



CSA INTERNATIONAL

Certificate of Compliance

Certificate: 1770497 (113206)

Master Contract: 189893

Project: 1770497

Date Issued: 2006/08/08

Issued to: Rinnai America Corporation

103 International Dr
Peachtree City, GA 30269
USA
Attention: Don Emen

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US'



Issued by: Michael Sharkey

Authorized by: Richard Fort, Manager of Certification Services

PRODUCTS

CLASS 2901 84 - DOMESTIC HEATERS (GAS) - Vented Fireplace-Certified to U.S. Standards

CLASS 2901 04 - DOMESTIC HEATERS (GAS) - Vented Fireplace

For Use With Natural Gas

Vented Gas Fireplace Heater without Front Panel

Model Number

RHFE-750ETRN

The 'C' and 'US' indicators adjacent to the CSA Mark signify that the product has been evaluated to the applicable CSA and ANSI/UL Standards, for use in Canada and the U.S., respectively. This 'US' indicator includes products eligible to bear the 'NRTL' indicator. NRTL, i.e. National Recognized Testing Laboratory, is a designation granted by the U.S. Occupational Safety and Health Administration (OSHA) to laboratories which have been recognized to perform certification to U.S. Standards.



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Front Panel Model Numbers

R2700 Flat Metal - Black Front

R2701 Flat Metal - Stainless Steel Front

R2702 Radius Glass - Silver Front

R2703 Radius Glass - Black Front

For Use With Liquefied Petroleum Gases

Vented Gas Fireplace Heater without Front Panel

Model Number

RHFE-750ETRL

Front Panel Model Numbers

R2700 Flat Metal - Black Front

R2701 Flat Metal - Stainless Steel Front

R2702 Radius Glass - Silver Front

R2703 Radius Glass - Black Front

APPLICABLE REQUIREMENTS

ANSI Z21.88 - 2005 / CSA 2.33 - 2005 Vented Gas Fireplace Heaters

ANSI Z21.86 - 2004 / CSA 2.32 - 2004 Vented Gas-Fired Space Heating Appliances (filters only)

ANSI Z21.86a - 2005 / CSA 2.32a - 2005 Vented Gas-Fired Space Heating Appliances (filters only)

MARKINGS

All markings and printed instructions are in compliance with the above mentioned requirements. Samples are contained in the main certification report.



Supplement to Certificate of Compliance

Certificate: 1770497

Master Contract: 189893

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
1770497	2006/08/08	New units - initial certification



Descriptive Report and Test Results

MASTER CONTRACT: 189893

REPORT: 1770497

PROJECT: 1770497

Edition 1: August 8, 2006; Project 1770497 – Cleveland
Issued by Michael Sharkey; Reviewed by Richard Fort

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Supplement to Certificate of Compliance – Page 1
Description and Tests – Pages 1 to 11
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PRODUCTS

2901-04 DOMESTIC HEATERS (GAS) - Vented Fireplace
2901-84 DOMESTIC HEATERS (GAS) Vented Fireplace-Certified to U.S. Standards

Model Number	Maximum Input Rating	Minimum Input Rating
For Use With Natural Gas Vented Gas Fireplace Heater		
RHFE-750ETRN	29,000	11,000
For Use With Liquefied Petroleum Gases Vented Gas Fireplace Heater		
RHFE-750ETRL	28,000	11,000

APPLICABLE REQUIREMENTS

ANSI Z21.88 - 2005 • CSA 2.33 - 2005	Vented Gas Fireplace Heaters
ANSI Z21.86 - 2004 • CSA 2.32 - 2004	Vented Gas-Fired Space Heating Appliances (Filters Only)
ANSI Z21.86a - 2005 • CSA 2.32a - 2005	Vented Gas-Fired Space Heating Appliances (Filters Only)

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MARKINGS

All marking in compliance with the applicable requirements are found on descriptive drawing page numbers 99 - 126. The specifications of the marking system are identified on the drawings.

ALTERATIONS

Project No. 1770497 - none

FACTORY TESTS

The submitter shall ensure that the following factory tests are conducted at the frequency specified and the results are documented and made available for review by CSA field services representatives.

<u>Test</u>	<u>Frequency</u>
<u>Test Fire Burner, Manifold & Control Assembly</u> Pass/Fail Criteria: <ul style="list-style-type: none">• Burners shall light smoothly and burn at all ports• No leakage in the manifold shall be observed	100%
<u>Dielectric Withstand Test on Completed Fireplace Heater</u> Pass/Fail Criteria: <ul style="list-style-type: none">• The test shall be conducted at 120% of the 1000 volts + twice the nameplate voltage and shall be held without breakdown for 1 second.	100%
<u>Burner Operating Characteristics</u> Pass/Fail Criteria: <ul style="list-style-type: none">• The main burners shall light without delay.• Burners shall not flashback.• The burner flames shall carry across to all burners and burn at all ports.• Burner flames shall not flash outside the appliance jacket.• There shall be no backpressure at the burner mixer face.	1 per month/production
<u>Ignition Systems</u> Pass/Fail Criteria: <ul style="list-style-type: none">• Verify that the pilot effectively lights the main burners without delay.• Verify that upon loss of supervised flame, that the ignition system will shut off the gas flow within 30 seconds.	1 per month/production
<u>Combustion</u> Pass/Fail Criteria: <ul style="list-style-type: none">• Carbon Monoxide shall not exceed 0.04% Air Free after 15 minutes of operation.	1 per month/production
<u>Discharge Air Temperatures</u> Pass/Fail Criteria: <ul style="list-style-type: none">• The average discharge air temperature shall not exceed 280°F above room temperature after being operated for one hour.	1 per month/production

Surface Temperature 1 per month/production

Pass/Fail Criteria:

- Surface temperatures shall be less than 140°F above room temperature up to and including 18 inches above the bottom of the fireplace heater.
- Surface temperatures shall be less than 180°F above room temperature above 18 inches above the bottom of the fireplace heater.

Combustion System Leakage 1 per month/production

Pass/Fail Criteria:

- The leakage of the combustion chamber section shall not exceed 4.0% of the products of combustion.

Impact 1 per month/production

Pass/Fail Criteria:

- The glass front shall not break when impacted by a 1.2 pound steel sphere.

Thermal Shock 1 per month/production

Pass/Fail Criteria:

- The glass front shall not crack or break when misted or wiped with a wet cloth.

Impact of Glazing 1 per month/production

Pass/Fail Criteria:

- The glazing shall not be compromised when impacted with a 1.2 pound steel ball.

Thermal Shock of Glazing 1 per month/production

Pass/Fail Criteria:

- The glazing shall not be compromised when the glass is misted or wiped with a wet cloth.

TESTS

Project No. 1770497

Tests were conducted at CSA Cleveland Laboratory. The actual test data results are maintained in CSA Cleveland facility. Testing was conducted on model number RHFE-750ETR. Testing was conducted on Natural Gas. Additional tests were conducted using Liquefied Petroleum Gases on tests indicated with an (*). Satisfactory results were obtained on the following tests:

Part I. Construction

Part II. Performance

- 2.1 General
- 2.2 Test Gases
- *2.3 Test Pressure and Burner Adjustments
- *2.4 Combustion
- 2.5 Appliance and Burner Durability Test
- *2.6 Burner Operating Characteristics
- 2.7 Loose Materials – Not Applicable – No Loose Materials
- *2.8 Pilot Operating Characteristics

- *2.9 Pilot Burners and Safety Shut-Off Devices
- 2.10 Direct Ignition Systems – Not Applicable – Pilot is used in design
- 2.11 Combustion Chamber Relief for Gravity Vented Gas Fireplace Heaters – Not Applicable
- 2.12 Delayed Ignition and Integrity Tests for Direct Vent Gas Fireplace Heaters
- 2.13 Glass Fronts
- 2.14 Main Burner and Flame Spreader Temperatures
- 2.15 Nonload-Bearing Flue Gas Baffle Temperatures
- 2.16 Appliance Main Gas Valves
- 2.17 Gas Appliance Pressure Regulators
- 2.18 Automatic Valves
- 2.19 Safety Circuit Analysis
- 2.20 Manifold and Control Assembly Capacity
- 2.21 Temperature at Discharge Air Opening
- 2.22 Wall, Floor and Ceiling Temperatures
- 2.23 Flue Gas Temperatures
- 2.24 Surface Temperatures
- 2.25 Evaluation of Clothing Ignition Potential
- 2.26 Venting
- 2.27 Draft Hoods – Not Applicable – Draft Hood not part of design.
- 2.28 Draft Tests for Appliances Not Equipped with Draft Hoods
- 2.29 Vent Shut-Off System
- *2.30 Wind Tests
- 2.31 Vent and Vent/Air Intake Terminal Assemblies
- 2.32 Joints in Direct Vent Systems
- 2.33 Allowable Vent Pipe, Heating Element and Load-Bearing Flue Gas Baffle Temperatures
- 2.34 Automatic Vent Damper Devices – Not Applicable – No Vent Damper in Design
- 2.35 Cooling Section of Appliances with Cooling Units – Not Applicable – No Cooling in Design.
- 2.36 Heating Elements Located Downstream from Refrigeration Coils – Not Applicable – No Refrig.
- 2.37 Marking Material Adhesion and Legibility

This unit has been designed with integral filters. Filters are not part of the scope of Z21.88 • CSA 2.33. Since this unit has an integral computerized control that monitors circulating air flow, it was agreed to test the filters to the Z21.86 • CSA 2.32 standard. The following tests were conducted from the Z21.86 • CSA 32 standard:

- 2.11.2 Filter Temperatures
- 6.5.2 Wall, Floor and Ceiling Temperatures
- 6.5.4 Component Temperatures
- 6.6.7 Temperature at Discharge Air Opening

MODEL NUMBER BREAKDOWN

Character	Description
RH	Rinnai Heater
FE-	Forced Fan Exhaust Flue System
750	750 kcals
ETR	ETR Control
N	Natural Gas
L	Liquefied Petroleum Gases

CLEARANCES

Minimum clearances from combustible and non-combustible construction:

Top	36 inches
Mantel	12 inches
Vent	24 inches
Enclosure	0 inches for combustible and non-combustible installations
Left	12 inches
Right	12 inches
Front	36 inches
Floor	0 inches Freestanding

GAS PRESSURES

Manifold Pressure

		Max. Rate	Min. Rate
Natural Gas	RHFE-750ETRN	3.0 inches w.c.	0.83 inches w.c.
Liquefied Petroleum Gases	RHFE-750ETRL	8.35 inches w.c.	2.68 inches w.c.

Maximum Supply Pressure

Natural Gas	10.5 inches w.c.
Liquefied Petroleum Gases	13.0 inches w.c.

Minimum Supply Pressure

Natural Gas	4.3 inches w.c.
Liquefied Petroleum Gases	9.8 inches w.c.

ELECTRICAL RATING

120 Volts / 0.8 Amps / 60 Hertz / Single Phase

GAS CONTROL ASSEMBLIES
INTERMITTENT/INTERRUPTED IGNITION SYSTEMS

Read columns vertically
For complete assemblies

Used on all Models

TYPE OF CONTROL	MFR. OF CONTROL	MFR. MODEL NUMBER	SIZE OF CONTROL	
			NATURAL	PROPANE/LP
Combination * Control	Rinnai Japan	C36R-2-1-S	X	X
Pressure Regulator	Mertik Maxitrol	RV12LM	X	X
Ignition Module	Rinnai Japan	EI-161	X	X
Pilot/Ignitor	SIT	190 Series 3 Flame	0977166(62)	0977168(35)
	SIT	0190653 Bracket	X	X
	SIT	0975063 Hood	X	X
Flame Sensor	SIT (Pilot)	0915024	X	X
	Rinnai Japan (Burners x 3)	750ETR-057	X	X

* Combination Control has the following step features:

Natural Gas - inches w.c.	Step 1 PL	Front Burner Low	0.83"WC	(0.206 kPa)
	Step 3 PF	Front Burner High	2.67"WC	(0.666 kPa)
	Step 4 PA	All Burners Low	1.00"WC	(0.294 kPa)
	Step 7 PH	All Burners High	3.00"WC	(0.745 kPa)
Propane/LP - inches w.c.	Step 1 PL	Front Burner Low	2.68"WC	(0.667 kPa)
	Step 3 PF	Front Burner High	8.30" WC	(2.068 kPa)
	Step 4 PA	All Burners Low	3.38"WC	(0.843 kPa)
	Step 7 PH	All Burners High	8.35" WC	(2.078 kPa)

ELECTRICAL EQUIPMENT

Circulating Air Motor:

Manufacturer	Model Number	Ratings
Shinano Kenshi	750ETR-302-2	120Volt/60Hertz/Single Phase, 1150 RPM (High), 600 RPM (Low)

Circulating Air Motor Overload Protection:

Manufacturer	Model Number
Texas Instruments	YS11A135A-D7

Circulating Air Motor Run Capacitor:

Manufacturer	Model Number	Ratings
Sizuki Electric Co.	CMKS	220VAC, 3.0 uF

Combustion Air Motor:

Manufacturer	Model Number	Ratings
Nihon Densan	750ETR-073	120Volt/60Hertz/Single Phase, 10W, 2080 RPM (High), 1050 RPM (Low)

Combustion Air Blower:

Manufacturer	Model Number	Size
Maeno Kogyo	Housing	----
Nippon Kohbuns	Wheel	1.7 x 8 in. dia. w/50 blades

Pressure Switch:

Manufacturer	Model Number	Ratings
Omron	100F-2051	5 VDC

Transformer:

Manufacturer	Model Number	Ratings
Tamura Corp.	ET-301	120V, E59673

Wiring:

Manufacturer	Model Number	Ratings
Style - UL 1015	PVC – 18 AWG	600V / 105°C
Style - UL 3534	PVC – 18 AWG	300V / 200°C

Junction Box:

Manufacturer	Size
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Rinnai New Zealand	3' x 2-3/8" x 2-3/8" Zinc Coated Steel, 0.031" Thick
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Overheat Thermistor:

Manufacturer	Model Number	Ratings
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Tateyama Kagaku	1004F – 2057	
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Flue Block Thermistor:

Manufacturer	Model Number	Ratings
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Tateyama Kagaku	1004F – 2057	
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Room Temperature Thermistor:

Manufacturer	Model Number	Ratings
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Tateyama Kagaku	ES – 01131 Bi-metal	149 ° F
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