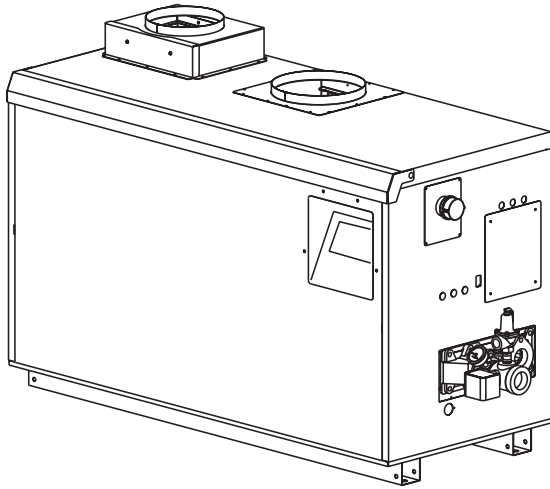


# Boiler & Water Heater

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

## Copper Brute II



Date:

Project #:

Engineer:

Prepared By:

Bid Date:



### Submittal Data

Project Name:

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

#### Fuel

- Natural  
 Propane

#### Number of Units:

#### 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)

#### 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	
	500	<b>500.0</b>	147	<b>425</b>	125	1¼	2	<b>640</b>	290
	750	<b>750.0</b>	220	<b>638</b>	187	1¼	2	<b>735</b>	333
	1000	<b>999.0</b>	293	<b>849</b>	249	1½	2½	<b>830</b>	376
	1250	<b>1250.0</b>	366	<b>1064</b>	312	2	2½	<b>925</b>	420
	1500	<b>1500.0</b>	440	<b>1266</b>	371	2	2½	<b>1020</b>	463
	1750	<b>1750.0</b>	513	<b>1489</b>	436	2	2½	<b>1115</b>	506
	BWCH 2000	<b>1999.0</b>	586	<b>1701</b>	498	2	2½	<b>1210</b>	549
	BWCV 2000	<b>2000.0</b>	586	<b>1701</b>	498	2	2½	<b>1210</b>	549

	Size	BWCH Combustion Efficiency%	BWCH Thermal Efficiency%	BWCV Thermal Efficiency%
	500	85.0	85.0	85
	750	85.0	85.0	85
	1000	85.0	85.0	85
	1250	85.1	85.2	85
	1500	85.1	85.2	85
	1750	85.1	85.2	85
	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 green or dry wood used in the crate.

## Water Flow Requirements

### BWCH (Boiler)

TEMPERATURE RISE IN DEGREES

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
500	<b>43</b>	<b>1.7</b>	161	0.5	<b>34</b>	<b>1.1</b>	129	0.3	<b>28</b>	<b>0.9</b>	107	0.3	<b>24</b>	<b>0.7</b>	92	0.2
750	<b>64</b>	<b>3.3</b>	241	1.0	<b>51</b>	<b>2.3</b>	193	0.7	<b>43</b>	<b>1.7</b>	161	0.5	<b>36</b>	<b>1.2</b>	138	0.4
1000	<b>85</b>	<b>5.0</b>	321	1.5	<b>68</b>	<b>3.6</b>	257	1.1	<b>57</b>	<b>3.1</b>	214	0.9	<b>49</b>	<b>2.2</b>	184	0.7
1250	<b>106</b>	<b>8.1</b>	401	2.5	<b>85</b>	<b>6.1</b>	322	1.9	<b>71</b>	<b>4.7</b>	269	1.4	<b>61</b>	<b>3.4</b>	231	1.0
1500	<b>128</b>	<b>10.0</b>	483	3.0	<b>102</b>	<b>7.2</b>	386	2.2	<b>85</b>	<b>5.5</b>	322	1.7	<b>73</b>	<b>4.2</b>	276	1.3
1750	<b>N/R</b>	<b>N/R</b>	<i>N/R</i>	<i>N/R</i>	<b>119</b>	<b>10.5</b>	451	3.2	<b>99</b>	<b>8.4</b>	375	2.6	<b>85</b>	<b>5.8</b>	322	1.8
2000	<b>N/R</b>	<b>N/R</b>	<i>N/R</i>	<i>N/R</i>	<b>136</b>	<b>12.5</b>	515	3.8	<b>113</b>	<b>10.4</b>	429	3.2	<b>97</b>	<b>8.3</b>	368	2.5

### BWCV (Water Heater)

Size	HARD WATER				NORMAL WATER				SOFT WATER			
	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
500	<b>90</b>	<b>3.5</b>	341	1.1	<b>68</b>	<b>2.3</b>	257	0.7	<b>45</b>	<b>1.8</b>	170	0.5
750	<b>90</b>	<b>6.0</b>	341	1.8	<b>68</b>	<b>3.0</b>	257	0.9	<b>45</b>	<b>2.1</b>	170	0.6
1000	<b>90</b>	<b>6.1</b>	341	1.9	<b>68</b>	<b>3.6</b>	257	1.1	<b>45</b>	<b>2.3</b>	170	0.7
1250	<b>90</b>	<b>6.3</b>	341	1.9	<b>68</b>	<b>3.8</b>	257	1.2	<b>68</b>	<b>3.8</b>	257	1.2
1500	<b>90</b>	<b>6.5</b>	341	2.0	<b>68</b>	<b>3.9</b>	257	1.2	<b>68</b>	<b>3.9</b>	257	1.2
1750	<b>90</b>	<b>6.7</b>	341	2.0	<b>68</b>	<b>4.0</b>	257	1.2	<b>68</b>	<b>4.0</b>	257	1.2
2000	<b>112</b>	<b>10.0</b>	424	3.0	<b>112</b>	<b>10.0</b>	424	3.0	<b>112</b>	<b>10.0</b>	424	3.0

**NOTE:** Headloss shown is for the heat exchanger only.

## 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	
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.

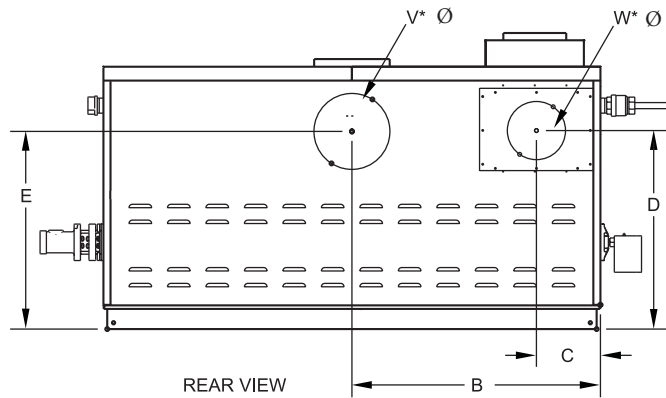
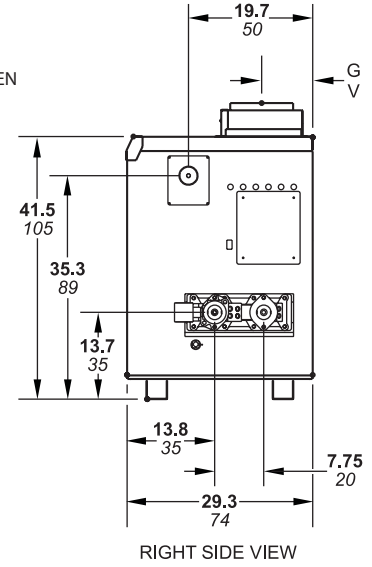
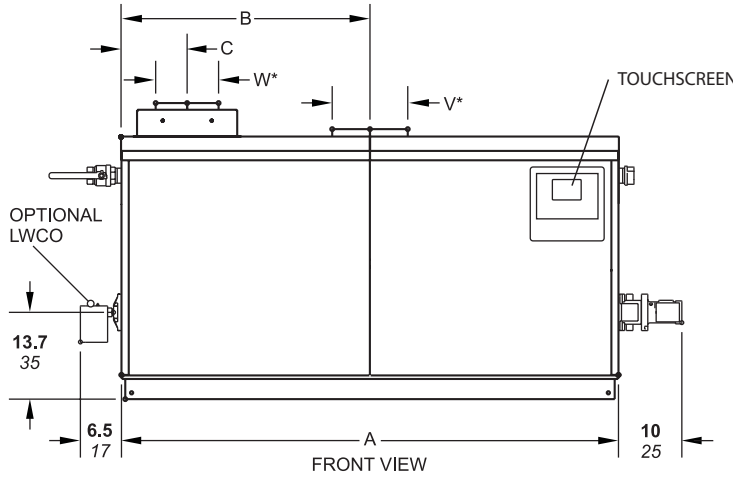
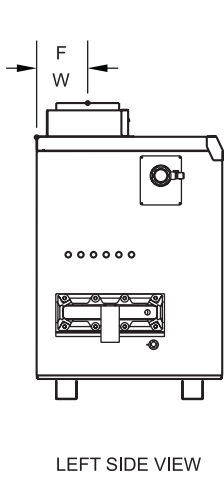
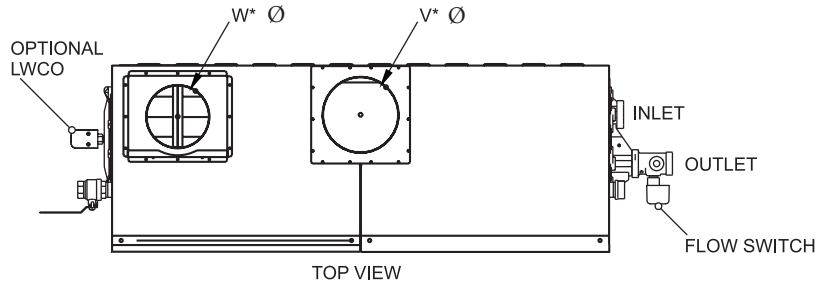
## Electrical Data

Model	Boiler / Heater			Pump Delay Connection Rating			Blower(s)
	Volts	Phase	Amps	Volts	Phase	Amps	
BWCH, BWCV non-pump mounted 500-2000	115	Single	Less than 12	Pilot Duty 24V	Single	Up to 25VA	Included in Pennant connection

## Accessories

- 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

# 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.



200 Lafayette St.  
 Middleville, MI 49333  
 Warranty: (800) 531-2111

www.BradfordWhite.com

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