

LAARS[®] **MAGNATHERM[®] HTD**

*High Turndown Condensing Boiler
and Volume Water Heater*



Up to 96% Thermal Efficiency

20:1 Modulation All Sizes

TRU TRAC O₂ Trim

LAARS LINC™ Intuitive Touch Screen Controls

VARI-PRIME® Pump Control

Indoor and Outdoor

10 Year Heat Exchanger Warranty

COMMERCIAL HIGH EFFICIENCY

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

THE MAGNATHERM® HTD



Office Buildings & High-Rises



Schools and Universities

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

On board every MagnaTherm HTD boiler is the unique Tru Trac O₂ trimming system and Laars Vari-Prime pump control that balances 20:1 turndown, combustion, and water flow to dramatically reduce boiler energy consumption. MagnaTherm HTD is designed, engineered and manufactured at Laars Heating Systems, an American company.



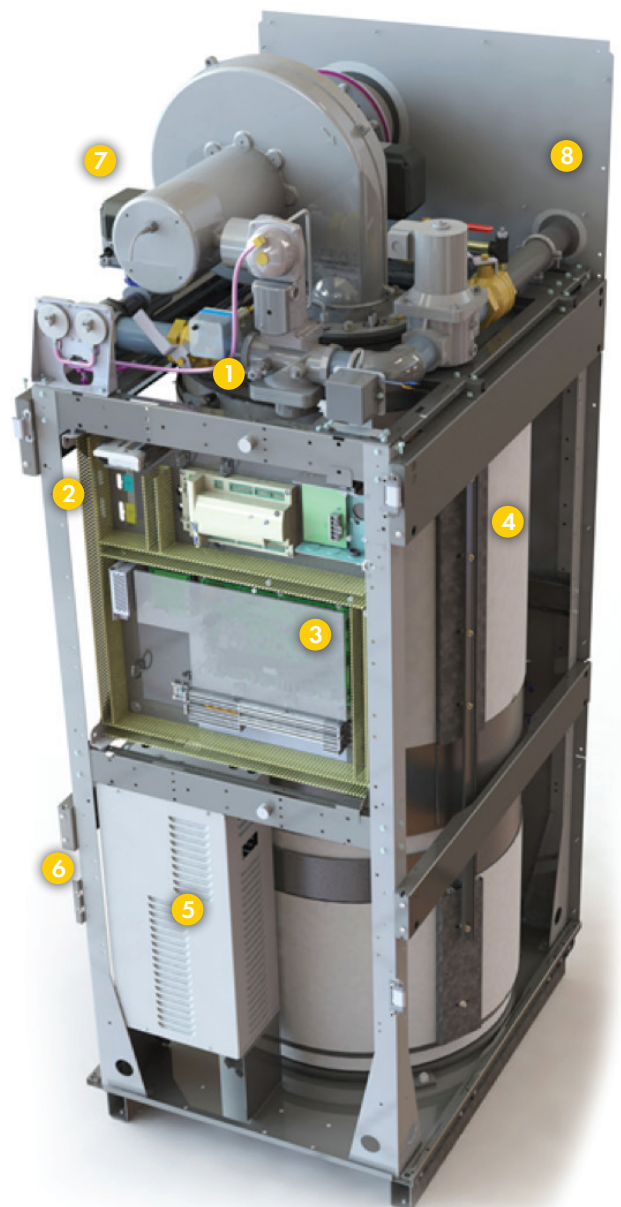
Stadiums & Warehouse Facilities

OPTIMAL BALANCE OF FORM AND FUNCTION

The MagnaTherm boiler'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. A 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.

STANDING APART FROM THE OTHERS

1. 20:1 turndown gas train – high accuracy air – gas control valve system.
2. Tru Trac O₂ Trim Control with proprietary Laars algorithms maintain high efficiency throughout the entire modulation range.
3. Laars Linc advanced controls with an intelligently laid out control panel. Limits, alarms, gateways and terminal blocks are all accessible from the front via a hinged panel.
4. Up to 96% Thermal Efficiency via a gasketless, stainless steel heat exchanger that is resistant to corrosive condensate and flue gasses.
5. Many electrical packages available to meet job site voltage requirements; 120, 240, 480 or 600 VAC depending on boiler size.
6. Access to the front of the MagnaTherm is via two side by side lockable doors that are also easily removed for complete access.
7. Removable upper section for when negotiating tight areas – gas train, blower, and upper panels.
8. All gas, water, and high voltage connections are located in the back of the MagnaTherm for ease of installation.



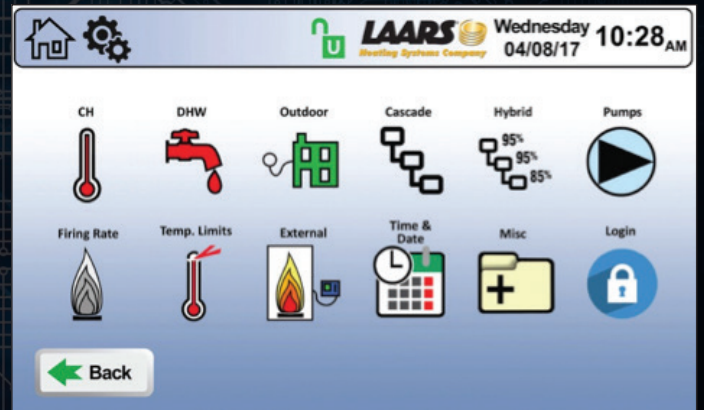
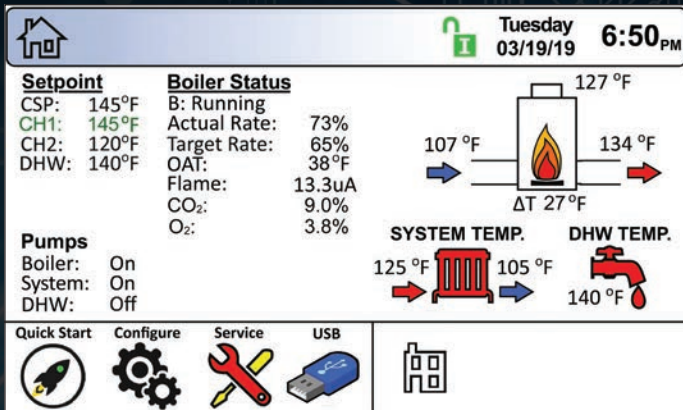
LAARS LINC™

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

LAARS LINC™

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

ADVANCED EASE OF USE FUNCTIONALITY:



- **HOME SCREEN BOILER STATUS:** The home screen shows the operational status of the boiler; all set points, status of each pump, and boiler run status.
- **QUICK START CONFIGURATOR:** Simply touch the "Quick Start" icon on the home screen to access the most commonly-used parameters for systems that don't require advanced set up.
- **USB DATA CONNECTION:** The USB connection allows for easy transfer of parameter sets from one boiler to another and for the boiler's history data to be transferred to a USB memory device.
- **MULTIPLE PUMP CONTROL:** System pump, boiler pump and domestic water pump operation, each with time delay.
- **VARI-PRIME PUMP CONTROL:** The MagnaTherm boiler's combustion modulation is matched to the rate of a variable speed boiler pump. This unique on board control mirrors a heating system's profile during varying load conditions to optimize overall efficiency. A variable speed pump's yearly watt usage can be dramatically reduced with a payback realization in as little as one year.
- **LAARS LINC CONTROL TO DISPLAY HANDSHAKE:** If for any reason a display or control board needs to be replaced, the parameter set is automatically transferred from the remaining display or control board to the replaced component. Parameters are stored on both the display and control to auto populate either one!
- **INTELLIGENT REDUNDANCY:** Laars Linc cascade logic includes a built-in redundancy; via either a lag unit's internal setpoint, or a configurable redundant leader. A bank of boilers will continue to operate even if the master control goes down, keeping buildings warm and hot water flowing!
- **AUTO CONFIGURING CASCADE:** Up to 8 units can be automatically configured by simply connecting the controls and selecting the master boiler. The intelligence of Laars Linc takes over to auto configure the remaining follower boilers. No need to register each follower!
- **BacNET MSTP AND MODBUS ON BOARD**

TRU TRAC

HIGH TURNDOWN O₂ TRIM TECHNOLOGY

TRU TRAC



Each MagnaTherm HTD unit is equipped with the proprietary Laars Tru Trac O₂ combustion control system. Tru Trac Electric Fuel-Air-Ratio control algorithms actively manage the combustion process to optimize efficiency and emission levels.

Oxygen levels produced during combustion are monitored in real-time, throughout the entire 20-1 turndown range of the MagnaTherm HTD to ensure optimal operation.

Just like a high-performance automobile, the MagnaTherm HTD Tru Trac system adjusts air-to-fuel mixture to maintain ideal performance. No longer compromise between turndown, efficiency and clean emission levels.

TRU TRAC REAL TIME COMBUSTION MANAGEMENT:

- Maintains ideal oxygen levels to optimize operation
- Quickly adjusts to counteract environmental fluctuations
- Increases thermal efficiency throughout entire 20:1 range
- Increase runtime availability
- Reduces maintenance required over time

NON-IDEAL O₂ LEVELS RESULT IN:

- Unstable flame formation reduces efficiency
- Increased emissions
- Less condensing due to lower dew points
- Increased maintenance issues
- Increased downtime



The combined energy savings of the MagnaTherm HTD ultra-high efficiency with Tru Trac O₂ trim and Vari-Prime pump control leads the industry. Only the Laars MagnaTherm HTD with built in Vari-Prime, Tru Trac O₂ controls and 20:1 turndown can offer such savings in one package!

SIZING DATA

Model	Minimum Input Rate		Maximum Input Rate		Minimum Output Rate		Maximum Output Rate		Thermal Efficiency (%)		Combustion Efficiency (%)
	MBH	kw	MBH	kw	MBH	kw	MBH	kw	VWH	Boiler	Boiler
1600	80	23.4	1600	469	76	22.3	1520	445	96	95	96.0
2000	100	29.3	1999	586	95	27.8	1895	555	96	95	93.6
2500	125	36.6	2499	732	119	34.9	2374	696	96	95	93.8
3000	150	44.0	3000	879	141	41.3	2814	825	96	95	93.8
3500	175	51.3	3500	1025	164	48.1	3276	960	96	95	93.6
4000	200	58.6	4000	1172	190	55.7	3800	1113	96	95	93.1

Model	Product Weight		Operating Weight		Shipping Weight		Water Content	
	lbs	kg	lbs	kg	lbs	kg	gal	l
1600	1410	640	1582	718	1610	731	22	83
2000	1410	640	1582	718	1610	731	22	83
2500	1810	822	2064	937	2010	913	31	117
3000	1810	822	2064	937	2010	913	31	117
3500	2325	1056	2789	1266	2525	1146	56	212
4000	2325	1056	2789	1266	2525	1146	56	212

Voltage (Phase)	Full Load Amperage (FLA)					
	120 (Single)	240 (Single)	208 (Single)	208 (Three)	480 (Three)	600 (Three)
1600	6.2	3.4	3.6	-	-	-
2000	18.6	10.1	12.5	7.5	3.5	4.4
2500/ 3000	-	-	-	9.5	4.4	3
3500/ 4000	-	-	-	9.9	3.3	4.5

BOILER WATER FLOW REQUIREMENTS

Model	25°F		30°F		35°F		40°F	
	Flow GPM	Head Loss* Feet	Flow GPM	Head Loss* Feet	Flow GPM	Head Loss* Feet	Flow GPM	Head Loss* Feet
1600	122	19.4	100	14	87	10	76	8
2000	150	30	128	23.5	109	17.1	95	13.6
2500	190	34	158	23.6	136	17.6	119	13.6
3000	226	47	190	34.2	164	25.8	142	18.9
3500	266	41	222	30.6	190	23.6	166	18.6
4000	300	48	255	38.2	218	28.5	190	22.5

Minimum Boiler Flow Rates		
Model	Flow GPM	Flow LPM
1600	8	30
2000	11	42
2500	13	49
3000	16	61
3500	18	68
4000	21	79

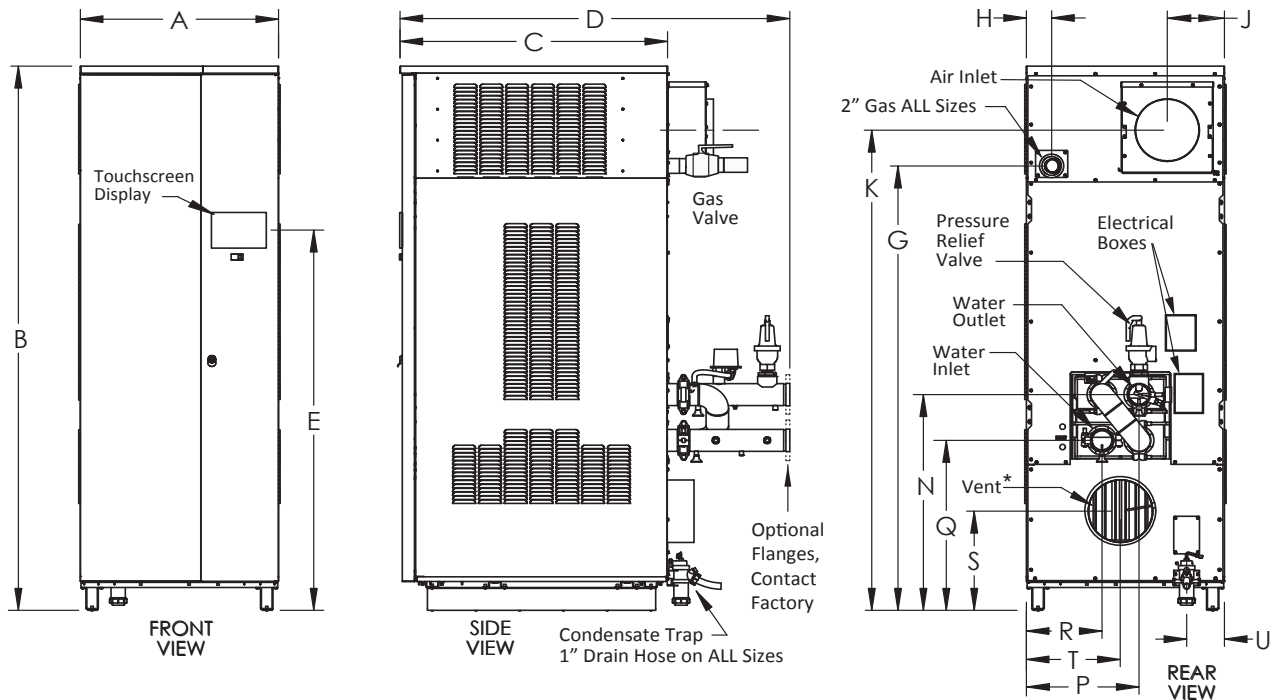
Model	14°C		17°C		19°C		22°C	
	Flow LPM	Head Loss* m	Flow LPM	Head Loss* m	Flow LPM	Head Loss* m	Flow LPM	Head Loss* m
1600	461.8	5.9	378.5	4.3	329.3	3.0	287.7	2.4
2000	567.8	9.1	484.5	7.2	412.6	5.2	359.6	4.1
2500	719.2	10.4	598.1	7.2	514.8	5.4	450.5	4.1
3000	855.5	14.3	719.2	10.4	620.8	7.9	537.5	5.8
3500	1006.9	12.5	840.4	9.3	719.2	7.2	628.4	5.7
4000	1135.6	14.6	965.3	11.6	825.2	8.7	719.2	6.9

* Headloss is for boiler only (no piping)

VOLUME WATER HEATER WATER FLOW REQUIREMENTS

Model	1-10 Grains Per Gallon Hardness			11-15 Grains Per Gallon Hardness			Model	1-10 Grains Per Gallon Hardness			11-15 Grains Per Gallon Hardness		
	Flow Rate (gpm)	Headloss* (ft)	Temp Rise (°F)	Flow Rate (gpm)	Headloss* (ft)	Temp Rise (°F)		Flow Rate (l/m)	Headloss* (m)	Temp Rise (°C)	Flow Rate (l/m)	Headloss* (m)	Temp Rise (°C)
1600	152	31	20	177	41	17	1600	525	10.1	11	670	12.5	9.4
2000	152	33	25	177	43.9	21	2000	575	10.1	14	670	13.4	12
2500	190	33.7	25	220	46	21	2500	719	10	14	833	14	11.7
3000	190	36	30	220	46	26	3000	719	11	17	833	14	14
3500	222	30.6	30	266	40.6	25	3500	840	9	17	1007	12	14
4000	224	30	34	266	41.2	29	4000	848	9.1	19	1007	12.6	16

DIMENSIONAL DATA



Model	A	B	C	D	E	G	H	J
1600	29.3 (75)	79.8 (203)	38 (96)	57.5 (147)	49.8 (126)	60.8 (154)	2.6 (7)	8.4 (21)
2000	29.3 (75)	79.8 (203)	38 (96)	57.5 (147)	49.8 (126)	60.8 (154)	2.6 (7)	8.4 (21)
2500	30.8 (78)	87 (221)	41.5 (105)	60.5 (154)	60.8 (154)	71 (180)	4 (10)	9.8 (25)
3000	30.8 (78)	87 (221)	41.5 (105)	60.5 (154)	60.8 (154)	71 (180)	4 (10)	9.8 (25)
3500	34.5 (88)	97.5 (248)	52 (133)	70 (178)	60.8 (154)	81.3 (207)	7 (18)	8.3 (21)
4000	34.5 (88)	97.5 (248)	52 (133)	70 (178)	60.8 (154)	81.3 (207)	7 (18)	8.3 (21)

Model	K	N	P	Q	R	S	T	U
1600	68.4 (171)	30.4 (77)	16 (41)	23 (58)	10.2 (26)	14 (36)	13 (33)	6.3 (16)
2000	67.4 (171)	30.4 (77)	16 (41)	23 (58)	10.2 (26)	14 (36)	13 (33)	6.3 (16)
2500	76.4 (194)	34.5 (88)	17.7 (45)	27.2 (69)	11.8 (30)	18.3 (46)	14.8 (38)	6.0 (15)
3000	76.8 (195)	34.5 (88)	17.7 (45)	27.2 (69)	11.8 (30)	18.3 (46)	14.8 (38)	6.0 (15)
3500	86.4 (219)	40 (102)	21.6 (55)	30.7 (78)	13 (33)	16 (41)	17.4 (44)	6.7 (17)
4000	86.4 (219)	40 (102)	21.6 (55)	30.7 (78)	13 (33)	16 (41)	17.4 (44)	6.7 (17)

* Up to 100 equivalent feet of vent. See manual for details.



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 03867 • 603.335.6300 • Fax 603.335.3355
9 Brigden Gate, Halton Hills, Ontario, Canada, L7G 0A3 • 905.203.0600 • Fax 905.636.0666
www.LAARS.com