

VSRT® SERIES:

VSRT-10

10 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 4:1 turndown burner
- Industrial pilot ignition
- Operating and high pressure limit switches
- Two (2) low water cut off probes, (1) with auto reset, (1) with manual reset
- NEMA 1 enclosure with locking electrical panel
- Low NOx emissions <20ppm
- Media free cyclonic 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	
Date Submitted	
Fulton Representative	

City, State (Province)	
Engineer of Record	
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-10
Rated Input at High Fire	BTU/hr	400,000
	<i>kWh</i>	<i>117</i>
Minimum Input at Low Fire	BTU/hr	100,000
	<i>kWh</i>	<i>29</i>
Rated Output (At 0 psig operating pressure and 212F feedwater temperature)	BTU/hr	335,000
	Boiler HP	10
	lbs/hr	345
	kg/hr	156
	<i>kWh</i>	<i>98</i>

CONNECTION SIZES:

VSRT®		VSRT-10
Steam Outlet Operating at >75 psig	inches	1
	<i>mm</i>	<i>25</i>
Steam Outlet Operating at ≤75 psig	inches	2
	<i>mm</i>	<i>51</i>
Feedwater Inlet	inches	1
	<i>mm</i>	<i>25</i>
Bottom Blowdown	inches	1
	<i>mm</i>	<i>25</i>
High Water Protection	inches	3/4
	<i>mm</i>	<i>19</i>
Natural Gas Train Inlet	inches	1
	<i>mm</i>	<i>25</i>
Combustion Air Inlet	inches	4
	<i>mm</i>	<i>102</i>
Stack Connection	inches	6
	<i>mm</i>	<i>152</i>
Water Column Drain	inches	1
	<i>mm</i>	<i>25</i>
Surface Blowdown	inches	3/4
	<i>mm</i>	<i>19</i>
Sight Glass Drain	inches	1/4
	<i>mm</i>	<i>6</i>
Safety Valve Inlet x Outlet Section I 15 psi trim	inches	1-1/4 x 1-1/2
	<i>mm</i>	<i>32 x 38</i>
Safety Valve Inlet x Outlet Section I 150 psi trim	inches	1 x 1-1/4
	<i>mm</i>	<i>25 x 32</i>

FUEL REQUIREMENTS: PRESSURE REQUIREMENTS AT RATED INPUT

VSRT®		VSRT-10
Fuel Usage at Rated Input (Natural Gas)*	SCFH <i>m³/hr</i>	400 <i>11</i>
Fuel Usage at Rated Input (Propane)**	SCFH <i>m³/hr</i>	160 <i>4.5</i>
Minimum Gas Pressure	in W.C. <i>kPa</i>	3 <i>0.75</i>
Maximum Gas Pressure	in W.C. <i>kPa</i>	13.8 <i>3.4</i>

*SCFH based on 1,000 BTU/ft³

**SCFH based on 2,500 BTU/ft³

ELECTRICAL REQUIREMENTS: APPLIES TO <20 PPM NOx STANDARD BLOWER MOTOR AND CONTROL OPTION

VSRT®		VSRT-10
Electrical Supply	Volts <i>Ø</i> <i>Hz</i>	120 <i>1</i> <i>60</i>
Short Circuit Current Rating	Amps	5000
NEMA Rating		1
Full Load Amps	Amps	27

WEIGHTS AND VOLUMES:

VSRT®		VSRT-10
Dry Weight	lbs <i>kg</i>	2,650 <i>1,202</i>
Operating Weight at Normal Working Level	lbs <i>kg</i>	3,500 <i>1,588</i>
Flooded Weight	lbs <i>kg</i>	3,850 <i>1,746</i>
Water Volume at Normal Working Level	gallons <i>liters</i>	102 <i>386</i>

VENTING REQUIREMENTS:

VSRT®		VSRT-10
Typical Combustion Air Intake Flow Rate	SCFM	88
	<i>m³/hr</i>	<i>150</i>
Flue Gas Exhaust Flow Rate	SCFM	95
	<i>m³/hr</i>	<i>163</i>
Minimum Allowable Draft Pressure	in W.C.	-0.25
	<i>kPa</i>	<i>-0.062</i>
Maximum Allowable Draft Pressure	in W.C.	+1.50
	<i>kPa</i>	<i>+0.373</i>

EMISSIONS: TYPICAL NATURAL GAS OPERATION (CORRECTED TO 3% O₂, CO TO BE 10ppm OR LESS)

VSRT®		VSRT-10 <20ppm NOx condition	VSRT-10 15% excess air condition
NO _x	lbs/hr	0.0084	0.0281
	<i>kg/hr</i>	<i>0.004</i>	<i>0.013</i>
SO _x	lbs/hr	0.0002	0.0002
	<i>kg/hr</i>	<i>0.0001</i>	<i>0.0001</i>
Volatile Organic Compounds	lbs/hr	0.0022	0.0022
	<i>kg/hr</i>	<i>0.001</i>	<i>0.001</i>
Total Particulates	lbs/hr	0.0030	0.0030
	<i>kg/hr</i>	<i>0.0014</i>	<i>0.0014</i>
CO	lbs/hr	0.0029	0.0029
	<i>kg/hr</i>	<i>0.0013</i>	<i>0.0013</i>

MINIMUM CLEARANCES: LOCAL CODES MAY SUPERSEDE FULTON REQUIREMENTS

VSRT®		VSRT-10
Side Clearance from Boiler Jacket	inches	24
	<i>mm</i>	<i>609</i>
Total Installed Height Required for Burner Removal	inches	98.5
	<i>m</i>	<i>2.5</i>

SOUND DATA: MEASUREMENTS TAKEN FROM FIVE FOOT FROM THE FRONT OF THE BOILER

VSRT®		VSRT-10
Sound Level at Low Fire	dBa	61
Sound Level at High Fire	dBa	73

DIMENSIONS:

Refer to the Product Data Submittal Drawing for dimensions.