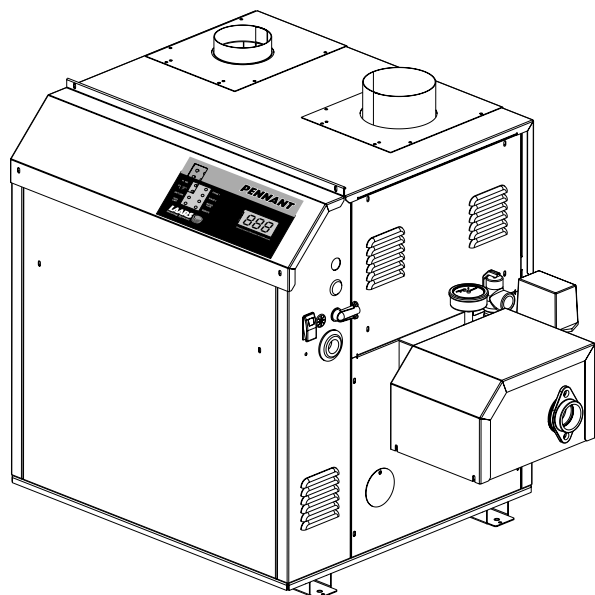


PENNANT®



Pump Mounted Boiler and Water Heater

Date:

Project #:

Engineer:

Prepared By:

Bid Date:

PNCH Hydronic Boiler

PNCV Volume Water Heater

Indoor/Outdoor Sizes 200-400

Submittal Data **LAARS**
Heating Systems Company

Project Name:

Location:

Contractor:

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
- On-off firing
- Certified for indoor or outdoor use
- Hot surface ignition
- On/off toggle switch
- Pump time delay
- Diagnostic lights
- Less than 30ppm NOx

Boiler Data

Model:

- ☐ Boiler PNCH
☐ Water Heater PNCV

Number of Units:

Fuel

- ☐ Natural
☐ Propane

Configuration

- ☐ On/Off (standard)
☐ Two-Stage (optional)

Heat Exchanger

- ☐ Copper
☐ Cupro-Nickel
☐ Copper, Reversed
☐ Cupro-Nickel, Reversed

Pump

- ☐ Normal Water
☐ Soft Water (PNCV only)

Water Trim

- ☐ Glass-Lined Cast Iron
☐ Bronze Trim (std. on PNCV)

Options

- ☐ 200°F Max Controls (std. on PNCV)
☐ Low Water Cutoff
☐ Alarm Package with Bell
☐ ASME "HLW" Stamp



Sizing Data

Model	Input		Output		Gas Conn. Size inches	Water Conn. Size inches	Shipping Weight	
	BTU/h	kW	BTU/h	kW			lbs	kg
 PNCH0200	199,900	58.6	172,000	50.4	3/4 NPT	1-1/2 NPT	290	132
 PNCV0200	199,900	58.6	169,915	49.8	3/4 NPT	1-1/2 NPT	290	132
 PNCH/PNCV0300	300,000	87.9	255,000	74.7	3/4 NPT	1-1/2 NPT	320	145
PNCH/PNCV0400	399,900	117.2	339,915	99.6	3/4 NPT	1-1/2 NPT	350	159

- 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 = $\frac{\text{Output}}{33,475}$ Radiation Surface: EDR sq. ft. = $\frac{\text{Output}}{150}$

Accessories

-  Side-wall vent terminal for indoor installation (required for side-wall venting)
-  Side-wall combustion air terminal for indoor installation (required only for ducted combustion air)
-  Outdoor vent terminal and combustion air terminal

Water Flow Data

PNCH (Boiler) TEMPERATURE RISE								
Size	20°F Flow gpm	11°C Flow lpm	25°F Flow gpm	14°C Flow lpm	30°F Flow gpm	17°C Flow lpm	35°F Flow gpm	19°C Flow lpm
200	17	64	14	51	11	43	10	37
300	26	98	20	77	17	64	15	55
400	34	129	27	103	23	86	19	74

PNCV (Water Heater)												
	HARD WATER				NORMAL WATER				SOFT WATER			
Size	Flow gpm	Temp Rise °F	Flow lpm	Temp Rise °C	Flow gpm	Temp Rise °F	Flow lpm	Temp Rise °C	Flow gpm	Temp Rise °F	Flow lpm	Temp Rise °C
200	45	8	170	4	35	10	133	5	23	15	87	8
300	45	11	170	6	35	15	133	8	23	22	87	12
400	45	15	170	8	35	19	133	1	23	30	87	16

Recovery Data

WATER TEMPERATURE RISE IN °F									
Size	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
200	510	408	340	291	255	227	204	170	146
300	765	612	510	437	383	340	306	255	219
400	1020	816	680	583	510	453	408	340	291

NOTE: GPH = gallons per hour.

WATER TEMPERATURE RISE IN °C									
Size	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
200	1928	1542	1285	1100	964	858	771	643	552
300	2892	2313	1928	1652	1448	1285	1157	964	828
400	3856	3084	2570	2204	1928	1712	1542	1285	1100

NOTE: L/h = Liters per hour.

Clearances

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
Vertical 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.

Electrical Data

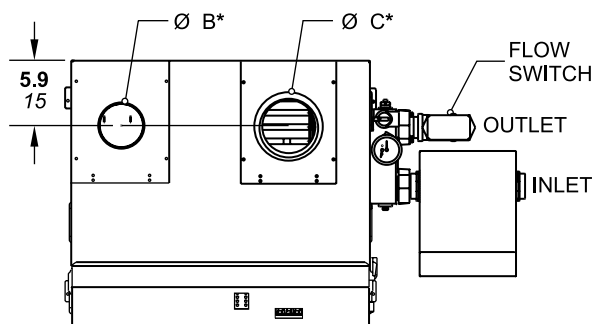
Model	Boiler / Heater			Pump	Blower
	Volts	Phase	Amps		
PNCH, PNCV Pump mounted 200-400	115	Single	Less than 12	Included in Pennant connection	Included in Pennant connection

Pump Data

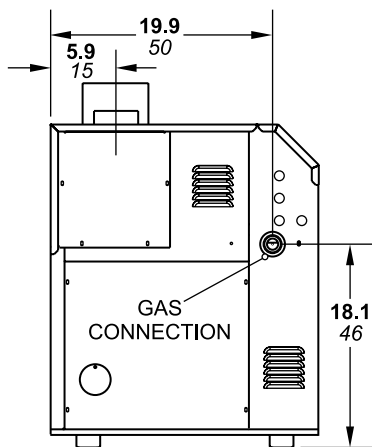
PNCV Water Heaters				
Size	Water Category			
	SOFT		NORMAL	
	HP	Amps	HP	Amps
200	1/10	1.5	1/6	2.0
300	1/10	1.5	1/6	2.0
400	1/10	1.5	1/6	2.0

PNCH Boilers		
Size		
	HP	Amps
200	1/8	1.8
300	1/6	2.0
400	1/6	2.0

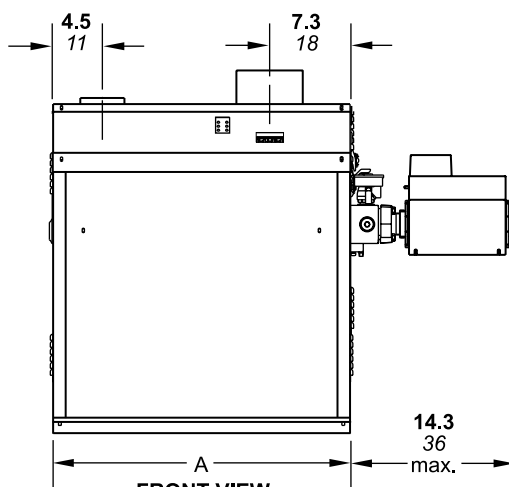
Dimensional Data



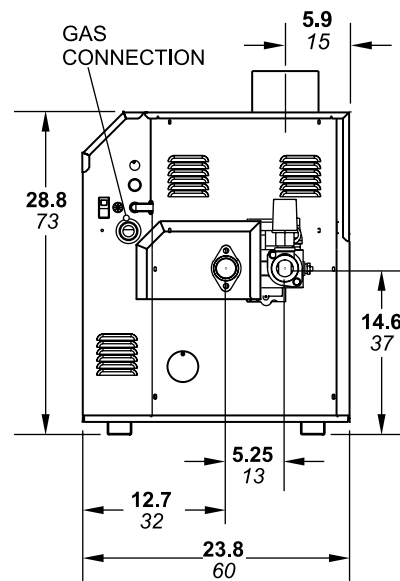
TOP VIEW



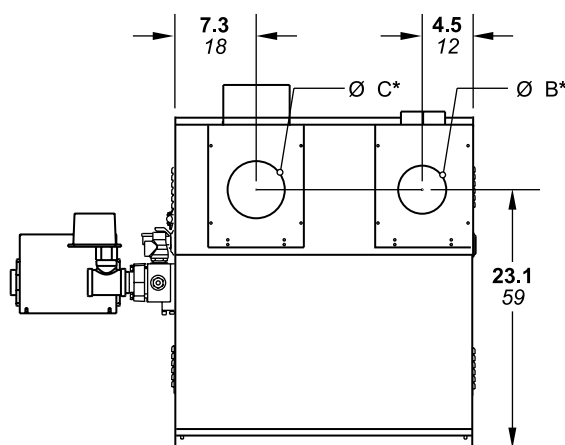
LEFT SIDE VIEW



FRONT VIEW



RIGHT SIDE VIEW



REAR VIEW

Dimensions shown in inches cm.

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.

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