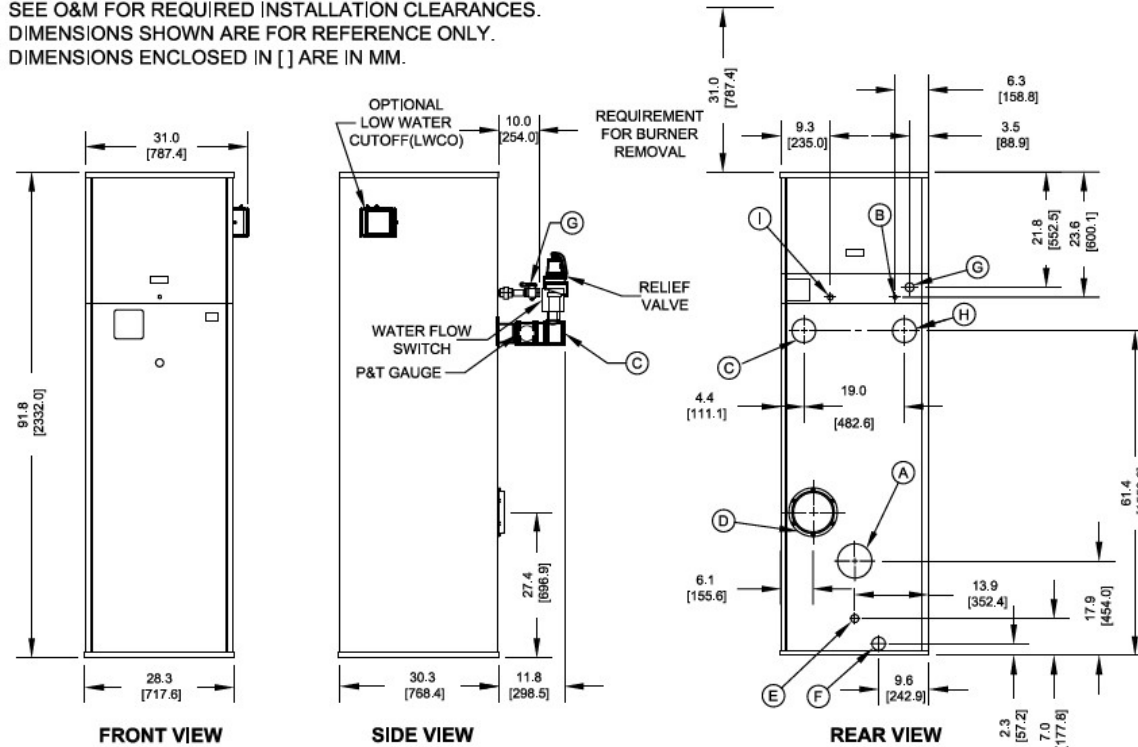


# Submittal Data Sheet

**NOTES:**

1. SEE O&M FOR REQUIRED INSTALLATION CLEARANCES.
2. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.
3. DIMENSIONS ENCLOSED IN [ ] ARE IN MM.



| KEY | DESCRIPTION                    |                                        |
|-----|--------------------------------|----------------------------------------|
| A   | Flue Outlet                    | 6" [152.4] Diameter (AL29-4C SS)       |
| B   | Factory Installed Pilot Gas Li | 1/4" [6/4] O.D. Tube                   |
| C   | Water Supply to System         | 3" NPT                                 |
| D   | Inlet Air                      | 8" [203.2] Diameter                    |
| E   | Drain, Startup Condensate      | 5/8" [15.9] O.D. Tube SS               |
| F   | Appliance Drain                | 1" NPT                                 |
| G   | Gas Supply                     | 1 1/2" NPT                             |
| H   | Water Return from System       | 3" NPT                                 |
| I   | Optional Gas Train Vent        | 3/4" NPT (D.B.&B & D.B.&B w/ POC Only) |

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# Submittal Data Sheet

## RATINGS AND CAPACITIES

|                          |                              |         |
|--------------------------|------------------------------|---------|
| Input (MBH):             | <b>2,000,000</b>             | BTU/HR  |
| Output (MBH):            | <b>1,640,000</b>             | BTU/HR  |
| Boiler Horsepower:       | <b>49.0</b>                  | BTU/HR  |
| Thermal Efficiency:      | <b>82.0%</b>                 | BHP     |
| Heating Surface:         | <b>352</b>                   | Sq.Ft.  |
| Water Content:           | <b>18.5</b>                  | Gallons |
| Fuel:                    | <b>Natural Gas or LP Gas</b> |         |
| Firing Rate:             | <b>Reliable Modulation</b>   |         |
| Burner Turndown:         | <b>3:1</b>                   |         |
| Low NOx Emissions:       | <b>&lt;10 ppm</b>            |         |
| Inlet Gas Pressure (NG): | <b>See Chart at right</b>    |         |
| Inlet Gas Pressure (LP): | <b>See Chart at right</b>    |         |

\* This data supercedes data found on Table 3 of I&O Manual, per PRODUCT UPDATE issued June 6, 2024.

Shipping Weight, Approximate: **1,536** lbs

ASME Section IV (Max 160 PSIG / 210°F)

Setpoint range is 145-190°F

Adjustable, manual reset high limit setting of ≤ 200°F.

ASME HLW stamp MAWT is 210°F for the vessel. (For max setpoint, see Setpoint range.)

UL Certified to ANSI Z21.10.3/CSA 4.3



## DIMENSIONS / CONNECTIONS

|                                          |                             |                     |
|------------------------------------------|-----------------------------|---------------------|
| Height:                                  | <b>91 7/8"</b>              | (Note 1)            |
| Width:                                   | <b>28 3/8"</b>              | (Note 2)            |
| Length:                                  | <b>30 3/8"</b>              | (Note 3)            |
| Supply Connection:                       | <b>3"</b>                   |                     |
| Return Connection:                       | <b>3"</b>                   |                     |
| Vent / Air Intake Connections:           | <b>6" Vent</b>              | <b>8" Intake</b>    |
| Condensate / Appliance Drain Connection: | <b>5/8" Condensate Tube</b> | <b>1" NPT Drain</b> |
| Gas Connection:                          | <b>1 1/2"</b>               |                     |

### NOTES:

1. Height dimension is from floor to top of jacket.

2. Length is from jacket front to jacket rear.

3. Dimensions shown are for reference only

## FLows AND PRESSURE DROPS

| Delta T | Flow (GPM)       | ΔP (Ft. Hd)  |
|---------|------------------|--------------|
| 20°F ΔT | <b>170 (Max)</b> | <b>13.27</b> |
| 40°F ΔT | <b>85 (Min)</b>  | <b>3.32</b>  |

## Electrical Supply Options

|                          |                          |          |
|--------------------------|--------------------------|----------|
| <input type="checkbox"/> | 120v/60hz/1ph (Standard) | 7.5 amps |
| <input type="checkbox"/> | 208v/60hz/1ph            | 6.6 amps |
| <input type="checkbox"/> | 230v/60hz/1ph            | 6.4 amps |
| <input type="checkbox"/> | 208v/60hz/3ph            | 6.0 amps |
| <input type="checkbox"/> | 230v/60hz/3ph            | 6.0 amps |
| <input type="checkbox"/> | 460v/60hz/3ph            | 3.0 amps |

## Blower Motor (hp)

1-1/2

## Relief Valve Options

|                          |                    |
|--------------------------|--------------------|
| <input type="checkbox"/> | 125 psi (STANDARD) |
| <input type="checkbox"/> | 150 psi (OPTIONAL) |

## Inlet Gas Pressure

| SIZE  | Nat. Gas Min.<br>("w.c.) | LP Min.<br>("w.c.) | Max        |
|-------|--------------------------|--------------------|------------|
| 500   | 5.0" w.c.                | 8.0" w.c.          | 14.0" w.c. |
| 750   | 7.0" w.c.*               |                    |            |
| 1000  | 7.0" w.c.*               |                    |            |
| 1500  | 7.0" w.c.*               |                    |            |
| 2000  | 9.0" w.c.*               | 9.0" w.c.          |            |
| 2000s | 7.0" w.c.                | 8.0                |            |
| 2500  | 6.0" w.c.                |                    |            |
| 3000  | 6.0" w.c.                |                    |            |

\* NOTE: Optional natural gas train with 4" w.c. minimum inlet gas pressure  
ONLY AVAILABLE on sizes 750, 1000, 1500 & 2000.

# Submittal Data Sheet

| STANDARD EQUIPMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | OPTIONAL EQUIPMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |               |               |                |                   |                          |                          |                          |                        |     |                          |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------|---------------|----------------|-------------------|--------------------------|--------------------------|--------------------------|------------------------|-----|--------------------------|--------------------------|
| <div style="background-color: #f2f2f2; text-align: center; padding: 2px; margin-bottom: 5px;"><b>PRESSURE VESSEL DESIGN</b></div> <p>Copper Fin-tube construction<br/>Bronze header design<br/>Gasketless heat exchanger<br/>ASME Section IV certified "H" stamp<br/>MAWP 160 PSI &amp; max design temp 250°F<br/>5-year heat exchanger warranty<br/>20-year thermal shock warranty</p>                                                                                             | <div style="background-color: #f2f2f2; text-align: center; padding: 2px; margin-bottom: 5px;"><b>BOILER EQUIPMENT</b></div> <p>High limit w/ manual reset safety temperature control<br/>Water flow switch<br/>Low water cut-off with manual reset safety controller<br/>Outlet temperature sensor<br/>Combustion air switch<br/>Pressure and temperature gauge<br/>Safety relief valve (Optional pressure 30 - 150 PSI; See details above.)<br/><br/>Single point electrical supply: (Available in: 1 and 3 phase options. See details above.)</p>                                                      | <div style="background-color: #f2f2f2; text-align: center; padding: 2px; margin-bottom: 5px;"><b>OPTIONAL EQUIPMENT</b></div> <div style="margin-top: 10px;"> <input type="checkbox"/> Low gas pressure venturi, 4" wc (AVAILABLE ONLY on Models 750-2000) [FACTORY INSTALLED OPTION ONLY]<br/> <input type="checkbox"/> Honeywell 7800 Series display with ModBus Module<br/> <input type="checkbox"/> Line Reactor Adds voltage / spike protection for the blower's VFD. (For areas with dirty voltage)<br/> <input type="checkbox"/> Outdoor Air Sensor<br/> <input type="checkbox"/> Condensate neutralizer:<br/> <div style="display: flex; justify-content: space-between; margin-left: 150px;"> <input type="checkbox"/> 850 MBH                      <input type="checkbox"/> 1,200 MBH<br/> <input type="checkbox"/> 2,000 MBH                      <input type="checkbox"/> 5,000 MBH </div> <input type="checkbox"/> Pump Kit (Boiler Circulation Pump, Pump Flange Kit Sized based on a 20°F Delta T)<br/> <input type="checkbox"/> Annual Maintenance Kit<br/> <input type="checkbox"/> System Temperature Sensor<br/> <input type="checkbox"/> Universal com. gateway (BacNet MS/TP, BacNet/IP, LonWorks)<br/> <input type="checkbox"/> Local / Remote Switch for Enable / Disable<br/> <input type="checkbox"/> Alarm bell with silencing switch<br/> <input type="checkbox"/> Relays:                      <input type="checkbox"/> General Alarm                      <input type="checkbox"/> Boiler Status<br/> <input type="checkbox"/> Conductor Sequencing Panel: (Contact Regional Manager with Questions.) </div> <div style="margin-top: 10px;"> <p>The Conductor Sequencing Panel manages multiple condensing &amp; non-condensing, small &amp; large heat output, new and/or existing boilers (full modulation ), and steam or hot water applications. It helps improve system efficiency by selecting and modulating the right boiler to match operating conditions. The Conductor offers a single point boiler plant Energy Management System (EMS) interface including Modbus TCP/IP, Modbus RTU RS485, BACnet/IP and BACnet MSTP standard. If Lonworks needed, add for the separate Lonworks gateway.</p> </div> |                          |               |               |                |                   |                          |                          |                          |                        |     |                          |                          |
| <div style="background-color: #f2f2f2; text-align: center; padding: 2px; margin-bottom: 5px;"><b>COMBUSTION DESIGN</b></div> <p>Maintenance-free ceramic burner<br/>Ultra-low NOx emissions (&lt;10ppm)<br/>Whisper quiet operation (&lt;50 dBA)<br/>Easy to service, 99% efficient industrial air filter<br/>Industrial cast aluminum blower assembly<br/>VFD Driven Blower<br/>Reliable electric spark-to-pilot ignition<br/>10-year burner warranty<br/>Honeywell UV-Scanner</p> | <div style="background-color: #f2f2f2; text-align: center; padding: 2px; margin-bottom: 5px;"><b>BURNER EQUIPMENT</b></div> <p>UL/FM/CSD-1 gas train<br/>Reliable Turndown<br/>Natural or LP gas<br/>Pilot gas valve / Pilot gas regulator<br/>Siemens SKP-75 gas valve<br/>Low and high gas pressure switches with manual reset</p>                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |               |               |                |                   |                          |                          |                          |                        |     |                          |                          |
| <div style="background-color: #f2f2f2; text-align: center; padding: 2px; margin-bottom: 5px;"><b>VENTING</b></div> <p>Sealed or room air combustion<br/>Direct vent (sidewall or vertical) (Cat IV)<br/>Conventional venting (Cat II)<br/><i>NOTE: This is NOT a Cat I Vent appliance.</i></p>                                                                                                                                                                                      | <div style="background-color: #f2f2f2; text-align: center; padding: 2px; margin-bottom: 5px;"><b>TSBC Control Features</b></div> <p>Advanced Boiler Modulation or Setpoint<br/>Intelligent Multiplier Boiler Staging (8 Boilers)<br/>Building Management (BMS) Interface<br/>Outdoor Air Temperature Reset<br/>Warm Weather Shutdown<br/>Domestic Hot Weather Priority<br/>Auxiliary Device Control<br/> <div style="margin-left: 20px;"> <input type="checkbox"/> Boiler Pump<br/> <input type="checkbox"/> System Pump </div> Adjustable setpoint or burner modulation with 1-9vDC input from BMS </p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |               |               |                |                   |                          |                          |                          |                        |     |                          |                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Extended Warranty Options Available:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                          |               |               |                |                   |                          |                          |                          |                        |     |                          |                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; padding: 5px;"><u>Parts Only</u></th> <th style="text-align: center; padding: 5px;"><u>3-Year</u></th> <th style="text-align: center; padding: 5px;"><u>5-Year</u></th> <th style="text-align: center; padding: 5px;"><u>10 Year</u></th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;"><u>Parts Only</u></td> <td style="text-align: center; padding: 5px;"><input type="checkbox"/></td> <td style="text-align: center; padding: 5px;"><input type="checkbox"/></td> <td style="text-align: center; padding: 5px;"><input type="checkbox"/></td> </tr> <tr> <td style="padding: 5px;"><u>Parts and Labor</u></td> <td style="text-align: center; padding: 5px;">N/A</td> <td style="text-align: center; padding: 5px;"><input type="checkbox"/></td> <td style="text-align: center; padding: 5px;"><input type="checkbox"/></td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <u>Parts Only</u>        | <u>3-Year</u> | <u>5-Year</u> | <u>10 Year</u> | <u>Parts Only</u> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <u>Parts and Labor</u> | N/A | <input type="checkbox"/> | <input type="checkbox"/> |
| <u>Parts Only</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <u>3-Year</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <u>5-Year</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <u>10 Year</u>           |               |               |                |                   |                          |                          |                          |                        |     |                          |                          |
| <u>Parts Only</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/> |               |               |                |                   |                          |                          |                          |                        |     |                          |                          |
| <u>Parts and Labor</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                              | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/> |               |               |                |                   |                          |                          |                          |                        |     |                          |                          |

## TSBC CONTROL FEATURES



### Flexible, Field Selectable Control

- Remote Setpoint Control or Firing Rate Control
- Factory defaults simplify field programming
- Eleven settings to help control oversizing

### Boiler Monitoring and Diagnostic Displays

- Boiler inlet and outlet sensors
- (OPTIONAL) System header sensor
- (OPTIONAL) Outdoor air sensor
- Modulation rate setpoint & modulating percent
- Boiler sequencing messages, alarms, hold & lockout messages
- Event history - Up to 10 alarm messages & data

### Modulation Rate

- Modbus or 1-9VDC input boiler modulation control options
- Choice of six different control modes
- Adjustable PID for local or remote control

### Advanced Availability

- If optional header sensor fails, TSBC automatically reverts back to the outlet sensor to allow continued operation.

### Outdoor Air Reset

- Fine tune the water temp based on outdoor air temp for maximized comfort and fuel savings.  
Requires optional outdoor air temp sensor.
- Frost protection enabled with optional outdoor air sensor

### Pump Control

- Domestic Hot Water (DHW) Pump
- System Pump
- Pump Overrun for Heat Dissipation
- Boiler Pump

### Peer-to-Peer Network

- Lead-lag sequencing for up to eight (8) boilers.
- Selectable Lead boiler rotation, 8-720 hours
- RJ11 plug in connections between units (Requires splitter)
- Rotation off feature for complex installations

### Warm Weather Shutdown (WWSD)

- Boilers used primarily for building heat will automatically shut down when outdoor temp reaches programmable WWSD setpoint.
- Saves energy by preventing boiler, pump and / or system pump from starting
- Requires the optional outdoor air sensor

### Other Features

- Domestic Hot Water Priority (DHWP)
- Rotation enable and disable
- Setpoint adjustable up to 230F for boilers and 200F for water heaters
- Defineable min. setpoint to reduce chance of condensing
- 3 pump control capable, Boiler, DHW, System