Parts Only

Rheos™

Modulating Boiler
Model RHCH

Modulating Water Heater
Model RHCV

U.S. Patent No. 6,644,393
Canada Patent Pending

FOR YOUR SAFETY: This product must be installed and serviced by a professional service technician, qualified in hot water boiler installation and maintenance. Improper installation and/or operation could create carbon monoxide gas in flue gases which could cause serious injury, property damage, or death. Improper installation and/or operation will void the warranty.

⚠WARNING

If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS

- **Do not try to light any appliance.**
- **Do not touch any electrical switch; do not use any phone in your building.**
- **Immediately call your gas supplier from a nearby phone. Follow the gas supplier's instructions.**
- **If you cannot reach your gas supplier, call the fire department.**

Installation and service must be performed by a qualified installer, service agency, or gas supplier.

⚠AVERTISSEMENT

Assurez-vous de bien suivres les instructions données dans cette notice pour réduire au minimum le risque d'incendie ou d'explosion ou pour éviter tout dommage matériel, toute blessure ou la mort.

Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquides inflammables dans le voisinage de cet appareil ou de tout autre appareil.

QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ:

- **Ne pas tenter d'allumer d'appareils.**
- **Ne touchez à aucun interrupteur. Ne pas vous servir des téléphones dansle bâtiment où vous vous trouvez.**
- **Appelez immédiatement votre fournisseur de gaz depuis un voisin. Suivez les instructions du fournisseur.**
- **Si vous ne pouvez rejoindre le fournisseur de gaz, appelez le sservice des incendies.**

L'installation et l'entretien doivent être assurés par un installateur ou un service d'entretien qualifié ou par le fournisseur de gaz.

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SECTION 1. General Information

USING THIS MANUAL – Because the Rheos Boilers and Rheos Water Heaters are identical appliances, with the exception of materials of manufacture, labels and ultimate use application, this manual provides information for the proper installation, operation and maintenance of both products. Where differences exist between the application of the appliances and their operation, the sections pertinent to only one appliance or the other will be so identified.

⚠WARNING

The Rheos hydronic, boiler or water heater **must** be installed in accordance with the procedures detailed in this manual, or the Laars Heating Systems warranty will be voided. The installation must conform to the requirements of the local jurisdiction having authority, and, in the United States, to the latest edition of the National Fuel Gas Code, ANSI Z223.1/NFPA54. In Canada, the installation must conform to the latest edition of CSA B149.1 Natural Gas and Propane Gas Installation Code, and/or local codes. Where required by the authority having jurisdiction, the installation of Rheos boilers must conform to the Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1. Any modifications to the boiler, its gas controls, or wiring may void the warranty. If field conditions require modifications, consult the factory representative before initiating such modifications.

1.1 Introduction

This manual provides information necessary for the installation, operation, and maintenance of Laars Heating Systems Rheos (copper tube or cupronickel tubes) appliances. Read it carefully before installation.

All application and installation procedures should be reviewed completely before proceeding with the installation. Consult the Laars Heating Systems factory, or local factory representative, with any problems or questions regarding this equipment. Experience has shown that most operating problems are caused by improper installation.

The Rheos appliance is protected against over pressurization. A pressure relief valve is fitted to all appliances. It is installed inside the jacket, at the water outlet of the unit.

IMPORTANT: The inlet gas pressure to the appliance must not exceed 13" W.C. (3.2kPa).

All installations must be made in accordance with 1) American National Standard Z223.1/NFPA54-Latest Edition “National Fuel Gas Code” or 2) CSA B149.1 “Natural Gas and Propane Installation Code” and with the requirement of the local utility or other authorities having jurisdiction. Such applicable requirements take precedence over the general instructions contained herein.

All electrical wiring is to be done in accordance with the local codes, or in the absence of local codes, with: 1) The National Electrical Code ANSI/NFPA No. 70-latest Edition, or 2) CSA STD. C22.1 “Canadian Electrical Code - Part 1”. This appliance must be electrically grounded in accordance with these codes.

1.2 Model Identification

Consult the rating plate on the unit. The following information describes the model number structure.

(1-2) Model Series Designation
- R H = Rheos mid-sized commercial

(3) Model Efficiency
- C = Mid Efficiency (non-condensing)
- H = High Efficiency (condensing)

(4) Usage
- H = Hydronic
- V = Volume Water

(5-8) Size
- 1 2 0 0 = 1,200,000 BTU/hr input
- 1 6 0 0 = 1,600,000 BTU/hr input
- 2 0 0 0 = 2,000,000 BTU/hr input
- 2 4 0 0 = 2,400,000 BTU/hr input

Model Designation

9.2 Parts List

COMBUSTION COMPONENTS

See Figure 39		1200	1600	2000	2400
1	Combustion chamber assembly	R2010800	R2016300	R2016400	R2001000
2	Base assembly	R2001100	R2001100	R2001100	R2001100
3	Panel, front cover, base frame	R2001200	R2001200	R2001200	R2001200
4	Panel, top, combustion chamber (with insulation)	R2001300	R2001300	R2001300	R2001300
5	Panel, bottom, combustion chamber	R2001400	R2001400	R2001400	R2001400
6	Panel, left, combustion chamber	R2001500	R2001500	R2001500	R2001500
7	Panel, right, combustion chamber	R2001600	R2001600	R2001600	R2001600
8	Panel, access, combustion chamber	R2001700	R2001700	R2001700	R2001700
9	Support, front, fan transition	R2010200	R2010200	R2010200	R2010200
10	Support, rear, fan transition	R2010300	R2010300	R2010300	R2010300
11	Hardware kit, combustion chamber	R2002200	R2002200	R2002200	R2002200
12	Burner, with gaskets	R2013200	R2016500	R2016600	R2002300
13	Gasket kit, burner	R2002400	R2002400	R2002400	R2002400
14	Tile kit (top & bottom of heat exchanger w/top insulation)	R2002500	R2002500	R2002500	R2002500
15	Tile support w/rods	R2010900	R2016700	R2016800	R2002600
16	Tile support protective liner	R2016900	R2016900	R2016900	R2002700
17	Flue collector kit (with gaskets)	R2011000	R2011000	R2017000	R2002800
18	Gasket kit, flue collector	R2002900	R2002900	R2002900	R2002900
19	Gasket kit, combustion chamber	R2003000	R2003000	R2003000	R2003000
20	Heat exchanger assembly, copper	R2013300	R2017100	R2017200	R2003100
20	Heat exchanger assembly, cupro-nickel	R2013301	R2017101	R2017201	R2003101
21	Baffle, flue	R2017300	not used	not used	not used

GAS TRAIN / COMBUSTION AIR COMPONENTS

See Figures 40 and 41					
25	Gas train assembly, standard, Nat	R2011100	R2017400	R2017500	R2003200
25	Gas train assembly, standard, LP Nat	R2011200	R2017600	R2017700	R2010400
25	Gas train assembly, control pack A, Nat	R2017800	R2017900	R2018000	R2018100
25	Gas train assembly, control pack A, LP Nat	R2018200	R2018300	R2018400	R2018500
25	Gas train assembly, control pack B and E, Nat	R2018600	R2018700	R2018800	R2018900
25	Gas train assembly, control pack B and E, LP Nat	R2019000	R2019100	R2019200	R2019300
26	Gas valve, safety	R2011300	R2003300	R2003300	R2003300
27	Gas valve, solenoid safety, for control packs B & E	R2019400	R2019500	R2019500	R2019500
28	Gas valve, mod valve actuator	R2003400	R2003400	R2003400	R2003400
29	Gas valve, mod valve body	R2011400	R2011400	not used	R2003500
29	Gas valve, mod valve body, size 2000, Nat	not used	not used	R2003500	not used
29	Gas valve, mod valve body, size 2000, LP	not used	not used	R2011400	not used
30	Gas valve, mod complete (body and actuator)	R2011500	R2011500	not used	R2003600
30	Gas valve, mod complete (body and actuator) size 2000, Nat	not used	not used	R2003600	not used
30	Gas valve, mod complete (body and actuator) LP gas size 2000, LP	not used	not used	R2011500	not used
31	Gas valve, manual	R2011600	R2003700	R2003700	R2003700
32	Double valve body / Actuator	not used	not used	R2019600	R2019600
33	Double valve body	not used	not used	R2019700	R2019700
34	On/Off Actuator	R2019800	R2019800	R2019800	R2019800
35	Normally open vent valve	R2014400	R2014400	R2014400	R2014400
36	Gas orifice kit (orifice in holder), Nat	R2011700	R2019900	R2020000	R2003800
36	Gas orifice kit (orifice in holder), LP	R2011800	R2020100	R2020200	R2010500
37	Gas orifice, Nat	R2011900	R2020300	R2020400	R2003900
37	Gas orifice, LP	R2012000	R2020500	R2020600	R2010600
38	Pressure switch, high gas	R2004000	R2004000	R2004000	R2004000

		1200	1600	2000	2400
39	Pressure switch, low gas	R2004100	R2004100	R2004100	R2004100
40	Tubing/Fittings (gas train repair kit)	R2020700	R2020700	R2020700	R2020700
41	Air filter box assembly (with gasket and hardware) Nat	R2020800	R2020900	R2004400	R2004400
41	Air filter box assembly (with gasket and hardware) LP	R2020800	R2021000	R2021100	R2021200
42	Air filter	R2004500	R2004500	R2004500	R2004500
43	Gasket kit, air filter	R2004600	R2004600	R2004600	R2004600
44	Air filter box cover	R2004700	R2004700	R2004700	R2004700
45	Air filter felt gasket	R2004800	R2004800	R2004800	R2004800
46	Air filter air inlet vent w / gasket	R2021300	R2021400	R2021400	R2021400
47	Blower	R2012100	R2004900	R2004900	R2004900
48	Blower gasket kit	R2012200	R2005000	R2005000	R2005000
49	Air orifice, Nat	R2012300	R2021500	R2021700	R2005100
50	Air orifice strip, LP	not used	not used	R2022000	R2022000
51	Air orifice, LP	R2026400	R2021600	R2021700	R2005100
52	Air restrictor, LP	R2026500	R2022100	R2022200	not used
53	Air transition (filter box to blower)	R2012500	R2005200	R2005200	R2005200
54	Blower adapter transition	R2022300	not used	not used	not used
55	Ignitor kit (with gasket)	RW2002300	RW2002300	RW2002300	RW2002300
56	Sight glass	R2005300	R2005300	R2005300	R2005300
57	Pressure switch, air	R2022400	R2022400	R2022400	R2022400

ELECTRICAL COMPONENTS

See Figure 42		**1200**	**1600**	**2000**	**2400**
60	Transformer, 115/24V, 40VA step down,	R0021300	R0021300	R0021300	R0021300
60	Transformer, 115/24V, 80VA step down, for control pack B & E only	R2022500	R2022500	R2022500	R2022500
62	Transformer, 24/115 step up	R2005500	R2005500	R2005500	R2005500
63	Fuse kit, 2 Amp, 5 pack (not shown)	RE2043600	RE2043600	RE2043600	RE2043600
63	Fuse kit, 5 Amp, 5 pack (Control packs B and E) (not shown)	RE2043500	RE2043500	RE2043500	RE2043500
64	Fuse holder (qty of 5)	RE2000300	RE2000300	RE2000300	RE2000300
65	Diagnostic lights kit	R2005600	R2005600	R2005600	R2005600
66	Ignition control (Single Trial)	R2014100	R2014100	R2014100	R2014100
66	Ignition control (Three Trial, Control packs F and G)	R2022600	R2022600	R2022600	R2022600
67	High limit, manual reset, RHCH boiler	RE0015900	RE0015900	RE0015900	RE0015900
67	High limit, manual reset, RHCV water heater	RE2217800	RE2217800	RE2217800	RE2217800
68	Temperature control, RHCH boiler	R2005800	R2005800	R2005800	R2005800
69	Module, proportional control	R2005900	R2005900	R2005900	R2005900
70	Relay, DPDT, 24V coil	R2006000	R2006000	R2006000	R2006000
71	Relay, Time Delay on Make	R2006100	R2006100	R2006100	R2006100
72	Relay, DPDT, 120V coil	R2006200	R2006200	R2006200	R2006200
73	Relay, EM2 kit	RE2077700	RE2077700	RE2077700	RE2077700
74	Relay, 115VAC SPST	R2014200	R2014200	R2014200	R2014200
75	Voltage regulator	R2006300	R2006300	R2006300	R2006300
76	Terminal block, 2 position	R2006400	R2006400	R2006400	R2006400
77	Terminal block, 4 position	R2006500	R2006500	R2006500	R2006500
78	Sensor, temperature control (not shown)	R2006600	R2006600	R2006600	R2006600
79	Switch, toggle, 3-way SPDT	R2007700	R2007700	R2007700	R2007700
80	Switch, toggle, DPDT	R2015000	R2015000	R2015000	R2015000
81	Control signal converter	R2012700	not used	not used	not used
82	Bell, alarm, 24V	R2014200	R2014200	R2014200	R2014200
83	Cover, control panel top	R2006700	R2006700	R2006700	R2006700
84	Cover, control panel bottom	R2007000	R2007000	R2007000	R2007000
85	Enclosure, control panel	R2006800	R2006800	R2006800	R2006800
86	Voltage divider panel, Std and control pack options A, C, and D	R2006900	R2006900	R2006900	R2006900
86	Voltage divider panel, control pack options B and E	R2015200	R2015200	R2015200	R2015200
87	Support, control panel bottom	R2007100	R2007100	R2007100	R2007100

		1200	1600	2000	2400
88	Panel, diagnostic lights	R2007300	R2007300	R2007300	R2007300
89	Bracket, mounting, diagnostic panel	R2007400	R2007400	R2007400	R2007400
90	Standoff	R2007500	R2007500	R2007500	R2007500
91	Hardware kit, control panel	R2007600	R2007600	R2007600	R2007600
92	Bracket, support, control panel top	R2007800	R2007800	R2007800	R2007800

HEAT EXCHANGER / WATER PATH

See Figure 43		**1200**	**1600**	**2000**	**2400**
93	Header cover	R2012800	R2022700	R2022800	R2007900
93	Header cover, pump mount	R2022900	R2023000	R2023100	R2023200
94	Water barrier assembly	R2012900	R2023300	R2023400	R2008000
95	Gasket kit, heat exchanger cover	R2013000	R2023500	R2023600	R2008200
96	Hardware kit, heat exchanger cover	R2013100	R2023700	R2023800	R2008300
97	Gauge, temperature/pressure	RA0079000	RA0079000	RA0079000	RA0079000
98	Pressure relief valve, RHCH boiler	A0063600	A0063600	A0002700	A0002700
98	Pressure relief valve, RHCV boiler	A0001200	A0064400	A0000400	A0000400
100	Immersion well, high limit	RE2058300	RE2058300	RE2058300	RE2058300
101	Immersion well, temperature control	RE2074000	RE2074000	RE2074000	RE2074000
102	Tube cleaning kit (not shown)	R2000700	R2000700	R2000700	R2000700
103	Flow switch (with paddle)	R2008400	R2008400	R2008400	R2008400
104	Low water cutoff, manual reset	RE2075100	RE2075100	RE2075100	RE2075100
105	Pump, circulator (normal water)	R2023900	R2024100	R2024300	R2024100
105	Pump, circulator (hard water)	R2024000	R2024200	R2024400	R2024200
106	Bracket, pump mounting (normal water)	R2024600	R2024500	R2024500	R2024500
106	Bracket, pump mounting (hard water)	R2024600	R2024600	R2024600	R2024600
107	Flange, pump, gaskets / hardware	R2024700	R2024800	R2024700	R2024800
108	Shims, pump bracket (10 ea)	R2013600	R2013600	R2013600	R2013600
109	Gaskets (10 pk)	R2013800	R2013800	R2013800	R2013800
110	Temperature switch, bi-metal disc	R2024900	R2024900	R2024900	R2024900

JACKET

See Figure 44		**1200**	**1600**	**2000**	**2400**
115	Panel, upper front access	R2015101	R2015101	R2015101	R2015101
116	Panel, lower front access	R2015102	R2015102	R2015102	R2015102
117	Panel, waterway access	R2025000	R2025100	R2025200	R2025300
117	Panel, waterway access, pump	R2025400	R2025400	R2025400	R2025500
118	Panel, waterway cover	R2025600	R2025600	R2025600	R2025600
119	Panel, pump access	R2025700	R2025800	R2025800	R2025800
120	Panel, PRV access	R2025900	R2025900	R2025900	R2025900
121	Panel, rear access	R2008600	R2008600	R2008600	R2008600
122	Panel, front left	R2008700	R2008700	R2008700	R2008700
123	Panel, front right	R2008800	R2008800	R2008800	R2008800
124	Panel, rear left	R2008900	R2008900	R2008900	R2008900
125	Panel, rear right	R2009000	R2009000	R2009000	R2009000
126	Panel, common access	R2009100	R2009100	R2009100	R2009100
127	Panel, top	R2009200	R2009200	R2009200	R2009200
128	Panel, support	R2009300	R2009300	R2009300	R2009300
129	Panel, flue vent access	R2026000	R2026000	R2026100	R2026300
130	Panel, ducted air cover	R2009500	R2009500	R2009500	R2009500
131	Jacket trim kit	R2009600	R2009600	R2009600	R2009600
132	Hardware kit, jacket	R2009700	R2009700	R2009700	R2009700
133	Window, control / display	R2009800	R2009800	R2009800	R2009800
134	Window guide	R2009900	R2009900	R2009900	R2009900
135	Window latch	R2010000	R2010000	R2010000	R2010000
136	Jacket retro-fit kit (standard)	R2026400	R2026500	R2026600	R2026700
137	Jacket retro-fit kit (mounted pump)	R2026800	R2026900	R2027000	R2027100

Figure 39. Combustion Components.

Figure 40. Gas Train/Combustion Air Components.

Figure 41. Gas Train Components.

Figure 42. Electrical Components.

Figure 43. Heat Exchanger / Water Path Components.

Figure 44. Jacket Components.

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800.900.9276 • Fax 800.559.1583 ***(Customer Service, Service Advisors)***
20 Industrial Way, Rochester, NH 03867 • 603.335.6300 • Fax 603.335.3355 ***(Applications Engineering)***
1869 Sismet Road, Mississauga, Ontario, Canada L4W 1W8 • 905.238.0100 • Fax 905.366.0130
www.Laars.com

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