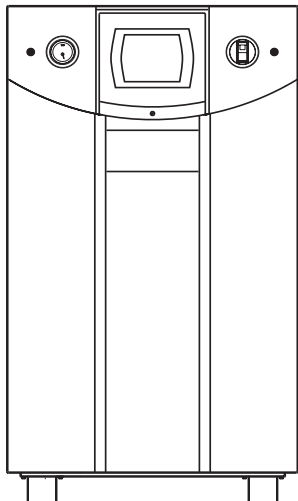


Brute



Volume Water Heater

Indoor/Outdoor, Models BNTV 1000 & 1200



Date:

Project #:

Engineer:

Prepared By:

Bid Date:

Submittal Data

Project Name:

Location:

Contractor:

Standard Equipment

- High condensing efficiency
- Modulation down to 10% of full fire (10:1 turndown)
- Sealed combustion chamber
- Pre-mix stainless steel burner
- Low NOx system exceeds the most stringent regulations for air quality - 10 ppm NOx
- For placement indoors and outdoors (in non-freezing environments)
- Horizontal or vertical direct vent
- Vent and air pipe lengths of up to 100 equivalent feet (each)
- Direct spark ignition system
- Electronic PID modulating control with large touchscreen and color display
- Controller cascades with up to four other Brutes (models 1000 and 1200)
- Accepts external 4-20mA modulation control (0-10V with optional converter)
- Domestic water pump time delay
- Alarm output
- Sensor for domestic water tank
- Manual reset high limit
- On/off toggle switch
- Vent temperature cutoff feature
- Built-in condensate trap
- 160 psi maximum working pressure
- Stainless steel heat exchanger with welded construction (no gaskets)
- ASME "H" stamp
- 125 psi (861 kPa) ASME rated pressure relief valve
- Water flow switch
- Temperature & pressure gauge
- Burner site glass
- 5-Year limited warranty

Heater Data

Number of Units:

Fuel

- ☐ Natural
☐ Propane

Factory Mounted Options

- ☐ CSD-1 (covers FM & GAP)
☐ Low water cutoff
☐ High & Low gas pressure switches
- ☐ Additional auto reset high limit*
☐ Additional manual reset high limit*
☐ Bell for ignition failure
☐ Air filter
- ☐ 30 psi pressure relief valve
☐ 50 psi pressure relief valve
☐ 60 psi pressure relief valve
☐ 75 psi pressure relief valve
☐ 150 psi pressure relief valve

* Auto reset high limit and manual reset high limit cannot be ordered together.



Accessories for Field Mounting

- ☐ Low water cutoff
- ☐ High & low gas pressure switches
- ☐ Air filter
- ☐ Additional auto reset high limit*
- ☐ Additional manual reset high limit*
- ☐ Variable speed pump frequency drive
- ☐ Horizontal vent terminal for PVC / CPVC
- ☐ Horizontal vent terminal for stainless steel
- ☐ Horizontal air terminal for PVC / CPVC
- ☐ Horizontal air terminal for stainless steel or polypropylene
- ☐ Vertical air terminal for PVC / CPVC
- ☐ Screen kit for stainless steel or polypropylene vertical air or vent pipe
- ☐ Outdoor vent terminal
- ☐ Outdoor air terminal
- ☐ BACnet gateway
- ☐ LON gateway
- ☐ Condensate neutralizer kit
- ☐ Condensate neutralizer kit with pump
- ☐ 0-10V converter for modulation control
- ☐ Conversion kit, Nat to LP

* Auto reset high limit and manual reset high limit cannot be ordered together.

Sizing Data

Model	Input		Output		Thermal Efficiency %	Gas Conn. size inches	Water Conn. size inches	Product Weight		Shipping Weight	
	BTU/h	kW	BTU/h	kW				lbs	kg	lbs	kg
☐ BNTV 1000	999,900	293	950,000	278	95.0	1½	2	518	235	620	281
☐ BNTV 1200	1,200,000	351	1,140,000	333	95.0	1½	2	538	244	640	290

NOTES:

For other boiler ratings:

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

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

Clearances

Appliance Surface	Suggested Service Access Clearance		Clearance to Combustibles	
	inches	cm	inches	cm
Front	24	61	2	5.1
Left Side	12	30	0	0
Right Side	18	46	0	0
Top	24	61	8	20
Back	24	61	0	0
Vent	—	—	1	2.5

Electrical Data

Size	Volts	Phase	Amps FLA	Pump Connections Ratings
1000	120	Single	10	max 7.4 FLA
1200	120	Single	12	max 7.4 FLA

Vent System

Size	Intake (Air) Pipe	Exhaust (Vent) Pipe	Maximum Allowable Equivalent Length*	
1000	6"	6"	100 ft	30 m
1200	6"	6"	100 ft	30 m

Installations in the U.S. require exhaust vent pipe that is a combination of PVC and CPVC complying with ANSI/ASTM D1785 F441, polypropylene pipe that complies with ULC S636, or stainless steel complying with UL 1738. Installations in Canada require exhaust vent pipe that is certified to ULC S636.

NOTE: The first 12" (30cm) of vent must be CPVC if using a PVC vent system.

Intake (air) pipe may be ABS, PVC, CPVC or galvanized material.

Closet and alcove installations do not allow the use of PVC under any circumstances

*To calculate max equivalent length, measure the linear feet of the pipe, and add 5 feet (1.5m) for each elbow used.

Water Flow Requirements

Temperature Rise				
20°F			11°C	
	Flow	H/L	Flow	H/L
Size	gpm	feet	lpm	m
1000	95	30	359	9.0
1200	114	37	430	10.8

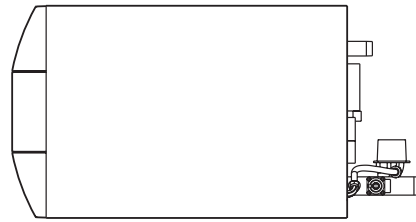
Maximum water hardness of 10 grains per gallon allowed.

Recovery Data

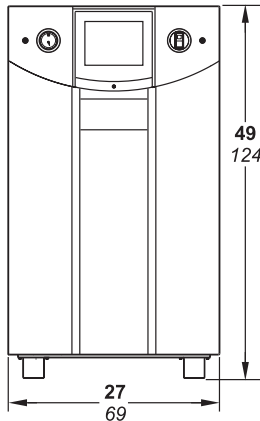
Design Temperature Rise Across Boiler									
Size	40°F gph	50°F gph	60°F gph	70°F gph	80°F gph	90 °F gph	100°F gph	120°F gph	140°F gph
1000	2857	2286	1905	1633	1429	1270	1143	952	816
1200	3420	2736	2280	1954	1710	1520	1368	1140	977

Design Temperature Rise Across Boiler									
Size	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
1000	10799	8641	7201	6173	5402	4801	4321	3599	3084
1200	12927	10369	8641	7407	6482	5761	5185	4319	3701

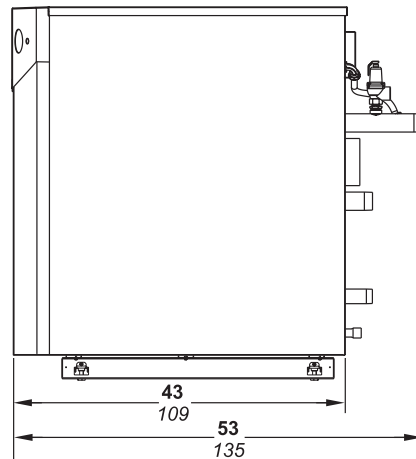
Dimensional Data
BRUTE 1000
AND BRUTE 1200



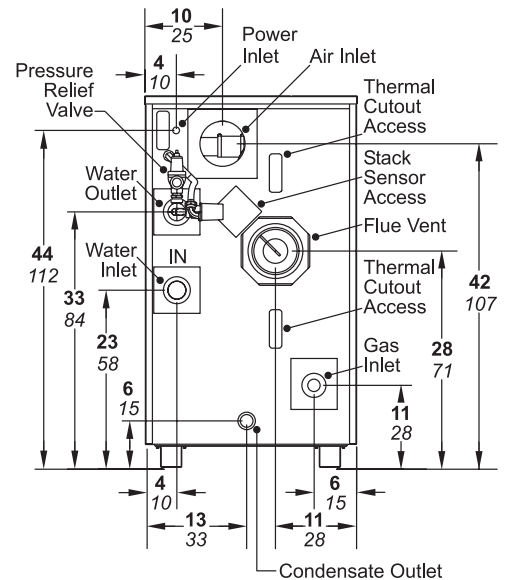
TOP



FRONT



RIGHT



BACK