

Date:

Project #:

Engineer:

Project Name:

Prepared By:

Location:

Bid Date:

Contractor:

## Standard Equipment

- 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 - 10 ppm 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
- Indirect water heater priority
- Sensor for indirect domestic water tank
- 160 psi maximum working pressure
- Stainless steel heat exchanger with welded construction (no gaskets)
- ASME "H" stamp
- 75 psi (517 kPa) ASME rated pressure relief valve
- Water flow switch (399-850 only)
- Temperature & pressure gauge
- Drain valve
- Multiple pump control for boiler pump, system pump and indirect domestic water pump, each with delay
- Optional pump (sized to model) available for field installation (285-500 only)
- Electronic PID modulating control
- Large user-interface and display
- Alarm output
- Accepts external (4-20mA or 0-10V) modulation control
- Outdoor reset
- Outdoor air temperature sensor
- On/off toggle switch
- Manual reset high limit
- Burner site glass
- Zero clearance to combustible surfaces
- 10-year limited warranty

## Boiler Data

Number of Units:

### Fuel

- Natural  
 Propane

### Pump Options

- Pump-included (285-500 only)  
 No pump

## Factory Mounted Options

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



## Sizing Data

Model	Input		Output		AFUE	Thermal Efficiency %	Comb. Efficiency %	Gas Conn. Size inches	Water Conn. Size inches
	BTU/h	kW	BTU/h	kW					
<input type="checkbox"/> NTH 285	<b>285,000</b>	83.5	<b>269,040</b>	78.8	95.7	N/A	94.4	¾ NPT	1¼ NPT
<input type="checkbox"/> NTH 399	<b>399,000</b>	116.9	<b>382,242</b>	112.0	N/A	94.0	95.6	¾ NPT	1¼ NPT
<input type="checkbox"/> NTH 500	<b>500,000</b>	146.5	<b>475,000</b>	138.4	N/A	95.0	95.0	1 NPT	1½ NPT
<input type="checkbox"/> NTH 600	<b>600,000</b>	175.8	<b>576,000</b>	167.0	N/A	95.3	96.0	1 NPT	1½ NPT
<input type="checkbox"/> NTH 750	<b>750,000</b>	219.8	<b>723,000</b>	208.9	N/A	96.6	96.4	1½ NPT	2 NPT
<input type="checkbox"/> NTH 850	<b>850,000</b>	249.1	<b>810,000</b>	236.7	N/A	95.7	95.4	1½ NPT	2 NPT

### NOTES:

For other boiler ratings:

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

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

## Accessories for Field Mounting

- Water flow switch (285 only)     
  High & Low gas pressure switches     
  Additional auto reset high limit
- Low water cutoff

## Clearances

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

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

## Electrical Data

Sizes	Boiler			Pump Connections Ratings (System Pump and DHW Pump Connections)
	Volts	Phase	Amps	
285–850 No Pump	120	Single	2*	115V – Maximum 1HP
285–500 With Pump	120	Single	Less than 6*	115V – Maximum 1HP

\* Minimum 15A circuit required

## Vent System

Size	Intake (Air) Pipe	Exhaust (Vent) Pipe	Maximum Allowable Equivalent Length*	
285	3"	3"	20 ft	6 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	22 m
	6"	6"	100 ft**	30 m**
750	4"	4"	40 ft	22 m
	6"	6"	100 ft	30 m
850	4"	4"	40 ft	22 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.

Closest 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.

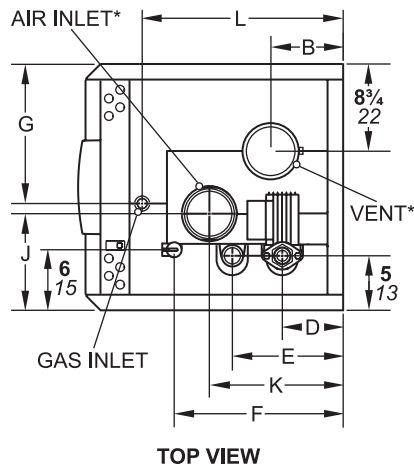
## Water Flow Requirements

Size	Temperature Rise in °F									
	20°F		25°F		30°F		35°F		40°F	
	Flow	H/L	Flow	H/L	Flow	H/L	Flow	H/L	Flow	H/L
	gpm	feet	gpm	feet	gpm	feet	gpm	feet	gpm	feet
285	27	25.5	22	17.5	18	14	15	10.5	13	8
399	38	28	31	20	25	14.5	22	11	19	9
500	48	24	38	16	32	12	27	9	24	8
600	58	44	46	31	38	22	33	18	29	15
750	72	37	58	23	48	17	41	13	36	10
850	81	33	65	22	54	15	46	10	41	8

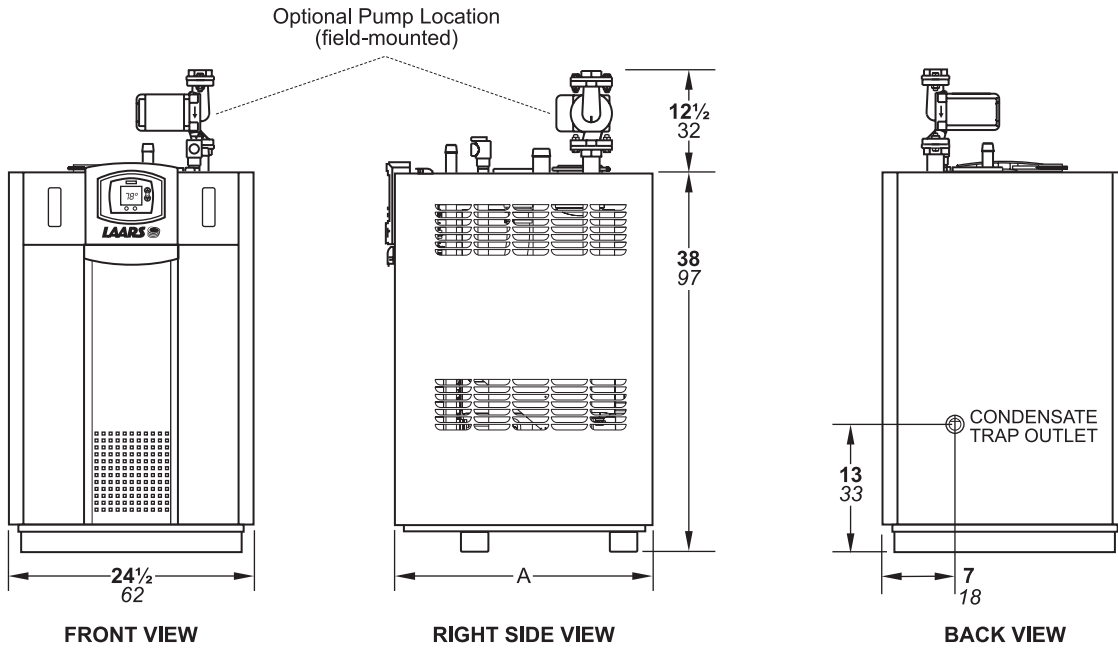
Size	Temperature Rise in °C									
	11°C		14°C		17°C		19°C		22°C	
	Flow	H/L	Flow	H/L	Flow	H/L	Flow	H/L	Flow	H/L
	lpm	m	lpm	m	lpm	m	lpm	m	lpm	m
285	102	7.8	81	5.3	68	4.3	58	3.2	51	2.4
399	144	8.5	116	6.1	96	4.4	83	3.4	72	2.7
500	180	7.3	144	4.9	120	3.7	103	2.7	90	2.4
600	218	13.4	174	9.4	145	6.7	125	5.5	109	4.6
750	274	11.3	219	7.0	182	5.2	156	4.0	137	3.0
850	307	10.1	246	6.7	205	4.6	175	3.0	154	2.4

**Dimensional  
Data, Sizes  
285-500**



\* NeoTherm is shipped with adapters for the air and vent that accept standard pipe of the proper size and type.

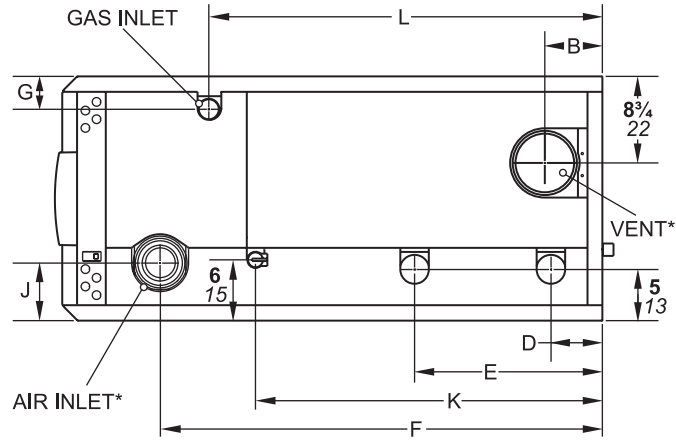
Dimensions shown in **inches cm**.



NTH Size	A in	B in	D in	E in	F in	G in	J in	K in	L in	AIR INLET* in	VENT* in
285	26	7	6	11	17	14	9 <sup>3</sup> / <sub>4</sub>	13 <sup>1</sup> / <sub>4</sub>	20 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>2</sub>
399	31	5	4 <sup>1</sup> / <sub>4</sub>	14 <sup>1</sup> / <sub>2</sub>	21 <sup>1</sup> / <sub>2</sub>	19 <sup>1</sup> / <sub>4</sub>	8 <sup>1</sup> / <sub>4</sub>	18 <sup>1</sup> / <sub>2</sub>	25	4 <sup>1</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>2</sub>
500	37	5	4 <sup>1</sup> / <sub>4</sub>	15	26	20 <sup>1</sup> / <sub>2</sub>	5 <sup>3</sup> / <sub>4</sub>	20	27 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>2</sub>
	cm	cm	cm	cm	cm	cm	cm	cm	cm	cm	cm
285	66	18	15	28	43	36	25	34	51	11	11
399	79	13	11	37	55	49	21	47	64	11	11
500	94	13	11	38	66	52	15	51	69	11	11

Dimensions are nominal.

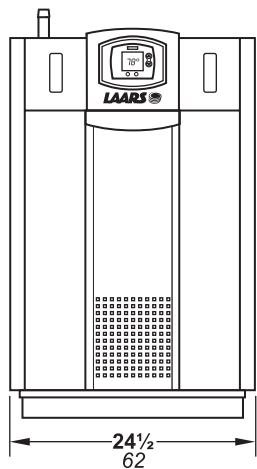
**Dimensional  
Data, Sizes  
600-850**



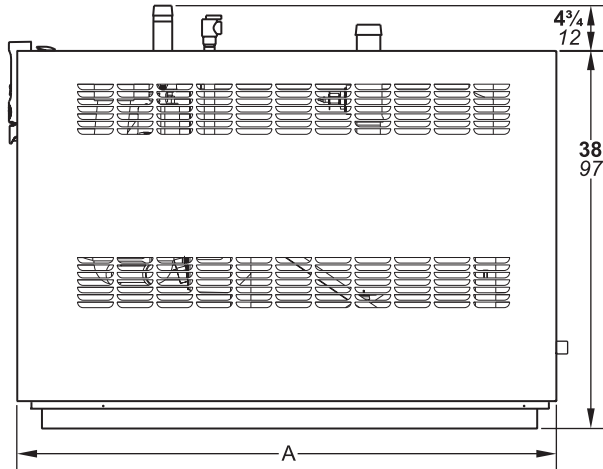
**TOP VIEW**

\* NeoTherm is shipped with adapters for the air and vent that accept standard pipe of the proper size and type.

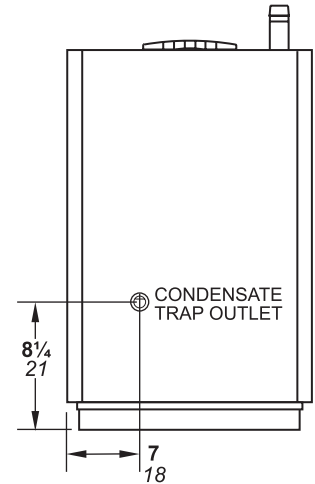
Dimensions shown in **inches cm**.



**FRONT VIEW**



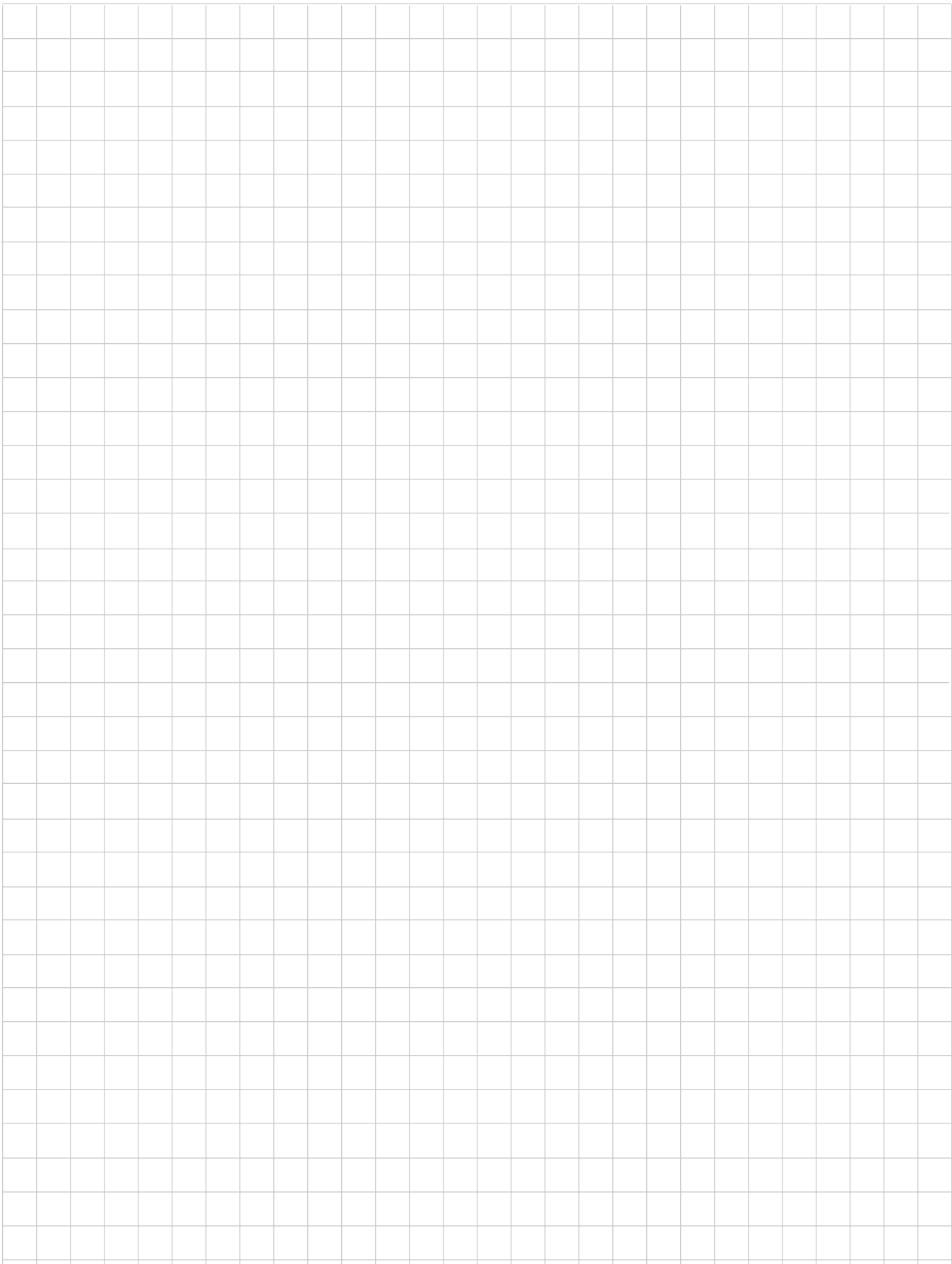
**FRONT VIEW**



**BACK VIEW**

NTH Size	A in	B in	D in	E in	F in	G in	J in	K in	L in	AIR INLET* in	VENT* in
600	38	5	4 1/4	15	20	3	5 3/4	26	29 3/4	4 1/2	4 1/2
750	51	5	5	19	40 1/2	3 1/4	5 3/4	30 1/2	35 1/2	4 1/2	6 1/2
850	55	5	5	19	44 1/2	3 1/2	5 3/4	35	39 3/4	4 1/2	6 1/2
	cm	cm	cm	cm	cm	cm	cm	cm	cm	cc	cm
600	97	13	11	38	51	8	15	66	76	11	11
750	130	13	13	48	103	8	15	77	90	11	17
850	140	13	13	48	113	9	15	89	101	11	17

Dimensions are nominal.



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



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