

RIH, RIHV Gas Fired High Intensity Infrared Heaters for Indoor Commercial-Industrial Use



RIHN30



RIHVN200



ANSI Z83.19



CAN 2.35

NOTE: Not approved for outdoor use.

DESCRIPTION

Reznor High Intensity Infrared Models RIH, RIHV are designed to provide personal comfort heating with reduced energy cost. Units are available in sizes from 30,000 through 200,000 BTUH gas input for use with natural gas and sizes from 50,000 through 120,000 BTUH gas input for use with propane.

Infrared heaters can best be compared to the sun in how they heat. On a bright sunny day, you can feel the infrared rays of the sun heating your skin surface. The same infrared rays are also heating the concrete sidewalks and buildings. Infrared heating equipment works the same way - it warms people, heats floors, walls, machinery and other surfaces, without heating the air between. The "infrared heated" objects in turn warm the surrounding air. Eliminated are the costly ceiling heat losses and discomforts of cold air stratification that are so familiar with conventional forced air heating systems. Infrared heat assures floor level comfort with fuel savings up to 50%. Electrical energy is also saved because there is no need for a fan or blower.

In addition to the gas and electric energy savings, infrared heaters have other economical installation and operational features. Model RIH, RIHV heaters can be suspended by chains from a joist or mounted to a wall, making them well suited for space or spot heating. Direct venting is not required. Operational service and maintenance requirements are minimal due to the absence of moving parts.

Some sizes can be ordered with optional 2-stage heating. The first stage will fire at 1/2 or 2/3 of total capacity. If more heat is required second stage will fire for full capacity. A 2-stage thermostat **must** be used with 2-stage heaters. Two-stage operation provides fewer on/off cycles for improved comfort and longer life.

Model RIH, RIHV high intensity infrared units are design certified for use in The United States and Canada by the Canadian Standards Association (CSA).

STANDARD FEATURES

- 115 volt operation for single-stage models, 24 volt operation for 2-stage models
- Direct spark ignition, 100% safety shut-off
- Solenoid gas valve, 1/2" NPT inlet
- Ceramic combustion surface temperature up to 1850°F, capable of reaching full intensity temperature in less than 30 seconds
- Seamless aluminized steel plenum chamber with stainless steel ceramic tile retainer clips
- Venturi mixer of spun metal construction for precision metering of air/gas mixture
- Highly polished aluminum reflector
- Balanced suspension holes, 3/8" diameter

OPTIONAL FEATURES

- Limited lifetime warranty available on burner
- Parabolic reflector
- Wire grid for increased radiant efficiency
- Protective screens for standard reflector or parabolic reflector
- Heat deflector shield (to reduce required clearance above the heater) only available on 60 and 100 sizes
- 120/24V Thermostat (50° - 90°F)
- 2-Stage heating on sizes 90, 100, 120, 150
- 2-Stage 24V thermostat for use with 2-stage heaters only.
- Stainless steel flexible connector (24") with manual valve
- Chain (50 ft.) with 14 "S" hooks
- Chain mounting kit (pre-assembled for one heater) for mounting heater at a 30° angle

TECHNICAL DATA

MODELS		NATURAL GAS						PROPANE GAS			
		RIHN 30 ^A	RIHN 60 ^B	RIHVN 100 ^C	RIHVN 150 ^C	RIHVN 160	RIHVN200 ^C	RIHL 50	RIHVL 90 ^C	RIHVL 120 ^C	
HEATING INPUT	MBH	30	60	100	150	160	200	50	90	120	
	kW	8.8	17.6	29.3	44.0	46.9	58.6	14.7	26.4	35.2	
INLET GAS PRESSURE	MINIMUM	" w.c.	7	7	7	7	7	7	11	11	11
		mbar	17	17	17	17	17	17	27	27	27
	MAXIMUM	" w.c.	14	14	14	14	14	14	14	14	14
		mbar	35	35	35	35	35	35	35	35	35
ALLOWABLE MOUNTING ANGLE (in degrees)		0 - 30 deg.	0 - 30 deg.	5 - 29 deg.	0 - 30 deg.	5 - 29 deg.	0 - 30 deg.	0 - 30 deg.	5 - 29 deg.	0 - 30 deg.	
GAS CONNECTION		in.	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	
		mm	13	13	13	13	13	13	13	13	
SHIPPING WEIGHT ^D		Lbs.	30	30	36	49	62	62	30	36	49
		Kg	14	14	16	22	28	28	14	16	22

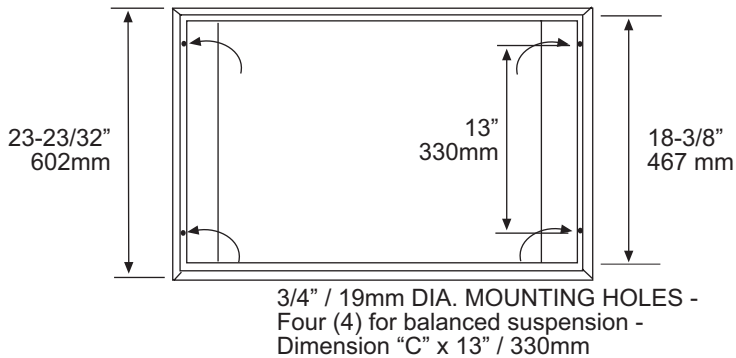
^A MODEL RIHN30 is not available in Canada.

^B MODEL RIHN60 in Canada requires addition of a wire grid, Option DN2.

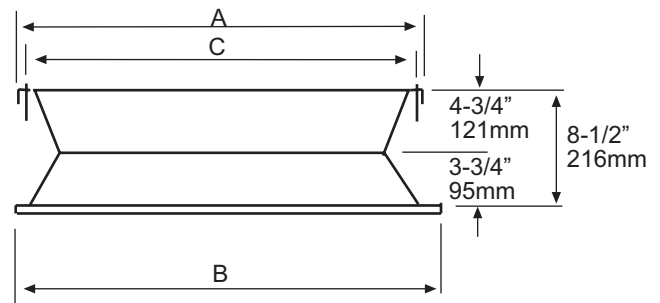
^C These sizes are available in two-stage operation see explanation below.

^D Weights are for single stage units; add 6 lbs (3 kg) for two-stage units.

DIMENSIONAL DATA



TOP VIEW



FRONT VIEW

DIMENSIONS ACCURATE TO WITHIN 3mm or 1/8 in.

SIZE	A		B		C	
	in.	mm	in.	mm	in.	mm
30, 50, 60	15 5/16	389	16 5/8	422	14 5/8	371
90, 100	23 15/16	608	25 1/4	641	23 1/4	591
120, 150, 160	32 9/16	827	33 7/8	860	31 7/8	810
200	41 13/16	1,062	42 1/2	1,080	40 1/2	1,029

2-STAGE OPERATION

Model Size	Fuel	MBH	
		First Stage	Full Capacity
RIHVL90	Propane	45	90
RIHVN100	Natural Gas	50	100
RIHVL120	Propane	80	120
RIHVN150	Natural Gas	100	150
RIHVN200	Natural Gas	100	200

VENTILATION REQUIREMENTS

Every direct gas-fired heater installation requires sufficient fresh air to provide adequate combustion air and removal of products of combustion. In the U.S. the minimum intake and exhaust air opening shall provide for not less than 4 CFM per 1,000 BTUH (0.38 m³/minute per kW). Canada requires 3 CFM per 1,000 BTUH (0.29 m³/minute per kW) for natural gas, and 4 CFM per 1,000 BTUH (0.38 m³/minute per kW) for LP/propane. In the U.S., this may be accomplished by either gravity or mechanical means. In Canada, the Natural Gas and Propane Installation Code CAN/CSA B149.1 (latest edition) requires the use of mechanical ventilation. This may be accomplished by the use of exhaust fans and fresh air intake openings. Both exhaust fans and inlet air openings are required in tight buildings. Exhaust openings for removing flue products shall be above the level of the heater.

When mechanical means are provided to supply and exhaust, a positive interlock with the heater thermostat must be provided by the installer so that the heater cannot operate unless the supply and exhaust system is operating.

Clearance from Combustibles (See diagram below)

		Natural Gas Models						Propane Gas Models		
		RIHN 30 ^A	RIHN 60 ^B	RIHVN 100 ^C	RIHVN 150	RIHVN 160 ^C	RIHVN 200	RIHL 50 ^C	RIHVL 90 ^C	RIHVL 120 ^C
Side Clearance	inches	30	30	36	46	48	48	30	36	46
	mm	762	762	914	1,168	1,219	1,219	762	914	1,168
Back Clearance	inches	30	30	30	33	33	33	30	30	33
	mm	762	762	762	838	838	838	762	762	838

Top Clearance

Mounted 0-29° (no heat deflector)	inches	60	60	62	64	68	68	60	62	64
	mm	1,524	1,524	1,575	1,626	1,727	1,727	1,524	1,575	1,635
Mounted 30° only (no heat deflector)	inches	48	48	50	58	68	68	48	50	58
	mm	1,219	1,219	1,270	1,473	1,727	1,727	1,219	1,270	1,473
Mounted 0-30° with Heat Deflector, Option DO2 or DN4	inches	34	34	38	N/A	N/A	N/A	28	38	N/A
	mm	864	864	965				711	965	

Below Clearance

Standard Reflector	inches	80	80	105	125	140	140	80	105	125
	mm	2,032	2,032	2,667	3,175	3,556	3,556	2,032	2,667	3,175
With Parabolic Reflector, Option DM2 or DN4	inches	110	110	135	165	180	180	110	135	165
	mm	2,794	2,794	3,429	4,191	4,572	4,572	2,794	3,429	4,191

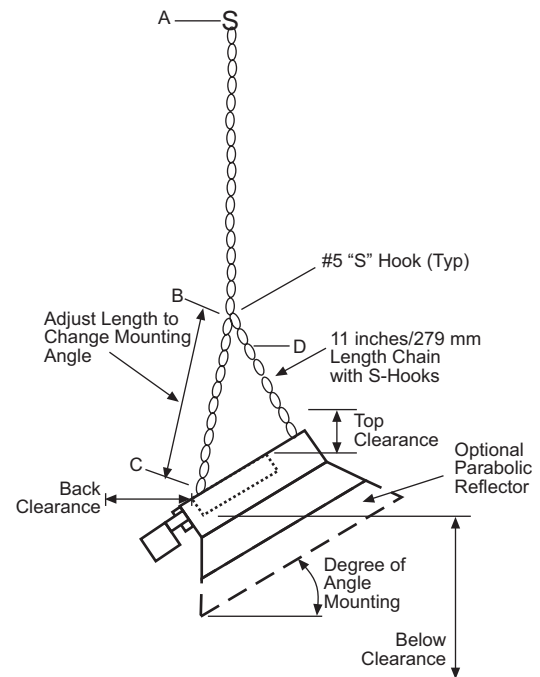
^A Model RIHN 30 is not available in Canada.

^B Model RIHN60 in Canada requires addition of wire grid, Option DN2.

^C See allowable mounting angles on previous page.

INSTRUCTIONS:

1. Hang full length chains at desired height and attach to back of heater (C) with S-hooks.
2. Attach one end of the 11" (279mm) length chain with S-hooks to front of heater (D).
3. Place other end of chain with S-hooks in loop (B) on the full length chain.
4. Check degree of angle mounting. Adjust degree of mounting angle by moving "S" hooks at point B.
5. Check to be sure unit is level. Crimp all "S" hooks closed.



COVERAGE - For complete space heating coverage, maximum distance between heaters is two times the mounting height.

Recommended Distances for Units Mounted HORIZONTALLY

Model	Distance from the Wall		Maximum Distance Between Heater Rows
	With Standard Reflector	With Parabolic Reflector, Option DM2 or DN4	
RIHN 30	8 ft (2.4M)	5 ft (1.5M)	90 ft (27.4M)
RIHL 50 & RIHN 60	12 ft (3.7M)	9 ft (2.7M)	100 ft (30.5M)
RIHVL 90 & RIVN 100	16 ft (4.9M)	12 ft (3.7M)	110 ft (33.5M)
RIHVL 120	18 ft (5.5M)	14 ft (4.3M)	115 ft (35.1M)
RIHVN 150	20 ft (6.1M)	15 ft (4.6M)	12 ft (36.6M)
RIHVN 160 & RIHVN 200	24 ft (7.3M)	20 ft (6.1M)	130 ft (39.6M)

Location/Installation

Models RIH/RIHV - High Intensity Infrared Heaters

MOUNTING ANGLE MUST BE WITHIN THE TOLERANCE ALLOWED

MODEL	ALLOWABLE MOUNTING ANGLE RANGE	IMPORTANT
RIHN 30	HORIZONTAL to 30 deg.	When angle mounted, all RIHV Models must be installed with the gas manifold on the lower end.
RIHL 50	HORIZONTAL to 30 deg.	
RIHN 60	HORIZONTAL to 30 deg.	
RIHVL 90	5 to 29 deg.	When angle mounted, RIH Models must be installed with the gas valve on the high side.
RIHVN 100	5 to 29 deg.	
RIHVL 120	HORIZONTAL to 30 deg.	
RIHVN 150	HORIZONTAL to 30 deg.	
RIHVN 160	5 to 29 deg.	Do not angle heaters more than 30°.
RIHVN 200	HORIZONTAL to 30 deg.	

MINIMUM MOUNTING HEIGHT

Model	With Standard Reflector				With Parabolic Reflector, Option DM2 or DN4			
	HORIZONTAL		30°		HORIZONTAL		30°	
	ft	M	ft	M	ft	M	ft	M
RIHN 30	11.0 - 13.0	3.4 - 4	10.0 - 12.0	3 - 3.7	N/A		N/A	
RIHL 50*	13.5 - 15.5	4.1 - 4.7	12.5 - 14.5	3.8 - 4.4	15.5 - 18.5	4.7 - 5.6	14.0 - 17.0	4.3 - 5.2
RIHN 60	14.5 - 16.5	4.4 - 5	13.0 - 15.0	4 - 4.6	16.0 - 20.0	4.9 - 6.1	15.0 - 18.0	4.6 - 5.5
RIHVL 90*	16.0 - 18.5	4.9 - 5.6	14.5 - 17.0	4.4 - 5.2	19.5 - 22.5	5.9 - 6.9	17.5 - 20.5	5.2 - 6.2
RIHVN 100*	17.0 - 19.5	5.2 - 5.9	15.0 - 17.5	4.6 - 5.3	20.5 - 23.5	6.2 - 7.2	18.5 - 21.5	5.6 - 6.6
RIHVL 120*	17.5 - 21.0	5.3 - 6.4	15.5 - 18.5	4.7 - 5.6	21.5 - 25.0	6.6 - 7.6	20.0 - 23.0	6.1 - 7
RIHVN 150	18.5 - 22.5	5.6 - 6.9	16.5 - 20.0	5.0 - 6.1	24.0 - 27.5	7.3 - 8.4	21.5 - 24.5	6.6 - 7.5
RIHVN 160*	19.0 - 23.0	5.8 - 7.0	17.0 - 20.5	5.2 - 6.2	25.0 - 28.5	7.6 - 8.7	22.5 - 25.5	6.9 - 7.8
RIHVN 200	20.5 - 25.0	6.2 - 7.6	18.5 - 22.5	5.6 - 6.9	27.0 - 31.0	8.2 - 9.4	24.5 - 28.0	7.5 - 8.5

*Must be within allowable mounting angle range.

Sample Specifications

Models RIH/RIHV - High Intensity Infrared Heaters

Provide gas-fired, high-intensity infrared heaters manufactured as Reznor brand units. The heaters shall be equipped for use with natural (propane) gas to operate on a 115 volt supply voltage [25 volt supply voltage].

The burner control system shall have a direct spark ignition with 100% safety shut-off and a solenoid gas valve with 1/2" NPT inlet. Heater shall have single-stage [two-stage] heating.

Heaters shall be of compact modular design and rugged construction consisting of the controls; a seamless aluminized steel plenum chamber with stainless steel ceramic tile retainer clips; surface combustion ceramic burner capable of full intensity temperature in less than 30 seconds; venturi mixer of spun metal construction for precision metering of air/gas mixture; highly polished aluminum reflector; and balanced suspension holes.

The burner assembly shall be removable with a single screw for cleaning or replacement. The ceramic combustion surface shall reach temperatures up to 1850°F and be of a cordierite-based grooved design with alternating rows of precision perforations producing a shorter stable flame.

These units must be approved for installation in The United States and Canada by the Canadian Standards Association (CSA). (Capacities, dimensions, and additional field-installed options as described in this catalog.)

Limited Warranty

Model RIH/RIHV Heaters

Thomas & Betts warrants to the original owner-user that this Reznor product will be free from defects in material or workmanship. This warranty is limited to twelve (12) months from the date of original installation, whether or not actual use begins on that date, or eighteen (18) months from date of shipment by Reznor, whichever occurs first.

Limitations and Exclusions

Thomas & Betts Corporation's obligations under this warranty and the sole remedy for its breach are limited to repair, at its manufacturing facility, of any part or parts of its Reznor products which prove to be defective; or, in its sole discretion, replacement of such products. All returns of defective parts or products must include the product model number and serial number, and must be made through an authorized Reznor distributor or arranged through Reznor Customer Service. Authorized returns must be shipped prepaid. Repaired or replacement parts will be shipped by Thomas & Betts F.O.B. shipping point.

1. The warranty provided herein does not cover charges for labor or other costs incurred in the troubleshooting, repair, removal, installation, service or handling of parts or complete products.
2. All claims under the warranty provided herein must be made within ninety (90) days from the date of discovery of the defect. Failure to notify Thomas & Betts of a warranted defect within ninety (90) days of its discovery voids Thomas & Betts's obligations hereunder.
3. The warranty provided herein shall be void and of no effect in the event that (a) the product has been operated outside its designed output capacity (heating, cooling, airflow); (b) the product has been subjected to misuse, neglect, accident, improper or inadequate maintenance, corrosive environments, environments containing airborne contaminants (silicone, aluminum oxide, etc.), or excessive thermal shock; (c) unauthorized modifications are made to the product; (d) the product is not installed or operated in compliance with the manufacturer's printed instructions; (e) the product is not installed and operated in compliance with applicable building, mechanical, plumbing and electrical codes; or (f) the serial number of the product has been altered, defaced or removed.
4. The warranty provided herein is for repair or replacement only. Thomas & Betts Corporation shall not be liable for any loss, cost, damage, or expense of any kind arising out of a breach of the warranty. Further, Thomas & Betts Corporation shall not be liable for any incidental, consequential, exemplary, special, or punitive damages, nor for any loss of revenue, profit or use, arising out of a breach of this warranty or in connection with the sale, maintenance, use, operation or repair of any Reznor product. In no event will Thomas & Betts be liable for any amount greater than the purchase price of a defective product. The disclaimers of liability included in this paragraph 4 shall remain in effect and shall continue to be enforceable in the event that any remedy herein shall fail of its essential purpose.
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