Fulton TECHNICAL DATA SHEET

Vantage (VTG) SERIES:
VTG-2000, VTG-3000, VTG-4000, VTG-5000, VTG-6000

2,000,000 to 6,000,000 BTU/HR:
Firetube Condensing Boilers

Fulton's Vantage (VTG) line of condensing boilers combines proven industrial-grade firetube construction with modern condensing boiler efficiencies up to 99%. The high-mass and high-volume pressure vessel provides exceptional tolerance for varying and sometimes unpredictable system demands. The highly-engineered robust construction is built to last with thicker, higher-strength materials including Duplex (LDX2205) alloy stainless steel, and a premium fit and finish reflecting Fulton's paramount quality. Included parallel positioning combustion system saves up to 5-8% on fuel consumption and reduces CO_2 emissions. The surgical precision of independent air and gas servo motors is optimized across the entire curve, not just at high and low fire like on conventional controls, empowering technicians to perfectly tune the burner for worry-free, efficient, and reliable heat. Vantage boilers are the premier choice for healthcare, military, government, industrial process, and any other application searching for the perfect blend of heavy-duty construction, simplicity and ultra-high efficiency fuel savings.

STANDARD FEATURES:

- Factory Packaged and Test Fired Boiler Assembly
- Fully Condensing Ultra-High Efficiency Operation
- Designed for Variable Primary Flow Arrangements
- Fully Modulating Gas Burner
- Parallel Positioning Combustion Control System
- Direct Spark Ignition System
- 160 PSIG Maximum Allowable Working Pressure
- 210°F Maximum Allowable Working Temperature
- Factory Recommended Maximum Setpoint 190°F
- Operating and High Limit Aquastats; 200°F Setting
- Low Water Cut Off Probe with Manual Reset
- Air Switch
- Ventless Gas Train with Low and High GPS
- Alarm Horn

CONTROL CAPABILITIES:

- Modbus Communication Protocol
- Burner Management Display and Operator Unit
- PID Temperature Controller
- Outlet Water Temperature Sensor
- 4-20mA Outlet Water Temperature Retransmission
- Local/Off/Remote 3-Position Switch
- Two Safety Interlock Contacts for External Device(s)
- Monitoring Contacts (Status, Demand, Alarm)
- Remote Boiler Enable Contact
- Draft System Enable Relay
- Motorized Isolation Valve Control Relay
- Primary Pump Control Relay
- Emergency Stop (E-Stop) Contact

PROJECT DETAILS:

Project Name		City, State (Province)	
Date Submitted		Engineer of Record	
Fulton Representative		Contractor	

LISTINGS & COMPLIANCE:

- ASME Section IV, "H" Stamp
- ETL Listed to UL-795
- CSD-1 and CSA Controls and Fuel Train
- AXA XL Compliant; Supersedes IRI
- AHRI Certified to BTS-2000
- FM Compliant Fuel Train Components

TRIM KIT ITEMS:

- ASME Safety Relief Valve ☐60, ☐100, ☐125, or ☑160 PSIG
- Pressure & Temperature Gauge
- Installation, Operation and Maintenance Manual
- Rubber Combustion Air Intake Coupling

FACTORY INSTALLED OPTIONS:

☐ Propane Conversion (Single Fuel)
☐ Dual Gas Combination Nat. Gas & Propane
☐ NFPA 85 "Double Block & Bleed" Gas Train
☐ Custom Engineered Electrical Controls (Refer to Quotation)

OPTIONAL ACCESSORIES: PARTS SHIP LOOSE FOR FIELD INSTALLATION

☐ ModSync SE Sequencing System *7-53-006000*
☐ BACnet Protonode with Remote Cloud Access *2-45-001058-30*
☐ Multiple Boiler Condensate Drain Trap (12MM Max) *4-57-000440*
☐ Individual Boiler Condensate Drain Trap (6MM Max) *4-57-005500*
☐ pH Neutralization Kit (12MM Max) *4-50-000008*
☐ Second (Auxiliary) Low Water Cut Off Kit *4-30-000330*
☐ 4-Inch Butterfly Valve with 120VAC 2-Position Actuator *2-30-001385*
☐ 6-Inch Butterfly Valve with 120VAC 2-Position Actuator *2-30-001386*
☐ Fused External Disconnect Switch *Consult Factory*
☐ _____
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NOTE:
Information provided in this document is based on standard boiler configurations only. Alternate configurations may result in deviations.

CAPACITIES: STANDARD NATURAL GAS; REFER TO ENGINEERING DATA FOR CAPACITY AT HIGH ELEVATION

Vantage Model		VTG-2000	VTG-3000	VTG-4000	VTG-5000	VTG-6000
Rated Input at High Fire	**BTU/hr**	**2,000,000**	**3,000,000**	**4,000,000**	**5,000,000**	**6,000,000**
	kW	*586*	*879*	*1,172*	*1,465*	*1,758*
Rated Output (BTS-2000)	**BTU/hr**	**1,918,000**	**2,889,000**	**3,876,000**	**4,630,000**	**5,640,000**
	Boiler HP	57	86	116	138	168
	kW	*562*	*847*	*1,136*	*1,357*	*1,653*
Thermal Efficiency (BTS-2000)	**%**	**95.7**	**96.3**	**96.9**	**92.6**	**94.0**

CONNECTION SIZES:

Vantage Model		VTG-2000	VTG-3000	VTG-4000	VTG-5000	VTG-6000
Boiler Supply Water Outlet (ANSI 150# FLG)	**inches**	**4**	**4**	**6**	**6**	**6**
	mm	*102*	*102*	*152*	*152*	*152*
Boiler Return Water Inlet (ANSI 150# FLG)	**inches**	**4**	**4**	**6**	**6**	**6**
	mm	*102*	*102*	*152*	*152*	*152*
Flue Gas Condensate Drain (NPT)	**inches**	**1**	**1**	**1**	**1**	**1**
	mm	*25*	*25*	*25*	*25*	*25*
Boiler Pressure Vessel Drain (NPT)	**inches**	**2**	**2**	**2**	**2**	**2**
	mm	*51*	*51*	*51*	*51*	*51*
Natural Gas Train Inlet (NPT)	**inches**	**1-1/2**	**2**	**2**	**2-1/2**	**2-1/2**
	mm	*38*	*51*	*51*	*64*	*64*
Combustion Air Intake (ID)	**inches**	**8**	**10**	**12**	**12**	**12**
	mm	*203*	*254*	*305*	*305*	*305*
Flue Gas Exhaust Vent (ID)	**inches**	**10**	**12**	**14**	**14**	**14**
	mm	*254*	*305*	*356*	*356*	*356*

FUEL REQUIREMENTS: STANDARD NATURAL GAS AT 1,020 BTU/SCF (9,082 KCAL/M³)

Vantage Model		VTG-2000	VTG-3000	VTG-4000	VTG-5000	VTG-6000
Fuel Usage at Rated Input	**SCFH**	**1,961**	**2,941**	**3,922**	**4,902**	**5,882**
	m³/hr	*55.5*	*83.3*	*111.1*	*138.8*	*166.6*
Minimum Gas Pressure *(Req. at High Fire)*	**in W.C.**	**14**	**14**	**14**	**14**	**18**
	kPa	*3.5*	*3.5*	*3.5*	*3.5*	*4.4*
Maximum Gas Pressure	**in W.C.**	**42**	**42**	**42**	**42**	**42**
	kPa	*10.5*	*10.5*	*10.5*	*10.5*	*10.5*

NOTE:
- Typical burner turndown ratio up to 5:1 when operating on Natural Gas.

FUEL REQUIREMENTS: STANDARD HD5 PROPANE AT 2,500 BTU/SCF (22,260 KCAL/M³)

Vantage Model		VTG-2000	VTG-3000	VTG-4000	VTG-5000	VTG-6000
Fuel Usage at Rated Input	**SCFH**	**800**	**1,200**	**1,600**	**2,000**	**2,400**
	m³/hr	*22.7*	*34.0*	*45.3*	*56.6*	*68.0*
Minimum Gas Pressure *(Req. at High Fire)*	**in W.C.**	**17**	**17**	**17**	**17**	**28**
	kPa	*4.2*	*4.2*	*4.2*	*4.2*	*6.9*
Maximum Gas Pressure	**in W.C.**	**28**	**28**	**28**	**28**	**42**
	kPa	*7*	*7*	*7*	*7*	*10.5*

NOTES:
- Vantage boilers are factory tested on Natural Gas. Field conversion to Propane during commissioning is required by an authorized service technician.
- Typical burner turndown ratio up to 3:1 when operating on Propane as a secondary fuel; up to 5:1 for single fuel applications using a Propane conversion kit.
- Propane-fired operation is suitable for use with HD5 grade Liquid Petroleum Gases conforming to ASTM D1835-82 only.

ELECTRICAL REQUIREMENTS: APPLIES TO STANDARD BLOWER AND CONTROL OPTIONS

Vantage Model		VTG-2000		VTG-3000		VTG-4000		VTG-5000		VTG-6000	
Electrical Supply	**Volts**	**208**	**460**	**208**	**460**	**208**	**460**	**208**	**460**	**208**	**460**
	Ø	3	3	3	3	3	3	3	3	3	3
	Hz	*60*	*60*	*60*	*60*	*60*	*60*	*60*	*60*	*60*	*60*
Full Load Amps (FLA)	**Amps**	**11**	**5**	**14**	**7**	**21**	**9**	**28**	**13**	**28**	**13**
Minimum Current Ampacity (MCA)	**Amps**	**14**	**7**	**18**	**9**	**27**	**12**	**35**	**17**	**35**	**17**
SCCR	**Amps**	**5,000**		**5,000**		**5,000**		**5,000**		**5,000**	

NOTES:
- Provide separate power supplies for external devices. Do not power external devices through the boiler control circuits.
- 24VDC power supply is not included. 24VDC to be provided by either the optional ModSync boiler sequencing system or the Building Automation System.
- Consult the factory for 575/3/60 or 230/3/60 applications.

WATER AND FLOW REQUIREMENTS: **SPECIFICATIONS APPLY TO 100% WATER SYSTEMS**

	Vantage Model	VTG-2000	VTG-3000	VTG-4000	VTG-5000	VTG-6000
Typical Flow Rate at Rated Output 20°F ΔT	**GPM**	**192**	**289**	**387**	**463**	**564**
	LPM	*727*	*1,094*	*1,465*	*1,753*	*2,135*
Typical Flow Rate at Rated Output 40°F ΔT	**GPM**	**96**	**144**	**194**	**231**	**282**
	LPM	*364*	*547*	*733*	*877*	*1068*
Water Pressure Drop at Rated Output 20°F ΔT	**PSI**	**0.9**	**1.0**	**2.6**	**4.8**	**5.6**
	kPa	*6.2*	*6.9*	*17.9*	*33.1*	*38.6*
Water Pressure Drop at Rated Output 40°F ΔT	**PSI**	**< 0.1**	**< 0.1**	**< 0.1**	**0.4**	**1.3**
	kPa	*< 0.7*	*< 0.7*	*< 0.7*	*2.8*	*9.0*
Maximum ΔT Capable	**°F**	**100**	**100**	**100**	**100**	**100**
	°C	*55.5*	*55.5*	*55.5*	*55.5*	*55.5*
Minimum Flow Rate	**GPM**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
	LPM					
Maximum Flow Rate	**GPM**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
	LPM					

NOTES:

- No minimum flow requirement means a low or zero flow situation will not cause harm to the heat exchanger.
- The system will require proper design flow for the given conditions to heat the building and prevent nuisance high limit manual reset lockouts at the boiler.
- Flow rates will vary for glycol systems. Review Engineering Guide for details.
- Refer to the Installation, Operation, and Maintenance Manual for the water pressure drop at flow rates not listed above.

WEIGHTS AND VOLUMES:

	Vantage Model	VTG-2000	VTG-3000	VTG-4000	VTG-5000	VTG-6000
Dry Weight	**lbs**	**3,800**	**5,300**	**6,600**	**6,900**	**10,800**
	kg	*1,724*	*2,404*	*2,994*	*3,130*	*4,899*
Operating Weight	**lbs**	**5,100**	**7,100**	**8,900**	**9,200**	**14,800**
	kg	*2,314*	*3,221*	*4,037*	*4,173*	*6,713*
Approximate Shipping Weight	**lbs**	**4,250**	**5,825**	**7,200**	**7,475**	**11,500**
	kg	*1,928*	*2,642*	*3,266*	*3,391*	*5,216*
Pressure Vessel Water Volume	**Gallons**	**147**	**215**	**275**	**275**	**480**
	Liters	*556*	*814*	*1,041*	*1,041*	*1,817*

VENTING REQUIREMENTS:

	Vantage Model	VTG-2000	VTG-3000	VTG-4000	VTG-5000	VTG-6000
Combustion Air Intake Flow Rate	**SCFM**	**391**	**587**	**782**	**978**	**1,173**
Flue Gas Exhaust Flow Rate	**SCFM**	**424**	**636**	**848**	**1,060**	**1,272**
	ACFM	*563*	*838*	*1,117*	*1,407*	*1,688*
Minimum Allowable Draft Pressure	**in W.C.**	**-0.04**	**-0.04**	**-0.04**	**-0.04**	**-0.04**
	kPa	*-0.01*	*-0.01*	*-0.01*	*-0.01*	*-0.01*
Maximum Allowable Draft Pressure	**in W.C.**	**+0.35**	**+0.35**	**+0.35**	**+0.35**	**+0.35**
	kPa	*+0.087*	*+0.087*	*+0.087*	*+0.087*	*+0.087*

NOTES:

- Maximum draft pressure is the total sum of combustion air intake and flue gas exhaust venting system friction losses.
- Refer to the Installation, Operation, and Maintenance Manual for complete venting guidelines including certifications, materials, common venting requirements.

EMISSIONS: STANDARD NATURAL GAS AT 1,020 BTU/SCF (9,082 KCAL/M^3)

	Vantage Model	VTG-2000	VTG-3000	VTG-4000	VTG-5000	VTG-6000
NOx	**ppm**	**< 100**	**< 100**	**< 100**	**< 100**	**< 30**
CO_2	**%**	**8 to 10**	**8 to 10**	**8 to 10**	**8 to 10**	**8 to 10**
CO	**ppm**	**< 50**	**< 50**	**< 50**	**< 50**	**< 50**
	lbs/hr	0.072	0.107	0.143	0.179	0.215
	g/hr	*32.7*	*48.5*	*64.9*	*81.2*	*97.5*
Volatile Organic Compounds (VOC)	**lbs/hr**	**0.0110**	**0.0165**	**0.0220**	**0.0275**	**0.0330**
	g/hr	*0.0050*	*0.0075*	*0.0100*	*0.0125*	*0.0150*

NOTES:

- NOx and CO are stated at a 3% O_2 correction.
- Emissions data is typical for standard natural gas operation.
- Emissions will vary based on site specific factors and operating parameters.
- Site specific conditions and emissions requirements will determine the appropriate CO_2 settings for each application.
- VOC is achieved through calculation using the AP 42 method as published by the US EPA, and are stated at rated input.
- AP 42, Fifth Edition, Vol 1, Ch 1, Table 1.4-2 determines the emissions components that cannot be measured with a combustion analyzer.
- Jacket losses: 0.2% of output at maximum capacity, IAW ASHRAE Standard 103-2007.

MINIMUM CLEARANCES:

	Vantage Model	VTG-2000	VTG-3000	VTG-4000	VTG-5000	VTG-6000
Front	**inches**	**36**	**36**	**36**	**36**	**36**
	mm	*914*	*914*	*914*	*914*	*914*
Rear	**inches**	**24**	**24**	**24**	**24**	**24**
	mm	*610*	*610*	*610*	*610*	*610*
Top	**inches**	**24**	**24**	**24**	**24**	**24**
	mm	*610*	*610*	*610*	*610*	*610*
Sides	**inches**	**1**	**1**	**1**	**8**	**1**
	mm	*25*	*25*	*25*	*203*	*25*

NOTE:

- Local codes may supersede Fulton clearance requirements.

DIMENSIONS:

Refer to the 7-91 type Product Data Submittal End Assembly Drawing for dimensions.