

## VSRT® SERIES:

VSRT-125

**125 HP**

Vertical Spiral Rib Tubeless Steam Boiler

As the worlds first and only spiral rib tubeless design, the VSRT® has been optimized so that its spiral rib heat exchanger can acheive maximum heat transfer in a compact space. The VSRT® features a fully water backed pressure vessel wrapped with high-density insulation, resulting in minimal thermal losses and low jacket temperatures. The VSRT® provides the highest efficiencies available combined with a compact vertical footprint. VSRT® boilers are built to last as a reliable source of dry steam, providing savings and operator peace of mind for years to come.

### STANDARD FEATURES:

- Vertical Tubeless Heat Exchanger
- Thick wall construction (0.375" minimum)
- Never needs re-tubing
- Fully wetted design- no refractory
- Operating efficiencies up to 86%
- Variable speed combustion air blower
- 150 PSIG maximum allowable working pressure
- Can be trimmed 15-150 PSIG
- Fully modulating 10:1 turndown burner
- Industrial pilot ignition
- Operating and high pressure limit switches
- Two (2) low water cut off probes, (1) with autoreset, (1) with manual reset
- NEMA 1 enclosure with locking electrical panel
- Low NOx emissions <20ppm on natural gas, <30ppm on propane
- Combustion air intake filter
- CSD-1/CSA ventless gas train
- PID type pressure controller
- Safety interlock contacts for external device
- Emergency-stop contacts
- Combustion air inlet adapter
- 10 year pressure vessel warranty
- 5 year burner warranty

### OPTIONS:

- Stainless steel jacket
- Conductivity based surface blowdown
- Timer based bottom blowdown
- Control panel with non-fused disconnect
- High water overflow protection
- Reflex type sight glass
- Boiler alarm package
- Boiler gauge kit
- Remote E-stop
- MM-150 ALWCO
- MM-157 PWLCO and pump control
- MM-193-7B PWLCO modulating level control
- On/off motorized FW valve & 3-valve bypass
- On/off FW solenoid valve
- Differential pressure level control
- Modbus integration gateway
- BACnet integration gateway

### PROJECT DETAILS:

Project Name:		City, State, Providence:	
Date Submitted:		Engineer of Record:	
Fulton Representative:		Contractor:	

### LISTINGS & COMPLIANCE:

- ASME Section I & IV code
- ETL approved to UL-795
- CSD-1 and CSA Controls and Fuel Train
- GAPS Compliant; Supersedes IRI
- Exceeds AHRAE 90.1 efficiency requirements
- FM Compliant Fuel Train Components
- Control panel wired in a UL 508 facility

### TRIM KIT ITEMS:

- ASME Safety Relief Valve
- Pressure Gauge
- Installation, Operation and Maintenance Manual
- Gauge Glass and Protector Rods
- Touch-up Spray Paint

### NOTE:

Information provided in this document is based on standard boiler configurations only. Custom configurations may result in deviations.

## CAPACITIES:

STANDARD NATURAL GAS; APPLIES TO ELEVATIONS UP TO 2,000 FT)

VSRT®		VSRT-125
Rated Input at High Fire	<b>BTU/hr</b>	<b>4,990,000</b>
	<i>kWh</i>	<i>1,462</i>
Minimum Input at Low Fire	<b>BTU/hr</b>	<b>508,490</b>
	<i>kWh</i>	<i>149</i>
Rated Output (At 0 psig operating pressure and 212°F feedwater temperature)	<b>BTU/hr</b>	<b>4,184,875</b>
	Boiler HP	<b>125</b>
	<b>lbs/hr</b>	<b>4,313</b>
	<b>kg/hr</b>	<i>1,956</i>
	<i>kWh</i>	<i>1,226</i>

## CONNECTION SIZES:

VSRT®		VSRT-125
Steam Outlet Operating >50 PSI	<b>inches</b>	<b>4</b>
	<i>mm</i>	<i>102</i>
Steam Outlet Operating 15-50 PSI	<b>inches</b>	<b>6</b>
	<i>mm</i>	<i>153</i>
Steam Outlet Operating 5-15 PSI	<b>inches</b>	<b>8</b>
	<i>mm</i>	<i>203</i>
Feedwater Inlet	<b>inches</b>	<b>1-1/4</b>
	<i>mm</i>	<i>32</i>
Bottom Blowdown	<b>inches</b>	<b>2</b>
	<i>mm</i>	<i>51</i>
High Water Protection	<b>inches</b>	<b>3/4</b>
	<i>mm</i>	<i>19</i>
Natural Gas Train Inlet	<b>inches</b>	<b>1-1/2</b>
	<i>mm</i>	<i>38</i>
Combustion Air Inlet	<b>inches</b>	<b>8</b>
	<i>mm</i>	<i>203</i>
Stack Connection	<b>inches</b>	<b>10</b>
	<i>mm</i>	<i>254</i>
Water Column Drain	<b>inches</b>	<b>1</b>
	<b>mm</b>	<i>25</i>
Surface Blowdown	<b>inches</b>	<b>3/4</b>
	<i>mm</i>	<i>19</i>
Sight Glass Drain	<b>inches</b>	<b>1/4</b>
	<i>mm</i>	<i>6</i>

**CONNECTION SIZES (CONTINUED):**

<b>VSRT®</b>		<b>VSRT-125</b>
Safety Valve Inlet x Outlet Section I 125-150psi trim	<b>inches</b>	<b>(1) 1-1/2 x 2</b>
	<i>mm</i>	<i>38 x 51</i>
Safety Valve Inlet x Outlet Section I 75-100psi trim	<b>inches</b>	<b>(2) 1-1/2 x 2</b>
	<i>mm</i>	<i>38 x 51</i>
Safety Valve Inlet x Outlet Section I 50psi trim	<b>inches</b>	<b>(2) 2 x 2-1/2</b>
	<i>mm</i>	<i>51 x 64</i>
Safety Valve Inlet x Outlet Section 1 30psi trim	<b>inches</b>	<b>(3) 2 x 2-1/2</b>
	<i>mm</i>	<i>51 x 64</i>
Safety Valve Inlet x Outlet Section I 15psi trim	<b>inches</b>	<b>(3) 2 x 2-1/2</b>
	<i>mm</i>	<i>51 x 64</i>

**FUEL REQUIREMENTS:****PRESSURE REQUIREMENTS AT RATED INPUT**

<b>VSRT®</b>		<b>VSRT-125</b>
Fuel Usage at Rated Input (Natural Gas)*	<b>SCFH</b>	<b>5,085</b>
	<i>m³/hr</i>	<i>144</i>
Fuel Usage at Rated Input (Propane)**	<b>SCFH</b>	<b>2,034</b>
	<i>m³/hr</i>	<i>58</i>
Minimum Gas Pressure	<b>in W.C.</b>	<b>13</b>
	<i>kPa</i>	<i>3.2</i>
Maximum Gas Pressure	<b>PSI</b>	<b>5</b>
	<i>kPa</i>	<i>34.5</i>

\*SCFH based on 1,000 BTU/ft³

\*\*SCFH based on 2,500 BTU/ft³

**ELECTRICAL REQUIREMENTS:****APPLIES TO <20 PPM NO<sub>x</sub> STANDARD BLOWER MOTOR AND CONTROL OPTION**

<b>VSRT</b>		<b>VSRT-125</b>			
Electrical Supply	<b>Volts</b>	<b>208</b>	<b>230</b>	<b>460</b>	<b>575</b>
	Ø	3	3	3	3
	<i>Hz</i>	60	60	60	60
Short Circuit Current Rating	<b>Amps</b>	<b>5000</b>	<b>5000</b>	<b>5000</b>	<b>5000</b>
NEMA Rating		<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
Full Load Amps	<b>Amps</b>	<b>51</b>	<b>46</b>	<b>23</b>	<b>19</b>

**WEIGHTS AND VOLUMES:**

<b>VSRT®</b>		<b>VSRT-125</b>
Dry Weight	<b>lbs</b>	<b>11,485</b>
	<i>kg</i>	<i>2,630</i>
Operating Weight at Normal Working Level	<b>lbs</b>	<b>18,975</b>
	<i>kg</i>	<i>4,119</i>
Flooded Weight	<b>lbs</b>	<b>19,925</b>
	<i>kg</i>	<i>4,404</i>
Water Volume at Normal Working Level	<b>gallons</b>	<b>898</b>
	<i>liters</i>	<i>1,488</i>

**VENTING REQUIREMENTS:**

<b>VSRT®</b>		<b>VSRT-125</b>
Typical Combustion Air Intake Flow Rate	<b>SCFM</b>	<b>1,158</b>
	<i>m³/hr</i>	<i>1,967</i>
Flue Gas Exhaust Flow Rate	<b>SCFM</b>	<b>1,178</b>
	<i>m³/hr</i>	<i>2,063</i>
Minimum Allowable Draft Pressure	<b>in W.C.</b>	<b>-0.25</b>
	<i>kPa</i>	<i>-0.062</i>
Maximum Allowable Draft Pressure	<b>in W.C.</b>	<b>+1.50</b>
	<i>kPa</i>	<i>+0.373</i>

**EMISSIONS:**TYPICAL NATURAL GAS OPERATION (CORRECTED TO 3% O<sub>2</sub>, CO TO BE 10ppm OR LESS)

<b>VSRT®</b>		<b>VSRT-125 &lt;20ppm NOx condition</b>	<b>VSRT-125 15% excess air condition</b>
NO <sub>x</sub>	<b>lbs/hr</b>	<b>0.1030</b>	<b>0.3492</b>
	<i>kg/hr</i>	<i>0.0467</i>	<i>0.1584</i>
SO <sub>x</sub>	<b>lbs/hr</b>	<b>0.0029</b>	<b>0.0029</b>
	<i>kg/hr</i>	<i>0.0013</i>	<i>0.0013</i>
Volatile Organic Compounds	<b>lbs/hr</b>	<b>0.0268</b>	<b>0.0268</b>
	<i>kg/hr</i>	<i>0.0122</i>	<i>0.0122</i>
Total Particulates	<b>lbs/hr</b>	<b>0.0370</b>	<b>0.0370</b>
	<i>kg/hr</i>	<i>0.0168</i>	<i>0.0168</i>
CO	<b>lbs/hr</b>	<b>0.0355</b>	<b>0.0355</b>
	<i>kg/hr</i>	<i>0.0161</i>	<i>0.0161</i>

**MINIMUM CLEARANCES:**

LOCAL CODES MAY SUPERSEDE FULTON REQUIREMENTS

VSRT®		VSRT-125
Side Clearance from Boiler Jacket	<b>inches</b>	<b>24</b>
	<i>mm</i>	<i>609</i>
Total Installed Height	<b>inches</b>	<b>147-3/4</b>
	<i>m</i>	<i>3.75</i>

**SOUND DATA:**

MEASUREMENTS TAKEN FROM FIVE FOOT FROM THE FRONT OF THE BOILER

VSRT®		VSRT-125
Sound Level at High Fire	<b>dBa</b>	<b>74</b>

**DIMENSIONS:**

Refer to the Product Data Submittal Drawing for dimensions.