

Date: _____ Engineer: _____
Job: _____ Contractor: _____
Model #: _____ End User: _____
Representative: _____ Prepared By: _____



VALIANT-FT

Condensing Boiler - Hydronic Heating

The Valiant-FT is a condensing residential/commercial boiler for hydronic heating system at working pressures up to 80PSI.

- ANSI Z21.13/CSA 4.9 Certified
- ASME Certified; "H" Stamp / National Board Listed
- Canadian Registration Number (CRN)
- CSD-1 Compliant
- California Code Compliant
- South Coast Air Quality Management District Qualified



Standard Features

- ASME "H" stamped stainless steel heat exchangers
- Fully welded construction with stainless steel pressure vessel, combustion chamber, tubes, and tubesheets
- Modulating boiler with up to 10:1 turn-down
- 95% DOE AFUE efficiency (VA0080-VA0299)
- 97% thermal & combustion efficiency (VA0399)
- Natural gas or propane gas operation (Field Convertible)
- Standard wall-hung configuration
- Optional kit for floor-mount configuration
- Top and bottom water and gas connections
- 30PSI operating pressure (VA0080 to VA0155)
- 80PSI operating pressure (VA0199 to VA0399)
- Category IV venting (up to 100' of flue and 100' of air intake)
- Universal vent adapter with built-in combustion analyzer port
- Condensate trap
- Stainless steel knitted metal fiber premix burner
- Venturi for precise air/gas ratio control
- Low gas pressure operation
- Low air pressure switch
- Blocked flue switch
- Low NOx operation
- Direct spark ignition
- Flame sensor
- Direct vent - sealed combustion
- Built-in high limit with soft manual reset through touchscreen
- Return water temperatures as low as 40°F
- Inlet, outlet and stack sensors
- ASME relief valve
- Inherent O2 trim via air density response
- Flame viewport for visual inspection of ignition and boiler combustion during firing
- On/Off switch
- Condensate trap
- Zero clearances to combustible materials
- Factory test-fired and certified
- 10-year warranty on heat exchanger (see warranty details)
- 5-year warranty on burner (see warranty details)
- 1-year warranty on parts (see warranty details)

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Standard Control Features

- Externally mounted 7" color touchscreen for user control
- Internally mounted digital screen for start-up and service
- Graphic representation of firing rate
- System temperature sensor
- Outdoor reset sensor
- Flue temperature sensor
- Enable/disable relay
- High limit with soft manual reset
- LWCO with soft manual reset
- Alarm contacts
- Pump enable contacts
- Air inlet damper (or damper) contacts
- Modbus standard, protocol translator available for other communication needs
- BAS Gateway: BACnet MSTP/IP, LonWorks or Metasys N2
- Freeze protection
- PWM (pulse width modulation) signal output for modulating fan speeds
- Service reminder
- 0-10VDC analog setpoint demand
- 0-10VDC modulation rate control
- Built-in cascade management for up to 64 boilers
- Lead-lag staging and auto-lead rotation
- Flame signal monitoring
- ΔT heat exchanger protection algorithm
- Indirect DHW
- Adjustable target temperature; inter-stage delay; anti-short cycle
- Display run hours
- Flame failure signal
- Molex connectors for ease of service
- Error message display in text
- Error history with cycle stamp
- Manual override of boiler modulation rate

Optional Features

- Condensate neutralization kit
- BMS gateway: BACnet MSTP/IP, LonWorks or Metasys N2
- Optional low gas pressure switch with manual reset
- Optional pressure relief valves: 30PSI, 45PSI, 50PSI, 60PSI, 75PSI, 80PSI
- Floor mount kit
- Outdoor installation kit (Consult Factory)

Venting Options

- Category IV venting
- Direct venting
- Room air
- Horizontal & vertical venting
- Outdoor venting (Consult Factory)

Venting Material

- Stainless steel or AL29-4C for all system applications
- Polypropylene for all system applications
- CPVC for select low temperature systems – consult factory
- PVC for select low temperature systems – consult factory

| Minimum Power Requirements | | | |
|----------------------------|----------------------------|----------------|-------------------------|
| Model | Voltage Requirement | Full Load Amps | Maximum Over Protection |
| VA0080 | 115VAC, 60Hz, Single Phase | 4 | 15 |
| VA0110 | 115VAC, 60Hz, Single Phase | 4 | 15 |
| VA0155 | 115VAC, 60Hz, Single Phase | 4 | 15 |
| VA0199 | 115VAC, 60Hz, Single Phase | 4 | 15 |
| VA0250 | 115VAC, 60Hz, Single Phase | 4 | 15 |
| VA0299 | 115VAC, 60Hz, Single Phase | 4 | 15 |
| VA0399 | 115VAC, 60Hz, Single Phase | 4 | 15 |

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| Heat Exchanger Head Loss and Flow | | | | | | | | | | | | | | | |
|-----------------------------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|------|
| Model | VA0080 | | VA0110 | | VA0155 | | VA0199 | | VA0250 | | VA0299 | | VA0399 | | |
| Unit | GPM | ft-hd | GPM | ft-hd | GPM | ft-hd | GPM | ft-hd | GPM | ft-hd | GPM | ft-hd | GPM | ft-hd | |
| Temperature Rise (°F) | 20 | 7.59 | 1.66 | 10.44 | 2.56 | 14.71 | 4.99 | 18.89 | 2.69 | 23.73 | 4.32 | 28.38 | 3.23 | 38.67 | 4.91 |
| | 25 | 6.08 | 1.27 | 8.35 | 1.69 | 11.77 | 3.27 | 15.11 | 1.85 | 18.98 | 2.98 | 22.71 | 2.39 | 30.94 | 3.29 |
| | 30 | 5.06 | 0.98 | 6.96 | 1.44 | 9.81 | 2.45 | 12.59 | 1.45 | 15.82 | 2.30 | 18.92 | 1.62 | 25.78 | 2.45 |
| | 35 | 4.34 | 0.86 | 5.97 | 1.19 | 8.41 | 1.99 | 10.79 | 1.15 | 13.56 | 1.86 | 16.22 | 1.32 | 22.10 | 1.95 |
| | 40 | 3.80 | 0.64 | 5.22 | 0.94 | 7.36 | 1.70 | 9.44 | 1.00 | 11.87 | 1.55 | 14.19 | 1.13 | 19.34 | 1.60 |

| Model | Maximum Flow | Minimum Flow | |
|--------|--------------|--------------|----------|
| | | High Fire | Low Fire |
| | GPM | GPM | GPM |
| VA0080 | 17.0 | 3.0 | 1.0 |
| VA0110 | 17.0 | 4.2 | 1.0 |
| VA0155 | 17.0 | 5.9 | 1.0 |
| VA0199 | 27.0 | 7.6 | 1.5 |
| VA0250 | 27.0 | 9.5 | 1.5 |
| VA0299 | 27.0 | 11.4 | 1.5 |
| VA0399 | 38.0 | 15.5 | 4.5 |

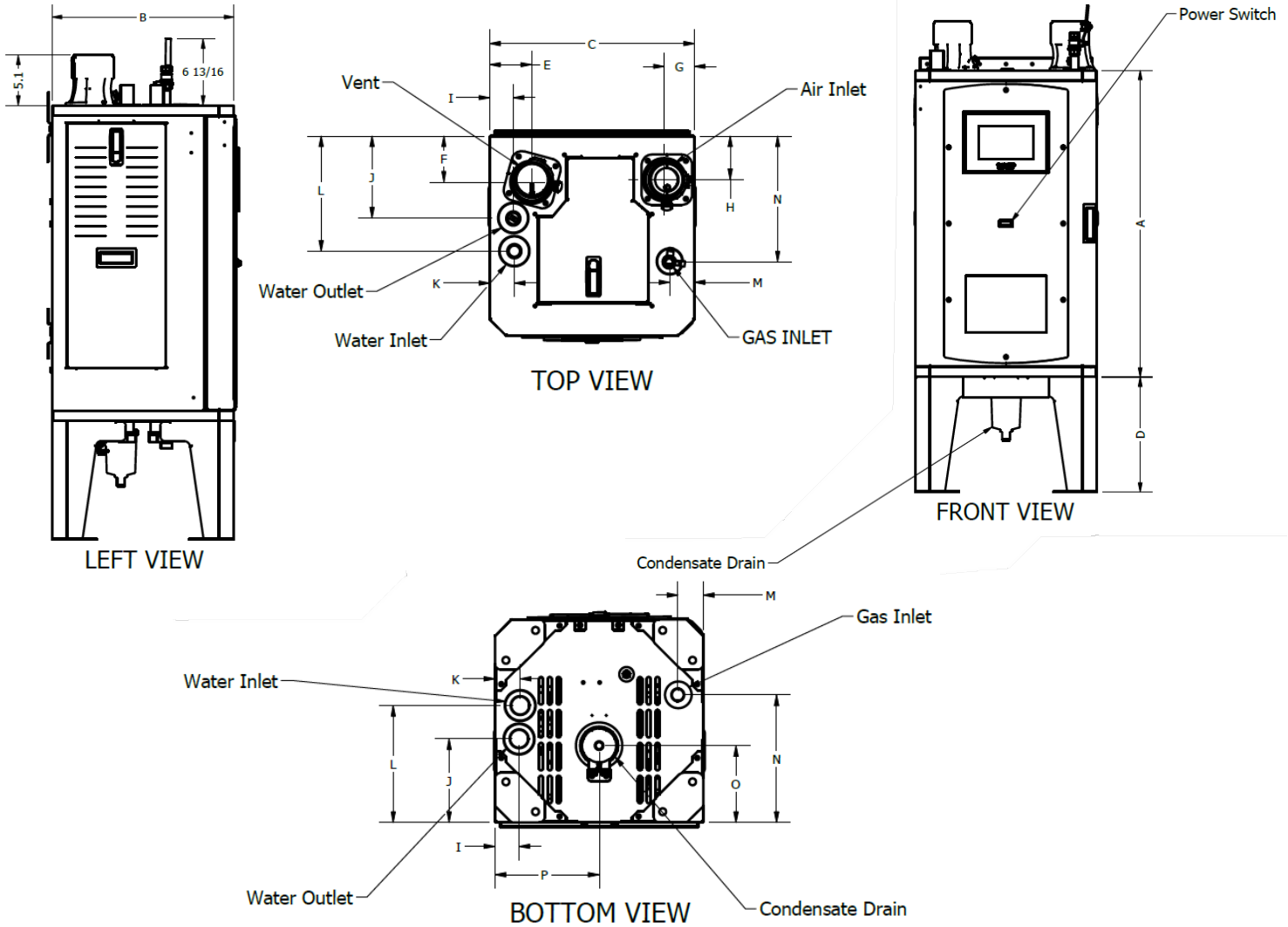
| Shipping Weights | |
|------------------|-----------------|
| Model | Weight lb. (kg) |
| VA0080 | 130 (60) |
| VA0110 | 130 (60) |
| VA0155 | 170 (77) |
| VA0199 | 200 (90) |
| VA0250 | 200 (90) |
| VA0299 | 240 (109) |
| VA0399 | 250 (113) |

| Input / Output / High Altitude | | | | | | | | |
|--------------------------------|--------------------------|---------------------------|--------------------------|------------------|---------------------------------------|--|------------------------------------|------------------|
| Model | Max Input Btu/hr (kw) | Max Output Btu/hr (kw) | Min Input Btu/hr (kw) | | Max Input > 2000 ft Btu/hr (kw) | Max Output > 2000 ft Btu/hr (kw) | Min Input > 2000 ft Btu/hr (kw) | |
| | | | NG | LP | | | NG | LP |
| VA0080 | 80,000 (23.4) | 76,000 (22.2) | 11,000 (3.2) | 16,000 (4.6) | 72,000 (21.1) | 68,400 (20.0) | 9,900 (2.9) | 14,400 (4.2) |
| VA0110 | 110,000 (32.2) | 104,500 (30.6) | 11,000 (3.2) | 22,000 (6.4) | 99,000 (29.0) | 94,050 (27.5) | 9,900 (2.9) | 19,800 (5.8) |
| VA0155 | 155,000 (45.4) | 147,250 (43.1) | 15,500 (4.5) | 31,000 (9.0) | 139,500 (40.8) | 132,525 (38.8) | 13,950 (4.0) | 27,900 (8.1) |
| VA0199 | 199,000 (58.3) | 189,050 (55.4) | 19,900 (5.8) | 39,800 (11.6) | 179,100 (52.4) | 170,145 (49.8) | 17,910 (5.2) | 35,820 (10.4) |
| VA0250 | 250,000 (73.2) | 237,500 (69.6) | 25,000 (7.3) | 50,000 (14.6) | 225,000 (65.9) | 213,750 (62.6) | 22,500 (6.5) | 45,000 (13.1) |
| VA0299 | 299,000 (87.6) | 284,050 (83.2) | 29,900 (8.7) | 59,800 (17.5) | 269,100 (78.8) | 255,645 (74.9) | 26,910 (7.8) | 53,820 (15.7) |
| VA0399 | 399,000 (116.9) | 387,030 (113.0) | 39,900 (11.6) | 79,800 (23.3) | 359,100 (105.2) | 348,327 (102.0) | 35,910 (10.5) | 71,820 (21.0) |

| Minimum Service Clearance | | | | | |
|---------------------------|------------|--------|-------|------|------------|
| Model | Top | *Right | *Left | Back | Front |
| VA0080 | 12" (30cm) | None | None | None | 24" (60cm) |
| VA0110 | 12" (30cm) | None | None | None | 24" (60cm) |
| VA0155 | 12" (30cm) | None | None | None | 24" (60cm) |
| VA0199 | 12" (30cm) | None | None | None | 24" (60cm) |
| VA0250 | 12" (30cm) | None | None | None | 24" (60cm) |
| VA0299 | 12" (30cm) | None | None | None | 24" (60cm) |
| VA0399 | 12" (30cm) | None | None | None | 24" (60cm) |

*: Left and right panels can be easily removed to give extra access to the unit from the sides. This access is not necessary for servicing but if you require access to the sides, leave enough clearance on each side.

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| Dimensional Data | | | | | | | |
|---------------------|----------------|----------------|---------------|---------------|---------------|---------------|---------------|
| Model | VA0080 | VA0110 | VA0155 | VA0199 | VA0250 | VA0299 | VA0399 |
| A in. (mm) | 32 (813) | 32 (813) | 32 (813) | 33 1/2 (851) | 33 1/2 (851) | 35 1/2 (902) | 35 1/2 (902) |
| B in. (mm) | 18 1/2 (470) | 18 1/2 (470) | 18 1/2 (470) | 18 1/2 (470) | 18 1/2 (470) | 21 (533) | 21 (533) |
| C in. (mm) | 19 (483) | 19 (483) | 19 (483) | 21 (533) | 21 (533) | 23 (584) | 23 (584) |
| D in. (mm) | 12 (305) | 12 (305) | 12 (305) | 12 (305) | 12 (305) | 12 (305) | 12 (305) |
| E in. (mm) | 3 7/8 (98) | 3 7/8 (98) | 3 15/16 (100) | 4 1/4 (108) | 4 1/4 (108) | 4 15/16 (125) | 4 15/16 (125) |
| F in. (mm) | 4 1/4 (108) | 4 1/4 (108) | 2 1/2 (63) | 2 7/8 (73) | 2 7/8 (73) | 4 7/16 (113) | 4 7/16 (113) |
| G in. (mm) | 2 13/16 (71) | 2 13/16 (71) | 2 11/16 (68) | 2 7/16 (62) | 2 7/16 (62) | 3 5/16 (84) | 3 5/16 (84) |
| H in. (mm) | 4 1/16 (103) | 4 1/16 (103) | 4 1/16 (103) | 3 1/16 (78) | 3 1/16 (78) | 2 3/4 (70) | 2 3/4 (70) |
| I in. (mm) | 2 3/16 (56) | 2 3/16 (56) | 1 15/16 (49) | 2 3/8 (60) | 2 3/8 (60) | 2 15/16 (75) | 2 15/16 (75) |
| J in. (mm) | 7 5/8 (194) | 7 5/8 (194) | 7 5/8 (194) | 7 1/2 (190) | 7 1/2 (190) | 9 1/6 (233) | 9 1/6 (233) |
| K in. (mm) | 2 5/16 (59) | 2 5/16 (59) | 2 3/16 (56) | 2 3/8 (60) | 2 3/8 (60) | 2 15/16 (59) | 2 15/16 (59) |
| L in. (mm) | 10 11/16 (271) | 10 11/16 (271) | 10 3/4 (273) | 11 3/16 (284) | 11 3/16 (284) | 13 5/16 (338) | 13 5/16 (338) |
| M in. (mm) | 2 5/16 (59) | 2 5/16 (59) | 2 3/16 (56) | 2 (51) | 2 (51) | 3 9/16 (90) | 3 9/16 (90) |
| N in. (mm) | 11 11/16 (297) | 11 11/16 (297) | 11 9/16 (294) | 12 1/8 (308) | 12 1/8 (308) | 14 5/8 (371) | 14 5/8 (371) |
| O in. (mm) | 7 (178) | 7 (178) | 7 (178) | 7 9/16 (192) | 7 9/16 (192) | 9 1/16 (230) | 9 1/16 (230) |
| P in. (mm) | 9 1/2 (241) | 9 1/2 (241) | 9 1/2 (241) | 11 1/2 (292) | 11 1/2 (292) | 13 1/2 (343) | 13 1/2 (343) |
| Water Conn. in. NPT | 1 | 1 | 1 | 1 1/4 | 1 1/4 | 1 1/2 | 1 1/2 |
| Gas Conn. in. NPT | 1/2 | 1/2 | 1/2 | 1/2 | 3/4 | 3/4 | 3/4 |