RenewAire®
Energy Recovery Ventilation

INDIRECT GAS-FIRED DUCT

FURNACE

GH OUTDOOR SERIES SHOWN

RENEWAIRE ERV + INDIRECT GAS-FIRED DUCT FURNACE: A SINGLE-SOURCE SOLUTION

RENEWAIRE EVERYWHERE

EVERY GEOGRAPHY, EVERY CLIMATE, EVERY HOME,
EVERY BUILDING AND EVERY APPLICATION

INDIRECT GAS-FIRED DUCT FURNACE

RenewAire offers some of the highest-efficiency energy recovery ventilators (ERVs) on the market. However, during winter conditions, supply air from the ERV may be less than optimal for space conditions. By providing an indoor and outdoor **INDIRECT GAS-FIRED DUCT FURNACE** as an accessory for our commercial ERVs, in addition to the Electric Duct Heater, RenewAire ERVs now have increased flexibility for controlling supply-air temperature during cooler months. This enhances indoor comfort, makes ERV installations easier and is possible via a single source for ERVs and furnaces.

KEY BENEFITS

A SINGLE SOURCE REDUCES TIME AND COSTS:

A single information source, a single purchase point and a single approval package for ERVs and heaters reduces design time and costs, as well as streamlines logistics for design engineers and contractors.

INCREASED CAPABILITIES AND FLEXIBILITY:

RenewAire offers design engineers the capacity to specify ERVs with a matching indoor or outdoor gas-fired furnace to increase ERV capabilities and flexibility for providing a single space or multiple spaces with tempered air conditions to equal wintertime loads.

MORE AND EASIER APPLICATIONS:

The addition of the indoor and outdoor indirect gas-fired duct furnace as an accessory ensures that RenewAire ERVs can be easily specified on more applications that require gas heating of the recovered air.

EXPERT GUIDANCE:

The RenewAire customer-support team will provide detailed and expert guidance for how best to install the indoor and outdoor gas-fired duct furnace with an ERV.

ULTIMATE RELIABILITY:

RenewAire furnaces come with our two-year warranty and unmatched reliability. Single-source responsibility offers contractors and end users peace of mind and a single call location for technical, start-up and commissioning questions.

HIGHLY CERTIFIED:

CSA certified, ANSI Z83.8, CSA 2.6, ETL and Gas Control Listed to ANSI Z21.85.

APPLICATIONS

RenewAire ERV and indirect gas-fired duct furnace combinations are available for all of our commercials ERVs for indoor and outdoor projects that require gas heating of recovered air. VRF systems, hydronic panels and areas where non-ducted systems are applied offer an exclusive installation opportunity. RenewAire furnaces can suit many site restrictions in size, configuration or orientation, and can be designed for an array of preheat capabilities in certain extreme weather conditions.

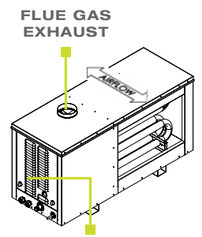
Other applications include existing installations that require additional heat, increased heat or simply replacement furnaces. RenewAire furnaces can be designed for 75°F comfort conditions, or warmer, and since ERV supply air is ducted into the space, tempering outdoor air for space conditions or offering supplemental heat is easy and simple.

MODELS & FEATURES

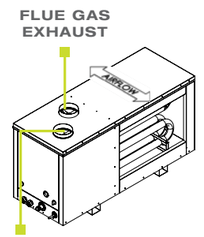
RenewAire indoor and outdoor gas furnaces have been designed to match our existing product offering heat capacities that range from 50–400 MBH (input) and the ability to handle airflows from 620–11,000 CFM. Each indirect gas-fired duct furnace can be customized to address application specifics, and the furnaces's unique design allows air to flow freely for the lowest possible pressure drop.

GH INDOOR SERIES (See submittal for venting requirements)

IN-KI (Top Exhaust Indoor)

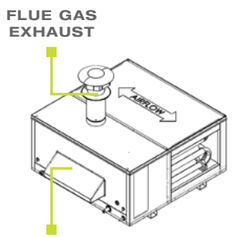


IN-SI (Separate Inlet Exhaust Indoor)

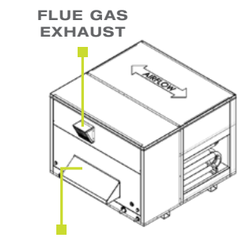


GH OUTDOOR SERIES

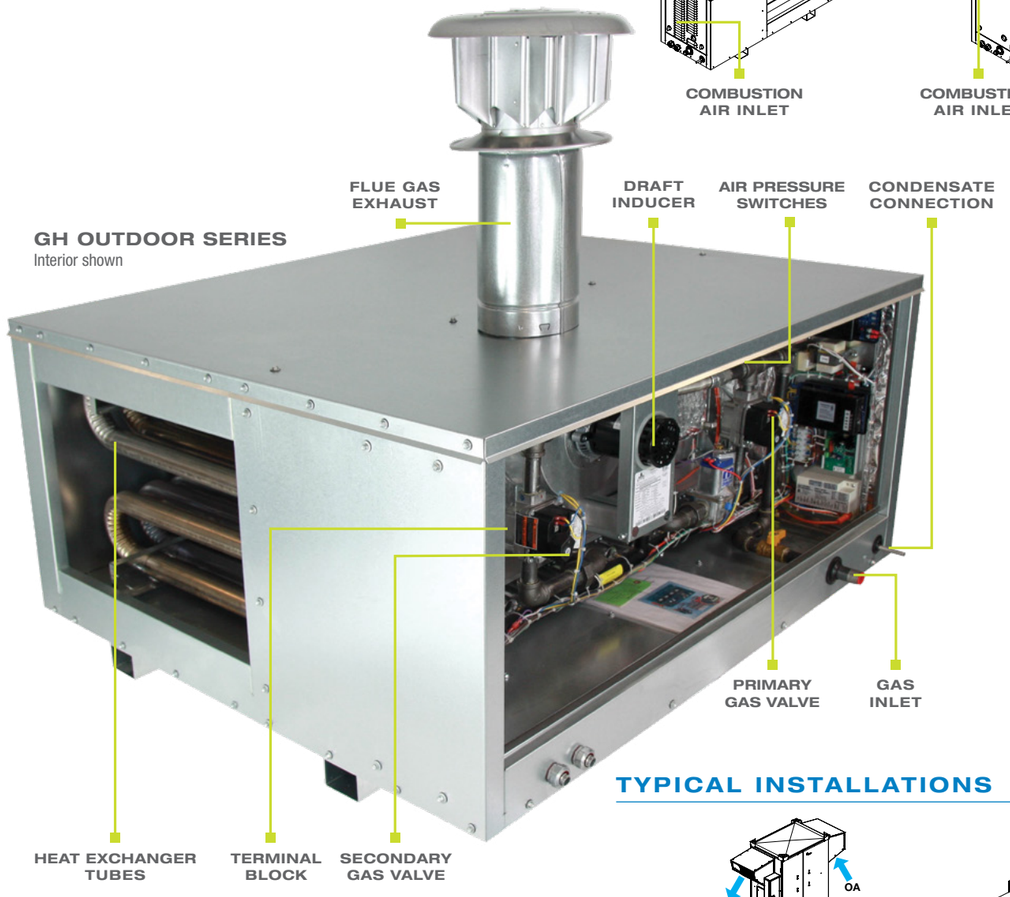
RT-NO (Top Exhaust Outdoor)



RT-WO (Front Exhaust Outdoor)



GH OUTDOOR SERIES
Interior shown



ACCESSORIES

MODULATION CONTROL

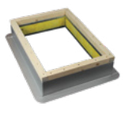
Duct-mounted thermostat accessory that provides 0-10 VDC signal for modulation control of gas furnace.

1-STAGE/2-STAGE CONTROL

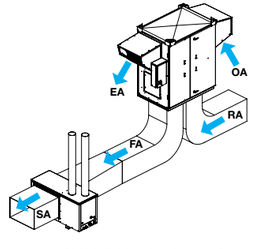
Duct-mounted thermostat accessory that provides "ON/OFF" signal for single-stage or two-stage control of gas furnace.

DUCT CURB FOR OUTDOOR MODELS

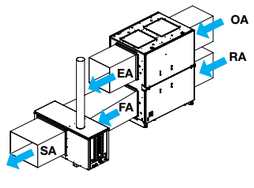
24" x 16" duct curb for the easy installation of outdoor gas furnace and associated ductwork on the roof.



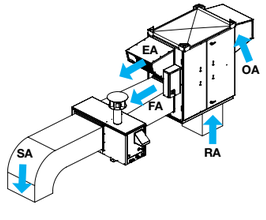
TYPICAL INSTALLATIONS



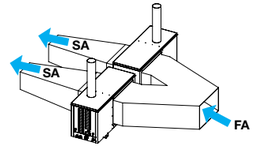
INDOOR SEPARATED COMBUSTION



INDOOR TOP EXHAUST



OUTDOOR TOP EXHAUST



PARALLEL FURNACE INSTALLATION (indoor shown)

GH OUTDOOR Indirect Gas-Fired Duct Furnace Accessory

Intertek

ROOFTOP
Indirect Gas-Fired Duct Furnace

Rooftop RT-NO shown

Download specification at:
renewaire.com/specifications

SPECIFICATIONS

Heater Type:
Indirect Gas-Fired Duct Furnace

Typical Input Capacity (MBH):
50, 75, 100, 125, 150, 175,
200, 250, 300, 350, 400

Standard Features:
Tubular heaters
Indirect natural gas fired
Outdoor installation
80% thermal efficiency
Horizontal airflow
Rated for elevations from 0 – 2,000 ft.
409 stainless steel heat exchanger
409 stainless steel burners
Flue/combustion air – outdoor models
  Horizontal separated outdoor with hoods
  Vertical top exhaust with intake hood
Direct spark ignition
2-stage gas controls
Induced draft venting
Terminal block for power and control wiring
Automatic high limit safety shut-off
Auxiliary manual high limit switch
Combustion air pressure switch
Air proving switch

Standard Features (continued):
Combination gas valve with shutoff
Flame rollout switch
Manual shut off valve
3/8" condensate drain connection

Voltages & Phase:
Single phase - 120V, 208V, 230V

Control Voltage:
24 VAC

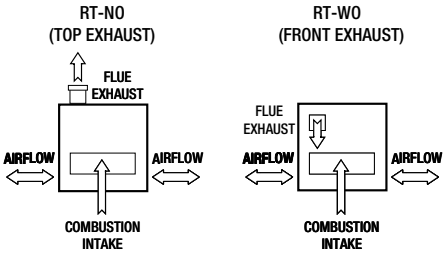
Dimensions:
See table 1

Shipping:
Shipped loose with base unit and installed in the field

Options:
Indirect propane fired fuel
Elevation correction for elevation > 2,000 ft.
304 stainless steel heat exchanger
5:1 continuous electronic modulation for all furnaces
10:1 continuous electronic modulation for furnaces
  200 MBH and larger
Duct thermostat for modulation control
Disconnect switch
Power fusing

Accessory:
Duct thermostat for 2-stage control
Duct thermostat for modulation control
Duct curb

FLUE AND COMBUSTION AIR CONFIGURATION



Caution: All indirect gas-fired duct furnaces to be installed downstream of the ERV and on the positive side of the supply fan.

TEMPERATURE RISE AND PRESSURE DROP

FIGURE 1 GAS FURNACE 50-200 MBH

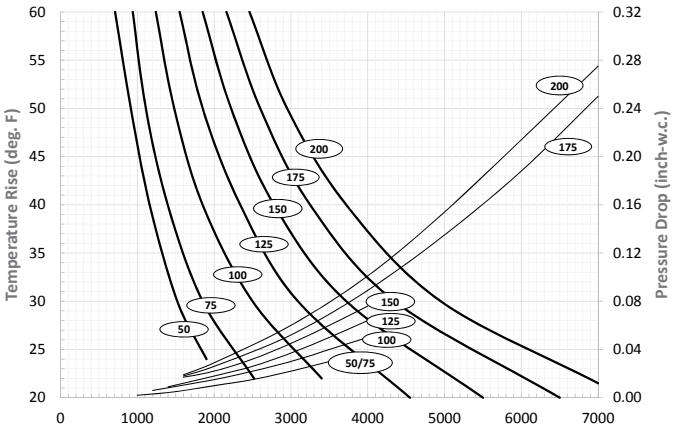
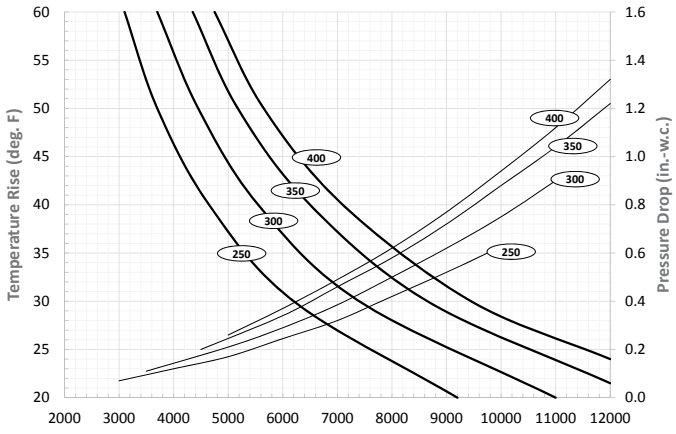


FIGURE 2 GAS FURNACE 250-400 MBH



Specifications may be subject to change without notice.

DUCT FURNACE DIMENSIONS

FIGURE 3 RT-NO (TOP EXHAUST OUTDOOR)

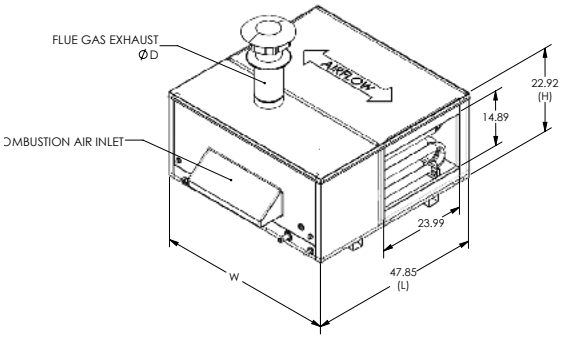


FIGURE 4 RT-WO (FRONT EXHAUST OUTDOOR)

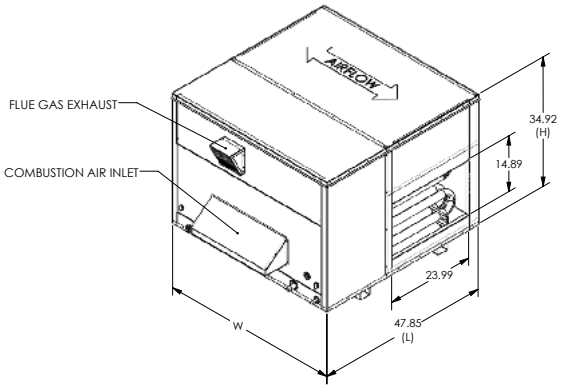
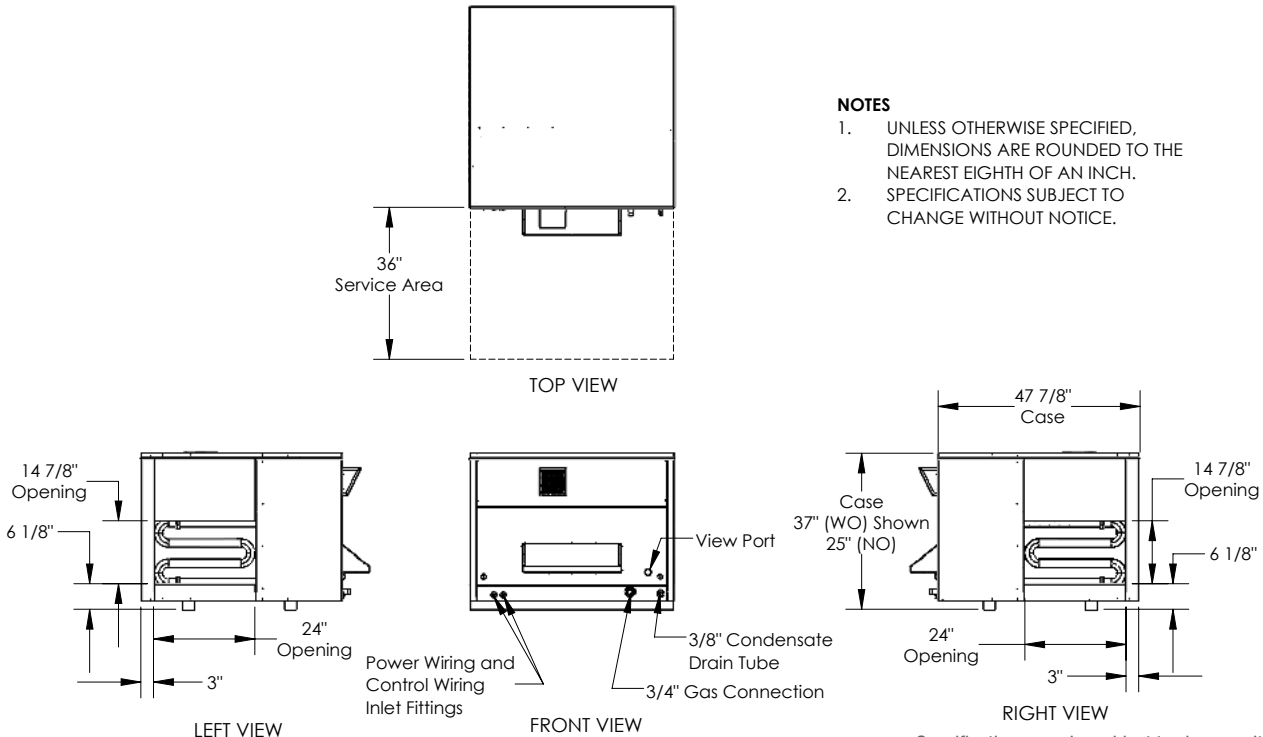


TABLE 1

Size	Tubes	Input Rate	Output	Min/Max Temperature Rise through Furnace (°F)									Vent Locations					Unit Weight	Shipping Weight
				20	25	30	35	40	45	50	55	60	RT-NO, RT-WO		RT-NO	RT-WO	Diameter		
													"W"	"L"	"H"	"H"	"D"		
MBH	Qty.	Btuh	Btuh	Nom. Duct Opening Airflow (CFM)									inch	inch	inch	inch	inch	lb	lb
50	3	50,000	40,000	1852	1481	1235	1058	926	823	741	673	617	15.7	47.8	22.9	34.9	5	127	207
75	3	75,000	60,000	2778	2222	1852	1587	1389	1235	1111	1010	926	15.7					127	207
100	4	100,000	80,000	3704	2963	2469	2116	1852	1646	1481	1347	1235	18.4					142	222
125	5	125,000	100,000	4630	3704	3086	2646	2315	2058	1852	1684	1543	21.2					169	249
150	6	150,000	120,000	5556	4444	3704	3175	2778	2469	2222	2020	1852	23.9					160	240
175	7	175,000	140,000	6481	5185	4321	3704	3241	2881	2593	2357	2160	26.7					180	260
200	8	200,000	160,000	7407	5926	4938	4233	3704	3292	2963	2694	2469	29.4				6	196	276
250	10	250,000	200,000	9259	7407	6173	5291	4630	4115	3704	3367	3086	34.9					245	325
300	12	300,000	240,000	11111	8889	7407	6349	5556	4938	4444	4040	3704	40.4					279	384
350	14	350,000	280,000	12963	10370	8642	7407	6481	5761	5185	4714	4321	45.9					324	429
400	15	400,000	320,000	14815	11852	9877	8466	7407	6584	5926	5387	4938	48.7					394	499

Note: For a single furnace, 20° F minimum temperature rise, 60° F maximum temperature rise.

INDIRECT GAS-FIRED DUCT FURNACE DIMENSIONS



Specifications may be subject to change without notice.

GH INDOOR

Indirect Gas-Fired Duct Furnace
Accessory

INDOOR
Indirect Gas-Fired Duct Furnace

Indoor IN-KI shown

Download specification at:
renewaire.com/specifications

SPECIFICATIONS

Heater Type:
Indirect Gas-Fired Duct Furnace

Typical Input Capacity (MBH):
50, 75, 100, 125, 150, 175,
200, 250, 300, 350, 400

Standard Features:
Tubular heaters
Indirect natural gas fired
Indoor installation
80% thermal efficiency
Horizontal airflow
Rated for elevations from 0 – 2,000 ft.
409 stainless steel heat exchanger
409 stainless steel burners
Flue/combustion air – indoor models
  Vertical (separated indoor)
  Vertical top exhaust with louvered intake
Direct spark ignition
1-stage/2-stage gas controls
Induced draft venting
Terminal block for power and control wiring
Automatic high limit safety shut-off
Auxiliary manual high limit switch
Combustion air pressure switch
Air proving switch
Combination gas valve with shutoff

Standard Features (continued):
Flame rollout switch
Manual shut off valve
3/8" condensate drain connection

Voltages & Phase:
Single phase - 120V, 208V, 230V

Control Voltage:
24 VAC

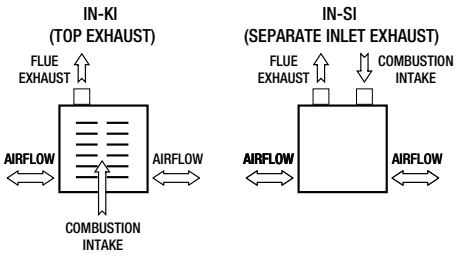
Dimensions:
See table 2

Shipping:
Shipped loose with base unit and installed in the field

Options:
Indirect propane fired fuel
Elevation correction for elevation > 2,000 ft.
304 stainless steel heat exchanger
5:1 continuous electronic modulation for all furnaces
10:1 continuous electronic modulation for furnaces
  200 MBH and larger
Duct thermostat for modulation control
Disconnect switch
Power fusing

Accessory:
Duct thermostat for 1-stage/2-stage control
Duct thermostat for modulation control

FLUE AND COMBUSTION AIR CONFIGURATION



Note: The total equivalent length of vent pipe must not exceed 50 feet. If equivalent length exceeds 50 feet refer to IOM for recommendations.

Caution: All indirect gas-fired duct furnaces to be installed downstream of the ERV and on the positive side of the supply fan.

TEMPERATURE RISE AND PRESSURE DROP

FIGURE 1 GAS FURNACE 50-200 MBH

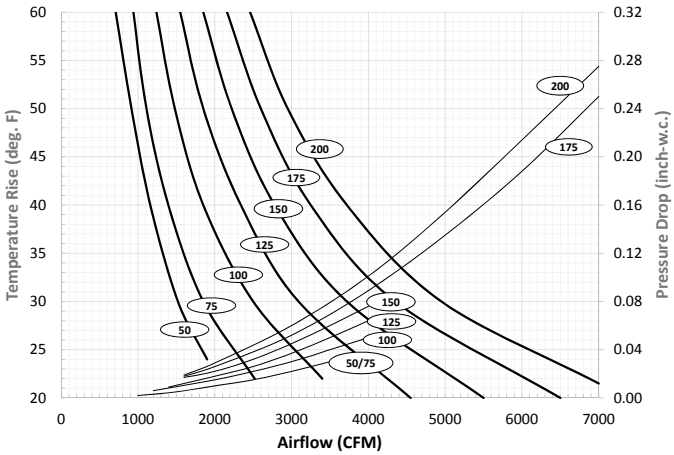
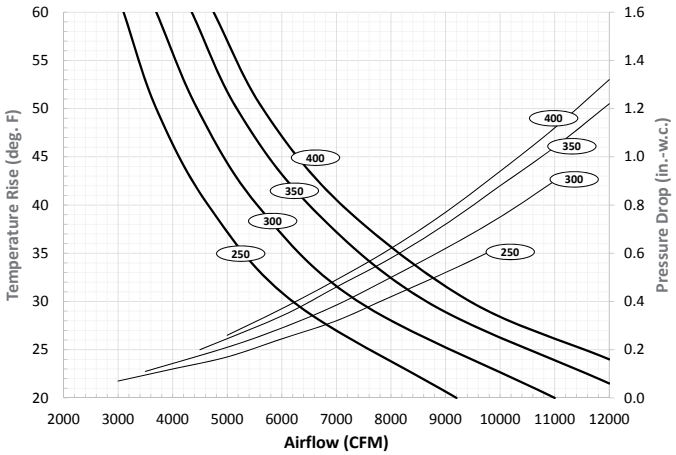


FIGURE 2 GAS FURNACE 250-400 MBH



Specifications may be subject to change without notice.

DUCT FURNACE DIMENSIONS

FIGURE 3 IN-KI (TOP EXHAUST INDOOR)

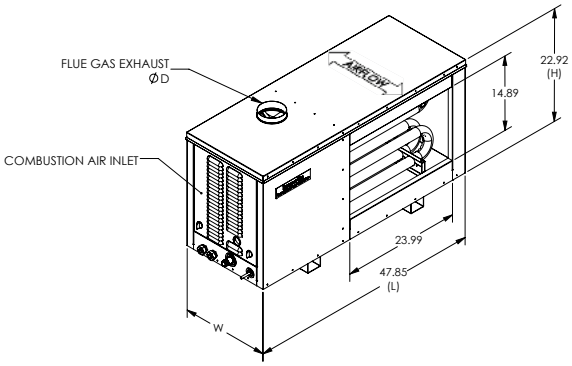


FIGURE 4 IN-SI (SEPARATE INLET EXHAUST INDOOR)

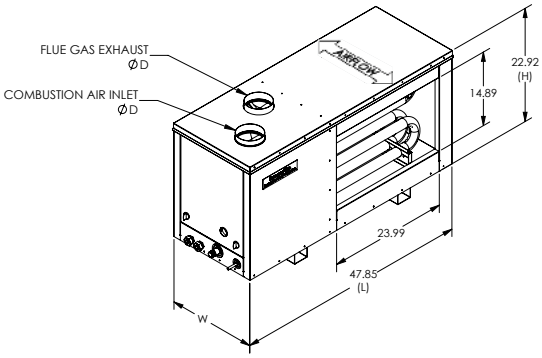


TABLE 2

Size	Tubes	Input Rate	Output	Min/Max Temperature Rise through Furnace (°F)									Vent Locations IN-KI, IN-SI			Diameter	Unit Weight	Shipping Weight
				20	25	30	35	40	45	50	55	60	"W"	"L"	"H"	"D"		
MBH	Qty.	Btuh	Btuh	Nom. Duct Opening Airflow (CFM)									inch	inch	inch	inch	lb	lb
50	3	50,000	40,000	1852	1481	1235	1058	926	823	741	673	617	15.7	47.8	22.9	5	127	207
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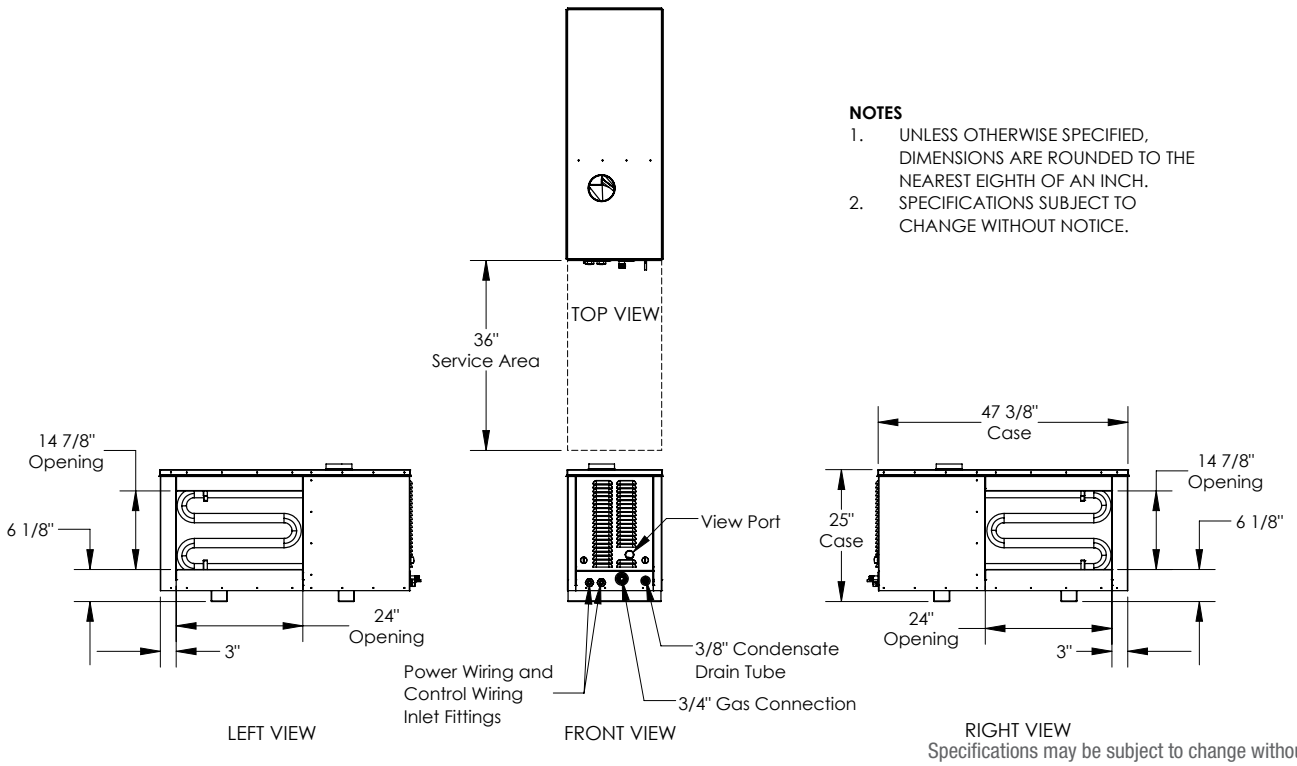
400	15	400,000	320,000	14815	11852	9877	8466	7407	6584	5926	5387	4938	48.7				394	499

Note: For a single furnace, 20° F minimum temperature rise, 60° F maximum temperature rise.

INDIRECT GAS-FIRED DUCT FURNACE DIMENSIONS



Specifications may be subject to change without notice.

SIZE AND SELECT AN INDIRECT GAS-FIRED DUCT FURNACE

Two of the following data points are required to size and select a furnace:

1. **Required heat output (Btu/Hr)**
2. **Airflow rate (CFM)**
3. **Required temperature rise △T (°F)**

Then use the following formula(s) to select the furnace.

STEP 1:

Calculate output capacity (Btu/Hr):
Output capacity (Btu/Hr) = 1.08 x airflow (CFM) x temperature rise (°F)

STEP 2:

Calculate output capacity (MBH) using the results from step 1:
Output capacity (MBH) = output capacity (Btu/Hr) / 1,000

STEP 3:

Then, calculate the furnace input capacity (MBH):
Furnace input capacity (MBH) = output capacity (MBH) / furnace efficiency (80%)

STEP 4:

Select the furnace that is the next size up that will meet the input requirements.

EXAMPLE:

The airflow rate:
3,000 CFM

Required temperature rise △T:
30 °F

Output capacity:
1.08 x 3,000 x 30 = 91,200 Btu/Hr

Output capacity:
91,200/1,000 = 91.2 MBH

Furnace input capacity:
91.2/0.8 = 121.5 MBH

Furnace input capacity of 121.5 MBH would require a 125 MBH **indirect gas-fired furnace**.

MINIMUM AND MAXIMUM AIRFLOWS

The minimum and maximum airflows for the selected furnace can be calculated using:

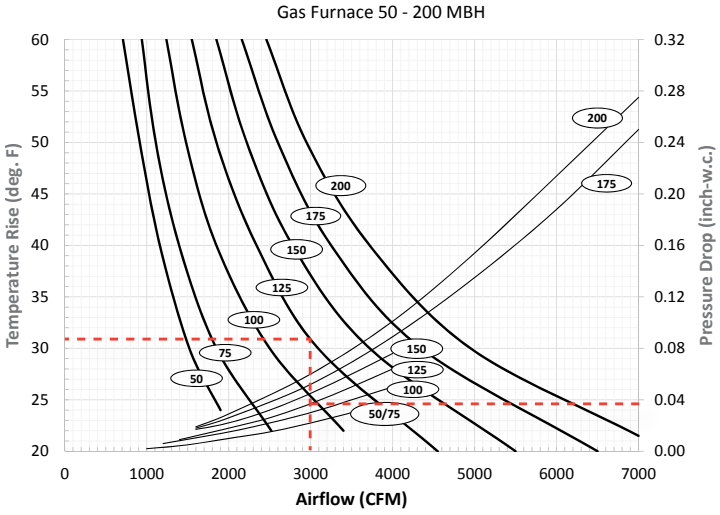
Minimum airflow (CFM) = furnace size (MBH) x 1,000 x furnace efficiency (80%) / 1.08 x 60 (°F)
Maximum airflow (CFM) = furnace size (MBH) x 1,000 x furnace efficiency (80%) / 1.08 x 20 (°F)

DETERMINING DUCT FURNACE PRESSURE DROP

To determine the duct furnace pressure drop, use the following procedure:

1. Find airflow (CFM) on horizontal axis.
2. Follow the airflow line vertically up the graph until it intersects the curve for the furnace size selected. The lighter curves are for pressure drop. The darker curves are for temperature rise.
3. At the intersection point on the lighter curve, read the value on the right vertical axis for the pressure drop across the furnace.
4. At the intersection point on the darker curve, read the value on the left vertical axis for the temperature rise across the furnace.

In the example, airflow is 3,000 CFM. The furnace size is 125 MBH. Pressure drop is .036 inch WC and temperature rise is 31°F.



TO SELECT AND SPECIFY YOUR FURNACE

visit renewaire.com/products/commercial-products/indirect-gas-fired-duct-furnace

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