

Vantage (VTG) SERIES:

VTG-2000DF, VTG-3000DF, VTG-4000DF, VTG-5000DF, VTG-6000DF

2,000,000 to 6,000,000 BTU/HR:

Dual Fuel (Gas & #2 Oil) Firetube Condensing Boilers



Fulton's Vantage (VTG) DF line of dual-fuel (gas & #2 fuel oil) 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 CO₂ 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; Dual-Fuel Gas/#2 Oil
- Parallel Positioning Combustion Control System
- Direct Spark Oil 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
- Gas/Oil Fuel Selection 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	
Date Submitted	
Fulton Representative	

City, State (Province)	
Engineer of Record	
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
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

NOTE:

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

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

Vantage DF Model		VTG-2000DF	VTG-3000DF	VTG-4000DF	VTG-5000DF	VTG-6000DF
Rated Input at High Fire	BTU/hr	2,000,000	3,000,000	4,000,000	5,000,000	6,000,000
	<i>kW</i>	586	879	1,172	1,465	1,758
Rated Output (BTS-2000)	BTU/hr	1,918,000	2,889,000	3,876,000	4,550,000	5,640,000
	Boiler HP	57	86	116	136	168
	<i>kW</i>	562	847	1,136	1,333	1,653
Thermal Efficiency (BTS-2000)	%	95.7	96.3	96.9	92.0	94.0

FUEL OIL CAPACITIES: STANDARD NO. 2 FUEL OIL; REFER TO ENGINEERING DATA FOR CAPACITY AT HIGH ELEVATION

Vantage DF Model		VTG-2000DF	VTG-3000DF	VTG-4000DF	VTG-5000DF	VTG-6000DF
Rated Input at High Fire	BTU/hr	2,000,000	3,000,000	4,000,000	5,000,000	6,000,000
	<i>kW</i>	586	879	1,172	1,465	1,758
Rated Output (BTS-2000)	BTU/hr	1,936,000	2,943,000	3,928,000	4,550,000	5,736,000
	Boiler HP	58	88	117	136	171
	<i>kW</i>	567	862	1,151	1,333	1,681
Thermal Efficiency (BTS-2000)	%	96.8	98.1	98.2	92.0	95.6

CONNECTION SIZES:

Vantage DF Model		VTG-2000DF	VTG-3000DF	VTG-4000DF	VTG-5000DF	VTG-6000DF
Boiler Supply Water Outlet (ANSI 150# FLG)	inches	4	4	6	6	6
	<i>mm</i>	102	102	152	152	152
Boiler Return Water Inlet (ANSI 150# FLG)	inches	4	4	6	6	6
	<i>mm</i>	102	102	152	152	152
Flue Gas Condensate Drain (NPT)	inches	1	1	1	1	1
	<i>mm</i>	25	25	25	25	25
Boiler Pressure Vessel Drain (NPT)	inches	2	2	2	2	2
	<i>mm</i>	51	51	51	51	51
Natural Gas Train Inlet (NPT)	inches	1-1/2	2	2	2-1/2	2-1/2
	<i>mm</i>	38	51	51	64	64
Combustion Air Intake (ID)	inches	10	10	12	12	12
	<i>mm</i>	254	254	305	305	305
Flue Gas Exhaust Vent (ID)	inches	10	12	14	14	14
	<i>mm</i>	254	305	356	356	356
#2 Fuel Oil Supply & Return (NPT)	inches	3/8	3/8	3/8	1/2	1/2
	<i>mm</i>	10	10	10	13	13

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

Vantage DF Model		VTG-2000DF	VTG-3000DF	VTG-4000DF	VTG-5000DF	VTG-6000DF
Fuel Usage at Rated Input	SCFH <i>m³/hr</i>	1,961 55.5	2,941 83.3	3,922 111.1	4,902 138.8	5,882 166.6
Minimum Gas Pressure (Req. at High Fire)	in W.C. <i>kPa</i>	14 3.5	14 3.5	14 3.5	14 3.5	18 4.4
Maximum Gas Pressure	in W.C. <i>kPa</i>	42 10.5	42 10.5	42 10.5	42 10.5	42 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 DF Model		VTG-2000DF	VTG-3000DF	VTG-4000DF	VTG-5000DF	VTG-6000DF
Fuel Usage at Rated Input	SCFH <i>m³/hr</i>	800 22.7	1,200 34.0	1,600 45.3	2,000 56.6	2,400 68.0
Minimum Gas Pressure (Req. at High Fire)	in W.C. <i>kPa</i>	17 4.2	17 4.2	17 4.2	17 4.2	28 6.9
Maximum Gas Pressure	in W.C. <i>kPa</i>	28 7	28 7	28 7	28 7	42 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 5:1 when operating on Propane provided a Propane conversion kit is utilized.
- Propane-fired operation is suitable for use with HD5 grade Liquid Petroleum Gases conforming to ASTM D1835-82 only.

FUEL REQUIREMENTS: STANDARD NO. 2 FUEL OIL AT 138,500 BTU/GAL (9,226 KCAL/L)

Vantage DF Model		VTG-2000DF	VTG-3000DF	VTG-4000DF	VTG-5000DF	VTG-6000DF
#2 Fuel Oil Consumption	GPH <i>LPH</i>	14.4 54.5	21.7 82.1	28.9 109.4	36.1 136.7	43.3 163.9
#2 Fuel Oil Supply Flow Rate	GPH <i>LPH</i>	54 204	54 204	54 204	150 568	150 568
Maximum Pump Supply Vacuum	in Hg <i>bar</i>	13 0.44	13 0.44	13 0.44	13 0.44	13 0.44
Maximum Pump Supply Pressure	PSI <i>bar</i>	3 0.21	3 0.21	3 0.21	3 0.21	3 0.21

NOTES:

- Burner is suitable for operation with light distillate #2 Fuel Oil conforming to ASTM D396.
- Maximum Pump Supply Pressure is an NFPA-31 code requirement and is to be measured on the supply (inlet) side of the burner pump.
- Fuel oil operation on models VTG-2000DF through VTG-4000DF are Lo-Hi-Lo; VTG-5000DF and VTG-6000DF are fully modulating 2:1.
- Factory-mounted burner pump will pump a greater amount of oil than burned, refer to the supply flow rate, unused oil is returned to the tank.
- Where combining multiple burners into a common oil manifold, the flooded loop method is recommended. Refer to the IO&M Manual for instruction.
- For flooded loop systems, size auxiliary fuel oil transfer pump set for a minimum 1.5x total combined supply flow rate of all burner pumps.

ELECTRICAL REQUIREMENTS: APPLIES TO STANDARD BLOWER AND CONTROL OPTIONS

Vantage DF Model		VTG-2000DF		VTG-3000DF		VTG-4000DF		VTG-5000DF		VTG-6000DF	
Electrical Supply	Volts	208	460	208	460	208	460	208	460	208	460
	\emptyset	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	18	8	18	8	18	8	32	15	32	15
Minimum Current Ampacity (MCA)	Amps	20	9	20	9	20	9	38	17	38	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.

WEIGHTS AND VOLUMES:

		Vantage DF Model	VTG-2000DF	VTG-3000DF	VTG-4000DF	VTG-5000DF	VTG-6000DF
Dry Weight	lbs	3,800	5,300	6,600	6,900	10,900	
	kg	1,724	2,404	2,994	3,130	4,944	
Operating Weight	lbs	5,100	7,100	8,900	9,200	14,900	
	kg	2,314	3,221	4,037	4,173	6,759	
Approximate Shipping Weight	lbs	4,250	5,825	7,200	7,475	11,600	
	kg	1,928	2,642	3,266	3,391	5,262	
Pressure Vessel Water Volume	Gallons	147	215	275	275	480	
	Liters	556	814	1,041	1,041	1,817	

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

Vantage DF Model		VTG-2000DF	VTG-3000DF	VTG-4000DF	VTG-5000DF	VTG-6000DF
Typical Flow Rate at Rated Output 20°F ΔT	GPM	192	289	387	454	564
	<i>LPM</i>	<i>727</i>	<i>1,094</i>	<i>1,465</i>	<i>1,719</i>	<i>2,135</i>
Typical Flow Rate at Rated Output 40°F ΔT	GPM	96	144	194	227	282
	<i>LPM</i>	<i>364</i>	<i>547</i>	<i>733</i>	<i>859</i>	<i>1068</i>
Water Pressure Drop at Rated Output 20°F ΔT	PSI	0.9	1.0	2.6	4.5	5.6
	<i>kPa</i>	<i>6.2</i>	<i>6.9</i>	<i>17.9</i>	<i>31.0</i>	<i>38.6</i>
Water Pressure Drop at Rated Output 40°F ΔT	PSI	< 0.1	< 0.1	< 0.1	0.4	1.3
	<i>kPa</i>	<i>< 0.7</i>	<i>< 0.7</i>	<i>< 0.7</i>	<i>2.8</i>	<i>9.0</i>
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
	<i>LPM</i>					
Maximum Flow Rate	GPM	N/A	N/A	N/A	N/A	N/A
	<i>LPM</i>					

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.

VENTING REQUIREMENTS:

Vantage DF Model		VTG-2000DF	VTG-3000DF	VTG-4000DF	VTG-5000DF	VTG-6000DF
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
	<i>ACFM</i>	<i>563</i>	<i>838</i>	<i>1,117</i>	<i>1,407</i>	<i>1,688</i>
Minimum Allowable Draft Pressure	in W.C.	-0.10	-0.10	-0.10	-0.04	-0.04
	<i>kPa</i>	<i>-0.025</i>	<i>-0.025</i>	<i>-0.025</i>	<i>-0.01</i>	<i>-0.01</i>
Maximum Allowable Draft Pressure	in W.C.	+0.40	+0.50	+0.50	+0.35	+0.35
	<i>kPa</i>	<i>+0.100</i>	<i>+0.124</i>	<i>+0.124</i>	<i>+0.087</i>	<i>+0.087</i>

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/M³)

Vantage DF Model		VTG-2000DF	VTG-3000DF	VTG-4000DF	VTG-5000DF	VTG-6000DF
NO _x	ppm	< 65	< 65	< 65	< 45	< 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

EMISSIONS: STANDARD NO. 2 FUEL OIL AT 138,500 BTU/GAL (9,226 KCAL/L)

Vantage DF Model		VTG-2000DF	VTG-3000DF	VTG-4000DF	VTG-5000DF	VTG-6000DF
NO _x	ppm	< 100	< 100	< 100	< 100	< 100
CO ₂	%	11 to 13	11 to 13	11 to 13	11 to 13	11 to 13
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

NOTES:

- NO_x and CO are stated at a 3% O₂ correction.
- Emissions data is typical for standard natural gas and standard #2 fuel oil operation.
- Emissions will vary based on site specific factors and operating parameters.
- Site specific conditions and emissions requirements will determine the appropriate CO₂ 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 DF Model		VTG-2000DF	VTG-3000DF	VTG-4000DF	VTG-5000DF	VTG-6000DF
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	1	1
	mm	25	25	25	25	25

NOTE:

- Local codes may supersede Fulton clearance requirements.

DIMENSIONS:

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