

RHEOS®

Commercial Smart Boiler/
Water Heater



LAARS® 
Heating Systems Company
A subsidiary of **BRADFORD WHITE®** Corporation

RHEOS®

***Small enough to fit through a 3'-0" door...
big enough to handle any heating or hot water need***

Smart boiler/water heater technology combines the precise control of state-of-the-art modulation electronics that sense the existing conditions and automatically adjusts the boiler performance to meet the required heating load. At 87% combustion efficiency, the Rheos will greatly cut fuel costs by as much as 30%

Rheos sets a new standard in boiler design with its high-density heat exchanger that uses a unique double row finned tube design to maximize the heating surface area. This design yields the highest density of heat transfer per square foot of floor space.

Low emissions burner enables Rheos to deliver the highest environmental performance. Meets building codes and environmental regulations in all 50 states and Canada, including NOx emission standards.

Compact, space-saving footprint is less than 34½ inches wide, so it fits easily through a standard 3'-0" doorway – perfect for new construction as well as replacement. Rheos only takes up half the floor space of conventional units.

Flexible venting alternatives allow you to locate the boiler where you need it. Rheos can use vertical or horizontal venting configurations to make the installation placement easier. Since the Rheos is a sealed combustion system, outside air can be ducted directly to the unit. Its powerful blower will bring in filtered combustion air and, at the same time, propel flue gases to the vent through side walls – up to 50 feet away.

Reliable LAARS Heating Systems quality – backed by more than a half century of experience in the design and manufacture of the world's best commercial boilers and water heating systems.



Easy Side Access

Convenient service panels on both sides allow easy access to the heat exchanger.



Quick-Change Washable Filter

Combustion air filter can be removed, washed, and re-installed easily and quickly.

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RHEOS® Commercial Smart Boiler/Water Heater

The Rheos smart boiler / water heater is a breakthrough in commercial heating system design. Now, for the first time, engineers and heating contractors can choose a single high-efficiency, low-cost system for commercial installations requiring up to 2.4 million BTU/hour. Plus, the Rheos features the highest density and smallest footprint available, so it takes up far less floor space. In fact, it's so compact, it can fit through a standard 3'-0" doorway.

For more than 50 years, the Laars Heating Systems brand has stood for quality, reliability and innovation in heating products design. Now, Rheos builds on that tradition and sets a new standard with an entirely new generation of cutting-edge boiler technology designed especially for today's most demanding commercial environments.

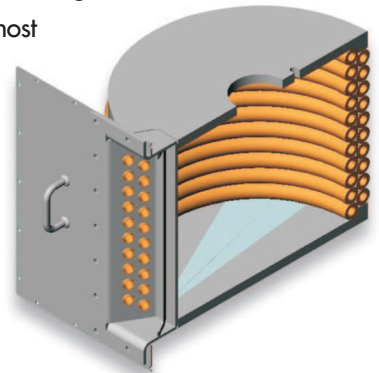


Smart boiler technology saves fuel costs

The innovative Rheos smart boiler technology controls the boiler operation by automatically down-firing to as low as 50% of full input. In addition, the system boasts an 87% combustion efficiency - one of the highest ratings in its class. Taking full advantage of high-efficiency combustion in addition to the boiler modulation, Rheos can cut operating costs by as much as 30% over conventional, non-modulating systems. The result is fuel cost savings that can amount to tens of thousands of dollars over the life of the equipment. In fact, in most installations, the Rheos will virtually pay for itself in a short period of time. Optional control packages are available to comply with regional code requirements.

Patented double-row heat exchanger

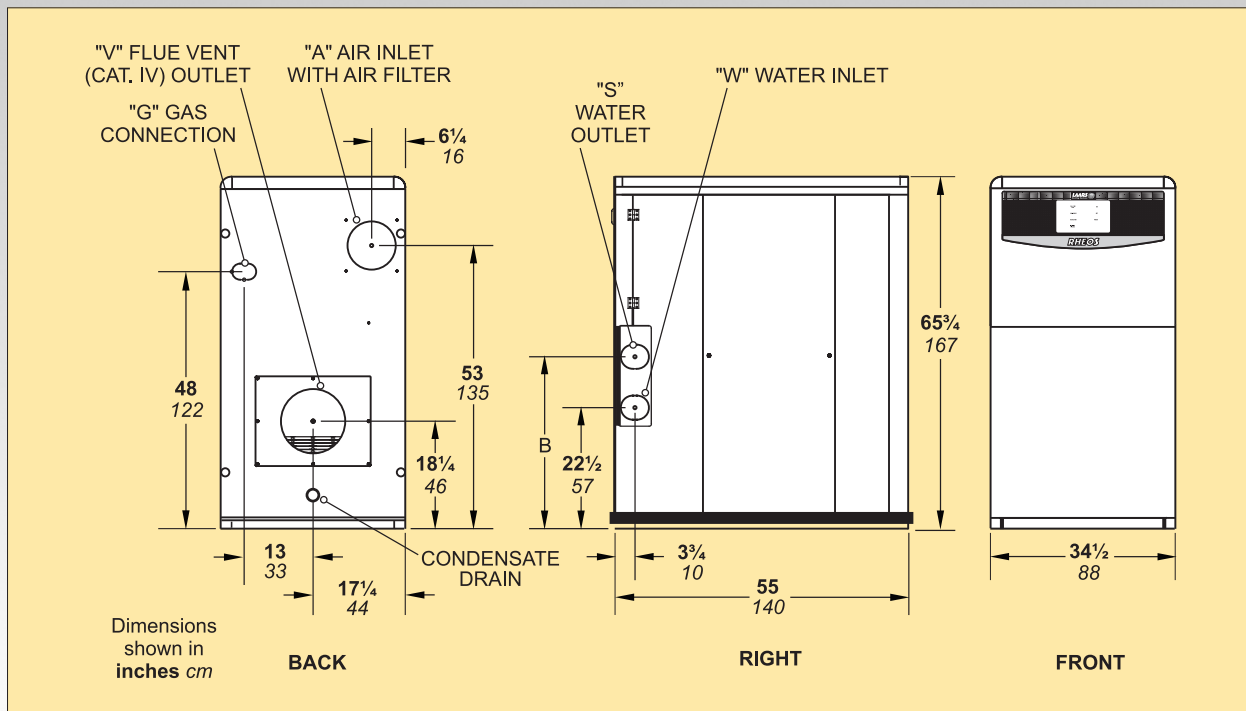
Rheos is far and away the most compact and cost-effective heating system in its rating class. The system uses a patented double-row coil configuration to create maximum heat transfer surface area and balanced water flow. Coupled with a powerful burner, the Rheos is able to provide industrial grade service for hydronic and volume water applications.



For water conditions requiring an upgrade, a cupro-nickel heat exchanger is available as an option.

Compact and easy to install indoors or out

The greatest advantage to the heating contractor is that Rheos is as simple to install for replacement, as it is for new construction. Convenient right or left-hand piping configurations make installing even easier. Because of its compact size, the Rheos boiler / water heater fits virtually anywhere. The same boiler can be installed either indoors or outdoors. A special gas train heating unit ensures reliable operation outdoors in cold climates. The unit measures just under 34½ inches wide.

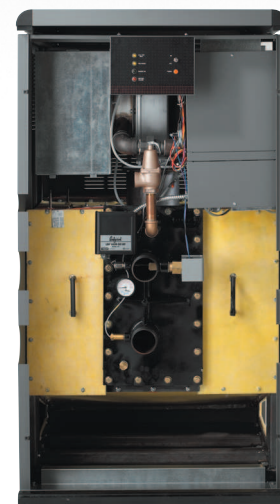


Sealed combustion system uses no inside air

Rheos also solves the problem of inside air depletion by using a completely sealed combustion system with a high-power blower that draws all combustion air from the outside and vents flue gases simultaneously. Intake air is passed through a permanent filter, which is easily removed from the front for cleaning. Rheos can be installed inside or outside, even on the roof. Because of its versatile design, it can be vented through the roof or a sidewall.

Low NOx and high efficiency certified in all 50 states and Canada

Rheos is also one of the "greenest" and most environmentally sound heating systems in the marketplace. It offers extremely low levels of both NOx and CO greenhouse gases and is fully certified for commercial use in all 50 states and Canada, meeting ASHRAE 90.1, ANSI Z21.13 and ANSI Z21.10.3 codes. It also meets all domestic and international codes and regulations for greenhouse gas emissions. In addition, Rheos has been designed to meet or exceed the efficiency and pollution standards used by the gas utility industry for environmental rebates and commercial incentive programs for noncondensing equipment.



High Efficiency The sophisticated gas and air introduction system, combined with a powerful low-NOx burner and patented heat exchanger, allows the Rheos to maintain its high efficiency throughout its modulation range.

Standard Features

- Modulating proportional firing control system (50- 100%)
- All waterways are copper or glass-lined
- 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
- ASME CSD-1
- Water flow switch
- Vertical or horizontal venting options (Category IV)
- Pump time delay
- Low-fire start time delay
- 160 lb. w.p. heat exchanger
- 75 psi pressure relief valve (boiler)
- 125 psi pressure relief valve (water heater)
- Temperature and pressure gauge
- Low water volume heat exchanger
- Washable combustion air filter
- Dry alarm contacts
- Diagnostic and status indicator lights
- Easy seismic securing
- Selector switch for internal or external (0-10 VDC) control
- Weatherproof jacket for outdoor installations

Specifications

Model RHCH Boiler

Size	1200		1600		2000		2400	
Input, High Fire	1,200,000 BTU/h	352 kW	1,600,000 BTU/h	469 kW	1,999,000 BTU/h	586 kW	2,400,000 BTU/h	703 kW
Output, High Fire	1,032,000 BTU/h	302 kW	1,376,000 BTU/h	403 kW	1,719,000 BTU/h	504 kW	2,064,000 BTU/h	605 kW
Input, Low Fire	600,000 BTU/h	176 kW	800,000 BTU/h	234 kW	999,500 BTU/h	293 kW	1,200,000 BTU/h	352 kW
Output, Low Fire	516,000 BTU/h	151 kW	688,000 BTU/h	202 kW	859,500 BTU/h	252 kW	1,032,000 BTU/h	302 kW

Model RHCV Water Heater

Input, High Fire	1,200,000 BTU/h	352 kW	1,600,000 BTU/h	469 kW	1,999,000 BTU/h	586 kW	2,400,000 BTU/h	703 kW
Output, High Fire	1,020,000 BTU/h	299 kW	1,360,000 BTU/h	398 kW	1,700,000 BTU/h	498 kW	2,040,000 BTU/h	598 kW
Input, Low Fire	600,000 BTU/h	176 kW	800,000 BTU/h	234 kW	999,500 BTU/h	293 kW	1,200,000 BTU/h	352 kW
Output, Low Fire	510,000 BTU/h	149 kW	680,000 BTU/h	199 kW	850,000 BTU/h	249 kW	1,020,000 BTU/h	299 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
Shipping Weight	1220 lbs	554 kg	1265 lbs	574 kg	1295 lbs	588 kg	1350 lbs	613 kg

Important Note: output shown is based on certification test standards. 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+.

Size	“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, C, D, F, G Nat/LP NPT	B & E Nat NPT	B & E LP NPT		
1200	6	15	6	15	2½	1	1½	1½	34¼	87
1600	6	15	8	20	2½	1½	2	2	34¼	87
2000	7	18	8	20	3	1½	2	2	34¼	87
2400	10	25	8	20	3	1½	2	2	32	81

Water Flow

Temperature Rises in Degrees

RHCH Boiler Size	20°F Flow GPM		25°F Flow GPM		30°F Flow GPM		11°C Flow lpm		14°C Flow lpm		17°C Flow lpm	
	H/L Feet		H/L Feet		H/L Feet		H/L m		H/L m		H/L m	
1200	103	18	83	12	69	8.0	391	5.5	313	3.7	260	2.4
1600	138	22	113	14	92	9.7	521	6.7	417	4.3	347	3.0
2000	172	20	138	13	115	8.8	651	6.1	521	4.0	434	2.7
2400	206	18	165	12	138	8.0	781	5.5	625	3.7	521	2.4

Note: Maximum temperature rise is 30°F (17°C), as shown. Headloss is for boiler's heat exchanger only.

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*			

Water Flow

RHCV Water Heater Size	HARD WATER						NORMAL WATER						SOFT WATER					
	Flow GPM	H/L Feet	Temp. Rise °F	Flow lpm	H/L m	Temp. Rise °C	Flow GPM	H/L Feet	Temp. Rise °F	Flow lpm	H/L m	Temp. Rise °C	Flow GPM	H/L Feet	Temp. Rise °F	Flow lpm	H/L m	Temp. Rise °C
1200	104	18	20	395	5.5	11	84	12	25	316	3.7	14	70	8.0	30	264	2.4	17
1600	164	29	17	620	8.8	9	133	20	21	502	6.1	12	90	8.9	31	340	2.7	17
2000	183	22	19	693	6.7	11	151	15	23	573	4.6	13	99	6.6	35	376	2.0	19
2400	209	18	20	791	5.5	11	167	12	25	632	3.7	14	139	8.0	30	527	2.4	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.

Recovery Data

GPH L/h Delivered

Size	40°F GPH	22°C L/h	50°F GPH	28°C L/h	60°F GPH	33°C L/h	70°F GPH	39°C L/h	80°F GPH	44°C L/h	90°F GPH	50°C L/h	100°F GPH	56°C L/h	120°F GPH	67°C L/h	140°F GPH	78°C L/h
1200	3061	11571	2449	9257	2041	7714	1749	6612	1531	5786	1361	5143	1224	4629	1020	3857	875	3306
1600	4082	15429	3265	12343	2721	10286	2332	8816	2041	7714	1814	6857	1633	6171	1361	5143	1166	4408
2000	5102	19286	4082	15429	3401	12857	2915	11020	2551	9643	2268	8571	2041	7714	1701	6429	1458	5510
2400	6122	23143	4898	18514	4082	15429	3499	13224	3061	11571	2721	10286	2449	9257	2041	7714	1749	6612



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