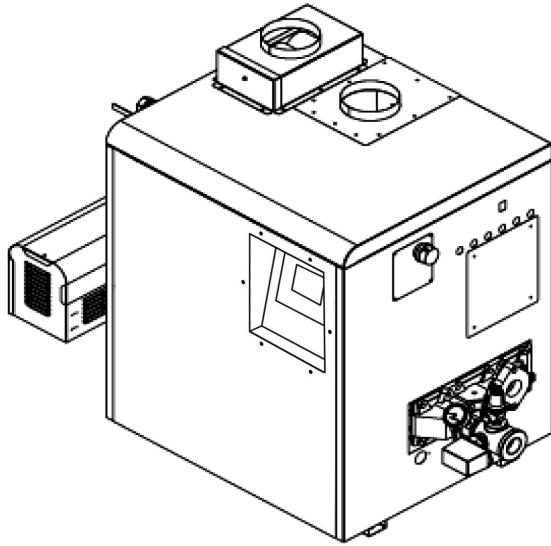


# Copper Brute II



## Pump-Mounted Boiler & Water Heater

BWCH Hydronic Heater  
 BWCV Volume Water Heater  
 Indoor/Outdoor Sizes 500-2000



Date:

Project #:

Engineer:

Prepared By:

Bid Date:

### Submittal Data

Location:

Contractor:

### Standard Equipment

- ASME 160 psi working pressure heat exchanger
- ASME "H" stamp
- Meets NSF/ANSI-372 Low Lead Content Certification (BWCV)
- Electronic staging & ignition control with LCD touchscreen
- Cascades up to 8 boilers with redundancy options
- Multiple pump control (system, boiler and indirect water heater), each with time delay
- BACnet MSTP and Modbus (optional BACnet IP, Metasys, or LonWorks)
- Accepts external 0-10VDC or 4-20mA for remote control of temperature or stages
- Displays messages in clear text form
- Complete diagnostics for analog and digital inputs
- Password protected parameters
- Quick start configuration
- Hot surface ignition
- 24V control system
- On/off toggle switch
- 115/24VAC transformer
- Boiler, system, DHW, and outdoor temperature sensors
- Manual reset high limit
- Automatic reset high limit
- Dry run and alarm contacts
- Anti-frost mode
- Anti-short-cycle mode
- Pump, mounted and wired (when ordered as pump-mounted unit)
- Flanged water connections
- Glass-lined headers
- External header gaskets
- 75 psi (517kPa) ASME rated pressure relief valve
- Water flow switch
- Temperature/pressure gauge
- Multiple operating gas valve/pressure regulators
- Manual "A" gas valve
- Multiple removable burner trays
- Stainless steel burners
- Built-in draft fan for Category I or III vent systems
- Intake air filter
- Air pressure switch
- Burner site glass

### Boiler Data

#### Model:

- Boiler BWCH  
 Water Heater BWCV

#### Number of Units:

#### Fuel

- Natural  
 Propane

#### Heat Exchanger

- Copper (std. on BWCH N/A on BWCV)  
 Cupro-Nickel (std. on BWCV)  
 Copper, Reversed (N/A on BWCV)  
 Cupro-Nickel, Reversed

#### Water Trim

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

#### Pump

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

#### Options

- CSD-1 (LWCO Not Included)  
 Low Water Cutoff  
 ASME "HLW" Stamp (BWCV only)  
 Additional manual reset high limit  
 Additional automatic reset high limit  
 Alternate display orientation for top unit in stacked system.



## Sizing Data

	Size	Input <sup>1</sup> MBH	Input <sup>1</sup> kW	Output <sup>1</sup> MBH	Output <sup>1</sup> kW	Gas Conn. Size inches <sup>2</sup>	Water Conn Size inches <sup>2</sup>	Shipping Weight lbs kg	
<input type="checkbox"/>	500	<b>500.0</b>	147	<b>425</b>	125	1¼	2	<b>715</b>	324
<input type="checkbox"/>	750	<b>750.0</b>	220	<b>638</b>	187	1¼	2	<b>810</b>	367
<input type="checkbox"/>	1000	<b>999.0</b>	293	<b>849</b>	249	1½	2½	<b>955</b>	433
<input type="checkbox"/>	1250	<b>1250.0</b>	366	<b>1064</b>	312	2	2½	<b>1050</b>	476
<input type="checkbox"/>	1500	<b>1500.0</b>	440	<b>1266</b>	371	2	2½	<b>1185</b>	538
<input type="checkbox"/>	1750	<b>1750.0</b>	513	<b>1489</b>	436	2	2½	<b>1280</b>	581
<input type="checkbox"/>	BWCH 2000	<b>1999.0</b>	586	<b>1701</b>	498	2	2½	<b>1410</b>	640
<input type="checkbox"/>	BWCV 2000	<b>2000.0</b>	586	<b>1701</b>	498	2	2½	<b>1410</b>	640

	Size	BWCH Combustion Efficiency%	BWCH Thermal Efficiency%	BWCV Thermal Efficiency%
<input type="checkbox"/>	500	85.0	85.0	85
<input type="checkbox"/>	750	85.0	85.0	85
<input type="checkbox"/>	1000	85.0	85.0	85
<input type="checkbox"/>	1250	85.1	85.2	85
<input type="checkbox"/>	1500	85.1	85.2	85
<input type="checkbox"/>	1750	85.1	85.2	85
<input type="checkbox"/>	2000	85.1	85.2	85

- 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. Shipping weight is approximate based on previous units shipped and can be effected by several variables including the various weights for optional pumps and even the green or dry wood used in the crate.

## Accessories

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

## Water Flow Data

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

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

## Recovery Data

WATER TEMPERATURE RISE IN DEGREES

	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
Size	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	Dimensions in inches cm
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.

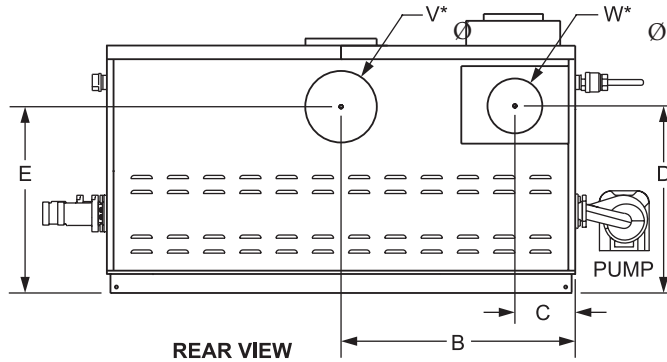
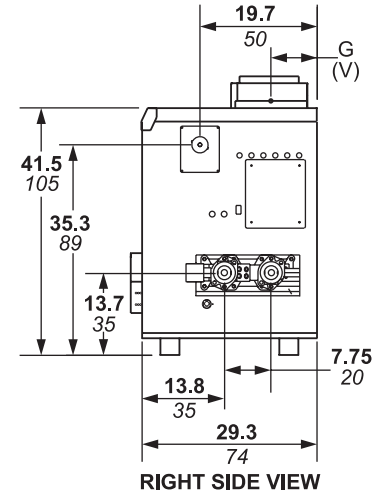
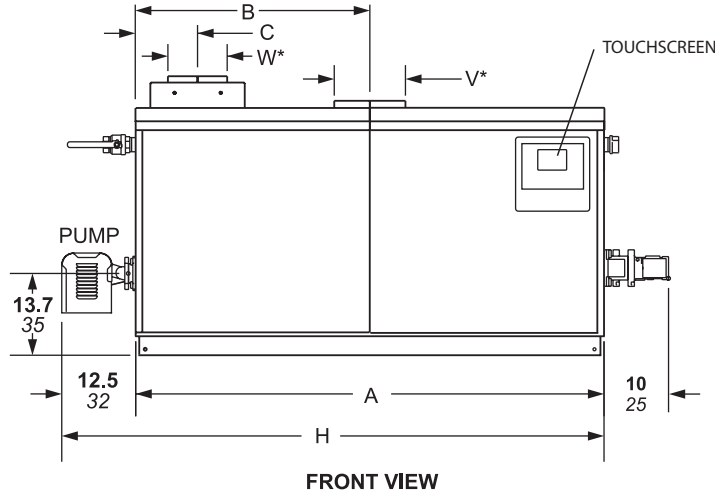
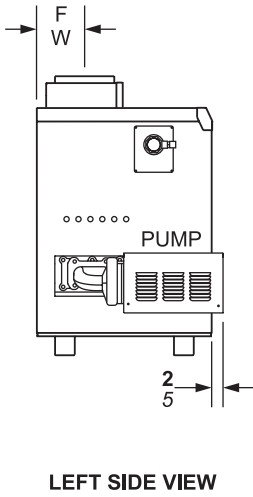
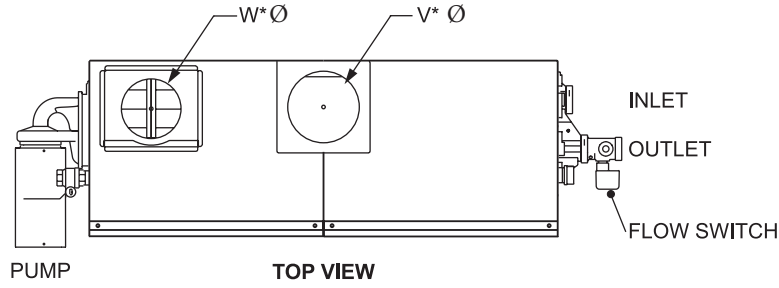
## Electrical Data

Model	Boiler / Heater			Pump			Blower(s)
	Volts	Phase	Amps	Volts	Phase	Amps	
BWCH, BWCV Pump mounted 500-1500	115	Single	Less than 12	Included in Connection			Included in Connection
BWCH, BWCV Pump mounted 1750-2000	115	Single	Less than 12	115	Single	Less than 12	Included in Connection

## Pump Data

BWCV (Water Heaters)							BWCH (Boilers)		
Size	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	33¾	86	7¾	20	8¾	22	46	117	6	15	8	20	6	15
750	45½	116	21¾	55	5¾	15	29¾	76	33¾	86	7¾	20	8¾	22	58	147	8	20	10	25	8	20
1000	57½	146	28¾	73	5¾	15	29¾	76	33¾	86	7¾	20	7	18	70	178	8	20	10	25	8	20
1250	68	172	34	86	10⅞	26	30¾	78	31⅞	79	8¾	22	8¾	22	80	203	12	30	12	30	10	25
1500	78½	199	39¾	101	10⅞	26	30¾	78	31⅞	79	8¾	22	8¾	22	91	231	12	30	12	30	10	25
1750	89	226	44½	113	10⅞	26	30¾	78	31⅞	79	8¾	22	8¾	22	101	256	12	30	14	36	12	30
2000	99½	253	49¾	126	10⅞	26	30¾	78	31⅞	79	8¾	22	8¾	22	112	284	12	30	14	36	12	30

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

Dimensions in inches cm

Bradford White reserves the right to change specifications, components, features, or to discontinue products without notice.



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[www.BradfordWhite.com](http://www.BradfordWhite.com)

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