

**85% Thermal Efficiency**

**Continuous Modulation or Stage-Firing with 3-to-1 Turndown**

**Proportionate Gas/Air Control for Optimum Combustion**

**100% Non-ferrous Braze-welded Heat Exchanger**

**Space-saving, Concentric, Multi-pass Vertical Design**

**Electronic Operator with ModBus RTU Serial Connection**



399,000 Btuh  
540,000 Btuh  
750,000 Btuh  
1,000,000 Btuh  
1,200,000 Btuh  
1,600,000 Btuh  
2,000,000 Btuh



# PRIMERA®

## BOILERS AND WATER HEATERS



Introducing PRIMERA, an exciting and cost effective change in hydronics and domestic water heating to meet the demands of the owner, engineer, contractor, and maintenance manager.

PRIMERA combines reliable, high-efficiency performance with ease of installation; including a small footprint, venting versatility and 1" available clearances. PRIMERA is also maintenance friendly with single-panel access to all controls and gas train components.

## FEATURES

Concentric finned-copper heat exchanger has integral angular baffles to capture and transfer heat for long and efficient service life. This eliminates the need for "V" baffles; components that can shift out of place on other boilers and cause a reduction in efficiency and potential combustion problems.

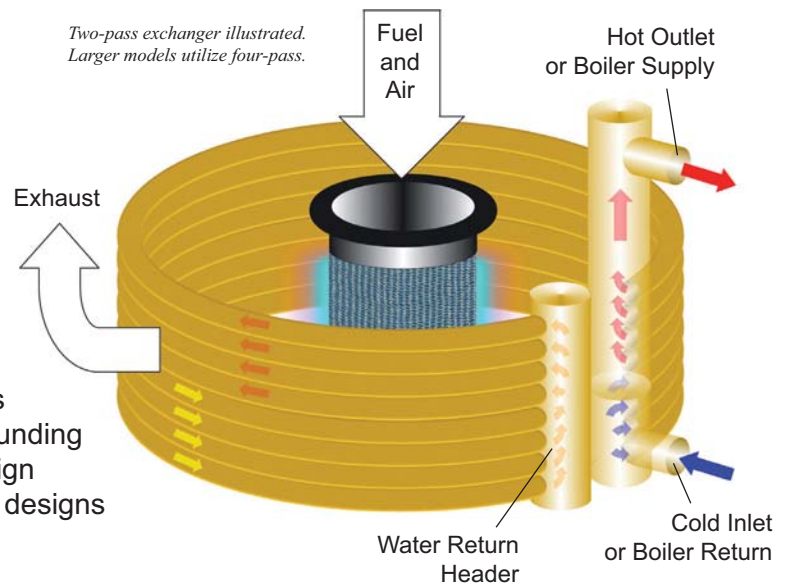
Furnace-braze-welded header and tube joints result in greater tensile strength than the surrounding base metal. The all copper or cupro-nickel design eliminates rolled or gasketed joints common in designs using dissimilar metals.

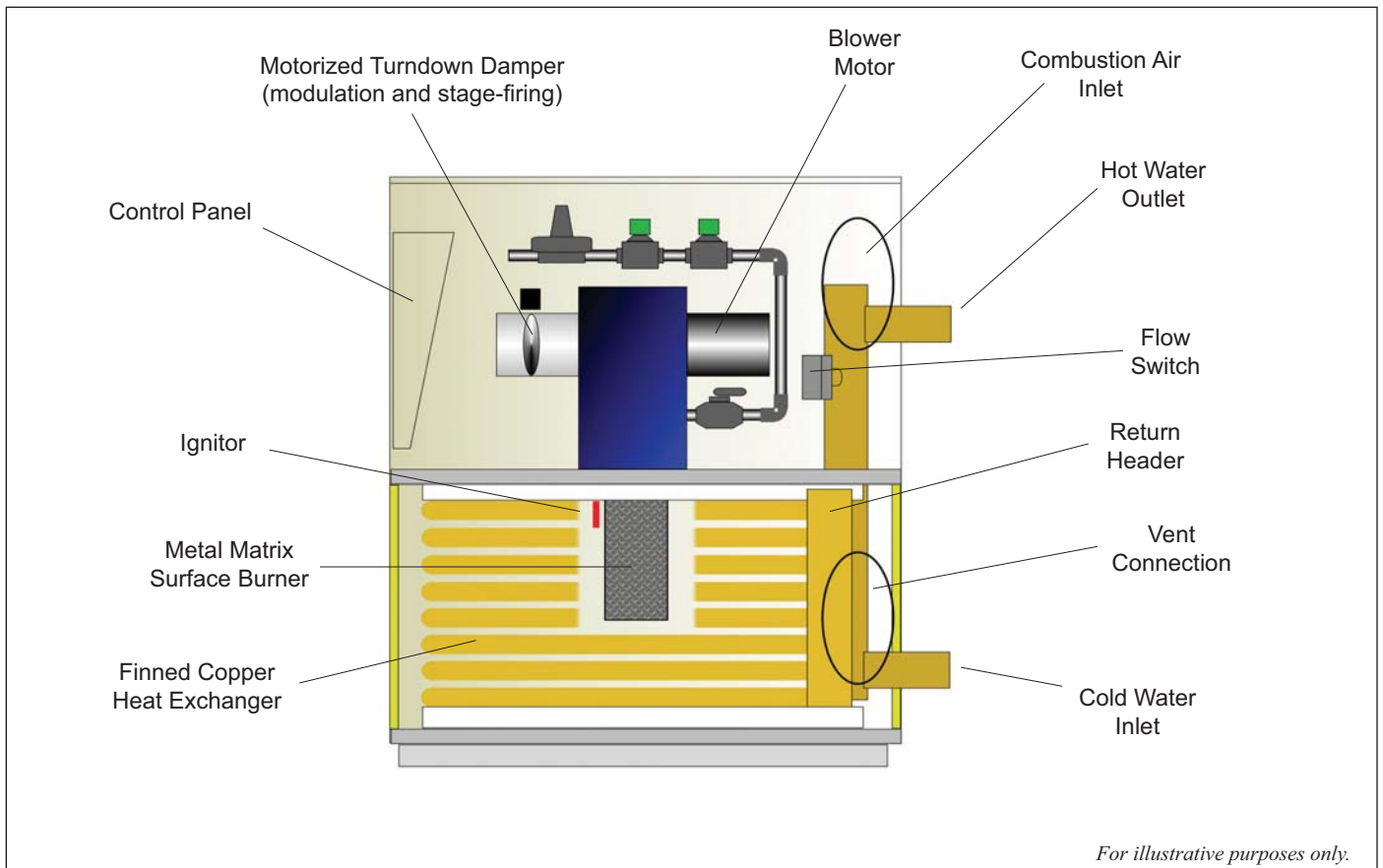
Multi-pass heat exchanger design moderates pressure drop and provides greater consistency and control of water velocity, which is essential to maximizing the boiler's service life.

Vertical heat exchanger orientation offers a small footprint. PRIMERA boilers fit through 32" doorways across the entire product range.

Premix burner automatically balances the fuel to air ratio under varying vent pressure conditions. Low NOx, metal-fiber-matrix burner is centrally located for even heat distribution across the exchanger.

Hot surface ignition system and flame monitor is vertically oriented to protect against damage from shipment, handling and condensation during start-up.





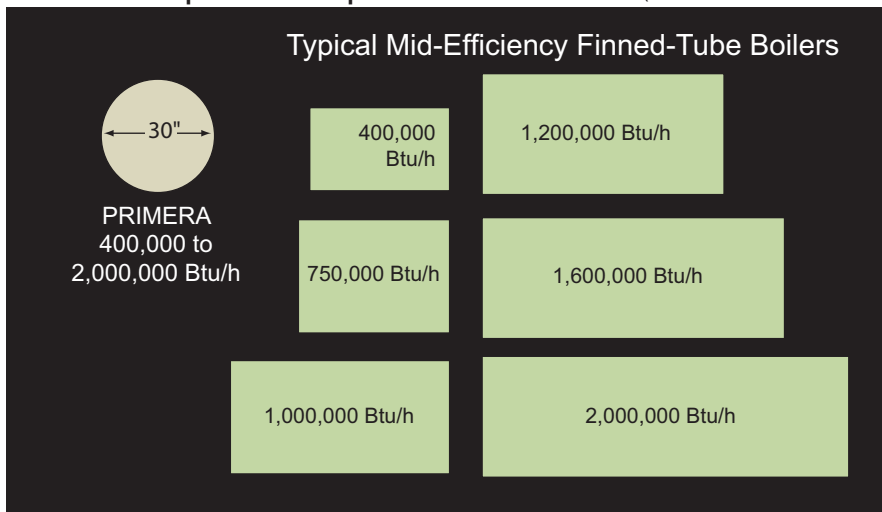
Digital temperature control with LED readouts for ease of viewing. Temperature settings and operational parameters are fully programmable. Connectable to a building management system through optional MODBUS interface.

Water heaters are ASME section IV, part HLW stamped. Water heaters are standard with on/off firing with the option for staged firing and modulation. Boilers are ASME section IV, H stamped. Boilers are two-stage at 399,000 Btu with a 2:1 turndown and fully modulating from 540,000 to 2,000,000 Btu with a 3:1 turndown.

Accessibility for service: All burner and control components are accessible in seconds by removing a single top pan. Flip-up control panel cover provides protection and yet allows easy access to the digital temperature control, flame and low-water resets, main power switch and fuse.

### Boiler Footprint Comparison

(all boilers drawn to scale)



*Digital operating control and readout*



*Integrally baffled finned tubes on heat exchanger*

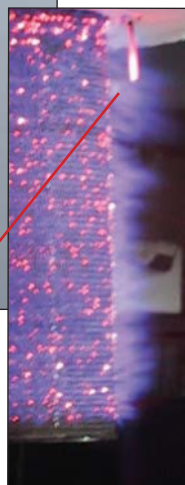
*Single panel access to all controls and gas train components*



*Water, vent and air connections all located at rear of appliance, reducing footprint requirements*

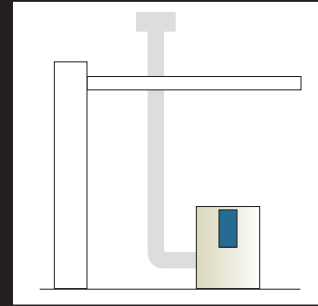


*Low NOx metal-matrix surface burner*

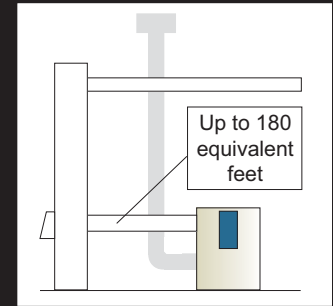


*Hot surface ignitor position eliminates possible contact with condensate, extending ignitor service life*

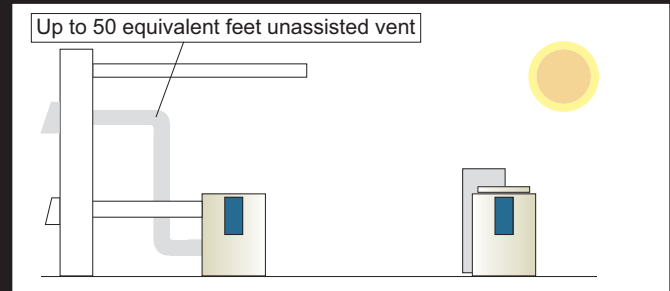
## VENTING OPTIONS



**NATURAL DRAFT**



**DIRECT COMBUSTION AIR**



**THROUGH-THE-WALL EXHAUST  
(CAT III)  
(ALSO WITH ROOM AIR)**

**OUTDOOR**

## STANDARD EQUIPMENT

- Finned-tube heat exchanger braze-welded into 100% copper headers
- ASME stamped, 160 psi MAWP
- Metal-fiber-matrix low NOx burner
- SCAQMD compliant emissions
- Full modulation with 3-to-1 turndown (540 to 2000 MBH boilers) or stage-firing with 2-to-1 turndown (399 MBH) (turndown firing is optional on water heaters)
- Electronic combustion control with proved ignition
- Pre-purge and post-purge
- Flame status indicating lights
- Hot surface ignitor /flame monitor
- Digital operating control accurate to  $\pm 1^\circ\text{F}$
- LED temperature indicators
- Redundant limit controls
- Heat exchanger flow switch
- Blocked flue and air proving switch
- Low and high return water temperature indicator
- Safety relief valve(s)
- All bronze pump (domestic water applications)
- ETL listed (ANSI Z21.13 and ANSI Z21.10.3)
- ETL listed for closet or alcove installations
- FM compliant

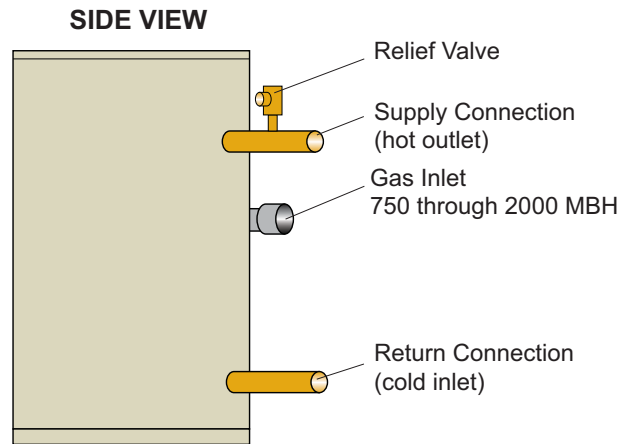
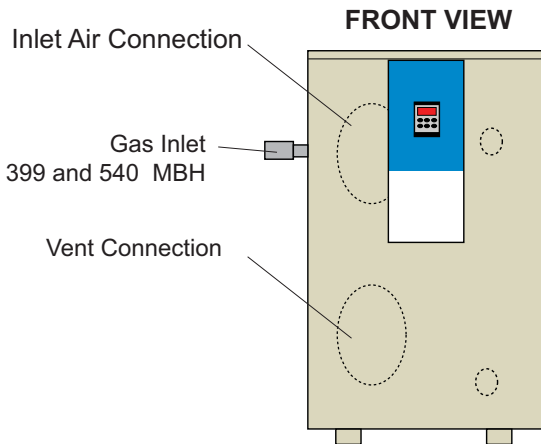
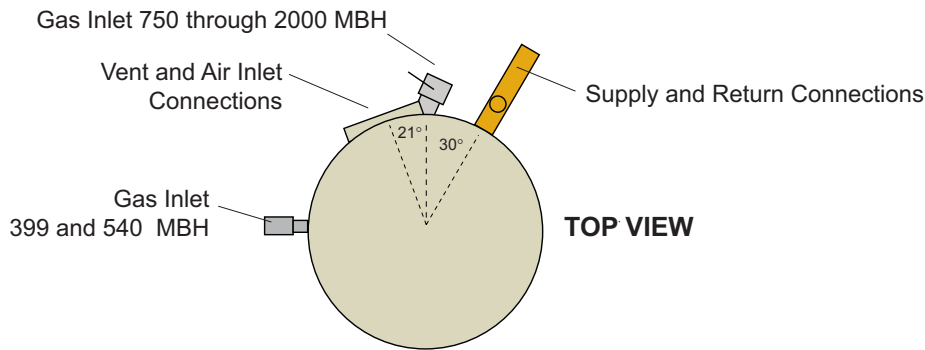
## SELECTED OPTIONS

- Stacking skid (boilers up to 1000 MBH)
- CSD-1 compliance
- Remote alarm relay and terminals
- Outdoor installation kit
- Communications interface over 485 serial connection with ModBus RTU protocol
- Cast-iron pumps for hydronic heating applications

# SPECIFICATIONS

MBtu/h Input	399	540	750	1000	1200	1600	2000
<b>WATER</b>							
Inlet /Outlet Connections	2"	2"	2"	2"	2"	2"	2"
Drain	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
Design Water Flow Rate (gpm)	30	30	61	76	46	61	76
Head Loss in Heat Exchanger at Design Flow (ft. of head)	8	8	10	12	18	18	19
Temp. Rise at Design Flow (°F) Low Fire / High Fire	12   23	10   30	7   21	7   22.5	15   45	15   45	15   45
Maximum Working Pressure (psi)	160	160	160	160	160	160	160
<b>GAS</b>							
Inlet Connection (NPT)	3/4"	3/4"	1"	1"	1"	1-1/4"	1-1/2"
<b>PHYSICAL CHARACTERISTICS</b>							
Depth	38	38	38	38	38	38	38
Width	30 *	30*	30	30	30	30	30
Height	31	31	36-5/8	40	44	51	58
Operating Weight (lbs.)	270	270	350	375	590	625	650

\* with gas shutoff valve removed



### STANDARD ELECTRICAL REQUIREMENTS

120V, 1Ø, 60 Hz. Line voltage, with 24V controls. Maximum total amperage is 23. Refer to individual catalog sheets for details by model number.

### STANDARD CLEARANCE REQUIREMENTS

1" minimum from combustibles.  
24" recommended from front and top for service.  
18" recommended from sides for service.

### STANDARD GAS PRESSURE REQUIREMENTS

Natural Gas:  
Maximum static pressure 10.5" W.C.  
Minimum flow pressure 4.5" W.C.  
LP Gas:  
Maximum static pressure 13" W.C.  
Minimum flow pressure 11" W.C.

