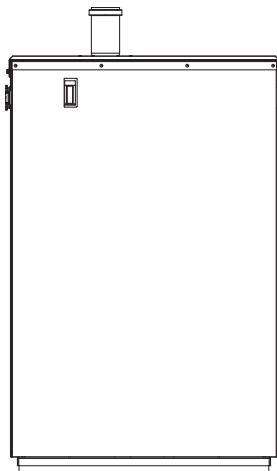


NEOTHERM®



Date:

Project #:

Engineer:

Prepared By:

Bid Date:

Volume Water Heater

NTV | Volume Water Heater

Outdoor Sizes 150-850

Submittal Data



Project Name:

Location:

Contractor:

Standard Equipment

- Meets ANSI Z21.10.3-2013, section 5.24 wind test and section 5.30 rain test
- Electronic PID modulating control with large color touchscreen display
- Password-protected parameters for installer use
- Test feature allows forced min or max firing
- Complete diagnostics for analog and digital inputs
- Displays holds, alerts and errors in clear text form
- Dry alarm contacts for ignition failure
- High condensing efficiency
- Modulation down to 20% of full fire (5:1 turndown)
- Sealed combustion chamber
- Pre-mix stainless steel burner
- Low NOx system exceeds the most stringent regulations for air quality - less than 10ppm NOx
- Horizontal or vertical direct vent
- Horizontal vent and air terminals
- Vent and air pipe lengths of up to 100 equivalent feet (each)
- Built-in condensate trap
- Vent temperature cutoff feature
- Direct spark ignition system
- Sensor for domestic water tank
- 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 (399-850 only)
- Temperature & pressure gauge
- Drain valve
- Integrated PID temperature and ignition controls
- Alarm output
- Accepts external 4-20mA (0-10V with optional convertor) modulation signal
- On/off toggle switch
- Manual reset high limit
- Burner site glass
- Zero clearance to combustible surfaces
- Built-in cascade function for up to eight NeoTherms
- 8 year limited warranty

Heater Data

Number of Units:

Fuel

- ☐ Natural
☐ Propane

- ☐ Pump included (150-500 only)
☐ No pump

Factory Mounted Options

- ☐ ASME "HLW" Stamp
☐ CSD-1 (covers FM & GAP) (500-850 only)
☐ Low water cutoff (500-850 only)
☐ High & Low gas pressure switches (500-850)
- ☐ Additional auto reset high limit
☐ 60 psi pressure relief valve
☐ 75 psi pressure relief valve
☐ 125 psi pressure relief valve (std)
☐ 150 psi pressure relief valve
- ☐ Bell for ignition failure



Accessories for Field Mounting

☐ Water flow switch (285 only)	☐ Boiler pump (285-500)	☐ Propane conversion kit
☐ Low water cutoff	☐ Concentric vent terminal, 2"	☐ Condensate neutralizer kit
☐ 0 - 10V convertor for modulation control	☐ Concentric vent terminal, 3"	☐ BACnet gateway
☐ High & Low gas pressure switches	☐ Flush-mount terminal, 3"	☐ LON gateway
	☐ Flush-mount terminal, 4"	

Sizing Data

Model	Input		Output		Thermal Efficiency %	Gas Conn. Size inches	Water Conn. Size inches	Shipping Weight	
	BTU/h	kW	BTU/h	kW				lbs	kg
☐ NTV 150	150,000	44.0	142,500	41.7	95	½ NPT	1¼ NPT	228	103
☐ NTV 199	199,000	58.3	193,030	56.5	97	½ NPT	1¼ NPT	270	123
☐ NTV 285	285,000	83.5	270,750	79.3	95	¾ NPT	2 NPT	299	136
☐ NTV 399	399,000	116.9	383,040	112.2	96	¾ NPT	2 NPT	364	165
☐ NTV 500	500,000	146.5	480,000	140.6	96	1 NPT	2 NPT	419	190
☐ NTV 600	600,000	175.8	582,000	170.4	97	1 NPT	2 NPT	426	193
☐ NTV 750	750,000	219.8	705,000	206.4	94	1½ NPT	2 NPT	481	218
☐ NTV 850	850,000	249.1	816,000	238.9	96	1½ NPT	2 NPT	503	228

Clearances

Appliance	Suggested Service Access Clearance	
Surface	inches	cm
Left Side	1	2.5
Right Side	12	31
Top	24	61
Back	6	15
Closet, Front	6	15
Alcove, Front	24	61
Vent	—	—

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*	
150	3"	3"	100 ft	30 m
199	3"	3"	100 ft	30 m
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

Sizes	Heater		Pump Connection Ratings (System Pump and DHW Pump Connections)	
	Volts	Phase	Amps	
150-850 No pump	120	Single	2*	n/a
150-199 With pump	120	Single	7*	115V - Maximum 1HP or 7.4A max
285-500 With pump	120	Single	8*	115V - Maximum 1 HP or 7.4A max

*Minimum 15A circuit required

Recovery Data

Size	GPH Delivered								
	REQUIRED WATER TEMPERATURE RISE								
	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
150	431	345	287	246	215	191	172	144	123
199	579	463	386	331	290	257	232	193	166
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

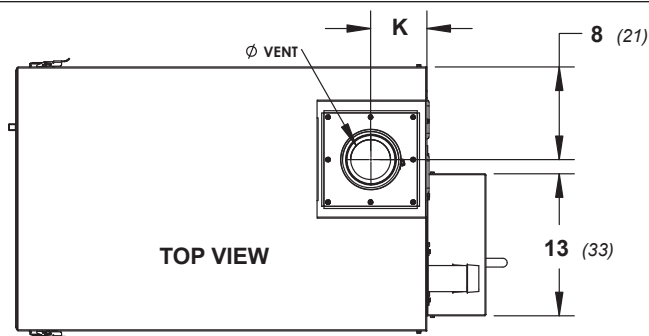
Size	L/h Delivered								
	REQUIRED WATER TEMPERATURE RISE								
	22°C L/h	28°C L/h	33°C L/h	39°C L/h	44°C L/h	50°C L/h	56°C L/h	67°C L/h	78°C L/h
150	1629	1303	1086	931	814	724	651	543	465
199	2190	1752	1460	1251	1095	973	876	730	626
285	3091	2473	2061	1766	1545	1374	1236	1030	883
399	4359	3487	2906	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

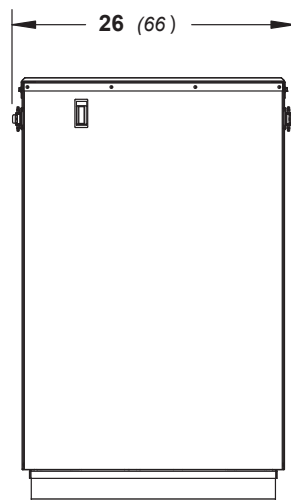
Size	NORMAL WATER*					
	Flow gpm	H/L feet	Temp Rise °F	Flow lpm	H/L m	Temp Rise °C
150	19	57	15	72	17.4	8
199	25	28	15	95	8.5	8
285	36	33	15	98	10.1	8
399	50	35	15	189	10.7	8
500	63	28	15	239	8.5	8
600	60	24	19	227	7.3	11
750	68	35	21	257	10.7	12
850	68	26	24	257	7.9	13

*Maximum water hardness of 10 grains per gallon allowed

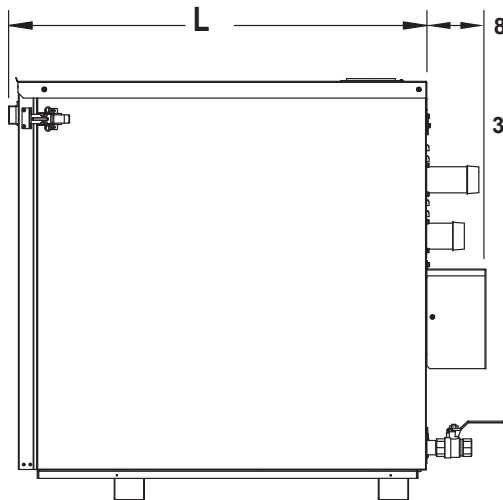
Dimensional Data



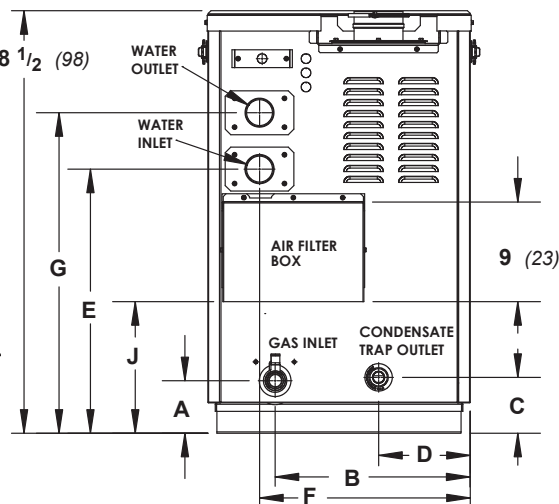
Dimensions shown in Inches and (cm's)



FRONT VIEW



RIGHT SIDE VIEW



BACK VIEW

The 'BACK VIEW' shown is of a 500 MBH model. All other units will be similar, yet different.

All models are shipped with adapters for the air and vent that accept standard pipe of the proper size and type.

SIZE	A		B		C		D		E	
	in	cm	in	cm	in	cm	in	cm	in	cm
150	6-1/4"	16	11"	28	13"	33	17-1/4"	43.8	23-1/2"	60
199 / 210	6-1/4"	16	11"	28	13"	33	17-1/4"	43.8	23-1/2"	60
285	6"	15.5	11"	28	5"	13	17-1/4"	43.8	24"	61
399	8"	15.5	19-1/2"	50	7-3/4"	20	17-1/4"	43.8	24"	61
500	5"	13	17-3/4"	45	5"	13	8-1/4"	21	24"	61
600	33-1/2"	85	3.0"	8	5"	13	8-1/4"	21	24"	61
750	32-3/4"	83.2	3.0"	8	5-1/4"	13.4	17-1/4"	43.8	24"	61
850	32-3/4"	83.2	3.0"	8	5-1/4"	13.4	17-1/4"	43.8	24"	61

SIZE	F		G		J		K		L (length)		VENT Ø	
	in	cm	in	cm	in	cm	in	cm	in	cm	in	cm
150	18"	45.7	27"	69	23-1/2"	60	5-1/4"	13	20	60	3	7.6
199 / 210	18"	45.7	27"	69	24-1/2"	60	5-1/4"	13	27	68.6	3	7.6
285	19"	48	28-1/4"	72	12"	30.5	7-1/4"	18.4	27	68.6	4	11
399	19"	48	28-1/4"	72	12"	30.5	6"	15.2	31 1/4	80.5	4	11
500	19"	48	29-1/4"	74	12"	30.5	5.5"	14	38	96.5	4	11
600	19"	48	29-1/4"	74	12"	30.5	5-3/4"	14.6	38	96.5	4	11
750	19"	48	29-1/4"	74	12"	30.5	5-3/4"	14.6	51 1/4	130	6	17
850	19"	48	29-1/4"	74	12"	30.5	5-3/4"	14.6	55 3/4	141.5	6	17

Laars Heating Systems Company reserves the right to change specifications, components, features, or to discontinue products without notice.