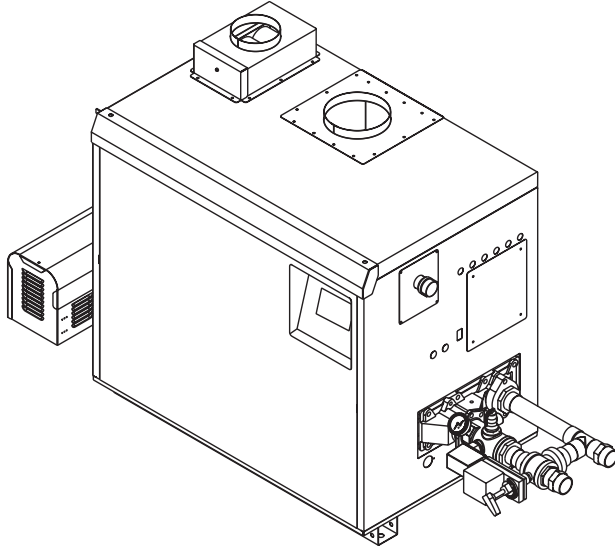


# Low-Temp Copper Brute II

# 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

Project Name:

Location:

Contractor:

## Standard Equipment

- ASME 160 psi working pressure heat exchanger
- ASME "H" stamp
- Meets NSF/ANSI-372 Low Lead Content Certification (MT2V)
- Electronic firing & 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
- Anti-Condensing mixing system
- 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

- Normal Water
- Hard Water (BWCV only)
- Soft 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 kW	Output <sup>1</sup> MBH kW	BWCH Combustion Efficiency	BWCH Thermal Efficiency	BWCV Thermal Efficiency	Gas Conn. Size inches <sup>2</sup>	Heater Water Conn. Size inches <sup>2</sup>	Shipping Weight	
								lbs	kg
500	500.0	425	85.0	85.0	85	1¼	2	775	352
750	750.0	638	85.0	85.0	85	1¼	2	870	395
1000	999.0	849	85.0	85.0	85	1½	2½	1035	469
1250	1250.0	1064	85.1	85.2	85	2	2½	1130	513
1500	1500.0	1266	85.1	85.2	85	2	2½	1285	583
1750	1750.0	1489	85.1	85.2	85	2	2½	1380	626
BWCH 2000	1999.0	1701	85.1	85.2	85	2	2½	1510	685
BWCV 2000	2000.0	1701	85.1	85.2	85	2	2½	1510	685

Size	Input <sup>1</sup> kW	Output <sup>1</sup> kW
500	147	125
750	220	187
1000	293	249
1250	366	312
1500	440	371
1750	513	436
2000	586	498

- 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 affected by several variables including the various weights for optional pumps and even the green or dry wood used in the crate.

## Accessories

- 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

Size	BWCH (Boiler) Temperature Rise in Degrees							
	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	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	BWCV (Water Heater)					
	Hard Water		Normal Water		Soft Water	
	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	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		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.

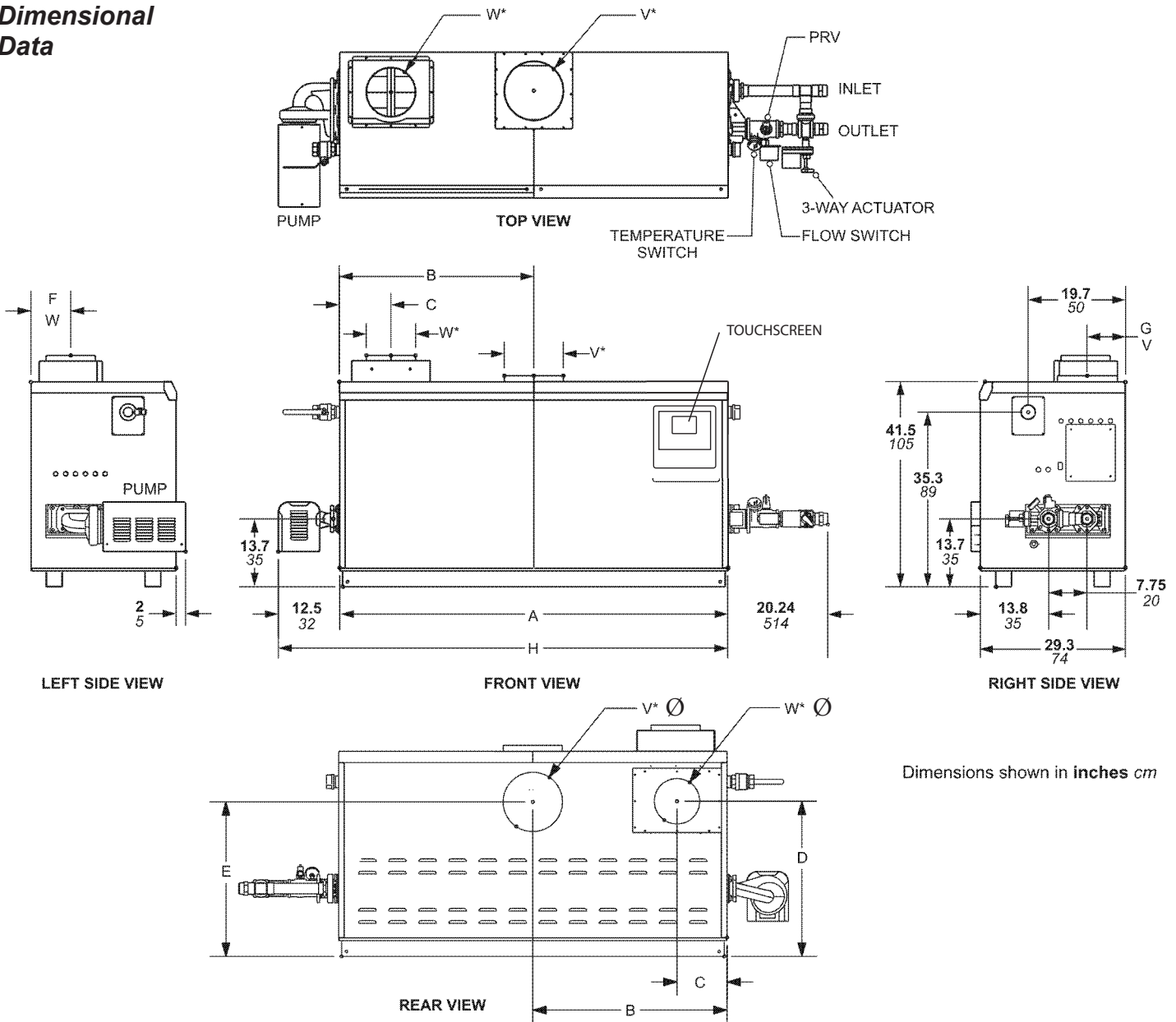
## Electrical Data

Model	Boiler / Heater			Pump			Blower(s)
	Volts	Phase	Amps	Volts	Phase	Amps	
<b>BWCH, BWCV</b> Pump mounted 500-1000	115	Single	Less than 12	Included in Copper Brute II Connection			Included in Copper Brute II Connection
<b>BWCH, BWCV</b> Pump mounted 1250-2000	115	Single	Less than 12	115	Single	Less than 12	Included in Copper Brute II 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	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 of the Copper Brute II, 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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