Job: ­­­

# MVB® - Type H

##  Heating BoilersModels 504A-2004A

Engineer:

Contractor:

Prepared By:       Date:

Model:       Indoor/Outdoor:

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

Modbus RTU BMS Port

Maximum Outlet Water Temperature: 235°F

Minimum Acceptable Inlet Water Temperature: 120°F

Limited Twenty-Five-Year Thermal Shock Warranty

Limited Ten-Year Heat Exchanger Warranty

Proudly Assembled in the USA

Ultra Low NOx – Less than 20PPM

#### Heat Exchanger

* Headers

[ ]  Cast Iron – Standard

[ ]  A-1 Bronze

* ASME H Stamped
160 PSIG MAWP
* National Board Approved
* Fin Tubing

[ ]  Copper – Standard

[ ]  A-3 Cupronickel

* ASME Powder-Coated Tube Sheet
* Silicone High-Temp O-Rings
* ASME Pressure Relief Valve

[ ]  60 PSIG – Standard

[ ]      PSIG – Optional

* Temperature and Pressure Gauge,
Shipped Loose
* Stainless Steel Evaporator Plate
* Four-pass heat exchanger

#### Control

* 120V, 60Hz, 1Ø, Power Supply
* 120/24V 60Hz Transformer
* VERSA IC® built-in control
* 7” color HD touchscreen display
* Raymote™ Wi-Fi remote connectivity
* Cascade up to 4 Boilers
* Ignition Module

[ ]  3-Try – Standard

[ ]  C-6 Single-Try

* Remote Flame Sensor
* Freeze Protection
* High Limit, Manual Reset, Fixed, 240ºF
* 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

#### Control (cont.)

* Water Temperature Sensors (7)
* Modbus RTU BMS Port

[ ]  B-85 Gateway – BACnet MS/TP, BACnet IP, N2 Metasys or Modbus TCP

[ ]  B-86 Gateway - LonWorks

* Cold Water Protection Function

[ ]  Optional Variable Speed Pump

[ ]  Optional Proportional Valve

#### Burner

* Hot Surface Ignition (HSI)
* Radially-Fired Knitted Burner

#### Gas Train

* Fuel

[ ]  Natural Gas

[ ]  Propane (Minimum Grade HD-5)

* Dual-Seat Combination Firing Valve
* Manual Shut-Off 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

* Vent Termination

[ ]  D-11 Outdoor

[ ]  D-15 Indoor, Horizontal

[ ]  Indoor, Vertical (by others)

* Combustion Air

[ ]  D-16 Air Intake Elbow

* Extractor – Optional

[ ]  By others

[ ]  Not required

**Options**

[ ]  A-30 Air Vent, Auto, 150 PSI (Loose)

[ ]  B-31 Dry-Well Assembly

[ ]  B-32 Outdoor Air Sensor

[ ]  F-10 Low Water Cut-Off, Remote Probe

[ ]  I-1 High Limit, Auto Reset, Adj.,
100-240°F

[ ]  I-2 High Limit, Manual Reset, Adj., 100-240°F (additional)

[ ]  P-   Pump:      HP, 120V, 1∅, 60Hz

 [ ]  Cast Iron [ ]  Bronze

 [ ]  Loose [ ]  Mounted

[ ]  P-   Cold Water Start

[ ]  P-   Cold Water Run

[ ]  S-1 Low Gas Pressure Switch,
Manual Reset

[ ]  S-2 High Gas Pressure Switch, Manual Reset

[ ]  Z-12 Condensate Treatment Kit

#### Additional Options or Accessories

[ ]

#### Multi-Boiler Temperature Controllers

[ ]  TempTracker Mod+ Hybrid

 [ ]  B-36 2-4 Heaters

 [ ]  B-37 5-10 Heaters

 [ ]  B-38 11-16 Heaters

 [ ]  B-39 EMS 4-20mA Remote Setpoint Interface Module

 **[ ]**  B-62 BACnet MS/TP Interface

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|  |  |
| --- | --- |
| **Model****(H7 - )** | **Water Hardness** |
| [ ]  **Soft** | [ ]  **Medium** | [ ]  **Hard** |
| 504A [ ]  | 1/4 – 6 | 1/4 – 6 | 3/4 – 11 |
| 754A [ ]  | 1/4 – 6 | 1/2 – 7 | 3/4 – 11 |
| 1104A[ ]  | 1/4 – 6 | 1/2 – 7 | 1 – 14 |
| 1504A[ ]  | 3/4 – 11 | 1 – 14 | 1 – 14 |
| 2004A[ ]  | 1 – 14 | 1-1/2 – 16 | 1-1/2 – 16 |

**PUMP HP – AMPS\***

\* Current draw is for Pump Only

**CLEARANCES**

|  |  |  |
| --- | --- | --- |
|  | **CertifiedMinimum** | **Recomm.Service** |
| Front | 24” | 24” |
| Rear | 12” | 24” |
| Right | 1” | N/A |
| Left | 1” | N/A |
| Top | 0” | 10” |
| Floor | 0” | N/A |
| Vent | 1” | N/A |

|  |  |  |  |
| --- | --- | --- | --- |
| **Model(H7-)** | **MBTUH** |  | **Dimensions (in.)** |
| **B****Height** | **D** | **E** | **F** | **G\*****NPT** | **H****NPT** | **K****Flue Ø** | **L** | **M** | **N****C/A Ø** | **P** | **R** | **V** |
| **Input** | **Output** |
| 504A [ ]  | 500 | 420 | 43-1/4 | 30-3/4 | 35 | 23-3/4 | 1 | 2 | 8 | 13-3/4 | 14-1/4 | 6 | 36-3/4 | 8-1/4 | 1-3/4 |
| 754A [ ]  | 750 | 630 | 49 | 36-3/4 | 40-3/4 | 29-1/2 | 1 | 2 | 10 | 13-1/2 | 14-1/4 | 6 | 42-1/2 | 8-1/4 | 1-3/4 |
| 1104A [ ]  | 1100 | 924 | 55 | 42-3/4 | 46-3/4 | 35-1/2 | 1-1/4 | 2-1/2 | 10 | 13-1/2 | 14-1/4 | 6 | 48-1/2 | 8-1/4 | 1-3/4 |
| 1504A [ ]  | 1500 | 1260 | 61 | 48-3/4 | 53 | 41-3/4 | 1-1/4 | 2-1/2 | 12 | 13-3/4 | 17-1/4 | 8 | 54-3/4 | 8-1/4 | 1-3/4 |
| 2004A [ ]  | 1999 | 1679 | 75 | 61 | 65-1/4 | 53-3/4 | 2 | 2-1/2 | 14 | 13-1/2 | 20 | 8 | 68-1/2 | 9-1/4 | 5 |

|  |
| --- |
| * \*For natural gas. Propane all sizes 1” NPT.
* Ratings shown are for elevations up to 4,500 feet. For installations at elevations above 4,500 feet, please consult the factory for additional instructions. No hardware changes required below 10,000 ft.
* For direct vent applications, please contact the factory about relocating the pump.
 |

\* Current draw is for Boiler Only.

(Supply breaker must have delayed trip.)

|  |  |  |  |
| --- | --- | --- | --- |
| Model(H7 - ) | ShippingWeight(Lbs.) | Footprint(ft2) | Amps\* |
| 504A [ ]  | 600 | 5.4 | 12 |
| 754A [ ] Raypak, Inc. ▪ 2151 Eastman Avenue, Oxnard, CA 93030 ▪ (805) 278-5300 ▪ Fax (800) 872-9725 ▪ www.raypak.com | 670 | 5.4 | 12 |
| 1104A [ ]  | 720 | 5.4 | 12 |
| 1504A [ ]  | 780 | 5.4 | 12 |
| 2004A [ ]  | 940 | 5.4 | 18 |

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**RATES OF FLOW AND PRESSURE DROPS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Model(H7-)** | **20**°**F T** | **30**°**F T** | **39**°**F T\*** | **Maximum Flow** | **Minimum Flow\*** |
| **GPM** | **P (ft.)** | **GPM** | **P (ft.)** | **GPM** | **P (ft.)** | **GPM** | **P (ft.)** | **T (**°**F)** | **GPM** | **P (ft.)** | **T (**°**F)** |
| 504A [ ]  | 42 | 2.7 | 28 | 1.4 | N/A | N/A | 100 | 11.3 | 8 | 25 | 1.1 | 34 |
| 754A [ ]  | 63 | 6.0 | 42 | 2.9 | 32 | 1.7 | 100 | 13.8 | 13 | 32 | 1.7 | 39 |
| 1104A [ ]  | 92 | 13.3 | 62 | 6.7 | 47 | 4.1 | 113 | 18.6 | 16 | 47 | 4.1 | 39 |
| 1504A [ ]  | N/A | N/A | 84 | 13.3 | 65 | 8.0 | 113 | 22.2 | 22 | 65 | 8.0 | 39 |
| 2004A [ ]  | N/A | N/A | 112 | 26.9 | 86 | 16.0 | 113 | 27.2 | 30 | 86 | 16.0 | 39 |

\* Closed systems only

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