

Raypak Residential Products

Raypak[®]

A Rheem[®] Company



Raypak's Residential Boiler Product Family

Raypak revolutionized the boiler market in 1948 with the first innovative high recovery boilers that utilized superior finned copper tube material. Our successful designs became the benchmark by which all other boiler designs were judged for efficient, reliable and durable hydronic heat.

At that time, Raypak was the first American manufacturer to provide an innovative family of heating products that used superior copper and bronze materials in the construction of their heat exchangers. Up until that time, all manufacturers used energy wasteful high mass cast iron and steel in the construction of heat exchangers.

We direct our Engineers to consider innovation of a new function or feature into the boiler's basic design to be a requirement of every new product. Additionally, the innovative feature provided to the end user in a manner that is apparent and beneficial to the user, rather than as an unfathomable abstraction.



Recent legislative activity throughout the United States, where Municipal, State and Federal Governments have created various incentive and rebate programs in order to lower non-renewable energy consumption at the consumer level. In the process, these incentives have enhanced the marketplace for higher efficiency boilers.

Raypak's family of Hydronic boilers allows every homeowner's possible needs to be satisfied. Raypak provides easy, reliable single source provision of modern, Energy Star listed designs made in the USA or Europe that are backed up with the best service and support network in the trade.



For over 60 years, Raypak has led the trade with innovative boilers that utilized finned copper tubes as the primary material of choice for heat exchangers. Raypak has found the necessity to increase choices in materials, so that copper, as well as aluminum alloys are available for the construction of heat exchangers that are suitable for any application or environment.

This brochure features three Raypak families of residential boilers, ranging in size from 42,000 to 300,000 Btu. The specific construction varies. However, all product lines are at the cutting edge of operating efficiency feasible for their particular design. This ranges from 83% AFUE for the reliable and time proven Raytherms, to the mid 90's for the condensing versions in whichever size fits your needs. Choose a hydronic system to maximize your family's comfort, and select whichever Raypak model best meets your individual preferences from this complete array.





Models 85 and 120

Extruded Aluminum Heat Exchanger

The XPak utilizes an extruded, single tube design made of 6063-T1 aluminum alloy for the heat exchanger. The pressure vessel is rated for 45PSIG and is ASME stamped and National Board registered. With over 250,000 units sold through-out Europe, you can depend on many years of trouble free operation. That's what makes this boiler a Raypak!

Up to 4.4:1 Modulation

Infinitely modulating condensing design meets or exceeds Energy Star requirements. Zero governor gas valve with negative pressure gas regulator allows for greater installation flexibility in areas with low gas pressures. Burner is made from high grade, perforated stainless steel.

3-Speed Non-Ferrous Pump

Factory installed circulator with bypass and condensate siphon. Thermostatically controlled circulator maintains proper flow through the boiler.

Electronic Direct Spark Ignition

Software controlled and monitored ignition device allows for up to 5 tries to ignite before lock-out condition is authorized.

Natural Gas or Propane

Propane conversion kit is shipped with every unit.



Easy to Install

Inlet and outlet water connections, gas and electrical connections and condensate drain are located on the bottom. Venting on the top allows this compact and lightweight boiler to mount easily onto walls without heavy bracing.

3" Venting - Flexible Options

- AL29-4C Stainless steel
- Polypropylene plastic
- CPVC plastic vent
- Concentric vent or twin penetrations
- Horizontal or vertical vent
- Direct vent ready
- Common vent with multiple units when used with ULC 636 listed vent systems and in accordance with the installation and operating manual

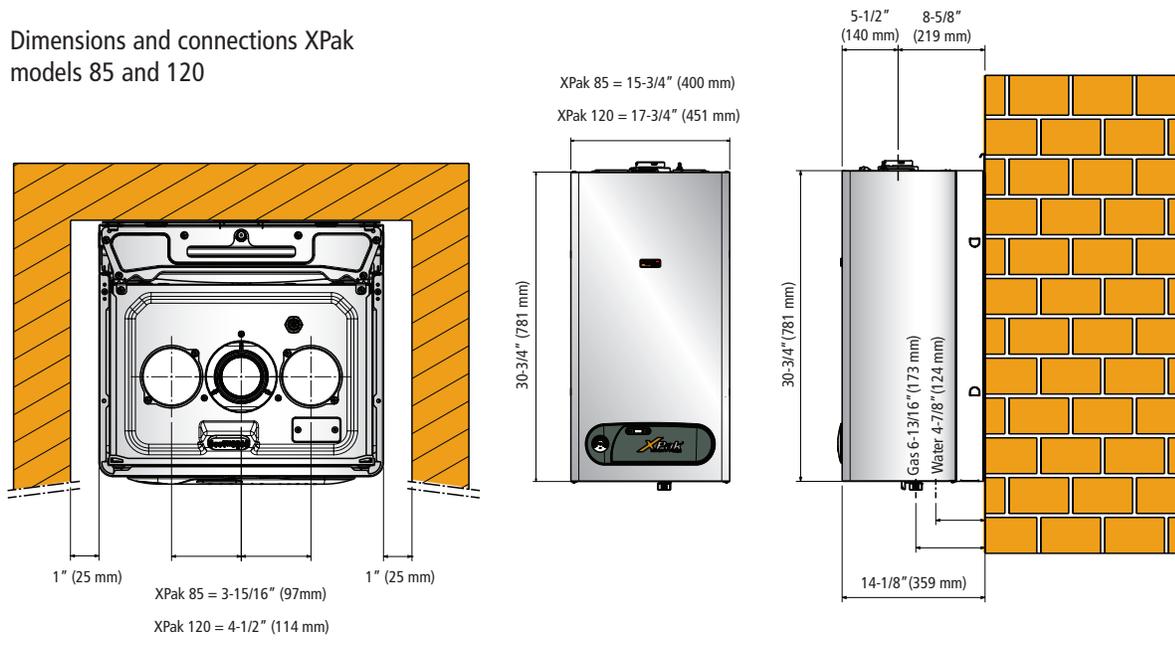


The XPak boiler may qualify for your State's credits and rebates. visit www.raypak.com. Click on the "utility rebates" page. There are several tables and charts for each program by state. There are links to each state's energy website. The information posted should help verify and identify the programs that are available in your area.



XPak Technical Data

Dimensions and connections XPak models 85 and 120



- Radiant Heating
- Hydronic Space Heating
- Snow Melting
- Light Commercial
- Multiple Boilers
- Indirect Fired Water Heating (with indirect storage tank)

BOILER	XPak Model	MBTUH Input*	MBTUH Output*		Dimensions (in.)				Operating Weight (lbs.)	Amps
			Heating Capacity MBTUH	Net I=B=R MBTUH	Width	Gas NPT	Water NPT	Vent Diameter		
	85	87	80	68	15 - 3/4	3/4"	3/4"	3"	73	1.20
	120	120	111	94	17 - 3/4	3/4"	3/4"	3"	80	1.25

* Ratings for models natural or propane gas and for elevations up to 2,000 ft. above sea level . For higher elevations, consult the factory.

BOILER	XPak Model	AFUE %	Flow Rates		Water Content Gallons	Firing Rate		Operating Pressure		Flue Gas Mass Flow Rate		Condensate Flow Rate	
			Min. GPM	Max. GPM		Min. (BTU/Hr)	Max. (BTU/Hr)	Min. (PSI)	Max. (PSI)	Full Load (Lbs/Hr)	Partial Load (Lbs/Hr)	86°F Return Full Fire GPH	86°F Return Min Fire GPH
	85	91.8	3.0**	5.7	.85	25,600	87,000	6.5	45	90.4	26.6	0.37	0.13
	120	92.6	3.5**	6.2	1.0	27,300	119,500	6.5	45	123.2	28.5	0.41	0.16

** Minimum flow rate may vary. See manual for details on pump performance settings, and residential head.





Models: HD101R thru HD301R

Raypak's Hi Delta ss

Decades of expertise and technological innovations went into creating the Hi Delta ss boiler, a product that incorporates features sought after by engineers, installers and end-users alike.

In 1948, Raypak introduced the first straight copper finned tube boiler designed with reliability and serviceability in mind. The tradition continues with Raypak's Hi Delta ss model. It's patented burner "security blanket," an ingenious enhancement that provides a perfected air-gas pathway for complete combustion, makes the Hi Delta ss the most adaptable sealed-combustion boiler on the market today.

While many manufacturers claim simple, convenient heat exchanger removal, servicing the Hi Delta ss couldn't be more straightforward. Just remove the top cover and flue collector and it lefts right out.

When installed indoors, the Hi Delta's versatility is revealed in smaller vent diameters, direct-venting and the convenience of stacking without an increased footprint.

Raypak's focus on customer satisfaction goes beyond product design. Like all Raypak boilers, every Hi Delta ss is factory-fire tested, assuring reliable start-up upon installation.

For over 60 years, Raypak professionals have earned their reputation as The Hot Water Management Experts. From system design through installation and start-up, you can count on your local Raypak Representative and the backing of the industry's best sales staff, applications engineers and service department.

Options

- A-6 – Right hand water connection
- S-1 S-2 High and low gas pressure switches
- Digital controller
 - Outdoor reset
 - DHW boost function

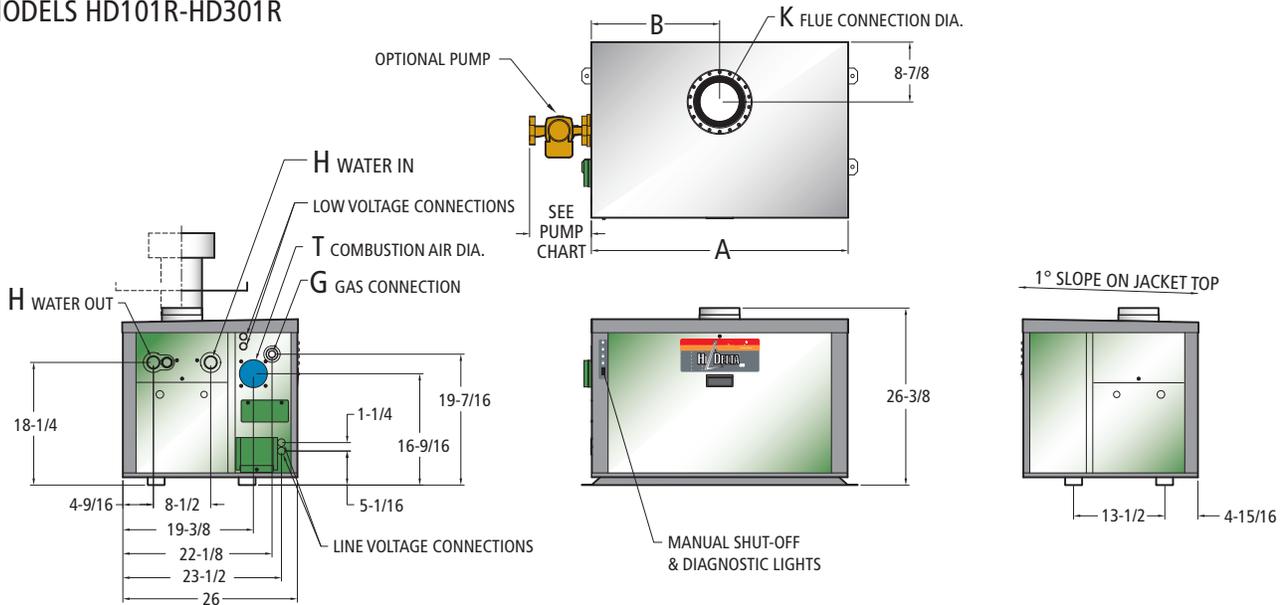


Key Features

- 5 models from 100,000 to 299,000 BTUH
- All models indoor/outdoor certified
- Efficiency:
 - **85% AFUE** HD101R-HD301R
- Patented burner "security blanket" enhances combustion, minimizes installation and start-up issues, and protects burners from metal fatigue
- 105°F minimum inlet water capability
- Copper finned tube heat exchanger; Cupro-nickel available
- Sidewall venting ready; No extractor needed for most applications
- Ducted combustion air ready; TruSeal™ CSA-certified direct-vent ready
- Meets all current and pending NOx air quality regulations
- Integral combustion air filter

Hi Delta ss Technical Data

MODELS HD101R-HD301R



- Radiant Heating
- Hydronic Space Heating
- Snow Melting
- Light Commercial
- Multiple Boilers
- Indirect Fired Water Heating (with indirect storage tank)

BOILER	Hi Delta Model	MBTUH Input*	MBTUH Output* Type H (Cat. I)	Dimensions (in.)						Operating Weight (lbs.)	Amps‡
				A Width	B	G NPT	H NPT	K Flue Ø	T Ø		
	HD101R	100	85	18-9/16	9-1/4	3/4	1-1/2	4	4	150	4.7
	HD151R	150	128	21-7/8	10-7/8	3/4	1-1/2	4	4	175	4.7
	HD201R	199	169	25-1/16	12-1/2	3/4	1-1/2	5	4	200	4.7
	HD251R	250	213	28-5/16	14-1/8	3/4	1-1/2	5	4	225	4.7
	HD301R	299	254	31-9/16	15-3/4	3/4	1-1/2	5	4	250	4.7

* Ratings for models HD101-HD301 for natural or propane gas and for elevations up to 2,000 ft. above sea level. For higher elevations, consult the factory.
 ‡ Current draw is for heater only. (Supply breaker must have a delayed trip.)

85% AFUE	Hi Delta Model	Flow Rates						Pressure Drops							
		Minimum Flow			Maximum Flow			10°F ΔT		20°F ΔT		30°F ΔT		40°F ΔT	
		GPM	ΔP Ft	ΔT °F	GPM	ΔP Ft	ΔT °F	GPM	ΔP Ft	GPM	ΔP Ft	GPM	ΔP Ft	GPM	ΔP Ft
	HD101R	13	0.7	14	44	8.8	4	17	1.4						
	HD151R	13	0.7	20	44	8.8	6	26	3.1	13	1.0	Less than Minimum Flow			
	HD201R	13	3.4	27	44	8.9	8	34	5.4	17	1.3	Less than Minimum Flow			
	HD251R	13	0.7	34	44	9.2	10	43	8.5	21	2.1	14	0.9	Less than Minimum Flow	
	HD301R	13	0.7	41	44	9.4	12	Exceeds Maximum Flow		25	3.1	17	1.4	13	0.7





Models 42 – 180

Firing Mode

Models 42 & 66 – Single-stage firing
Models 90-180 – 2-stage firing

Non-Condensing

Operates at 105 °F return water temperature without condensing perfect for the low-temperature needs of radiant floor and snow melting systems

Built-In Pump and Bypass

Offers maximum application flexibility

Honeywell IID Ignition

Standard S8600 IID eliminates off-cycle fuel consumption;

“Spark-To-Hood” Pilot

Eliminates erratic pilot ignition and lockout

Motorized Vent Damper

Prevents heat loss during off-cycles

Built-in low profile draft hood

Fits into tight spaces

Non-Ferrous Waterways Option

All stainless steel pump, brass fittings and glass-lined headers eliminate boiler oxygen permeation problems associated with non-barrier radiant tubing

Outstanding Warranty

One-year parts and service warranty against defects

The Raytherm Residentials

With five sizes to choose from, there is a copper fin tube Residential for every home, apartment or condominium. Small enough to fit in almost any space and fuel efficient for utility savings. Easy to install and service because it's complete right out of the box. Reliable because it's a Raypak.

- **Radiant Heating**
- **Hydronic Space Heating**
- **Snow Melting**
- **Light Commercial**
- **Multiple Boilers**
- **Indirect Fired Water Heating**
(with indirect storage tank)



Safe

- Over-temperature protection device with LED
- Instantly shuts down boiler in a no-flow condition.
- Safety features shut boiler down in the event of a blocked flue or heat exchanger.
- ASME heat exchanger is inspected and stamped for 160 psi operating pressure.
- 30 psi pressure relief valve.
- Available with or without pump.

Easy to Install

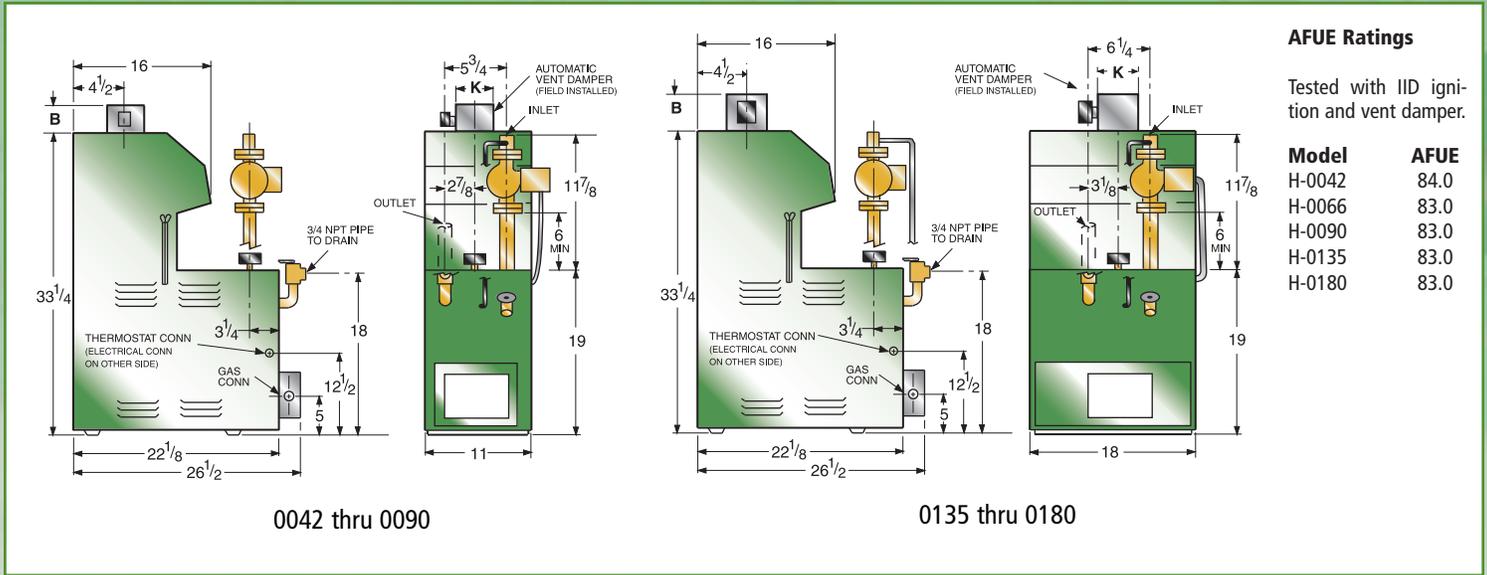
- Lightweight; All sizes transportable by one person.
- Weight of the largest model is 140 lbs., compared to an equivalent cast iron boiler at over 300 lbs.
- One carton contains all components.
- Piping and wiring located at front

A line of boilers that are perfect for residential and light commercial applications. Crafted with Raypak's proven copper finned tube and cast iron headers, ASME heat exchanger and stainless steel burners, backed up with Raypak's unmatched warranty.

Radiant Ready



Raytherm Technical Data



AFUE Ratings

Tested with IID ignition and vent damper.

Model	AFUE
H-0042	84.0
H-0066	83.0
H-0090	83.0
H-0135	83.0
H-0180	83.0

BOILER	Raytherm Model	MBTUH Input*	MBTUH Output*		Dimensions (in.)			Operating Weight (lbs.)	Amps†
			Heating Capacity MBTUH	Net I=B=R Rating MBTUH	Gas NPT	Water NPT	Vent Diameter		
	H-0042	42	35	30	1/2"	1"	4"	99	<3
	H-0066	66	54	47	1/2"	1"	5"	109	<3
	H-0090	90	74	64	1/2"	1"	5"	109	<3
	H-0135	135	109	95	1/2"	1 - 1/4"	6"	139	<3
	H-0180	180	148	129	1/2"	1 - 1/4"	7"	144	<3

* Ratings for models natural or propane gas and for elevations up to 2,000 ft. above sea level . For higher elevations, consult the factory.

BOILER	Raytherm Model	AFUE (%)	Water Content Gallons	Firing Rate		Operating Pressure	
				Min. (BTU/Hr)	Max. (BTU/Hr)	Min. (PSI)	Max. (PSI)
	H-0042	84	0.5	42,000	42,000	12	160
	H-0066	83	0.7	66,000	66,000	12	160
	H-0090	83	0.7	45,000	90,000	12	160
	H-0135	83	1.0	67,500	135,000	12	160
	H-0180	83	1.0	90,000	180,000	12	160

