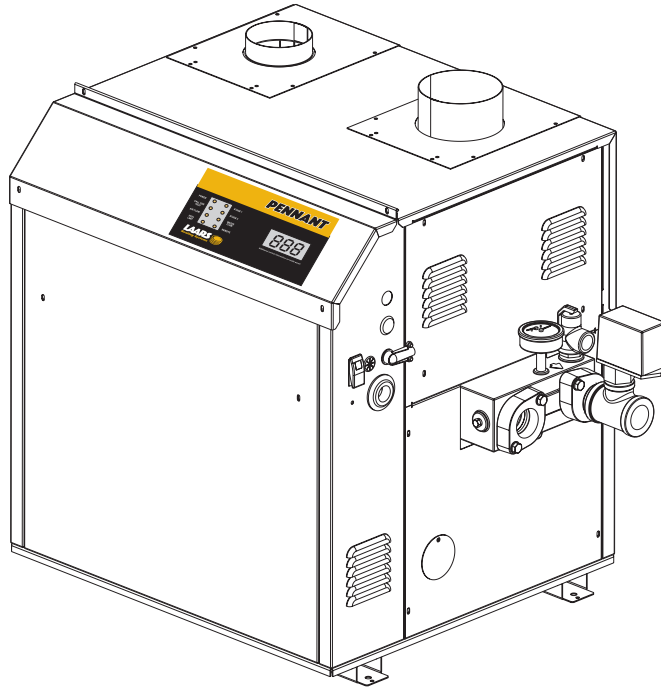


**PENNANT**<sup>®</sup>

# Boiler and Water Heater



PNCH	Hydronic Boiler
PNCV	Volume Water Heater

Indoor/Outdoor Sizes 200-400

Submittal Data **LAARS**  
Heating Systems Company

## Standard Equipment

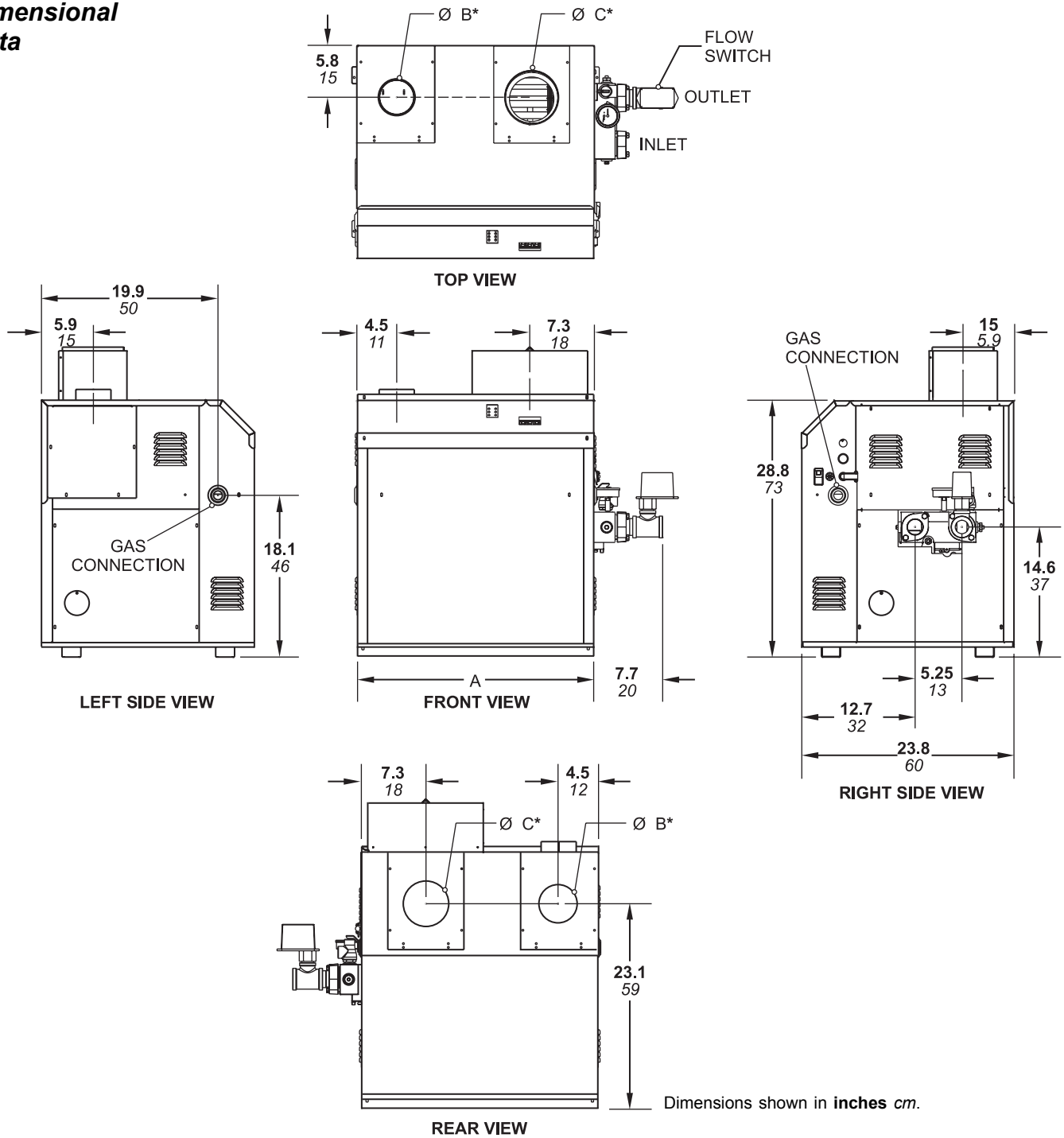
- ASME 160 psi working pressure heat exchanger
- ASME “H” stamp
- Flanged water connections
- Glass-lined headers
- External header gaskets
- 75 psi (517 kPa) ASME rated pressure relief valve (PNCH)
- 125 psi (861 kPa) ASME rated pressure relief valve (PNCV)
- Multiple operating gas valve/pressure regulators
- Temperature pressure gauge
- Manual “A” gas valve
- Intake air filter
- Removable burner tray(s)
- Stainless steel burners
- Built-in fan for Category I or III vent systems
- Air pressure switch
- Blocked vent switch
- Burner site glass
- 24V control system
- 115/24V transformer
- Flow switch
- Manual reset high limit
- Fusible link (size 200)
- Electronic staging control
- Two-stage firing
- External control connections with selector switch
- Hot surface ignition
- On/off toggle switch
- Pump time delay
- Diagnostic lights
- Less than 30ppm NOx

## Sizing Data

Size	Input		Output		IBR Net Rating		Gas Conn. Size	Water Conn. Size	Shipping Weight	
	MBTU/h	kW	MBTU/h	kW	MBTU/h	kW	inches	inches	lbs	kg
200	199.9	58.6	169.9	49.8	144.4	42.3	3/4 NPT	1-1/2 NPT	270	123
300	299.9	87.9	254.9	74.7	216.7	63.6	3/4 NPT	1-1/2 NPT	300	136
400	399.9	117.2	339.9	99.6	288.9	84.6	3/4 NPT	1-1/2 NPT	330	150

- NOTES:**
1. Input and output must be derated 4% per 1000 feet above sea level when installed above 2000 feet altitude.
  2. Dimensions are nominal.
  3. For other boiler ratings:  
Boiler Horsepower: HP = Output/33,475    Radiation Surface: EDR sq. ft. = Output/150    IBR sq. ft. = Net IBR/150

**Dimensional Data**



Size	A		Air Conn. B*		Vent Conn. C*		Horiz Vent Pipe	
	in	cm	in	cm	in	cm	in	cm
200	20½	52	4	10	5	13	4	10
300	26½	67	4	10	6	15	5	13
400	33½	85	6	15	7	18	6	15

\*Air and vent connections may be on top or back of the Pennant, and are field convertible.

## Water Flow Requirements

### TEMPERATURE RISE

Size	20°F		11°C		25°F		14°C		30°F		17°C		35°F		19°C	
	Flow gpm	H/L feet	Flow lpm	H/L m	Flow gpm	H/L feet	Flow lpm	H/L m	Flow gpm	H/L feet	Flow lpm	H/L m	Flow gpm	H/L feet	Flow lpm	H/L m
200	17	1.6	64	0.5	14	1.0	53	0.3	11	0.7	42	0.2	10	0.5	38	0.2
300	26	3.5	97	1.1	20	2.3	76	0.7	17	1.6	64	0.5	15	1.2	57	0.4
400	34	6.3	129	1.9	27	4.0	102	1.2	23	2.8	87	0.9	19	2.1	72	0.6

Size	HARD WATER						NORMAL WATER						SOFT WATER					
	Flow gpm	H/L feet	Temp Rise °F	Flow lpm	H/L m	Temp Rise °C	Flow gpm	H/L feet	Temp Rise °F	Flow lpm	H/L m	Temp Rise °C	Flow gpm	H/L feet	Temp Rise °F	Flow lpm	H/L m	Temp Rise °C
200	45	7.3	8	170	2.2	4	35	4.4	10	133	1.3	6	23	1.9	15	87	0.6	8
300	45	7.4	11	170	2.3	6	35	4.5	15	133	1.4	8	23	2.0	22	87	0.6	12
400	45	7.4	15	170	2.3	8	35	4.5	19	133	1.4	11	23	2.0	30	87	0.6	17

## Recovery Data

### WATER TEMPERATURE RISE IN DEGREES

Size	40°F	22°C	50°F	28°C	60°F	33°C	70°F	39°C	80°F	44°C	90°F	50°C	100°F	56°C	120°F	67°C	140°F	78°C
	GPH	L/h	GPH	L/h	GPH	L/h	GPH	L/h	GPH	L/h	GPH	L/h	GPH	L/h	GPH	L/h	GPH	L/h
200	510	1928	408	1542	340	1285	291	1100	255	964	227	858	204	771	170	643	146	552
300	765	2892	612	2313	510	1928	437	1652	383	1448	340	1285	306	1157	255	964	219	828
400	1020	3856	816	3084	680	2570	583	2204	510	1928	453	1712	408	1542	340	1285	291	1100

NOTE: GPH = gallons per hour, L/h = Liters per hour

## Minimum Clearances from Adjacent Construction

Appliance Surface	Required Clearance from Combustible Material		Suggested Service Access Clearance	
	inches	cm	inches	cm
Left Side	1	2.54	24	61.0
Right Side	1	2.54	24	61.0
Top	1	2.54	12	30.5
Back*	1	2.54	12	30.5
Front	1	2.54	36	91.4
Vent Vent** (Category 1)	6*	15.2		
Horizontal Vent (Category 3)	per UL1738 venting system supplier's instructions			

\* When vent and/or combustion air connects to the back, recommended clearance is 36" 91cm.

\*\* 1" when b-vent is used.



A subsidiary of **BRADFORD WHITE** Corporation

20 Industrial Way, Rochester, NH 03867 • 603.335.6300 • Fax 603.335.3355  
1355 Kuehner Drive, Simi Valley, CA 93063 • 800.900.9276 • Fax 800.559.1583 (Sales, Service)  
480 S. Service Rd. West, Oakville, Ontario, Canada L6K 2H4 • 905.844.8233 • Fax 905.844.2635  
[www.Laars.com](http://www.Laars.com)

Litho in U.S.A. © Laars Heating Systems Co. 0604 Document 1193A