

**Typical Specification for HTP
Mod Con Commercial Heating Boiler
Models: 300,000/500,000/850,000 Btu/Hr**

Guide Specification Sheet
Mod Con Commercial Boiler

The boiler shall be an HTP, Inc. model _____, having a modulation input range of _____ Btu/Hr, and shall operate on natural or LP gas. The boiler shall be capable of full modulation firing down to 20% of rated input with a turndown ratio of 5:1.

The boiler 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 boiler assembly from the site. The stainless steel combustion chamber shall be designed to have a trough located on the bottom front and back sections leading to the middle to ensure that condensation does not collect in the boiler. The complete heat exchanger assembly shall have a ten (10) year limited warranty.

The boiler shall be certified and listed by ETL under the latest edition of the harmonized ANSI Z21.13 test standard for the US and Canada. The boiler 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 boiler shall operate at a minimum of **94%** thermal efficiency. The boiler shall be certified for indoor installation.

The boiler shall be constructed with a heavy gauge steel jacket assembly, primed and pre-painted on both sides. The boiler 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 Inconel** with modulating firing rates. The boiler shall be supplied with a gas valve designed with negative pressure regulation 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 4 inches of water column.

The control cabinet shall be equipped with two screw type terminal strips. One of the terminal strips is designated for low voltage connections, including thermostat, DHW sensor/thermostat or system sensor, outdoor sensor, and 0-10VDC input signals. The other terminal strip is designated for 120 volt connections for incoming power, central heat (CH) and DHW (indirect water heater) pump operation and alarm/system pump operation. The pump outputs are 4 amp fuse protected. 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 boiler by removing an access door. The electrical supply shall be 120/60/1. Two additional electrical connections are provided internal to the boiler cabinet for the connection of optional high and low gas pressure switches and UL 353 approved low water cutoff switch.

The boiler shall utilize a 24 VAC control circuit and components. The control system shall have an LED display for boiler setup, boiler status, and boiler diagnostics. All components shall be easily accessed and serviceable from the front, right, and left sides of the jacket. The boiler shall be supplied with a temperature/pressure gauge (field installed), high limit temperature control with manual reset, ASME certified pressure relief valve, outlet water temperature sensor, return water temperature sensor, blocked vent pressure switch, flue temperature sensor, and built-in freeze protection. The boiler shall also be equipped with an outdoor air reset function. The manufacturer shall verify proper operation of the burner, controls, safety devices, and the heat exchanger by connecting to water and venting for a factory fire test prior to shipping.

The boiler shall include an ON/OFF power switch and feature the 926 intelligent control system with digital LED display and LED status indicators for System Pump, DHW Pump, Boiler Pump, Flame On, and Fault Indication. Pump operation and 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 and configure outdoor reset. The control will have freeze protection (which can be optionally disabled for snowmelt applications), outdoor reset, indirect priority with operation time limits, and a 0-10VDC input for building management system (i.e. programmable to control either boiler temperature or firing). The boiler control is equipped for boiler sequencing for up to eight boilers for greater system turndown and system backup.

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

The boiler shall be installed and vented with (select one):

(a) Direct Vent System with Horizontal Sidewall Termination – Where both the air intake and exhaust vents terminate in a two pipe configuration or through a factory approved sidewall termination kit. The flue shall be Category IV approved Stainless Steel, PVC, or CPVC sealed vent material terminating at the sidewall with the manufacturer's specified vent termination. A separate pipe shall supply combustion air directly to the boiler from the outdoors. The air inlet pipe may be PVC or CPVC sealed pipe. The boiler's total combined air intake length shall not exceed 200 equivalent feet. The boiler's total combined exhaust venting length shall not exceed 200 equivalent feet. The air inlet must terminate on the same sidewall as the exhaust. **Foam core pipe is not approved material for exhaust venting.**

(b) Direct Vent System with Vertical Rooftop Termination – Where both the air intake and exhaust vents terminate in a two pipe configuration or through a factory approved rooftop termination kit. The flue shall be Category IV approved Stainless Steel, PVC, or CPVC sealed vent material terminating at the rooftop with the manufacturer's specified vent termination. A separate pipe shall supply combustion air directly to the boiler from the outdoors. The air inlet pipe may be PVC or CPVC sealed pipe. The boiler's total combined air intake length shall not exceed 100 equivalent feet. The boiler's total combined exhaust venting length shall not exceed 100 equivalent feet. The air inlet must terminate on the rooftop with the exhaust. **Foam core pipe is not approved material for exhaust venting.**

The boiler shall operate at altitudes up to 4500 feet above sea level without additional parts or adjustment.

The boiler 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 boiler will operate based on its designed parameters before shipping. Complete operating and installation instructions shall be furnished with every heater as packaged by the manufacturer for shipping.

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.