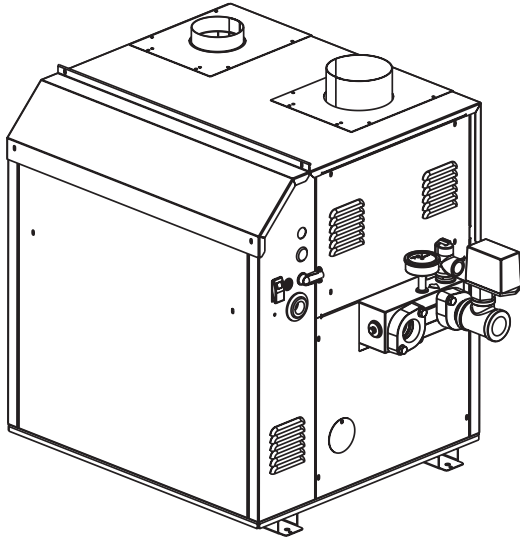


# Brute® Deluxe

# Boiler & Water Heater



Date:

Project #:

Engineer:

Prepared By:

Bid Date:

BMT2H	400 Hydronic Heater
BMT2V	200 - 400 Volume Water Heater

Indoor/Outdoor

Submittal Data



Project Name:

Location:

Contractor:

## Standard Equipment

- Certified for indoor or outdoor use
- Less than 10ppm NOx
- ASME 160 psi working pressure heat exchanger
- ASME "H" stamp
- Opt. ASME "HLW" stamp (BMT2V only)
- Meets NSF/ANSI-372 Low Lead Content Certification (BMT2V)
- Flanged water connections
- Glass-lined headers
- External header gaskets
- Temperature pressure gauge
- 75psi (517kPa) ASME rated pressure relief valve (BMT2H)
- 125psi (861kPa) ASME rated pressure relief valve (BMT2V)
- Water flow switch
- 24V control system
- 115/24V transformer
- Temperature controller
- Manual reset high limit
- On-off firing (2-stage opt.)
- Hot surface ignition
- On/off toggle switch
- CSD-1 compliant
- Removable burner tray(s)
- Multiple operating gas valve/ pressure regulators
- Manual "A" gas valve
- Burner site glass
- Fusible link (model 200)
- Intake air filter
- Built-in fan for Category I or III vent systems
- Blower pre- & post-purge
- Air pressure switch
- Blocked vent switch

## Controller Features

### BMT2H Boiler

- PI temperature controller
- Outdoor reset with ratios of 0.4 to 3.6
- Warm weather shutdown
- Indicator lights for power, heat call, DHW call & WWSD
- Indirect DHW operation
- Automatic boiler differential
- Pump pre-purge, post-purge and exercise
- Outdoor air sensor
- Codes for sensor errors

### BMT2V Water Heater

- Bulb & capillary adjustable temperature controller
- On/off control has fixed 5°F differential
- Opt. 2-stage control is adjustable with fixed 3.5°F switch differential and adjustable interstage differential
- Pump time delay, adjustable from 0-10 minutes

## Boiler Data

### Model:

- Boiler BMT2H
- Water Heater BMT2V

Number of Units:

### Fuel

- Natural
- Propane

### Configuration

- On/Off (standard)
- Two-Stage (optional)

### Heat Exchanger

- Copper
- Cupro-Nickel
- Copper, Reversed
- Cupro-Nickel, Reversed

### Water Trim

- Glass-Lined Cast Iron
- Bronze Trim (std. on BMT2V)

### Options

- 200°F Max Controls (std. on BMT2V)
- Low Water Cutoff
- ASME "HLW" Stamp (BMT2V only)



## Sizing Data

Model	Input		Output		Thermal Efficiency %	Gas Conn. Size NPT	Water Conn. Size NPT	Shipping Weight	
	BTU/h	kW	BTU/h	kW				lbs	kg
<input type="checkbox"/> BMT2H0400	<b>399,000</b>	116.9	<b>340,000</b>	99.6	85.3	3/4	1-1/2	<b>330</b>	150
<input type="checkbox"/> BMT2V0200	<b>199,900</b>	58.6	<b>169,915</b>	49.8	85	3/4	1-1/2	<b>270</b>	123
<input type="checkbox"/> BMT2V0300	<b>300,000</b>	87.9	<b>255,000</b>	74.7	85	3/4	1-1/2	<b>300</b>	136
<input type="checkbox"/> BMT2V0400	<b>400,000</b>	117.2	<b>339,915</b>	99.6	85	3/4	1-1/2	<b>330</b>	150

### NOTES:

- Input and output must be derated 4% per 1000 feet above sea level when installed above 2000 feet altitude.
- Dimensions are nominal.
- For other boiler ratings:  
Boiler Horsepower: HP =  $\frac{\text{Output}}{33,475}$       Radiation Surface: EDR sq. ft. =  $\frac{\text{Output}}{150}$

## Accessories

- Side-wall vent terminal for indoor installation (required for side-wall venting)
- Side-wall combustion air terminal for indoor installation (required only for ducted combustion air)
- Outdoor vent terminal and combustion air terminal

## Water Flow Data

### BMT2H (Boiler)

#### TEMPERATURE RISE

Size	20°F		11°C		25°F		14°C		30°F		17°C		35°F		19°C	
	Flow	H/L	Flow	H/L	Flow	H/L	Flow	H/L	Flow	H/L	Flow	H/L	Flow	H/L	Flow	H/L
	gpm	feet	lpm	m	gpm	feet	lpm	m	gpm	feet	lpm	m	gpm	feet	lpm	m
400	<b>34</b>	<b>6.3</b>	129	1.9	<b>27</b>	<b>4.0</b>	102	1.2	<b>23</b>	<b>2.8</b>	87	0.9	<b>19</b>	<b>2.1</b>	72	0.6

### BMT2V (Water Heater)

Size	HARD WATER						NORMAL WATER						SOFT WATER					
	Flow	H/L	Temp	Flow	H/L	Temp	Flow	H/L	Temp	Flow	H/L	Temp	Flow	H/L	Temp	Flow	H/L	Temp
	gpm	feet	rise °F	lpm	m	rise °C	gpm	feet	rise °F	lpm	m	rise °C	gpm	feet	rise °F	lpm	m	rise °C
200	<b>45</b>	<b>7.3</b>	<b>8</b>	170	2.2	4	<b>35</b>	<b>4.4</b>	<b>10</b>	133	1.3	6	<b>23</b>	<b>1.9</b>	<b>15</b>	87	0.6	8
300	<b>45</b>	<b>7.4</b>	<b>11</b>	170	2.3	6	<b>35</b>	<b>4.5</b>	<b>15</b>	133	1.4	8	<b>23</b>	<b>2.0</b>	<b>22</b>	87	0.6	12
400	<b>45</b>	<b>7.4</b>	<b>15</b>	170	2.3	8	<b>35</b>	<b>4.5</b>	<b>19</b>	133	1.4	11	<b>23</b>	<b>2.0</b>	<b>30</b>	87	0.6	17

## Recovery Data

Size	WATER TEMPERATURE RISE IN °F								
	40°F GPH	50°F GPH	60°F GPH	70°F GPH	80°F GPH	90°F GPH	100°F GPH	120°F GPH	140°F GPH
200	510	408	340	291	255	227	204	170	146
300	765	612	510	437	383	340	306	255	219
400	1020	816	680	583	510	453	408	340	291

NOTE: GPH = gallons per hour.

Size	WATER TEMPERATURE RISE IN °C								
	22°C L/h	28°C L/h	33°C L/h	39°C L/h	44°C L/h	50°C L/h	56°C L/h	67°C L/h	78°C L/h
200	1928	1542	1285	1100	964	858	771	643	552
300	2892	2313	1928	1652	1448	1285	1157	964	828
400	3856	3084	2570	2204	1928	1712	1542	1285	1100

NOTE: L/h = Liters per hour.

## Clearances

Appliance Surface	Required Clearance from Combustible Material		Suggested Service Access Clearance	
	inches	cm	inches	cm
Left Side	1	2.5	24	61.0
Right Side	1	2.5	24	61.0
Top	1	2.5	12	30.5
Back*	1	2.5	12	30.5
Front	1	2.5	36	91.4
Vertical Vent** (Category 1)	6	15.2		
Horizontal Vent (Category 3)	per UL1738 venting system supplier's instructions			

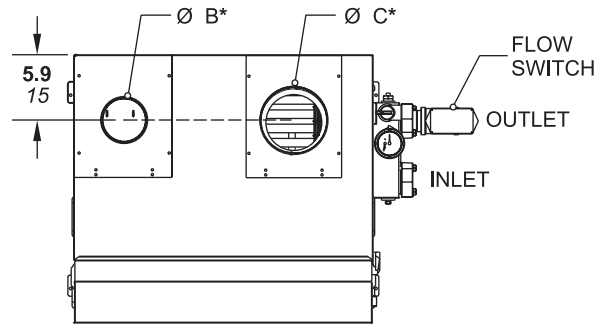
\* When vent and/or combustion air connects to the back, recommended clearance is 36" 91cm.

\*\* 1" when b-vent is used.

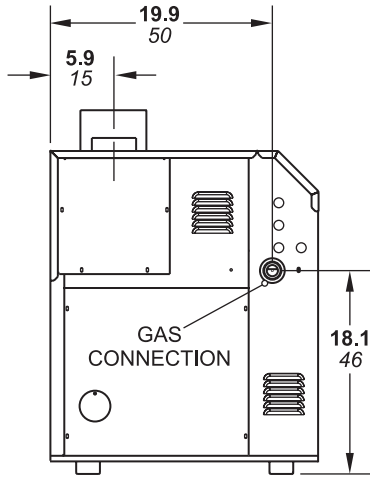
## Electrical Data

BMT2H & BMT2V (non-pump mounted) Size	Boiler / Heater Circuit Size			Pump Delay Connection Rating			Blower
	Volts	Phase	Amps	Pilot Duty	Phase	Power	
200-400	120	Single	15	24V	Single	Up to 25VA	Included in Boiler Circuit

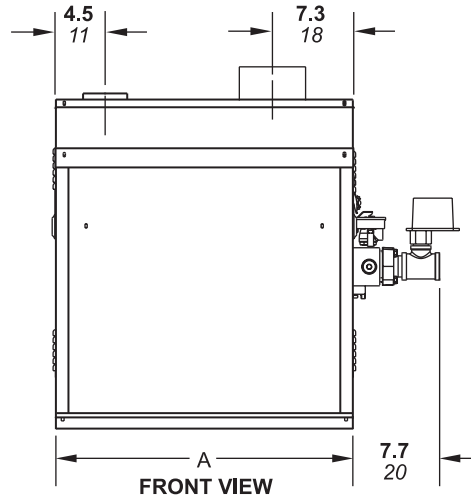
**Dimensional  
Data**



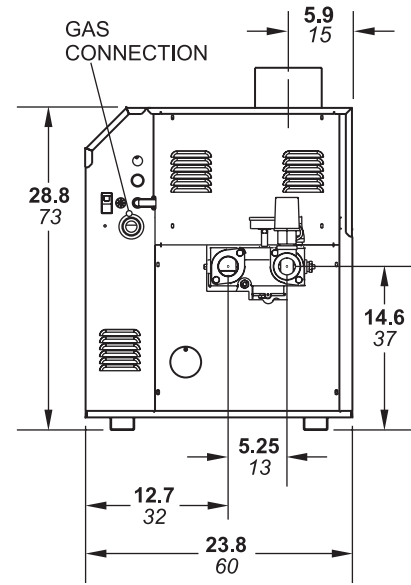
**TOP VIEW**



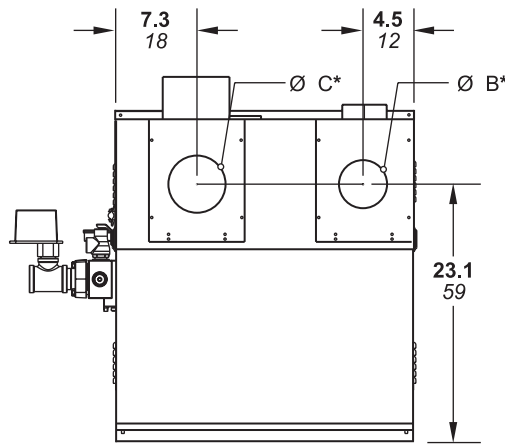
**LEFT SIDE VIEW**



**FRONT VIEW**



**RIGHT SIDE VIEW**



**REAR VIEW**

Size	A		Air Conn. B*		Vent Conn. C*		Horiz Vent Pipe	
	in	cm	in	cm	in	cm	in	cm
200	20½	52	4	10	5	13	4	10
300	26½	67	4	10	6	15	5	13
400	33½	85	6	15	7	18	6	15

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

*Bradford White Corporation reserves the right to change specifications, components, features, or to discontinue products without notice.*



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