



CAMUS[®]

Hydronics Ltd.



CAMUS

HYDRONICS LTD.

FAMILY BROCHURE

THE CAMUS FAMILY OF GAS FIRED
RESIDENTIAL, COMMERCIAL AND INDUSTRIAL
COPPER TUBE, STAINLESS STEEL AND FIRE TUBE
BOILERS AND WATER HEATERS



Camus Hydronics is taking a leading role in the development of environmentally friendly products through innovative engineering as we incorporate the very latest technologies designed to create higher efficiency levels while lowering emissions.

CAMUS is continually setting new benchmarks of excellence through skillfully engineered and solidly constructed high-efficiency products designed to provide years of reliable service and comfort.

Additional specifications can be obtained by visiting our website or by calling your local CAMUS representative.

www.camus-hydronics.com



FORWARD THINKING

AVENGER

two-pass counter flow fire tube boilers and water heaters

for hydronic heating and hot water supply

Camus Hydraulics Ltd. is proud to introduce the industry's newest two-pass counter-flow fire tube heat exchanger. With thermal efficiencies of up to 98% in low water temperatures and a turn down ratio of up to 25:1, the Avenger is aimed at providing you with outstanding energy saving capabilities paired with remarkable high efficiencies.

Standard Features

- 160 PSI working pressure
- Operating pressure as low as 12 PSI
- Natural or propane gas operation
- Variable frequency drive (VFD) modulation
- SOLA Controller featuring cascade controls- lead lag up to 8 boilers on a single system
- Modbus RTU standard, Protocol Translator available for other communication needs
- Local/Remote switch for building management, remote modulation and set-point control
- 1 to 1 air/gas ratio control for proper combustion across entire modulation range
- Low NOx operation
- Sealed combustion
- Return water temperatures as low as 40°F
- Inherent O2 trim
- Rear Connections; water, gas, vent and electric



The Avenger is constructed using 100% stainless steel. The superior two-pass firetube design reduces the cost of manufacturing, maintains performance, quality standards and maximizes efficiency.

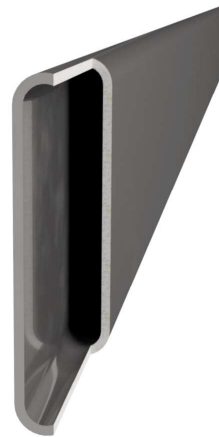
The first pass of the heat exchanger consists of stainless steel rifled tubes. The spiral design increases the turbulence within the tube, which optimizes the velocity of the combustion gases, increasing the heat transfer and efficiency of the boiler.



The second pass features a stainless steel oblong tube, which has a larger diameter compared to the rifle tubing. The oval design allows us to extract the latent heat from the flue gases, creating condensate in the process.

The larger diameter tubes help the condensation to rain down the condensation chamber without restricting the tubes and effecting combustion.

The oblong tube optimizes the condensing process by allowing the condensate to freely flow to the condensate tray.

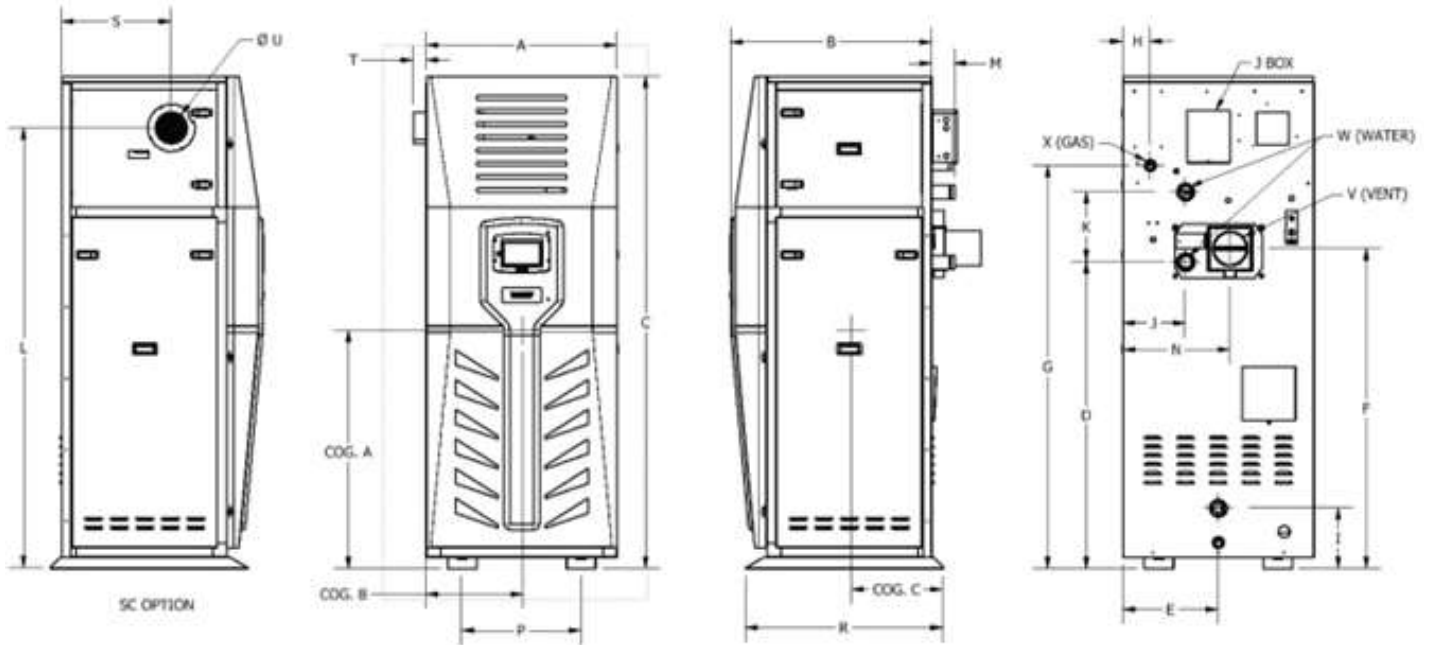


EFFICIENCIES
UP TO
98%



The Avenger utilizes a 100% stainless steel burner with a dual gas train, which due to its design, is able to maintain efficiency and low Nox. The burner is designed to combust a precise amount of premixed combustion air and gas to provide equal distribution of heat throughout the entire heat exchanger.

The stainless steel burner has increased resistance to temperature induced stresses, while still providing reliable heat transfer, smooth operation and stable flame signal even at very low outputs. Premix technology in combination with a condensing heat exchanger maximize the efficiency and limit emissions.



Model	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	F (in.)	G (in.)	H (in.)	I (in.)	J (in.)	K (in.)
1000	29 1/2	34	83	51 1/2	14 7/8	53 7/8	67 1/8	5	10 1/4	9 3/8	11 3/4
1500	29 1/2	38	83	52 3/8	14 7/8	54 1/2	68	3 1/2	10 7/8	8 1/8	10 1/2
2000	35	44	90	52 7/8	17 1/2	57 1/4	73 1/2	5 5/8	10	10 1/8	13 1/4
2500	35	44	90	52 7/8	17 1/2	57 1/4	73 1/2	5 5/8	10	10 1/8	13 1/4
3000	35	44	90	52 7/8	17 1/2	52 1/4	73 1/2	5 3/4	10 1/4	9	13
3500	35	44	99	53 3/8	17 1/2	60	77	5 1/2	10	8 1/2	16
4000	35	44	99	53 3/8	17 1/2	60	77	5 1/2	10	8 1/2	16

Model	L (in)	M (in.)	N (in.)	P (in.)	R (in.)	S (in.)	T (in.)	U (in.)	W (in.) Ø Water	X (in.) Ø Gas
1000	74 1/8	3 7/8	16 7/8	18 7/8	33 1/4	18 1/2	3 1/2	5 3/8	2	1
1500	74	4	17 7/8	19 3/8	36 1/2	20 1/2	3 1/2	5 3/8	2 1/2	1 1/4
2000	78 1/2	4	20	24	42 1/2	23 1/4	3	5 3/8	3	1 1/4
2500	78 1/2	4	20	24	42 1/2	23 1/4	3	7 3/8	3	1 1/2
3000	79 1/8	4	20	24	42 1/2	24 1/8	3 1/2	7 3/8	3	1 1/2
3500	83 1/2	6 1/2	20 1/2	24	42 1/2	24	4	7 3/8	4	2
4000	85 1/2	6 1/2	20 1/2	24	42 1/2	24 1/2	4	7 3/8	4	2

Model	Input MBH		Gross Output MBH	Turn-Down
	Max	Min		
ARN-1000	1000	47	945	21:1
ARP-1000	1000	100	945	10:1
ARN-1500	1500	60	1,416	25:1
ARP-1500	1500	150	1,416	10:1
ARN-2000	2000	80	1,886	25:1
ARP-2000	2000	200	1,886	10:1
ARN-2500	2500	100	2,355	25:1
ARP-2500	2500	250	2,355	10:1
ARN-3000	3000	120	2,841	25:1
ARP-3000	3000	300	2,841	10:1
ARN-3500	3500	140	3,325	25:1
ARP-3500	3500	350	3,325	10:1
ARN-4000	4000	160	3,748	25:1
ARP-4000	4000	400	3,748	10:1



DYNAFORCE

gas fired stainless steel condensing boilers

for hydronic heating and hot water supply



EFFICIENCIES
UP TO
99%

heat exchanger

The Dynaforce Heat Exchanger is a vertical cylindrical counter-flow water tube design. Constructed of 439 grade stainless steel, this welded heat exchanger features a 12 pass design with a maximum working pressure of 160 psig (1100 kPa) and a vertical cylindrical counter-flow water tube design complete with integral 439 grade stainless steel finned heat transfer tubes and waterways. The heat exchanger design is capable of 40°F constant system return temperatures for fully condensing operation and comes complete with condensate trap and drains.



**TURNDOWN
RATIO OF
5:1**

burner

The burner is 100% stainless steel and vertical mounted radial fired with stainless knitted metal fiber construction. The burner combusts a precise amount of premixed combustion air and gas to provide equal distribution of heat for heat transfer to the entire heat exchanger. Combustion operates with a 5:1 turn down ratio while sustaining combustion characteristics throughout the entire modulating range.

venting

For ease of installation, the fully condensing Dynaforce can be vented individually in a Category IV positive pressure venting arrangement or in a common chimney resulting in a Category II venting system.

With the outstanding efficiency of the Dynaforce, it can be vented with corrosion resistant PVC, CPVC, Polypropylene, AL29-4C or 316L stainless steel material as stack temperatures are between 10-15°F above incoming water temperatures. This allows a diverse range of venting materials to suit any installation and the Dynaforce is capable of venting up to 100 equivalent feet and up to 100 equivalent feet of combustion air can be brought directly to the boiler for direct vent installations.



outdoor venting

standard venting

sidewall venting and
combustion air inlet

The Dynaforce is available with an air inlet damper for cold climates which prevents outdoor air from infiltrating the heat exchanger when the appliance is in standby.

Model	Maximum Input MBTU/hr	Maximum Output MBTU/hr
300	300	282
350	350	329
400	399	375
500	500	470
600	600	564
800	800	752
1000	1000	940
1200	1200	1138
1400	1400	1327
1600	1600	1517
1800	1800	1706
2000	2000	1896
2500	2500	2370
3000	3000	2835
3500	3500	3307
4000	4000	3780
4500	4500	4253
5000	4999	4724

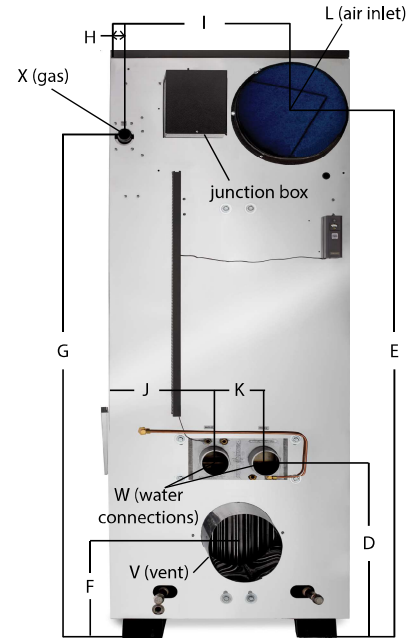
Input and Output



FRONT VIEW



SIDE VIEW



BACK VIEW

Model	Dim. "A"	Dim. "B"	Dim. "C"	Dim. "D"	Dim. "E"	Dim. "F"	Dim. "G"	Dim. "H"	Dim. "I"	Dim. "J"	Dim. "K"	Ø Dim. "L" Air Inlet*	Ø Air Inlet up to 100 Ft. Equiv. Length	Ø Dim. "V" Vent CAT. IV up to 100 Ft. Equiv. Length (as shipped)	Ø Dim. "V" Vent CAT. II	Dim. "M"	Ø Dim. "W" Water	Ø Dim. "X" Gas	Shipping Weight (lbs)
300	25"	27"	42"	15 1/2"	34 7/8"	9 3/4"	31 1/4"	6 3/4"	4 3/4"	11 7/8"	6"	6"	4"	4"	5"	5"	1 1/2"	3/4"	500
350	25"	27"	42"	15 1/2"	34 7/8"	9 3/4"	31 1/4"	6 3/4"	4 3/4"	11 7/8"	6"	6"	4"	4"	5"	5"	1 1/2"	3/4"	500
400	25"	27"	48 3/4"	16 3/8"	41 7/8"	10 1/2"	39 3/4"	9 3/4"	3 3/4"	12"	6"	6"	5"	4"	5"	5"	1 1/2"	1"	500
500	25"	27"	48 3/4"	16 3/8"	41 7/8"	10 1/2"	39 3/4"	9 3/4"	3 3/4"	12"	6"	6"	5"	5"	5"	5"	1 1/2"	1"	560
600	25"	27"	55 1/4"	18 1/2"	46"	11 1/2"	45 7/8"	10 1/2"	4 5/8"	12"	6"	8"	6"	5"	6"	5"	2"	1"	585
800	25"	27"	55 1/4"	18 1/2"	46"	11 1/2"	45 7/8"	10 1/2"	4 5/8"	12"	6"	8"	6"	6"	6"	5"	2"	1"	640
1000	25"	27"	65"	20 3/4"	57"	13"	56 5/8"	10 3/8"	4 3/8"	12"	6"	8"	8"	6"	7"	5"	2"	1"	750
1200	29 3/8"	31 3/4"	70 1/2"	20 3/4"	59 1/2"	13"	56 3/8"	1 7/8"	23 1/4"	12"	6"	10"	8"	7"	8"	5"	2 1/2"	1 1/4"	845
1400	29 3/8"	31 3/4"	73 1/2"	22 5/8"	62 1/2"	14"	59 1/4"	1 7/8"	23 1/4"	12"	6"	10"	8"	7"	8"	5"	2 1/2"	1 1/4"	845
1600	29 3/8"	31 3/4"	73 1/2"	22 5/8"	62 1/2"	14"	59 1/4"	1 7/8"	23"	12"	6"	12"	10"	7"	9"	5"	2 1/2"	1 1/4"	875
1800	29 3/8"	31 3/4"	73 1/2"	22 5/8"	62 1/2"	14"	59 1/4"	1 7/8"	23"	12"	6"	12"	10"	8"	9"	5"	2 1/2"	1 1/4"	1120
2000	29 3/8"	31 3/4"	81 1/4"	24 5/8"	72 3/8"	14 3/8"	69"	1 7/8"	22 3/4"	12 1/2"	6 1/2"	12"	10"	8"	10"	5"	3"	1 1/4"	1138
2500	29 3/8"	31 3/4"	82 5/8"	25"	74"	15 3/4"	69 1/2"	1 7/8"	22 1/2"	11 1/4"	6 1/2"	12"	12"	9"	10"	5 1/2"	3"	1 1/2"	1250
3000	35 3/4"	39 1/4"	85 1/4"	25 5/16"	75 3/16"	16"	70 1/2"	1 7/8"	27 3/4"	14"	7 3/4"	12"	12"	9"	10"	5 1/2"	3"	1 1/2"	1425
3500	35 3/4"	39 1/4"	93"	27 1/4"	82 1/4"	15 1/2"	76 1/4"	4 1/2"	27 3/4"	12"	12"	12"	12"	10"	12"	7"	4"	2"	1840
4000	35 3/4"	39 1/4"	93"	25 1/4"	82 1/4"	15 1/2"	76 1/4"	4 1/2"	27 3/4"	12"	12"	12"	12"	10"	12"	7"	4"	2"	1912
4500	35 3/4"	39 1/4"	96"	29"	81 1/4"	16 1/2"	79 1/4"	4 1/2"	28"	12"	12"	14"	14"	12"	12"	7 1/2"	4"	2 1/2"	2000
5000	35 3/4"	39 1/4"	102"	29 1/2"	87 1/2"	16 3/4"	85 1/2"	4 1/2"	27 3/4"	12"	12"	14"	14"	12"	12"	8"	4"	2 1/2"	2200

Dimensions and Specifications

Standard Features

- 18 models available with inputs ranging from 300,000 btu/hr to 5 Mil btu/hr
- Up to 99% Thermal Efficiency
- Suitable for Category 2 and Category 4 installation
- All welded heat exchanger, 316L/439 grade stainless steel counter flow, primary/secondary construction
- Return water temperatures down to 40°F
- Single point input adjustment for control of air and gas
- 1 to 1 air/gas ratio control for perfect combustion across entire modulation range
- Extremely low NOx emissions (less than 9 ppm)
- Flow Switch
- Water pressure switch
- Local/Remote switch for building management, remote modulation and set-point control
- Extremely low noise level
- Stainless steel mirror finish outer jacket
- Advanced integrated Honeywell SOLA control with touch-screen interface
- Suitable for venting with PVC, CPVC or PPE plastic vent material (app. dependent)
- Cascade up to 8 individual appliances in daisy-chain formation
- Direct ignition up to 2.5 million BTU/hr.
- Proven pilot ignition for 3 to 5 million BTU/hr.
- Low gas pressure switch
- High Gas pressure switch (models 3000 through 5000)
- Inlet regulator for incoming gas pressures up to 14" w.c.

- Stainless steel burner with radial knitted fiber
- Easy access to components for maximum serviceability
- Maximum allowable working pressure of 160 psig
- Maximum allowable discharge temperature of 210°F
- Minimum gas pressure requirements of 4.5" w.c. for models 300-1000, 7" w.c. for models 1200-5000
- Main burner test firing valve
- For operation with natural gas or propane
- Flame failure alarm contacts
- 5:1 turndown ratio with a minimum 20% firing rate
- Flue temperature monitoring

Optional Features

- Dual Fuel for firing with natural and propane (incl. two gas trains)
- Pump delay up to 1hp/Pilot duty over 1hp
- Air inlet damper and/or damper contacts
- Low water cut off (manual or automatic reset)
- High gas pressure switch (standard on models 3000-5000)
- Status on/off monitoring contacts
- Gateway protocol converter for BACnet, Metasys N2, IP or LonWorks
- Neutralization kit for condensate water
- Remote operation for set-point or fire-rate control utilizing 0-10VDC
- Additional voltages



DYNAFLAME

gas fired copper tube and stainless steel boilers

for hydronic heating and hot water supply



copper...

The copper heat exchanger is a four pass design with a maximum working pressure of 160 PSIG and a maximum working temperature of 250°F for heating and 210°F for domestic hot water applications. With its cast bronze headers and copper or cu-ni tubes, this gasket-less sealed design is a Camus trademark. Both the Copper and Stainless Heat Exchangers are vertically oriented which makes it easy to install and service with full access from the top and front of the appliance. Line up multiple units with minimal clearance between appliances.

...or stainless

The stainless steel heat exchanger is a six pass design with a maximum working pressure of 160 PSIG and is limited to 210°F maximum outlet temperature for heating and domestic hot water applications. It is a welded 439 grade stainless steel construction with a vertical cylindrical water tube design, complete with integral 439 stainless finned heat transfer tubes and 304/316L waterways.



The burner is 100% stainless steel and vertical mounted radial fired with stainless knitted metal fiber construction. The burner combusts a precise amount of premixed combustion air and gas to provide equal distribution of heat for heat transfer to the entire heat exchanger. Combustion operates with up to a 5:1 turn down ratio while sustaining combustion characteristics throughout the entire modulating range.

boiler efficiencies up to

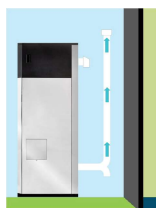
85% non-condensing

88% near-condensing

95% condensing



outdoor venting



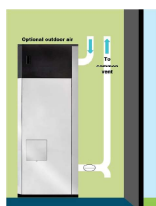
For all Condensing, Near-Condensing and Non-Condensing models

thru-wall venting



For all Non-Condensing models: Vents horizontally up to 100 ft. using Cat. III approved vent. Optional 100 ft. of inlet air duct, vertical or horizontal. Optional outdoor air.

conventional venting



For all Non-Condensing models: Vents into common breeching as Cat. I. Barometric damper may be used to control excess draft. Optional 100ft. of air duct, vertical or horizontal. Optional outdoor air.

vertical venting



For all Non-Condensing models: Vents vertically up to 100 ft. using Cat. III approved vent. Optional 100 ft. of inlet air duct, vertical or horizontal. Optional outdoor air.

For all Condensing and Near-Condensing models: Vents vertically using combined Cat. II approved venting system. Optional 100 ft. of air duct, vertical or horizontal. Barometric damper may be used to control excess air. Optional outdoor air.



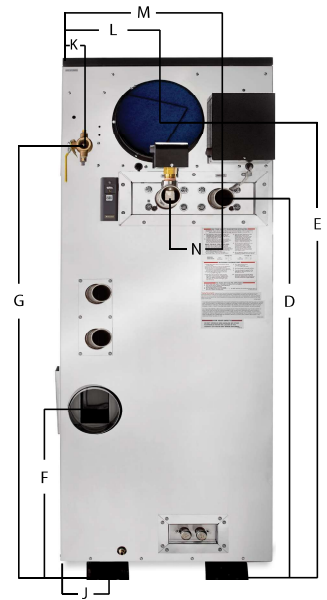
FRONT VIEW



SIDE VIEW
optional condensing models only



BACK VIEW
(condensing)



BACK VIEW
(non-condensing)

Model	Width "A"	Depth "B"	Height "C"	Water Conn. "D"	Air Inlet "E"	Flue Height "F"	Gas Height "G"	"H"	"I"	"J"	"K"	"L"	"M"	"N"	"P"	Air Inlet Dia. As shipped "W"	Water Conn. Prim. (s/s & copper) as shipped (grooved)	Water Conn. Sec. as shipped (Grooved)	Gas Conn. (NPT)
500	25"	27"	45 5/8"	27"	37 1/4"	13 1/4"	33 5/8"	17 3/4"	6"	4 1/8"	2 5/8"	11 1/2"	18 3/4"	6 1/4"	5"	10"	2"	1 1/2"	1"
750	25"	27"	55"	36 3/4"	46 5/8"	15 3/4"	43"	25"	6"	4 1/8"	2 5/8"	11 1/2"	18 3/4"	6 1/4"	5"	10"	2"	1 1/2"	1"
1100	25"	27"	68 1/4"	49 5/8"	59 7/8"	22"	56 1/4"	31 1/8"	6"	4 1/8"	2 5/8"	11 1/2"	18 3/4"	6 1/4"	5"	10"	2"	1 1/2"	1"
1200	25"	27"	68 1/4"	49 5/8"	59 7/8"	22"	56 1/4"	31 1/8"	6"	4 1/8"	2 5/8"	11 1/2"	18 3/4"	6 1/4"	5"	10"	2"	1 1/2"	1"
1500	29 3/8"	31 3/4"	58 1/8"	38 1/4"	48 5/8"	16 3/8"	45 7/8"	24 1/2"	6"	3 7/8"	1 7/8"	13 1/2"	22 3/8"	10 1/4"	5"	10"	2 1/2"	1 1/2"	1 1/4"
1750	29 3/8"	31 3/4"	62 5/8"	42 5/8"	53 1/8"	16 3/8"	50 3/8"	24 1/2"	6"	3 7/8"	1 7/8"	13 1/2"	22 3/8"	10 1/4"	5"	10"	2 1/2"	1 1/2"	1 1/4"
2000	29 3/8"	31 3/4"	66 7/8"	46 7/8"	57 3/8"	20"	53 5/8"	28 3/4"	6"	3 7/8"	1 7/8"	13 1/2"	22 3/8"	10 1/4"	5"	12"	3"	1 1/2"	1 1/4"
2500	29 3/8"	31 3/4"	73 1/2"	52 5/8"	63 5/8"	25 3/4"	60 3/8"	34 1/2"	6"	3 7/8"	1 7/8"	13 1/2"	22 3/8"	10 1/4"	5 1/2"	12"	3"	1 1/2"	1 1/2"
3000	29 3/8"	31 3/4"	79 1/2"	58 5/8"	69 5/8"	31 3/4"	66 3/8"	40 1/2"	6"	3 7/8"	1 7/8"	13 1/2"	22 3/8"	10 1/4"	5 1/2"	12"	3"	1 1/2"	1 1/2"
3500	29 3/8"	31 3/4"	86 1/2"	63 5/8"	76"	24 7/8"	72 5/8"	32 7/8"	20"	3 7/8"	1 7/8"	13 1/2"	22 3/8"	10 1/4"	6"	14"	4"	1 1/2"	2"
4000	29 3/8"	31 3/4"	91 1/2"	68 5/8"	81"	29 7/8"	77 5/8"	37 7/8"	20"	3 7/8"	1 7/8"	13 1/2"	22 3/8"	10 1/4"	6"	14"	4"	1 1/2"	2"
4500	29 3/8"	31 3/4"	96 1/2"	73 5/8"	86"	34 7/8"	82 5/8"	42 7/8"	20"	3 7/8"	1 7/8"	13 1/2"	22 3/8"	10 1/4"	31"	14"	4"	1 1/2"	2 1/2"
5000	29 3/8"	31 3/4"	101 1/2"	78 5/8"	91"	39 7/8"	87 5/8"	47 7/8"	20"	3 7/8"	1 7/8"	13 1/2"	22 3/8"	10 1/4"	31"	14"	4"	1 1/2"	2 1/2"
4504	35 3/4"	39 1/4"	83"	59 3/4"	72 1/4"	20 3/4"	67 7/8"	28 7/8"	20"	2 1/2"	3 1/2"	17 7/8"	25 5/8"	12"	31"	14"	4"	1 1/2"	2 1/2"
5004	35 3/4"	39 1/4"	88 1/4"	65"	77 1/2"	26"	72 1/4"	34 1/8"	20"	2 1/2"	3 1/2"	17 7/8"	25 5/8"	12"	31"	14"	4"	1 1/2"	2 1/2"
6004	35 3/4"	39 1/4"	102"	75 1/2"	91"	35 1/2"	85 1/2"	44 5/8"	20"	2 1/2"	2 3/4"	17 7/8"	25 5/8"	12"	31"	14"	4"	1 1/2"	3"

Dimensions & Specifications

Model	Maximum Input MBTU/hr	Max. Output MBTU/hr (Non-Condensing)	Max. Output MBTU/hr (Near-Condensing)	Max. Output MBTU/hr (Condensing)
500	500	425	440	475
750	750	638	660	713
1100	1100	935	968	1045
1200	1200	1020	1056	1140
1500	1500	1275	1320	1425
1750	1750	1488	1540	1663
2000	2000	1700	1760	1900
2500	2500	2125	2200	2375
3000	3000	2550	2640	2850
3500	3500	2975	3080	3325
4000	4000	3400	3520	3800
4500	4500	3825	3960	4275
5000	4999	4249	4399	4749
4504	4500	3825	3960	4275
5004	4999	4249	4399	4749
6004	6000	5100	5280	5700

Input and Output

Model	Non-Condensing			Condensing and Near-Condensing				
	Outdoor	Cat. III up to 50 ft.	Cat III up to 100 ft.	Cat. I	Outdoor	Cat. IV up to 50 ft.	Cat. IV up to 100 ft.	Cat. II
500	4	4	6	8	4	4	6	5
750	6	6	8	10	6	6	8	6
1100	6	6	8	10	6	6	8	7
1200	6	6	8	10	6	6	8	7
1500	7	7	10	12	7	7	10	8
1750	7	7	10	12	7	7	10	8
2000	8	8	12	14	8	8	12	9
2500	8	8	12	14	8	8	12	9
3000	8	8	12	14	8	8	12	10
3500	9	9	14	16	9	9	14	12
4000	9	9	14	16	9	9	14	12
4500	10	10	14	16	10	10	14	12
5000	10	10	14	16	10	10	14	12
4504	10	10	14	16	10	10	14	12
5004	10	10	14	16	10	10	14	12
6004	12	12	14	16	12	12	14	12

Venting (inches)

Model	Non-Cond.	Near-Cond.	Cond.
500	520	520	593
750	600	600	678
1100	640	640	704
1200	700	700	770
1500	825	825	899
1750	900	900	963
2000	943	943	999
2500	1025	1025	1085
3000	1100	1100	1120
3500	1250	1250	1330
4000	1290	1290	1380
4500	1420	1420	1500
5000	1627	1627	1720
4504	1525	1525	1610
5004	1732	1732	1815
6004	1963	1963	2210

Approx. Shipping Weight - lbs

Standard Features

- Single point input adjustment for controlling air and gas
- 1 to 1 air/gas ratio for perfect modulation throughout
- Extremely low NOx emissions (less than 10 PPM)
- Flow switch
- Pressure relief valve
- Extremely low noise level
- Stainless steel outer jacket & combustion chamber
- Advanced digital control system with pin point accuracy
- Proven hot surface ignition with soft start, rumble free operation

- Low gas pressure switch
- 4-20mA for setpoint or modulation control
- Local remote switch
- Proven pilot ignition 3 to 6 million
- 0-10 VDC Converter (must be specified)
- Lead lag capability up to 8 boilers standard
- DHW sensor (Domestic only) and system sensor (Htg only)
- Modbus RTU Communication
- Flame failure contacts
- Direct Ignition up to 2.5 million BTU/hr
- Very small footprint

Condensing and Near-Condensing Additional Features

- 95% Thermal Efficiency (Condensing)
- 88% Thermal Efficiency (Near-Condensing)
- Suitable for Category 2 and Category 4 installation
- Range of burner modulation 20-100% (turn down ratio 5:1)

Non-Condensing Additional Features

- 85% Thermal Efficiency
- Suitable for Category 1 and Category 3 installation
- Range of burner modulation 35-100% (turn down ratio 3:1)



CONTROLS

Avenger, Dynaforce and DynaFlame Series Boilers

The Avenger, Dynaforce and DynaFlame are controlled by an integrated Honeywell SOLA controller. The 7" color touch screen provides remote operation through the 4-20mA or 0-10Vdc for set point or fire rate control. Paired with the ability to control multiple pump operation along with daisy chain set up for up to 8 boilers, this user friendly control also provides you with a USB output for screenshot capture, as well as password access for service personnel. Up to 8 SOLA devices may be monitored and controlled with one single display.



SOLA Touchscreen Display Additional Features

- Viewable outdoor reset schedule
- Real-time digital and analog temperatures, flame signal, firing rate, remote input signal information
- Digital I/O safety annunciation
- Trend Analysis
- USB file and screenshot download
- 15-item error lockout history with time and date stamp
- 15-item alert history with time and date stamp
- Complete diagnostic report when lockout occurs
- Real-time clock to keep track of when errors occur
- Fahrenheit/Celsius temperature readout
- Infinitely adjustable firing rate for manual operation
- Internal ModBus communication

In a world where we are becoming more connected, the Avenger, Dynaforce and DynaFlame are ready to enter this revolutionary phase in building automation. All three family of boilers are equipped with standard Modbus RTU communication protocol to allow for BMS access to boiler operation. The remote monitoring of a boiler plant allows for complete overview of various boiler-related temperatures, boiler status, pump activation, boiler error codes and more. This is not just limited to read-only parameters, as a BMS is permitted to write setpoint temperatures, enable/disable and remotely send and receive firing rate requests.

To further evolve and adapt to the changing marketplace, these models are available with BacnetIP, BacnetMSTP, LonWorks and MetasysN2 protocol support. All the features available in the Modbus RTU realm are carried into these protocols with the use of a highly advanced, yet user friendly, Fieldserver Protonode. The Fieldserver Protonode is equipped with Ethernet or RS485 connectivity and is BTL (BACnet Testing Laboratory) Certified. This approval assures that we carry only the highest quality products with optimum performance and utmost ease of connectivity.



get connected





DYNAMAX

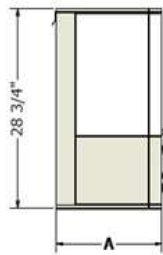
gas fired stainless steel condensing boilers

for hydronic heating, hot water supply and combination

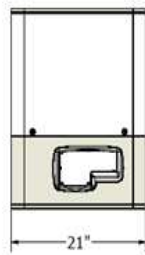


EFFICIENCIES
UP TO
97%

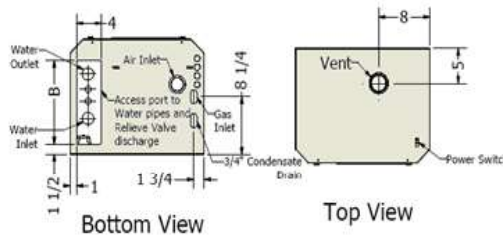
Dimensions and Specifications - Wall Mount



Side View



Front View



Bottom View

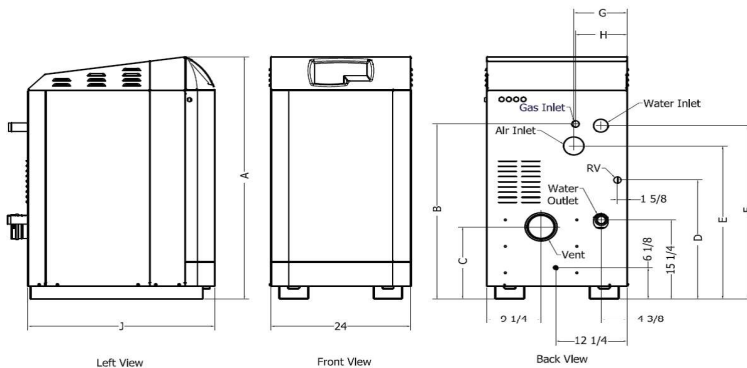
Top View

Model	Maximum Input MBTU/hr	Maximum Output MBTU/hr
200	200	186.0
250	250	232.5
210	199	186.0
260	250	232.5
290	299	278.0
399	399	371.0
500	500	465.0
600	600	558.0
700	700	651.0
800	800	744.0

Model	Dim. "A"	Dim. "B"	Dim. "C"	Dim. "D"	Dim. "E"	Dim. "F"	Dim. "J"	Equivalent Length of Vent & Air Intake Pipes at Recommended Dia.			Water Conn. at Heater NPT	Gas Conn. at Boiler NPT	
								Category IV					
								Over 25' and up to 100'	Over 15' and up to 25'	Up to 15'			
200	23 1/2"	19"	-	-	-	-	-	3"	3"	2"	-	1"	1/2"
250	23 1/2"	19"	-	-	-	-	-	3"	3"	2"	-	1 1/4"	1/2"
210	42 1/2"	25 3/4"	14 1/4"	23"	24 1/4"	34 1/4"	32"	3"	3"	2"	4"	1"	1/2"
260	42 1/2"	25 3/4"	14 1/4"	23"	24 1/4"	34 1/4"	32"	3"	3"	2"	4"	1 1/4"	1/2"
290	47 1/8"	34 7/8"	14"	23"	29 7/8"	33 7/8"	32"	4"	3"	3"	5"	1 1/4"	3/4"
399	47 1/8"	34 7/8"	14"	23"	29 7/8"	33 7/8"	32"	4"	3"	3"	5"	1 1/2"	1"
500	47 1/8"	34 7/8"	14"	23"	29 7/8"	33 7/8"	32"	4"	3"	3"	6"	1 1/2"	1"
600	47 1/8"	36 1/4"	14"	23"	30 3/4"	38"	40 1/2"	4"	3"	3"	6"	2"	1"
700	47 1/8"	36 1/4"	14"	23"	30 3/4"	38"	40 1/2"	4" (Air), 6" (Vent)	4"	4"	7"	2"	1"
800	47 1/8"	36 1/4"	14"	23"	30 3/4"	38"	40 1/2"	5" (Air), 6" (Vent)	5"	5"	7"	2"	1"

Model	Shipping Weights		
	HTG	DHW	Combination
200	210	210	220
250	220	220	230
210	315	315	320
260	320	320	335
290	376	376	380
399	405	405	445
500	450	470	514
600	490	610	650
700	533	615	660
800	600	630	675

Dimensions and Specifications - Floor Mount



Left View

Front View

Back View

Standard Features

- All stainless steel water surfaces
- Gasketless heat exchanger design
- Approved plastic venting up to 100 feet (PVC, PVC, PPE)
- Up to 150 PSI relief valves
- Onboard digital operating control
- Fully modulating with 5:1 turndown
- Available in Natural Gas or LP
- Thru wall exhaust vent (vertical or horizontal) with 3 air intake options: 1) outside air sealed direct, 2) outside air, 3) Indoor air
- UL353 approved fail safe high limit @ 210°F with manual reset
- Factory mounted boiler circulating pump
- Single point input adjustment for air and gas
- 1 to 1 air/gas ratio for perfect modulation throughout
- Extremely low NOx emissions exceeding air quality standards (<10ppm)
- Cascade up to 8 individual appliances in daisy-chain formation



TH SERIES

gas fired condensing water heaters

for hot water supply



EFFICIENCIES
UP TO
92%

Dimensions and Specifications

Model	Maximum Input MBTU/hr	Maximum Output MBTU/hr
TH-202	199	186.0
TH-252	250	232.5
TH-292	299	278.0
TH-392	399	371.0
TH-502	500	465.0

Model	Approx. Shipping Weight
TH-202	525
TH-252	525
TH-292	600
TH-392	650
TH-502	710

Model	Tank Capacity
TH-202	40
TH-252	40
TH-292	40
TH-392	40
TH-502	40

Model	Dim. "A"	Dim. "B"	Dim. "C"	Dim. "D"	Dim. "E"	Dim. "F"	Dim. "G"	Dim. "H"	Length of Vent & Air Intake Pipes at Recommended Dia.					
									over 25' & up to 100'	Category IV over 15' & up to 25'	Up to 15'	Cat. II Comb. Vent	Water Conn. At Heater NPT	Gas Conn. At Heater NPT
TH-202	53"	31 1/4"	37 3/4"	46 3/8"	47 1/2"	12 1/8"	9 7/8"	7 3/8"	3"	3"	2"	4"	1"	1/2"
TH-252	53"	31 1/4"	37 3/4"	46 3/8"	47 1/2"	12 1/8"	9 7/8"	7 3/8"	3"	3"	2"	4"	1 1/4"	1/2"
TH-292	65 1/2"	31 1/4"	37 1/2"	58 3/8"	53 7/8"	12 1/8"	11 3/8"	8 7/8"	4"	3"	3"	5"	1 1/4"	3/4"
TH-392	65 1/2"	31 1/4"	37 1/2"	58 3/8"	53 7/8"	12 1/8"	11 3/8"	8 7/8"	4"	3"	3"	5"	1 1/2"	1"
TH-502	65 1/2"	31 1/4"	37 1/2"	58 3/8"	53 7/8"	12 1/8"	11 3/8"	8 7/8"	4"	3"	3"	6"	1 1/2"	1"

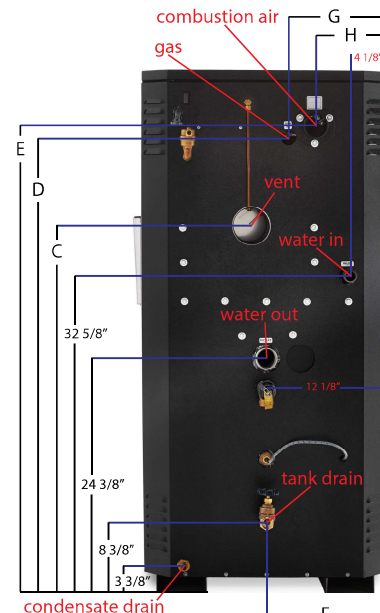
Dim. and Specifications



FRONT VIEW



SIDE VIEW



BACK VIEW

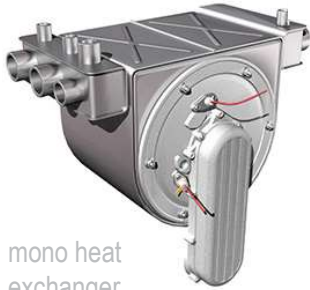
Standard Features

- Approved for plastic venting up to 100 feet
- 150 PSI temp. & pressure relief valve
- Onboard integrated digital operating control
- Fully modulating with 5:1 turndown
- Stainless steel heat exchanger rated at 160 PSIG maximum allowed working pressure & 210°F maximum outlet temp.
- Available in Natural Gas or LP
- Thru wall exhaust vent (vertical or horizontal) with 3 air intake options: 1) outside air sealed direct, 2) outside air, 3) indoor air
- Extremely low NOx
- Fail safe high limit w/ manual reset
- Water flow proving
- Direct spark ignition
- Zero clearance to combustibles
- Factory mounted bronze circulating pump
- CSA Certified stainless steel storage tank w/ 10 year warranty, rated 160 PSIG maximum allowed working pressure & 210°F maximum working temp.
- Neutralizer kit

DYNAMAX & TH SERIES

Burner

The DynaMax and TH Series burner is 100% stainless steel and vertical mounted radial fired with stainless knitted metal fiber construction. The burner combusts a precise amount of premixed combustion air and gas to provide equal distribution of heat for heat transfer to the entire heat exchanger. Combustion operates with a 5:1 turn down ratio while sustaining combustion characteristics throughout the entire modulating range.



mono heat exchanger

The DynaMax and TH Series models 200-250 feature a MONO design heat exchanger wherein the secondary heat exchanger is separated by a divider plate from the primary heat exchanger.

Heat Exchanger

The DynaMax and TH Series features an industry leading, high efficiency stainless steel heat exchanger. The heat exchanger is formulated by multi-pass all welded construction with a maximum working pressure of 160 PSI. The heat exchanger design is capable of 40°F constant system return temperatures that enables fully condensing operation.

With either design, the water always performs the concept of counter flow whereby the coolest water meets with the coolest flue gases and water temperature is gradually increased as it exits the primary heat exchanger. Each tube wraps around the shell of the heat exchanger four times before entering the opposite header. This provides sufficient residency time for energy capture. The flue gases are discharged with a Camus supplied adapter to accommodate PVC, CPVC or Stainless Steel venting. The heat exchanger features a condensate spillway to allow condensate to be properly disposed of in a Camus supplied stainless steel condensate box.



duo heat exchanger

DynaMax models 299-800 and TH Series models 292-502 feature a DUO design where the heat exchanger is split into two distinct chambers.



Honeywell HAPI Display

The DynaMax and TH Series are equipped with a multi-line user configurable LCD display which provides access to control system configuration and set up, readouts of various heater temperatures, accumulated runtime, annunciator diagnostics, flame signal readout and firing rates. The display can be accessed through a 5-way touchpad high resolution LCD control with shortcut key access with user and installer protected parameters. The display is capable of storing up to 15 automatic reset errors and 15 manual reset errors.



get connected



MICOFLAME SERIES

gas fired copper tube boilers

for hydronic heating and hot water supply



Standard Features

- Low NOx
- Copper Tube Heat Exchanger which meets lead-free regulations
- Durable metal fiber burner unaffected by high temps
- Suitable for use in negative pressure environments
- Complete diagnostic light package
- Easy access for inspection & cleaning of heat exchanger tubes
- Durable ceramic fibre refractory
- Simple to service with easy access to burner and fan

MicoFlame Series 1 Additional Standard Features

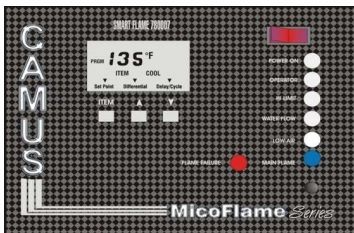
- For Residential/Light Commercial Installations
- Vents up to 50 feet horizontally with 50 feet of air intake duct
- Firing Modes: All models available in on/off, 2-stage, and modulating

MicoFlame Series 2 and Grande Additional Standard Features

- For Residential/Light Commercial* and Commercial/Industrial**
- Vents up to 60 feet horizontally with 60 feet of air intake duct
- Firing Modes: Models 800-1000 on/off, 2-stage and modulating. Models 1200-4000 2-stage, 3-stage, 4-stage and modulating.

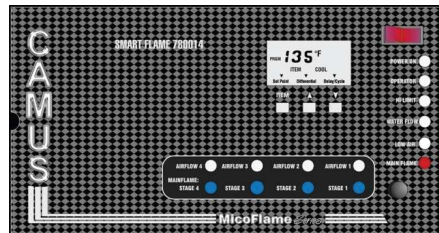
*MicoFlame 2
**MicoFlame Grande

Control Panel and Display



MicoFlame Series 1

- Accurate proportional control with 2-stage option
- Incorporates auto reset high limit & operator
- Three modes of operation: heating, DHW & remote
- Port for optional tank sensor
- Optional pump delay
- Flame failure feature
- Displays inlet/outlet temps & delta temp.
- Displays total run hours
- Molex harness connection for ease of service
- Weather proof enclosure
- Fusible link for over-voltage
- Proven field performance



MicoFlame Series 2 & Grande

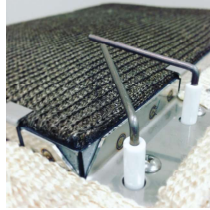
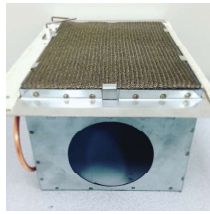
- Accurate proportional control with up to 4-stage option
- Incorporates auto reset high limit & operator
- Eight modes of operation for outdoor reset, heating, DHW and Remote
- Port for optional tank sensor
- Optional pump delay
- Flame failure feature
- Displays inlet/outlet temps & delta temp.
- Displays total run hours
- Molex harness connection for ease of service
- Weather proof enclosure
- Fusible link for over-voltage
- Proven field performance



The MicoFlame Series appliance is controlled by the Tekmar SmartFlame which is specifically designed for on/off, staging or modulating function.

This user-friendly controller accommodates up to 4-stage control along with up to 8 modes of operation in total which provides set point as well as reset control. This controller is equipped with a molex harness connection as well as a pump exercising feature which runs the pump for 10 seconds every three days of no pump operation.

These functions along with many more are designed with the user in mind providing them with ease of service and years of reliability.



Burner

The MicoFlame burner is 100% stainless steel, with a knitted metal fiber construction. Vertically fired below the heat exchanger, the burner combusts a precise amount of premixed combustion air and gas to provide equal distribution of heat to the heat exchanger at a turndown rate of 3:1. Multiple staging and modulating configurations allow for a range of operating characteristics, and combustion characteristics are maintained throughout the operating range. Full access to the burner assembly and easy removal for inspection and cleaning is provided by the access panels at the base of the unit.

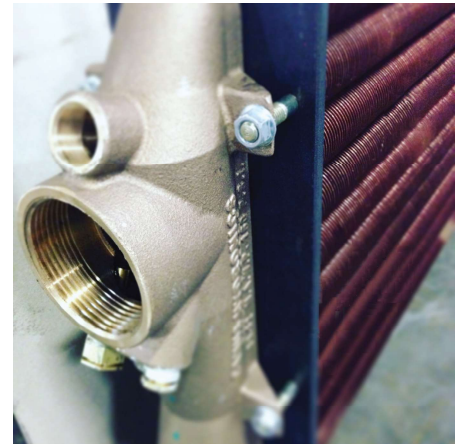
Heat Exchanger

The copper heat exchanger is a two pass design with a maximum working pressure of 160 PSIG and a maximum working temperature of 250°F for heating and 210°F for domestic hot water applications. Utilizing cast bronze headers, steel tube-sheets and copper or cu-ni tubes, they can be configured for right or left side water connections. Removable headers allow for easy access to the tube bundle for service and cleaning.



Secondary HTX

The appliance can be fitted with an economizer (secondary heat exchanger) to achieve nominal efficiency of 95%. This heat exchanger is fabricated from stainless steel and can accept inlet water temperatures as low as 40°F.



MICOFLAME MODULATING SERIES (HEATING APPLICATIONS ONLY)

Standard Features

Includes all the standard features of the MicoFlame Series 1, 2 and Grande plus...

- Models 400-1000 modulate seamlessly down to 35% of input
- Models 1200-4000 modulate seamlessly down to 40% of input
- Includes a Pulse Width Modulation (PWM) blower

Input & Output	Model	Input Range [kBTU/hr x 100]	Input Range [kW]	Input [BTU/hr]	Input [kW]	Non-Condensing		Condensing	
						Output [BTU/hr]	Output [kW]	Output [BTU/hr]	Output [kW]
	Series 1 400	140-399	41.0 - 116.8	399,000	116.8	339,150	99.3	379,050	110.9
	Series 1 500	175 - 500	51.2 - 146.4	500,000	146.4	425,000	124.5	475,000	139.1
	Series 1 600	210 - 600	61.5 - 175.7	600,000	175.7	510,000	149.3	570,000	166.9

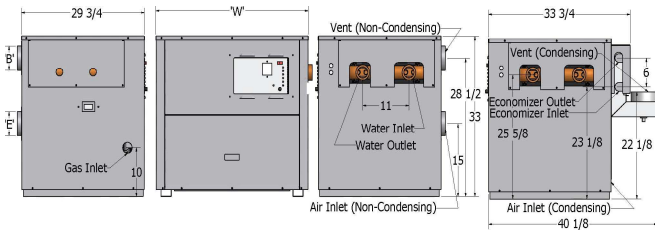
Input & Output	Model	Input Range [kBTU/hr x 100]	Input Range [kW]	Input [BTU/hr]	Input [kW]	Non-Condensing		Condensing	
						Output [BTU/hr]	Output [kW]	Output [BTU/hr]	Output [kW]
	Series 2 800	320 - 800	93.7 - 234.3	800,000	234.3	680,000	199.1	760,000	222.5
	Series 2 1000	400 - 1000	117.1 - 292.8	1,000,000	292.8	850,000	248.9	950,000	278.2
	Series 2 1200	480 - 1200	140.5 - 351.3	1,200,000	351.4	1,020,000	298.7	1,140,000	333.8
	Series 2 1400	560 - 1400	164.0 - 410.0	1,400,000	410.0	1,190,000	348.5	1,330,000	389.5
	Series 2 1600	640 - 1600	187.4 - 468.5	1,600,000	468.5	1,360,000	398.2	1,520,000	445.1
	Series 2 1800	720 - 1800	210.8 - 527.1	1,800,000	527.1	1,530,000	448	1,710,000	500.7
	Series 2 2000	800 - 2000	234.2 - 585.7	2,000,000	585.7	1,700,000	497.8	1,900,000	556.4

Input & Output	Model	Input Range [kBTU/hr x 100]	Input Range [kW]	Input [BTU/hr]	Input [kW]	Non-Condensing		Condensing	
						Output [BTU/hr]	Output [kW]	Output [BTU/hr]	Output [kW]
	Grande 2010	800 - 2000	234.2 - 585.6	2,000,000	585.6	1,700,000	497.8	1,900,000	556.3
	Grande 2500	1000 - 2500	292.8 - 732.0	2,500,000	732.0	2,125,000	622.2	2,375,000	695.4
	Grande 3000	1200 - 3000	351.4 - 878.4	3,000,000	878.4	2,550,000	746.6	2,850,000	834.5
	Grande 3500	1400 - 3500	409.9 - 1024.8	3,500,000	1024.8	2,975,000	871.1	3,325,000	973.6
	Grande 4000	1600 - 4000	468.5 - 1171.2	4,000,000	1171.2	3,400,000	995.5	3,800,000	1,112.6

Dimensions and Specifications
Models 400-600

THERMAL EFFICIENCIES OF UP TO

85% Non-Condensing
95% Condensing



Side View (Left) Front View Side View (Right) Side View (Right) (Cond.)

Input and Output

Model	"W"	Water Connection (NPT)	Gas Connection	"B" Dia. Venting			"E" Dia. Air Inlet
				Outdoor	Sidewall or Condensing	Standard	
400	31 1/2"	2"	1"	5"	5"	6"	5"
500	31 1/2"	2"	1"	6"	6"	7"	6"
600	36 1/2"	2"	1"	6"	6"	7"	6"

Model	Input	Output - BTUH (Non-Cond.)	Output - BTUH (Cond.)	Input - KW	Output - KW (Non-Cond.)	Output - KW (Cond.)
400	399,000	340,000	380,000	116.94	99.64	111.37
500	500,000	425,000	475,000	146.54	124.56	139.21
600	600,000	510,000	570,000	175.84	149.47	167.05

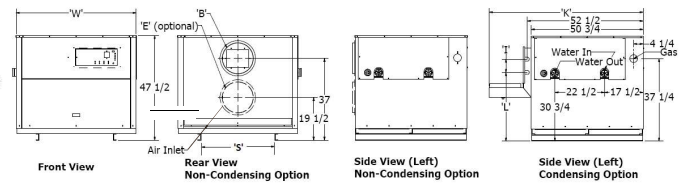
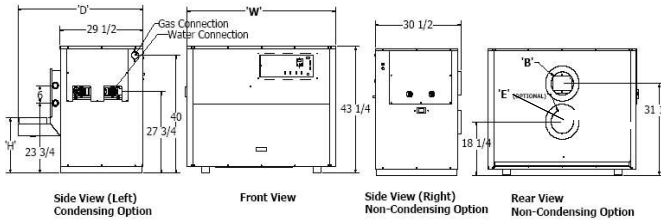
Shipping Weights

Model	Non-Condensing	Condensing
400	290	310
500	305	345
600	360	400

Note: Non-Condensing models are shipped with standard vent size unless sidewall vent size is specified

Dimensions and Specifications - MicoFlame 2
Models 800-2000

Dimensions and Specifications - MicoFlame Grande
Models 2010-4000



Model	"W"	"D"	"H"	Water Connection	Gas Connection	"B" Dia. Venting			"E" Dia. Air Inlet
						Outdoor	Sidewall or Condensing	Standard	
800	45 3/4"	44 1/2"	18 3/4"	2 1/2"	1"	8"	8"	10"	8"
1000	52 3/4"	44 1/2"	18 3/4"	2 1/2"	1 1/4"	8"	8"	10"	8"
1200	62"	44 1/2"	23 1/4"	2 1/2"	1 1/4"	10"	10"	12"	10"
1400	71 1/4"	44 1/2"	23 1/4"	2 1/2"	1 1/4"	10"	10"	12"	10"
1600	80 3/4"	44 1/2"	23 1/4"	2 1/2"	1 1/2"	12"	12"	14"	12"
1800	89 3/4"	44 1/2"	23 1/4"	2 1/2"	1 1/2"	12"	12"	14"	12"
2000	99"	44 1/2"	23 1/4"	2 1/2"	1 1/2"	12"	12"	14"	12"

Model	"I"	"K"	"L"	"W"	"S"	Water Conn.	Gas Conn.	"B" Dia. Venting			"E" Dia. Air Inlet
								Outdoor	Sidewall or Condensing	Standard	
2010	6"	68"	34 5/8"	54 5/8"	33 3/8"	3"	1 1/2"	12"	12"	14"	12"
2500	6"	72"	34 5/8"	78 7/8"	58"	3"	2"	14"	14"	16"	14"
3000	6"	72"	34 5/8"	78 7/8"	58"	3"	2"	14"	14"	16"	14"
3500	6"	72"	34 5/8"	103"	81 3/4"	4"	2 1/2"	16"	16"	18"	16"
4000	6"	72"	34 5/8"	103"	81 3/4"	4"	2 1/2"	16"	16"	18"	16"

*These models have two identical outdoor air inlets. When joining the two 8" inlets, use a 10" pipe. When joining the two 10" inlets, use a 12" pipe.
**Appliance may be supplied with 2 openings that can be combined into this size.
***Non-Cond. models are shipped with standard vent size unless sidewall vent size is specified.

*Note: "E" Dia.: join (2) 10" openings into common 14" and join (2) 12" openings into common 16"
**Appliance may be supplied with 2 openings that can be combined into this size.
***Non-Cond. models are shipped with standard vent size unless sidewall vent size is specified.
****Water connections are 3" grooved at header.

Model	Input	Output - BTUH	
		(Non-Cond.)	(Condensing)
800	800,000	680,000	760,000
1000	1,000,000	850,000	950,000
1200	1,200,000	1,020,000	1,140,000
1400	1,400,000	1,190,000	1,330,000
1600	1,600,000	1,360,000	1,520,000
1800	1,800,000	1,530,000	1,710,000
2000	2,000,000	1,700,000	1,900,000
2010	2,000,000	1,700,000	1,900,000
2500	2,500,000	2,125,000	2,375,000
3000	3,000,000	2,550,000	2,850,000
3500	3,500,000	2,975,000	3,325,000
4000	4,000,000	3,400,000	3,800,000

Model	Approx. Shipping Weights (lbs)	
	Non-Cond.	Cond.
800	500	580
1000	610	690
1200	732	828
1400	854	966
1600	976	1104
1800	1098	1242
2000	1220	1380
2010	1,585	1,635
2500	1,675	1,745
3000	1,750	1,820
3500	2,000	2,070
4000	2,200	2,270

BLUEFLAME SERIES

gas fired commercial copper tube boilers

for hydronic heating and hot water supply



EFFICIENCIES
UP TO
83%

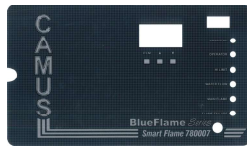


The BlueFlame atmospheric burner is 100% stainless steel construction. Vertically fired below the heat exchanger, the tubes are mounted in a burner tray in an array formation to allow for a broad range of inputs. The tray slides out for full access to the burners for easy inspection and cleaning.



The copper heat exchanger is a two pass design with a maximum working pressure of 160 PSIG and a maximum working temperature of 250°F for heating and 210°F for domestic hot water applications. Utilizing cast bronze headers, steel tube-sheets and copper or cu-ni tubes, they can be configured for right or left side water connections. Removable headers allow for easy access to the tube bundle for service & cleaning.

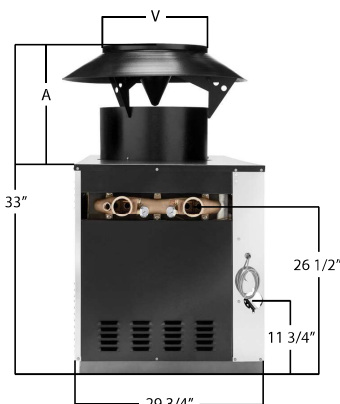
Smartflame 780007 Control Panel Highlights



- Incorporates auto reset high limit & operator
- Multiple modes of operation for domestic hot water, hydronic heating and outdoor reset
- Firing Modes available: on/off, 2-stage and modulation (modulation is optional - controlled by the Honeywell T775A2009)
- Port for optional tank sensor
- Displays inlet/outlet temps and delta temperature
- Flame failure feature
- Alarm contacts
- Displays total run hours
- Snap on Molex connection for easy service
- Fusible link for over-voltage protection

Standard Features

- Diagnostic lights help troubleshooting
- Copper Tube HTX meets lead-free regulations
- Durable stainless steel burner
- Adaptable to outdoor use
- Simple to service
- Slide out burner tray and Heat Exchanger
- Easy side access for inspection of combustion chamber
- High temp ceramic fiber tiles in combustion chamber
- Very smooth and quiet operation
- Suitable for venting in low ceiling applications with use of power venter and low profile hood
- Optional Digital Temp control is extremely accurate to minimize standby losses from temp. overshoot
- Optional modulating firing mode available



Dimensions & Specifications	STANDARD VENTING					OUTDOOR VENTING					
	Model	"A"	"B"	"V"	Nat. Gas	L.P.	"A"	"B"	"V"	Nat. Gas	L.P.
	480	16"	30 3/4"	10"	1"	3/4"	20"	30 3/4"	12"	1"	3/4"
660	16"	39"	12"	1"	3/4"	20"	39"	14"	1"	3/4"	
840	19"	47 1/4"	14"	1"	3/4"	20"	47 1/4"	16"	1"	3/4"	
1020	21"	55 1/2"	16"	1 1/4"	1"	20"	55 1/2"	18"	1 1/4"	1"	
1200	21"	63 3/4"	16"	1 1/4"	1"	20"	63 3/4"	18"	1 1/4"	1"	
1380	21"	72"	18"	1 1/4"	1"	20"	72"	20"	1 1/4"	1"	
1560	21"	80 1/4"	18"	1 1/4"	1"	20"	80 1/4"	20"	1 1/4"	1"	
1740	21"	88 1/2"	20"	1 1/2"	1 1/4"	20"	88 1/2"	22"	1 1/2"	1 1/4"	
1950	21"	96 3/4"	20"	1 1/2"	1 1/4"	20"	96 3/4"	22"	1 1/2"	1 1/4"	

Model	Input - BTUH		Output - BTUH		Approx. Shipping Weight (lbs)
	MBH	KW	MBH	KW	
480	480	(140.6)	398.4	(116.7)	425
660	660	(193.4)	547.8	(160.5)	535
840	840	(246.1)	697.2	(204.3)	596
1020	1020	(298.9)	846.6	(248.1)	650
1200	1200	(351.6)	996.0	(291.8)	770
1380	1380	(404.3)	1145.4	(335.6)	802
1560	1560	(457.0)	1294.8	(379.4)	930
1740	1740	(509.8)	1444.2	(423.1)	950
1950	1950	(571.3)	1618.5	(474.2)	1035

VTECH

gas fired stainless steel water heater

for hot water supply



The VTECH is the newest dedicated hot water system on the market today and it is designed to provide you with continuous water temperatures all while lowering energy consumption. Its storage tank is available in sizes ranging from 60 to 125 gallons, and is constructed entirely of stainless steel.

With inputs ranging from 80,000 to 499,000 BTU/hr, the VTECH is the right choice for new commercial builds and retrofits. And with its sleek design and quiet operation, you can be confident that you'll never run out of hot water again.

Main Features

- Fully modulating with a 5:1 turndown
- Integrated digital operating control
- 160 PSIG M.A.W.P. stainless steel storage tank
- All stainless steel water surfaces
- Extremely low noise level of operation
- Available in natural gas or propane

Additional Features

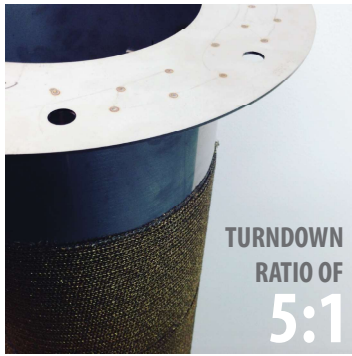
- Left or right side water connections
- Combustion thermal switch
- Stack temperature limit
- Proven hot surface ignition
- Neutralizer kit
- Integrated UL353 approved fail safe manual reset high limit @ 195°F
- 150 PSI temperature & pressure relief valve
- Thru wall exhaust vent (vertical or horizontal) with 3 intake options
 1. Outside air sealed direct
 2. Outside air
 3. Indoor air
- PVC/CPVC/Stainless Steel/PPE vent options
- Suitable for Category II and IV installations
- Single-point adjustment for air and gas
- 1:1 air/gas ratio

EFFICIENCIES

UP TO

95%

FORWARD THINKING



Burner

The VTech burner is 100% stainless steel and vertical mounted radial fired with stainless knitted metal fiber construction. The burner combusts a precise amount of premixed combustion air and gas to provide equal distribution of heat for heat transfer to the entire heat exchanger. Combustion operates with a 5:1 turn down ratio while sustaining combustion characteristics throughout the entire modulating range.

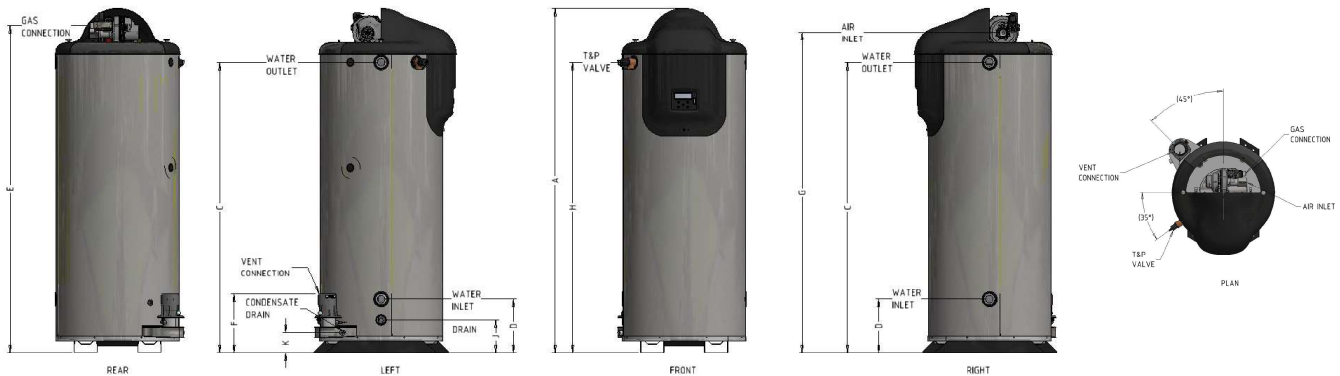
**TURNDOWN
RATIO OF
5:1**

Heat Exchanger

The VTech features a single pass fire-tube heat exchanger with 1.5" diameter oval tubes configured to optimize performance and maximize heat transfer and efficiencies. Constructed using 304L/316L grade stainless steel and multiple ports, this all welded heat exchanger has been designed to allow for reduced maintenance, longer life and greater application.

Integrated digital operating control system

- User configurable multi-line backlit LCD display (Temperature readings, status, heater response, run hours, date and time)
- Secure access for both the user and installer
- Heater shuts down on flue gas high temperature detection
- Alarm contacts
- 15 error and lockout history with time & date stamp
- Real time flame signal
- Digital safety annunciation with fault rectification
- Unique programming card allowing for simplified setup and support
- Maximum operating setpoint of 190°F



Dimensions

Model	"A"	"B"
VT-80	53"	27"
VT-100	53"	27"
VT-120	66"	27"
VT-150	66"	27"
VT-199	76"	27"
VT-250	76"	27"
VT-299	76"	27"
VT-399	76"	27"
VT-499	85 3/4"	27"

Recovery Capacities (GPH) (Continuous)

Model	140°F Rise	120°F Rise	100°F Rise	80°F Rise	60°F Rise	40°F Rise
VT-80	65	76	91	114	152	228
VT-100	81	95	114	142	190	285
VT-120	102	119	142	178	237	356
VT-150	122	142	171	214	285	427
VT-199	162	189	227	283	378	567
VT-250	203	237	285	356	475	712
VT-299	243	284	341	426	568	851
VT-399	325	379	454	568	757	1136
VT-499	406	474	568	711	947	1421

Tank Capacity

Model	US Gallons
VT-80	60
VT-100	60
VT-120	80
VT-150	80
VT-199	100
VT-250	100
VT-299	100
VT-399	100
VT-499	115

Input/Output BTU/hr

Model	Max Input	Max Output
VT-80	80,000	76,000
VT-100	100,000	95,000
VT-120	125,000	118,750
VT-150	150,000	142,500
VT-199	199,000	189,050
VT-250	250,000	237,500
VT-299	299,000	284,050
VT-399	399,000	379,050
VT-499	499,000	474,050



VALIANT-FT SERIES I

gas fired stainless steel firetube condensing boilers

Firetube heat exchanger

Industry leading counterflow firetube design

- 439 stainless steel construction
- Dedicated stainless steel alloys
- Resistant to corrosion
- Extremely low operating noise
- Maximum operating temperature of 200°F
- Up to 40° ΔT
- Maximum operating pressures:
080-155 – 30 PSI
199-399 – 80 PSI

low water mass design

- Increased tolerance for varying flow or low flow conditions
- Increased tolerances to changes in water chemistry
- Decreased risk of scaling and erosion
- Decreased boiler cycling

THERMAL EFFICIENCIES

UP TO

97%

• Up to 10:1 turndown - lowering firing rates provide better heat transfer throughout the heat exchanger, reduces on/off cycle, increases energy savings and minimizes wear and tear on the appliance and components.

Convenience of access

Serviceability in any situation



The Valiant-FT takes into consideration convenience of access to all components, as well as multiple field installation possibilities. All the components are conveniently placed inside the jacket, making them easily accessible from multiple access points from the body of the unit. Paired with the small footprint and zero inch clearance to combustibles on either side, the Valiant-FT can be installed seamlessly into any space restrictive job sites while still maintaining an ease of access to the appliance.

- Can be floor or wall mounted
- Reversible swing door (swing open left or right)
- Interchangeable location of touchscreen (top or bottom)
- Service panels on 3 sides

A top mounted stainless steel mesh burner design makes it easily removable for cleaning and access to the combustion chamber, including all burner mounted components.

Controls

Communications and Lead Lag capability



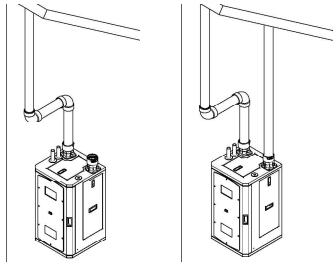
The Valiant-FT utilizes a 7" color HMI touchscreen which provides an easy-to-read graphical display of all information making it extremely user friendly and intuitive to use. This display provides the ability to change set points over various modes of operation, such as Central Heating, DHW, Outdoor Reset and more. This interface provides visual graphs illustrating the various temperature points over a period of time. It also allows for overall appliance monitoring, including all sensors, firing rate, fan speed, flame signal, alarm reporting, and manual firing rate control during product commissioning.

A second digital display is mounted on the inside door of the Valiant-FT. This display provides access to additional parameters which can be changed by the installer to suit the requirements of the specific job site. This adds an additional layer of multi-level access to the control which makes the control easy to use for the user without the fear of changing any major performance altering parameters.

The Valiant-FT control is Modbus RTU ready and capable of alternative protocols through the use of a gateway. Our Field Server Protonode is proven and capable of communication with common protocols including but not limited to BACnet, LonWorks and Metasys. The Protonode provides ease of integration with new and existing building management systems.

- Multi-unit cascade function up to 64 Boilers
- Multiple Lead Lag Modes
- Fail-Safe Mode



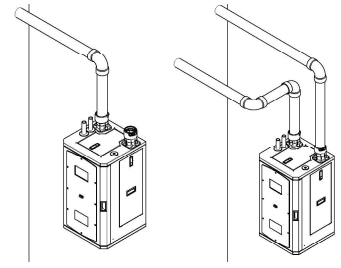


Vertically Vented

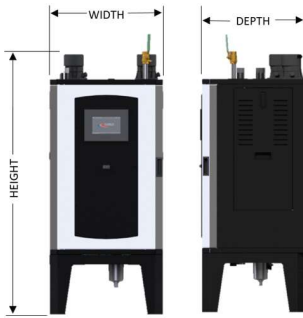
Venting configurations

The Valiant-FT is a Category IV appliance suitable for up to 100' of flue gas venting. In a directly vented system, an additional 100' of combustion air can be combined for a maximum total of 200'.

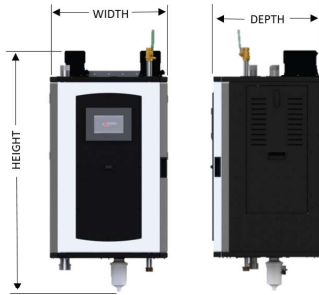
- Suitable for use with CPVC, PVC, Polypropylene and AL29-4C venting systems
- 3" venting diameters for all model sizes
- Vertically or horizontally vented with combustion air drawn from either the room, or directly from outside



Horizontally Vented



Floor-mounted



Wall-mounted

Dimensions & Specifications

Model	Width	Depth	Height (Wall)	Height (Floor)
80	19"	18 1/2"	37"	49 5/16"
110	19"	18 1/2"	37"	49 5/16"
155	19"	18 1/2"	37"	49 5/16"
199	21"	18 1/2"	38.3"	50 5/8"
250	21"	18 1/2"	38.3"	50 5/8"
299	23"	21"	40.3"	52 11/16"
399	23"	21"	40.3"	52 11/16"

Max. Input (Btu/hr)	Max. Output (Btu/hr)
80,000	76,000
110,000	104,500
155,000	147,250
199,000	189,050
250,000	237,500
299,000	284,050
399,000	387,030

Model	Weight lb (kg)
80	130 (60)
110	130 (60)
155	170 (77)
199	200 (90)
250	200 (90)
299	240 (109)
399	250 (113)

Shipping Weights

Heat Exchanger Head Loss and Flow

Model	VA0080		VA0110		VA0155		VA0199		VA0250		VA0299		VA0399		
	Unit	GPM	ft-hd	GPM	ft-hd	GPM	ft-hd	GPM	ft-hd	GPM	ft-hd	GPM	ft-hd	GPM	ft-hd
Temp. Rise (°F)	20	7.59	1.66	10.44	2.56	14.71	4.99	18.89	2.69	23.73	4.32	28.38	3.23	38.67	4.91
	25	6.08	1.27	8.35	1.69	11.77	3.27	15.11	1.85	18.98	2.98	22.71	2.39	30.94	3.29
	30	5.06	0.98	6.96	1.44	9.81	2.45	12.59	1.45	15.82	2.3	18.92	1.62	25.78	2.45
	35	4.34	0.86	5.97	1.19	8.41	1.99	10.79	1.15	13.56	1.86	16.22	1.32	22.1	1.95
	40	3.8	0.64	5.22	0.94	7.36	1.7	9.44	1.00	11.87	1.55	14.19	1.13	19.34	1.6

Standard Features

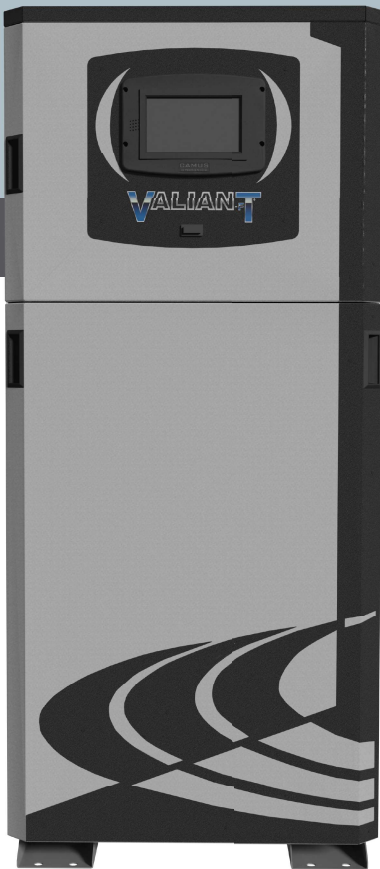
- ASME "H" stamped stainless steel heat exchanger
- Fully welded construction with stainless steel pressure vessel combustion chamber, tubes and tubesheets
- Modulating boiler with up to 10:1 turndown
- 95% DOE AFUE efficiency (VA80-299)
- 97% thermal & combustion efficiency (VA399)
- NG or LP operation (field convertible)
- Standard wall-hung configuration (optional kit for floor-mount configuration)
- Inherent O₂ trim via air density response
- Zero clearances to combustible materials
- Built-in high limit with soft manual reset through touchscreen
- Built-in low water cut-off with soft manual reset through touchscreen
- Universal vent connection with combustion analyzer test port
- Return water temperatures as low as 40°F
- Factory test-fired and certified
- 10 year limited warranty on heat exchanger
- 5 year limited warranty on burner
- 1 year limited warranty on parts

Model	Maximum Flow GPM	Minimum Flow	
		High Fire GPM	Low Fire GPM
80	17.0	3.0	1.0
110	17.0	4.2	1.0
155	17.0	5.9	1.0
199	27.0	7.6	1.5
250	27.0	9.5	1.5
299	27.0	11.4	1.5
399	38.0	15.5	4.5



VALIANT-FT SERIES II

gas fired stainless steel firetube condensing boilers



Firetube heat exchanger

Industry leading counterflow firetube design

- 439 stainless steel construction
- Dedicated stainless steel alloys
- Resistant to corrosion
- Extremely low operating noise
- Maximum operating temperature of 210°F
- Up to 40° ΔT
- Maximum operating pressures 160 PSI

low water mass design

- Increased tolerance for varying flow or low flow conditions
- Increased tolerances to changes in water chemistry
- Decreased risk of scaling and erosion
- Decreased boiler cycling



• Up to 10:1 turndown - lowering firing rates provide better heat transfer throughout the heat exchanger, reduces on/off cycle, increases energy savings and minimizes wear and tear on the appliance and components.



Convenience of access

Serviceability in any situation

The Valiant-FT takes into consideration convenience of access to all components, as well as multiple field installation possibilities. All the components are conveniently placed inside the jacket, making them easily accessible from multiple access points from the body of the unit. Paired with the small footprint and zero inch clearance to combustibles on either side, the Valiant-FT can be installed seamlessly into any space restrictive job sites while still maintaining an ease of access to the appliance.

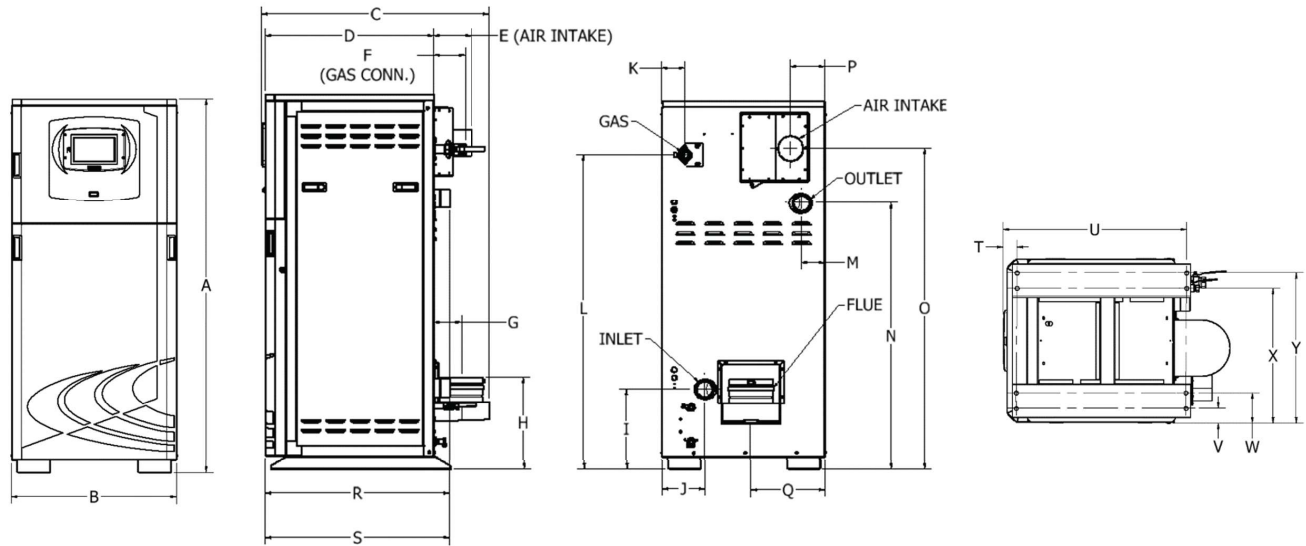
- 5 models available ranging in sizes from 400 - 850 MBTU
- Up to 99.4% thermal efficiency
- Combustion efficiency up to 99.2%

A top mounted stainless steel mesh burner design makes it easily removable for cleaning and access to the combustion chamber, including all burner mounted components.

Advanced and Proven Controls

The Valiant-FT Series II is controlled by an integrated Honeywell SOLA controller. The 7" color touch screen provides remote operation through the 4-20mA or 0-10Vdc for set point or fire rate control. Paired with the ability to control multiple pump operation along with daisy chain set up for up to 8 boilers, this user friendly control also provides you with a USB output for screenshot capture, as well as password access for service personnel. Up to 8 SOLA devices may be monitored and controlled with one single display.





Dimensions (Inches)	Model	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"	"K"	"L"
		400	57 1/2	22 1/8	31 3/8	23 3/8	6	5 7/8	4 3/8	14	12 1/8	4 3/4	2 1/2
	500	57 1/2	22 1/8	31 3/8	23 3/8	6	5 7/8	4 3/8	14	12 1/8	4 3/4	2 1/2	47 1/2
	600	57 1/2	25 1/4	31 3/8	23 3/8	6 5/8	5 3/8	4 3/8	14	12 1/8	7 5/8	2	48 1/2
	725	57 1/2	25 1/4	35	25 7/8	5 7/8	4 7/8	4 1/4	14	12 1/2	6 5/8	3 5/8	49 1/8
	850	57 1/2	25 1/4	35	25 7/8	5 7/8	4 7/8	4 1/4	14	12 1/2	6 5/8	3 5/8	49 1/8

Dimensions (Inches)	Model	"M"	"N"	"O"	"P"	"Q"	"R"	"S"	"T"	"U"	"V"	"W"	"X"	"Y"
		400	2 7/8	41 1/2	49 7/8	5 1/2	10 5/8	27 1/4	27 1/4	2 1/8	25 5/8	2 1/8	4 1/2	17 5/8
	500	2 7/8	41 1/2	49 7/8	5 1/2	10 5/8	27 1/4	27 1/4	2 1/8	25 5/8	2 1/8	4 1/2	17 5/8	20
	600	3 1/4	41 1/2	49 5/8	5 1/8	10 7/8	27 1/4	27 1/4	2 1/8	25 5/8	2 1/4	4 5/8	20 5/8	23
	725	3 5/8	41 1/2	50 1/8	5 3/8	11 1/2	28 7/8	28 7/8	2 1/8	28 1/4	2 1/4	4 5/8	20 7/8	23 1/4
	850	3 5/8	41 1/2	50 1/8	5 3/8	11 1/2	28 7/8	28 7/8	2 1/8	28 1/4	2 1/4	4 5/8	20 7/8	23 1/4

Standard Safeties

- Air Pressure Switch
- Blocked Flue Switch
- Water Flow Switch
- High & Low Air Pressure Switches (Blocked Air Intake & Blocked Flue Switch)
- Manual Reset High Temperature Limit
- ΔT heat exchanger protection algorithm

Combustion Features

- Direct Vent (Sealed Combustion)
- Standard Air Filter for combustion air
- Modulating Stainless Steel knitted metal fiber Premix Burner
- Venturi Air/Gas Ratio Combustion Control
- "Inherent O2 Trim" Via Air Density Response
- Low NOx (SCAQMD Pending)
- Natural Gas or Propane Fuel Operation (Field Convertible)
- Input gas pressure is 4"-14" W.C. for Natural Gas (5" W.C. min gas pressure for NG VA0500); and 8"-14" W.C. for Propane.
- 10:1 Turndown for NG (5:1 for LP)
- Category II Venting
- Category IV Venting (120' Flue & 120' Air Intake vent)
- Approved for Thermoplastic Venting (PVC, CPVC, PPE)
- Direct Ignition
- Flame Sensor
- Optional UV flame detection
- Flame view port for visual inspection of ignition and/or the boiler combustion during firing.

Optional Features

- CSD-1
- Motorized isolation valves
- Condensate neutralization kit
- BMS gateway – BACnet MSTP/IP, LonWorks or Metasys N2
- Outdoor installation kit (Consult Factory)
- Outdoor sensor

Venting Options

- Category II and IV venting
- Direct venting
- Standard PVC/CPVC flue vent connection
- Room air
- Horizontal & vertical venting
- Outdoor venting (Consult Factory)

Venting Materials

- PVC
- CPVC
- PPE
- AL29-4C Stainless Steel



H

DYNAFLO

prepackaged instantaneous indirect domestic hot water system

choice in size and material

The DynaFLO is available in 12 different models ranging up to 340 GPM of domestic hot water (DHW) at 60°F Delta T. It is equipped with a 3-way motorized valve, a very accurate PID based control and a variety of options in material.

accurate and precise control

Under steady flow, DynaFLO's ultra-precise control system keeps the outlet temperature within +/-1°F of setpoint which is unheard of in the industry!

patented IntelliFLO technology

Equipped with Camus' patented IntelliFLO technology DynaFLO can keep the domestic water outlet temperature within +/-2°F of user selected setpoint under sudden load fluctuations (50% load drop within seconds). This technology therefore allows DynaFLO to prevent sudden temperature spikes.

effortless operation

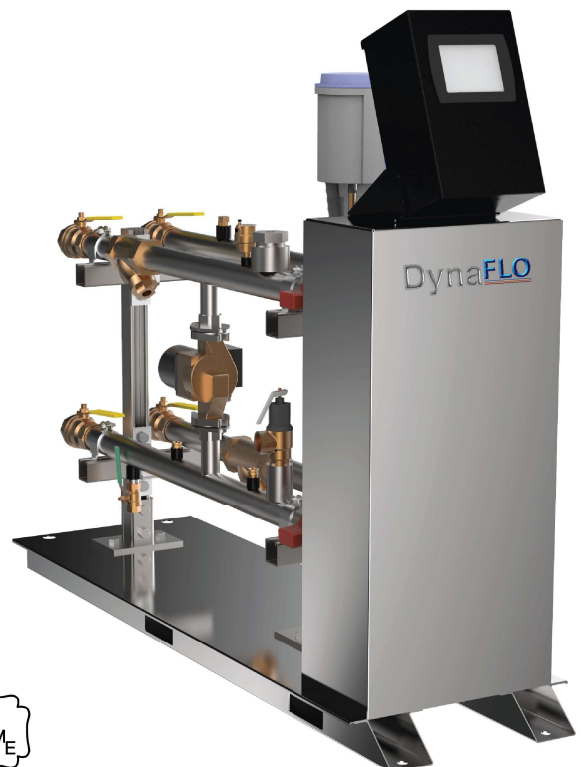
With DynaFLO's control system, unlike some other competitors' products, there is no need for adjusting control related parameters. All PID parameters have been rigorously fine-tuned through months of in-depth testing and analysis. Parameters related to Camus Hydraulics' patented IntelliFLO technology automatically adjust to adapt to different load conditions to keep DHW outlet temperature accurate even under harsh load swings.

performance highlights

- Smallest footprint in the industry 6.5<ft2
- DHW side piping material options: Stainless Steel and Copper
- Boiler side piping material options: Stainless Steel, Black Iron or Copper
- Stainless steel plate heat exchanger – low maintenance as there are no gaskets
- Choice of double wall or single wall heat exchanger
- Victaulics for easy removal and maintenance of the heat exchanger
- 3-way electronic control valve
- Inlet Strainers on boiler and DHW side
- Anti-Scaling circulation pump
- Pressure relief valve
- T&P valve (Optional)
- Boiler side differential pressure gauge (Optional)
- System isolation valves
- High Limit Switch mounted on DHW outlet
- Air vent
- Precise control system that maintains DHW outlet temperature to within +/-1°F of setpoint under steady flow conditions - Most accurate in the industry!
- Patented IntelliFLO Technology maintains DHW outlet temperature (+/-2°F of setpoint) under load fluctuations thereby preventing sudden temperature spikes – (Optional)
- No need for PID fine tuning or any control related parameter adjusting
- Full color 4.3" user friendly HMI
- Modbus communications
- Remote operation capability
- Audible and visual alarms
- Dedicated alarm contacts
- Data-Logging
- Plug and play installation (120VAC Single Phase)
- Fuse protected
- Separate Pump On/Off switch
- Glycol system compatible*

control system

The control system of DynaFLO is made up of a PLC (Programmable Logic Controller), a DHW outlet RTD sensor, an Electro-hydraulic actuator on the boiler side, and a flowmeter if equipped with the IntelliSense Technology.






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