

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

**Raypak®**

A Rheem® 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.



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.



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.



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.



# Models 88AR thru 398A Wall Hung



## 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 and 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

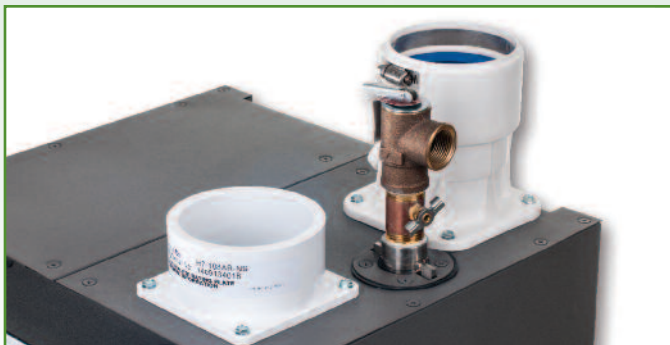
Propane conversion kit included with 88AR & 108AR. Conversion kit is available from the factory for all other models.

## 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.



## 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

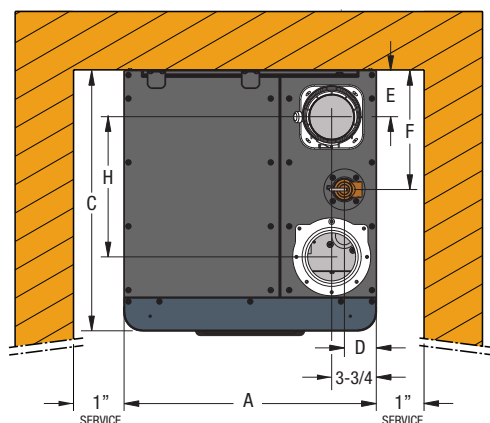
Versa IC merges safety, ignition and temperature control, outdoor reset and freeze protection, plus system monitoring, alarm and diagnostics, and BMS transmission all in one Integrated Control Platform. Multiple DHW priority modes.

- 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

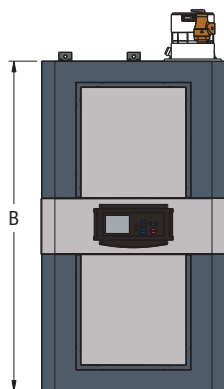


# XPakFT Technical Data

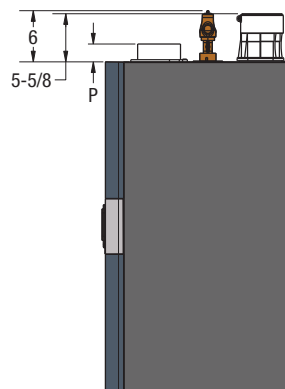
## Models 88AR thru 398A



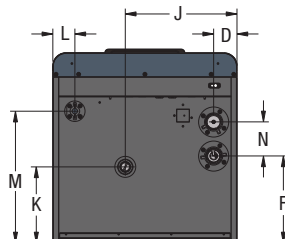
TOP



FRONT



SIDE



BOTTOM

| 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 | 12-5/16 | 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 | 12-5/16 | 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

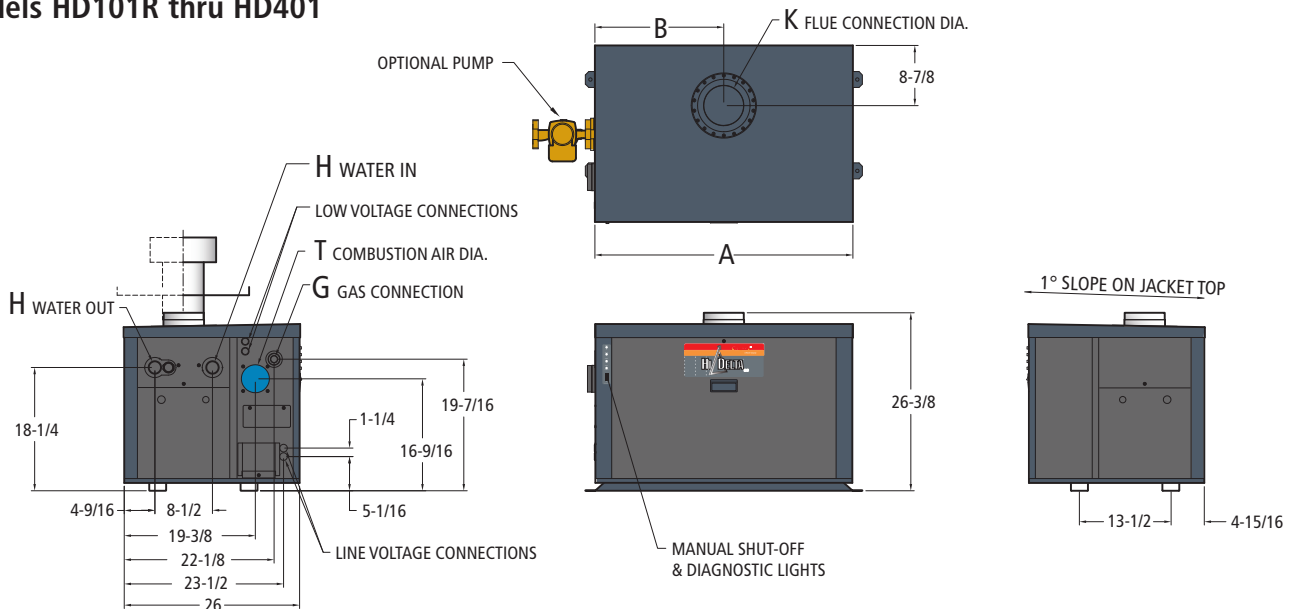


## Standard Features

- 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   | 13      |       | 0.7 |     |
| HD301R         | 13           | 0.7   | 40    | 44           | 9.4   | 11    | Exceeds Max Flow |       | 25                     | 3.1   | 17      | 1.3   |         |       |     |     |
| 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

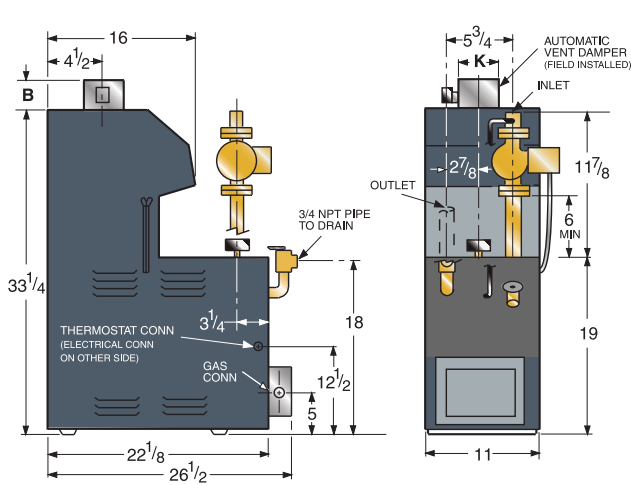
- Lightweight; All sizes transportable by one person.
- Weight of the largest model is 144 lbs., compared to an equivalent cast iron boiler at over 300 lbs.
- One carton contains all components.
- Piping and wiring located at front

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.

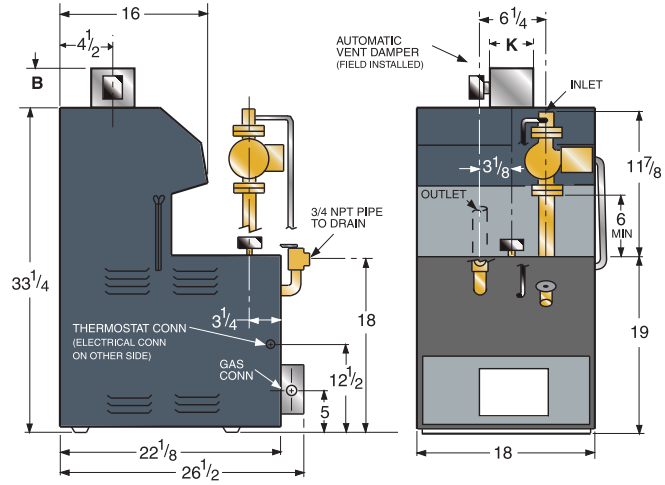
**Radiant Ready**



# 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)



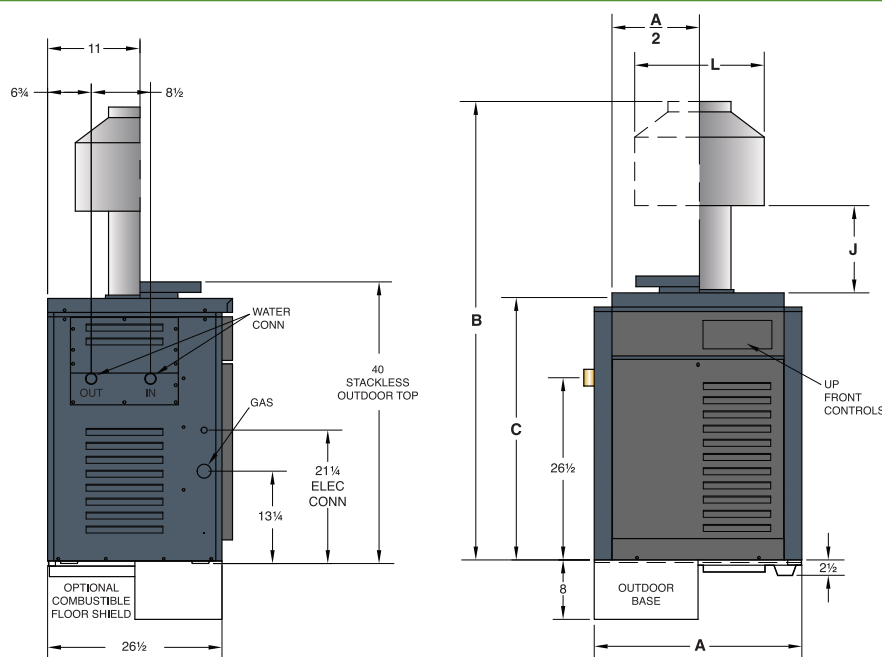
**Safe**

- 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.

**Radiant Ready**

# 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.

Cat. 1100.13-G 10-01-16 Replaces 04-01-16

