

**Elite XL Commercial VWH (Volume Water Heater) Specification Sheet**

***Model: ELX-400FVWHN / 500 / 650 / 800 / 1000 / 1500 / 2000***

The VWH shall be an HTP, Inc. model , having a modulation input range of Btu/Hr, and shall operate on either Natural Gas (NG) or Liquid Propane (LP) (1500 and 2000 Models operate on Natural Gas (NG) ONLY). The VWH shall be capable of full modulation with a turndown ratio of up to 10:1.

The VWH heat exchanger shall be certified and stamped for 160PSI and shall be National Board Listed. There shall be no banding material, bolts, gaskets, or “O” rings in the header configuration. The heat exchanger is removable from the cabinet for replacement without removing the entire VWH assembly from the site. The stainless-steel combustion chamber shall be designed to direct condensate to the rear of the chamber to ensure that condensation does not collect in the VWH. The complete heat exchanger assembly shall have a five (5) year limited warranty.

The VWH shall be certified and listed by ETL under the latest edition of the harmonized ANSI Z21.10.3 test standard for the US and Canada. The VWH shall comply with the energy efficiency requirements of the latest edition of the ASHRAE 90.1 Standard and the minimum efficiency requirements of the latest edition of the ASHRAE 103 Standard. The VWH shall operate at up to **98%** thermal efficiency. The VWH shall be certified for indoor installation.

The VWH shall be constructed with a heavy gauge steel jacket assembly, primed and pre-painted on both sides. The VWH jacket shall afford easy access to all components through easily removable access doors to facilitate service of all components. The combustion chamber shall be sealed and completely enclosed, independent of the outer jacket assembly, so that integrity of the outer jacket does not affect a proper seal. A burner/flame observation port shall be provided. The burner shall be a premix design and constructed of **high-grade stainless steel** with modulating firing rates. The boiler shall be supplied with a gas valve designed with a negative pressure regulation pneumatic gas valve and be equipped with a variable speed blower system to precisely control the fuel/air mixture to provide modulating boiler firing rates for maximum efficiency. The boiler shall operate in a safe condition at a derated output with gas supply pressures as low as 3 ½ inches of water column. The VWH shall operate in a safe condition at a derated output with gas supply pressures as low as 3 ½ inches of water column.

The control customer connection board shall be equipped with two screw type terminal strips. One of the terminal strips is designated for low voltage connection inputs including aquastat / DHW sensor, system sensor, and 0-10VDC. There are also two sets of Low Voltage Output 0-10 volt - A (Modulating Pump Output) and Low Voltage B (see the status of various parameters through 0-10VDC output for the Fan Speed - VWH Power - Cascade Power Alarm Status or Target temperature). The other terminal strip is designated for 120-volt connections for incoming power to a DHW pump with additional double pole relay rated at 5 amp for Alarm Output. The three pump outputs are 2-amp fuse protected in 400 – 1500 models, and 5-amp fuse protected in 2000 models. The control cabinet will also include two RJ-45 style jacks for cascade communication bus wiring using CAT 5 or CAT 3 cables. All of these connections and fuses are accessed from the outside of the VWH by removing an access door. The electrical supply for 400 – 1500 models shall be 120 volt / 60 hertz / single phase; on 2000 models the electrical supply shall be 208 volt / 60 hertz / 3 phase wye 10A leg. Two additional electrical connections are provided internal to the VWH cabinet for the connection of optional high and low gas pressure switches. The VWH comes equipped with an Integrated UL 353 certified CSD-1 compliant low water cut-off (LWCO) with manual reset.

The VWH shall utilize a 120 VAC control circuit and components. The control system shall have a seven-inch (7”) color touch screen display for VWH setup, status, and diagnostics. All components shall be easily accessed and serviceable from the front, right, and left sides of the jacket. The VWH shall be supplied with a high resolution flow switch to ensure minimum flow rates through the heat exchanger, temperature/pressure gauge, optional high limit temperature control with manual reset, ASME certified temperature and pressure relief valve, Dual Water Supply Temperature Sensor / High Limit (210oF), return water temperature sensor, blocked vent pressure switch, flue temperature sensor, and built-in freeze protection.

The VWH shall feature the HTP Link system as standard equipment. HTP Link offers a WiFi web connection to remotely monitor VWH operation. HTP Link will also allow the user to change system parameters to maximize VWH efficiency and alert the user of system issues to aid in troubleshooting. The VWH shall include an ON/OFF power switch and feature the 928 intelligent control system with color touch screen display with graphic indicators for DHW Pump, Pump Service Mode, Flame On, and Fault Indication. Pump operation and the combustion system can be manually operated to assist the installer in system commissioning. The control will have password protection for the installer to set limits for operation and meet set point temperature. The control will have freeze protection and a 0-10V DC input for building management system (i.e. programmable to control either VWH temperature or firing). The VWH control shall have an optional gateway device which will allow integration of Modbus or BACnet Protocols. The VWH control is equipped for cascading up to eight VWHs for greater system turndown and system backup.

The VWH shall be equipped with a condensate collection system equipped with an internal float switch which will protect the VWH from condensation backing up into the combustion chamber. The condensate collection system will be equipped with a 2” NPT threaded cleanout port to allow for easy cleaning and sediment removal.

The boiler will have a sealed combustion system, taking outside air for combustion and exhausting the flue gas with a 4" (400 / 500 models), 6” (650, 800 and 1000 models), or 8” (1500 and 2000 models) adapter. The Category IV vent system may be constructed with Stainless Steel, PVC, CPVC, or Polypropylene. The boiler's total combined equivalent vent length, including fitting allowances for both intake and exhaust, shall not exceed 125 feet (400 – 1000 Models), or 150 feet (1500 and 2000 Models).

The VWH can be vented in many methods, including:

**Horizontal Venting** shall be done as a balanced system only. Both intake and exhaust must terminate on the same side of the building.

**Vertical Venting** shall be done either as a balanced or unbalanced system. An unbalanced system shall ONLY be allowed when the exhaust is installed vertically and the intake horizontally. Both exhaust and intake must remain within the VWH’s combined equivalent length.

**Indoor Combustion Venting from a Confined or Unconfined Space** – Where the exhaust runs vertically and combustion air is drawn either from the mechanical room or from outdoors.

Adequate combustion air must be supplied when drawing air from the mechanical room. Avoid the room contaminants listed in the installation manual. (Refer to appliance installation manual venting section for additional venting requirements.)

**CAUTION: Foam core pipe is NOT an approved material for either intake or exhaust piping.**

The VWH shall be in compliance with the NOx emissions limit set forth in SCAQMD Rule 1146.2. The manufacturer shall verify proper operation of the burner, the combustion and control systems, as well as all related safety functions, to ensure the VWH will operate based on its designed parameters before shipping. Complete operating and installation instructions shall be furnished with every VWH as packaged by the manufacturer for shipping.

The appliance shall operate at high elevations without additional parts. However, adjustments to the combustion system may be required at any elevation. See installation manual for combustion system setting details.

Maximum unit dimensions shall be length inches, width inches and height inches. Maximum unit weight shall be pounds.

**NOTE:** **Due to variations in CSD-1 requirements from state to state, please consult with the factory for all controls required in your jurisdiction.**

**NOTE:** HTP reserves the right to make product changes or updates without notice and will not be held liable for typographical errors in literature.