100	752	7290	677

Notes: 1. For high altitude pools, reduce the surface area figures shown in the charts by 4% for each 1000 ft. above sea level. (No derating is necessary up to 2000 ft. above sea level.) 2. Laars maintains a policy of continuous improvements and therefore reserves the right to change specifications without notice. 3. Sizing for outdoor pools is based on 3½ mph average wind.

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

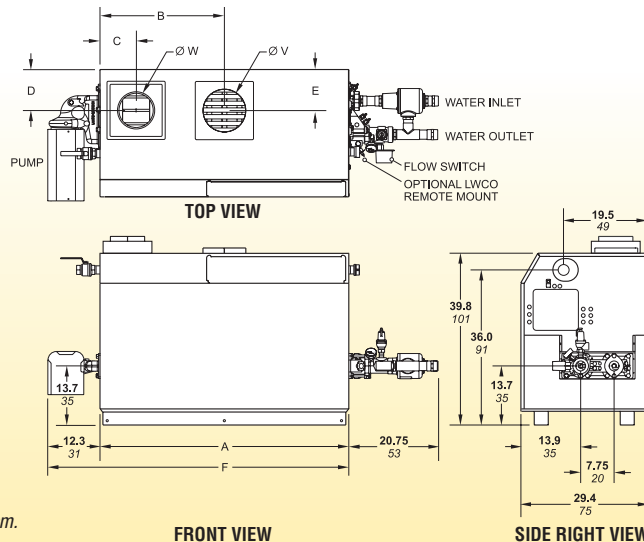
MIGHTY THERM[®] 2 POOL COMMERCIAL INDOOR/OUTDOOR POOL HEATER



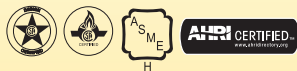
Mighty Therm[®] 2 ranks among the industry's most versatile and environmentally friendly systems for superior pool heating. Available in 7 sizes from 500 to 2000 MBH, Mighty Therm[®] 2 pool heaters run reliably on natural or LP gas and deliver exceptional efficiency levels. The systems are also among the "greenest" in the industry with NOx emissions below 10 ppm.

- Indoor/Outdoor construction
- Immune to thermal shock down to 30°F
- Operates in altitudes up to 10,000 feet
- Ambient temperatures from -40°F to +140°F
- Waterways able to operate in a maximum water hardness of 17 gpg
- Factory-mounted pump sized for heat exchanger, 30 feet of pipe and 3 elbows total pressure drop
- Fan-assisted combustion system
- 120vac, 60 Hz single phase power
- Modular construction: burner trays,

- gas train, blower assembly
- Thermostatic mixing valve
- Heat exchanger uses efficient 10 finned tube design
- Category III (horizontal) venting, up to 50 feet with 3 elbows, without additional fans
- Washable air filter
- Wiring terminal strip makes electrical troubleshooting easy
- Easy access to igniter via special service panel
- Easy-to-service burner assembly
- Warranties: 5-Year limited + 1-Year parts



Dimensions shown in inches *cm*.



MIGHTY THERM® 2 POOL HEATER® SPECIFICATIONS

DIMENSIONS

	A		B		C		D		E		F		Air Conn. W		Vent Conn. V	
Model	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm				
MT2P0500	33¾	85	16¾	43	6½	17	10	25	8	20	46¼	117	6	15	8	20
MT2P0750	45¾	116	22¾	53	6½	17	10	25	9½	24	58¼	148	8	20	10	25
MT2P1000	57¾	147	28¾	73	6½	17	10	25	9½	24	70¼	178	8	20	10	25
MT2P1250	68¼	173	34	87	10¼	26	10	25	9	23	80¾	205	12	30	12	30
MT2P1500	78¾	200	39½	100	10¼	26	10	25	9	23	91¼	232	12	30	12	30
MT2P1750	89¼	227	44¾	113	10¼	26	10	25	9	23	101¾	258	12	30	12	30
MT2P2000	99¾	253	49¾	127	10¼	26	10	25	9	23	112¼	285	12	30	14	36

SIZING DATA

Model	Input MBTU/h	Input kW	Output MBTU/h	Output kW	Thermal Efficiency %	Gas Conn. Sizes inches	Pool Heater Water Conn. Size inches	Mixing System Water Conn. Size inches	Approx. Shipping Weight* lbs. kg	
MT2P0500	500	147	435	127	87	1 ¹ / ₄	2	2	495	225
MT2P0750	750	220	652.5	191	87	1 ¹ / ₄	2	2	575	261
MT2P1000	999	293	869.13	254	87	1 ¹ / ₄	2 ¹ / ₂	2	685	311
MT2P1250	1250	366	1087.5	318	87	2	2 ¹ / ₂	2	730	331
MT2P1500	1500	440	1305	382	87	2	2 ¹ / ₂	2	830	377
MT2P1750	1750	513	1522.5	446	87	2	2 ¹ / ₂	2	880	400
MT2P2000	1999	586	1739.13	509	87	2	2 ¹ / ₂	2	1025	465

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

2. Dimensions are nominal.

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

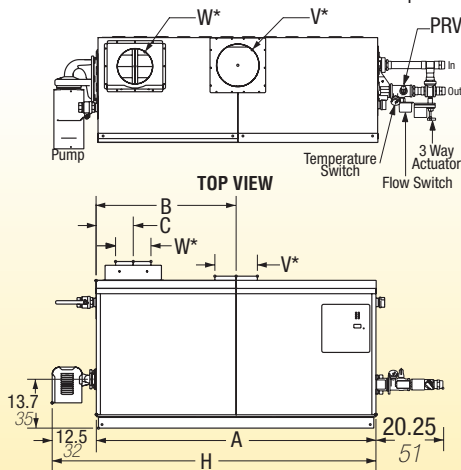
PENNANT® COMMERCIAL POOL HEATER



The Pennant® line of high-performance commercial pool heating boilers from LAARS delivers efficiency levels of 85% or more. NOx emissions are among the lowest in the industry at 10 ppm.

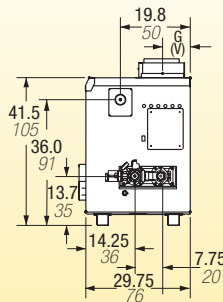
- Installs indoors or outdoors
- Automatic bypass system is factory pre-set — no field adjustments required
- Reversible vent and intake air terminals
- Separate field wiring terminal panel
- Front panel diagnostics
- Optional rack-mounting
- Reversible gas and water connections
- Warranties: 5-Year limited + 1-Year parts

- Available in 500, 750, 1000, 1250, 1500, 1750, 2000MBH inputs
- Built-in automatic mixing system to help eliminate condensation in the heat exchanger
- Allows return water temperatures as low as 60° without condensation
- Standard Backwash Switch
- Uses room air or outside air for combustion
- Vents into a chimney or through a side-wall

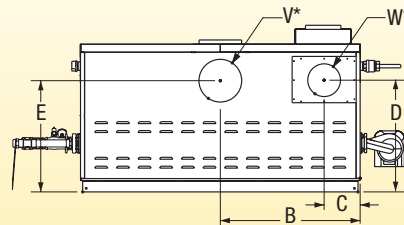


FRONT VIEW

Dimensions shown in inches cm.
All specifications subject to change.



SIDE RIGHT VIEW



REAR VIEW



PENNANT® SPECIFICATIONS

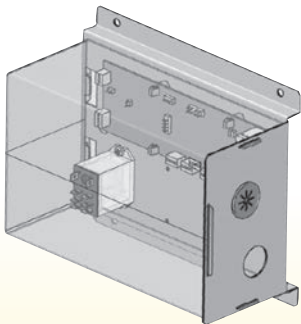
	Dimensions ² inches <i>cm</i>																Air Conn. W*	Vent Conn. V*	Horiz. Vent. Pipe	Input ¹	Output ¹	Gas Conn.	Water Heater Conn.	Mixing System Water Conn.	Shipping Weight ³
Model	A	B	C	D	E	F	G	H	MBTU/h	MBTU/h	Size inches	Size inches	Size inches	lbs	kgs										
PNCP0500	33½ 85	15¾ 40	5¾ 15	29¾ 76	33¾ 86	7¾ 20	8¾ 22	46 117	6 15	8 20	6 15	500	425	1¼	2	2	495 225								
PNCP0750	45½ 116	21¾ 55	5¾ 15	29¾ 76	33¾ 86	7¾ 20	8¾ 22	58 147	8 20	10 25	8 20	750	638	1¼	2	2	575 261								
PNCP1000	57½ 146	28¾ 73	5¾ 15	29¾ 76	33¾ 86	7¾ 20	7 18	70 178	8 20	10 25	8 20	999	849	1½	2½	2	685 311								
PNCP1250	68 172	34 86	10⅛ 26	30¾ 78	31⅛ 79	8¾ 22	8¾ 22	80 203	12 30	12 30	10 25	1250	1063	2	2½	2	730 331								
PNCP1500	78½ 199	39¾ 101	10⅛ 26	30¾ 78	31⅛ 79	8¾ 22	8¾ 22	91 231	12 30	12 30	10 25	1500	1275	2	2½	2	830 377								
PNCP1750	89 226	44½ 113	10⅛ 26	30¾ 78	31⅛ 79	8¾ 22	8¾ 22	101 256	12 30	14 36	12 30	1750	1488	2	2½	2	880 400								
PNCP2000	99½ 253	49¾ 126	10⅛ 26	30¾ 78	31⅛ 79	8¾ 22	8¾ 22	112 284	12 30	14 36	12 30	1999	1699	2	2½	2	1025 465								

*Air and vent connections may be on top or back of the Pennant, and they are field convertible.

NOTES: 1. Input and output must be derated 2% per 1000 feet above sea level when installed above 2000 feet altitude. 2. Dimensions are nominal.

Model	Temperature Difference Surface Area of Pools (sq. ft.)																40°F	22°C	45°F	25°C	50°F	28°C
	10°F	6°C	15°F	8°C	20°F	11°C	25°F	14°C	30°F	17°C	35°F	19°C										
PNCPO500	4090	370	2720	250	2040	180	1630	150	1360	120	1170	100	1020	90	910	80	810	70				
PNCPO750	6130	560	4090	370	3060	280	2450	220	2040	180	1750	160	1530	140	1360	120	1220	110				
PNCPI1000	8180	750	54540	500	4090	370	3270	300	2720	250	2340	210	2040	180	1820	160	1630	150				
PNCPI1250	10230	950	6820	630	5110	470	4090	370	3410	310	2920	270	2550	230	2280	210	2040	180				
PNCPI1500	12270	1130	8180	750	6130	560	4910	450	4090	370	3510	320	3060	280	2730	250	2450	220				
PNCPI1750	14320	1330	9540	880	7160	660	5720	530	4770	440	4090	370	3580	330	3190	290	2860	260				
PNCPI2000	16370	1520	10910	1010	8180	750	6540	600	5450	500	4680	430	4090	370	3650	330	3270	300				

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

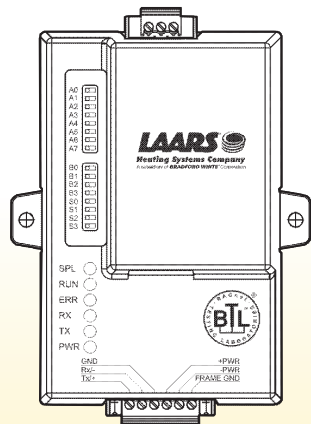


The Vari-Prime™ Control System features a variable pump control that, when used with a variable speed pump, maintains a user-chosen temperature rise between the inlet and outlet of the boiler.

- Maintains user chosen temperature rise between boiler inlet and outlet.
- Operates in degrees, Fahrenheit or Celsius, user selectable.
- User selectable Delta T settings.
- Protective enclosure.
- Proprietary Boiler System Algorithm: Vari-Prime™ will operate the boiler pump at maximum flow during boiler startup to ensure stable operation is reached before introducing variable water flow. This key feature keeps the boiler's combustion and variable speed pump's flow in phase with each other, protecting the heat exchanger from potential low flow conditions.
- Comes standard on the Laars MagnaTherm condensing modulating boilers
- Available as an optional package on the Laars NeoTherm condensing boiler line.
- In conjunction with a variable speed pump, A Vari-Prime™ installation will track the heating profile curve and dramatically reduce the electrical usage of the boiler pump.
- Vari-Prime™ control logic operates in tandem with Laars modulating boiler combustion controls and the variable speed pumps and drivers that are available on the market today.
- Based on today's energy costs vs. the cost of installing a variable speed pump system can provide an expected payback within one to two years, depending on size of system, heating profile, and regional energy costs.

VARI-PRIME™ CONTROL SYSTEM SPECIFICATIONS

Delta T Settings	15°F (8°C), 20°F (10°C), 25°F (13°C), 30°F (16°C), 35°F (18°C), 40°F (20°C)
Output Types	0-10VDC or 4-20mA
Dimensions	7 3/4" x 6 1/4" x 3 3/4"
Power Voltage	24 VAC
Max Operating Temp	150°F (65°C)



The LAARS Gateway is an external, high performance Building Automation multi-protocol gateway that has been preprogrammed for LAARS' Mascot II, NeoTherm, and NeoTherm LC to support BACnet®1 MS/TP, BACnet/IP, Metasys®2 N2 by JCI, Modbus TCP, and LonWorks®3.

Features

- BTL Marked and LonMark Certified
- Field programmable

Standard Equipment

- LER Model Protocol: LonWorks
- RER Model protocols: BACnet MS/TP, BACnet IP, Metasys N2, and Modbus TCP

- Laars Gateway RER is based on an ARM9 processor for fast performance and includes two serial ports, one RS-485, and one Ethernet port. BACnet BTL marked (B-ASC)
- Laars Gateway LER includes a LonWorks port plus Ethernet and RS-485 ports. LonMark certified
- Able to interface with up to eight controls on Laars Mascot, NeoTherm, and MagnaTherm product lines

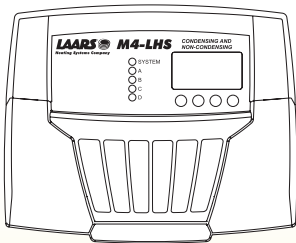
- Interfaces with RS-485, Ethernet, or LonWorks
- DIP switches to select baud rate on RS-485 protocol (9600, 19200, 38400, 57600, or 76800)
- Serial or Ethernet versions support a total of 2400 Host and Field Protocol memory points
- LonWorks versions support a total of 1500 Host and Field Protocol memory points. Voltage Input Multi-mode power adapter: 9-30VDC or 12 – 24VAC

GATEWAY SPECIFICATIONS

Power Consumption @ 12V	RER = 150mA LER = 279mA
Operating Temperature	-40°F to 167°F (-40°C to 75 °C)
Operating Humidity	5-90% RH, non-condensing
Connections	RS-485 Port for BACnet MP/TS or Metasys N2 Ethernet Port for BACnet IP LonWorks Port
Weight	0.4 lbs (0.2 kg)
Dimensions	4.5 L x 3.2 W x 1.6 H inches (11.5 x 8.2 x 4.0 cm)
Surge Suppression	EN61000-4-2 ESD EN61000-4-3 EMC EN61000-4-4 EFT
Approvals	BACnet Testing Labs (BTL) B-ASC-RER Series LonMark 3.4 Certified-LER Series CE (EN55022; EN55024; EN60950) TUV approved to UL 916 standard and CSA C22-2 FCC Class A Part 15 CSA 205 Approved RoHS Compliant DNP3 Conformance Tested OPC Self Certified to Compliance

BACnet Support	BTL Listed BACnet COV's Support up to 2,000 Host & Field points DIP switches are for setting MAC Address, Node-ID, Baud Rate on the RS-485 Field protocol
LonMark Certification	SPID: 80:00:95:46:00:84:04:07 Profiles: 0000-Node object (1), 0001 0001-Open Loop Sensor Object (5) 0003-Open Loop Actuator Object (5)
Warranty	Two years from date of purchase, return to factory

M4-LHS CONTROL FOR CONDENSING, NON-CONDENSING, MODULATION & STAGE-FIRED BOILERS



Laars M4-LHS — Multiple boiler sequencing control with outdoor reset for up to four modulating boilers. Includes system water sensor and well, outdoor air sensor, and clip.

Standard Equipment

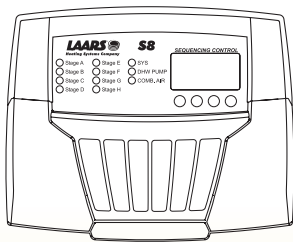
- Multiple boiler control, used to lead-lag modulating, stage-fired, condensing, and non-condensing boilers
- Controls up to four stages (one modulating boiler is one stage)
- Ready to use with Laars X-BAC BACnet interface module
- Ready to use with up to two M4EXT extension modules for control of up to 16 modulating stages
- Ready to use with XSIG module to accept external 4-20mA control signal
- Outdoor reset or setpoint control
- System water temperature sensor
- System water temperature sensor well
- Outdoor air temperature sensor
- Outdoor air temperature sensor clip

Features

- Operates two groups of boilers — condensing and non-condensing — each with independent configuration — to achieve the highest system efficiency
- Chooses condensing or noncondensing groups based on system temperature
- Controller works with either stagefired or modulated boilers
- Controls 0-5V, 1-5V, 0-10V, 2-10V and 4-20mA boilers, or stage-fired boilers, in any combination
- Lo/Hi/Lo/Hi sequencing fires lag boiler after the lead boiler reaches full fire capacity — Lo/Lo/Hi/Hi sequencing provides an opportunity for higher boiler efficiency to bring on the lowest firings stages of all the boiler before moving any of them to higher firing rates
- Parallel or normal modulation provides efficient, smooth, and adjustable modulation that can fit most applications whether the boilers are to sequence normally (one after another) or in parallel
- Each boiler can be set for one of three rotation modes: timed (one hour to sixty days), manual, or last-on/last-off
- Each boiler can be set individually to be automatically operated, fully on, manually adjusted, off, or be considered a standby boiler. The standby boiler is used as a backup with an adjustable standby delay. This feature is great for using less efficient boilers (with lower initial purchase cost) for periods of high demand only
- Soft-off feature, lag delay and last stage hold assist in minimizing boiler short-cycling
- Adjustable ignition start point and modulation start point
- Adjustable purge delay, feature to match the boiler's pre-purge time
- Adjustable minimum and maximum system temperature protect boilers or system
- Communicates with EMS (energy management system) by adding the XSIG 4-20mA interface module, and has shutdown and prove inputs for the EMS

M4-LHS SPECIFICATIONS

Voltage Input	120VAC 60Hz	Temperature Display	Fahrenheit or Celsius
Power Consumption	12 VA Max	Display	Graphical alphanumeric (7 rows x 21 characters each)
Operating Temperature	20°F to 130°F	Temperature Sensor Ranges	-35°F to 250°F
Operating Humidity	20% to 80%	Outdoor Cutoff	Range 20°F to 100°F, ON and OFF
Storage Temperature	-4°F to 180°F	SetPoint	70°F to 250°F
Dimensions	11-3/8" wide x 9-1/4" high x 3-31/4" deep	External Setpoint	-10°F to 240°F using XSIG 4-20mA interface (optional)
Weight	2.5 pounds	Sequencing Modes	Lo/Hi/Lo/Hi or Lo/Lo/Hi/Hi
Lead Boiler Rotation	Time (1 to 1440 hours [60 days]), manual, last-on	Domestic Water	With or without priority
Stage Modes	Auto, standby, manual, on, off	Reset Ratio Range (Outdoor Reset only)	(1:4) to (4:1) (outdoor: system water), and custom ratio
Ignition Start Point	1% to 50%	Offset Adjustment (Outdoor Reset only)	-40°F to 40°F
Modulation Start Point	0% to 100%	Minimum Target (Outdoor Reset only)	70°F to 170°F
Switch Between Boiler Group Modes	System/Return Temp	Maximum Target (Outdoor Reset only)	90°F to 240°F
Standby Time (PID only)	1 to 60 minutes	Last Stage Hold (PID only)	0°F to 30°F
Purge Delay	0.0 to 10.0 minutes Switch between boiler group modes: Outdoor Temp or System/Return Temp	Pump Run-On	0 to 360 minutes
Lag Delay	0 to 60 minutes	Night Setback	0°F to 75°F
Modulating Signals Available	0-5V, 1-5V, 0-10V, 2-10V and 4-20mA	Schedules	1 Day and 1 Night (setback) settings per day
Output Relay Ratings	1 Amp inductive, 6Amp resistive at 120VAC 60Hz, 15A total for all circuits	Power Backup	Lithium coin battery, 100 days minimum 5 year replacement (maintains clock in power outage)
Pump Outlet	1 N.O. SPST	External Inputs	Shutdown input and prove input (dry contacts only)
		Season	Winter and Summer
		Modulation Modes	Normal or parallel



S8 — Multiple boiler sequencing control with outdoor reset for up to eight boiler stages — will control on/off, two-stage, and four-stage units.

Standard Equipment

- Multiple boiler control, for up to eight boiler stages
- Ready to use with up to two S8EXT extension modules for control of up to twenty-four boiler stages
- Outdoor reset or setpoint control
- Ready to use with XSIG module to accept external 4-20mA control signal
- System water temperature sensor

Features

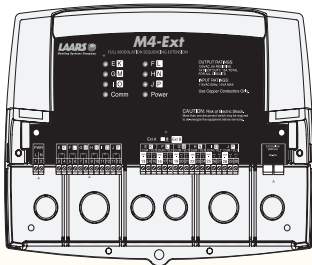
- System water temperature sensor well
- Outdoor air temperature sensor
- Outdoor air temperature sensor clip
- Graphics that display in plain English
- Brightly lit LCD, visible with no ambient light

- Can be used with on/off, two-stage and four-stage units
- Each boiler can be set individually to be automatically operated, fully on, manually adjusted, off, or standby.
- Communicates with EMS (energy management systems) by adding the XSIG 4-20mA interface module
- Can be configured for indirect domestic hot water pump control with the additional DHW sensor, or by using a dry contact closure, for a variety of domestic water priority and control options
- Settings are pre-configured, but adjustable
- Three rotation options – timed, manual, or first-on/first-off
- Minimum boiler return feature with optional return sensor
- Adjustable day and night schedule
- PID Lo/Hi/Lo/Hi or Lo/Lo/Hi/Hi sequencing or over-sized-system sequencing with features such as last stage hold, reaction time, or minimum runtime, to minimize short-cycling
- System output relay for system pump with adjustable run-on delay, or combustion air damper with prove for air damper
- Adjustable outdoor temperature cutoff and customizable reset curves
- Internal programming switch protected by locking cover for security against unexpected changes to program
- UL Listed, tested per standard 916
- Boost feature
- Summer shutdown option with domestic water override
- Memory and backup with lithium battery to store information for 100 days

S8 SPECIFICATIONS

Voltage Input	20VAC 60Hz	Offset Adjustment (outdoor reset only)	-40°F to 40°F
Power Consumption	12 VA Max	Minimum Target (outdoor reset only)	70°F to 170°F
Operating Temperature	20°F to 120°F	Maximum Target (outdoor reset only)	90°F to 240°F
Operating Humidity	20% to 80%	Reaction Time (PID only)	1 to 10 minutes
Dimensions	11-3/8" wide x 9-1/4" high x 3-3/4" deep	Min. Run-Time (PID only)	80°F to 140°F
Weight	2.5 pounds	Purge Delay (PID only)	0.0 to 10.0 minutes
Lead Stage Rotation	Time (1 to 999 hours [41 days]) manual, first-on/first-off	Last Stage Hold (PID only)	0°F to 30°F
Stage Modes	Auto, standby, on, off	Throttle Range (OSS only)	2°F to 20°F
Standby Time (PID only)	1 to 60 minutes	Domestic Hot Water Priority Options	Parallel piping w/ or w/out priority
Output Relay Ratings	2 Amp inductive at 120 VAC 60 Hz	Pump Run-On	0 to 60 minutes
Add-on Extension Panels	Up to two S8EXT panels using included RS485	Pump Exercise	Yes or no
Temperature Display	Fahrenheit or Celsius	Schedules	1 day and 1 night (setback) setting
Display	Graphical alphanumeric (7 rows of 21 characters)	Night Setback	0°F to 80°F
Temperature Sensor Ranges	-35°F to 250°F	Power Backup	Lithium coin battery, 100 days min (maintains clock in power outage)
Outdoor Cutoff Range	20°F to 100°F, ON and OFF	External Inputs	Shutdown input and prove input (d
Set Point	-10°F to 240°F	Seasons	Winter and Summer
External Set Point	-10°F to 240°F using XSIG 4-20mA interface (optional)		
Reset Ratio Range (outdoor reset only)	(1:4) to (8:1) (outdoor : system water) and custom ratio		

M4 EXT EXTENSION MODULE FOR M4-LHS CONTROLS



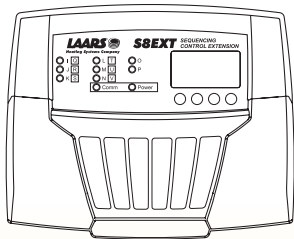
Extension module for M4-LHS control, to add 6 more boilers to the control system. Includes RS485 connection cable. Up to two M4 EXT modules can be used with one M4 control, for control of up to 16 boilers from the same system.

- Easily connects to any M4-LHS and additional M4 EXT panels or XSIG interface modules
- Additional stages easily added by using the included RS485 cable
- Six N.O. Boiler startup relay outputs. Each is wired in series with each boiler's limit circuit.
- UL listed, tested per standard 916
- LED indicators display associated relay status for easy diagnostics.
- The M4 EXT can operate up to six 0-10 V, 4-20 mA (or split signal) modulating boilers, in any combination
- M4 EXT can be used in Hybrid Systems with condensing, non-condensing, modulating, and/or stage-fired boilers

M4 EXT SPECIFICATIONS

Voltage Input	120 VAC 60 Hz
Power Consumption	12 VA Max
Operating Temperature	20°F/-6°C to 130°F/54°C
Operating Humidity	20% to 80% non-condensing
Dimensions	11" W x 9" H x 3 ¾" D
Weight	2.5 pounds
Switch Between Boiler Groups Mode	Using Outdoor Temperature or System/Return Temperature
Lead State Rotation	Time (1 to 1440 Hours (60 days)), Manual, Last-On
Pump Output	1 N.O. S.P.S.T.
Modulating Boiler Modes	Auto, Manual, Standby, On, Off
Staging Boiler Modes	Auto, Standby, On, Off
Standby Time	1 to 60 minutes
Modulating Output Types	4-20mA, 0-5V, 0-10V, 1-5V, 2-10V
Sequencing Output Types	On/Off, 2-Stage, 3-Stage, or 4-Stage
Output Relay Ratings	1 Amp inductive, 6 Amp resistive at 120 VAC 60 Hz, 15A total for all circuits
Add-On M4-Extension Panels	up two M4-Extension Panels using RS485
Ignition Point %	1 to 50%
Modulation Start Point %	0 to 100%
Modulation Modes	Normal or Parallel
Sequencing Modes	Lo/Hi/Lo/Hi or Lo/Lo/Hi/Hi
Temperature Display	Fahrenheit or Celsius

Display	Graphical Alphanumeric (up to 7 rows x 21 char. Each)
LED	1 System Output relay, 4 Boiler Output relays
Sensor Ranges	Outdoor temperature sensor — minus 35°F/-37°C to 250°F/121°C Heating system sensor— minus 35°F/-37°C to 250°F/121°C
Outdoor Cutoff Range	20°F/-6°C to 100°F, ON and OFF
Reset Ratio Range	(1:4) to (4:1) (Outdoor: System Water)
Minimum Water Temperature	70°F/21°C to 170°F/77°C
Maximum Water Temperature	90°F/32°C to 240°F/116°C
Domestic Hot Water	with Priority or without Priority
Pump Run-On	0 to 360 minutes
Purge Delay	0.0 to 10.0 minutes
Lag Delay	0 to 60 minutes
Last Stage Hold	0 to 30°F
Schedules	1 Day and 1 Night (Setback) setting per day
Night Setback	0F°/0C° to 75F°/42C°
Power Backup	Lithium coin battery, 100 days minimum 5 year replacement (Maintains Clock in power outages)
External Inputs	Shutdown, Tstat, and Setback Input, and Prove and DHW Call Input. (Dry Contacts Only)
Season	Winter and Summer



Standard Equipment

- Extension module (used with Laars S8) for up to eight additional boiler stages
- Ready to use with RS485 cable (included)

Features

- Easily connects to S8, another S8EXT, and XSIG with RS485 cables
- Can be used with on/off, two-stage and four-stage units

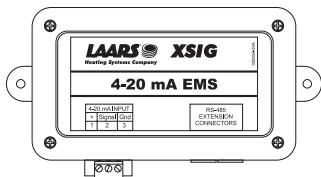
- A-B switch for identification when two S8 EXT units are used
- UL Listed, tested per standard 916

S8 EXT SPECIFICATIONS

Extension Numbering	Toggle switch A or B
LED	1 power: (dual color green (A)/red (B)), 1 comm: 8 stage output relays (dual color green (A)/red (B))
Stage Outputs	8 N.O. SPST
Output Relay Ratings	2 Amp inductive at 120 VAC 60 Hz

Connection to S8 and Another S8EXT	Two RS485
Operating Temperature	20°F to 120°F
Operating Humidity	20% to 80%
Dimensions	11-3/8" wide x 9-1/4" high x 3-3/4" deep
Weight	2.5 pounds

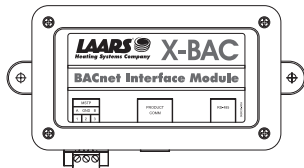
XSIG 4-20MA INTERFACE MODULE



The XSIG Interface provides the M4 and S8 series controls with the capability of receiving an external set point as a 4-20mA signal through an Energy Management or Building Management Systems (EMS/BMS).

- Module easily connects with the S8 or M4 controls and extensions.
- Connects to the M4 or S8 via included RS485 connection cable.
- The M4 and the S8 controls can be shutdown by the EMS/BMS system.
- The control, XSIG Interface, and two Extensions can be connected in series using the RS485.
- The XSIG Interface can source the current for the 4-20mA input signal, providing an excitation DC current.

LAARS X-BAC BACNET INTERFACE MODULE



X-BAC interface module allows a BACnet system to have communication with Laars M4-LHS multiple boiler controls and easily connects to M4-LHS with RJ45 (ethernet) cables.

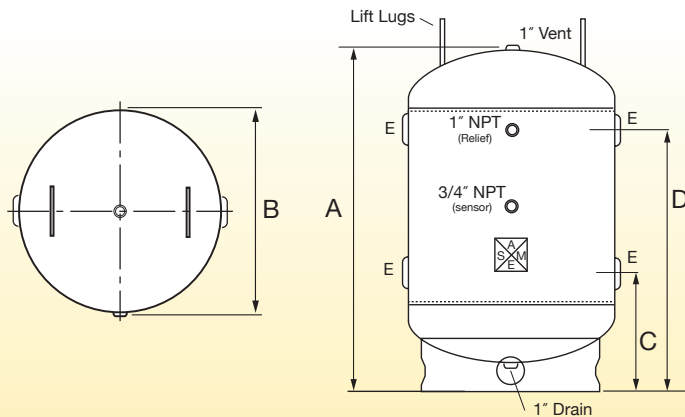
Available to the BACnet system from the M4-LHS, through the X-BAC:

- Operation mode
- Outdoor temperature
- System temperature
- Output status
- Control status
- Season
- Reset ratio
- Offset
- Outdoor cutoff
- Minimum water temperature
- Maximum water temperature
- Setback
- Purge delay
- System run-on
- Rotation time
- Standby time
- Last stage hold
- Condensing unit lead stage
- Non-condensing unit lead stage
- Reaction time
- Minimum run time
- Gain
- Lag delay
- Soft off
- Set time
- Day schedule
- Night schedule

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HYDRAULIC SEPARATORS

The Laars Hydraulic Separator tank is designed help reduce short cycling of a boiler system and separate building and boiler circulation. The Laars Hydraulic Separator uses stored boiler water to buffer the system load when the boiler is producing more BTU's than what the building can handle. When the building has a minimal demand, it pulls from the tank allowing the boiler to "rest". The Hydraulic Separator is piped so the building flow is separate from the boiler flow, allowing independent circulation.



Standard:

- ASME Sec. VIII, Div 1
- 125 psi
- Bare tank
- 5 year warranty
- 4" base ring

Optional:

- Hand hole
- Manway
- Topcoat R-16 insulation
- Painted Steel Jacket
- Additional fittings

Laars Hydraulic Separators are designed for 125 psi (150 optional). Standard sizes range from 120 gallon up to 860 actual gallons. Custom sizes and additional fittings are available.

HYDRAULIC SEPARATORS SPECIFICATIONS

Model	Actual Gallons	Nominal Gallons	NPT/FLG	A	B	C	D	E
HTVN-30-045	120	138	3" NPT	49"	30"	16 ⁷ / ₅ "	36 ¹ / ₄ "	4"
HTVN-30-071	200	217	3" NPT	75"	30"	16 ⁷ / ₅ "	62 ¹ / ₄ "	4"
HTVN-36-072	285	317	4" Flg	76"	36"	24 ¹ / ₂ "	55 ¹ / ₂ "	4"
HTVN-42-072	385	432	4" Flg	76"	42"	27"	53"	4"
HTVN-42-083	450	498	4" Flg	87"	42"	27"	64"	4"
HTVN-48-096	675	752	4" Flg	100"	48"	29"	75"	4"
HTVN-48-120	860	940	4" Flg	124"	48"	29"	99"	4"

Dimensions shown in inches

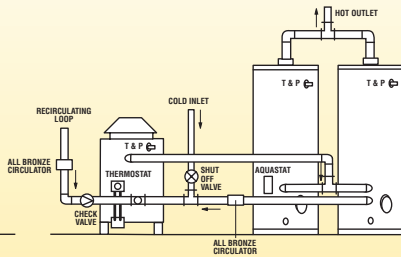
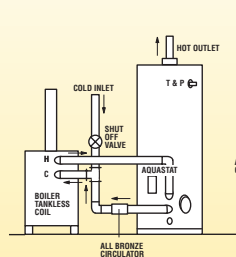
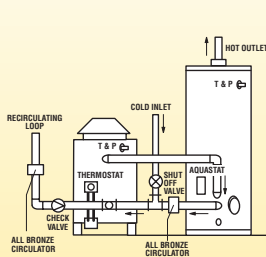
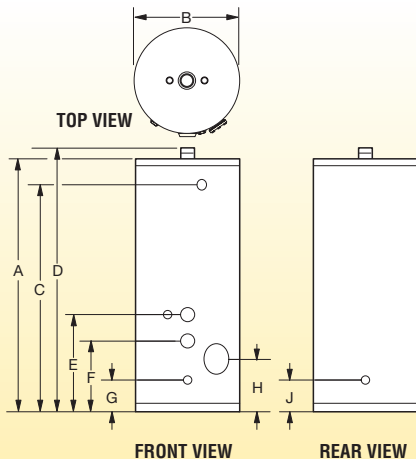
For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

COMMERCIAL JACKETED ENERGY SAVER STORAGE TANKS



Designed for moderate, commercial peak demands, light duty jacketed storage tanks are available in 80, 120, and 200 gallon capacities. Applications include use with boilers, hot water circulation systems, and where large dump volume is required.

- Heavy gauge steel automatically formed, rolled, and welded
- Exclusive ceramic porcelain-like lining protects storage tank from corrosion
- ASME construction available. 200-gallon models come standard with ASME construction
- 2" NPT factory-installed true dielectric waterway fittings extend water heater life
- 120 and 200-gallon ASME models have 2-1/2" connections
- 2" NPT spud allows for a rear water connection (120 gallon models only)
- Hand hole cleanout
- Two protective magnesium anode rods
- 2" Non-CFC foam insulation
- T&P relief valve opening (T&P not supplied)
- 3/4" NPT aquastat fitting
- Brass drain valve



COMMERCIAL JACKETED ENERGY SAVER STORAGE TANKS SPECIFICATIONS

			A	B	C	D	E	F	G	H	J		
Model	Gallon Capacity	ASME	Floor to Heater Top	Jacket Dia.	Floor to T&P Valve	Floor to Hot Water Conn.	Floor to Aquastat Top Circ. Conn.	Floor to Bottom Circ. Conn.	Floor to Drain Valve	Floor to Hand Hole Cleanout	Floor to Rear Water Conn.	Water Conn. Size†	Approx. Shipping Weight (lbs)
A0073100	80	No	58 ³ / ₄	24	52 ¹ / ₂	59 ³ / ₄	14 ¹ / ₄	9 ¹ / ₄	4 ³ / ₄	7 ¹ / ₄	—	2(F&T)	192
A0073101	80	Yes	58 ³ / ₄	24	52 ¹ / ₂	59 ³ / ₄	14 ¹ / ₄	9 ¹ / ₄	4 ³ / ₄	7 ¹ / ₄	—	2(F&T)	192
A0078800	119	No	62 ¹ / ₂	28	55 ³ / ₄	63 ¹ / ₂	14 ¹ / ₄	9 ¹ / ₄	5	—	5	2(F&T), 2(R)	312
A0070101	119	Yes	62 ¹ / ₂	28	55 ³ / ₄	63 ¹ / ₂	14 ¹ / ₄	9 ¹ / ₄	5	7 ¹ / ₂	5	2 ¹ / ₂ (F&T), 2(R)	366
A2086000	200	Yes	77	32	66	78	16 ¹ / ₄	11 ¹ / ₄	6 ³ / ₄	9 ¹ / ₄	—	2 ¹ / ₂ (F&T)	541

† (F) = Front water connections
 (R) = Rear water connections
 (T) = Top water connections

Dimensions shown in inches

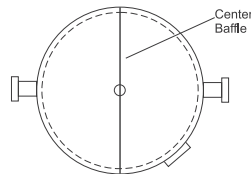
LAARS® COMMERCIAL CHILLED WATER BUFFER TANKS



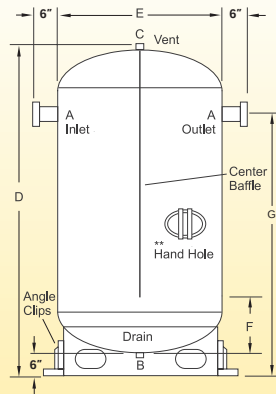
- Eliminates excessive chiller cycling, poor temperature and erratic system operation
- Stabilized water temperature return
- Red oxide shop primer exterior standard
- Spray foam insulation, R-16 value with acrylic top coat available

Chilled Water Buffer Tanks from Laars® Heating Systems are designed to increase water volume capacity, in relation to the chiller capacity. Low water volume systems may require additional buffer capacity to eliminate excessive chiller cycling, poor temperature control, or erratic system operation. A Chilled Buffer Tank can buffer the system volume.

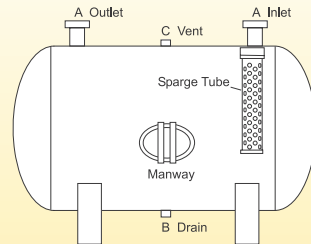
- Custom sizes available upon request
- Can be ordered in vertical or horizontal orientation
- Tanks constructed and certified in accordance with ASME Section VIII, Div. I Code, rated for 125 psi at 450°F
- Horizontal tanks are supplied with sparging tube
- Horizontal tanks are same size as vertical tanks



** Hand Holes required on tanks above 36" diameter.



Sparge Tube mixes and disperses water evenly



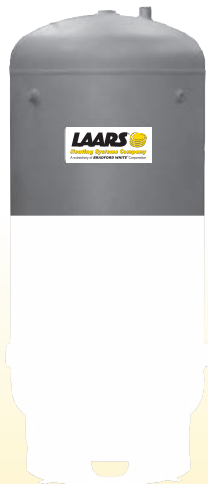
LAARS® COMMERCIAL CHILLED WATER BUFFER TANKS SPECIFICATIONS

Model	Capacity	A	B	C	D	E	F	G	Weight
	Gal.	Inlet/Outlet	in.	in.	in.	in.	in.	in.	lbs.
BT-VNB-24-072-XASX-XX	130	2 NPT	1	1	78	24	20	66	375
BT-VNB-30 075-XFSX-XX	210	3 FLG	1	1	83	30	24	67	425
BT-VNB-36 072-XFSX-XX	300	4 FLG	1	1	78	36	24	62	633
BT-VNB-36 094-XFSX-XX	400	4 FLG	1	1	100	36	30	84	715
BT-VNB-42 084-XFSX-XX	460	4 FLG	1	1	91	42	30	74	870
BT-VNB-48 077-MFSX-XX	528	6 FLG	1	1	83	48	31	62	1150
BT-VNB-48 147-MFSX-XX	1040	6 FLG	1	1	150	48	45	127	1975
BT-VNB-54 096-MFSX-XX	850	6 FLG	1	1	102	54	32	80	1630
BT-VNB-60 096-MFSX-XX	1040	8 FLG	1	1	102	60	32	77	2280

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

CUSTOM STORAGE TANKS 30" TO 48" DIA. 193 TO 1316 GALLONS

108

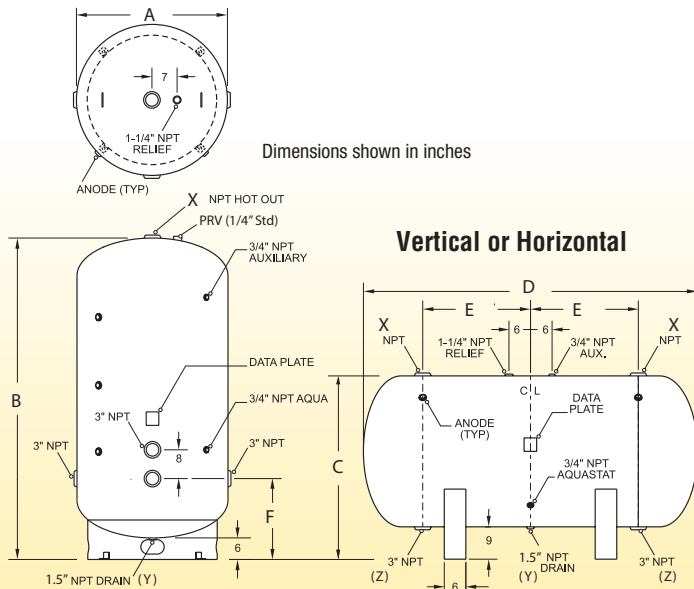


Bare

- Vertical or Horizontal Construction
- Horizontal models require two saddles and have two additional 3" (7.6 cm.) NPT fittings
- Heavy gauge steel primed with a red oxide color (Bare tanks only)

Available in 30" through 48" standard diameters, these large volume, bare tanks offer capacities ranging from 193 to 1,316 gallons. Horizontal and vertical configurations as well as custom sizes are available.

- Tanks are lined with an exclusive enamel formula to provide superior protection from corrosion
- Two female 3" (7.6 cm.) NPT water connection fittings are located on the front for ease of installation
- Additional size fittings are available as an option
- Magnesium anode rods provide added protection against corrosion
- One 3/4" (1.9 cm.) NPT aquastat fitting
- Lifting lugs — standard
- Optional hand hole cleanout — 4" x 6" (10.2 cm. x 15.2 cm.) diameter
- Optional manway — 12" x 16" (30.5 cm. x 40.1 cm.) diameter
- Optional stainless steel, dielectrically isolated recirculation tube minimizes turbulence and maximizes hot water delivery
- Designed for storage of potable water up to 180°F (82°C)
- All tanks are constructed and certified in accordance with ASME Sect. IV, Part HLW for 125 psi (862 kPa). 150 psi (1034 kPa) is available as an option
- 5-year limited steel tank warranty



CUSTOM STORAGE TANKS SPECIFICATIONS 'STANDARD SIZES'

Call 1.800.900.9276 for our extended custom tank selection

Model	Capacity				Dimensions											Tappings			Shipping Weight				
	Nominal*		Actual		Diameter A		Vert. Height B		Hori. Height C		D					E		F		X	Y	Z	@125#
	Gal.	L	Gal.	L	Gal.	L	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	in.	in.	lbs.	kg
CTV GB 30-063	193	731	175	662	30	762	69	1753	39	991	63	160	19.5	495	22.5	572	2.5	1	3			612	277
CTV GB 30-075	229	867	210	795	30	762	81	2057	39	991	75	191	19.5	495	28.5	724	2.5	1	3			651	295
CTV GB 30-085	260	984	240	908	30	762	91	2311	39	991	85	216	19.5	495	33.5	851	2.5	1	3			703	319
CTV GB 30-099	303	1147	280	1060	30	762	105	2667	39	991	99	252	19.5	495	40.5	1029	2.5	1	3			786	356
CTV GB 30-111	340	1287	320	1211	30	762	117	2972	39	991	111	282	19.5	495	46.5	1181	2.5	1	3			831	377
CTV GB 36-072	317	1272	285	1079	36	92	78	198	45	1143	72	183	21	53	21	53	2.5	1	3			743	337
CTV GB 36-078	344	1302	310	1173	36	914	84	2134	45	1143	78	198	21	533	30	762	2.5	1	3			848	385
CTV GB 36-085	375	1420	340	1287	36	914	91	2311	45	1143	85	216	21	533	33.5	851	2.5	1	3			836	379
CTV GB 36-090	397	1503	360	1363	36	914	96	2438	45	1143	90	229	21	533	36	914	2.5	1	3			941	427
CTV GB 36-102	449	1700	415	1571	36	914	108	2743	45	1143	102	259	21	533	42	1067	2.5	1	3			992	450
CTV GB 36-114	502	1900	465	1760	36	914	120	3048	45	1143	114	290	21	533	48	1219	2.5	1	3			1145	519
CTV GB 36-126	555	2101	515	1949	36	914	132	3353	45	1143	126	320	21	533	54	1372	2.5	1	3			1186	538
CTV GB 42-081	486	1840	435	1647	42	1067	87	2210	51	1295	81	206	22.5	572	31.5	800	3	1	3			996	452
CTV GB 42-085	510	1931	460	1741	42	1067	91	2311	51	1295	85	216	22.5	572	33.5	851	3	1	3			1081	490
CTV GB 42-093	558	2112	505	1912	42	1067	99	2515	51	1295	93	236	22.5	572	37.5	953	3	1	3			1068	484
CTV GB 42-105	630	2385	575	2177	42	1067	111	2819	51	1295	105	267	22.5	572	43.5	1105	3	1	3			1210	549
CTV GB 42-117	702	2657	645	2442	42	1067	123	3124	51	1295	117	297	22.5	572	49.5	1257	3	1	3			1370	621
CTV GB 42-129	774	2930	720	2725	42	1067	135	3429	51	1295	129	328	22.5	572	55.5	1410	3	1	3			1520	689
CTV GB 48-139	846	3202	790	2990	42	1067	145	3683	51	1295	139	353	22.5	572	61.5	1562	3	1	3			1798	816
CTV GB 48-073	572	2165	500	1893	48	1219	79	2007	57	1448	73	185	24	610	27.5	699	3	1	3			1038	471
CTV GB 48-084	658	2491	580	2196	48	1219	90	2286	57	1448	84	213	24	610	33	838	3	1	3			1161	527
CTV GB 48-096	752	2847	675	2555	48	1219	102	2591	57	1448	96	244	24	610	39	991	3	1	3			1298	589
CTV GB 48-108	846	3202	765	2896	48	1219	114	2896	57	1448	108	274	24	610	45	1143	3	1	3			1686	765
CTV GB 48-120	940	3558	860	3255	48	1219	126	3200	57	1448	120	305	24	610	51	1295	3	1	3			1567	711
CTV GB 48-141	1128	4270	1040	3937	48	1219	147	3734	57	1448	141	358	24	610	63	1600	3	1	3			2096	951
CTV GB 48-168	1316	4944	1135	4637	48	1219	168	4420	57	1448	168	429	24	610	75	1905	3	1	3			2755	1250

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

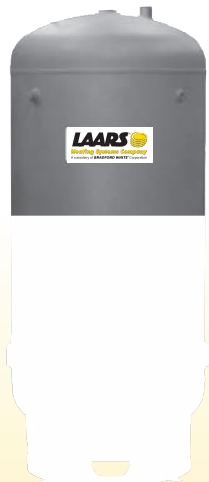
Dimensions shown in **inches cm**

CUSTOM STORAGE TANKS 54" TO 84" DIA.

110

981-6141 GALLONS

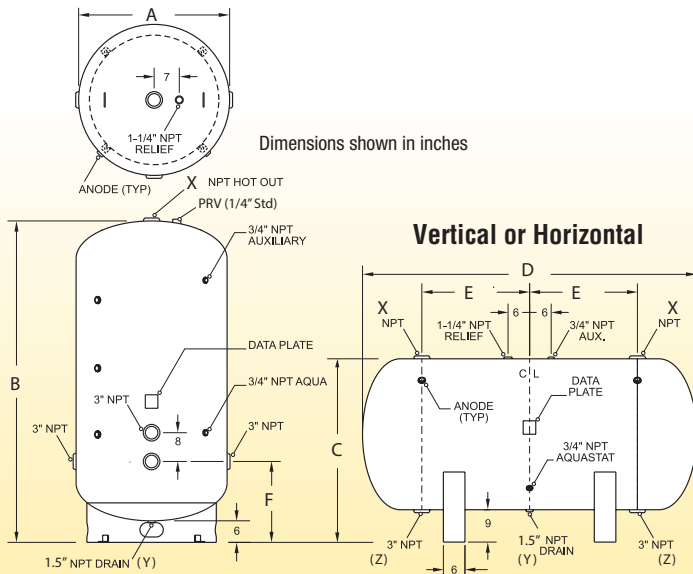
Available in 54", 60", 72" and 84" standard diameters, these large volume, bare tanks offer capacities ranging from 981 to 6,141 gallons. Horizontal and vertical configurations as well as custom sizes are available.



Bare

- Vertical or Horizontal construction
- Horizontal models require two saddles and have two additional 3" (7.6 cm.) NPT fittings
- Heavy gauge steel primed with a red oxide color (bare tanks only)

- Tanks are lined with an exclusive enamel formula to provide superior protection from corrosion
- Two female 3" (7.6 cm.) NPT water connection fittings are located on the front for ease of installation
- Additional size fittings are available as an option
- Magnesium anode rods provide added protection against corrosion
- One 3/4" (1.9 cm.) NPT aquastat fitting
- Lifting lugs — standard
- Optional hand hole cleanout — 4" x 6" (10.2 cm. x 15.2 cm.) diameter
- Optional manway — 12" x 16" (30.5 cm. x 40.1 cm.) diameter
- Optional stainless steel, dielectrically isolated recirculation tube minimizes turbulence and maximizes hot water delivery
- Designed for storage of potable water up to 180°F (82°C)
- All tanks are constructed and certified in accordance with ASME Sect. IV, Part HLW for 125 psi (862 kPa). 150 psi (1034 kPa) is available as an option
- 5-year limited steel tank warranty



Vertical or Horizontal

CUSTOM STORAGE TANKS SPECIFICATIONS 'STANDARD SIZES'

Call 1.800.900.9276 for our extended custom tank selection

Model	Capacity				Dimensions													Tappings			Shipping Weight	
	Nominal*		Actual		Diameter A		Vert. Height B		Hori. Height C		D		E					F		X		
	Gal.	L	Gal.	L	Gal.	L	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	in.	in.	in.	lbs.	kg
CTV GB 54-099	981	3713	875	3312	54	1372	105	2667	63	160	25.5	648	99	2515	37.5	953	2.5	1.5	3	1996	905	
CTV GB 54-123	1219	4614	1110	4202	54	1372	129	3277	63	160	25.5	648	123	3124	49.5	1257	2.5	1.5	3	1989	902	
CTV GB 54-147	1457	5515	1340	5072	54	1372	153	3886	63	160	25.5	648	147	3734	61.5	1562	2.5	1.5	3	2282	1035	
CTV GB 54-183	1814	6867	1690	6397	54	1372	189	4801	63	160	25.5	648	183	4648	79.5	2019	2.5	1.5	3	2722	1235	
CTV GB 60-114	1395	5281	1245	4713	60	1524	120	3048	69	175	27	686	114	2896	45	1143	2.5	1.5	3	2399	1088	
CTV GB 60-138	1689	6394	1530	5792	60	1524	144	3658	69	175	27	686	138	3505	57	1448	2.5	1.5	3	2804	945	
CTV GB 60-168	1983	7506	1820	6889	60	1524	168	4267	69	175	27	686	168	4267	69	1753	2.5	1.5	3	3210	1456	
CTV GB 60-186	2276	8616	2105	7968	60	1524	192	4877	69	175	27	686	186	4724	81	2057	2.5	1.5	3	3616	1640	
CTV GB 60-210	2570	9728	2395	9066	60	1524	216	5486	69	175	27	686	210	5334	93	2362	2.5	1.5	3	4022	1824	
CTV GB 72-120	2115	8006	1865	7060	72	1829	126	3200	81	206	30	762	120	3048	48	1219	2.5	1.5	3	3100	1406	
CTV GB 72-144	2538	9607	2285	8650	72	1829	150	3810	81	206	30	762	144	3658	60	1524	2.5	1.5	3	3463	1571	
CTV GB 72-168	2961	11209	2700	10221	72	1829	174	4420	81	206	30	762	168	4267	72	1829	3	1.5	3	3951	1792	
CTV GB 72-192	3384	12810	3115	11792	72	1829	198	5029	81	206	30	762	192	4877	84	2134	3	1.5	3	4438	2013	
CTV GB 72-216	3807	14411	3530	13362	72	1829	222	5639	81	206	30	762	216	5486	94.5	2400	3	1.5	3	4925	2234	
CTV GB 72-250	4406	16678	4120	15596	72	1829	256	6502	81	206	30	762	250	6350	113	2870	3	1.5	3	5616	2547	
CTV GB 84-138	3310	12530	2915	11034	84	2134	144	3658	93	236	33	838	138	3505	57	1448	3	1.5	3	4747	2153	
CTV GB 84-162	3886	14710	3480	13173	84	2134	168	4267	93	236	33	838	160	4064	69	1753	3	1.5	3	5428	2462	
CTV GB 84-186	4462	16890	4045	15312	84	2134	192	4877	93	236	33	838	186	4724	81	2057	3	1.5	3	6109	2771	
CTV GB 84-210	5038	19071	4610	17451	84	2134	216	5486	93	236	33	838	210	5334	93	2362	3	1.5	3	6789	3079	
CTV GB 84-256	6141	23246	5695	21558	84	2134	262	6655	93	236	33	838	256	6502	116	2946	3	1.5	3	8094	3671	

Dimensions shown in **inches cm**

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

CUSTOM JACKETED STORAGE TANKS

Refer to pages 109 and 111 for standard sizes
Call 1.800.900.9276 for our extended custom tank selection

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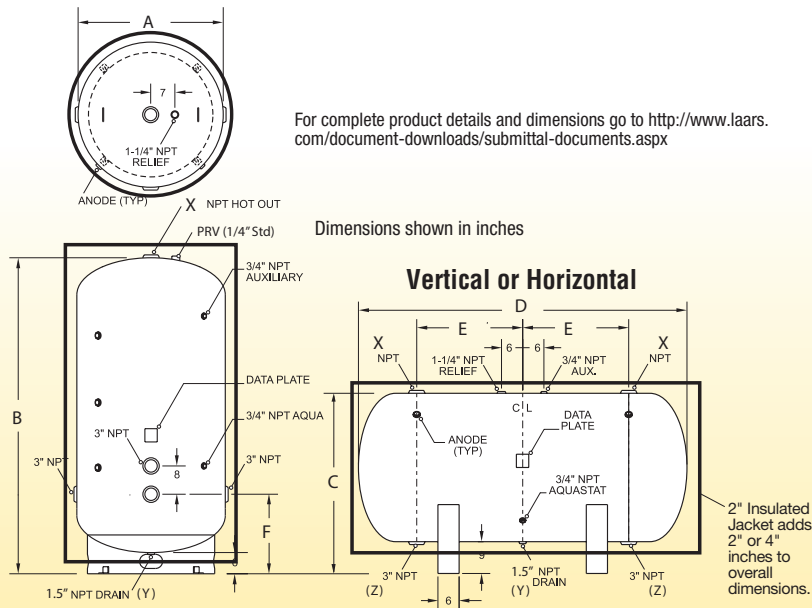


Jacketed

- Sturdy heavy gauge steel jacket
- 2" High Density Foam Insulation — Covers the side and top of tank, reducing the amount of heat loss
- Optional Hand hole Cleanout — 4" x 6" (10.2cm. x 15.2 cm.) diameter

- Optional manway — 12"x16" (30.5 cm. x 40.1 cm.) diameter
- Optional stainless steel, dielectrically isolated recirculation tube minimizes turbulence and maximizes hot water delivery
- Tanks are lined with a exclusive enamel formula to provide superior protection from corrosion
- Two female 3" (7.6 cm.) NPT water connection fittings are located on the front for ease of installation
- Additional size fittings are available as an option
- Magnesium anode rods provide added protection against corrosion
- One 3/4" (1.9 cm.) NPT aquastat fitting
- Designed for storage of potable water up to 180°F (82°C)
- All Tanks are constructed and certified in accordance with ASME Sect. IV, Part HLW for 125 psi (862 kPa). 150 psi (1034 kPa) is available as an option
- 5-year limited steel tank warranty

Available in 30" thru 60" standard diameters, these large volume, insulated and jacketed tanks offer seven capacities ranging from 193 to 1689 gallons. Two inch, high-density foam insulation minimizes heat loss.



RIGID FOAM STORAGE TANKS

Refer to pages 109 and 111 for standard sizes
Call 1.800.900.9276 for our extended custom tank selection

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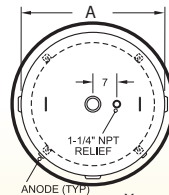


Rigid Foam

- SPF meets requirements for California Title 24.
- The 100% acrylic topcoat is formulated for applications over spray polyurethane foam
- Alternative for insulated and steel jacket
- Any tank size or shape can be insulated
- Field repairable
- Vertical or Horizontal construction

Custom storage tanks with sprayed-on, rigid Polyurethane foam (SPF) insulation and acrylic topcoat exceed ASHRAE 90.1 requirements with 2.25" of high-density polyurethane foam with an "R" value of R-16. Spray foam insulation has the best fire spread rating with a class I foam with less than a 25-flame spread rating suitable for boiler room applications.

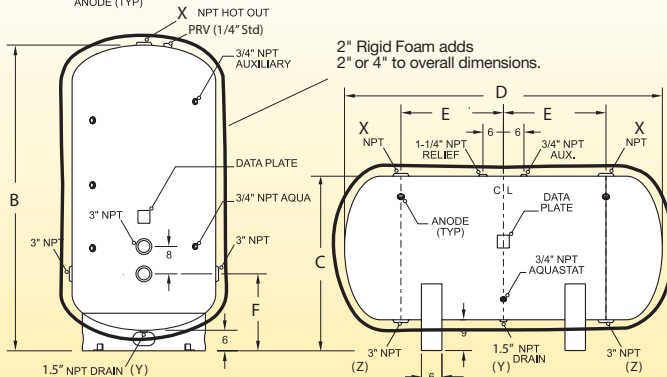
- Horizontal models require two saddles and have two additional 3" NPT fittings
- Tanks are lined with an exclusive enamel formula to provide superior protection from corrosion
- Two female 3" (7.6 cm.) NPT water connection fittings are located on the front for ease of installation
- Magnesium anode rods provide added protection against corrosion
- One 3/4" (1.9 cm.) NPT aquastat fitting
- Lifting lugs — standard
- Optional hand hole cleanout — 4" x 6" (10.2 cm. x 15.2 cm.) diameter
- Optional manway — 12" x 16" (30.5 cm. x 40.1 cm.) diameter
- Optional stainless steel, dielectrically isolated recirculation tube minimizes turbulence and maximizes hot water delivery
- Designed for storage of potable water up to 180°F (82°C)
- All tanks are constructed and certified in accordance with ASME Sect. IV, Part HLW for 125 psi (862 kPa). 150 psi (1034 kPa) is available as an option



For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

Dimensions shown in inches

Vertical or Horizontal

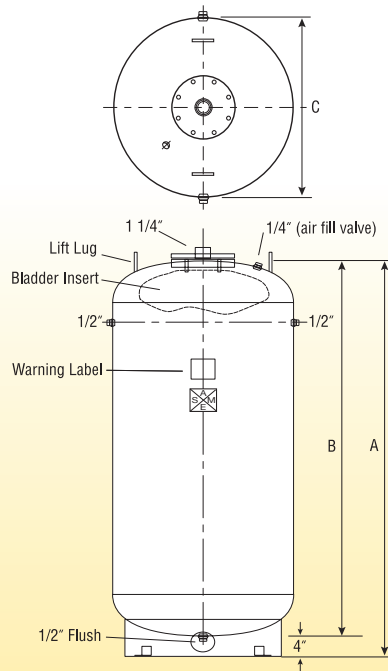


2" Rigid Foam adds
2" or 4" to overall dimensions.

EXPANSION BLADDER TANKS



- Factory charged at 12 psi.
- Dried to -50 dew point
- For use with non-potable water
- Heavy duty replaceable bladder
- Max temperature 240 degrees F
- Red oxide primer paint
- Large flanged opening for easy bag replacement
- Carbon steel construction
- Can be used with glycol systems
- ASME code Sec VIII, Div 1
- 1 Year warranty



Dimensions shown in inches

EXPANSION BLADDER TANKS SPECIFICATIONS

Model	Gallons	(A) Overall Height	(B) Overall Height	(C) Diameter	System Connection	Working Pressure	Weight
LEBT-30-063	175	67"	63"	30"	1½"	125	465
LEBT-30-075	210	79"	75"	30"	1½"	125	505
LEBT-30-085	240	89"	85"	30"	1½"	125	550
LEBT-36-072	285	76"	72"	36"	1½"	125	675
LEBT-36-078	310	82"	78"	36"	1½"	125	700
LEBT-36-085	340	89"	85"	36"	1½"	125	750
LEBT-36-090	360	94"	90"	36"	1½"	125	780
LEBT-42-081	435	85"	81"	42"	1½"	125	1186
LEBT-42-084	453	88"	84"	42"	1½"	125	1216
LEBT-42-093	505	97"	93"	42"	1½"	125	1304
LEBT-48-073	500	77"	73"	48"	1½"	125	1293
LEBT-48-096	675	100"	96"	48"	1½"	125	1550
LEBT-48-108	765	112"	108"	48"	1½"	125	1685
LEBT-48-120	860	124"	120"	48"	1½"	125	1870
LEBT-48-141	1040	145"	141"	48"	1½"	125	1870

Dimensions shown in inches

For complete product details and dimensions go to <http://www.laars.com/document-downloads/submittal-documents.aspx>

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2016 FULL-LINE POCKET CATALOG



LAARS®
Heating Systems Company
A subsidiary of **BRADFORD WHITE®** Corporation

Customer Service and Product Support: 800-900-9276 FAX 800-559-1583
Headquarters: 20 Industrial Way, Rochester, NH, USA 03867 603-335-6300 FAX 603-335-3355
1869 Sismet Road, Mississauga, Ontario, Canada L4W 1W8 905-238-0100 FAX 905-366-0130

www.Laars.com

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