AVENGER™

Fully Condensing
Stainless Steel
Firetube Boilers
& Water Heaters

CAMUS®
Hydronics Ltd.

www.camus-hydronics.com

Rev.02

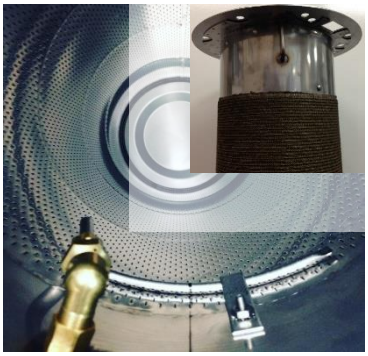
AVENGER

Advanced and Proven Controls

The Avenger utilizes the integrated Honeywell SOLA.

It features a 7" color touch screen, provides remote operation through 4-20mA or 0-10Vdc for set point or fire rate control. The controller has the ability to control multiple pump operation along with integration of up to 8 boilers on a lead-lag configuration and implementation of an outdoor reset schedule. Up to 8 SOLA devices may be monitored and controlled with one single display, permitting ease of integration with a building management system. The SOLA control is Modbus RTU ready and capable of alternative protocols through the use of a gateway. Camus customers who have implemented a condensing boiler system that is operating a SOLA controller, can now seamlessly integrate an Avenger boiler into their Lead-Lag sequence.

Boiler efficiency starts with the burner



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.

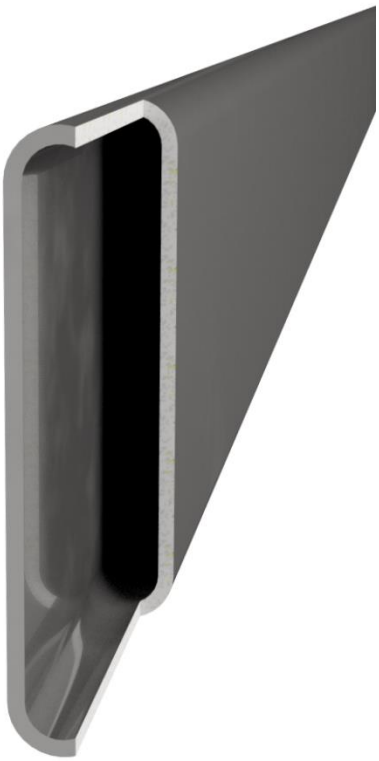
Standard Features

- Thermal efficiencies up to 98%
- Fully welded construction with stainless steel pressure vessel, tubes, tube sheets and combustion chamber
- Modulating burner with up to 25:1 turn-down
- ASME "H" and "HLW" stamped heat exchanger
- Operating pressure as low as 12 PSI
- Natural or propane gas operation
- Radial fired knitted fiber stainless steel burner
- Variable frequency drive (VFD) modulation
- Modbus RTU standard, Protocol Translator available for other communication needs
- Low NOx operation
- Sealed combustion
- Return water temperatures as low as 40°F
- Inherent O2 trim
- 1 to 1 air/gas ratio control for proper combustion across entire modulation range
- Rear Connections; water, gas, vent and electric
- Local/Remote switch for building management, remote modulation and set-point control
- SOLA Controller featuring cascade controls-lead lag up to 8 boilers on a single system

Advanced Heat Exchanger Design and Technology

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.

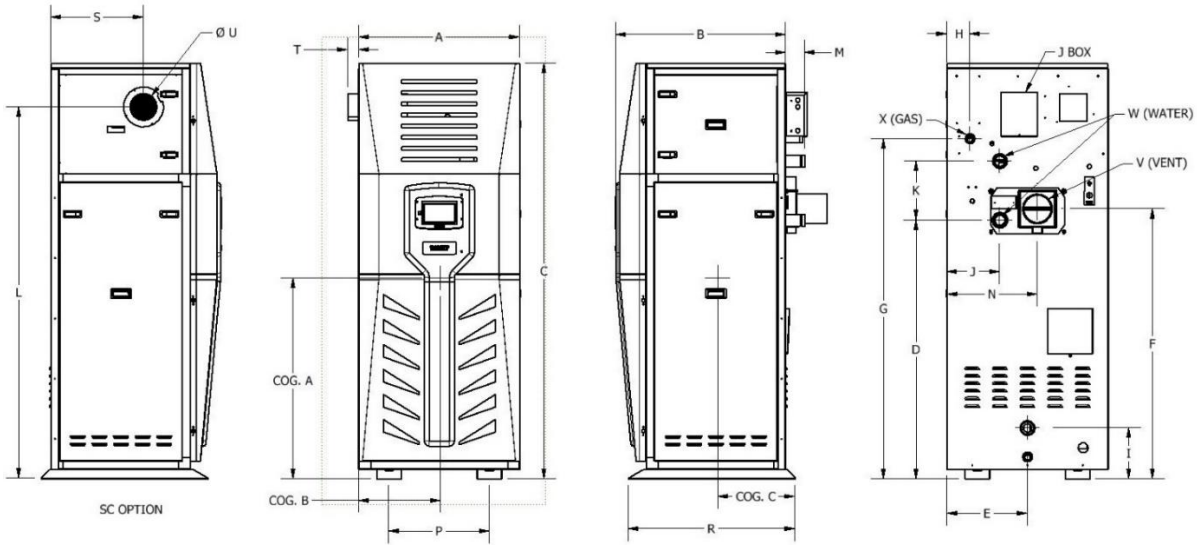
The first pass of the heat exchanger consists of stainless steel rifled tubes. The spiral design increases the turbulence within the tube, which optimizes the velocity of the combustion gases, increasing the heat transfer and efficiency of the boiler.



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.



Appliance Dimensions and Specifications

Model	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	F (in.)	G (in.)	H (in.)	I (in.)	J (in.)	K (in.)	*L (in)	COG (A)	COG (B)
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	74 1/8	40	14 1/2
1500	29 1/2	38	83	52 3/8	14 7/8	55 1/4	68 1/2	3	10 7/8	8 1/8	10 1/2	74	38 1/2	15
2000	35	44	90	52 7/8	17 1/2	57 1/4	72 1/2	4 1/2	10	10 1/8	13 1/4	78 1/2	42	17.75
2500	35	44	90	52 7/8	17 1/2	57 1/4	72 1/2	4 1/2	10	10 1/8	13 1/4	78 1/2	42	17.75
3000	35	44	90	52 7/8	17 1/2	57 1/4	73 1/2	5 1/2	10 1/4	9	13	79 1/8	55	18.5
3500	35	44	99	53 3/8	17 1/2	60	77	3 3/4	10	8 1/2	16	83 1/4	43	18
4000	35	44	99	53 3/8	17 1/2	60	77	3 3/4	10	8 1/2	16	85 1/4	43	18

Model	COG (C)	Mh (in.)	Mc (in.)	N (in.)	P (in.)	Qw (in)	Qh (in)	R (in.)	*S (in.)	*T (in.)	U (in.)	W (in.) Ø Water	X (in.) Ø Gas	Y (in) Ø air	Weight (lbs)
1000	13.5	18 7/8	13 7/8	16 7/8	18 7/8	24	74	33 1/4	18 1/2	2 1/2	5 3/8	2	1	8	1180
1500	15	19	17	17 7/8	19 3/8	23 3/8	74	36 1/2	20 1/2	2 1/2	5 3/8	2 1/2	1 1/4	10	1530
2000	17	23	17	20	24	28	81	42 1/2	23 1/4	3	5 3/8	3	1 1/4	12	2085
2500	17	23	17	20	24	28	81	42 1/2	23 1/4	3	7 5/16	3	1 1/2	12	2150
3000	20	23	17	20	24	28	81	42 1/2	24 1/8	3 1/2	7 5/16	3	1 1/2	12	2400
3500	17	25 1/2	19 1/2	20 1/2	24	27	90	42 1/2	24	4	7 5/16	4	2	12	2520
4000	17	25 1/2	19 1/2	20 1/2	24	27	90	42 1/2	24 1/2	4	7 5/16	4	2	12	2620

Input / Output

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