

**Raypak**  
**Residential / Light Commercial**  
**Heating Products**

**Raypak**<sup>®</sup>

A Rheem<sup>®</sup> Company



# Raypak's Compact 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-wasting high-mass cast-iron and steel in the construction of heat exchangers.

Fast forward to today, and the copper-finned boiler still anchors our residential offering with market-leading reliability perfected over the last 65 years. Raypak also continues to innovate, and offers the latest technology with ultra-high-efficiency stainless steel condensing boilers. These high-efficiency boilers have been supported by 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.



This brochure features three Raypak families of heating boilers, ranging in size from 42,000 to 399,000 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 82.7% AFUE for the reliable and time-proven Raytherms, to 95% AFUE for the XPakFT condensing version in whichever size fits your needs.

Raypak has a broad product offering from floor-mount to our newest wall-hung XPakFT models. The Hi Delta<sub>ss</sub> and XPakFT are direct-vent capable, giving you the utmost in installation flexibility. So jump in and take a look at what Raypak has to offer you for your heating needs. We are confident that we have just the right solution for you.



Although efficiency comes at a price, Raypak has you covered with three different offerings to satisfy your budget or efficiency needs. We select the best-in-class for technologies and materials to serve the target market segment for each boiler. Our full offering covers all residential and commercial hydronic needs and budgets with the most reliable solutions.



The XPakFT boiler may qualify for your State's credits and rebates. visit [www.raypak.com](http://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.



### Stainless Steel Heat Exchanger

The XPakFT utilizes a stainless steel fire-tube design heat exchanger for ultra-high-efficiency. The pressure vessel is rated for 80 PSIG, is ASME stamped and National Board registered.

### Up to 10:1 Turndown

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, woven mesh.

### 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 included with 88AR & 108AR. Conversion kit is available from the factory for all other models.

### Pump Control

Boiler, System and Indirect DHW pump outputs.

### Easy to Install

Inlet-outlet water connections, gas and electrical connections and condensate drain are located on the bottom. Venting on the top allows this compact boiler to mount easily onto walls without heavy bracing. (For indoor installation only)



### 3-in-1 Vent Adapter (venting options)

- AL29-4C Stainless steel
- DuraVent Polypropylene
- PVC/CPVC plastic
- Concentric vent or twin penetrations
- Horizontal or vertical vent
- Direct vent ready



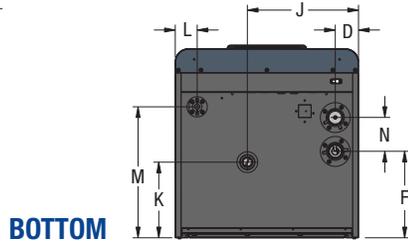
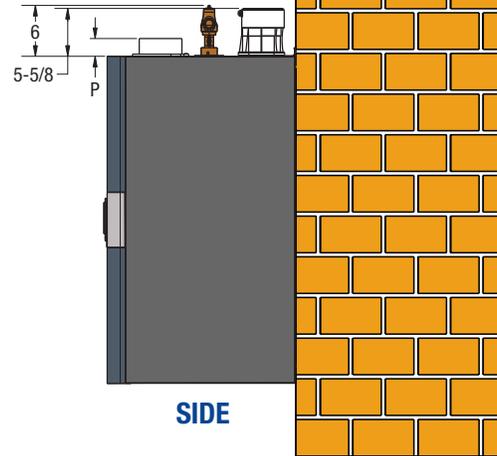
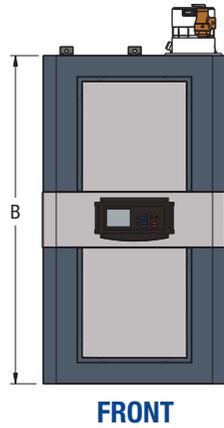
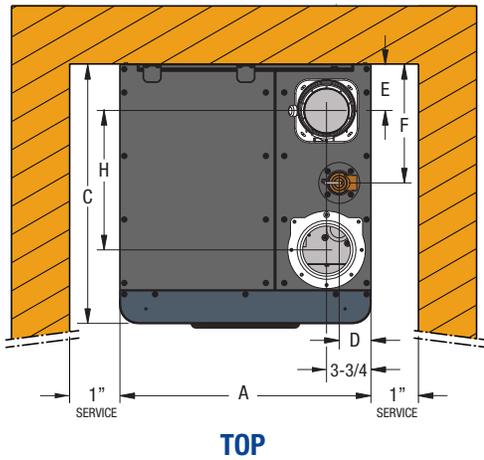
### Versa IC® Boiler Control and On-Board Diagnostic Center

Versa IC merges safety, ignition and temperature control, outdoor reset and freeze protection, plus system monitoring, alarm and diagnostics, and BMS transmission all in one Integrated Control Platform. Multiple DHW priority modes.

- Cascade up to 4 boilers
- Modbus RTU comm port standard
- All faults and interlocks monitored and reported in plain English
- Building Management System integration via optional gateways
  - BACnet MS/TP, BACnet IP, N2 Metasys or Modbus TCP
  - LONworks

# XPakFT Technical Data

## Models 88AR thru 398A



XPakFT Model	Dimensions (in.)												
	A	B	C	D	E	F	H	J	K	L	M	N	P
88AR	16-7/16	35-13/16	16-1/2	2-1/8	2-11/16	6-5/16	7-13/16	9-1/2	5-1/2	1-1/2	4-5/8	2-13/16	2-5/16
108AR	16-7/16	35-13/16	16-1/2	2-1/8	2-11/16	6-5/16	7-13/16	9-1/2	5-1/2	1-1/2	4-5/8	2-13/16	2-5/16
198AR	18-5/8	36-3/16	19-3/8	2	3-1/8	8-3/16	10	11-5/16	7-1/8	1-11/16	11-1/2	3-5/8	2-5/16
278AR	18-5/8	36-3/16	19-3/8	2	3-1/8	8-3/16	10	11-5/16	7-1/8	1-11/16	11-1/2	3-5/8	2-5/16
398A	21-7/16	38-5/8	22-1/8	2-11/16	4	10-1/8	12	13	8-7/8	2-5/8	15-5/16	4	2-1/8

XPakFT Model	AFUE			Firing Rate		Dimensions				Water Content (gal.)	Operating Weight (lbs.)	Amps‡
	MBTUH Input*	BTUH Output	% efficiency	Min (BTU/hr)	Max (BTU/hr)	Gas (NPT)	Water (NPT)	Flue Vent Ø	Combustion air Ø			
88AR	85	80,750	95.0	12,000	85,000	1/2"	1"	3"	3"	3.4	126	<5
108AR	110	104,500	95.0	13,000	110,000	1/2"	1"	3"	3"	3.1	128	<5
198AR	199	189,050	95.0	28,400	199,000	3/4"	1-1/4"	3"	3"	5.5	187	<5
278AR	275	260,700	94.8	36,600	275,000	3/4"	1-1/4"	3"	3"	4.8	186	<5
398A	399	383,040	96.0**	39,900	399,000	3/4"	1-1/2"	4"	4"	6.4	262	<5

\* Ratings for models natural or propane gas and for elevations up to 4,500 ft. above sea level . For higher elevations, consult the factory.

\*\* Model 398A AFUE value is Thermal Efficiency per BTS-2000.

‡Current draw is for heater only. (Supply breaker must have a delayed trip.)

XPakFT Model	Flow Rates						Pressure Drops					
	Minimum Flow			Maximum Flow			30°F ΔT		40°F ΔT		50°F ΔT	
	GPM	ΔP Ft	ΔT °F	GPM	ΔP Ft	ΔT °F	GPM	ΔP Ft	GPM	ΔP Ft	GPM	ΔP Ft
88AR	2.7	1.4	60	8.1	5.4	20	5.4	3.3	4.0	2.3	3.2	1.8
108AR	3.5	2.0	60	10.5	7.4	20	7.0	4.5	5.2	3.2	4.2	2.4
198AR	6.3	3.0	60	18.9	11.6	20	12.6	6.2	9.5	4.3	7.6	3.5
278AR	8.7	4.0	60	26.1	20.3	20	17.4	10.1	13.1	6.5	10.5	4.9
398A	12.8	3.4	60	38.3	14.1	20	25.5	7.4	19.2	5.0	15.3	4.0

Notes: Basis for minimum flow is ΔT . Basis for maximum flow is GPM.

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





# Models: HD101R thru HD401

## Raypak's Hi Delta <sub>SS</sub>

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

The tradition continues with Raypak's Hi Delta <sub>SS</sub> model. It's patented burner "security blanket," an ingenious enhancement that provides a perfected air-gas pathway for complete combustion, makes the Hi Delta <sub>SS</sub> the most adaptable sealed-combustion boiler on the market today.

While many manufacturers claim simple, convenient heat exchanger removal, servicing the Hi Delta <sub>SS</sub> couldn't be more straightforward. Just remove the top cover and flue collector and it lifts right out.

When installed indoors, the Hi Delta's <sub>SS</sub> 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 <sub>SS</sub> is factory fire-tested, assuring reliable start-up upon installation.

For over 65 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, application engineers and service department.

## Options

- Natural gas or propane
- A-3 Cupro-nickel heat exchanger tubes
- A-6 Right hand water connection
- B-42 Electronic controller
  - Outdoor reset
  - DHW boost function
  - Standard on sizes HD101-HD301,  
Optional on size HD401
- Code compliance for New Mexico and Washington

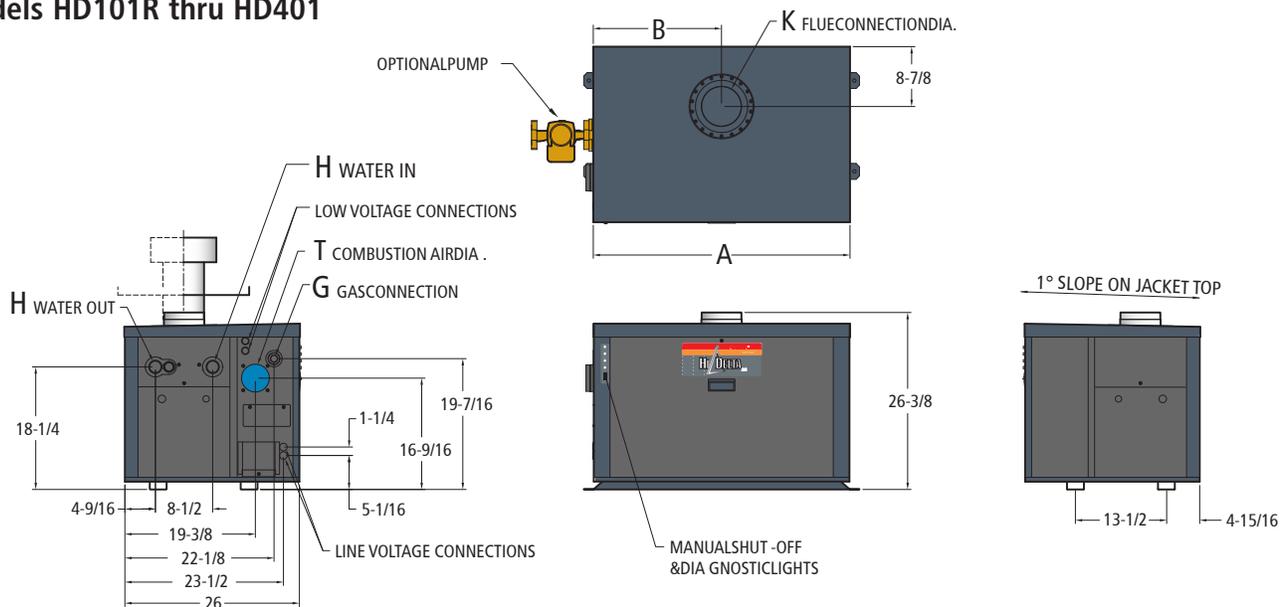


## Standard Features

- 6 models from 100,000 to 399,000 BTUH
- All models indoor/outdoor certified
- Efficiency:
  - **85% AFUE** HD101R-HD301R
  - **84% Thermal Efficiency** HD401
- 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; glass-lined Cast-Iron headers
- 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
- Outdoor reset control
- 2-Stage firing on all sizes
- 45 PSIG Pressure relief valve

# Hi Delta<sub>SS</sub> Technical Data

## Models HD101R thru HD401



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

Hi Delta Model	MBTUH Input*	MBTUH Output* Type H (Cat.I)	AFUE (%)	Dimensions (in.)						Operating Weight (lbs.)	Amps‡
				A Width	B	G (NPT)	H (NPT)	K Flue Ø	T Ø		
HD101R	100	84	85	18-9/16	9-1/4	3/4	1-1/2	4	4	150	<5
HD151R	150	126	85	21-7/8	10-7/8	3/4	1-1/2	4	4	175	<5
HD201R	199	167	85	25-1/16	12-1/2	3/4	1-1/2	5	4	200	<5
HD251R	250	210	85	28-5/16	14-1/8	3/4	1-1/2	5	4	225	<5
HD301R	299	251	85	31-9/16	15-3/4	3/4	1-1/2	5	4	250	<5
HD401	399	335	84**	38-1/16	19	3/4	1-1/2	6	4	300	<5

\* Ratings for models HD101R-HD301R for natural or propane gas and for elevations up to 2,000 ft. above sea level. For higher elevations, consult the factory.

\*\* Model HD401 AFUE value is Thermal Efficiency per BTS 2000.

‡ Current draw is for heater only. (Supply breaker must have a delayed trip.)

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	0.8	13	44	8.8	4	17	1.2	Less than Minimum Flow							
HD151R	13	0.8	20	44	8.8	6	25	2.9							13	0.8
HD201R	13	3.3	27	44	8.9	8	33	5.2							17	1.3
HD251R	13	0.7	34	44	9.2	10	44	9.2	21	2.1	14	0.9	Exceeds Max Flow			
HD301R	13	0.7	40	44	9.4	11	Exceeds Max Flow		25	3.1	17	1.3			13	0.7
HD401	22	2.5	30	44	9.8	15			34	5.6	22	2.5				





Models:  
0042 – 0180

### 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

### The Raytherm Residentials

With five sizes to choose from, there is a copper-fin tube boiler 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**
- **Standard Outdoor Reset Control**
- **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.

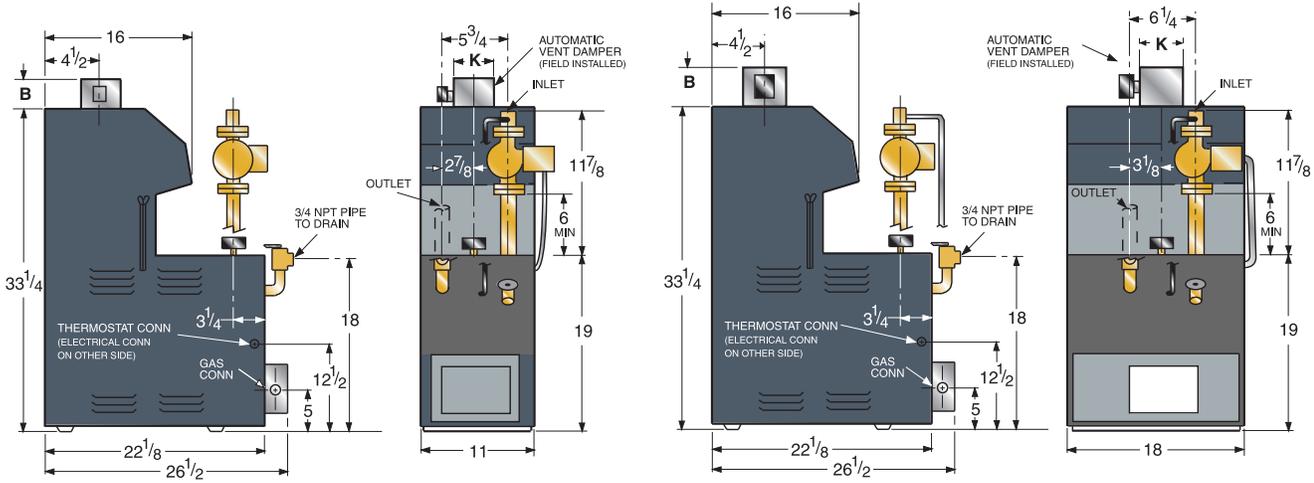
### Easy to Install

- Lightweight; All sizes transportable by one person.
- Weight of the largest model is 144 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 is 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.



# Raytherm Technical Data



0042 thru 0090

0135 thru 0180

## AFUE Ratings

Tested with IID  
ignition and vent damper.

Model	AFUE
H-0042	84.0
H-0066	83.0
H-0090	82.7
H-0135	82.8
H-0180	83.2

Raytherm Model	Firing Mode	MBTUH Input*	MBTUH Output*	AFUE (%)	Dimensions (in.)			Operating Weight (lbs.)	Amps‡ 120VAC
					Gas (NPT)	Water (NPT)	Vent Ø		
H4-0042	ON-OFF	42	35	84.0	1/2	1	4	99	<3
H4-0066	ON-OFF	66	54	83.0	1/2	1	5	109	<3
H3-0090	2-STG	90	74	82.7	1/2	1	5	109	<3
H3-0135	2-STG	135	109	82.8	1/2	1-1/4	6	139	<3
H3-0180	2-STG	180	148	83.2	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.

‡Current draw is for heater only. (Supply breaker must have a delayed trip.)

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





Models:  
0182 – 0400

#### Non-Condensing

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

#### 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

#### Non-Ferrous Waterways

Brass fittings and glass-lined headers eliminate boiler oxygen-permeation problems associated with non-barrier radiant tubing

#### The Raytherm Residentials

With four sizes to choose from, there is a copper-fin tube boiler 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. Reliable because it's a Raypak.

- **Radiant Heating**
- **Hydronic Space Heating**
- **Snow Melting**
- **Light Commercial**
- **Standard Outdoor Reset Control**
- **Indirect Fired Water Heating**  
(with indirect storage tank)



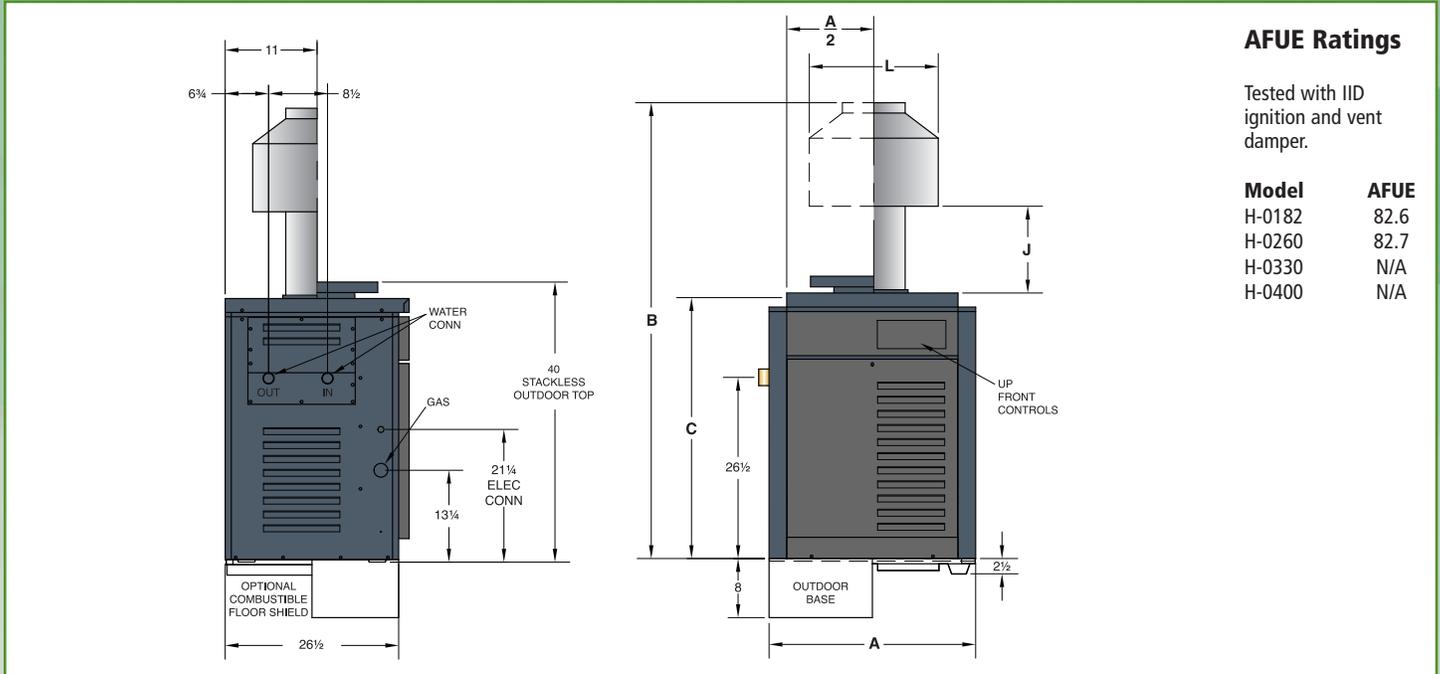
#### Safe

- 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.
- Adjustable manual reset high limit.

A line of boilers that is 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.



# Raytherm Technical Data



## AFUE Ratings

Tested with IID ignition and vent damper.

Model	AFUE
H-0182	82.6
H-0260	82.7
H-0330	N/A
H-0400	N/A

Raytherm Model	Dimensions (in.)				
	A	B	C	J	L
H-0182	18-1/4	62-5/8	38	12-1/16	11-13/16
H-0260	22-3/8	62-7/8	38	11-1/8	13-3/8
H-0330	25-3/4	63-3/4	38	10-3/4	15-3/4
H-0400	29-1/4	65-3/8	38	12-1/2	17-3/4

Raytherm Model	Firing Mode	MBTUH Input*	MBTUH Output*	AFUE (%)	Dimensions (in.)			Operating Weight (lbs.)	Amps‡ 120VAC
					Gas (NPT)	Water (NPT)	Vent Ø		
H-0182	2-STG	181	148	82.6	3/4	1-1/2	6	191	<5
H-0260	2-STG	264	216	82.7	3/4	1-1/2	7	214	<5
H-0330	2-STG	334	274	N/A**	3/4	1-1/2	8	234	<5
H-0400	2-STG	399	327	N/A**	3/4	1-1/2	9	253	<5

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

\*\*Thermal Efficiency.

‡Current draw is for heater only. (Supply breaker must have a delayed trip.)

Raytherm Model	Firing Rate		Operating Pressure		Water Content (gal.)
	Min. (BTU/hr)	Max. (BTU/hr)	Min. (PSI)	Max. (PSI)	
H-0182	91,000	181,000	12	160	.5
H-0260	132,000	264,000	12	160	.5
H-0330	167,000	334,000	12	160	.6
H-0400	200,000	399,000	12	160	.7



Visit our website at [www.raypak.com](http://www.raypak.com) to find the Raypak representative in your area.

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