

Accessories for Field Mounting

- Water flow switch (285 only)
- Low water cutoff
- 0 - 10V convertor for modulation control
- High & Low gas pressure switches
- Boiler pump (285-600)
- Concentric vent terminal, 2"
- Concentric vent terminal, 3"
- Flush-mount terminal, 3"
- Flush-mount terminal, 4"
- Propane conversion kit
- Condensate neutralizer kit
- BACnet gateway
- LON gateway

Sizing Data

Model	Input		Output		Gas Conn. Size inches	Water Conn. Size inches	Shipping Weight	
	BTU/h	kW	BTU/h	kW			lbs	kg
<input type="checkbox"/> BNTV 285	285,000	83.5	270,750	79.3	¾ NPT	2 NPT	299	136
<input type="checkbox"/> BNTV 399	399,000	116.9	383,040	112.2	¾ NPT	2 NPT	364	165
<input type="checkbox"/> BNTV 500	500,000	146.5	480,000	140.6	1 NPT	2 NPT	419	190
<input type="checkbox"/> BNTV 600	600,000	175.8	582,000	170.4	1 NPT	2 NPT	426	193
<input type="checkbox"/> BNTV 750	750,000	219.8	705,000	206.4	1½ NPT	2 NPT	481	218
<input type="checkbox"/> BNTV 850	850,000	249.1	816,000	238.9	1½ NPT	2 NPT	503	228

Clearances

Appliance Surface	Suggested Service Access Clearance	
	inches	cm
Left Side	12	31
Right Side	12	31
Top (for flue)	48	122
Back	12	31
Closet, Front	1	2.5
Alcove, Front	24	61
Vent	Per Vent Manufacturer	

Certified by CSA for zero clearance to combustible materials on all sides.

Vent System

Size	Intake (Air)	Exhaust (Vent)	Maximum Allowable	
	Pipe	Pipe	Equivalent Length*	
285	3"	3"	20 ft	6.1 m
	4"	4"	100 ft	30 m
399	4"	4"	100 ft	30 m
500	4"	4"	100 ft	30 m
600	4"	4"	40 ft	12 m
	6"***	6"***	100 ft**	30 m**
750	4"	4"	40 ft	12 m
	6"	6"	100 ft	30 m
850	4"	4"	40 ft	12 m
	6"	6"	100 ft	30 m

Installations in the U.S. require exhaust vent pipe that is a combination of PVC & CPVC complying with ANSI/ASTM D1785 F441, polypropylene pipe that complies with ULC S636, or stainless steel complying with UL1738. Installations in Canada require exhaust vent pipe that is certified to ULC S636.

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

Installer must comply fully with manufacturer's installation instructions, including use of minimum exhaust length CPVC, to maintain ANSI Z21.13 safety certification.

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.

** Allowed only if the vent pipe is no more than 20 equivalent feet longer than the air pipe.

Electrical Data

Heater	Heater Circuit		Heater Pump Circuit	
	285-500	600-850	285-500	600-850
Size MBH	285-500	600-850	285-500	600-850
Voltage	120V 1PH	120V 1PH	120V 1PH	120V 1PH
FLA	< 4 Amps	5 Amps	6 Amps	12 Amps
MCA	< 4 Amps	6 Amps	8 Amps	15 Amps
MOP	5 Amps	11 Amps	14 Amps	27 Amps

FLA = Full Load Amperage

MCA = Minimum Circuit Ampacity

MOP = Maximum Over-current Protection

* Note: For any pump(s) exceeding 7.4 FLA / 120V VAC, an external pump relay / contactor must be used. Units that are purchased with pumps include the contactor if the pump exceeds this limit.

Recovery Data

Size	GPH Delivered								
	REQUIRED WATER TEMPERATURE RISE								
	40°F	50°F	60°F	70°F	80°F	90°F	100°F	120°F	140°F
	GPH	GPH	GPH	GPH	GPH	GPH	GPH	GPH	GPH
285	818	654	545	467	409	363	327	273	234
399	1153	923	769	659	577	513	461	384	329
500	1451	1161	967	829	726	645	580	484	415
600	1729	1383	1152	988	864	768	691	576	494
750	2170	1736	1447	1240	1085	964	868	723	620
850	2434	1947	1622	1391	1217	1082	973	811	695

Size	L/h Delivered								
	REQUIRED WATER TEMPERATURE RISE								
	22°C	28°C	33°C	39°C	44°C	50°C	56°C	67°C	78°C
	L/h	L/h	L/h	L/h	L/h	L/h	L/h	L/h	L/h
285	3091	2473	2061	1766	1545	1374	1236	1030	883
399	4359	3487	2906	2491	2181	1937	1744	1453	1245
500	5485	4388	3657	3134	2743	2438	2194	1828	1567
600	6536	5288	4355	3735	3266	2903	2612	2177	1867
750	8203	6562	5470	4687	4101	3644	3281	2733	2344
850	9201	7360	6131	5258	4600	4090	3678	3066	2627

Water Flow Requirements

	Flow	H/L	Temp Rise
	gpm	feet	F
285	30	22	18
399	45	28	17
500	52	26	18
600	52	26	22
750	60	27	24
850	67	25	24

	Flow	H/L	Temp Rise
	lpm	m	C
285	113.6	6.7	10
399	170.3	8.5	9
500	196.8	7.9	10
600	196.8	7.9	12
750	227.1	8.2	13
850	253.6	7.6	13

Notes:

1. Pumps that are shipped with heaters are sized for 30 feet of full-sized piping and a typical number of fittings, intended to serve a heater with a tank that is within 15 feet.
2. Maximum water hardness of 10 grains per gallon allowed.

