

The Brute MagnaTech™

Commercial, High Efficiency
Condensing Boiler and Volume Water Heater



*Featuring Variable Speed
Pump Control*

A Perfect Balance of Size, Form, and Function



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The Brute MagnaTech™



Every commercial heating system is unique and requires a boiler that can adapt and respond to system fluctuations, while maintaining the energy conservation standards important to today's building owners. Such a boiler now exists in the innovative Bradford White Brute MagnaTech™.

Highlights

- *1,999-4,000 MBTU/Hr.*
- *Up to 99% thermal efficiency (AHRI certified 95% or higher)*
- *Variable Speed Pump Control*
- *5:1 (20% to 100% input) modulating gas valve*
- *Quiet, variable speed blower*
- *Small footprint (compared to others in class)*
- *Forward mounted low voltage panel for easy wiring and troubleshooting*
- *Up to 100 feet of vent*
- *Meets the most stringent NOx emission requirements*
- *Advanced control system*
- *Lead lag cascading of up to 8 units*

Variable Speed Pump Control Technology

Variable Speed Pump Control technology is a unique, energy saving feature that balances combustion, air flow, and water flow to significantly reduce energy use, resulting in thousands of dollars in savings over the lifetime of the unit.

How it works:

Traditional 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.

In contrast, the Brute MagnaTech™ utilizes Variable Speed Pump Control Technology to match the modulation rate of the unit's combustion system to the rate of a variable speed boiler pump. This unique on-board control allows the Brute MagnaTech™ to mirror the heating system's profile during varying load conditions and optimize overall efficiency.



A Perfect Balance of Size,

The Brute MagnaTech™ Exclusive Technologies and Features

Installation Flexibility and Versatility

The Brute MagnaTech™ offers a small footprint, slim vertical design and removable top section, making it ideal for tight mechanical rooms. Its optional electrical packages allow for easy pairing with various field supply voltages. A large, easy-to-navigate color touch screen display allows for quick setup and diagnostics and enables up to 8 Brute MagnaTech™ units to be controlled in a cascading boiler bank. The Brute MagnaTech™ can also be vented using CPVC, polypropylene, or stainless steel up to 100 feet.



Large Color Touch Screen

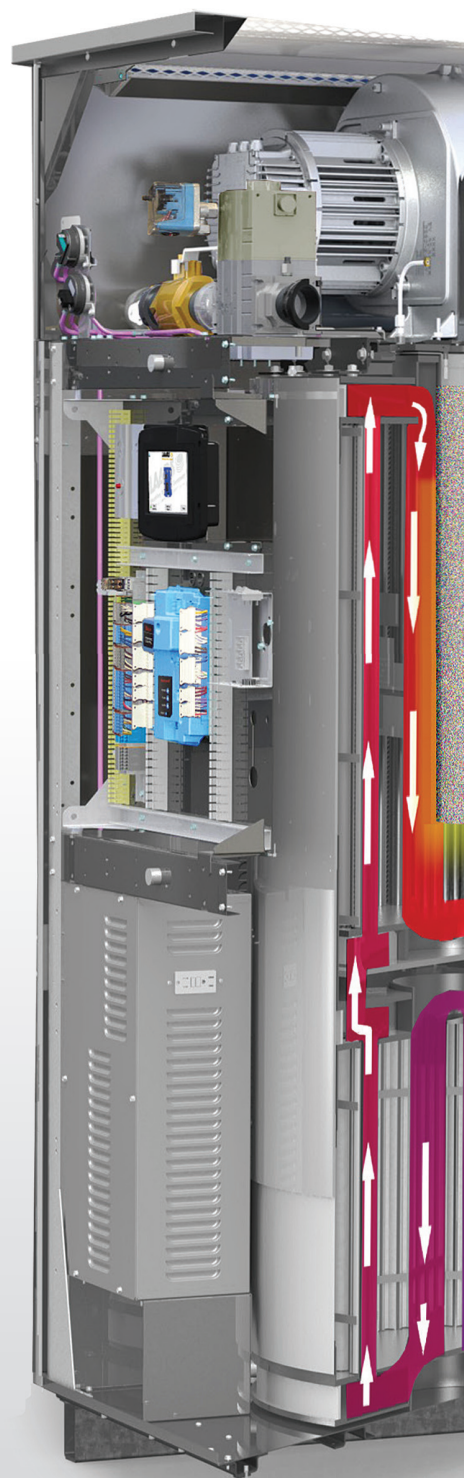
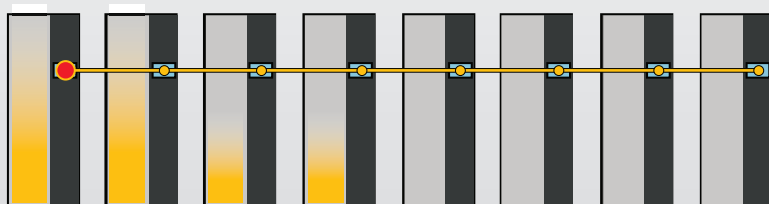
A multi-color, simple to use touch screen display allows you to fully control and setup the Brute MagnaTech™.

Indoor / Outdoor Installation

The Brute MagnaTech™ has a modern-looking, weatherproof cabinet design that is excellent for either indoor or outdoor installations.

Lead Lag Cascading of up to 8 Brute MagnaTech™ Units

The advanced control system of the Brute MagnaTech™ 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 Brute MagnaTech™ boilers.



Form, and Function

Superior Heat Exchanger Materials



The heat exchanger of the Brute MagnaTech™ was also designed and built in the USA. You can rely on years of worry-free service knowing that the heart of this innovative product is the result of American ingenuity and quality.

Full Access

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

Electrical Flexibility

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

Removable Top Section

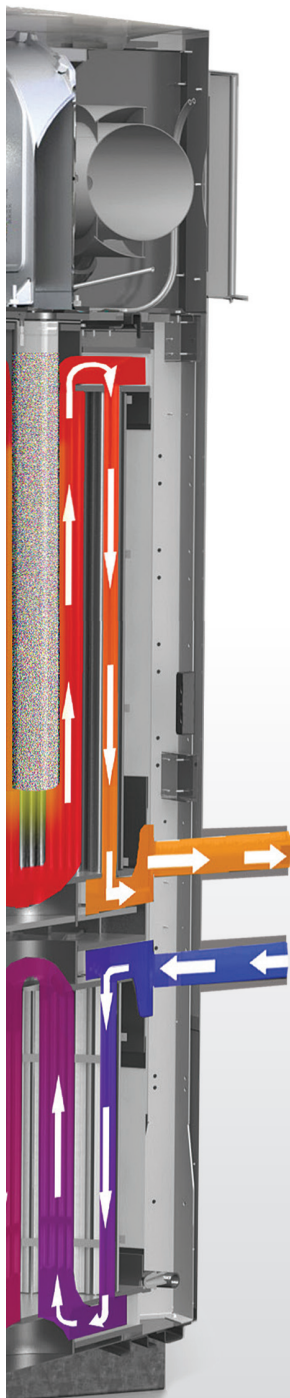
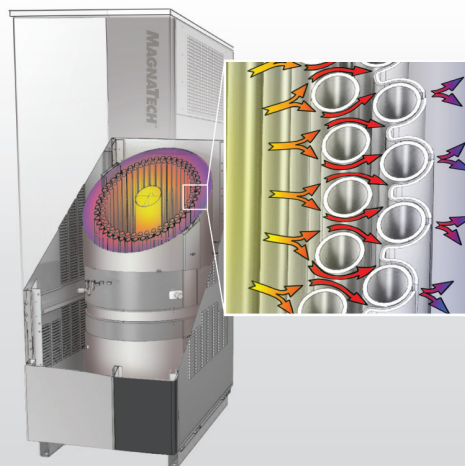
An easy-to-remove top blower section makes getting into tight spaces and elevators a smooth operation.

Slim Design, Small Footprint

The narrow width of the Brute MagnaTech™ allows it to fit through most standard doorways.

Optimized Heat Transfer Technology and Extended Life

The efficiency of the Brute MagnaTech™ is the result of precisely aligned micro-finned heating tubes combined with highly-engineered flue gas channels. This arrangement optimizes the flow of flue gases for maximum heat transfer to the water inside the heating tubes and extends the life of the heat exchanger.



Variable Speed Pump Control Delivers Energy Savings

By replacing a boiler with typical on/off pump controls with a Brute MagnaTech™ featuring the Variable Speed Pump Control, over a thousand dollars in boiler pump watt usage can be saved per year!

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
Annual Variable Speed Pump Control	
kWh savings	13,233
When the Bradford White Variable Speed	
Pump Control is used - kWh consumed	5,540
Annual Percent Pump Electrical Savings	70%
Annual Dollar Savings*	\$1,417

A Three Million BTU/Hr. Brute MagnaTech™ using Variable Speed Pump Control and a Goulds 22SH variable speed boiler pump were used in this example.

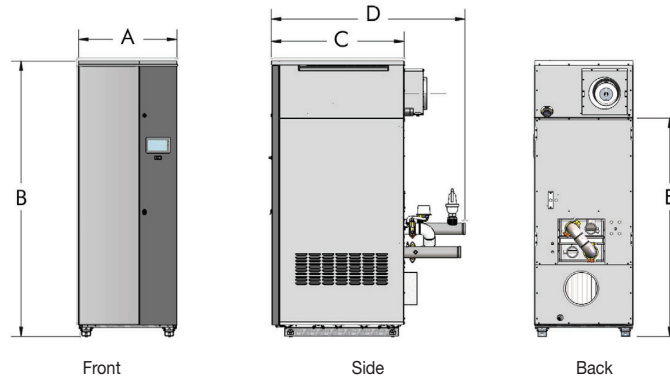
*2013 US Average of 11 cents per kWh used, source US Energy Information Administration. See Laars VARI-PRIME™ white paper 9185 for complete details.



Specs at a Glance

Venting and piping locations on the back of the Brute MagnaTech™ do vary from size to size.

For further details of Brute MagnaTech™ specifications, please see the Brute MagnaTech™ Submittal Data Sheets which are available online at www.bradfordwhite.com



Dimensional Data

Size	A		B		C		D		E Knock-down Height	Water Conn. Groove Lock	Gas Conn. NPT	Condensate Trap Line
	in.	cm	in.	cm	in.	cm	in.	cm	in.	cm	in.	in.
1600	29.3	75	80.0	203	38.0	96	57.5	147	60.8	154	3	2
2000	29.3	75	80.0	203	38.0	96	57.5	147	60.8	154	3	2
2500	30.8	78	87.0	221	41.5	105	60.5	154	71.0	180	3	2
3000	30.8	78	87.0	221	41.5	105	60.5	178	71.0	180	3	2
3500	34.5	88	97.0	246	52.0	132	70.0	178	80.8	205	4	2
4000	34.5	88	97.0	246	52.0	132	70.0	178	80.8	205	4	2

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.(in.)	Pa	in.	cm	ft.	m
1600	1,600.0	469	1,520	445	95.0	96.0	1,390	630	1,562	709	1,590	721	4	996	6	15	100	30.5
2000	1,999.9	586	1,883	552	95.0	96.0	1,390	630	1,562	709	1,590	721	4	996	8	20	100	30.5
2500	2,499.9	732	2,374	696	95.0	96.0	1,785	810	2,039	925	1,985	900	4	996	8	20	100	30.5
3000	3,000.0	879	2,814	825	95.0	95.0	1,785	810	2,039	925	1,985	900	4	996	10	25	100	30.5
3500	3,500.0	1,025	3,317	972	95.0	96.0	2,278	1,033	2,742	1,244	2,478	1,124	4	996	10	25	100	30.5
4000	4,000.0	1,172	3,724	1,091	95.0	96.0	2,278	1,033	2,742	1,244	2,478	1,124	4	996	12	30	100	30.5

Water Flow Data

Boiler Model Number	Temperature Rise												Volume Water Heater Model Number						
	30°F / 17°C				35°F / 19°C				40°F / 22°C					Flow		Head Loss*		Temp. Rise	
	Flow		Head Loss*		Flow		Head Loss*		Flow		Head Loss*								
	GPM	LPM	ft.	m	GPM	LPM	ft.	m	GPM	LPM	ft.	m		GPM	LPM	ft.	m	°F	°C
BMGH-1600	100	379	14.0	4.3	87	329	10.5	3.0	76	288	8.0	2.5	BMGV-1600	152	525	31.0	10.1	20	11.1
BMGH-2000	128	485	23.5	7.2	109	413	17.1	5.2	95	360	13.6	4.2	BMGV-2000	152	575	33.0	10.1	25	14.0
BMGH-2500	158	599	23.6	7.0	136	514	17.6	5.0	119	449	13.6	4.1	BMGV-2500	190	719	33.7	10.0	25	13.9
BMGH-3000	190	719	34.2	10.4	164	621	25.8	7.9	142	538	18.9	5.8	BMGV-3000	190	719	36.0	11.0	30	17.0
BMGH-3500	222	839	30.6	9.0	190	719	23.6	7.0	166	629	18.6	6.0	BMGV-3500	222	839	30.6	9.0	30	17.0
BMGH-4000	255	965	38.2	11.6	218	825	28.5	8.7	190	719	22.5	6.9	BMGV-4000	224	848	30.0	9.1	34	19.0

*Head loss is for the heater only (no piping). For Volume Water Heaters: water hardness of 1-10 grains per gallon. Allowable pH: 6.5 to 9.5.

Electrical Options

Voltage	Current (FLA)					
	1600	2000	2500	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



Dimensions are nominal and are shown in inches, cm.

Dimensions and specifications subject to change without notice in accordance with our policy of continuous product improvement.



MAGTECH-0815

Committed to American Manufacturing, Wholesale Distribution, and Professional Installation.

BRADFORD WHITE
WATER HEATERS
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