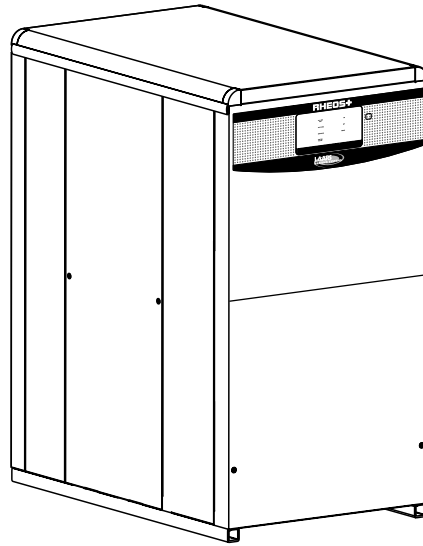


RHEOS+



Condensing Boiler and Water Heater

RHHH	Hydronic Boiler
RHHV	Volume Water Heater

Submittal Data **LAARS**
Heating Systems Company

Specifications*

Model (size)	1200		1600		2000		2400	
Input, High Fire	1,200 MBTU/h	352 kW	1,600 MBTU/h	469 kW	2,000 MBTU/h	586 kW	2,400 MBTU/h	703 kW
Output, High Fire	1,080 MBTU/h	316 kW	1,440 MBTU/h	422 kW	1,800 MBTU/h	527 kW	2,160 MBTU/h	633 kW
Input, Low Fire	300 MBTU/h	88 kW	400 MBTU/h	117 kW	500 MBTU/h	146 kW	600 MBTU/h	176 kW
Output, Low Fire	270 MBTU/h	79 kW	360 MBTU/h	105 kW	450 MBTU/h	132 kW	540 MBTU/h	159 kW
Vent Size (Cat. IV)	6"	15 cm	6"	15 cm	7"	18 cm	10"	25 cm
Combustion Air Size	6"	15 cm	8"	20 cm	8"	20 cm	8"	20 cm
Electrical- Control Circuit	120V / single phase / 20A		120V / single phase / 20A		120V / single phase / 15A		120V / single phase / 15A	
Electrical- Blower Circuit	(included in control circuit)		230V / single phase / 9A		230V / single phase / 9A		230V / single phase / 9A	
Electrical- Pump Circuit	230V / single phase / 20A		230V / single phase / 20A		230V / single phase / 20A		230V / single phase / 20A	
Shipping Weight	1420 lbs	645 kg	1465 lbs	666 kg	1495 lbs	678 kg	1550 lbs	704 kg

*Important Note: output shown is calculated using a 90% combustion efficiency. The efficiency of this unit will increase with lower return water temperature and/or lower modulation point, which will alter the output of the Rheos+.

Standard Equipment

- Water flow switch
- Low water cutoff with test light and manual reset button
- Manual reset high limit
- High gas pressure switch
- Low gas pressure switch
- Air pressure switch
- Low-fire start time delay
- Modulation capabilities down to 25% of full fire
- ASME CSD-1
- Leak test valve
- Manual firing valve
- ASME 160 lb. w.p. heat exchanger
- Less than 10ppm NOx
- Pump mounted
- Pump time delay (adjustable 0.1 - 10 min.)
- 75 psi pressure relief valve (RHHH)
- 125 psi pressure relief valve (RHHV)
- Temperature and pressure gauge
- Indicator/status lights for: Power On, Call for Heat; Pre-Purge; Burner On; Ignition Failure
- Selector switch for internal or external (0-10VDC) control
- 100% lockout ignition control
- Copper primary heat exchanger
- Stainless steel secondary heat exchanger
- Internal water mixing system to allow minimum 70°F water inlet
- Condensate overflow protection switch

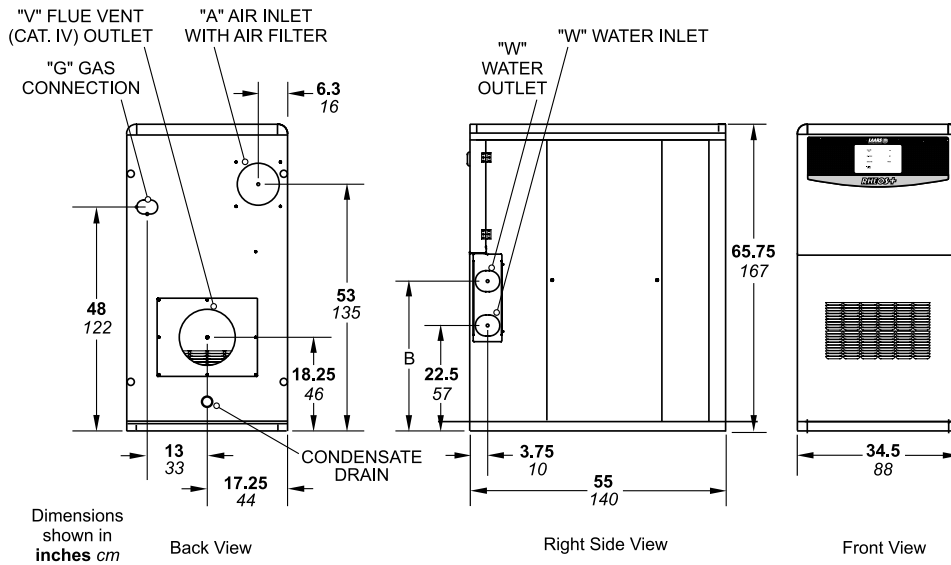
Optional Equipment

- Factory-installed LON or N2 (Metasys) card for communicating inlet water temperature, outlet water temperature, mixing system temperature, extra temperature (user-chosen), low mixing system
 - temperature alarm, burner on/off status
 - Cupro-nickel primary heat exchanger
 - Hard water pump (water heaters only)
 - Normally open vent valve*
 - Alarm bell*
 - Additional motorized safety valve with proof of closure*
 - Additional solenoid safety valve*
 - 200°F max. temperature controls*
 - Ignition module with three attempts (non-CSD-1)*
- *Included as part of option kit

Clearances

Appliance Surface	Clearance From Combustible Material	Service Access Clearance
Piping Side	1" 2.5 cm	18" 46 cm
Opposite Side	1" 2.5 cm	1" 2.5 cm
Top	1" 2.5 cm	24" 61 cm
Back	1" 2.5 cm	36" 91 cm
Front	1" 2.5 cm	36" 91 cm
Vent	Per UL1738 venting system supplier's instructions*	

Dimensions



Model	"V" Vent Outlet Connection		"A" Air Inlet Connection		"W" Inlet / Outlet Water Connection NPT	"G" Gas Connections Control Packages			"B"	
	in.	cm	in.	cm		Std & A	B & E	B & E	in.	cm
						Nat / LP NPT	Nat NPT	LP NPT		
1200	6	15	6	15	2-1/2"	1"	1-1/2"	1-1/2"	34-1/4	87
1600	6	15	8	20	2-1/2"	1-1/2"	2"	2"	34-1/4	87
2000	7	18	8	20	3"	1-1/2"	2"	2"	34-1/4	87
2400	10	25	8	20	3"	1-1/2"	2"	2"	32	81

RHHH (Boiler)

Water Flow Data*

Model Size	TEMPERATURE RISE IN DEGREES					
	20°F	11°C	25°F	14°C	30°F	17°C
	Flow gpm	Flow lpm	Flow gpm	Flow lpm	Flow gpm	Flow lpm
1200	108	409	86	327	72	273
1600	144	545	115	436	96	363
2000	180	681	144	545	120	454
2400	216	818	173	654	144	545

RHHV (Water Heater)

Model Size	HARD WATER				NORMAL WATER				SOFT WATER			
	Flow gpm	Temp Rise °F	Flow lpm	Temp Rise °C	Flow gpm	Temp Rise °F	Flow lpm	Temp Rise °C	Flow gpm	Temp Rise °F	Flow lpm	Temp Rise °C
1200	108	20	409	11	86	25	327	14	72	30	273	17
1600	169	17	641	9	137	21	519	12	93	31	352	17
2000	189	19	717	11	157	23	593	13	103	35	389	19
2400	216	20	818	11	173	25	654	14	144	30	545	17

NOTE: Soft water: 1 to 7.5 grains per gallon. Normal water: 7.6 to 17 grains per gallon. Hard water: More than 17 grains per gallon.
 *Important Note: water flow shown is calculated using a 90% combustion efficiency. The efficiency of this unit will increase with lower return water temperature and/or lower modulation point, which will lead to varying temperature rise.

Minimum Recovery Table*

GPH L/h Delivered

REQUIRED WATER TEMPERATURE RISE °F / °C

Model Size	40°F 22°C		50°F 28°C		60°F 33°C		70°F 39°C		80°F 44°C		90°F 50°C		100°F 56°C		120°F 67°C		140°F 78°C	
	GPH	L/h	GPH	L/h	GPH	L/h	GPH	L/h	GPH	L/h	GPH	L/h	GPH	L/h	GPH	L/h	GPH	L/h
1200	3241	12252	2593	9802	2161	8168	1852	7001	1621	6126	1441	5445	1297	4901	1080	4084	926	3501
1600	4322	16336	3457	13069	2881	10891	2470	9335	2161	8168	1921	7261	1729	6534	1441	5445	1235	4667
2000	5402	20420	4322	16336	3601	13613	3087	11669	2701	10210	2401	9076	2161	8168	1801	6807	1543	5834
2400	6483	24504	5186	19603	4322	16336	3704	14002	3241	12252	2881	10891	2593	9802	2161	8168	1852	7001

*Important Note: recovery shown is calculated using a 90% combustion efficiency. The efficiency of this unit will increase with lower return water temperature and/or lower modulation point, which will lead to higher recovery.



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