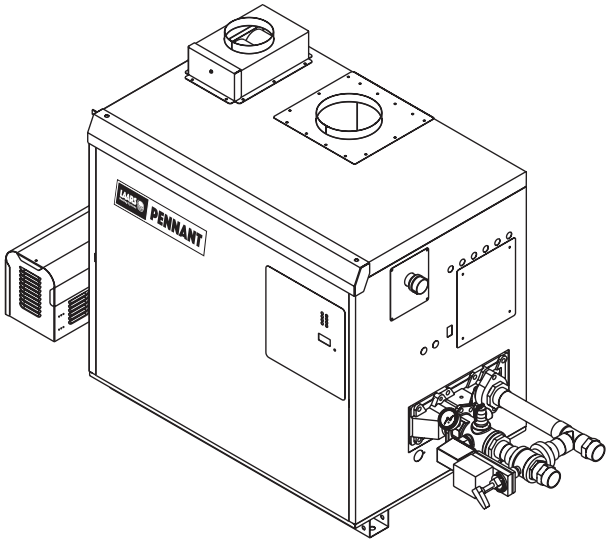
LOW-TEMP PENNANT®



Boiler & Water Heater

PNCH	Hydronic Heater
PNCV	Volume Water Heater

Indoor/Outdoor Sizes 500-2000

Submittal Data LAARS Heating Systems Company

Date:

Project #:

Engineer:

Project Name:

Prepared By:

Location:

Bid Date:

Contractor:

Standard Equipment

- ASME 160 psi working pressure heat exchanger
- ASME “H” stamp
- Flanged water connections
- Glass-lined cast iron 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 and pressure gauge
- Pump mounted and wired
- Mixing system for low temperature protection
- Multiple operating gas valve/ pressure regulators
- Manual “A” gas valve
- Intake air filter
- Multiple, removable burner trays
- Stainless steel burners
- Built-in draft fan(s) for Category I or III venting
- Air pressure switch
- Burner site glass
- Return water temperatures as low as 70°F (21°C)
- 24V control system
- 115/24VAC transformer
- Manual reset high limit
- Automatic reset high limit
- Electronic temperature control with LCD and touchpad
- PC board for electrical connections
- Hot surface ignition
- On/Off toggle switch
- Pump time delay
- Diagnostic lights
- Less than 10ppm 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
- ☐ Normal Water
- ☐ Hard Water (PNCV only)
- ☐ Soft Water (PNCV only)

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

HIA Hydronics Industry Alliance

Sizing Data

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

Indoor Size	*Input[1] kW*	*Output[1] kW*	*IBR Net[1, 3] 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:
Boiler Horsepower: HP = $\frac{\text{Output}}{33{,}475}$ Radiation Surface: EDR sq. ft. = $\frac{\text{Output}}{150}$ IBR sq. ft. = $\frac{\text{Net IBR Rating}}{150}$

Accessories

- ☐ Outdoor reset sensor
- ☐ Side-wall vent terminal for indoor unit with horizontal venting
- ☐ Side-wall combustion air terminal for indoor unit with horizontal ducted air
- ☐ Vent terminal for outdoor unit
- ☐ Air terminal for outdoor unit

Water Flow Data

PNCH (Boiler)
Temperature Rise in Degrees

	20°F *11°C*		**25°F** *14°C*		**30°F** *17°C*		**35°F** *19°C*	
Size	**Flow gpm**	*Flow lpm*	**Flow gpm**	*Flow lpm*	**Flow gpm**	*Flow lpm*	**Flow gpm**	*Flow lpm*
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*

PNCV (Water Heater)

	Hard Water		Normal Water		Soft Water	
Size	**Flow gpm**	*Flow lps*	**Flow gpm**	*Flow lps*	**Flow gpm**	*Flow lps*
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* **GPH** *L/h*	**50°F** *28°C* **GPH** *L/h*	**60°F** *33°C* **GPH** *L/h*	**70°F** *39°C* **GPH** *L/h*	**80°F** *44°C* **GPH** *L/h*	**90°F** *50°C* **GPH** *L/h*	**100°F** *56°C* **GPH** *L/h*	**120°F** *67°C* **GPH** *L/h*	**140°F** *78°C* **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

Dimensions in **inches** *cm*

Appliance Surface	Required Clearance From Combustible Material		Suggested Service Access Clearances	
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			

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

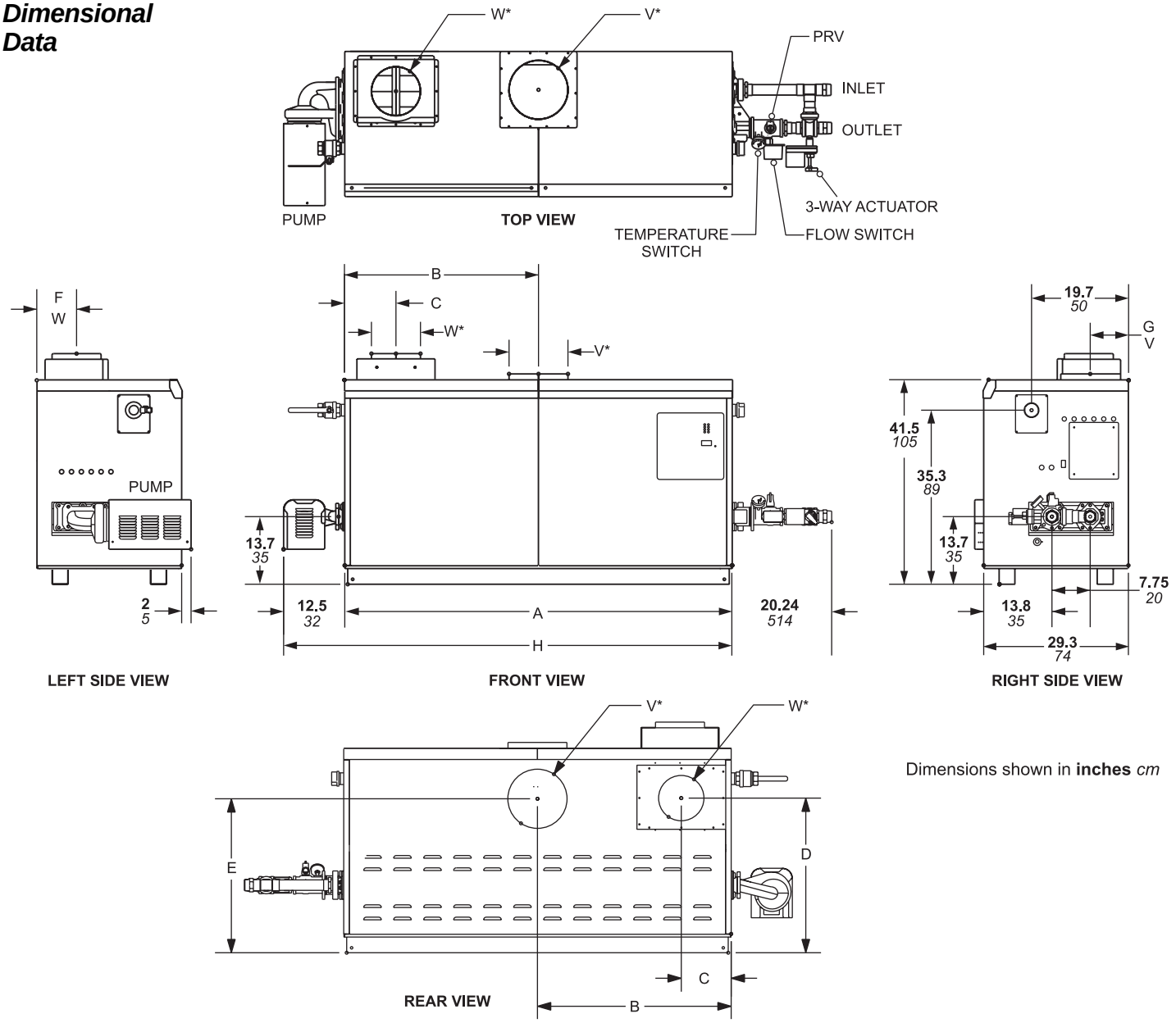
Electrical Data

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

Sizes	Water Category					
	Power (HP)			*Current (Amps)*		
	Soft	**Normal**	**Hard**	*Soft*	*Normal*	*Hard*
500	**1/3**	**1/3**	**3/4**	*2.8*	*2.8*	*7.2*
750	**1/3**	**1/3**	**3/4**	*2.8*	*2.8*	*7.2*
1000	**1/3**	**1/2**	**3/4**	*2.8*	*5.2*	*7.2*
1250	**1/3**	**1/2**	**3/4**	*2.8*	*5.2*	*7.2*
1500	**1/3**	**3/4**	**3/4**	*2.8*	*7.2*	*7.2*
1750	**3/4**	**3/4**	**3/4**	*7.2*	*7.2*	*7.2*
2000	**1**	**1**	**1**	*9.8*	*9.8*	*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** *200*
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*	**10 1/8** *26*	**30¾** *78*	**29½** *75*	**8¾** *22*	**8¾** *22*	**80** *203*	**8** *20*	**12** *30*	**8** *20*
1500	**78½** *199*	**39¾** *101*	**10 1/8** *26*	**30¾** *78*	**29½** *75*	**8¾** *22*	**8¾** *22*	**91** *231*	**8** *20*	**12** *30*	**8** *20*
1750	**89** *226*	**44½** *113*	**10 1/8** *26*	**30¾** *78*	**29½** *75*	**8¾** *22*	**8¾** *22*	**101** *256*	**8** *20*	**14** *36*	**8** *20*
2000	**99½** *253*	**49¾** *126*	**10 1/8** *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*.

Dimensions and specifications subject to change without notice in accordance with our policy of continuous product improvement.

LAARS® Heating Systems Company
A subsidiary of BRADFORD WHITE® Corporation

800.900.9276 • Fax 800.559.1583 ***(Customer Service, Service Advisors)***
20 Industrial Way, Rochester, NH 03867 • 603.335.6300 • Fax 603.335.3355 ***(Applications Engineering)***
1869 Sismet Road, Mississauga, Ontario, Canada L4W 1W8 • 905.238.0100 • Fax 905.366.0130
www.Laars.com