MAGNATHERM®

COMMERCIAL HIGH EFFICIENCY

Condensing Boiler and Volume Water Heater

with VARI-PRIME™ Pump Control On-Board

MADE IN AMERICA

1.6, 2.0, 2.5, 3.0, 3.5 and 4.0 MILLION BTU/HR

95% Certified Thermal Efficiency

Indoor and Outdoor Installation

Laars Heat Exchanger Design

LAARS® Heating Systems Company

A subsidiary of BRADFORD WHITE® Corporation

THE MAGNATHERM

CONDENSING BOILER & VOLUME WATER HEATER

A Perfect Balance of Size, Form and Function

Every commercial heating system is unique and as such requires a boiler that can respond to system fluctuations, while maintaining the energy conservation standards held by today's building owners. Such a boiler now exists in the innovative Laars MagnaTherm.

On board every boiler is MagnaTherm's unique VARI-PRIME™ control that allows building owners to save thousands of dollars over the life of the boiler due to dramatically reduced energy costs versus a typical on/off pump arrangement. Only the Laars MagnaTherm includes the VARI-PRIME™ control that balances combustion, air flow and water flow on every boiler!

The MagnaTherm's small footprint, slim vertical design and removable top section help it to fit into tight mechanical rooms. It's optional electrical packages allow for easy pairing with various field supply voltages. And the large easy-to-navigate color touch screen display results in quick setup and diagnostics and allows up to 8 MagnaTherms to be controlled in a cascading boiler bank.

Features:

- Laars designed and built heat exchanger
- Stylish, modern cabinet design
- Up to 99% thermal efficiency, condensing operation
- Reliable, smooth starting hot surface ignition
- Optimized gas usage for lower energy bills via a 5:1 (20% to 100% input) modulating gas valve
- Quiet, variable speed blower
- VARI-PRIME™, variable speed pump control matches system pump with boiler modulation to optimize efficiency
- Small footprint compared to others in class
- Forward mounted low voltage panel for easy wiring and trouble shooting
- 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
- Meets the most stringent NOx emission requirements
- 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
- 10-year heat exchanger warranty

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Getting to know the MAGNATHERM

Large Color Touch Screen

A multi-color, simple to use smart touch screen display allows you to fully control and setup the MagnaTherm.

Removable Top Section

An easy-to-remove top blower section makes getting into tight spaces and elevators a smooth operation!

Full Access

Two full-swing removable doors allow complete access to electrical, controls, gas valves and accessories from the front of the MagnaTherm for quick setup.

Electrical Flexibility

The MagnaTherm comes with a centralized electrical load center that allows for various voltage packages (single and three phase), to better match job site requirements.

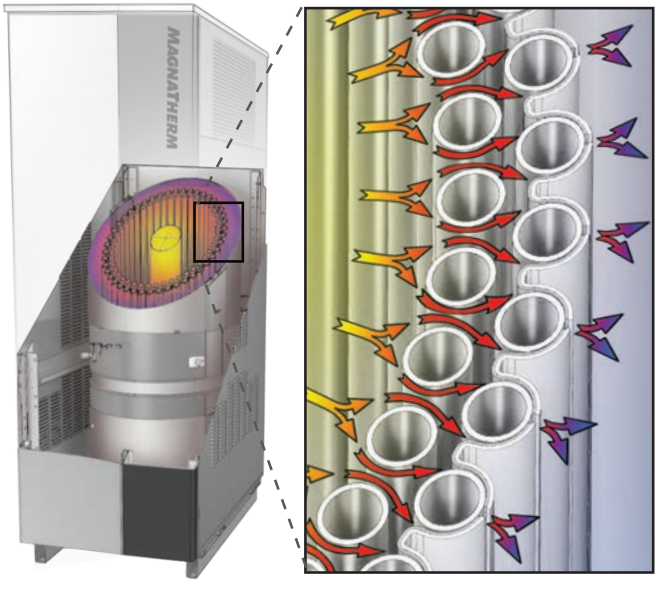
Superior Heat Exchanger Materials

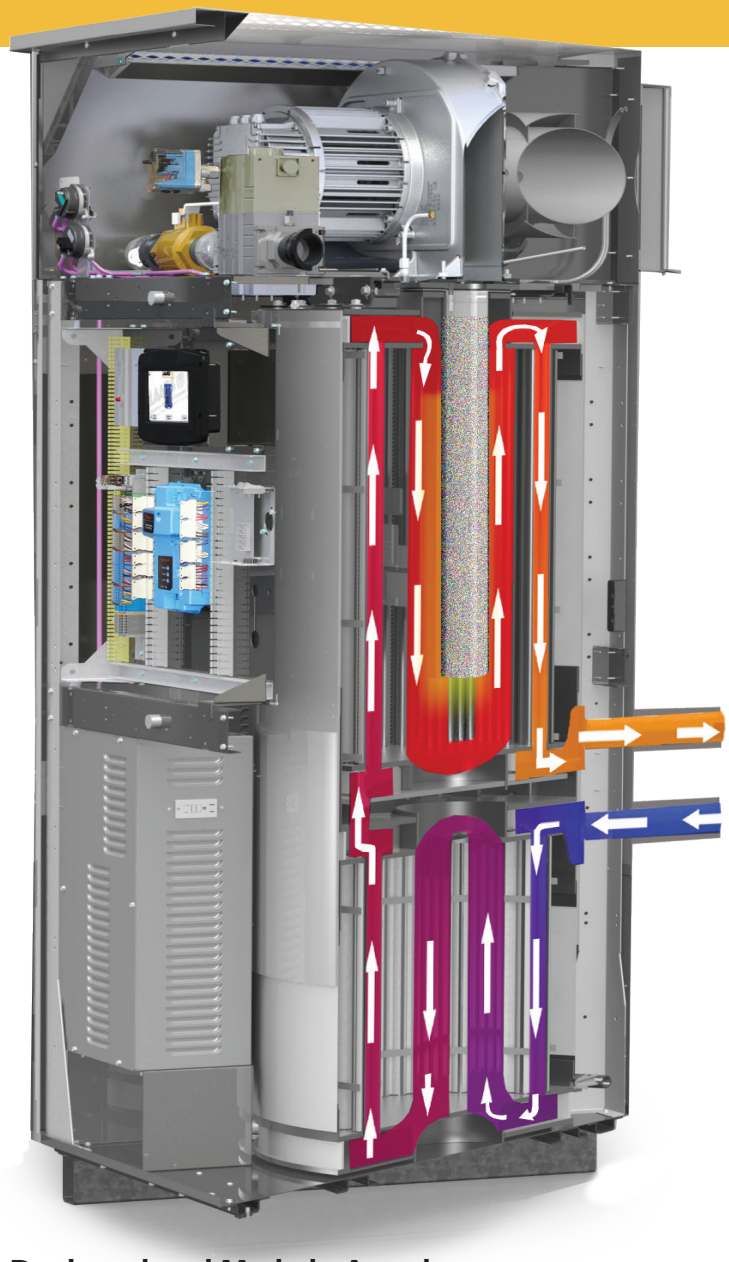
The MagnaTherm uses American produced 439 and 316 SS heat exchanger materials to withstand the extreme temperatures and caustic conditions found in high efficiency combustion chambers.

Indoor / Outdoor Installation

Slim Design, Small Footprint

The MagnaTherm's width allows it to fit through standard doorways.





Designed and Made in America

The MagnaTherm's heat exchanger design is the latest from Laars engineering. You can rely on years of worry free service knowing that the heart of the MagnaTherm was designed and built at the Laars manufacturing headquarters in Rochester, NH, USA.

Optimized Heat Transfer Technology and Extended Life

The MagnaTherm's efficiency secret lies in its precise alignment of micro-finned heating tubes combined with highly engineered flue gas channels. This arrangement optimizes the flow of flue gases in order to transfer maximum heat to the water inside the heating tubes and extending heat exchanger life.

Boasting an AHRI certified 95% or higher Thermal Efficiency, indoor or outdoor certification, a 5:1 turndown and the Laars boiler VARI-PRIME™ control package, the Laars MagnaTherm is the clear choice when selecting a high efficiency boiler or volume water heater.

Sizing Data, for the MAGNATHERM

Dimensional Data

Size	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
1600	29.3	75	79.8	203	38.0	96	57.5	147	60.8	154	3"	2"	1"
2000	29.3	75	79.8	203	38.0	96	57.5	147	60.8	154	3"	2"	1"
2500	30.8	78	87.0	221	41.5	105	60.5	154	71.0	180	3"	2"	1"
3000	30.8	78	87.0	221	41.5	105	60.5	178	71.0	180	3"	2"	1"
3500	34.5	88	96.7	246	52.0	132	70.0	178	80.8	205	4"	2"	1"
4000	34.5	88	96.7	246	52.0	132	70.0	178	80.8	205	4"	2"	1"

Sizing Data

Size	Input Rate		Output Rate		Boiler Thermal Efficiency	Water Heater Thermal Efficiency	Product Weight		Operating Weight		Shipping Weight		Minimum Gas Supply		Vent Diameter	Vent Length
	MBH	KW	MBH	KW	%	%	Lbs	Kg	Lbs	Kg	Lbs	Kg	" w.c.	Pa	in (cm)	ft (m)
1600	1599	469	1512	443	95.0	96	1390	630	1562	709	1590	721	4	996	6 (15)	100 (30.5)
2000	1999	586	1883	552	95.0	96	1390	630	1562	709	1590	721	4	996	8 (20)	100 (30.5)
2500	2499	732	2374	696	95.0	96	1785	810	2039	925	1985	900	4	996	8 (20)	100 (30.5)
3000	3000	879	2814	825	95.0	95	1785	810	2039	925	1985	900	4	996	10 (25)	100 (30.5)
3500	3500	1025	3317	972	95.0	96	2278	1033	2742	1244	2478	1124	4	996	10 (25)	100 (30.5)
4000	4000	1172	3724	1091	95.0	96	2278	1033	2742	1244	2478	1124	4	996	12 (30)	100 (30.5)

Venting and piping locations on Back of MagnaTherm do vary from size to size.

For further details of MagnaTherm specifications, please see the MagnaTherm Submittal Data Sheets which are available online at www.laars.com

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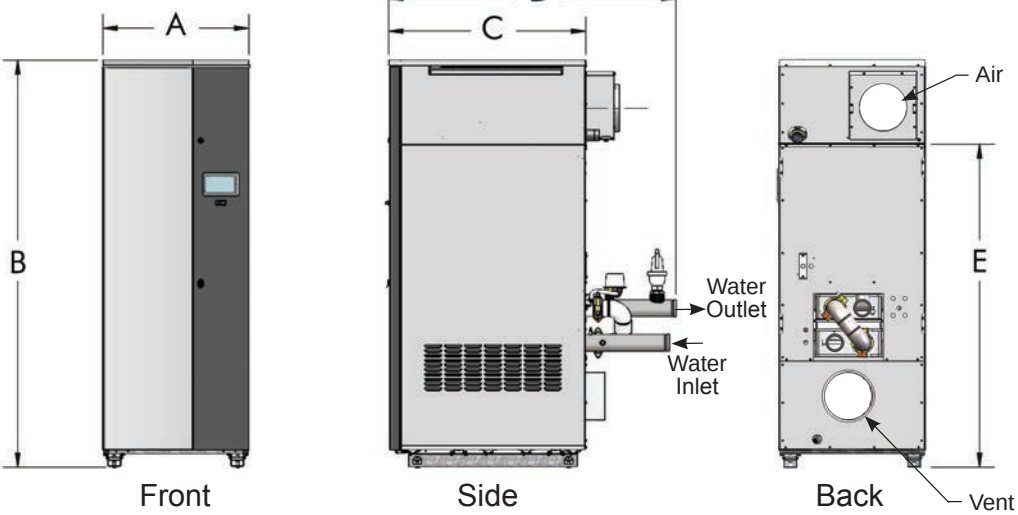


Boiler, Water Flow Requirements

Temperature Rise in °F

Size	30°F		35°F		40°F	
	Flow	Head Loss*	Flow	Head Loss*	Flow	Head Loss*
	GPM	Feet	GPM	Feet	GPM	Feet
1600	100	14.0	87	10.0	76	8.0
2000	128	23.5	109	17.1	95	13.6
2500	158	23.6	136	17.6	119	13.6
3000	190	34.2	164	25.8	142	18.9
3500	222	30.6	190	23.6	166	18.6
4000	255	38.2	218	28.5	190	22.5

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

Temperature Rise in °C

Size	17°C		19°C		22°C	
	Flow	Head Loss*	Flow	Head Loss*	Flow	Head Loss*
	LPM	m	LPM	m	LPM	m
1600	379	4.3	329	3.0	288	2.5
2000	485	7.2	413	5.2	360	4.2
2500	599	7.0	514	5.0	449	4.1
3000	719	10.4	621	7.9	538	5.8
3500	839	9.0	719	7.0	629	6.0
4000	965	11.6	825	8.7	719	6.9

Volume Water Heater, Flow Requirements

Size	Flow Rate	Temp Rise	Headloss*	Flow Rate	Temp Rise	Headloss*
	GPM	°F	Ft	LPM	°C	m
1600	152	20	31.0	525	11.1	10.1
2000	152	25	33.0	575	14.0	10.1
2500	190	25	33.7	719	13.9	10.0
3000	190	30	36.0	719	17.0	11.0
3500	222	30	30.6	839	17.0	9.0
4000	224	34	30.0	848	19.0	9.1

Water Hardness of 1-10 grains per gallon. Allowable pH: 6.5 to 9.5
*Headloss is for the heater only (no piping).

MagnaTherm Electrical Options

Voltage	Current (FLA)					
	1600	2000	3500	3000	3500	4000
120V Single Phase	17.0	22.6	N/A	N/A	N/A	N/A
220V Single Phase	10.0	11.3	N/A	N/A	N/A	N/A
208V Three Phase	N/A	12.7	19.4	19.4	19.4	19.4
480V Three Phase	N/A	6.2	8.7	8.7	8.7	8.7
600V Three Phase	N/A	4.5	5.9	5.9	5.9	5.9

VARI-PRIME™ Control Technology

Laars VARI-PRIME™ flow control matches the modulation rate of a MagnaTherm's combustion system to the rate of a variable speed boiler pump. This unique on board control allows the MagnaTherm boiler to mirror the heating system's profile during varying load conditions and optimize overall efficiency.

Boiler pumps are typically sized for the maximum flow that a boiler needs, but boilers rarely operate at maximum capacity. A pump's power consumption can drop by as much as 50% with only a 20% reduction in speed. By replacing a boiler's typical on/off pump with a VARI-PRIME™ equipped MagnaTherm control and variable speed pump, over a thousand dollars in boiler pump watt usage can be saved per year. The payback for the variable speed pump setup can be realized in as little as one year!

The combined potential energy savings of the MagnaTherm's high efficiency combustion coupled with the VARI-PRIME™ control system is huge. Only the Laars MagnaTherm with built in VARI-PRIME™ controls can offer such savings in one package!

VARI-PRIME™ Pump Control Energy Savings Example

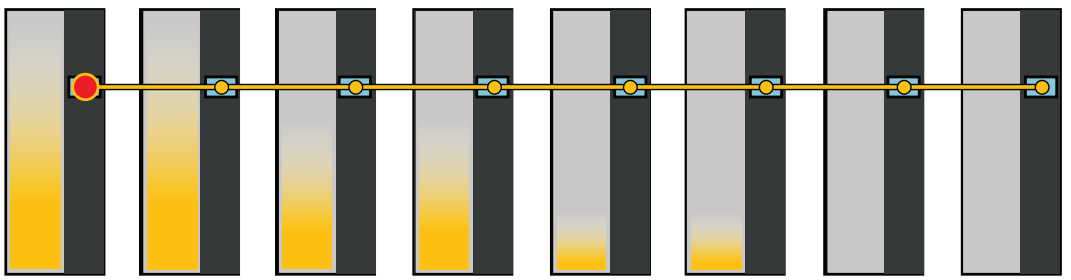
Typical boiler pump energy use seen over a full heating season located in upstate New York (September through April).

When an On/Off Boiler Pump is used - kWH consumed	18,773
When the Laars VARI-PRIME is used - kWH consumed	5,540
Annual VARI-PRIME™ kWH savings	**13,233**
Annual Percent Pump Electrical Savings	**70%**
Annual Dollar Savings*	**$1,417**

A Three Million BTU/hr MagnaTherm using VARI-PRIME™ pump control and a Goulds 22SH variable speed boiler pump were used in this example.
*2013 US Average of 11 cents per kWH used, source US Energy Information Administration.
See Laars VARI-PRIME™ white paper 9185 for complete details.

Lead Lag Cascading of up to 8 MagnaTherms

The advanced MagnaTherm control system also includes a cascading feature that allows for up to eight units to be lead lagged together. This results in a modulating heating cell of up to 32 million BTU/hr with a combined 40:1 turndown. Also included is an auto rotation function that periodically changes lead boiler to evenly spread service between all boilers. Communication with Building Automation Systems happens seamlessly via a built-in Modbus protocol included with all MagnaTherm boilers. The Laars Gateway is available for use with BacNET and LON networks.



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Low Lead Content

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Ask About Our Certified Products

LAARS®
Heating Systems Company
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800.900.9276 • Fax 800.559.1583 (Customer Service and Product Support)
20 Industrial Way, Rochester, NH 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