



APPROVED

Product Submittal for MVB® - Type H Heating Boiler Models 2503-4003

Date: _____ Job: _____ Location: _____
 Equipment Tags: _____ Engineer: _____ Contractor: _____
 Model: _____ Notes: _____
 Prepared by: _____ Indoor Outdoor Gas Type: Natural Gas Propane

- 85.1% thermal efficiency at full rate
- 100% factory fire-tested
- VERSA IC® modulating controller with 7" color touchscreen display
- Raymote™ IoT connectivity standard
- Full electronic modulation, constant ratio up to 7:1 turndown
- Full safety diagnostics with history
- Status display lights
- Cascade up to 8 heaters - no external sequencer required
- Modbus RTU BMS port
- CSA Low-lead certified ≤ .25% lead
- Maximum outlet water temperature: 235°F (112°C)
- Minimum inlet water temperature: 120°F (48°C)
- Limited 20-year thermal shock warranty
- Limited 5-year copper/10-year cupronickel heat exchanger warranty
- BAAQMD Rule 9-7 certified, Low NOx < 30 ppm
- Proudly assembled in the USA



Standard Features

Heat Exchanger

- Headers - bronze
- ASME H-stamped; 160 PSIG MAWP
- National Board registered
- Finned tubing
 - Copper (standard)
 - A-3 cupronickel (optional)
- ASME powder-coated tube sheet
- Silicone high-temp O-rings
- ASME pressure relief valve
 - 60 PSIG (standard)
 - ___ PSIG (optional)
- 50 PSI air vent, auto (2)
- T&P gauge
- Four-pass heat exchanger
- Stainless steel evaporator plate
- 4-inch grooved copper water connections

Power

- 208V, 60Hz, 1Ø, power supply (standard)
- 240V, 60Hz, 1Ø, power supply (field-wiring)

Control

- VERSA IC® built-in controller
- 7" (178 mm) color HD touchscreen display
- Raymote™ IoT connectivity
- Cascade up to 8 heaters
- Parallel and sequential modulation cascade modes
- Cascade interstage delay settings
- Ignition module
 - 3-try (standard)
 - C-6 Single-try (optional)
- Remote flame sensor
- Fixed high limit, manual-reset, 240°F (115°C)
- 240/120V, 60Hz, transformer
- On/off power switch
- Flow switch
- Blocked vent pressure switch
- Freeze protection
- Alarm dry contact
- High gas pressure switch, manual-reset

- Pump outputs - pilot duty
 - Boiler
 - DHW indirect
 - System
- Programmable pump time delays
- Modulating temperature control, 7:1 turndown
- Water temperature sensors 10kΩ (2 mtd, 3 loose, 1 well)
- Cold water protection option
 - Cold water start, 2-way valve, single boiler
- Modbus RTU BMS port (up to 115K baud rate, see ProtoNode Installation Manual P/N: 241515)
 - B-85 BMS Gateway, Modbus RTU to Modbus TCP, N2 Metasys, BACnet IP, or BACnet MS/TP (optional)
 - B-86 BMS Gateway, Modbus RTU to LonWorks (optional)

Burner

- Hot surface ignition (HSI)
- Radially-fired knitted burner

Gas Train

- Fuel
 - Natural gas
 - Propane (minimum grade HD-5)
- Dual-seat combination valve
- Manual shutoff firing valve

Construction

- Indoor/outdoor construction
- Enclosed front controls
- PolyTuf powder-coat finish
- Rear connections (water, gas, vent, electrical, combustion air)
- Combustion air filter
- Front connection - low-voltage wiring
- Design certified ANSI Z21.13/CSA 4.9
- CSA low-lead certified ≤ .25% lead

Venting, cat IV (shipped loose)

- D-11 Outdoor stack
- D-15 Vent termination, cap (horizontal)
- D-18 Flue exhaust boiler adapter

- D-19 Flue exhaust termination cap adapter
- D-22 TruSeal® intake air
- D-23 Flue exhaust vent support
- D-37 Motorized combustion air damper

Options

- B-32 Outdoor air sensor
- B-65 Indirect tank Aquastat controller (shipped loose, control cover must be used)
- E-5 Boiler alarm with 4" bell
- E-15 Alarm with buzzer (shipped loose)
- F-10 Low water cut off (remote)
- I-1 High limit, auto-reset, 240°F (115°C) max
- I-2 High limit, manual-reset, 240°F (115°C) max.
- I-5 High limit, manual-reset, 200°F (93°C) max.
- I-13 High limit, auto-reset, 200°F (93°C) max.
- M-1 Safety valve, motorized
- M-10 Safety valve, solenoid
- M-15 Safety valve (requires M-1 or M-10)
- P-29 Cold water start, multiple boilers
- P-52 Cold water start, multiple boilers
- S-1 Low gas pressure switch, manual-reset
- Z-4 T&P relief valve
- Z-9 Thermometer (shipped loose)
- Z-12 Condensate neutralizer

Additional options or accessories

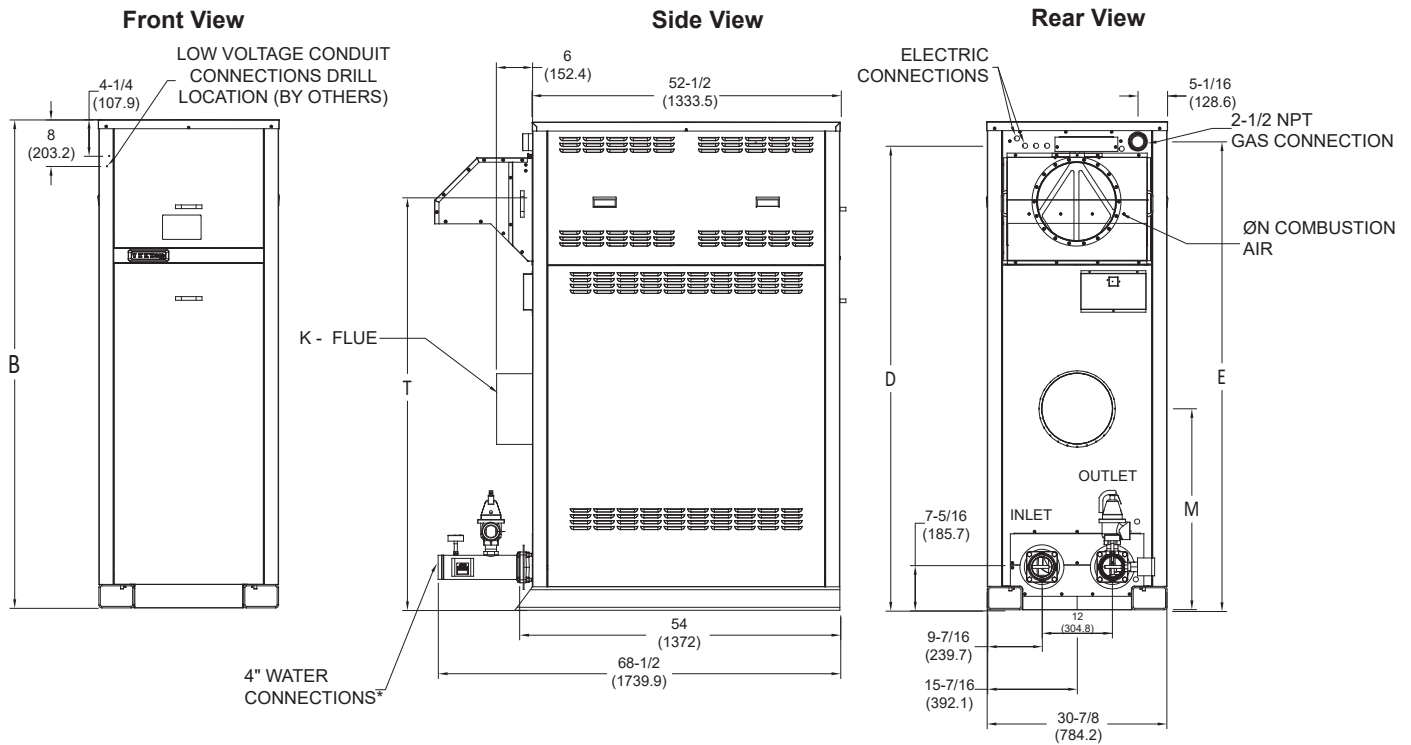
Pumps (optional)

Multi-Boiler digital temp controllers (shipped loose)

- B-36 TempTracker Mod+ Hybrid, 2-4 boilers, OA reset
- B-37 TempTracker Mod+ Hybrid, 5-10 boilers, OA reset
- B-38 TempTracker Mod+ Hybrid, 11-16 boilers, OA reset
- B-39 EMS 4-20 mA Remote Setpoint Interface Module (requires B-36 to B-38)
- B-62 BACnet MS/TP Interface Module (requires B-36 to B-38)

Regulatory agency requirements

- G-15 CSD-1 Field upgrade



*Water connections are grooved copper tube. Dimensions are shown in inches (mm).

Model	MBTUH (kW)		Dimensions - Inches (mm)							AHRI Thermal Efficiency	Turn Down	Approx. Shipping Weight lbs. (kg)
	Input	Output	B Height	D	E	K Flue ø	M	N C/A ø	T			
<input type="checkbox"/> 2503	2501 (733.0)	2126 (623.1)	68-1/4 (1733.6)	62 (1574.8)	64-3/4 (1644.7)	10	26-3/4 (679.5)	10	53-1/4 (1352.6)	85.1%	7:1	1410 (639.5)
<input type="checkbox"/> 3003	3000 (879.2)	2550 (747.3)	73-1/4 (1860.6)	67 (1701.8)	69-3/4 (1771.7)	10	29-1/4 (743.0)	10	58-1/4 (1479.6)			1450 (657.6)
<input type="checkbox"/> 3503	3500 (1025.7)	2975 (871.9)	78-1/4 (1987.6)	71 (1803.4)	74-3/4 (1898.7)	12	31-3/4 (806.5)	12	63-1/4 (1606.6)			1550 (702.9)
<input type="checkbox"/> 4003	4000 (1172.3)	3400 (996.4)	83-1/4 (2114.6)	76 (1930.4)	79-3/4 (2025.7)	12	34-1/4 (870)	12	68-1/4 (1733.6)			1660 (752.8)

Ratings shown are for elevations up to 4,500 ft. De-rate above 4,500 ft; consult factory.

CLEARANCES - Inches (mm)		
Heater Side	Minimum Clearances from Combustible Surfaces	Minimum Service Clearance
Front	24 (610)	30 (762)
Rear	30 (762)	30 (762)
Right Side	1 (25)	24* (610)
Left Side	1 (25)	1 (25)
Top	0	12 (304.8)
Floor	0	
Vent	1 (25)	

Model	Boiler Current Draw - Amps	
	<input type="checkbox"/> 208/220/240VAC	<input type="checkbox"/> 240VAC
<input type="checkbox"/> 2503	14	12
<input type="checkbox"/> 3003	17.5	15
<input type="checkbox"/> 3503	20	17
<input type="checkbox"/> 4003	23	20

*Service Clearance can be right side or left side.

RATES OF FLOW AND PRESSURE DROPS																			
Model	Input MBTUH (kWh)	20°F ΔT				30°F ΔT*				Minimum Flow*					Maximum Flow				
		GPM (L/min)	ΔP ft. wc.	System Head Loss (ft.)		GPM (L/min)	ΔP ft. wc.	System Head Loss (ft.)		GPM (L/min)	ΔP ft. wc.	ΔT °F (°C)	System Head Loss (ft.)		GPM (L/min)	ΔP ft. wc.	ΔT °F (°C)	System Head Loss (ft.)	
				3" Pipe	4" Pipe			3" Pipe	4" Pipe				3" Pipe	4" Pipe				3" Pipe	4" Pipe
□ 2503	2501 (732)	213 (807)	11.7		14.3	142 (538)	6.2	10.7	7.4	120 (455)	4.7	35 (19.4)	8.0	5.6	264 (1001)	15.7	16 (8.8)		19.6
□ 3003	3000 (879)	255 (966)	21.7		25.3	170 (644)	10.3	16.6	12.0	131 (496)	6.3	39 (21.6)	10.2	7.4	264 (1001)	23.1	19 (10.5)		27.0
□ 3503	3500 (1025)					198 (750)	15.2		17.5	153 (580)	9.1	39 (21.6)	14.3	10.5	264 (1001)	26.8	23 (12.7)		30.6
□ 4003	4000 (1172)					227 (860)	23.7		26.6	174 (659)	13.5	39 (21.6)	20.1	15.3	264 (1001)	33.5	26 (14.4)		37.4

*ΔP & SHL are in feet of head based upon 100 equivalent feet of type "L" copper tubing.

Base Anchor Bolt Pattern

