

# Pump-Mounted Boiler & Water Heater

Date:

Project #:

Engineer:

Prepared By:

Bid Date:

PNCH	Hydronic Heater
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PNCV	Volume Water Heater
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Indoor/Outdoor Sizes 500-2000

Submittal Data **LAARS**  
 Heating Systems Company

Project Name:

Location:

Contractor:

## Standard Equipment

- ASME 160 psi working pressure heat exchanger
- ASME "H" stamp
- Firing rates:  
 2-Stage (500-750)  
 3-Stage (1000)  
 4-Stage (1250-2000)
- 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)
- Flow switch
- Temperature/pressure gauge
- Pump, mounted and wired
- Multiple operating gas valve/pressure regulators
- Manual "A" gas valve
- Intake air filter
- Multiple, removable burner trays
- Stainless steel burners
- Built-in draft fan for Category I or III vent systems
- Air pressure switch
- Burner site glass
- 24V control system
- 115/24VAC transformer
- Manual reset high limit
- Automatic reset high limit
- Electronic PID staging control with LCD and touchpad
- PC board for electrical connections
- External controller connections with selector switch
- Hot surface ignition
- On/Off toggle switch
- Pump time delay
- Diagnostic lights
- Less than 10 ppm NOx

## Boiler Data

### Model:

- Boiler PNCH
- Water Heater PNCV

### Number of Units:

### Fuel

- Natural
- Propane

### Heat Exchanger

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

### Water Trim

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

### Pump

- Soft Water (PNCV only)
- Normal Water
- Hard Water (PNCV only)

### Options

- CSD-1
- 200°F Max Controls (std. on PNCV)
- Low Water Cutoff
- ASME "HLW" Stamp



## Sizing Data

Size	Input <sup>1</sup> BTU/H	Output <sup>1</sup> BTU/H	IBR Net <sup>1, 3</sup> Rating BTU/H x1000	Gas Conn. Size inches <sup>2</sup>	Heater Water Conn. Size inches <sup>2</sup>	Shipping Weight lbs
500	500,000	425,000	361	1¼	2	495
750	750,000	638,000	542	1¼	2	575
1000	999,000	849,000	722	1½	2½	685
1250	1,250,000	1,062,500	903	2	2½	730
1500	1,500,000	1,275,000	1084	2	2½	830
1750	1,750,000	1,487,500	1264	2	2½	880
2000	1,999,000	1,699,000	1444	2	2½	1025

Size	Input <sup>1</sup> kW	Output <sup>1</sup> kW	IBR Net <sup>1, 3</sup> Rating kW	Shipping Weight kg
500	147	125	106	225
750	220	187	159	261
1000	293	249	216	311
1250	366	312	265	331
1500	440	374	318	377
1750	513	436	370	400
2000	586	498	423	465

**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:

$$\text{Boiler Horsepower: HP} = \frac{\text{Output}}{33,475} \quad \text{Radiation Surface: EDR sq. ft.} = \frac{\text{Output}}{150} \quad \text{IBR sq. ft.} = \frac{\text{Net IBR Rating}}{150}$$

## Accessories

<input type="checkbox"/> Outdoor reset sensor/housing	<input type="checkbox"/> Vent terminal for outdoor unit	<input type="checkbox"/> Side-wall combustion air terminal for indoor unit with horizontal ducted air
<input type="checkbox"/> Side-wall vent terminal for indoor unit with horizontal venting	<input type="checkbox"/> Air terminal for outdoor unit	

## Water Flow Data

Size	PNCH (Boiler)							
	Temperature Rise in Degrees							
	20°F	11°C	25°F	14°C	30°F	17°C	35°F	19°C
	<b>Flow</b>	<i>Flow</i>	<b>Flow</b>	<i>Flow</i>	<b>Flow</b>	<i>Flow</i>	<b>Flow</b>	<i>Flow</i>
	<b>gpm</b>	<i>lpm</i>	<b>gpm</b>	<i>lpm</i>	<b>gpm</b>	<i>lpm</i>	<b>gpm</b>	<i>lpm</i>
500	43	161	34	129	28	107	24	92
750	64	241	51	193	43	161	36	138
1000	85	321	68	257	57	214	49	184
1250	106	401	85	322	71	269	61	231
1500	128	483	102	386	85	322	73	276
1750	N/R	N/R	119	451	99	375	85	322
2000	N/R	N/R	136	515	113	429	97	368

Size	PNCV (Water Heater)					
	Hard Water		Normal Water		Soft Water	
	<b>Flow</b>	<i>Flow</i>	<b>Flow</b>	<i>Flow</i>	<b>Flow</b>	<i>Flow</i>
	<b>gpm</b>	<i>lps</i>	<b>gpm</b>	<i>lps</i>	<b>gpm</b>	<i>lps</i>
500	90	341	68	257	45	170
750	90	341	68	257	45	170
1000	90	341	68	257	45	170
1250	90	341	68	257	68	257
1500	90	341	68	257	68	257
1750	90	341	68	257	68	257
2000	112	424	112	424	112	424

## 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
500	1276 4821	1020 3857	850 3214	729 2755	638 2411	567 2143	510 1929	425 1607	364 1378
750	1913 7232	1531 5786	1276 4821	1093 4133	957 3616	850 3214	765 2893	638 2411	547 2066
1000	2548 9633	2039 7707	1699 6422	1456 5505	1274 4817	1133 4281	1019 3853	849 3211	728 2752
1250	3189 12054	2551 9643	2126 8036	1822 6888	1594 6027	1417 5357	1276 4821	1063 4018	911 3444
1500	3827 14464	3061 11571	2551 9643	2187 8265	1913 7232	1701 6429	1531 5786	1276 4821	1093 4133
1750	4464 16875	3571 13500	2976 11250	2551 9643	2232 8438	1984 7500	1786 6750	1488 5625	1276 4821
2000	5099 19276	4080 15421	3400 12851	2914 11015	2550 9638	2266 8567	2040 7710	1700 6425	1457 5507

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

## Clearances

Appliance Surface	Required Clearance From Combustible Material		Suggested Service Access Clearances	
	1	2.5	24	61
Left Side	1	2.5	24	61
Right Side	1	2.5	24	61
Top	1	2.5	12	30
Back*	1	2.5	12	30
Front	1	2.5	36	91
Vent	Per venting system supplier's instructions			

Dimensions in inches cm

\*When vent and/or air is connected to the back, 36" (91cm) is suggested.

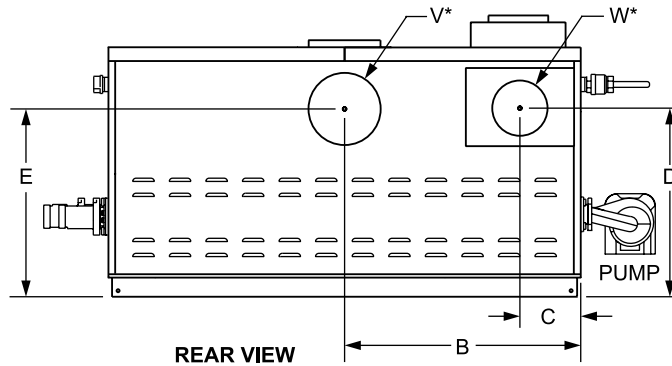
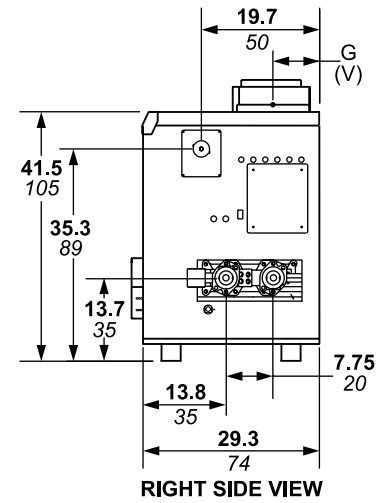
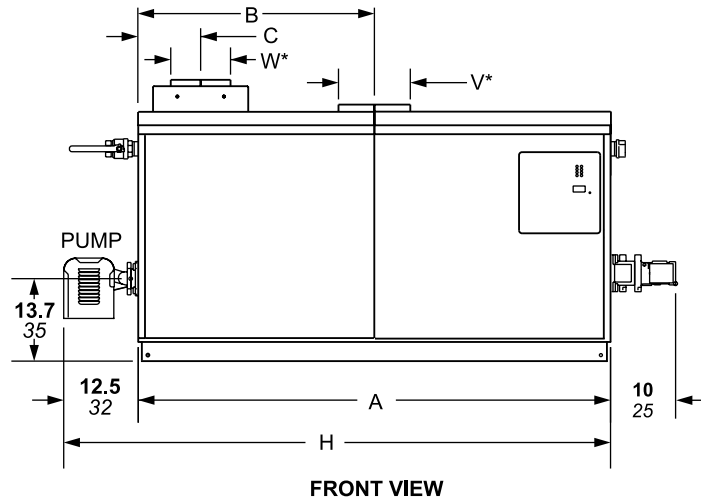
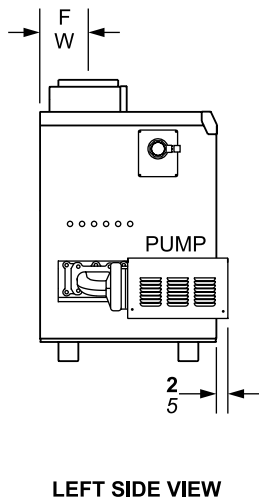
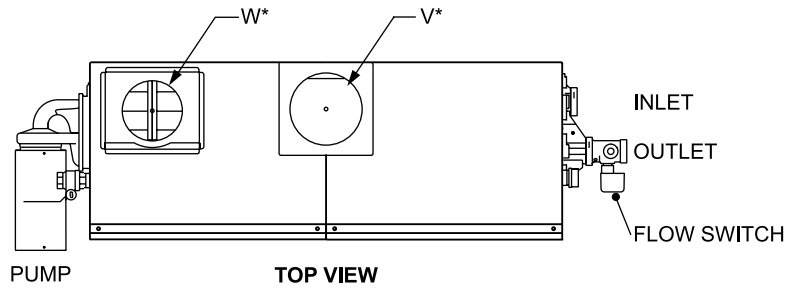
## Electrical Data

Model	Boiler / Heater			Pump			Blower(s)
	Volts	Phase	Amps	Volts	Phase	Amps	
PNCH, PNCV Pump mounted 500-1000	115	Single	Less than 12	Included in Pennant connection			Included in Pennant connection
PNCH, PNCV Pump mounted 1250-2000	115	Single	Less than 12	115	Single	Less than 12	Included in Pennant connection

## Pump Data

Size	PNCV Water Heaters						PNCH Boilers		
	Water Category						Size	HP	Amps
	SOFT		NORMAL		HARD				
HP	Amps	HP	Amps	HP	Amps				
500	1/3	2.8	1/3	2.8	3/4	7.2	500	1/3	2.8
750	1/3	2.8	1/3	2.8	3/4	7.2	750	1/3	2.8
1000	1/3	2.8	1/2	5.2	3/4	7.2	1000	1/2	5.2
1250	1/3	2.8	1/2	5.2	3/4	7.2	1250	1/2	5.2
1500	1/3	2.8	3/4	7.2	3/4	7.2	1500	3/4	7.2
1750	3/4	7.2	3/4	7.2	3/4	7.2	1750	3/4	7.2
2000	1	9.8	1	9.8	1	9.8	2000	1	9.8

# Dimensional Data



Dimensions shown in inches cm

Size	A	B	C	D	E	F	G	H	Air Conn. W*	Vent Conn. V*	Horiz. Vent Pipe
500	33½ 85	15¾ 40	5¾ 15	29¾ 76	32¾ 83	7¾ 20	8¾ 22	46 117	6 15	8 20	6 15
750	45½ 116	21¾ 55	5¾ 15	29¾ 76	32¾ 83	7¾ 20	8¾ 22	58 147	6 15	10 25	8 20
1000	57½ 146	28¾ 73	5¾ 15	29¾ 76	32¾ 83	7¾ 20	7 18	70 178	8 20	10 25	8 20
1250	68 172	34 86	10⅞ 26	30¾ 78	29½ 75	8¾ 22	8¾ 22	80 203	8 20	12 30	8 20
1500	78½ 199	39¾ 101	10⅞ 26	30¾ 78	29½ 75	8¾ 22	8¾ 22	91 231	8 20	12 30	8 20
1750	89 226	44½ 113	10⅞ 26	30¾ 78	29½ 75	8¾ 22	8¾ 22	101 256	8 20	14 36	8 20
2000	99½ 253	49¾ 126	10⅞ 26	30¾ 78	29½ 75	8¾ 22	8¾ 22	112 284	12 30	14 36	12 30

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

Dimensions in inches cm.

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