Engineering Submittal - VX Series Condensing Boilers

Job Name _____

Address _____

_____

Designer / Engineer _____

Wholesaler _____

Contractor _____

Model / Quantity □ VX 110 ____ □ VX 150 ____ □ VX 199 ____

Date _____

Fuel type □ Natural gas □ Propane (from factory) □ Propane (fuel conversion)

Features

- ASME approved pressure vessel constructed of high quality 439 Stainless Steel
- Heat exchanger performance maximized through a multi-tube, counter-flow fire-tube design
- Vertical combustion chamber and a down firing burner allow free gravity drainage of condensate from the heat exchanger
- 50 psi maximum pressure
- Metal fiber knit burner
- Direct spark ignition
- Brushless DC fan
- Zero governing gas valve
- Boiler shipped with 30 psi relief valve

Certifications

- Constructed in accord with ANSI Z21.13-2017, CSA 4.9-2017 and the ASME Boiler and Pressure Vessel Code, Section IV and bear the H stamp as per ASME code.
- SIM+ certified to CSA STD C22.2 #60730-2-5 and conforming to UL STD 60730-2-5 & ANSI STD Z21.20

SIM+ (Safety Ignition Module)

- SIM+ certified to CSA STD C22.2 #60730-2-5 and conforming to UL STD 60730-2-5 & ANSI STD Z21.20
- Provides ignition, flame proving and safety monitoring, including:
  - Electronic, probe-type Manual Reset Low Water Cut-Off
  - High Vent Temperature safety limit
  - Internal Manual Reset Electronic High limit with verification test
  - Fan Operation control
  - DC gas valve control

Boiler Control

- Clear LCD display with new, user-friendly “app-like” interface
- Outdoor Reset function modulates boiler water temperature according to outside air temperature
- Internal multiple boiler staging and rotation control for management of up to 4 boilers
- Software upgradable by internet or by USB port
- Accepts an external 0-10 VDC or 4-20 mA input signal
- Multiple load control with relays for five pumps
- Prioritizes up to 4 temperature circuits electrically for maximum fuel efficiencies
- Zoning feature for control of up to four load pumps for identical temperatures
- Load combining software for simultaneous running of compatible loads
- Load configuration save and export to USB
- Summer shutdown programmable by load
- Automatic altitude compensation to 12,000 ft
- Electronic water pressure sensing, for digital display of system pressure
- Two Interlock connections allowing external devices to effect a boiler safety shut-down
- Alarm dry contact for connection to external device
- Error log with detailed conditions capture
- User-defined unoccupied mode and DHW tank temperature (when using sensor)
- Variable speed output signal
- Easily set up load parameters
- Thermostat ground terminal for power-stealing thermostat wiring
- Electronic ΔT fence of 40°F (22.2°C) to prevent thermal stress to boiler

Product Specifications

Specification	VX 110	VX 150	VX 199
CSA Input (Natural Gas or Propane)	16.9 - 110 MBH	23 - 150 MBH	30.6 - 199 MBH
CSA Input (Natural Gas or Propane)	5 - 32.2 kW	6.7 - 44 kW	8.8 - 58.3 kW
CSA Output	16.2 - 101.5 MBH	22 - 138.5 MBH	29.2 - 183.7 MBH
CSA Output	4.74 - 29.8 kW	6.5 - 40.6 kW	8.6 - 53.8 kW
AFUE	95%	95%	95%
Min. gas supply pressure (NG or LP)	4 inch w.c.	4 inch w.c.	4 inch w.c.
Max. gas supply pressure (NG or LP)	14 inch w.c.	14 inch w.c.	14 inch w.c.
Minimum Ambient temperature	32°F / 0°C	32°F / 0°C	32°F / 0°C
Maximum Ambient temperature	122°F / 50°C	122°F / 50°C	122°F / 50°C
Max. relative humidity (non-condensing)	90%	90%	90%
Minimum water temp.	34°F / 1°C	34°F / 1°C	34°F / 1°C
Max. water temp. (electronic hi-limit)	190°F / 88°C	190°F / 88°C	190°F / 88°C
Max. ΔT - supply/return (electronic fence)	40°F / 22.2°C	40°F / 22.2°C	40°F / 22.2°C
Max. water temperature lockout limit	201°F / 94°C	201°F / 94°C	201°F / 94°C
Power use (120Vac/60Hz) @ full fire (without pumps)	90 Watts	79 Watts	90 Watts
Weight (empty)	67 lbs / 30.4 Kg	78 lbs / 35.4 Kg	88 lbs / 39.9 Kg
Pressure vessel water content	1.88 USG / 7.12 L	2.79 USG / 10.56 L	3.51USG / 13.29 L
Maximum boiler flow rate	14 USgpm	19 USgpm	25 USgpm
Minimum boiler flow rate	2 USgpm	3 USgpm	4 USgpm
Maximum operating water pressure	50 psig	50 psig	50 psig
Minimum boiler water pressure	8 psig	8 psig	8 psig
Relief valve pressure (supplied)	30 psig	30 psig	30 psig
Approved installation altitude	0 - 12,000' ASL	0 - 12,000' ASL	0 - 12,000' ASL
Max. equivalent 2" (vent & intake each)[1]	100'	50'	N/A
Max. equivalent 3" (vent & intake each)[1]	240'	170'	100'
CRN	9585.7CL	9415.7CL	9298.7CL

Table 1 *VX-series Specifications*

[1]Air intake either direct vent or indoor supply

Ignition Timings

Ignition Stages Timings	
Fan Pre-purge	15 seconds
Trial for Ignition	4 seconds
Flame Failure Response	<0.8 second

Table 2 *Ignition Timings*

Warranties

- For residential applications, the boiler carries a five (5) year limited warranty on parts.
- For residential applications, the boiler heat exchanger carries a 15 year warranty with registration, according to the following terms: 0-10 years (full 100% warranty), 11-15 years (25% warranty), or a five (5) year limited (100% warranty) with no registration.
- For commercial applications, the boiler has a five (5) year limited warranty on the heat exchanger, and a two (2) year limited warranty on parts.

IBC Portal

- Registering through an Ethernet connection gives remote access to controller functions
- Technician's View optimized for a browser
- Contractor or end user can receive email alerts for error states

Connection Specifications

	Description	VX 110	VX 150	VX 199
A	Flue Outlet	3" Schedule 40 or 3" PP (80 mm)		
B	Combustion Air Inlet	3" Schedule 40 or 3" PP (80 mm)		
C	Return Water Inlet	1" NPT-M		
D	Supply Water Outlet	1" NPT-M		
E	Condensate Outlet	¾" Hose		
F	Gas Inlet	½" NPT-F		

VX 110 Dimensions

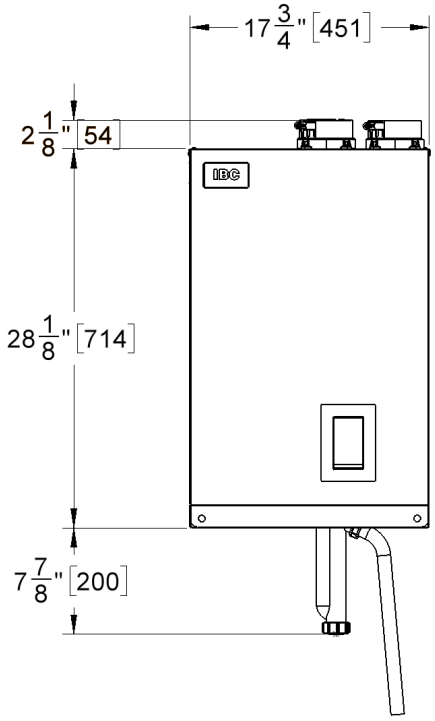

Figure 1 *Frontal view - VX 110*

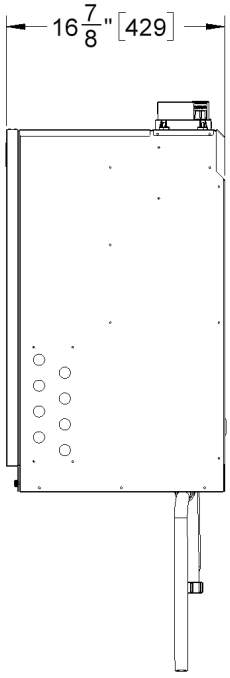

Figure 2 *Side view - VX 110*

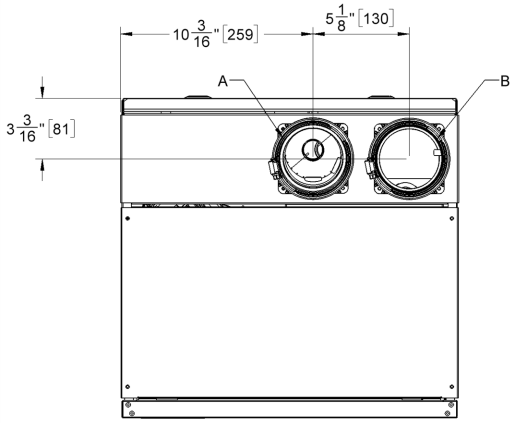

Figure 3 *Top view - VX 110*

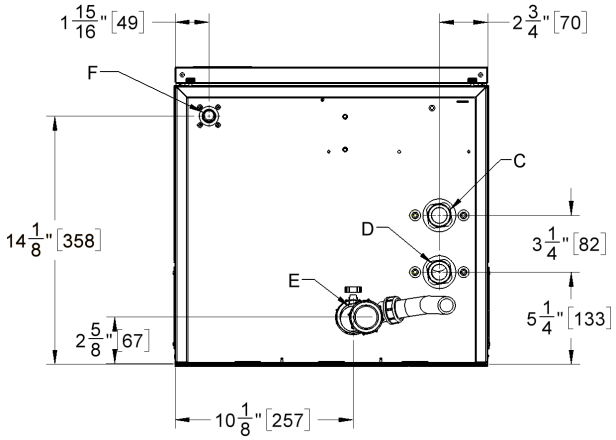

Figure 4 *Bottom view - VX 110*

VX 150 Dimensions

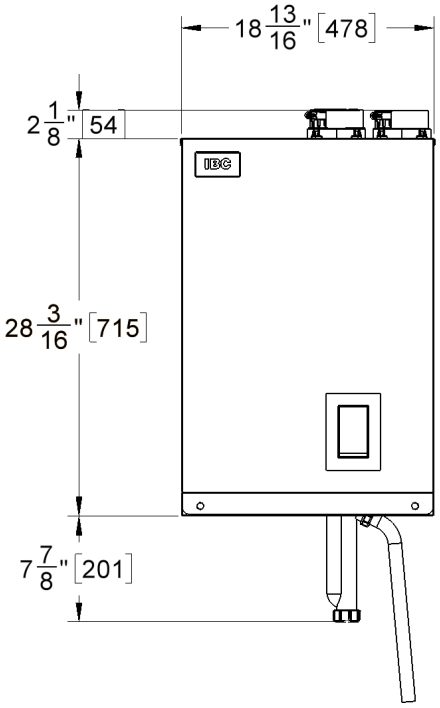

Figure 5 *Frontal view - VX 150*

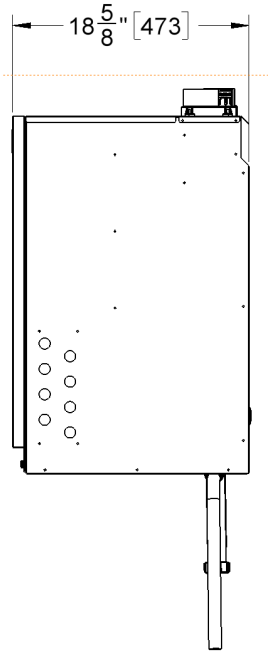

Figure 6 *Side view - VX 150*

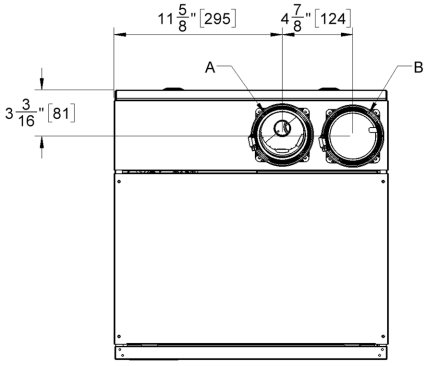

Figure 7 *Top view - VX 150*

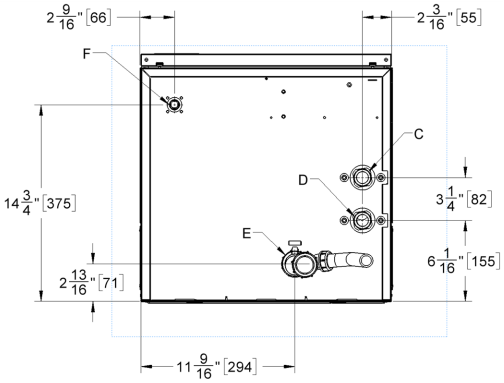

Figure 8 *Bottom view - VX 150*

VX 199 Dimensions

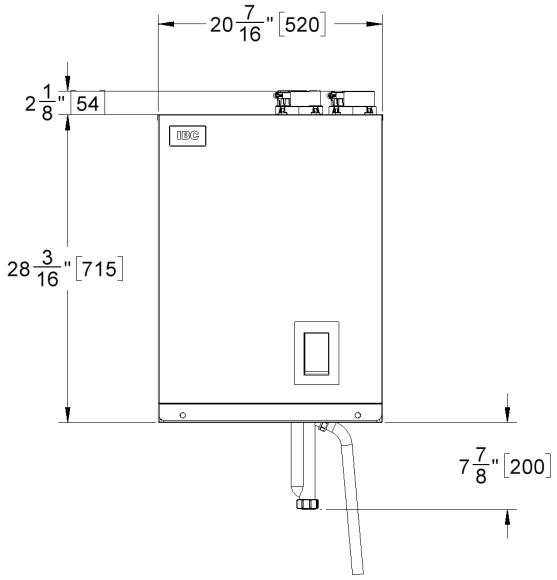

Figure 9 *Frontal view - VX 199*

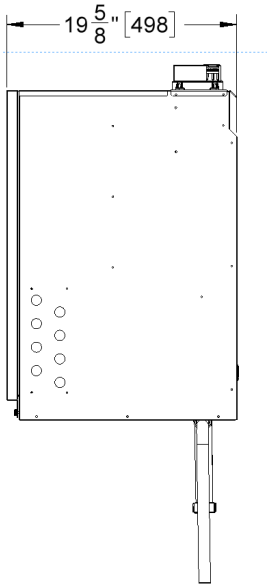

Figure 10 *Side view - VX 199*

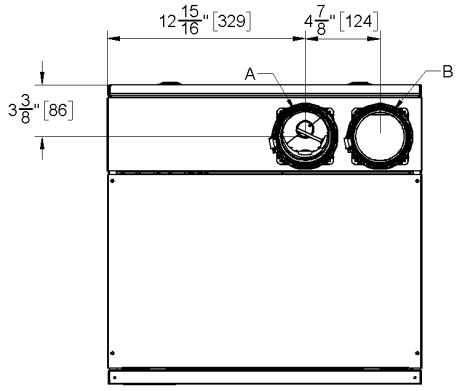

Figure 11 *Top view - VX 199*

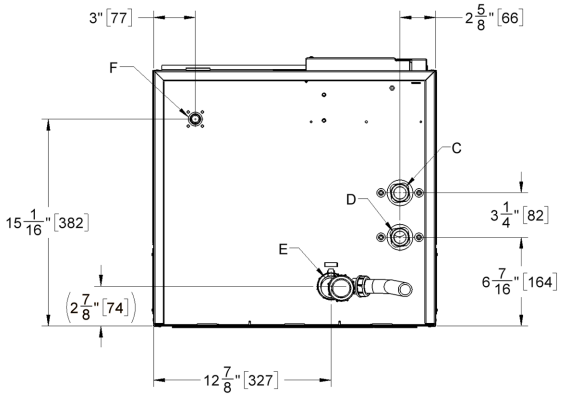

Figure 12 *Bottom view - VX 199*

Clearance Distances from Boiler Mounting Sites

VX 110, VX 150, VX 199		
Surface	**Minimum distance from combustible surfaces**	**Recommended clearance for installation and service**
Front	2"	24"
Rear flue connection	0"	0"
Left side	0"	4" (allow access to water connections)
Right side	1"	4" (allow access to water connections)
Top	2"	6" (for vent connections)
Bottom	0" (clearance for pipes)	12" (for condensate trap and piping)

Boiler Head Loss

Boiler Head Loss - VX 110							
Flow rate (gpm)	2	4	6	8	10	12	14
Head @ flow (ft)	0.18	0.51	0.99	1.59	2.49	3.55	4.75
Boiler Head Loss - VX 150							
Flow rate (gpm)	4	6	8	10	12	14	16
Head @ flow (ft)	0.42	0.9	1.52	2.26	3.25	4.31	5.61
Boiler Head Loss - VX 199							
Flow rate (gpm)	4	7	10	13	16	19	22
Head @ flow (ft)	0.44	0.9	1.73	2.91	4.36	6.23	8.4

Optional Accessories

Propane Conversion Kits:

- □ *P-1500* VX 110 qty: _____
- □ *P-1502* VX 150 qty: _____
- □ *P-1504* VX 199 qty: _____

Natural Gas Conversion Kits:

- □ *P-1501* VX 110 qty: _____
- □ *P-1503* VX 150 qty: _____
- □ *P-1505* VX 199 qty: _____

□ *P-216* Secondary Loop Sensor with Stainless Steel Well qty: _____

□ *P-1268* Communication cable (boiler network wiring, 1 required per link) qty: _____

□ *P-267C* Boiler stand qty: _____