



**Product Submittal for MVB® - Type H
Heating Boilers
Models 504A-2004A**

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

- 84% Thermal efficiency at full rate
- 100% Factory fire-tested
- VERSA IC® modulating controller with 7" color touchscreen display
- Raymote™ remote connectivity provided standard
- Electronic modulation, 60% minimum fire
- Full safety diagnostics with history
- Status display lights
- Cascade up to 8 heaters - no external sequencer required
- Cascade in parallel or sequential modulation modes
- Modbus RTU BMS port
- Maximum outlet water temperature: 235°F (112°C)
- Minimum acceptable inlet water temperature: 120°F (49°C)
- Limited 20-year thermal shock warranty
- Limited 10-year heat exchanger warranty
- SCAQMD Rule 1146.2 certified, Low NOx < 20 ppm
- Proudly Assembled in the USA



Features and options
Heat exchanger

- Headers
 - Cast iron (standard)
 - A-1 bronze (optional)
- ASME H-stamped 160 PSIG MAWP
- National Board registered
- Fin 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)
- T & P gauge (shipped loose)
- Stainless steel evaporator plate
- Four-pass heat exchanger

Power

- 120V, 60Hz, 1Ø, power supply
- 120/24V, 60Hz, transformer

Control

- VERSA IC built-in control
- 7" (178 mm) color HD touchscreen display
- Raymote™ Wi-Fi remote connectivity
- Cascade up to 8 boilers
- Parallel and sequential modulation cascade modes
- Cascade interstage delay settings
- Ignition module
 - 3-Try (standard)
 - C-6 Single-try
- Remote flame sensor
- Freeze protection
- High limit, manual-reset, fixed, 240°F (115°C)
- On/Off power switch
- Flow switch
- Blocked vent pressure switch
- Programmable pump time delays

- Pump outputs
 - Boiler pump
 - DHW indirect – pilot duty
 - System – pilot duty
- Water temperature sensors 10kΩ (2 mtd, 3 loose, 1 well)
- Modbus RTU BMS port
 - B-85 Gateway – BACnet MS/TP, BACnet IP, N2 Metasys or Modbus TCP
 - B-86 Gateway - LonWorks
- Cold water protection (optional)
 - CWR variable-speed pump, single-boiler
 - P-45 Injector pump, bronze
 - P-46 Injector pump, cast iron
 - P-47 Flange kit
 - CWS proportional valve, single boiler
 - Bronze
 - Cast Iron

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 valve

Construction

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

Venting

- D-11 Outdoor vent kit
- D-15 Vent termination, sidewall
- D-17 Inline air intake filter
- D-18 Boiler vent adapter (cat. III and IV)
- D-19 Vent termination cap adapter (cat. III and IV)
- D-20 Vent termination, vertical
- D-22 TruSeal direct vent intake plenum
- D-23 Outdoor vent supports
- D-37 Motorized combustion air damper

Other options

- A-30 Air vent, auto, 150 PSI (shipped loose)
- B-31 Tankstat well
- B-32 Outdoor air sensor
- B-65 Indirect tank aquastat control
- E-5 Boiler alarm with 4" bell
- E-15 Boiler alarm with buzzer
- I-1 Auto-reset, high limit, adj., 240°F (115°C) max
- I-2 Manual-reset, high limit, adj., 240°F (115°C) max (additional)
- I-13 Auto-reset, high limit, 200°F (115°C) max
- M-1 Safety valve, motorized
- M-10 Safety valve, solenoid
- M-15 Safety valve, vent (requires M-1 or M-10)
- P-____ Pump: ____HP, 120V, 1Ø, 60Hz
 - Cast iron Bronze
 - Loose Mounted
- P-29 CWS control (shipped loose)
- P-52 CWS, multiple units
- S-1 Low gas pressure switch, manual-reset
- S-2 High gas pressure switch, manual-reset
- Z-4 T & P relief valve
- Z-9 Thermometer

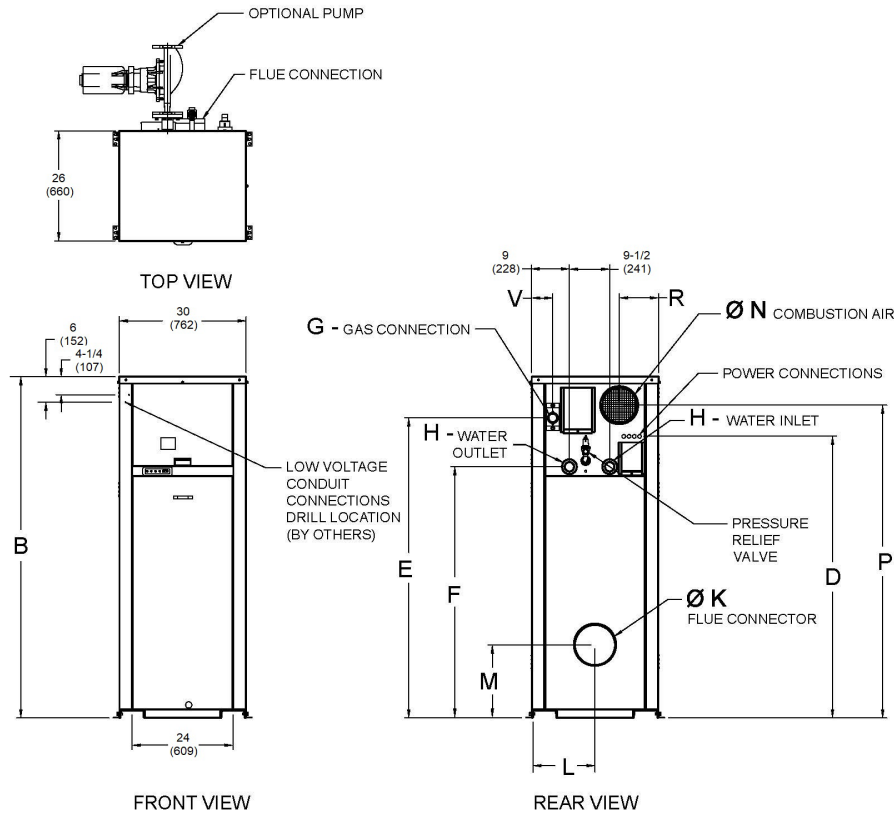
Multi-boiler temperature controllers

- TempTracker Mod+ Hybrid Digital Controller
 - B-36 2-4 boilers, OA reset
 - B-37 5-10 boilers, OA reset
 - B-38 11-16 boilers, OA reset
 - B-39* EMS 4-20 mA remote setpoint interface module
 - B-62* BACnet MS/TP interface module (*requires B-36 - B-38)

Regulatory agency requirements

- G-15 CSD-1 field upgrade

Additional options or accessories



| Model | MBTUH (kW/h) | | Dimensions - Inches (mm) | | | | | | | | | | | | | Operating Weight lbs. (kg) |
|--------------------------------|--------------|------------|--------------------------|---------------|---------------|---------------|----------------------|------------|----------|--------------|--------------|---------|---------------|-------------|------------|----------------------------|
| | Input | Output | B Height | D | E | F | G ⁽¹⁾ NPT | H NPT | K Flue Ø | L | M | N C/A Ø | P | R | V | |
| <input type="checkbox"/> 504A | 500 (147) | 420 (123) | 43-1/4 (1099) | 30-3/4 (781) | 35 (889) | 23-3/4 (603) | 1 (25) | 2 (50) | 8 (203) | 13-3/4 (350) | 14-1/4 (362) | 6 (152) | 36-3/4 (934) | 8-1/4 (210) | 1-3/4 (45) | 600 (272.1) |
| <input type="checkbox"/> 754A | 750 (220) | 630 (185) | 49 (1244.6) | 36-3/4 (934) | 40-3/4 (1035) | 29-1/2 (749) | 1 (25) | 2 (50) | 10 (254) | 13-1/2 (343) | 14-1/4 (362) | 6 (152) | 42-1/2 (1080) | 8-1/4 (210) | 1-3/4 (45) | 670 (303.9) |
| <input type="checkbox"/> 1104A | 1100 (322) | 924 (270) | 55 (1397) | 42-3/4 (1086) | 46-3/4 (1035) | 35-1/2 (902) | 1-1/4 (32) | 2-1/2 (63) | 10 (254) | 13-1/2 (343) | 14-1/4 (362) | 6 (152) | 48-1/2 (1232) | 8-1/4 (210) | 1-3/4 (45) | 720 (326.5) |
| <input type="checkbox"/> 1504A | 1500 (440) | 1260 (370) | 61 (1549.4) | 48-3/4 (1238) | 53 (1346) | 41-3/4 (1061) | 1-1/4 (32) | 2-1/2 (63) | 12 (305) | 13-3/4 (337) | 17-1/4 (438) | 8 (203) | 54-3/4 (1391) | 8-1/4 (210) | 1-3/4 (45) | 780 (353.7) |
| <input type="checkbox"/> 2004A | 1999 (586) | 1679 (492) | 75 (1905) | 61 (1549) | 65-1/4 (1632) | 53-3/4 (1657) | 2 (50) | 2-1/2 (63) | 14 (356) | 13-1/2 (343) | 20 (508) | 8 (203) | 68-1/2 (1740) | 9-1/4 (235) | 5 (127) | 940 (426.3) |

(1)For natural gas. Propane all sizes 1" NPT.
 -Ratings shown are for elevations up to 4,500 ft. De-rate above 4,500 ft; consult factory. No hardware changes required below 10,000 ft.
 -For direct vent applications, please contact the factory about relocating the pump.

| CLEARANCES | | |
|-------------|-------------------------------------------------------|------------------------------------|
| Heater Side | Minimum Clearances from Combustible Surfaces in. (mm) | Minimum Service Clearance in. (mm) |
| Front | 24 (610) | 24 (610) |
| Rear | 12 (305) | 24 (610) |
| Right Side | 1 (25) | 1 (25) |
| Left Side | 1 (25) | 1 (25) |
| Top | 0 | 10 (254) |
| Floor | 0 | 0 |
| Vent | 1 (25) | 1 (25) |

| PUMP HP - AMPS* | | | |
|--------------------------------|-------------------------------|---------------------------------|-------------------------------|
| Model | Water Hardness | | |
| | <input type="checkbox"/> Soft | <input type="checkbox"/> Medium | <input type="checkbox"/> Hard |
| <input type="checkbox"/> 504A | 1/4 - 6 | 1/4 - 6 | 3/4 - 11 |
| <input type="checkbox"/> 754A | 1/4 - 6 | 1/2 - 7 | 3/4 - 11 |
| <input type="checkbox"/> 1104A | 1/4 - 6 | 1/2 - 7 | 1 - 14 |
| <input type="checkbox"/> 1504A | 3/4 - 11 | 1 - 14 | 1 - 14 |
| <input type="checkbox"/> 2004A | 1 - 14 | 1-1/2 - 16 | 1-1/2 - 16 |

| Model | Shipping Weight lbs. (kg) | Footprint ft² (m²) | Amps* |
|--------------------------------|---------------------------|--------------------|-------|
| <input type="checkbox"/> 504A | 600 (272.1) | 5.4 (0.5) | 12 |
| <input type="checkbox"/> 754A | 670 (303.9) | | |
| <input type="checkbox"/> 1104A | 720 (326.5) | | |
| <input type="checkbox"/> 1504A | 780 (353.7) | | |
| <input type="checkbox"/> 2004A | 940 (426.3) | | |

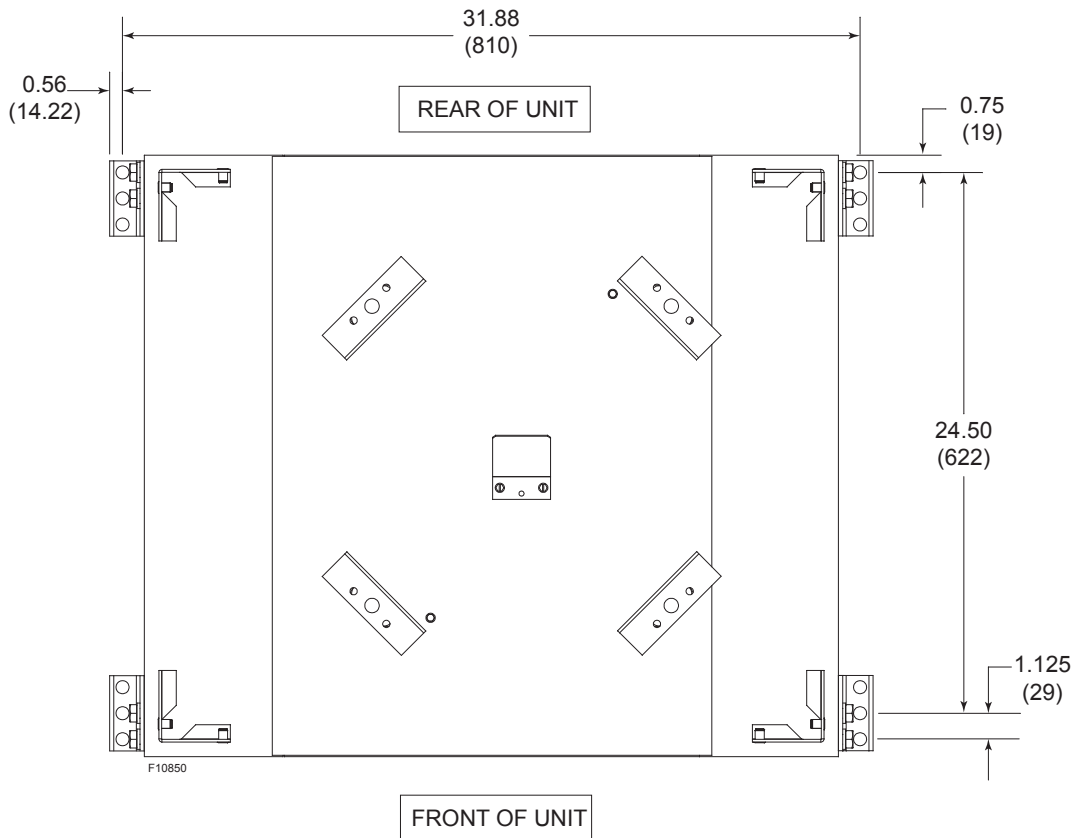
* Current draw is for pump only.

* Current draw is for boiler only.
 (Supply breaker must have delayed trip)

| Rates of Flow and Pressure Drops | | | | | | | | | | | | |
|----------------------------------|-------------|------------------|-------------|------------------|-------------|------------------|--------------|------------------|------------|---------------|------------------|------------|
| Model | 20°F ΔT | | 30°F ΔT | | 39°F ΔT* | | Maximum Flow | | | Minimum Flow* | | |
| | GPM (L/min) | ΔP ft. wc. (kPa) | GPM (L/min) | ΔP ft. wc. (kPa) | GPM (L/min) | ΔP ft. wc. (kPa) | GPM (L/min) | ΔP ft. wc. (kPa) | ΔT °F (°C) | GPM (L/min) | ΔP ft. wc. (kPa) | ΔT °F (°C) |
| 504A | 42 (159) | 2.7 (8) | 28 (106) | 1.4 (4.1) | N/A | N/A | 100 (379) | 11.3 (33.78) | 8 (4.4) | 25 (95) | 1.1 (3) | 34 (18.8) |
| 754A | 63 (239) | 6 (18) | 42 (159) | 2.9 (8.7) | 32 (121) | 1.8 (5) | 100 (379) | 13.8 (41.25) | 13 (7.2) | 32 (121) | 1.8 (5) | 39 (21.6) |
| 1104A | 92 (349) | 13.3 (40) | 62 (235) | 6.7 (20) | 47 (178) | 4.3 (13) | 113 (428) | 18.6 (55.6) | 16 (8.8) | 47 (178) | 4.3 (13) | 39 (21.6) |
| 1504A | N/A | N/A | 84 (318) | 13.3 (39.8) | 65 (246) | 8.4 (25) | 113 (428) | 22.2 (66.36) | 22 (12.2) | 65 (246) | 8.4 (25) | 39 (21.6) |
| 2004A | N/A | N/A | 112 (424) | 26.9 (80) | 86 (326) | 16.7 (50) | 113 (428) | 27.2 (81.3) | 30 (16.6) | 86 (326) | 16.7 (50) | 39 (21.6) |

*CLOSED SYSTEMS ONLY

Engineered Base



Dimensions are shown in inches (mm)