

NDUSTRIA™ has the perfect technology for restaurants to extend their outdoor dining season due to COVID-19 indoor capacity concerns.

NDUSTRIA™ Outdoor Restaurant Heaters

Easy Buying and Online Ordering Guide

(For Low-Intensity (Tube) Heaters)

www.ndustria.com

Congratulations! You and your customers are about to experience the warmth, convenience, safety, and efficiency of low-intensity, gas-fired infrared heating for outdoor dining patios provided by our Outdoor Restaurant Heaters (NHE) and Outdoor Restaurant Heaters for Covered Patios (NBH), which are made in the U.S.A. by NDUSTRIA™.

A high-quality outdoor dining solution can be on its way to you in less than a week. This guide is designed to help online buyers get a basic idea of how the heaters work, collect key measurements, and determine the system that will meet their needs.

Note: Our infrared heaters should be installed by a contractor qualified in the installation and service of gas-fired heating equipment or your gas supplier; they require a gas line and appropriate, safe electrical service. However, whether you are a restaurant buyer or a contractor, we hope this 6-step guide will make ordering easier by helping you gather key data in a simple worksheet, which you'll find below.

Once you've collected this information, we realize that you may have additional questions about your specific space. We're here to help! Our experts are standing by M-F 8:15 am – 4:45 pm EST for an online chat, which you can access from our website. Or, you can call 716-551-7900, or email info@ndustria.com to get answers to your questions or other assistance in determining the best product to order.

Step 1: Which of our models will work best for you?

A basic understanding of how low-intensity infrared heaters work will help you move quickly through this ordering guide. Both of our outdoor infrared restaurant heating systems have three main elements:

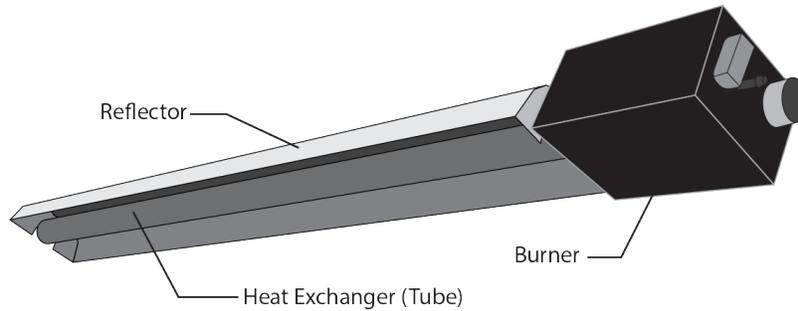


Image 1

1-The **burner**. The burner generates a flame that is pushed down the heat exchanger and warms the tube.

2-The **heat exchanger**. This element emits radiant heat.

3-The **reflector**. Positioned above or sometimes to the side of the heat exchanger, the reflector points the radiant heat in a direction designed to create a gentle blanket of heat for those sitting beneath it. Infrared heating heats and radiates off surfaces, it does not heat the air directly.

NDUSTRIA™ Outdoor Restaurant Heater NHE unit is designed for more exposed and extreme environments and has a water-resistant enclosure. It can be mounted along the central support of an outdoor dining tent, and it can also work for uncovered spaces, most likely mounted on an outside building wall.

Our Covered Patio NBH model is not designed for extreme cold, wet, or windy weather conditions. However, the NBH can be a good solution for outdoor spaces where there is a permanent, covered roof over a patio.

The first important question is: Is the patio you wish to heat . . .

1- Under a permanent roof or dining tent? If so, either the NHE or the NBH restaurant heaters can work for you. See our comparison chart at the bottom of this guide, which has more details comparing the NHE and the NBH models.

2-On an uncovered patio exposed to the elements? You'll want the NHE model.

Step 2: What kind of fuel will you use?

Our heaters can use either natural gas or liquid propane. Most restaurants have access to natural gas in their kitchens, making gas a natural choice. If for some reason tapping into existing natural gas lines is not practical or possible, we offer propane-powered units also. In that case, a contractor can install a large-capacity propane tank on the roof of your building. You will choose your fuel preference on the buy page.

Step 3: What measurements are needed to determine how much heat or BTUs you need?

There are three key measurements you will want to collect

1 Overhead structure/mounting height. It's important to follow our guidelines (see a specific guidelines chart at bottom of this page) for the minimum roof or mounting height appropriate for each model size.

Let's begin with the height measurement. If you have a tent or a roof above the space you want to heat, the distance from the floor to a tent spine (also see weight specifications in the comparison chart below to make sure the support can hold the unit) or a roof beam is needed. If your space is an uncovered patio, then you can either mount our units on existing structures like trellises, or along the side of a building.

2 Total length and width of the dining area. This will help determine, in a later step below, how long a unit you will need to sufficiently heat the space. The length of the heat exchanger is driven by the BTU of the burner. The higher the BTU, the longer the heat exchanger.

3 Survey your space to determine: Are there any clearances issues for structures, features, or objects that would interfere above, below, or to the sides of the unit? You will see minimum clearances recommendations in the guidelines chart below.

Step 4: You've measured. Now, let's talk about heat coverage.

Basic coverage calculation. The measure of the heat output you'll get from your system is BTUs. Infrared heaters provide the ability to focus heat in a specific area. A simple calculation is used to determine the approximate size of the area each heater will directly heat. To determine the area of heat coverage, simply multiply the heater mounting height by 2 and add the heat exchanger length. For example: A 100,000 BTU 30' long straight heater (Our NHE-100) mounted at 10' above the floor will directly heat an area that is 20' wide and 30' long.

Local climate. What are the average evening temperatures on your patio in the coldest part of the year? For installations located in mild climates where evening temperatures are 40°F – 60°F, it is ideal to space the heaters the same distance apart as the mounting height. E.g. if the mounting height is 14', the next parallel row of heaters should be spaced approximately 14' apart. We refer to this heat distribution as "average coverage."

For installations where evening temperatures may be below 40 °F, we recommend you space the heaters half of the mounting distance apart or less. E.g. if mounting height is 14', heaters should be spaced approximately 7' apart or less. This heat distribution would be "increased coverage."

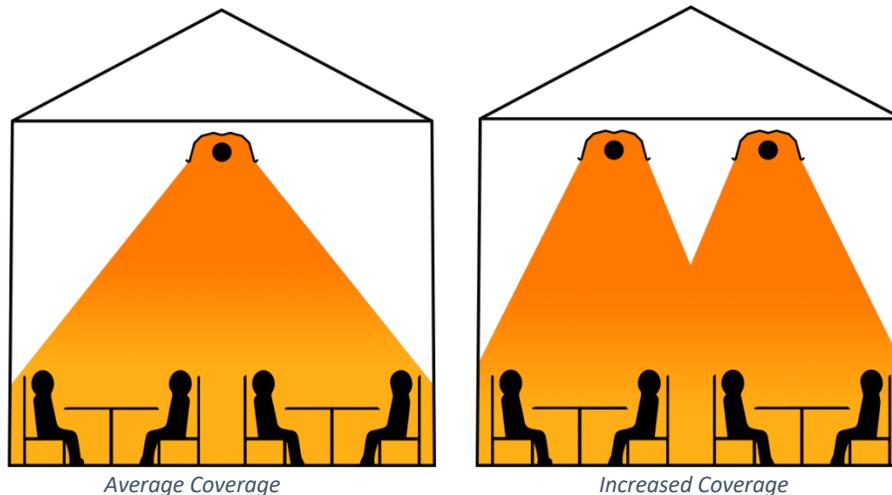


Image 2. Depending on the dimensions of your space, you may need two or more rows of heaters.

Step 5: U-shaped or straight tube?

Should you order a unit with straight or u-shaped tubes? Here's why that matters:

Straight tube heaters cover larger areas making them ideal for larger patios that in many cases require multiple heaters.

U-shaped tubes produce heat in a more focused/compact area which makes them a good fit for patios requiring only a single heater, or a higher concentration of heat.

If you need **more information or advice on what will work best for your space, please contact us at 716-551-7900, or use our handy online chat.**

Step 6: You have two options for how you mount the reflector

Both our NHE and NBH heaters come with hardware to allow the reflectors to be installed either at a level angle or tilted at a 45-degree angle. You don't need to choose one or the other when you order because the hardware we include provides both options. But when you're planning the installation, you'll have a choice to make.

When installed in a **level** orientation, the reflectors will direct radiant heat straight down. **45° tilted reflectors** will deflect the heat downward but also toward the middle of the dining space.

For example, if you install the heaters away from a wall on a trellis or other support, but directly over your patrons, it is recommended to position the reflectors level.

If the heater is installed on a wall, you likely would want the reflector at a 45° angle concentrating the radiant heat towards customers and away from the wall.

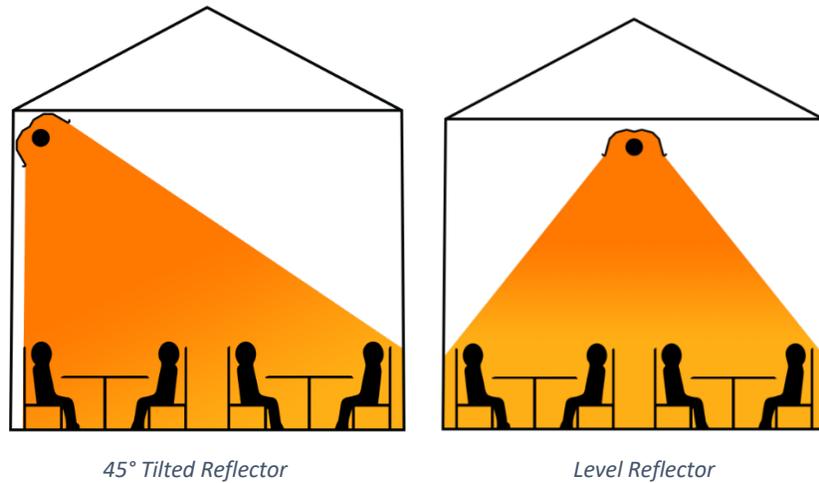


Image 3. Our heaters are shipped with hardware that allows for level or tilted installation. When mounted on a wall, installing at an angle directs the heat more efficiently for diners.

General tips and recommendations:

There are three elements that warrant consideration and possibly a conversation with your installer before you order if you have any concerns.

- **You'll want to identify available heater mounting points and access to gas and electric supplies.**
- **Make sure your installer follows and plans for our recommended clearances distances above, below, and to the sides of the heater.**
- **Ensure that your installer observes ventilation guidelines in enclosed spaces, if required. See installation, operation and service manual for guidance.**

Worksheet

1 Roof covering type?		
2 Natural Gas or Propane?		
3 Overhead/mounting height (Note: Heaters are mounted approximately 1' – 2' below a structure)		
4 - Floor space (length X width)		
5-Any clearances issues?		
6-How many units?		
7-U or straight tube?		

Sample worksheet, filled out, ready to use for ordering:

1 Roof covering type?	open patio; hope to mount along brick wall	NHE
2 Natural Gas or Propane?		Either
3 Overhead/mounting height	Tent spine is 12' off ground	
4 - Floor space (length X width)	40' X 24' serving floor area	
5-Any clearances issues?	No	
6-How many units?		one NHE 100
7-U or straight tube?		U

NHE and NBH guidelines chart with additional specifications

(edit to charts below 2nd column-clearances, not clearance. Also, column 4 change HEV to NHE. Column 5 change BH to NBH. Same changes to columns 6 & 7. Same comment to 2nd chart.

Heater Input (Btu/h x 1000)	Recommended Mounting Height	Clearances to combustibles (Level Reflector)			Approximate Heat Coverage (Straight Heaters)	Length of straight heat exchanger	Overall length of NHE straight heater	Overall length of NBH straight heater	Overall length of NHE u-tube heater	Overall length of NBH u-tube heater
		Sides	Above	Below						
40	8' - 12'	27"	6"	53"	16'x10'	10'	11' - 5 1/2"	10' - 11"	N/A	N/A
60		35"	6"	63"	16'x20'	20'	21' - 5 1/2"	20' - 11"	13' - 1/2"	11' - 7"
					(10' mounting height)					
80	10' - 15'	38"	6"	66"	20'x20'	20'	21' - 5 1/2"	20' - 11"	13' - 1/2"	11' - 7"
100		40"	6"	71"	20'x30'	30'	31' - 5 1/2"	30' - 11"	18' - 1/2"	16' - 7"
					(12' mounting height)					
*115	12' - 15'	46"	6"	77"	24'x30'	30'	N/A	30' - 11"	N/A	16' - 7"
125						(15' mounting height)		31' - 5 1/2"	30' - 11"	18' - 1/2"
*140	15' - 25'						N/A	40' - 11"	N/A	22' - 6"
150		50"	6"	80"	30'x40'	40'	41' - 5 1/2"	40' - 11"	23' - 1/2"	22' - 6"
*Input available for model NBH only										

Image 5: Comparison and specification chart

Some tips on using this chart:

Once you have the dimensions of your space, first look at the mounting height that is recommended. As mentioned above, to determine the area of heat coverage, simply multiply the heater mounting height by 2 and add the heat exchanger length. Now, you have an idea of the BTUs you will need for that space.

In the next column, check your space's clearances, and check the recommendations.

Next, you will get an idea of the space one unit will heat, and it will help you determine how many you may need.

Next, a specific unit's length is referenced, to make sure it will fit in the area you want to heat.

When you go to our product BUY pages, you will choose between NHE straight tube, NHE U-tube, or, if you have a covered patio, NBH straight tube, or NBH U-tube options.

OUTPUT (BTU/HOUR)	40,000 - 150,000
OVERALL LENGTH (FT.),(IN.)	11' 5.5" - 41' 5.5"
TUBE & REFLECTOR PACKAGE WEIGHT (LBS.)	52 - 161
BURNER WEIGHT (LBS.)	38
RECOMMENDED MOUNTING HEIGHT (FT.)	8' - 20'
ELECTRICAL SUPPLY	120 V, 60 Hz, 1 A
GAS CONNECTION (NPT)	1/2"
APPROVED AS	Indoor & Outdoor (Vented or Unvented)
CERTIFICATION	ANSI Z83.20/CSA 2.34, 2.17, 2.20

HEV Specification Sheet

Image 4. The above image is an example of the key product specifications you will find for each unit on the BUY pages for the Outdoor Restaurant Heater NHE models and Covered Patio Heater NBH models. There is also a downloadable link to a PDF of more detailed product specifications that are designed for professional installers.