

Date:

Project #:

Engineer:

Prepared By:

Bid Date:

Indoor Sizes 285-850

Submittal Data



Project Name:

Location:

Contractor:

Standard Equipment

- 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 - 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
- Cascades with other NeoTherms
- 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)
- Integrated PID temperature and ignition controls
- Large user-interface and display
- Alarm output
- Accepts external 4-20mA (0-10V with optional convertor) modulation signal
- Outdoor reset with customizable reset curves, domestic hot water override and warm weather shutdown
- 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
☐ 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
- ☐ 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
- ☐ Bell for ignition failure



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 (285-500)
- ☐ Concentric vent terminal, 3"
- ☐ Flush-mount terminal, 3"
- ☐ Flush-mount terminal, 4"
- ☐ Propane conversion kit

- ☐ Condensate neutralizer kit
- ☐ Vari-Prime variable speed pump drive
- ☐ BACnet gateway
- ☐ LON gateway
- ☐ Common vent kit (285-500, one required for each unit)

Sizing Data

Model	Input		Output		AFUE	Thermal Efficiency %	Comb. Efficiency %	Gas Conn. Size inches	Water Conn. Size inches	Shipping Weight	
	BTU/h	kW	BTU/h	kW						Lbs	kg
☐ NTH 285	285,000	83.5	264,000	77.4	95.0	N/A	N/A	¾ NPT	1¼ NPT	299	136
☐ NTH 399	399,900	117.2	386,000	113.1	N/A	96.5	96.5	¾ NPT	1¼ NPT	364	165
☐ NTH 500	500,000	146.4	475,000	139.2	N/A	95.0	95.0	1 NPT	1½ NPT	419	190
☐ NTH 600	600,000	175.7	572,000	167.6	N/A	95.3	96.0	1 NPT	1½ NPT	426	193
☐ NTH 750	750,000	219.8	724,000	212.1	N/A	96.6	96.6	1½ NPT	2 NPT	481	218
☐ NTH 850	850,000	248.9	813,000	238.2	N/A	95.7	95.7	1½ NPT	2 NPT	503	228

NOTES:

For other boiler ratings:

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

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

Clearances

Appliance Surface	Suggested Service Access Clearance	
	inches	cm
Left Side	1	2.5
Right Side	12	31
Top	24	61
Back	6	15
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.

Electrical Data

Sizes	Boiler			Pump Connections Ratings (System Pump and DHW Pump Connections)
	Volts	Phase	Amps	
No Pump	120	Single	2*	115V – Maximum 1HP or 7.4A max
With Pump	120	Single	Less than 6*	115V – Maximum 1HP or 7.4A max

* 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	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.

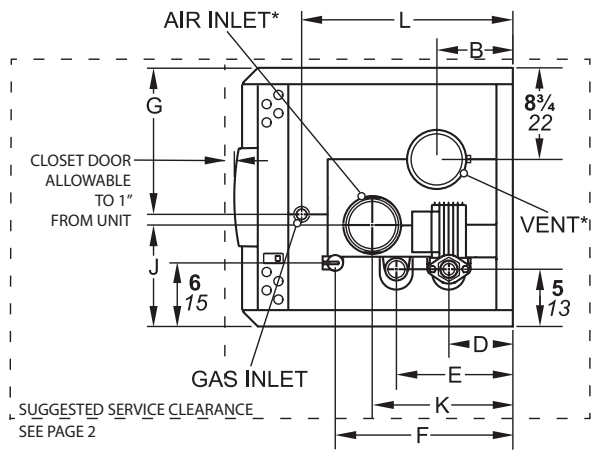
** Allowed only if the vent pipe is no more than 20 equivalent feet longer than the air pipe.

Water Flow Requirements

Temperature Rise in °F										
Size	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

Temperature Rise in °C										
Size	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

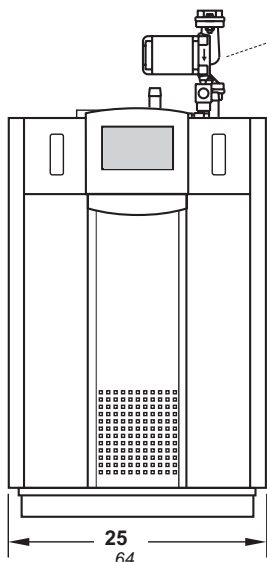


*This unit is shipped with adapters for the air and vent that accept standard pipe of the proper size and type.

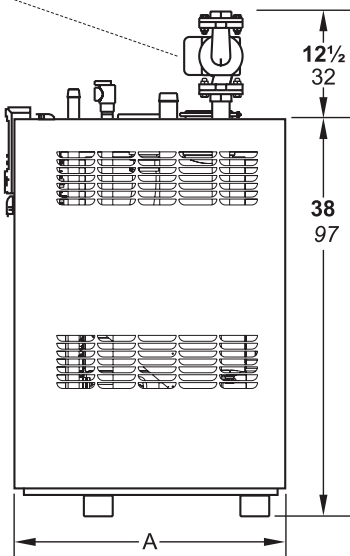
Dimensions shown in inches
cm.

TOP VIEW

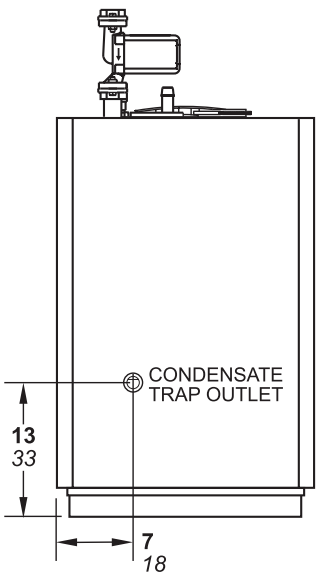
Optional Pump Location (285-500)
(field-mounted)



FRONT VIEW



RIGHT SIDE VIEW

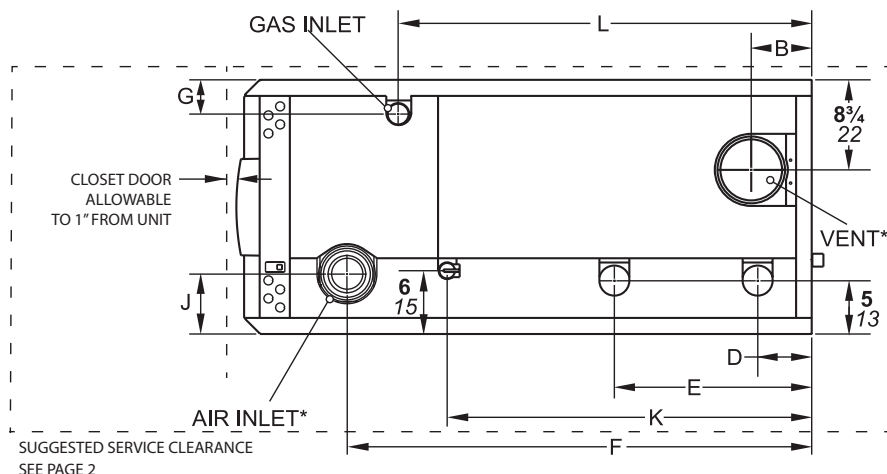


BACK VIEW

NTH Size	A in	B in	D in	E in	F in	G in	J in	K in	L in	Ø AIR INLET*	Ø VENT*
285	26¾	7¼	6¼	11	17	14	9¾	13¼	20¼	4	4
399	31½	5¼	4¼	14½	21½	19¼	8¼	18½	25	4	4
500	37¾	5¼	4¼	15	26	20½	5¾	20	27¼	4	4
	cm	cm	cm	cm	cm	cm	cm	cm	cm	cm	cm
285	68	18	15	28	43	36	25	34	51	11	11
399	80	13	11	37	55	49	21	47	64	11	11
500	96	13	11	38	66	52	15	51	69	11	11

Dimensions are nominal.

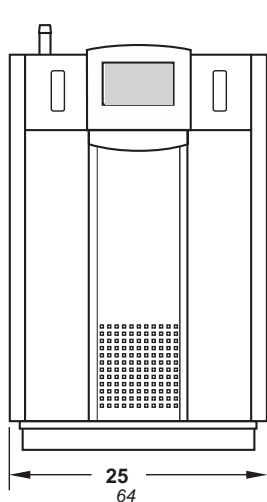
**Dimensional
Data, Sizes
600-850**



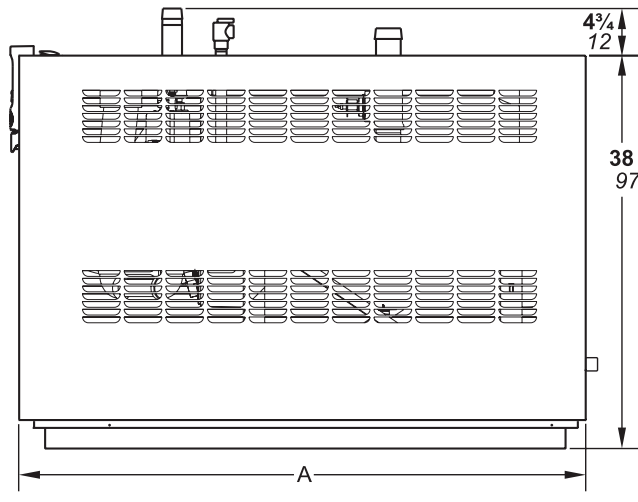
TOP VIEW

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

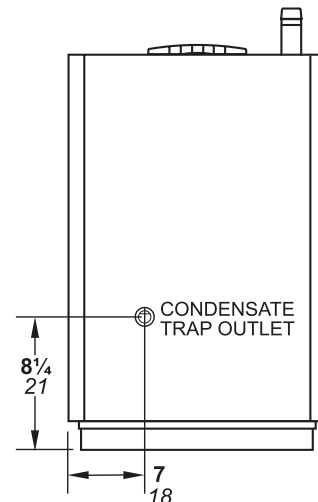
Dimensions shown in **inches**
cm.



FRONT VIEW



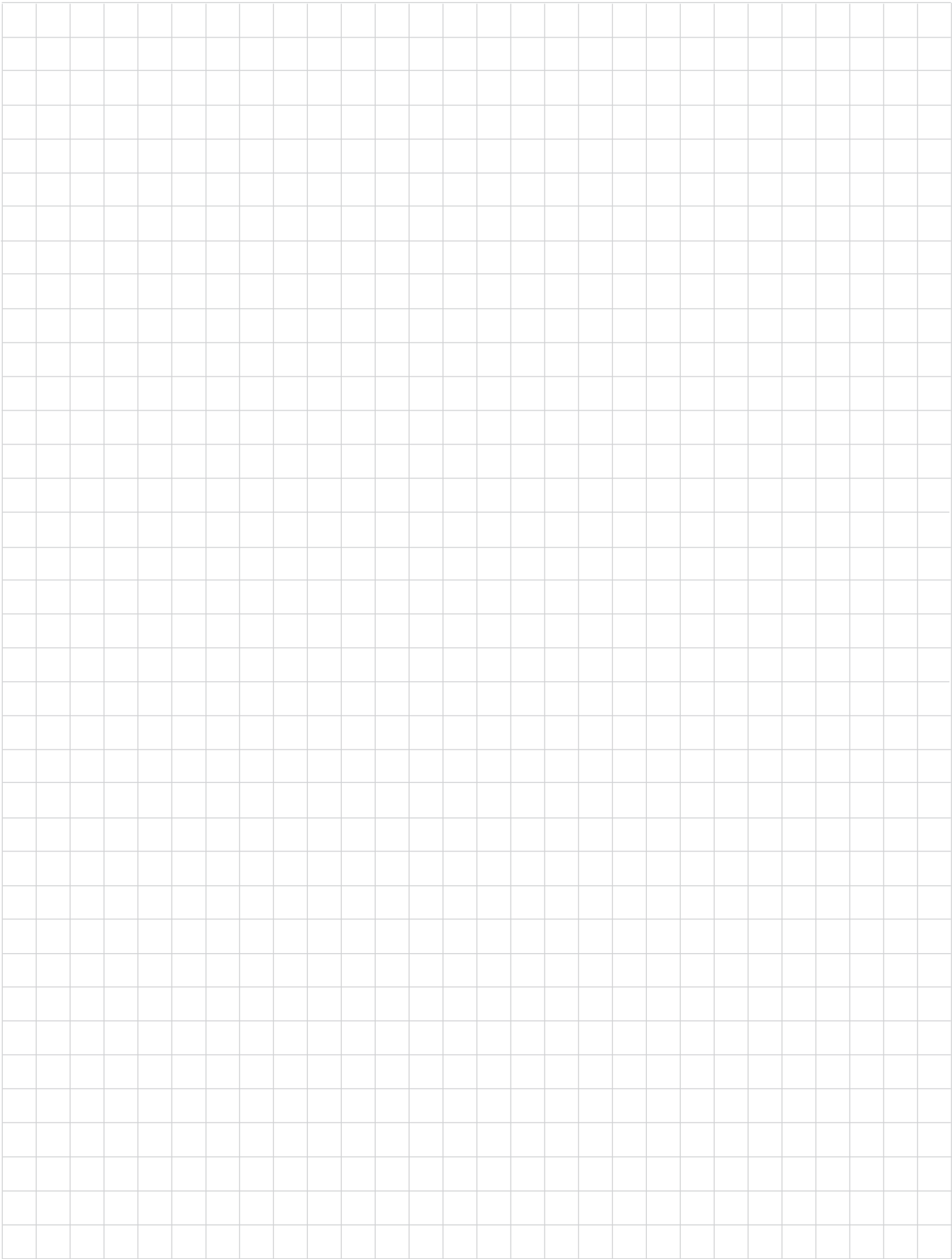
RIGHT SIDE VIEW



BACK VIEW

NTH	A	B	D	E	F	G	J	K	L	AIR Ø INLET*	Ø VENT*
Size	in	in	in	in	in	in	in	in	in	in	in
600	37 ³ / ₄	5	4 ¹ / ₄	15	20	3	5 ³ / ₄	26	29 ³ / ₄	4	4
750	51	6	5 ¹ / ₄	19	40 ¹ / ₂	3 ¹ / ₄	5 ³ / ₄	30 ¹ / ₂	35 ¹ / ₂	4	6 ¹ / ₂
850	55 ¹ / ₄	6	5 ¹ / ₄	19	44 ¹ / ₂	3 ¹ / ₂	5 ³ / ₄	35	39 ³ / ₄	4	6
	cm	cm	cm	cm	cm	cm	cm	cm	cm	cc	cm
600	96	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.



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