



Date: _____ Engineer: _____
Job: _____ Contractor: _____
Model #: _____ End User: _____
Representative: _____ Prepared by: _____



Typical Specifications for Avenger Series II Hydronic Heating & DHW Condensing Models ARN (H,W) 5000 – ARN (H,W) 6000

The Avenger Series II is a two-pass counter flow condensing commercial boiler for hydronic heating and hot water supply at working pressures up to 160PSI.

- ANSI Z21.13/CSA 4.9 & ANSI Z21.10.3/CSA 4.3 certified
- ASME design submitted and; “H” and “HLW” Stamps
- Canadian Registration Number (CRN)
- CSD-1 Compliant
- California Code Compliant – Field certified



Standard Features

- ASME “H” and “HLW” stamped stainless steel heat exchangers
- 40:1 Turndown (CO₂% above 8%)
- 160PSI working pressure
- Stainless Steel rifle tubes, designed to optimize flue gas velocity on the first pass
- Stainless steel oblong tubes, designed to maximize condensation on the second pass
- Fully welded construction with stainless steel pressure vessel, tubes, tube sheets and combustion chamber
- Natural gas operation
- Radial fired knitted fiber stainless steel burner
- Low gas pressure operation
- Downstream gas testcocks
- Fast closing shutoff gas pressure regulator
- Variable frequency drive (VFD) modulation
- Electronic low & high air pressure switch
- Blocked flue switch
- Water pressure switch
- Flow Switch
- Low gas pressure switch w/manual reset
- High gas pressure switch w/manual reset
- ΔT heat exchanger protection algorithm
- Staging relay to govern operation of low end or high end gas valve
- Local/Remote switch for building management, remote modulation and set-point control
- SOLA Controller featuring cascade controls lead lag up to 8 boilers
- Hot surface ignition
- Ultraviolet flame detection
- Proven pilot ignition
- Sealed combustion
- Adjustable high limit with manual reset and adjustable high limit

with auto reset

- Return water temperatures as low as 40°F
- Inlet, outlet, and stack sensors
- Drain valve
- ASME relief valve
- Single point input adjustment for control of air and gas
- Inherent O₂ trim
- Pressure regulated electro-hydraulic proportional air/gas actuator, providing a slow opening and fast closing safety shutoff valve
- 1 to 1 air/gas ratio control for proper combustion across entire modulation range
- Window viewport for combustion chamber
- Water, gas, vent and electric connections on the back
- Low and high voltage terminal strips
- On/Off switch
- Built-in audible alarm
- Flame failure alarm contacts
- Modbus RTU standard, Protocol Translator available for other communication needs
- Factory test fired and certified

Optional Features

- CSD-1
- Condensate neutralization kit
- BMS gateway – BACnet MSTP/IP, LonWorks or Metasys N2
- Outdoor installation kit (Consult Factory)
- Outdoor sensor for standalone boiler
- Outdoor sensor for cascade
- Outdoor vent kit (Consult Factory)
- Optional low water cutoff w/manual reset
- Spring return air inlet damper with wire harness
- Air inlet filter kit for room air installations



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Venting Options

- Category II and IV venting
- Certified for up to 300' equivalent length of venting with both 12" and 14" diameter vent
- Direct venting
- Room air
- Horizontal & vertical venting
- Outdoor venting (Consult Factory)

Venting Material

- Stainless steel or AL29-4C for all system applications
- Polypropylene for all system applications
- CPVC for domestic hot water systems and select low temperature heating systems – consult factory

Model	Required Ø for up to 150 ft. equiv. length for Direct Venting (in)	Required Category IV, vent Ø up to 150 ft. equiv. length (in)	Required Category II vent Ø (in)
ARN(H,W)-5000	12 or 14	12 or 14	12 or 14
ARN(H,W)-6000	12 or 14	12 or 14	14

Model	Air inlet Ø (in)	Vent connection Ø, as shipped (in)
ARN(H,W)-5000	14	14
ARN(H,W)-6000	14	14

Electrical Ratings		
Model	Voltage	Total Current
ARN(H,W)-5000	208/230VAC, 60Hz, 3 Phase*	<14A
ARN(H,W)-6000	208/230VAC, 60Hz, 3 Phase*	<18A
ARN(H,W)-5000	460VAC, 60Hz, 3 Phase*	<7A
ARN(H,W)-6000	460VAC, 60Hz, 3 Phase*	<9A

*This is a 5-wire power supply requiring three (3) lives, a neutral and a ground

Model	Input MBH		Gross Output MBH
	Max	Min	
ARN-5000	5000	125	4,800
ARN-6000	6000	150	5,640

Water Content	
Model	Volume (Gallon)
AR(N)-5000	171
AR(N)-6000	171

Minimum Flow Rate at Maximum Fire Rate	
Model	Flow (GPM)
AR(N)-5000	117.5
AR(N)-6000	138.0

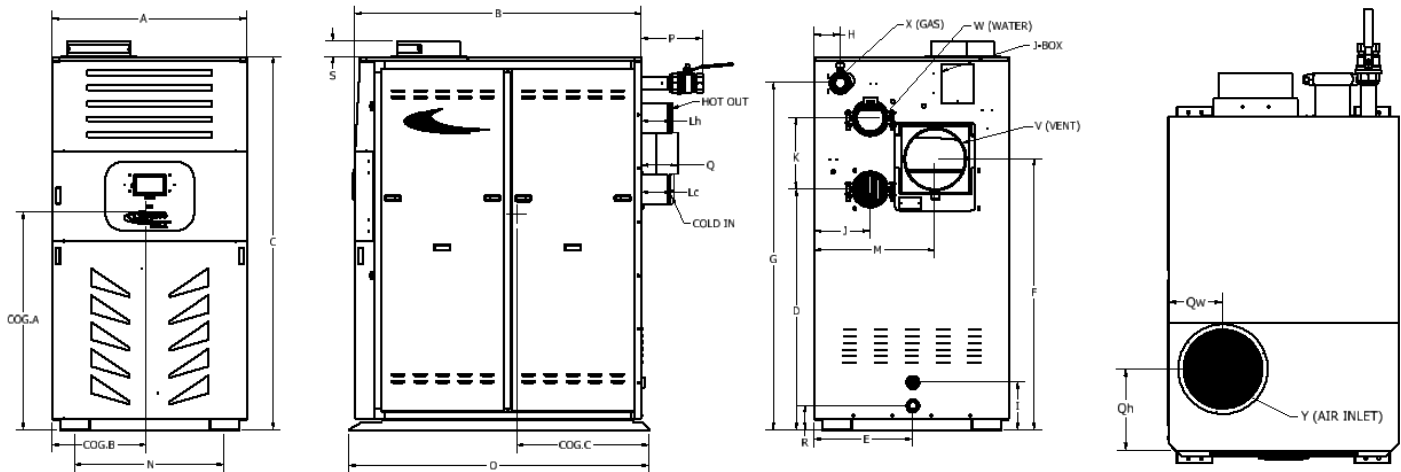
Absolute Minimum Flow Rate	
Model	Flow (GPM)
AR(N)-5000	39
AR(N)-6000	46

Recovery Capacity (Water Heater Only – HLW)			
Model	100°F (GPH)	80°F (GPH)	60°F (GPH)
AR(N)W-5000	5635	7044	9392
AR(N)W-6000	6619	8273	11031

Heat Exchanger Head Loss and Flow						
Model	20°F		40°F		60°F	
	US GPM	ΔP-FT	US GPM	ΔP-FT	US GPM	ΔP-FT
AR(N)-5000	470	9.7	235	3.7	156.7	2.7
AR(N)-6000	552	12.6	276	4.5	184	2.8

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Dimensional Data



Model	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	F (in.)	G (in.)	H (in.)	I (in.)	J (in.)	K (in.)	COG (A)	COG (B)
5000/6000	43 1/2	64 3/16	83 5/8	53 15/16	22	60 11/16	78 1/4	5 3/4	10 11/16	12 1/2	16	48 13/16	21 1/8

Model	COG (C)	Lh (in.)	Lc (in.)	M (in.)	N (in.)	Qw (in.)	Qh (in.)	O (in.)	W (in.) Ø Water	X (in.) Ø Gas	Y (in.) Ø air	P (in.)	Q (in.)	R (in.)	S (in.)	Weight (lbs)
5000/6000	29 11/16	26**	20**	27	33 1/2	10 5/16	15 1/2	67 1/4	6	3	14	13 5/8	8 3/16	5 1/2	3 9/16	3600

*COG-Center of Gravity

**Including extension pipe (not shown in image)

Note- Direct Vent/Sealed combustion dimensions are same as for air intake.

*Minimum Clearance to Combustibles					
Model	Top (in.)	Back (in.)	Sides (in.)	Front (in.)	Vent (in.)
All	25	12	12	12	1

*Service clearances are different than clearances to combustibles. Refer to IOM.