

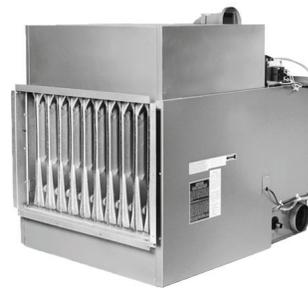


Product Catalog

Indoor Gas Heating Products

Unit Heaters

Duct Furnaces





Introduction

Trane unit heaters, offered in both propeller and blower models, are a complete heat generating and distributing plant, equipped with automatic controls, and packaged in an attractive streamlined housing. Designed for ceiling mounting, they provide a convenient low-cost method of comfortably heating stores, factories, warehouses, and other large open areas.

Trane unit heaters represent a technological breakthrough in quality. Trane offers customers the most complete line of unit heaters anywhere. And every unit in the line has been rates for 80 percent thermal efficiency or better (82 percent thermal efficiency or better for tubular units, and 95 percent thermal efficiency or better for high efficiency units)

But higher thermal efficiency and lower operating costs are just two features of this product line. Innovation—the engineering advances you've come to expect from Trane—can also be found across this entire line of unit heaters. And rugged, quality construction provides years of dependable service.

Quality products mean Trane value. So does fair, competitive pricing. The 10-year warranty for tubular units tells you Trane will be here for the long haul—keeping our commitment to you. You can count on Trane standing behind every unit shipped. That is what Trane value means.

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Revision History

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Features Highlights

Ten-Year Warranty

The complete heat exchanger, flue collector of the unit heater, and burners are warranted by Trane to be free from defects in material and workmanship for a period of 10 years from the date of manufacture. (Warranty not applicable on clamshell duct furnaces model GL and GM.)

Quiet Operation

Trane unit heaters incorporate an exceptionally balanced fan blade to assure quiet operation.

Heat Exchangers

All Trane heat exchangers are available in three types of steel:

- Aluminized Steel (Standard)
- 409 Grade Stainless Steel (Optional) (30 to 400 MBh units)
- 321 Grade Stainless Steel (Optional) (100 to 400 MBh units, model GL and GM only)

24V System

All units are equipped with a 24V control system which is powered by a 24V transformer as standard equipment.

Fan Time Delay

Through the integrated control board that is standard on all tubular models, fan operation is delayed 30 seconds after the thermostat calls for heat (optional fan time delay switch available for clamshell duct furnace models GL and GM). This feature eliminates an initial blast of cold air by allowing the unit to fire for a short period of time before actuating the fan motor. After the thermostat is satisfied (with burners off), the fan continues to operate for approximately 30 seconds, removing residual heat from heat exchanger.

Burners

Model GTNE—Single Orifice Burner

Trane model GTNE units are built with a proprietary, single orifice burner system: one burner to service and one orifice to change for gas conversion. The stainless steel burner box provides even heat distribution to all heat exchanger tubes.

Model GNNE, GVNE, and GUNE—Inshot Burner

Trane commercial unit heaters and duct furnaces offer a higher efficiency while ensuring proper gas mixing. The inshot burners are designed with an integral carryover bar to ensure all burners are lit.

Models GL and GM—Shade Port Burner

Trane model GLND and GMND units are equipped with a proven pressed steel burner design having a unique “burner shade” protective device to prevent scale or foreign matter from plugging the burner ports.

Energy Saving Ignition Control

Models GTNE, GNNE, GVNE, and GUNE—Direct Spark

Tubular units utilize a direct spark pilotless ignition of the burner, providing fast heat delivery. This highly reliable and efficient ignition system incorporates an integrated electronic control board to regulate the system sequence of operation, including an externally mounted LED indicator for simple troubleshooting.

Models GL and GM—Intermittent Spark Ignition

The pilot burner is ignited only during each cycle of operation, thereby conserving energy during the off cycle.

LP/Natural Operation

All units are available for operation on either natural or LP gas from the factory.

Easy Access For Maintenance

Designed with the service person in mind, every component of the unit heaters is easily accessible. Ignition and fan controls are located in one centrally located control panel. The access door provides control isolation as well as a pleasing exterior appearance.

Test Fire

All Trane unit heaters are test-fired to assure proper operation.

Ideal For Retrofit

Trane unit heaters let you pocket fuel savings from day one and provide years of dependable service.



Features and Benefits



Gas Fired High Efficiency Unit Heater (Model HI)

Trane's model HI high efficiency gas-fired unit heaters brings tomorrow's technologies to today's products. Engineered for performance, Trane incorporates leading edge control and combustion technologies to customers across North America.

Trane's model HI tri-metal condensing heat exchanger, state-of-the-art control platform, and proprietary fully modulating pre-mix burner design safely provide industry leading operating efficiencies of up to 99%.

Model HI is available in 6 sizes - 50, 100, 150, 200, 300 and 400 MBh, in both natural gas and LP gas, and can be vented through PVC and CPVC for application flexibility. All units are field convertible to separated combustion.



Low Profile Tubular Propeller Unit Heater (Model GT)

The Trane low profile gas-fired unit heater is a highly efficient, extremely versatile product. Model GT units combine the latest tubular heat exchanger technology with a unique single orifice burner system. Units are available in sizes ranging from 30 to 120 MBh in a compact, low profile design.

To allow installation in a wide variety of applications, these units can be installed in either standard or separated combustion venting configurations. Combustion air inlet collars are simply left open in a standard combustion application. After installing a simple sealing gasket (included with each unit), separated combustion venting requires connecting combustion air inlet piping to the inlet collars, which encloses the burner, spark ignitor, and flue system within the unit, allowing the entire combustion process to remain unaffected by the environment where the unit is installed. Separated combustion venting configurations should be used where dusty, dirty, or mildly corrosive conditions exist, or where high humidity or slightly negative pressures prevail.

The Trane low profile gas-fired unit heater conforms with the latest ETL certification standards. Design-certified under ANSI Z83.8 for Industrial/Commercial use makes this low profile unit heater the ideal selection.



Tubular Propeller Fan Unit Heater, Standard or Separated Combustion (Model GN)

Trane propeller fan unit heaters combine the latest tubular heat exchanger and inshot burner technology for a highly efficient, extremely durable alternative to conventional unit heaters. Standard energy saving features include direct spark pilotless ignition and power venting, which reduce standby losses and improve seasonal efficiencies.

Designed with application flexibility in mind, these units can be installed in either standard or separated combustion venting configurations without requiring modification to the unit itself. Combustion air inlet collars are simply left open in a standard combustion application. Separated combustion venting requires connecting combustion air inlet piping to the inlet collars, which encloses the burners, spark ignitor, and flue system within the unit, allowing the entire combustion process to remain unaffected by the environment where the unit is installed. Separated combustion venting configurations should be used where dusty, dirty, or mildly corrosive conditions exist, or where high humidity or slightly negative pressures prevail.

Units are available in sizes 100 to 400 MBh, and are certified by ETL as providing 83 percent thermal (combustion) efficiency.



Tubular Blower Unit Heater, Standard or Separated Combustion (Model GV)

Trane blower unit heaters combine the latest tubular heat exchanger and inshot burner technology for a highly efficient, extremely durable alternative to conventional unit heaters. Standard energy saving features include direct spark pilotless ignition and power venting, which reduce standby losses and improve seasonal efficiencies.

Designed with application flexibility in mind, these units can be installed in either standard or separated combustion venting configurations without requiring modification to the unit itself. Combustion air inlet collars are simply left open in a standard combustion application. Separated combustion venting requires connecting combustion air inlet piping to the inlet collars, which encloses the burners, spark ignitor, and flue system within the unit, allowing the entire combustion process to remain unaffected by the environment where the unit is installed. Separated combustion venting configurations should be used where dusty, dirty, or mildly corrosive conditions exist, or where high humidity or slightly negative pressures prevail.

Units are available in sizes 100 to 400 MBh, and are certified by ETL as providing 83 percent thermal (combustion) efficiency.



Tubular Duct Furnace (Model GU)

The Trane tubular duct furnace offers a highly efficient, extremely durable alternative to the traditional clamshell design. Designed with ease of service in mind, the model GU duct furnace has an easy access control panel allowing access to the control board, gas valve, and burner assembly. The unit is standard right-hand access and is field-convertible to left-hand access. Units are available in sizes 100 to 400 MBh. The tubular duct furnace is certified by ETL as providing 82 percent thermal (combustion) efficiency.

The model GU duct furnace can be field-converted to separated combustion using the optional combustion air inlet kit accessory. Once converted, a power venting system draws a controlled quantity of combustion air from outside the building. The same system exhausts flue products to the outside. The burners and flue system are enclosed within the unit; thus, the entire combustion process is unaffected by the atmosphere in the space where the heater is located. Separated combustion units are designed to be installed where dusty, dirty or mildly corrosive conditions exist or where high humidity or slightly negative pressures prevail.



Clamshell Indoor Duct Furnace (Model GL)

The Trane indoor duct furnace offers 80 percent thermal efficiency, and GL models add annual fuel savings of 20 to 25 percent. The GL models feature spark ignition, eliminating standing pilot losses. The power venting system virtually eliminates the off-cycle loss of heated air common to conventional gravity vented heaters. Horizontal power venting allows the use of smaller, single wall vent pipe and adds savings through sidewall penetration versus roof openings. Offered with bottom access to burners for service and or optional side access to burners for service.



Separated Combustion Clamshell Indoor Duct Furnace (Model GM)

The Trane separated combustion duct furnace is designed for installation in dusty, dirty, or mildly corrosive environments or where high humidity or slightly negative pressures exist. Ideal applications include HVAC equipment rooms, manufacturing facilities, automotive garages and greenhouses. The GM model includes all features of the GL.



Features and Benefits

Horizontal Blower Assemblies (Model HBAC)

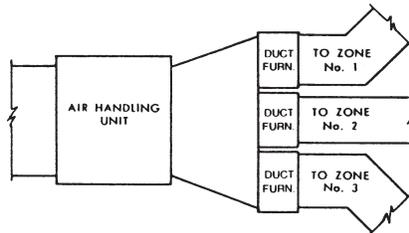
Trane horizontal blower assemblies have been specially designed for air handling systems of high static pressure in combination with Trane duct furnaces (Models GL and GM only). They are matched against the proper furnace size for greatest efficiency of operation.



Application Considerations

General

Propeller fan unit heaters and blower unit heaters are designed for use in space heating applications. The units are typically used in areas with high ceilings, and are exposed in the space to be heated. Unit heaters offer low installed cost, and are able to heat large volume areas without requiring extensive duct systems. Duct furnaces are designed for use in ducted applications with a separate air handling device such as a horizontal blower assembly. By utilizing a separate air source, greater application flexibility in airflow delivery can be obtained. Multiple duct furnaces can be used with an air handling unit to provide zone heating.

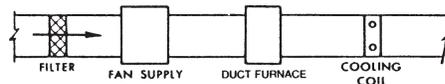


Note: When installing duct furnaces in parallel, minimum clearance requirements must be considered. This is required for serviceability of the gas valve and the high limit. All duct furnaces are approved in blow-thru applications only.

All duct furnaces are ETL approved upstream or downstream of the cooling coil. Recommend optional field installed drain pan when installed on the downstream side of the cooling coil.

Note: Downstream denotes cooling coil ahead of the fan section.

When used in conjunction with filters, cooling coils and an air handler, the duct furnace can become part of a built-up heating and cooling system.



Typical Upstream Installation

Gas Heating Value

The majority of gas heating units are installed in applications where natural gas is readily available. In areas where natural gas is not available, Trane units may be ordered directly from the factory for use on LP (propane) gas.

Gas heat content varies by fuel type and location. The standard gross heating value for natural gas is 1,000 Btu per cubic foot, and for propane, 2,500 Btu per cubic foot. Significant variations from these standard values should be taken into consideration in equipment selections. To account for variations in the gross heating value of the fuel, adjust the total heat input required and select the unit on the basis of the adjusted load using the following formula:

$$\text{Adjusted load} = \frac{\text{Calculated load} \times \text{gross heat value (Btu/ft}^3\text{)}}{\text{Actual gross heat value (Btu/ft}^3\text{)}}$$

Low Temperature Rise

Trane recommends against the setup of a unit which will result in a temperature rise of less than 30°F. With such low temperature rises, the flue gases passing through the heat exchanger are cooled to condensate before reaching the flue outlet. This condensate is corrosive and will result in shortened heat exchanger life.

Application Considerations

Air Density

Catalog performance data is based on elevations up to 2,000 ft above sea level. Above 2,000 ft the unit's heating capacity must be derated four percent for each 1,000 ft above sea level, and special orifice selections are required. [Table 8, p. 18](#) contains correction factors that can be applied to the unit's cataloged heating capacity, fan rpm, and fan bhp to obtain actual values for elevations above 2,000 ft.

Corrosive Atmospheres

Corrosion of heat exchangers and flue collectors have two basic variables—moisture (condensation) and sulphur. These two ingredients form to make sulfuric acid in the combustion process. Condensation occurs commonly in makeup air systems, using large amounts of fresh air, when air temperatures entering the heat exchanger drop to 40°F or below. This reaction can also occur in recirculating systems where some quantity of outside air is introduced upstream of the exchanger. The sulphur will always be present as an integral component of the gas. The resulting concentration of the acid is governed by the amount of sulphur in the gas. This concentration varies from gas to gas and geographically within the same type of gas.

Beyond sulfuric acid corrosion there is the area of chlorinated or halogenated hydrocarbon vapor corrosion. This type of corrosion occurs when substances are mixed with combustion air that will cause the formation of hydrochloric or hydrofluoric acid when burned. These basic substances are found in degreasers, dry cleaning solvents, glues, cements, paint removers and aerosol propellants. Specific chemicals included in this group are trichloroethylene, perchloroethylene, carbon tetrachloride, methylene chloride, methyl chloroform and refrigerants 11, 12, 21, 22 and 114.

If sufficient PPM content of these corrosives is present, none of the common heat exchanger materials will hold up. The dilemma becomes whether to place the gas heating equipment outside of the area to be conditioned, or use equipment in the space which does not burn a fuel such as gas (i.e., electric or hydronic).

Units should not be installed in areas with corrosive or inflammable atmospheres. Locations containing solvents or chlorinated hydrocarbons will produce corrosive acids when coming in contact with burner flames. This reaction will greatly reduce the life of the heat exchanger and may void the warranty. For added protection against heat exchanger corrosion, optional 409 and 321 stainless steel construction is available (321 stainless steel construction is only available on GL and GM units). On units using outside air, with entering air temperature below 40°F, condensation of flue gas in the heat exchanger is possible. In these cases, stainless steel heat exchangers are recommended.

Careful review of the job application with respect to use, probable contaminants within a conditioned space or the amount of fresh air to be brought in, will help to make the proper selection of heat exchanger material. This review will help to eliminate problems before they begin.

Indoor Units

Indoor gas unit heaters and duct furnaces are used primarily in commercial and industrial structures such as manufacturing areas, warehouses, garages, stores, showrooms, lobbies, and corridors.

Separated combustion units are used primarily in industrial work areas with wood or textile dust, non-explosive contaminated environments, non-chlorine process areas, automotive and truck garages and greenhouses.

Unit Placement

Refer to the applicable Trane *Installation, Operation, and Maintenance* literature for specific installation instructions. Installations must conform with local building codes or in the absence of local codes with the National Fuel Gas Code ANSI Z223.1.

When selecting a location for an indoor unit heater, both the size and weight of the unit, as well as the heating requirements of the building, should be considered. Installation of units in airplane hangars or public garages should be in accordance with NFPA No. 409 for aircraft hangars, and NFPA No. 88 for garages.

For proper distribution, air should be directed towards areas of maximum heat loss. When multiple units are used, circulation of heated air around the space perimeter is recommended. Satisfactory results can also be obtained where multiple units are located toward the center of the area, with heated air being discharged toward the outside walls. Throw data for standard unit heaters and unit heaters utilizing optional discharge nozzles is shown in [“General Data,” p. 15](#).

Locations where extreme drafts can affect burner operation should be avoided. Strong drafts may cause pilot outage, so units with intermittent pilot ignition may be preferable in areas where drafts are likely (model GL and GM units use pilots; tubular unit models use direct-spark ignition).

Minimum clearances required for accessibility and safety are listed in [Table 1, p. 15](#).

Note: *Direct air discharge on occupants should be avoided.*

Unit Mounting

Refer to the applicable unit *Installation, Operation, and Maintenance* manual for unit mounting detail.

Throw Data

Throw data for units with standard louvers and for units with optional discharge nozzles are in [“General Data,” p. 15](#). Optional nozzles are for use on propeller fan unit heaters, blower unit heaters and duct furnaces. When greater throw distance is desired, a 30° nozzle is recommended. For high mounting heights, a 90° nozzle may be used. When wide diffusion is needed, a Y splitter nozzle should be considered.

Indoor Units—Venting

Gas fired indoor units require venting to remove the products of combustion. To help assure safe, trouble-free operation, follow the guidelines listed in the applicable unit *Installation, Operation, and Maintenance* manual.

The unit heaters and duct furnaces are ETL-certified in accordance with Categories I and III venting requirements. This certification allows units to be vented both vertically and horizontally using either single-wall or double-wall venting materials. This venting flexibility of the unit heater makes installation easier and more cost effective by allowing the installer to utilize existing venting components.

Minimum/Maximum Gas Inlet Pressures

Gas valves are suitable to a maximum inlet pressure of 0.5 psi (14 inch water column) on natural gas. If the main gas supply pressure is greater than 14 inch wc, a step-down pressure regulator must be field-installed ahead of the gas valve. Minimum inlet pressure for natural gas units is 5 inch wc.

For LP (propane) gas, the minimum inlet pressure is 11.0 inch wc and the maximum inlet pressure is 14.0 inch wc.

High Pressure Regulators

The Trane indoor gas heating products contained in this catalog are designed to operate at a pressure of 3.5-inch wc (water column) when firing on natural gas for 10-inch wc when firing on propane. This is the “manifold” pressure or that which is present at the burner orifices. All five- and six-function valves provide a built-in pressure regulator which is capable of reducing “supply” pressures from a maximum of 14-inch wc (1/2 psi) down to 3.5-inch wc for natural gas or 10-inch wc for propane on the leaving side of the valve. The valve typically “drops” about 1-1/2 inches so the minimum supply pressure is 5-inch wc.

Whenever supply pressures exceed 14 inches wc, a high pressure regulator should be selected. We supply a regulator which is fitted with pressure springs and capacity orificing to meet the requirements of each specific job. In order to select the proper spring/orifice combination, we need to know what the supply pressure is on that particular job and the input size of the unit being ordered. More than one unit can be run from one regulator; however, we recommend that each unit have its own regulator.



Selection Procedure

Determine the total heating load requirements in accordance with methods recommended by the ASHRAE Handbook of Fundamentals or other acceptable means.

Unit Heater and Duct Furnaces

1. From the model performance data tables, select the unit whose heating output meets or exceeds the heating load requirement.
2. Airflow (cfm) and temperature rise can be read directly from the performance data tables.
 - a. For blower units and duct furnaces, airflow (cfm) ranges are listed for each unit size in the performance data tables. Knowing either the desired airflow or temperature rise, the other can be calculated using the following formulas:

$$\text{cfm} = \frac{\text{Output} \times 1,000}{1.085 \times \Delta T}$$

$$\Delta T = \frac{\text{Output} \times 1,000}{1.085 \times \text{cfm}}$$

- b. For duct furnaces, the temperature rise and pressure drop through the duct furnace can be read directly from the performance data charts. If the air temperature rise is below 30°F, some supply air must be bypassed around the duct furnace. If the air temperature rise is over maximum allowed, additional supply air must be delivered to the duct furnace.
3. Knowing the mounting height of the unit, throw can be determined from the performance data table. If the throw is not adequate, consider using a larger propeller fan unit heater or a blower unit heater with an optional discharge nozzle for greater throw.

Selection Example—A natural gas propeller fan unit heater that can provide 75 MBh heating output is required. The unit will be mounted 10 ft above the floor and a 40-foot throw is required.

Select the unit as follows:

- a. From [Table 10, p. 18](#), select a GNNE-010 with 100.0 MBh input and 83.0 MBh heating output, 1,600 cfm and a 47°F temperature rise.
- b. From [Table 3, p. 15](#), throw at a mounting height of 10 ft is 54 ft.

Horizontal Blower Assembly

1. From the performance data tables, select the blower assembly that provides the needed airflow at the required static pressure, and determine the required motor size and fan speed.
2. If a blower assembly is to be used with a duct furnace, refer to the dimensional data table to determine which blower to use with the given duct furnace. The duct furnace pressure drop must be added to the pressure drop of the duct system before entering the blower assembly performance data tables. Enter the performance data table at the required airflow and at the total external static pressure to determine the motor size and fan speed.

Selection Example—A GLND-040 indoor duct furnace is to be used with a horizontal blower assembly. An airflow of 5,000 cfm is required. The pressure drop of the duct system is 0.54 inches, and the pressure drop of the duct furnace is 0.16 inches.

Select the unit as follows:

- a. From [Table 24, p. 33](#), select a HBAC-45 for use with the GLND-040 duct furnace.
- b. From [Table 15, p. 21](#), an HBAC-45 at 5,000 cfm and 0.7 inches static pressure (0.54-inch ductwork + 0.16-inch furnace) requires a 1-1/2 hp motor with a fan speed of 720 rpm.



Model Number Descriptions

Gas Unit Heating Equipment

Note: This section excludes the High Efficiency Unit Heater. See “High Efficiency Unit Heater,” p. 14 for the model number description for that unit.

Digit 1 — Gas Heating Equipment

G = Gas Heating Equipment

Digit 2 — Unit Type

L = Indoor Duct Furnace
M = Separated Combustion Duct Furnace
N = Tubular Propeller Fan Unit Heater, Standard and Separated Combustion
T = Low Profile Tubular Propeller Unit Heater
U = Tubular Duct Furnace
V = Tubular Blower Fan Unit Heater, Standard and Separated Combustion

Digit 3 — Fuel Type

N = Natural Gas
P = LP Gas (Propane)

Digit 4 — Development Sequence

D = Fourth Generation
E = Fifth Generation

Digits 5, 6, 7 — Input Capacity

003 = 30 MBh
004 = 45 MBh
006 = 60 MBh
007 = 75 MBh
009 = 90 MBh
010 = 100 MBh
011 = 105 MBh
120 = 120 MBh
012 = 125 MBh
015 = 150 MBh
017 = 175 MBh
020 = 200 MBh
025 = 250 MBh
030 = 300 MBh
035 = 350 MBh
040 = 400 MBh

Digit 8 — Main Power Supply

A = 115/60/1 E = 460/60/3
B = 230/60/1 F = 575/60/3
C = 208/60/3 G = 208/60/1
D = 230/60/3

Digit 9 — Gas Control Option

D = Single-Stage, Intermittent Pilot Ignition
E = Two-Stage, Intermittent Pilot Ignition
H = Electronic Modulating w/ Room T-Stat
J = Electronic Modulating w/ Duct-Stat
L = Electronic Modulation w/External 4–20 mA Input
N = Electronic Modulation w/External 0–10 Vdc Input
T = Single Stage Direct Spark Ignition
V = Two-Stage, Direct Spark Ignition
W = Electronic Modulation w/ Duct T-Stat, Room Override Stat

Digit 10 — Design Sequence

A = First Design
G = Seventh Design

Digit 11 — Heat Exchanger Material

1 = Aluminized Steel
2 = 409 Stainless Steel
3 = 321 Stainless Steel

Digits 12, 13, 14

0 = Open

Digit 15 — Stainless Steel Burner

0 = Aluminized Steel Burner
A = Stainless Steel Burners

Digit 16 — Orifices for Elevation Above 2000' (610m)

B = Orifices for Elevation Above 2000 ft (Intermittent Pilot), or Air Pressure Switch for Above 5000 ft (Direct Spark)
P = Canadian High Altitude 2000–4500 ft

Digit 17 — 409 Stainless Steel Flue Collector

0 = Aluminized Steel Flue Collector
C = 409 Stainless Steel Flue Collector

Digit 18 — Summer/Winter Switch

D = With Summer/Winter Switch

Digit 19 — Louver Type

E = Vertical Louvers
F = Horizontal Louvers
G = Horizontal and Vertical Louvers

Digit 20 — Duct Discharge Flange

H = Duct Discharge Flange

Digit 21 — Totally Enclosed Motor

0 = Open Drip Proof (ODP)
J = Totally Enclosed Motor
3 = Premium Efficiency, ODP
4 = Premium Efficiency, Totally Enclosed

Digit 22 — Side Access Burner Drawer

0 = No Side Access Burner Drawer
K = Side Access Burner Drawer, Left Hand
M = Side Access Burner Drawer, Right Hand

Digit 23 — Fan Time Delay Control

0 = No Fan Time Delay Control
L = Fan Time Delay Control

Digits 24, 25

0 = Open

Digit 26 — Nozzles

A = Y Splitter
C = 90° Downward Discharge
E = 30° Downward Discharge
F = 60° Downward Discharge

Digit 27 — Thermostats

A = Single Stage Room Thermostat
B = Single Stage Room / Summer/ Winter T834
D = Single Stage Duct Thermostat
E = Two Stage Room Thermostat TH522
F = Two Stage Duct Thermostat
H = Two Stage Room Thermostat TH522 w/guard
J = Single Stage Room Thermostat w/guard
K = Single Stage, Line Voltage T6169C Thermostat
L = Single Stage, 24V, T822K Thermostat

Digit 28

0 = Open

Digit 29 — High Gas Pressure Regulator

Y = High Pressure Regulator 0.5–10 psi
Z = High Pressure Regulator 10–20 psi
9 = High Pressure Regulator 20–35 psi

Digit 30 — Drain Pan

W = 409 Stainless Steel

Digit 31 — Universal Guard for Room Thermostat

X = Universal Guard for Room Thermostat

Digits 32, 33

0 = Open

Digit 34 — Combustion Air Inlet Kit

5 = Vertical Combustion Air Inlet Kit
6 = Horizontal Combustion Air Inlet Kit
7 = Low Profile Combustion Air Inlet Kit

Digit 35 — OSHA Fan Guard

7 = OSHA Fan Guard



Model Number Descriptions

Digit 36 — Vent Cap

- 4 = 4-inch Vent Cap
- 5 = 5-inch Vent Cap
- 6 = 6-inch Vent Cap

Digit 37 — Vent Adapter

- A = Reducer 5-inch to 4-inch

Digit 38 — Air Flow Prove Switch

- 8 = Air Flow Prove Switch

High Efficiency Unit Heater

Digits 1, 2 — Unit Type

- HI = High Efficiency Unit Heater

Digit 3 — Gas Type

- N = Natural Gas
- P = Propane Gas (LP)

Digit 4 — Design Level

- A = First Design level

Digits 5, 6, 7 — Capacity

- 050 = 50,000 MBh/hr
- 100 = 10,000 MBh/hr
- 150 = 150,000 MBh/hr
- 200 = 200,000 MBh/hr
- 300 = 300,000 MBh/hr
- 400 = 400,000 MBh/hr

Digit 8 — Supply Voltage

- 1 = 115/1/60 5 = 460/3/60
- 2 = 208/1/60 6 = 460/3/60
- 3 = 230/1/60 7 = 575/3/60
- 4 = 208/3/60

Digit 9 — Direct Spark Gas Control

- 1 = Modulating w/Outside Air Reset Manager
- 2 = Modulating w/Outside Air Reset (Network)
- 3 = Modulating w/Indoor Air Reset
- 4 = Modulating w/2-10 Vdc/4-20 mA Input
- 5 = Modulating w/Room Sensing
- 6 = Two stage

Digit 10 — Design Sequence

- A = First Design

Digits 11 — Blower Motor Sizes

- 0 = Standard

Digits 12 — Motor Type

- 1 = Open Drip Proof (Standard)

Digit 13 — Furnace Type

- A = Left Side Access

Digit 14+ — Accessories

- A71 = Pressure Regulator, Range 0.5-10 psi
- A73 = Pressure Regulator, Range 10-20 psi
- A75 = Pressure Regulator, Range 20-35 psi
- E9 = Condensate Neutralizer (Inline)
- EW = Condensate Neutralizer (Wall Mounted)
- G1 = T87K Mercury Free Thermo w/ Subbase Kit
- G2 = T87K Mercury Free Thermo w/ TG511A Guard
- G3 = T834N Mercury Free Thermostat/ Fan Switch
- G5 = 2-Stage TH5220D Mercury Free Thermow/SB
- G9 = 1-Stage T822K Mercury Free Thermostat
- G6 = Locking Thermostat Covert
- H9 = Stratification Sensor
- K8 = Condensate Pump
- KY = Condensate Pump Shelf
- Y2 = 2" PVC Concentric Vent Kit
- Y3 = 3" PVC Concentric Vent Kit
- Y4 = 4" PVC Concentric Vent Kit

Horizontal Blower Assembly

Digit 1, 2, 3 — Horizontal Blower Assembly

Digit 4 — Development Sequence

- C = Third Generation

Digit 5, 6 — Blower Size

- 15 = Nominal 1500 cfm
- 20 = Nominal 2000 cfm
- 30 = Nominal 3000 cfm
- 45 = Nominal 4500 cfm

Digit 7 — Transition Size

(Specifies Duct Furnace Size)

- 0 = None

- A = 100 MBh F = 225 MBh
- B = 125 MBh G = 250 MBh
- C = 150 MBh H = 300 MBh
- D = 175 MBh J = 350 MBh
- E = 200 MBh K = 400 MBh

Digit 8 — Main Power Supply

- A = 115/60/1 D = 230/60/3
- B = 230/60/1 E = 460/60/3
- C = 208/60/3

Digit 9 — Motor Horsepower

- A = 1/3 hp D = 1 hp
- B = 1/2 hp E = 1-1/2 hp
- C = 3/4 hp F = 2 hp

Digit 10 — Design Sequence

- D = Fourth Design

Digit 11 — Miscellaneous Options

- 0 = None
- 1 = Insulation
- 3 = Totally Enclosed Motor



General Data

Service Clearances

Table 1. Minimum clearances (inches)

	GNNE GVNE	GUNE	GTNE	GLND	GMND
Sides	6	6	1	6	18
Top	6	6	1	6	6
Bottom	12	6	1	6 ^(a)	25
Flue	6	6	1	6	6
Rear	18	N/A	18	N/A	N/A

(a) 21-in. clearance is required for bottom access to burners and pilot. If a side pull-out burner drawer is ordered (model GL only), bottom clearance can be reduced to 6 in. Side clearance, however, must be increased such that it is adequate for burner drawer removal. Reference [Table 21, p. 30](#).

Table 2. Service accessibility clearances (inches)

	GNNE GVNE	GUNE	GTNE	GLND	GMND
Sides	18 ^(a)	18 ^(a)	18 ^(a)	6	18
Top	6	6	1	6	6
Bottom	12	6	1	21 ^(b)	25
Flue	6	6	1	6	6
Rear	18	N/A	18	N/A	N/A

(a) Side accessibility clearances of 18 in. are required for the control access side only.

(b) 21-in. clearance is required for bottom access burners and pilot. If a side pull-out drawer is ordered (model GL only), bottom clearance can be reduced to 6 in. Side clearance, however, must be increased such that it is adequate for burner drawer removal. Reference [Table 21, p. 30](#).

Heat Throw Data

Figure 1. Standard unit heater applications

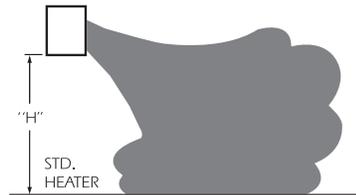


Table 3. Standard unit heater—approximate distance of throw at nominal airflow

Distance From Floor to Bottom of Unit "H" ft (m)	Unit Size Input MBh (kW)															
	30 (8.8)	45 (13.2)	60 (17.6)	75 (22.0)	90 (26.4)	100 (29.3)	105 (30.8)	120 (34.2)	125 (36.6)	150 (43.9)	175 (51.2)	200 (58.6)	250 (73.2)	300 (87.8)	350 (102.5)	400 (117.1)
8	33	33	33	40	40	60	60	65	65	70	75	80	90	105	110	120
(2.4)	(10.1)	(10.1)	(10.1)	(12.2)	(12.2)	(18.3)	(18.3)	(19.8)	(19.8)	(21.3)	(22.9)	(24.4)	(27.4)	(32.0)	(33.5)	(36.6)
10	28	28	28	35	35	54	54	56	56	60	64	68	78	90	95	100
(3.0)	(8.5)	(8.5)	(8.5)	(10.7)	(10.7)	(16.5)	(16.5)	(17.1)	(17.1)	(18.3)	(19.5)	(20.7)	(23.8)	(27.4)	(29.0)	(30.5)
12	—	—	—	—	—	44	44	46	46	49	57	61	68	80	84	90
(3.7)	—	—	—	—	—	(13.4)	(13.4)	(14.0)	(14.0)	(14.9)	(17.4)	(18.6)	(20.7)	(24.4)	(25.6)	(27.4)
15	—	—	—	—	—	—	—	—	—	45	49	52	60	70	74	80
(4.6)	—	—	—	—	—	—	—	—	—	(13.7)	(14.9)	(15.8)	(18.3)	(21.3)	(22.6)	(24.4)
20	—	—	—	—	—	—	—	—	—	—	—	46	54	63	66	70
(6.1)	—	—	—	—	—	—	—	—	—	—	—	(14.0)	(16.5)	(19.2)	(20.1)	(21.3)

Notes:

1. All throw data shown is for tubular unit heaters only—excludes GL, GM, HI, and GU Series and HBAC.
2. All throw data figures are approximations. Allowances should be made for optimum performance, altitude, etc.
3. — = Units not recommended at these mounting heights.

General Data

Figure 2. 30° nozzle

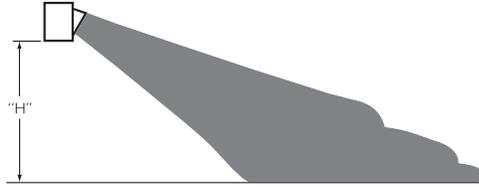


Table 4. 30-degree nozzle—approximate distance of throw at nominal airflow

Distance From Floor to Bottom of Unit "H" ft (m)	Unit Size Input MBh (kW)										
	100 (29.3)	105 (30.8)	120 (34.2)	125 (36.6)	150 (43.9)	175 (51.2)	200 (58.6)	250 (73.2)	300 (87.8)	350 (102.5)	400 (117.1)
8 (2.4)	65 (19.8)	Data Not Available	Data Not Available	70 (21.3)	75 (22.9)	80 (24.4)	85 (25.9)	95 (29.0)	115 (35.1)	120 (36.6)	125 (38.1)
10 (3.0)	57 (17.4)	Data Not Available	Data Not Available	60 (18.3)	64 (19.5)	68 (20.7)	72 (21.9)	86 (26.2)	99 (30.2)	105 (32.0)	110 (33.5)
12 (3.7)	50 (15.2)	Data Not Available	Data Not Available	54 (16.5)	57 (17.4)	60 (18.3)	64 (19.5)	77 (23.5)	88 (26.8)	94 (28.7)	100 (30.5)
15 (4.6)	—	Data Not Available	Data Not Available	45 (13.7)	48 (14.6)	50 (15.2)	53 (16.2)	64 (19.5)	74 (22.6)	79 (24.1)	84 (25.6)
20 (6.1)	—	Data Not Available	Data Not Available	—	—	44 (13.4)	47 (14.3)	58 (17.7)	66 (20.1)	71 (21.6)	75 (22.9)

Notes:

1. All throw data shown is for tubular unit heaters only—excludes GL, GM, HI, and GU Series and HBAC.
2. All throw data figures are approximate.
3. — = Not recommended at these mounting heights.

Figure 3. 60° nozzle

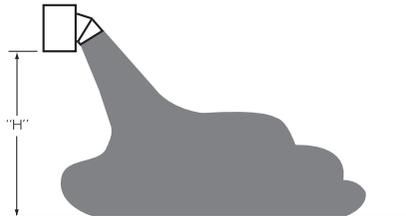


Table 5. 60-degree nozzle—approximate distance of throw at nominal airflow

Distance From Floor to Bottom of Unit "H" ft (m)	Unit Size Input MBh (kW)										
	100 (29.3)	105 (30.8)	120 (34.2)	125 (36.6)	150 (43.9)	175 (51.2)	200 (58.6)	250 (73.2)	300 (87.8)	350 (102.5)	400 (117.1)
8 (2.4)	75 (22.9)	Data Not Available	Data Not Available	80 (24.4)	85 (25.9)	90 (27.4)	95 (29.0)	110 (33.5)	125 (38.1)	130 (39.6)	138 (42.1)
10 (3.0)	65 (19.8)	Data Not Available	Data Not Available	70 (21.3)	75 (22.9)	79 (24.1)	83 (25.3)	95 (29.0)	109 (33.2)	115 (35.1)	120 (36.6)
12 (3.7)	60 (18.3)	Data Not Available	Data Not Available	64 (19.8)	68 (20.7)	72 (21.9)	76 (23.2)	84 (25.6)	100 (30.5)	103 (31.4)	108 (32.9)
15 (4.6)	50 (15.2)	Data Not Available	Data Not Available	54 (16.5)	56 (17.1)	61 (18.6)	65 (19.8)	71 (21.6)	85 (25.9)	88 (26.8)	94 (28.7)
20 (6.1)	—	Data Not Available	Data Not Available	49 (14.9)	52 (15.8)	55 (16.8)	59 (18.0)	65 (19.8)	77 (23.5)	81 (24.7)	85 (25.9)

Notes:

1. All throw data shown is for tubular unit heaters only—excludes GL, GM, HI, and GU Series and HBAC.
2. All throw data figures are approximate.
3. — = Not recommended at these mounting heights.

Figure 4. 90° nozzle

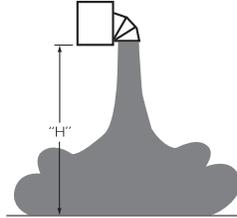


Table 6. 90-degree nozzle—approximate floor coverage at nominal airflow

Distance From Floor to Bottom of Unit "H" ft (m)	Unit Size Input MBh (kW)								
	100 (29.3)	125 (36.6)	150 (43.9)	175 (51.2)	200 (58.6)	250 (73.2)	300 (87.8)	350 (102.5)	400 (117.1)
10 (3.0)	—	—	—	—	—	—	—	—	—
15 (4.6)	30 x 25 (9.1 x 7.6)	35 x 30 (10.7 x 9.1)	40 x 35 (12.2 x 10.7)	45 x 40 (13.7 x 12.2)	50 x 40 (15.2 x 12.2)	60 x 45 (18.3 x 13.7)	70 x 45 (21.3 x 13.7)	80 x 50 (24.4 x 15.2)	100 x 50 (30.5 x 15.2)
20 (6.1)	—	—	—	—	40 x 35 (12.2 x 10.7)	56 x 40 (17.1 x 12.2)	65 x 40 (19.8 x 12.2)	70 x 45 (21.3 x 13.7)	75 x 40 (22.9 x 12.2)
25 (7.6)	—	—	—	—	—	50 x 35 (15.2 x 10.7)	60 x 35 (18.3 x 10.7)	65 x 40 (19.8 x 12.2)	75 x 40 (22.9 x 12.2)
30 (9.1)	—	—	—	—	—	—	55 x 35 (16.8 x 10.7)	60 x 35 (18.3 x 10.7)	65 x 40 (19.8 x 12.2)

Notes:

1. Mounting a unit with a 90° nozzle at mounting heights of 10 ft or less is NOT recommended.
2. All throw data shown is for commercial tubular unit heaters only; data excludes models GL, GM, HI, GUNE, and GTNE and HBAC.
3. — = Not recommended at these mounting heights.

Figure 5. "Y" splitter

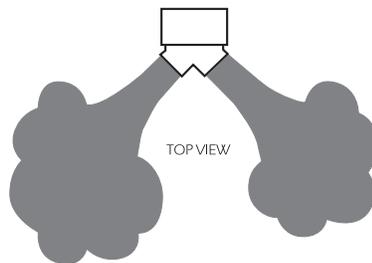


Table 7. "Y" splitters—approximate distance of throw at nominal airflow

Distance From Floor to Bottom of Unit "H" ft (m)	Unit Size Input MBh (kW)									
	100 (29.3)	125 (36.6)	150 (43.9)	175 (51.2)	200 (58.6)	225 (65.9)	250 (73.2)	300 (87.8)	350 (102.5)	400 (117.1)
8 (2.4)	47 (14.3)	51 (15.5)	60 (18.3)	65 (19.8)	70 (21.3)	72 (21.9)	80 (24.4)	95 (29.0)	100 (30.5)	103 (31.4)
10 (3.0)	41 (12.5)	44 (13.4)	52 (15.8)	56 (17.1)	61 (18.6)	63 (19.2)	69 (21.0)	82 (25.0)	87 (26.5)	92 (28.0)
12 (3.7)	37 (11.3)	40 (12.2)	47 (14.3)	51 (15.5)	55 (16.8)	57 (17.4)	63 (19.2)	75 (22.9)	79 (24.1)	82 (25.0)

Notes:

1. All throw data figures are approximate.
2. Nozzles are not available on units below size 100 MBh.



Performance Data

Table 8. Correction factors for high altitude installations

Altitude Above Sea Level (ft)	0	2,000	3,000	4,000	5,000	6,000	7,000
Gas Heating Capacity	1.00	0.96	0.92	0.88	0.84	0.80	0.76

Note: For high altitude installations above 2,000 ft, reduce ratings 4 percent for each 1,000 ft above sea level.

Table 9. Low profile unit heater performance data—model GTNE/GTPE

Unit Size	003	004	006	007	009	011	120
Input							
MBh	30	45	60	75	90	105	120
kW	8.8	13.2	17.6	22.0	26.4	30.8	35.2
Output							
MBh	24.9	37.35	49.8	61.5	73.8	86.1	98.4
kW	7.2	10.9	14.5	18.0	21.6	25.2	28.8
Thermal Efficiency (%)	83	83	83	82	82	82	82
Free Air Delivery							
cfm	370	550	740	920	1,100	1,300	1,475
m ³ /s	0.175	0.260	0.349	0.434	0.519	0.614	0.696
Air Temperature Rise							
°F	60	60	60	60	60	60	60
°C	33	33	33	33	33	33	33
Full Load Amps at 120V	3.2	3.2	4.1	4.1	6.4	6.4	6.4
Maximum Circuit Ampacity	3.7	3.7	4.8	4.8	7.5	7.5	7.5
Motor Data							
hp	1/20	1/20	1/12	1/12	1/10	1/10	1/10
kW	0.04	0.04	0.06	0.06	0.075	0.075	0.075
Type ODP ^(a)	SP						
rpm	1,650	1,650	1,050	1,050	1,050	1,050	1,050
Amps at 115V	1.9	1.9	2.6	2.6	4.2	4.2	4.2

Notes:

- Ratings are shown for elevations up to 2,000 ft above sea level. Above 2,000 ft, input must be derated 4 percent for each 1,000 ft above sea level. Refer to the applicable unit *Installation, Operation, and Maintenance* manual for additional information on field deration.
 - Standard motors are 115/60/1 Open Drip Proof.
- (a) ODP = Open Drip Proof; SP = Shaded Pole

Table 10. Tubular propeller fan gas unit heater performance data—model GNNE/GNPE

Unit Size	100	125	150	175	200	250	300	350	400
Input									
Btu/h	100,000	125,000	150,000	175,000	200,000	250,000	300,000	350,000	400,000
(kW)	(29.3)	(36.6)	(43.9)	(51.2)	(58.6)	(65.9)	(73.2)	(87.8)	(102.5)
Output									
Btu/h	83,000	103,750	124,500	145,250	166,000	207,500	249,000	290,500	332,000
(kW)	(24.3)	(30.4)	(36.4)	(42.5)	(48.6)	(60.7)	(72.9)	(85.1)	(97.2)
Thermal Efficiency (%)	83	83	83	83	83	83	83	83	83
Free Air Delivery									
cfm	1,600	2,200	2,400	2,850	3,200	3,450	5,000	5,600	5,800
(m ³ /s)	(0.756)	(1.039)	(1.133)	(1.346)	(1.511)	(1.629)	(2.361)	(2.644)	(2.738)
Air Temperature Rise									
°F	47	42	47	46	47	54	45	47	51
(°C)	(26)	(23)	(26)	(26)	(26)	(30)	(24)	(26)	(28)
Full Load Amps at 120V	6.4	6.9	6.9	8.0	8.0	8.0	11.6	13.8	13.8
Maximum Circuit Ampacity	7.5	8.1	8.1	9.5	9.5	9.5	12.8	15.3	15.3
Motor Data									
hp (Qty)	1/10	1/4	1/4	1/3	1/3	1/3	(2) 1/4	(2) 1/3	(2) 1/3
(kW)	(0.080)	(0.19)	(0.19)	(0.25)	(0.25)	(0.25)	(0.19)	(0.25)	(0.25)
Type ODP ^(a)	SP	PSC							
rpm	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050
Amps at 115V	4.2	4.7	4.7	5.8	5.8	5.8	9.4	11.6	11.6

Notes:

- Ratings shown are for unit installations at elevations between 0 and 2,000 ft (0 to 610 m). For unit installations in USA above 2,000 ft (610 m), the unit input must be field derated 4 percent for each 1,000 ft (305 m) above sea level; refer to local codes, or in absence of local codes, refer to the latest edition of the National Fuel Gas Code, ANSI Standard Z223.1 (NFPA No. 54). Refer to the applicable unit *Installation, Operation, and Maintenance* manual for additional information on field deration.
- For installations in Canada, any reference to deration at altitudes in excess of 2,000 ft. (610m) are to be ignored. At altitudes of 2,000 ft to 4,500 ft (610 m to 1372 m), the unit must be field derated, and be so marked in accordance with the ETL certification.

(a) ODP = Open Drip Proof; SP = Shaded Pole; PSC = Permanent Split Capacitor

Table 11. Tubular blower unit heater performance data—model GVNE/GVPE

Unit Size	100	125	150	175	200	250	300	350	400
Input									
Btu/h	100,000	125,000	150,000	175,000	200,000	250,000	300,000	350,000	400,000
(kW)	(29.3)	(36.6)	(44.0)	(51.3)	(58.6)	(73.3)	(87.9)	(102.6)	(117.2)
Output									
Btu/h	83,000	103,750	124,500	145,250	166,000	207,500	246,000	290,500	332,000
(kW)	(24.3)	(30.4)	(36.5)	(42.6)	(48.6)	(60.8)	(72.1)	(85.1)	(97.3)
Thermal Efficiency (%)	83	83	83	83	83	83	82	83	83
Free Air Delivery									
cfm	1,181	1,476	1,771	2,067	2,362	2,953	3,501	4,134	4,724
(m ³ /s)	(0.557)	(0.697)	(0.836)	(0.976)	(1.115)	(1.394)	(1.652)	(1.951)	(2.230)
Air Temperature Rise									
°F	65	65	65	65	65	65	65	65	65
(°C)	(36)	(36)	(36)	(36)	(36)	(36)	(36)	(36)	(36)
Outlet Velocity									
fpm	370	463	555	395.0	451.0	564.0	422	498	570
(m/s)	(1.879)	(2.351)	(2.819)	(2.006)	(2.291)	(2.864)	(2.143)	(2.529)	(2.895)
Full Load Amps at 115V	7.3	9.4	9.4	14.2	14.2	15.6	15.6	20.8	20.8
Maximum Circuit Ampacity	8.6	11.2	11.2	17.1	17.1	18.9	18.9	25.4	25.4
Motor Data									
hp (Qty)	1/4	1/2	1/2	3/4	3/4	1	1	1-1/2	1-1/2
(kW)	(0.19)	(0.37)	(0.37)	(0.56)	(0.56)	(0.75)	(0.75)	(1.11)	(1.11)
Type ODP ^(a)	SPH	SPH	SPH	SPH	SPH	Cap. Start	Cap. Start	Cap. Start	Cap. Start
rpm	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725
Amps at 115V	5.1	7.2	7.2	11.6	11.6	13.0	13.0	18.2	18.2

Notes:

1. Ratings shown are for unit installations at elevations between 0 and 2,000 ft (0 to 610 m). For unit installations in USA above 2,000 ft (610 m), the unit input must be field derated 4 percent for each 1,000 ft (305 m) above sea level; refer to local codes, or in absence of local codes, refer to the latest edition of the National Fuel Gas Code, ANSI Standard Z223.1 (NFPA No. 54). Refer to the applicable unit *Installation, Operation, and Maintenance* manual for additional information on field deration.
2. For installations in Canada, any reference to deration at altitudes in excess of 2,000 ft (610 m) are to be ignored. At altitudes of 2,000 ft to 4,500 ft (610 to 1,372 m), the unit must be field derated, and be so marked in accordance with the ETL certification.

(a) ODP = Open Drip Proof; SPH = Split Phase; Cap. Start = Capacitor Start

Table 12. Clamshell indoor gas duct furnace performance data—model GLND/GLPD

Unit Size	Input				Output		Min		Temp. Rise		P.D.		Max		Temp. Rise		P.D.	
	Max		Min		MBh	kW	cfm	m ³ /s	Deg. F	Deg. C	in. wc	kPa	cfm	m ³ /s	Deg. F	Deg. C	in. wc	kPa
010	100	29.3	50	14.6	80	23.4	929	0.438	80	44	0.12	0.03	2469	1.165	30	17	0.90	0.22
015	150	43.9	75	22.0	120	35.1	1389	0.656	80	44	0.15	0.04	3704	1.748	30	17	0.75	0.19
020	200	58.6	100	29.3	160	46.9	1852	0.874	80	44	0.14	0.03	4938	2.331	30	17	0.75	0.19
025	250	73.2	125	36.6	200	58.6	2315	1.093	80	44	0.14	0.03	6173	2.914	30	17	0.80	0.20
030	300	87.8	150	43.9	240	70.3	2778	1.311	80	44	0.13	0.03	7407	3.496	30	17	0.90	0.22
035	350	102.5	175	51.2	280	82.0	3241	1.530	80	44	0.13	0.03	8642	4.079	30	17	0.90	0.22
040	400	117.1	200	58.6	320	93.7	3704	1.748	80	44	0.14	0.03	9877	4.662	30	17	0.90	0.22

Note: Ratings are shown for elevations up to 2,000 ft above sea level. Above 2,000 ft input must be derated 4 percent for each 1,000 ft above sea level.

Table 13. Separated combustion clamshell indoor gas duct furnace performance data—model GMND/GMPD

Unit Size	Input				Output		Min		Temp. Rise		P.D.		Max		Temp. Rise		P.D.	
	Max		Min		MBh	kW	cfm	m ³ /s	Deg. F	Deg. C	in. wc	kPa	cfm	m ³ /s	Deg. F	Deg. C	in. wc	kPa
010	100	29.3	50	14.6	80	23.4	822	0.388	90	50	0.10	0.02	3700	1.746	20	11	2.03	0.51
015	150	43.9	75	22.0	120	35.1	1233	0.582	90	50	0.09	0.02	5550	2.620	20	11	1.81	0.45
020	200	58.6	100	29.3	160	46.9	1645	0.776	90	50	0.09	0.02	7401	3.493	20	11	1.90	0.47
025	250	73.2	125	36.6	200	58.6	2056	0.970	90	50	0.09	0.02	9251	4.366	20	11	1.96	0.49
030	300	87.8	150	43.9	240	70.3	2467	1.164	90	50	0.10	0.02	11101	5.240	20	11	2.00	0.50
035	350	102.5	175	51.2	280	82.0	2878	1.358	90	50	0.10	0.02	12951	6.113	20	11	2.02	0.50
040	400	117.1	200	58.6	320	93.7	3289	1.552	90	50	0.10	0.02	14801	6.986	20	11	2.05	0.51

Note: Ratings are shown for elevations up to 2,000 ft above sea level. Above 2,000 ft input must be derated 4 percent for each 1,000 ft above sea level.



Performance Data

Table 14. Tubular duct furnace performance data—model GUNE/GUPE

Unit Size	Input				Output		Min		Temp. Rise		P.D.		Max		Temp. Rise		P.D.	
	Max		Min															
	MBh	kW	MBh	kW	MBh	kW	cfm	m ³ /s	Deg. F	Deg. C	in. wc	kPa	cfm	m ³ /s	Deg. F	Deg. C	in. wc	kPa
100	100	29.3	50	14.6	82	24.0	758	0.357	100	56	0.07	0.017	2528	1.193	30	17	0.65	0.16
150	150	43.9	75	21.9	123	36.0	1137	0.536	100	56	0.03	0.007	3792	1.789	30	17	0.44	0.11
200	200	58.6	100	29.3	164	48.0	1517	0.715	100	56	0.04	0.009	5057	2.386	30	17	0.54	0.13
250	250	73.2	125	36.6	205	60.0	1896	0.894	100	56	0.08	0.019	6321	2.983	30	17	0.76	0.19
300	300	87.8	150	43.9	246	72.0	2275	1.074	100	56	0.03	0.007	7585	3.579	30	17	0.69	0.16
350	350	102.5	175	51.2	287	84.1	2654	1.252	100	56	0.07	0.017	8849	4.176	30	17	0.76	0.19
400	400	117.1	200	58.6	328	96.1	3034	1.431	100	56	0.08	0.019	10,114	4.773	30	17	0.70	0.17

Note: Ratings are shown for unit installations at elevations between 0 ft and 2,000 ft (610 m). For unit installations in U.S.A. above 2,000 ft (610 m), the unit input must be field derated 4% for each 1,000 ft (305 m) above sea level; refer to local codes, or in absence of local codes, refer to the latest edition of the National Fuel Gas Code, ANSI Standard Z223.1 (N.F.P.A. No. 54). For installations in Canada, any references to deration at altitudes in excess of 2,000 ft (610 m) are to be ignored. At altitudes of 2,000 ft to 4,500 ft (610 m to 1372 m), the unit must be field derated, and be so marked in accordance with the ETL certification. Refer to the applicable unit *Installation, Operation, and Maintenance* manual for additional information on field deration.

Table 15. Horizontal blower assembly performance data

Models	CFM	Blower Size (in.)	External Static Pressure																	
			in. wc		0.2		0.3		0.4		0.5		0.6		0.7		0.8		0.9	
			kPa		0.05		0.07		0.10		0.12		0.15		0.17		0.20		0.22	
			cfm m ³ /s	rpm	hp kW	rpm	hp kW													
HBAC-15	1,500	10	1,250	525	1/3	650	1/3	680	1/3	760	1/3	780	1/3	840	1/3	—	—	—	—	
			0.590	—	0.25	—	0.25	—	0.25	—	0.25	—	0.25	—	0.25	—	—	—	—	—
			1,500	600	1/3	680	1/3	715	1/3	790	1/3	810	1/2	860	1/2	895	1/2	970	1/2	—
			0.708	—	0.25	—	0.25	—	0.25	—	0.25	—	0.37	—	0.37	—	0.37	—	0.37	—
			1,750	650	1/3	710	1/3	750	1/2	805	1/2	850	1/2	890	1/2	940	3/4	990	3/4	—
			0.826	—	0.25	—	0.25	—	0.37	—	0.37	—	0.37	—	0.37	—	0.56	—	0.56	—
			2,000	700	1/2	760	1/2	800	1/2	850	1/2	890	1/2	925	3/4	980	3/4	1,010	3/4	—
			0.944	—	0.37	—	0.37	—	0.37	—	0.37	—	0.37	—	0.56	—	0.56	—	0.56	—
			1,500	425	1/3	500	1/3	550	1/3	630	1/3	—	—	—	—	—	—	—	—	—
			0.708	—	0.25	—	0.25	—	0.25	—	0.25	—	—	—	—	—	—	—	—	—
HBAC-20	2,000	12	1,750	450	1/3	515	1/3	560	1/3	635	1/2	680	1/2	725	1/2	—	—	—	—	
			0.826	—	0.25	—	0.25	—	0.25	—	0.37	—	0.37	—	0.37	—	—	—	—	
			2,000	475	1/3	530	1/3	590	1/2	640	1/2	690	1/2	740	1/2	785	1/2	810	3/4	—
			0.944	—	0.25	—	0.25	—	0.37	—	0.37	—	0.37	—	0.37	—	0.37	—	0.56	—
			2,250	515	1/2	560	1/2	610	1/2	650	1/2	700	3/4	750	3/4	790	3/4	815	3/4	—
			1.062	—	0.37	—	0.37	—	0.37	—	0.37	—	0.56	—	0.56	—	0.56	—	0.56	—
			2,500	540	1/2	590	1/2	625	1/2	670	1/2	710	3/4	760	3/4	795	3/4	820	3/4	—
			1.180	—	0.37	—	0.37	—	0.37	—	0.37	—	0.56	—	0.56	—	0.56	—	0.56	—
			2,750	575	1/2	615	1/2	650	3/4	690	3/4	730	3/4	780	3/4	800	3/4	830	1	—
			1.298	—	0.37	—	0.37	—	0.56	—	0.56	—	0.56	—	0.56	—	0.56	—	0.75	—
HBAC-30	3,000	12	1,750	450	1/3	510	1/3	560	1/3	630	1/3	675	1/2	720	1/2	—	—	—	—	
			0.826	—	0.25	—	0.25	—	0.25	—	0.25	—	0.37	—	0.37	—	—	—	—	
			2,000	475	1/3	525	1/3	590	1/2	635	1/2	680	1/2	735	1/2	785	1/2	810	3/4	—
			0.944	—	0.25	—	0.25	—	0.37	—	0.37	—	0.37	—	0.37	—	0.37	—	0.56	—
			2,250	500	1/2	550	1/2	600	1/2	645	1/2	685	1/2	740	3/4	785	3/4	810	3/4	—
			1.062	—	0.37	—	0.37	—	0.37	—	0.37	—	0.37	—	0.56	—	0.56	—	0.56	—
			2,500	525	1/2	580	1/2	615	1/2	665	1/2	700	3/4	750	3/4	790	3/4	815	3/4	—
			1.180	—	0.37	—	0.37	—	0.37	—	0.37	—	0.56	—	0.56	—	0.56	—	0.56	—
			2,750	560	1/2	605	1/2	640	3/4	685	3/4	715	3/4	775	3/4	805	3/4	825	1	—
			1.298	—	0.37	—	0.37	—	0.56	—	0.56	—	0.56	—	0.56	—	0.56	—	0.75	—
HBAC-45	4,500	12	3,000	610	1/2	640	3/4	660	3/4	710	3/4	750	1	790	1	815	1	845	1	
			1.416	—	0.37	—	0.56	—	0.56	—	0.56	—	0.75	—	0.75	—	0.75	—	0.75	—
			3,250	630	3/4	675	3/4	700	1	735	1	750	1	790	1	830	1	860	1	—
			1.534	—	0.56	—	0.56	—	0.75	—	0.75	—	0.75	—	0.75	—	0.75	—	0.75	—
			3,500	675	3/4	700	1	725	1	775	1	800	1	840	1-1/2	875	1-1/2	890	1-1/2	—
			1.652	—	0.56	—	0.75	—	0.75	—	0.75	—	0.75	—	1.12	—	1.12	—	1.12	—
			2,750	400	3/4	450	3/4	510	3/4	—	—	—	—	—	—	—	—	—	—	—
			1.298	—	0.56	—	0.56	—	0.56	—	—	—	—	—	—	—	—	—	—	—
			3,000	425	3/4	475	3/4	550	3/4	600	3/4	650	3/4	—	—	—	—	—	—	—
			1.416	—	0.56	—	0.56	—	0.56	—	0.56	—	0.56	—	—	—	—	—	—	—

Note: External Static Pressure in inches of water. Add pressure drop of indoor duct furnace, if used, to pressure drop of ductwork, to determine total external static pressure. HBAC units are for use with specific duct furnace sizes. Reference Table 24, p. 33.



Performance Data

Table 16. Gas fired high efficiency unit heaters performance and dimensional data (model HI)

Model	HI050	HI100	HI150	HI200	HI300	HI400
Input BTU/HR	50,000	100,000	150,000	200,000	300,000	400,000
Output BTU/HR	48,600	96,000	143,000	192,000	285,000	348,000
Thermal Efficiency	97%	96%	95%	96%	95%	96%
Air Temp Rise	57°F	55°F	50°F	55°F	55°F	55°F
Condensate Production (Gal/Hr)	0.41	0.73	1.06	1.38	1.71	3.00
Turn Down Ratio	3:1	3:1	3:1	3:1	3:1	3:1
Modulating Control	Yes	Yes	Yes	Yes	Yes	Yes
Fuel Type	NG/LP	NG/LP	NG/LP	NG/LP	NG/LP	NG/LP
Venting Category	IV	IV	IV	IV	IV	IV
Entering Airflow (CFM at 70°F)	790	1,616	2,661	3,232	4,848	6,464
Outlet Velocity (FPM)	697	977	928	1,127	1,101	1,114
Heat Throw at 20' Mounting Height	n/a	150 ft	n/a	150 ft	150 ft	150 ft
Min. Gas Pressure Natural	5 inch wc					
Min. Gas Pressure LP	8 inch wc					
Max. Gas Pressure Natural/LP	14 inch wc					
Motor HP	1/14	1/2	0	1/2	1	1
Motor Qty	2	1	2	2	2	2
Motor RPM	1,500	1,500	1,500	1,500	1,625	1,625
Gas Connection Size	1/2"	1/2"	1/2"	1/2"	3/4"	3/4"
Condensate Discharge Size	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
Condensate Trap	Yes	Yes	Yes	Yes	Yes	Yes
Combustion Air Intake	2"	2"	2"	3"	4"	4"
Combustion Air Intake Material	PVC/CPVC	PVC/CPVC	PVC/CPVC	PVC/CPVC	PVC/CPVC	PVC/CPVC
Flue Size	2"	2"	2"	3"	4"	4"
Flue Material	PVC/CPVC	PVC/CPVC	PVC/CPVC	PVC/CPVC	PVC/CPVC	PVC/CPVC
Electrical Data						
Supply Voltage/Phase	115V-1PH	115V-1PH	115V-1PH	115V-1PH	115V-1PH	115V-1PH
FLA	10.8	10.3	17.6	17.6	31.2	3.2
Motor Amps (total fan motor amps)	6.5	6.0	12.0	12.0	22.0	22.0
Dimensions						
Height	12-1/4"	17-1/4"	17-1/4"	17-1/4"	25-11/16"	33-7/16"
Width	42-13/16"	42-13/16"	54-13/16"	54-13/16"	54-13/16"	54-13/16"
Depth	32-5/8"	39"	41"	42"	42"	42"
Weight	120 lbs.	180 lbs.	209 lbs.	260 lbs.	323 lbs.	385 lbs.
Clearance Service/Combustible						
Air Intake Side	18"	18"	18"	18"	36"	36"
Access Side	18"	18"	18"	18"	18"	18"
Non-Access Side	2"	6"	6"	6"	6"	6"
Top	2"	6"	6"	6"	6"	6"
Bottom	2"	6"	6"	6"	6"	6"

Figure 6. Temperature rise and pressure drop graph—model GLND/GLPD, GMND/GMPD

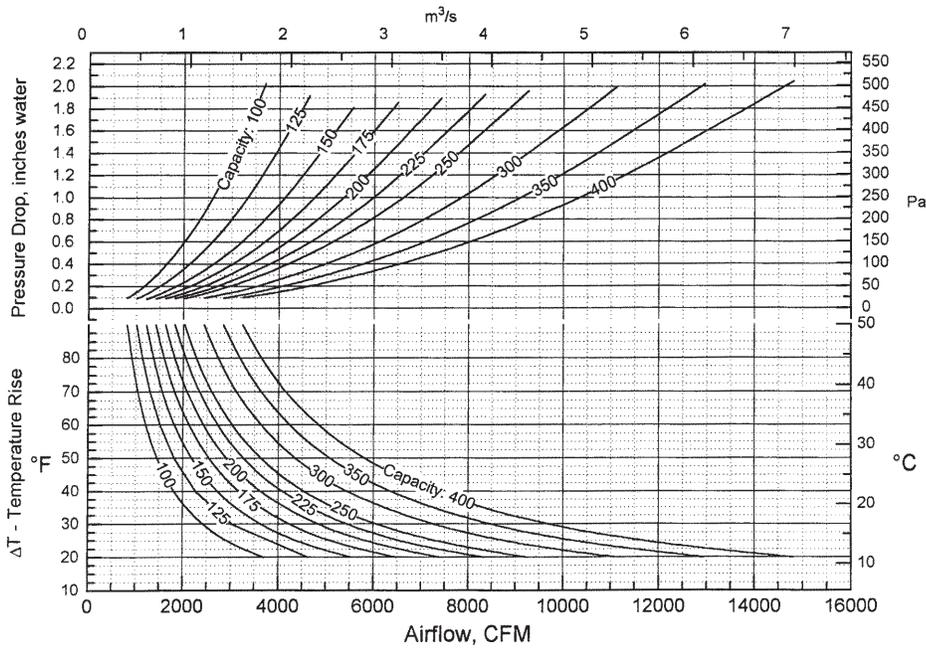
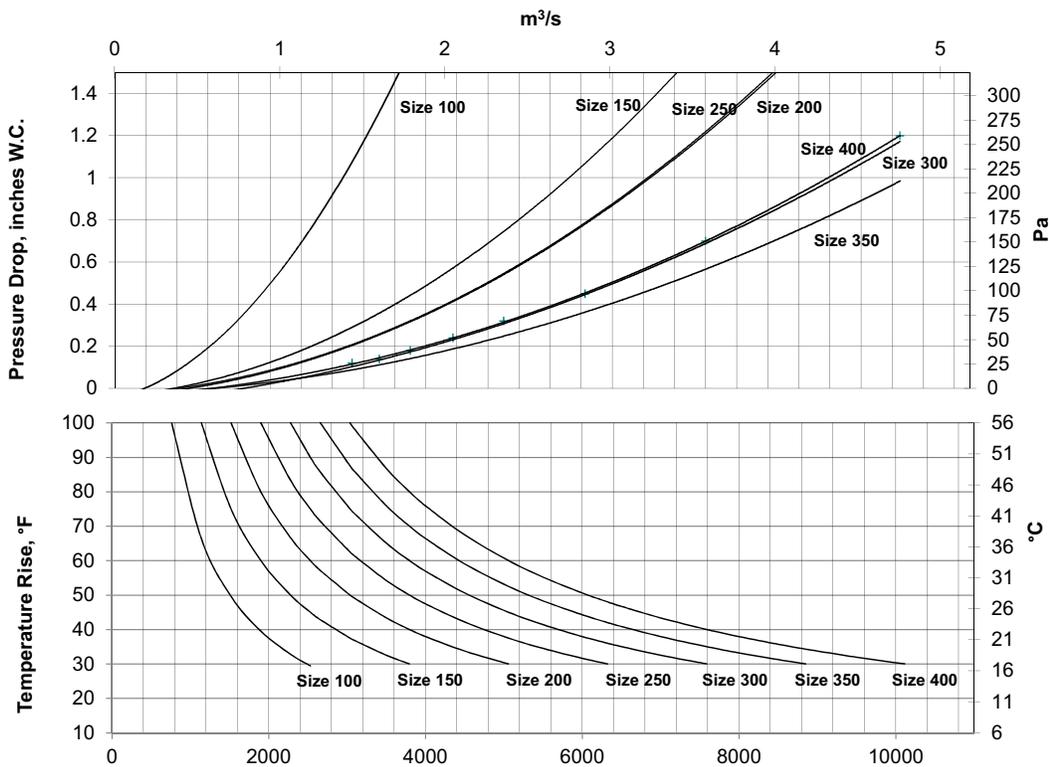


Figure 7. Temperature rise and pressure drop graph—model GUNE/GUPE





Controls

Pilot Control—Models GLND/GLPD, GMND/GMPD

Clamshell duct furnaces ship as standard with intermittent pilot ignition. Intermittent pilot ignition contains a solid-state ignition control system that ignites the pilot by spark for each cycle of operation. When the pilot flame is proven, the main burner valve opens to allow gas flow to the burners. Both the pilot and burners are extinguished during the off cycle.

Intermittent pilot ignition is ideal for limited access installations where manual lighting of the pilot may be difficult. Nuisance pilot outages on units mounted in areas subject to occasional severe drafts can also be eliminated. Energy savings will be realized using this system as the pilot is extinguished during the off cycle. Intermittent pilot ignition should be considered on units that have long shutoff periods.

Direct Spark Ignition Control—Models GTNE/GTPE, GNNE/GNPE, GVNE/GVPE, GUNE/GUPE

Tubular units utilize a direct spark pilotless ignition of the burner, providing fast heat delivery. When there is a call for heat, the gas valve will open and the igniter will provide a spark in an attempt to light the burners. The burner flame is then proven by the flame sensor and will continue to burn until the call for heat is satisfied.

This highly reliable and efficient ignition system incorporates an integrated electronic control board to regulate the system sequence of operation, including an externally mounted LED indicator for simple troubleshooting.

Gas Controls

Single-Stage Control

Indoor gas heating units are provided with an automatic single-stage gas valve as standard. This valve is an on/off type control, typically activated by a low voltage single-stage thermostat.

Two-Stage Control

Indoor units with optional two-stage control are provided with a two-stage gas valve capable of firing at 100 percent and 50 percent of rated input. Ignition is at low fire (50 percent of the unit's rated input) and the unit is typically controlled by a low voltage two-stage thermostat.

Note: *Not applicable on 30–45 MBh units.*

Electronic Modulating Control

This optional control is available for use with natural gas units only. Units with electronic modulating control are provided with an electronic modulating valve capable of firing from 100 percent to 40 percent of rated input. Ignition is at full fire (100 percent of unit's rated input). The electronic modulating valve is controlled by a room thermostat or a duct thermostat with remote setpoint adjustment which modulates the gas input from 100 percent to 40 percent of rated input. An optional override room thermostat is available for use with the duct thermostat. The override room thermostat allows full fire and overrides the duct thermostat when the room temperature falls below the override room thermostat's setpoint.

Note: *Not applicable on low profile tubular; GUNE/GUPE firing range is 100 percent to 50 percent.*

Electronic Modulating, 4–20 mA/0–10 Vdc Input

Provides modulated heat output. Ignition is at full fire (100 percent input), and modulates the gas input from 100 percent to 40 percent rated input.

The modulating gas valve shall operate in response to a 4–20 mA or a 0–10Vdc input from an external DDC control.

Note: *GUNE/GUPE modulates from 100 percent to 50 percent.*

Thermostats

Electronic Modulating Room Thermostat

(Included with Gas Control)

- Low Voltage (24V)
- 60°F to 85°F Range
- 5-13/16 in. W x 3-1/4 in. H x 1-7/8 in. D



Single-Stage Room Thermostat

(Order No. 350-0015-01)

- Low Voltage (24V)
- 55°F to 95°F Range
- 2-7/8 in. W x 4-3/4" H x 1-3/8" D



Single-Stage Duct Thermostat

(Order No. 350-0015-07)

- Low Voltage (24V)
- 55°F to 175°F Range
- 5-ft Capillary
- 2 in. W x 5-5/8 in. H x 2-7/16 in. D



Electronic Modulating Duct Thermostat

(Included with Gas Control)

- Low Voltage (24V)
- 55°F to 90°F Range
- Sensor: 10-in. Probe
- Remote Temperature Selector: 4-1/4 in. W x 4-1/4 in. H x 1-7/8 in. D
- Duct Thermostat: 4-1/4 in. W x 4-1/4 in. H x 1-5/8 in. D



Single-Stage Room Thermostat with Summer/Winter Switch

(Order No. 350-0015-02)

- Low Voltage (24V)
- 50°F to 90°F Range
- Fan Auto-On Switch
- 2-7/8 in. W x 4-3/4 in. H x 1-1/2 in. D



Two-Stage Duct Thermostat

Order No. 350-0015-08)

- Low Voltage (24V)
- 55°F to 175°F Range
- 5-ft Capillary
- 2 in. W x 5-5/8 in. H x 2-7/16 in. D



Electronic Modulating Override Room Thermostat for use with Duct Thermostats

(Order No. 350-0015-05)

- Line Voltage (115V)
- 50°F to 90°F Range
- 2-7/8 in. W x 4-9/16 in. H x 1-1/4 in. D



Two-Stage Room Thermostat

(Order No. 0135-THT02532-01, or 0135-THT02532G-01 with guard)

- Low Voltage (24V)
- 40°F to 90°F Range
- Fan Auto-On Switch
- System Off-Auto Switch
- 5-13/16 in. W x 3-9/16 in. H x 1-1/2 in. D



Universal Guard

(Order No. 350-0015-06)

- Clear Plastic
- Ring Base
- Tumbler Lock and Two Keys
- Cover: 6-7/8 in. W x 5-5/8 in. H x 3 in. D
- Base: 6-9/16 in. W x 5-1/2 in. H x 3/8 in. D





Electrical Data

Note: Refer to "Performance Data," p. 18 for standard unit electrical data.

Table 17. Motor electrical data—horizontal blower

	Full Load Amps ^(a)					
	115/1/60		208/1/60		230/1/60	
	Open Drip Proof	Totally Enclosed	Open Drip Proof	Totally Enclosed	Open Drip Proof	Totally Enclosed
1/3 hp	6.1	6.0	3.4		3.1	3.0
1/2 hp	7.2	8.6	3.7		3.8	4.3
3/4 hp	11.6	11.0	5.2	5.4	5.0	5.5
1 hp	13.0	13.4	6.6	6.8	6.5	6.7
1-1/2 hp	18.2	18.0	9.1	8.4	9.1	8.0
2 hp	21.0		11.3		10.5	
	Full Load Amps ^(a)					
	208/3/60		230/3/60		460/3/60	
	Open Drip Proof	Totally Enclosed	Open Drip Proof	Totally Enclosed	Open Drip Proof	Totally Enclosed
1/3 hp	1.5	1.6	1.6	1.9	0.8	0.8
1/2 hp	2.3	2.0	2.2	2.5	1.1	1.0
3/4 hp	3.0	3.2	3.4	3.0	1.7	1.5
1 hp	3.4	3.7	3.4	3.4	1.7	1.7
1-1/2 hp	5.1	5.0	5.2	4.6	2.6	2.3
2 hp	6.2		6.0		3.0	

(a) FLA based on NEC ratings. All motors are 1,725 rpm.



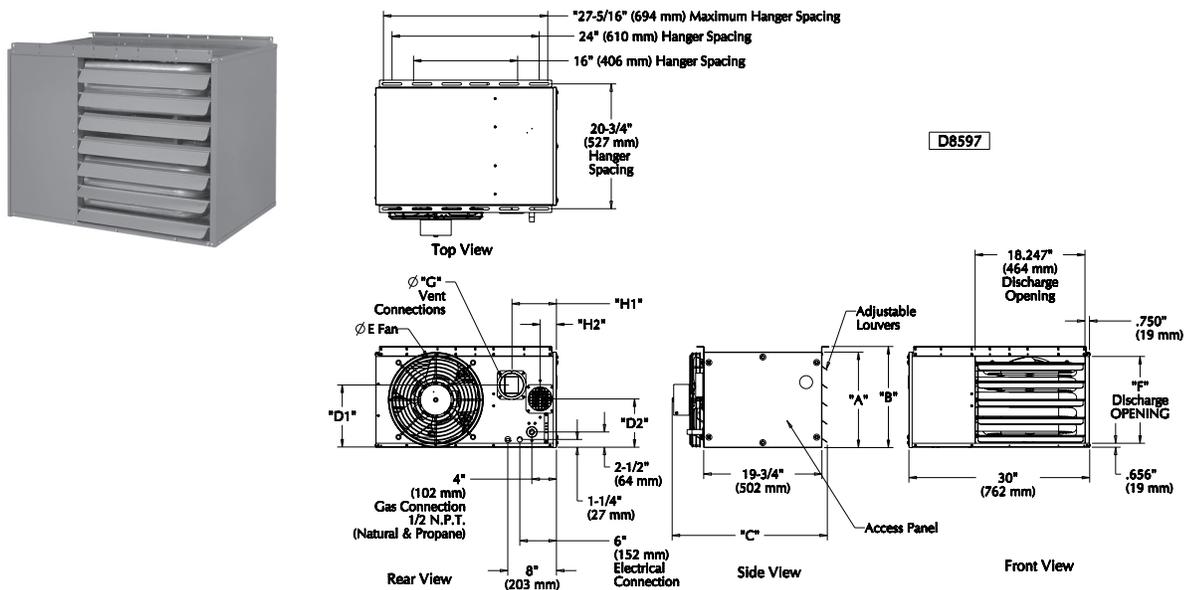
Dimensions and Weights

Table 18. Low profile unit heater—model GTNE/GTPE

Unit Sizes (MBh)		30	45	60	75	90	105	120
"A" Jacket Height	in.	12-3/8	12-3/8	15-7/8	15-7/8	22-5/8	22-5/8	22-5/8
	mm	314	314	403	403	574	574	574
"B" Overall Height	in.	13-1/4	13-1/4	16-13/16	16-13/16	23-9/16	23-9/16	23-9/16
	mm	337	337	427	427	598	598	598
"C" Overall Depth	in.	25-7/8	25-7/8	26-3/16	26-3/16	26-3/8	26-3/8	26-3/8
	mm	632	632	665	665	670	670	670
"D1" Center Line Height of Flue	in.	8-1/2	8-1/2	10-3/8	10-3/8	13-5/8	13-5/8	13-5/8
	mm	216	216	364	364	346	346	346
"D2" Center Line Height of Air Intake	in.	8-1/2	8-1/2	8	8	8-5/8	8-5/8	8-5/8
	mm	216	216	203	203	219	219	219
"E" Fan Diameter	in.	10	10	14	14	16	16	16
	mm	254	254	356	356	406	406	406
"F" Discharge Opening Height	in.	10-13/16	10-13/16	14-7/16	14-7/16	21-3/16	21-3/16	21-3/16
	mm	275	275	367	367	538	538	538
"G" Vent Connection Diameter	in.	4	4	4	4	4	4	4
	mm	102	102	102	102	102	102	102
"H1" Center Line of Flue Connection From Side	in.	7-1/4	7-1/4	7-1/4	7-1/4	7-3/4	7-3/4	7-3/4
	mm	184	184	184	184	197	197	197
"H2" Center Line of Air Intake From Side	in.	2-3/4	2-3/4	2-3/4	2-3/4	3-1/2	3-1/2	3-1/2
	mm	70	70	70	70	89	89	89
Flue Size Requirements—Standard Combustion								
Category III Horizontal	in.	4	4	4	4	4	4	4
	mm	102	102	102	102	102	102	102
Category I & III Vertical	in.	4	4	4	4	4	4	4
	mm	102	102	102	102	102	102	102
Flue Size Requirements—Separated Combustion								
Exhaust Diameter ^(a)	in.	4	4	4	4	5	5	5
	mm	102	102	102	102	127	127	127
Intake Air Diameter	in.	4	4	4	4	5	5	5
	mm	102	102	102	102	127	127	127
Unit Weight	lb	60	65	80	85	95	105	110
	kg	27	29	36	39	43	48	50
Shipping Weight	lb	70	75	90	95	110	115	120
	kg	32	34	41	43	50	52	54

Note: For all installations, the flue collar is included with the unit and should be field installed per the instructions included with the unit.

(a) 4–5 in. reducer supplied where required.



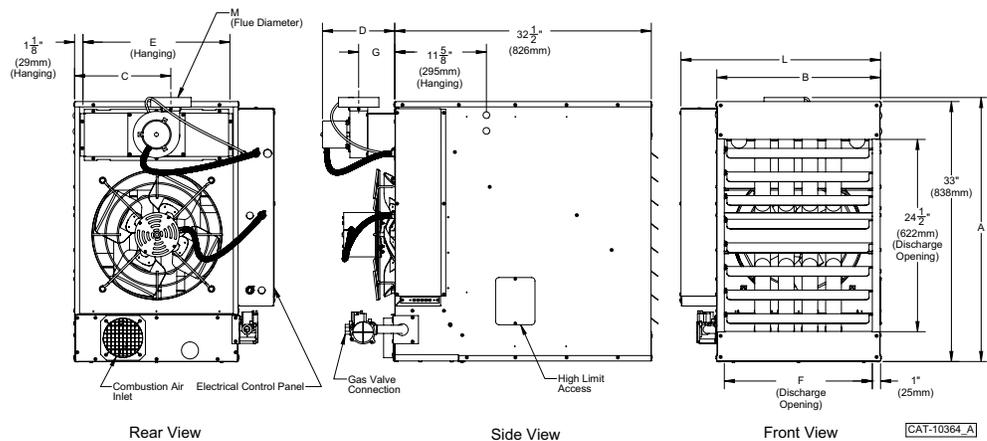


Dimensions and Weights

Table 19. Tubular propeller fan gas unit heater dimensional data—model GNNE/GNPE

Unit Size		100	125	150	175	200	250	300	350	400
"A" Overall Height to Top of Flue	in.	33-3/4	33-3/4	33-3/4	33-3/4	33-3/4	33-3/4	34	34	34
	mm	857	857	857	857	857	857	864	864	864
"B" Jacket Width of Unit	in.	20-3/4	20-3/4	20-3/4	32-3/4	32-3/4	32-3/4	50-3/4	50-3/4	50-3/4
	mm	527	527	527	831	831	831	1289	1289	1289
"C" Width to CL Flue	in.	13-3/8	13-3/8	13-3/8	19-3/8	19-3/8	19-3/8	28-3/8	28-3/8	28-3/8
	mm	340	340	340	492	492	492	721	721	721
"D" Depth to Rear of Housing	in.	11	11	11	11	11	11	12-1/4	12-1/4	12-1/4
	mm	279	279	279	279	279	279	311	311	311
"E" Hanging Distance Width	in.	18-5/8	18-5/8	18-5/8	30-5/8	30-5/8	30-5/8	48-5/8	48-5/8	48-5/8
	mm	473	473	473	778	778	778	1235	1235	1235
"F" Discharge Opening Width	in.	18-3/4	18-3/4	18-3/4	30-3/4	30-3/4	30-3/4	48-3/4	48-3/4	48-3/4
	mm	476	476	476	781	781	781	1238	1238	1238
"G" Depth to CL Flue	in.	4-3/4	4-3/4	4-3/4	4-3/4	4-3/4	4-3/4	5-1/8	5-1/8	5-1/8
	mm	121	121	121	121	121	121	130	130	130
"L" Overall Unit Width	in.	25-1/4	25-1/4	25-1/4	37-1/4	37-1/4	37-1/4	55-1/4	55-1/4	55-1/4
	mm	641	641	641	946	946	946	1403	1403	1403
Combustion Air Inlet Dia. (Qty)	in.	5	5	5	5	5	5	5 (2)	5 (2)	5 (2)
	mm	127	127	127	127	127	127	127	127	127
"M" Vent Size Diameter	in.	5	5	5	5	5	5	6	6	6
	mm	127	127	127	127	127	127	152	152	152
Fan Diameter	in. (Qty)	16	16	16	18	18	18	(2) 16	(2) 18	(2) 18
Gas Inlet—Natural Gas	in.	1/2	1/2	1/2	1/2	1/2	1/2	3/4	3/4	3/4
Gas Inlet—LP Gas	in.	1/2	1/2	1/2	1/2	1/2	1/2	3/4	3/4	3/4
Approximate Unit Weight	lb	135	147	157	194	204	214	311	325	339
	kg	61	67	71	88	93	97	141	147	154
Approximate Ship Weight	lb	175	187	197	244	254	264	371	385	399
	kg	79	85	89	111	115	120	168	175	181

Note: For all installations, the flue collar is included with the unit and should be field installed per the instructions included with the unit.

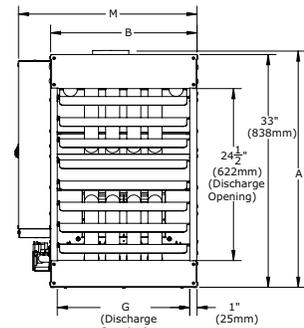
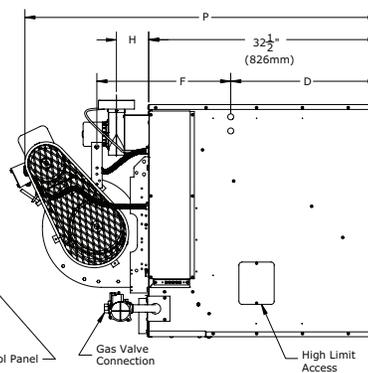
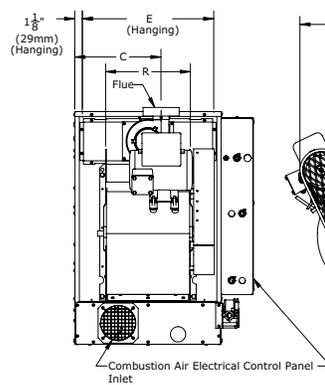


Dimensions and Weights

Table 20. Tubular blower unit heater dimensional data—model GVNE/GVPE

Unit Size		100	125	150	175	200	250	300	350	400
"A" Height to Top of Flue	in.	33-3/4	33-3/4	33-3/4	33-3/4	33-3/4	33-3/4	34	34	34
	mm	857	857	857	857	857	857	864	864	864
"B" Jacket Width of Unit	in.	20-3/4	20-3/4	20-3/4	32-3/4	32-3/4	32-3/4	50-3/4	50-3/4	50-3/4
	mm	527	527	527	832	832	832	1289	1289	1289
"C" Width to Centerline Flue	in.	13-3/8	13-3/8	13-3/8	19-3/8	19-3/8	19-3/8	28-3/8	28-3/8	28-3/8
	mm	340	340	340	492	492	492	721	721	721
"D" Depth to Front Hanger	in.	21	21	21	21	21	21	21	21	21
	mm	533	533	533	533	533	533	533	533	533
"E" Hanging Distance Width	in.	18-5/8	18-5/8	18-5/8	30-5/8	30-5/8	30-5/8	48-5/8	48-5/8	48-5/8
	mm	473	473	473	778	778	778	1235	1235	1235
"F" Hanging Distance Depth	in.	19	19-1/2	19-1/2	32-3/4	32-3/4	32-3/4	23-1/2	32-3/4	32-3/4
	mm	483	495	495	832	832	832	597	832	832
"G" Discharge Opening Width	in.	18-3/4	18-3/4	18-3/4	30-3/4	30-3/4	30-3/4	48-3/4	48-3/4	48-3/4
	mm	476	476	476	781	781	781	1238	1238	1238
"H" Depth to Centerline Flue	in.	4-3/4	4-3/4	4-3/4	4-3/4	4-3/4	4-3/4	5-1/8	5-1/8	5-1/8
	mm	121	121	121	121	121	121	130	130	130
"L" Discharge Opening Height	in.	24-1/2	24-1/2	24-1/2	24-1/2	24-1/2	24-1/2	24-1/2	24-1/2	24-1/2
	mm	622	622	622	622	622	622	622	622	622
"M" Overall Unit Width	in.	25-1/4	25-1/4	25-1/4	37-1/4	37-1/4	37-1/4	55-1/4	55-1/4	55-1/4
	mm	641	641	641	946	946	946	1403	1403	1403
"P" Overall Unit Depth	in.	49-3/4	49-3/8	49-3/8	56-1/8	56-1/8	56-1/8	53-3/8	56-1/8	56-1/8
	mm	1264	1254	1254	1426	1426	1426	1356	1426	1426
"R" Blower Hanging Bracket Width	in.	12	13-1/4	13-1/4	15-3/4	15-3/4	15-3/4	32-5/8	39	39
	mm	305	337	337	400	400	400	829	991	991
Combustion Air Inlet Dia. (Qty)	in.	5	5	5	5	5	5	5 (2)	5 (2)	5 (2)
	mm	127	127	127	127	127	127	127	127	127
Vent Size Diameter	in.	5	5	5	5	5	5	6	6	6
	mm	127	127	127	127	127	127	152	152	152
Blower Size	in. (Qty)	9	10	10	12	12	12	10 (2)	12 (2)	12 (2)
Gas Inlet, Natural Gas	in.	1/2	1/2	1/2	1/2	1/2	1/2	3/4	3/4	3/4
Gas Inlet, LP Gas	in.	1/2	1/2	1/2	1/2	1/2	1/2	3/4	3/4	3/4
Approximate Unit Weight	lb	173	177	204	248	267	292	374	394	433
	kg	78	80	92	112	121	132	170	179	196
Approximate Ship Weight	lb	258	263	291	384	403	428	524	551	599
	kg	117	119	132	174	183	194	238	250	272

Note: For all installations, the flue collar is included with the unit and should be field installed per the instructions included with the unit.

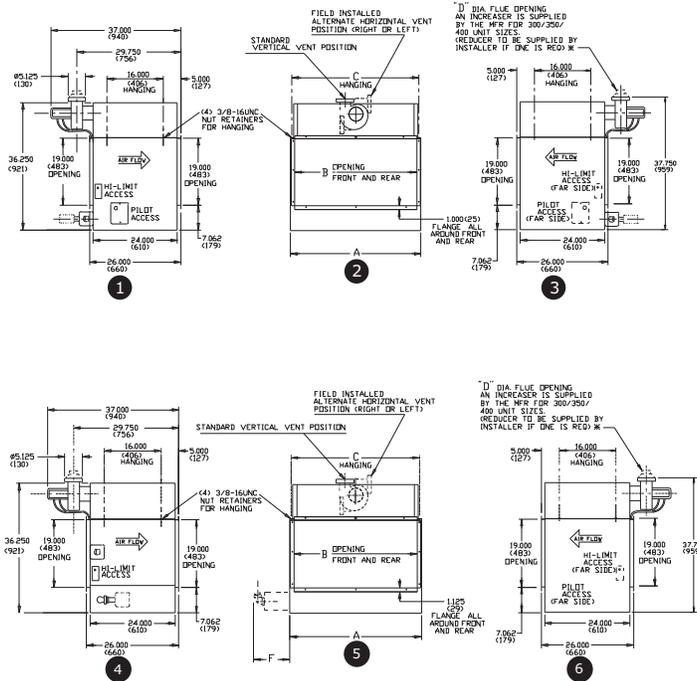


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Dimensions and Weights

Table 21. Clamshell duct furnaces dimensional data—model GLND/GLPD

Model	Input MBh	A	B	C	D (Dia.)	F	Gas Inlet		Approx. Ship Weight		
							Nat.	LP			
010	100	in.	17.875	15.5	17.125	4	23.875	1/2	1/2	lb	173
		mm	454	394	435	102	606			kg	78
015	150	in.	20.625	18.25	19.875	4	26.625	1/2	1/2	lb	197
		mm	524	464	505	102	676			kg	89
020	200	in.	26.125	23.75	25.375	5	32.125	1/2	1/2	lb	232
		mm	664	603	645	127	816			kg	105
025	250	in.	31.625	29.25	30.875	5	37.625	3/4	3/4	lb	263
		mm	803	743	784	127	956			kg	119
030	300	in.	37.125	34.75	36.375	6	43.125	3/4	3/4	lb	312
		mm	943	883	924	152	1095			kg	142
035	350	in.	42.625	40.25	41.875	6	48.625	3/4	3/4	lb	389
		mm	1083	1022	1064	152	1235			kg	176
040	400	in.	48.125	45.75	47.375	6	54.125	3/4	3/4	lb	403
		mm	1222	1162	1203	152	1375			kg	183



1. Bottom access, side view, sizes 100–125
2. Bottom access, front view, sizes 100–400
3. Bottom access, side view, sizes 150–400
4. Side access, side view, sizes 100–125
5. Side access, front view, sizes 100–400
6. Side access, side view, sizes 150–400
7. Optional top vent, positions: front, rear, right, left

Notes:

1. Units include reducer/increaser (if required). Rear vent position shown. See Detail 7 for optional top vent position.
2. Dimensions are in inches and millimeters (mm shown in parentheses).

Table 22. Separated combustion indoor gas duct furnaces dimensional data—model GMND/GMPD

Model	Input MBh	A	B	C	D (Dia.)(a)	Gas Inlet		lb	kg	Approx. Ship Weight
						Nat.	LP			
010	100	in.	17-7/8	15-1/2	17-1/8	4	1/2	1/2	lb	224
		mm	454	394	435	102			kg	102
015	150	in.	20-5/8	18-1/4	19-7/8	4	1/2	1/2	lb	254
		mm	524	464	505	102			kg	115
020	200	in.	26-1/8	23-3/4	25-3/8	5	1/2	1/2	lb	277
		mm	664	603	645	127			kg	126
025	250	in.	31-5/8	29-1/4	30-7/8	5	3/4	3/4	lb	313
		mm	803	743	784	127			kg	142
030	300	in.	37-1/8	34-3/4	36-3/8	6	3/4	3/4	lb	368
		mm	943	883	924	152			kg	167
035	350	in.	42-5/8	40-1/4	41-7/8	6	3/4	3/4	lb	402
		mm	1083	1022	1064	152			kg	182
040	400	in.	48-1/8	45-3/4	47-3/8	6	3/4	3/4	lb	519
		mm	1222	1162	1203	152			kg	235

(a) "D" diameter equals the air inlet opening and the flue discharge opening.

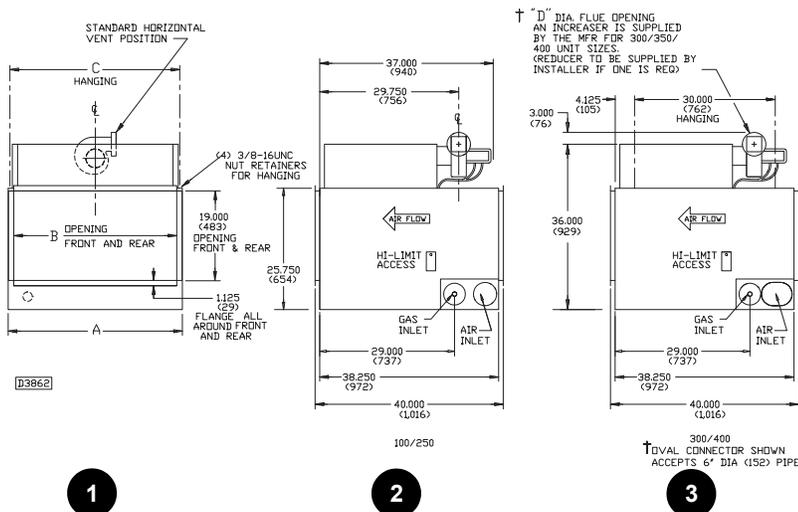


1. Front view, sizes 100–400
2. Side view, sizes 100–250
3. Side view, sizes 300–400

†Oval connector shown accepts 6 in. (152 mm) dia. pipe.

Notes:

1. Units include reducer/increaser (if required). Rear vent position shown. See Detail 4 for optional top vent position.
2. Dimensions are in inches and millimeters (mm shown in parentheses).



Dimensions and Weights

Table 23. Tubular duct furnace dimensional data—model GUNE/GUPE

Unit Size		100	150	200	250	300	350	400
"A" Overall Unit Height	in.	10.3	13.7	17	20.2	23.5	26.7	30
	mm	262	348	432	513	597	678	762
"B" Height to Centerline Flue	in.	7.6	10.5	11.9	6.8	8.4	10	11.6
	mm	193	267	302	173	213	254	295
"C" Height to Gas Connection	in.	2.5	3.7	5.3	7	7	8.7	10.3
	mm	64	94	135	178	178	221	262
"D" Opening Height, Front & Rear	in.	8.5	11.7	15	18.2	21.5	24.7	28
	mm	216	297	381	462	546	627	711
"E" Overall Unit Depth	in.	32.7	32.7	32.7	33.5	33.5	33.5	33.5
	mm	831	831	831	851	851	851	851
"F" Flue Size Diameter	in.	5	5	5	6	6	6	6
	mm	127	127	127	152	152	152	152
"G" Air Inlet Size Diameter	in.	5	5	5	6	6	6	6
	mm	127	127	127	152	152	152	152
Gas Inlet, Natural Gas	in.	1/2	1/2	1/2	3/4	3/4	3/4	3/4
Gas Inlet, LP Gas	in.	1/2	1/2	1/2	3/4	3/4	3/4	3/4
Approximate Unit Weight	lb	160	221	250	270	296	321	355
	kg	73	100	113	122	134	146	161
Approximate Ship Weight	lb	270	331	360	403	429	454	488
	kg	122	150	163	183	195	206	221

Note: For all installations, the flue collar is included with the unit and should be field installed per the instructions included with the unit.

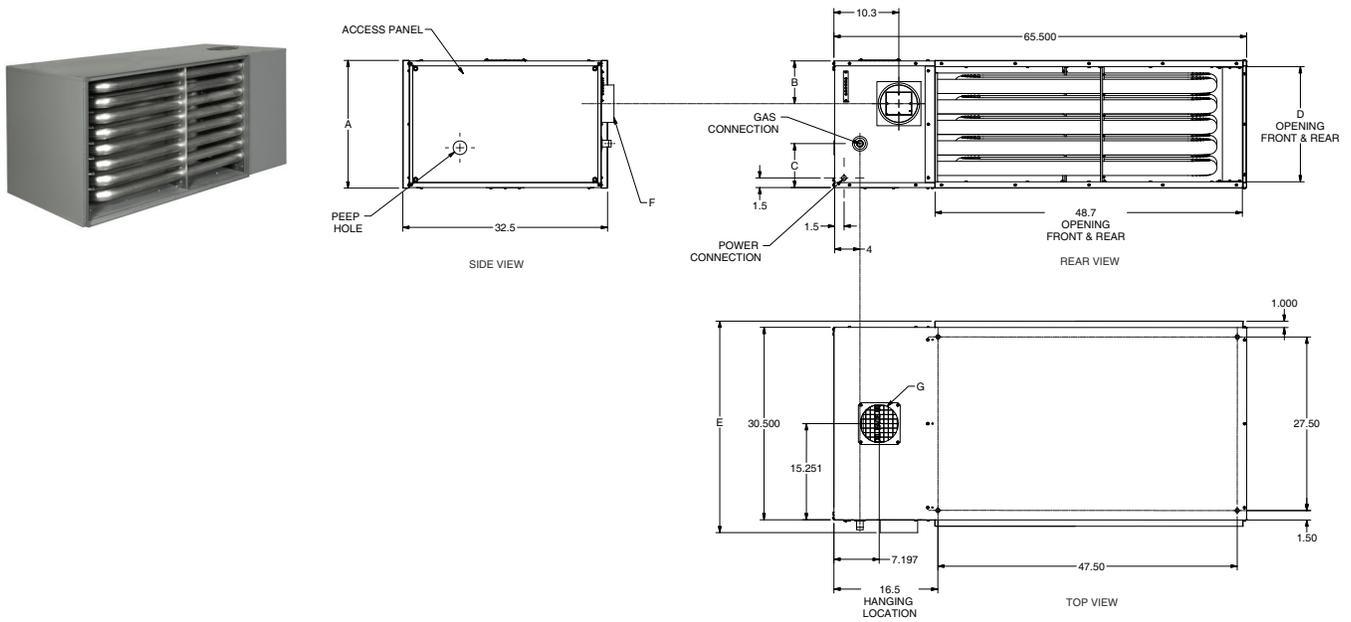
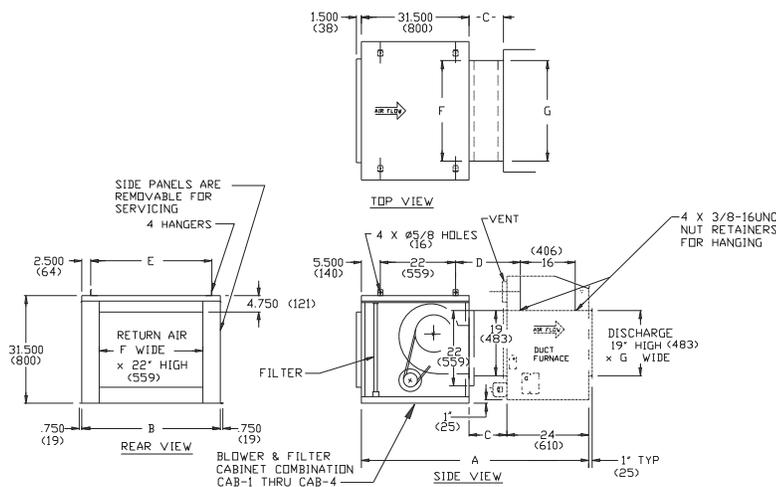


Table 24. Horizontal blower assembly dimension data

Model	Nominal cfm	Input MBh ^(a)	A	B	C	D	E	F	G	Filter		Ship Weight ^(b)		
										Size	# Req.			
HBAC-15	1500	100	in.	65-1/2	26	10	18	21-1/4	15-3/4	15-5/8	25 x 25 x 1	1	lb	135
			mm	1664	660	254	457	540	400	397			kg	61
		125	in.	65-1/2	26	10	18	21-1/4	15-3/4	18-3/8	25 x 25 x 1	1	lb	135
			mm	1664	660	254	457	540	400	467			kg	61
HBAC-20	2000	150	in.	65-1/2	26	10	18	21-1/4	15-3/4	18-3/8	25 x 25 x 1	1	lb	155
			mm	1664	660	254	457	540	400	467			kg	70
		175	in.	65-1/2	26	10	18	21-1/4	15-3/4	21-1/8	25 x 25 x 1	1	lb	155
			mm	1664	660	254	457	540	400	537			kg	70
HBAC-30	3000	200	in.	65-1/2	40-1/2	10	18	35-3/4	30-3/8	23-7/8	25 x 20 x 1	2	lb	200
			mm	1664	1029	254	457	908	772	606			kg	91
		225	in.	65-1/2	40-1/2	10	18	35-3/4	30-3/8	26-5/8	25 x 20 x 1	2	lb	200
			mm	1664	1029	254	457	908	772	676			kg	91
		250	in.	65-1/2	40-1/2	10	18	35-3/4	30-3/8	29-3/8	25 x 20 x 1	2	lb	200
			mm	1664	1029	254	457	908	772	746			kg	91
HBAC-45	4500	300	in.	65-1/2	60-1/2	10	18	55-3/4	50-3/8	34-7/8	25 x 20 x 1	3	lb	296
			mm	1664	1537	254	457	1416	1280	886			kg	134
		350	in.	69-1/2	60-1/2	14	22	55-3/4	50-3/8	40-3/8	25 x 20 x 1	3	lb	296
			mm	1765	1537	356	559	1416	1280	1026			kg	134
		400	in.	69-1/2	60-1/2	14	22	55-3/4	50-3/8	45-7/8	25 x 20 x 1	3	lb	296
			mm	1765	1537	356	559	1416	1280	1165			kg	134

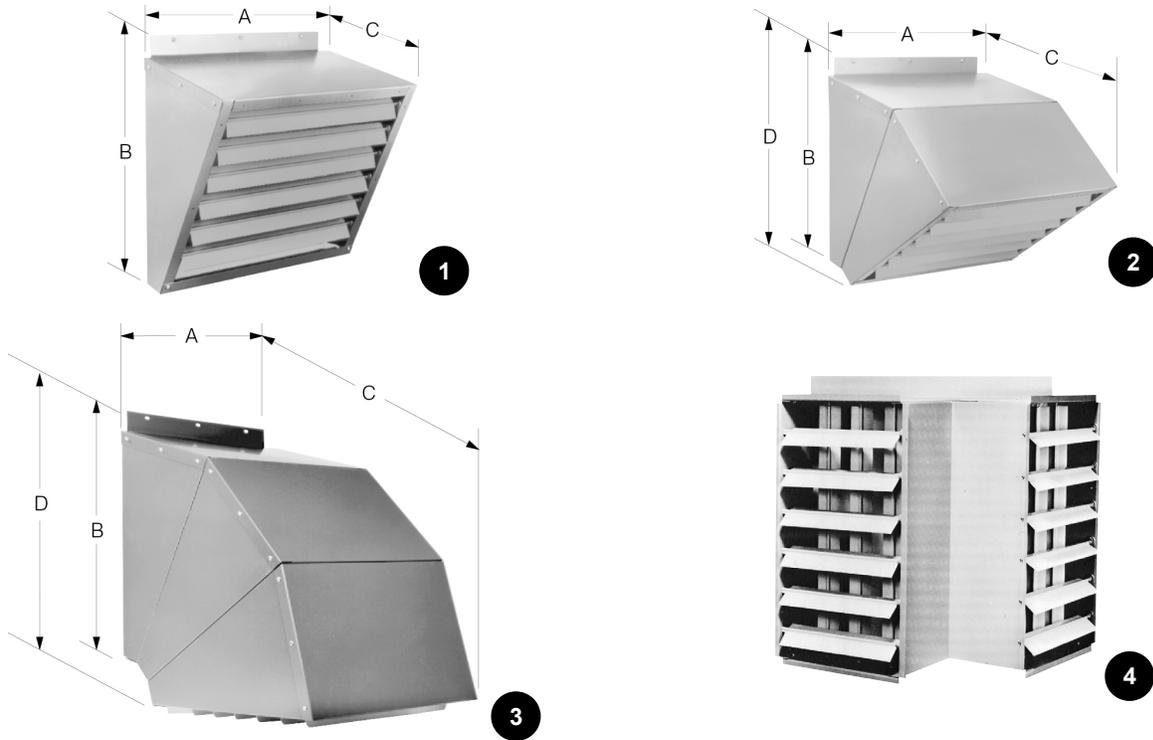
Notes:

1. Nominal 4,500 cfm unit has two blowers driven by one motor.
 2. Transition designed for specific duct furnace referenced in the table above. Variations from standard will require field-supplied transitions.
- (a) Size of duct furnace used with horizontal blower assembly.
 (b) Ship weight is approximate and does not include motor.



Note: Dimensions are in inches and millimeters (mm shown in parentheses).

Dimensions and Weights



1. 30° nozzle
2. 60° nozzle
3. 90° nozzle

Note: 30°, 60°, and 90° nozzles are shipped unassembled with bagged hardware and field assembling and installation instruction sheet. The louvers and louver springs are removed from the unit heaters and transferred to the nozzles in the field.

4. Y-splitter (factory-assembled)

Note: Nozzle information not applicable to models GL, GM, GU, HI, or HBAC.

Table 25. Tubular nozzle dimensional data

Dimension	Nozzle Type	30, 45	60, 75	90, 105, 120	100, 125, 150	175, 200, 250	300, 350, 400
Width "A" in. (mm)	30°	19-5/8	19-5/8	19-5/8	20-3/4	32-3/4	50-3/4
		(498)	(498)	(498)	(527)	(832)	(1289)
	60°	19-5/8	19-5/8	19-5/8	20-3/4	32-3/4	50-3/4
		(498)	(498)	(498)	(527)	(832)	(1289)
	90°	19-5/8	19-5/8	19-5/8	20-3/4	32-3/4	50-3/4
		(498)	(498)	(498)	(527)	(832)	(1289)
Height "B" in. (mm)	30°	12-1/16	15-5/8	22-3/8	31-1/2	31-1/2	31-1/2
		(306)	(397)	(568)	(800)	(800)	(800)
	60°	12-1/16	15-5/8	22-3/8	31-1/2	31-1/2	31-1/2
		(306)	(397)	(568)	(800)	(800)	(800)
	90°	12-1/16	15-5/8	22-3/8	31-1/2	31-1/2	31-1/2
		(306)	(397)	(568)	(800)	(800)	(800)
Furthest Depth "C" in. (mm)	30°	13-1/8	13-1/8	13-1/8	15	15	15
		(333)	(333)	(333)	(381)	(381)	(381)
	60°	22-3/16	22-3/16	22-3/16	25-1/2	25-1/2	25-1/2
		(564)	(564)	(564)	(648)	(648)	(648)
	90°	25-9/16	25-9/16	25-9/16	28-1/4	28-1/4	28-1/4
		(649)	(649)	(649)	(718)	(718)	(718)
Height with Overhang "D" in. (mm)	30°	N/A					
	60°	13-5/16	16-7/8	23-5/8	30	30	30
		(338)	(429)	(600)	(762)	(762)	(762)
	90°	15-1/4	18-13/16	25-9/16	34	34	34
		(387)	(478)	(649)	(864)	(864)	(864)



Mechanical Specifications

Low Profile Tubular Propeller Gas Unit (Model GT)

General

Unit is completely factory assembled, piped, wired and test fired. Unit is ETL certified, minimum of 82 percent thermal (combustion) efficient. These propeller type units are provided with aluminized steel tubes heat exchanger, single-orifice burner, direct spark ignition, individually adjustable and removable louvers, 100 percent baked enamel finish, removable access panel, power vented, single-stage combination gas valve, 24V control transformer and 115/60/1 volt fan motor with internal overload protection. OSHA fan guard is standard on all units.

Separated Combustion Ready

Low profile tubular propeller unit heaters can be installed in either standard or separated combustion venting configurations. Combustion air inlet collars on the rear panel are left open in a standard combustion application. Separated combustion venting requires installing a sealing gasket (included with each unit) and then connecting combustion air inlet piping to the inlet collars, which encloses the burner, spark ignitor, and flue system within the unit, "separating" the entire combustion process from the environment where the unit is installed. Separated combustion venting configurations should be used where dusty, dirty, or mildly corrosive conditions exist, or where high humidity or slightly negative pressures prevail. Separated combustion units can be vented horizontally or vertically via standard two-pipe configuration (one pipe for inlet/combustion air, one for exhausting flue products). When it is necessary to vent concentrically through one wall or roof penetration, an optional combustion air inlet kit should be installed.

Tubular Heat Exchanger

Heat exchanger construction consists of 20-gauge aluminized steel. The tubular design provides maximum and uniform heat transfer. The low pressure drop enables heated air to be evenly distributed. The curved, non-welded serpentine design, experiences less thermally induced stress making it highly durable for longer service life.

Cabinet

The cabinet is constructed of 20-gauge cold rolled steel. All components are individually electrostatically painted with a baked grey enamel.

Direct Spark Ignition

Tubular units utilize a direct spark pilotless ignition of the burner, providing fast heat delivery. When there is a call for heat, the single stage, redundant gas valve opens and the igniter provides a spark in an attempt to light the in-shot burners. The burner flame is then proven by the flame sensor and continues to burn until the call for heat is satisfied.

This highly reliable and efficient ignition system incorporates an integrated electronic control board to regulate the system sequence of operation, including an onboard LED indicator for simple troubleshooting.

Venting

The tubular design is ETL certified in accordance with Categories I and III venting requirements. Category I enables units to be vented vertically with either single- or double wall, or B-vent venting material. Category III allows for horizontal or vertical venting utilizing single- or double-wall venting material. This venting flexibility makes installation easier and more cost effective.

Control Accessibility

The control transformer and pressure switch is factory mounted in a main control cabinet located on the side of the unit. The side panel is removable creating easy access.

Motor—115V ODP

Motor is 115V, 60 Hz, single phase, open drip-proof with built-in thermal overload protection.



Mechanical Specifications

Factory-Installed Options

Totally Enclosed Motor

Motor is 115V, 60 Hz, single phase, totally enclosed with built-in thermal overload protection.

Type 409 Stainless Steel Heat Exchanger

Heat exchanger tubes and vestibule panel are 20-gauge Type 409 stainless steel.

Type 409 Stainless Steel Flue Collector

Two Stage Gas Valve (60–120 MBh)

Provides two stages of heat. Ignition is at low fire (50 percent of the furnace's rated input). Requires the use of a two-stage thermostat.

Field-Installed Accessories

High Gas Line Pressure Regulator

Reduces main gas line pressure to a minimum of 7 inches wc (water column). Pressure at the jobsite must be specified. The regulator is selected to accommodate that specific pressure.

Warranty

The heat exchanger, flue collector and burners are covered by a 10-year warranty from the date of manufacture.

Tubular Propeller (Model GN) and Blower Gas Unit Heaters (Model GV)

General

Units are completely factory assembled, piped, wired, and test fired. All units are ETL certified to a minimum of 82 percent thermal (combustion) efficiency and conform with the latest ANSI Standards for safe and efficient performance. Units are provided with two-point suspension hangers on propeller fan unit heaters and with four-point suspension hangers on blower unit heaters. All units are available for operation on either natural or LP (liquid propane) gas. All units combine the latest tubular heat exchanger technology and in-shot burner technology.

Convertible Venting, Standard or Separated Combustion

Tubular propeller and blower unit heaters can be installed in either standard or separated combustion venting configurations without requiring modification to the unit itself. Combustion air inlet collars on the rear burner panel are left open in a standard combustion application. Separated combustion venting requires connecting combustion air inlet piping to the inlet collars, which encloses the burners, spark ignitor, and flue system within the unit, "separating" the entire combustion process from the environment where the unit is installed. Separated combustion venting configurations should be used where dusty, dirty, or mildly corrosive conditions exist, or where high humidity or slightly negative pressures prevail. Separated combustion units can be vented horizontally or vertically via standard two-pipe configuration (one pipe for inlet/combustion air, one for exhausting flue products). When it is necessary to vent concentrically through one wall or roof penetration, an optional combustion air inlet kit should be installed.

Tubular Heat Exchanger

Heat exchanger construction consists of 20-gauge aluminized steel. The tubular design provides maximum and uniform heat transfer. The low pressure drop enables heated air to be evenly distributed. The curved, non-welded serpentine design, experiences less thermally induced stress making it highly durable for longer service life.

Cabinet

The cabinet is constructed of 20-gauge cold rolled steel. All components are individually electrostatically painted with a baked grey enamel.

Fans

Fan blades are constructed of aluminum with an aerodynamic contour. All fans are dynamically balanced for quiet, efficient operation and supplied with a protective type fan guard. Rubber-in-shear isolators provide isolation between the fan/motor combination and the unit heater casing.

Blowers are belt-driven with adjustable pitch motor sheave. Motor and blower are dynamically balanced for quiet operation.

Blower Unit Motors

Standard motors are 115V, 60 Hz, single phase, open drip-proof with built-in thermal overload protection. Optional 208, 230/60/1, 460/60/3 motors are available.

All Motors

Standard motors are 115V, 60 Hz, single phase, open drip-proof with built-in thermal overload protection.

Optional Fan Unit Motors

All motors are 115V, 60 Hz, single-phase totally enclosed with built-in thermal overload protection and permanently lubricated bearings.

Controls

Direct Spark Ignition

A direct spark pilotless ignition system with integrated control board and single-stage, redundant gas valve is utilized. Flame rectification is independent of the spark igniter allowing true indication of complete ignition of the burner. All line voltage wiring is completely enclosed in flexible conduit and units are equipped with a 120/24 volt controls transformer. Factory wiring permits the use of propeller fan on GN units and blower on GV units for continuous air circulation when combined with the (optional) 24-volt summer/winter switch or single stage thermostat. The control transformer and pressure switch are factory mounted in a main control panel located on the side of the unit; this panel creates easy access and all wiring information is indicated on the inside control panel door. Units are equipped with a low-voltage automatic reset high temperature control, wired to de-energize the main gas valve and maintain fan or blower operation until the high temperature control resets.

Two-Stage Gas Valve

Provides two stages of heat. Ignition is at low fire (50 percent of the furnace's rated input). Requires the use of a two-stage thermostat.

Electronic Modulating Gas Valve

Provides modulated heat output. Ignition is at full fire (100 percent input), and modulates the gas input from 100 percent to 40 percent rated input. Available for use with room thermostat or duct thermostat with remote setpoint adjustment. Duct thermostat available with optional override room thermostat which causes the unit to go to full fire when the room temperature falls below the override room thermostat. Modulation with duct thermostat is available on blower units only.

Electronic Modulating, 4–20 mA/0–10 Vdc Input

Provides modulated heat output. Ignition is at full fire (100 percent input), and modulates the gas input from 100 percent to 40 percent rated input. The modulating gas valve operates in response to a 4–20 mA or a 0–10 Vdc input from an external DDC control.

Flue Vent Fan

Flue vent fan provides power venting. Provided factory assembled to a sealed flue collection chamber.

A combustion air pressure switch is provided as standard to verify proper powered vent flow prior to allowing the gas valve to operate.



Mechanical Specifications

Factory-Installed Options

Heat Exchanger Options

Type 409 Stainless Steel

Heat exchanger tubes and vestibule panel are 20-gauge Type 409 stainless steel.

Additional Options

- Type 304L Stainless Steel Burners
- Type 409 Stainless Steel Flue Collector
- Summer/Winter Switch
- Vertical Louvers
- Duct Discharge Flange (blower units only) Provided in lieu of louvers on units for use with field ductwork.

OSHA Fan Guards—All Propeller Units

OSHA fan guards are available as a factory-installed option.

Field-Installed Accessories

High Gas Line Pressure Regulator

Reduces main gas line pressure to a minimum of seven inches wc (water column). Pressure at the jobsite must be specified. The regulator is selected to accommodate that specific pressure.

Thermostats

- Low voltage room thermostat, single-stage.
- Low voltage room thermostat, single-stage with summer/winter switch.
- Low voltage duct thermostat, single-stage.
- Universal tamper-proof guard for all room thermostats.
- Low voltage room thermostat, two-stage.
- Low voltage duct thermostat, two-stage.
- Room thermostat, electronic modulating control.
- Duct thermostat, electronic modulating control.
- Override room thermostat, for use with duct thermostat and electronic modulating control.

Discharge Nozzles

- "Y" Splitter
- 30° Downward
- 60° Downward
- 90° Downward

Warranty

The heat exchanger, flue collector and burners are covered by a 10-year warranty from the date of manufacture.

Combustion Air Inlet Kits

Combustion Air Inlet Kits utilize one 5- or 6-inch termination (depending on unit capacity) in which both the discharge flue gas and the combustion air inlet pass.

Vertical Combustion Air Inlet Kit

Kit includes a flue vent terminal, a non-recirculation deflector disk, and air inlet vent cap, and a combustion air inlet box.

Horizontal Combustion Air Inlet Kit

Kit includes a flue vent terminal, a non-recirculation deflector disk, an air inlet screen, and a combustion air inlet box.

Clamshell Indoor Gas Duct Furnaces (Model GL)**General**

Units are completely factory assembled, piped, wired, and test fired. All units are ETL certified and conform with the latest ANSI Standards for safe and 80 percent efficient performance. Units are provided with four point suspension hangers, and are available for operation on either natural or LP (propane) gas.

Casing

Casings are die-formed, 20-gauge galvanized steel and finished in baked enamel. The bottom panel is easily removed to provide access to the burners, pilot, and orifices. Units with optional side access utilize a burner drawer for easy access to the burners, pilot, and orifices. The pilot is also accessible through a side panel access plate. The high limit switch is accessible through a side panel access. Duct discharge flanges for simple ductwork connection are provided.

Heat Exchanger

Standard heat exchanger construction consists of seam welded 20-gauge aluminized steel tubes and 18-gauge aluminized steel headers.

Burners

Burners are die-formed, corrosion resistant aluminized steel, with stainless steel port protectors. Port protectors prevent foreign matter from obstructing the burner ports. Burners individually removable for ease of inspection and servicing. Each burner is provided with an individually adjustable, manually rotated air shutter adjustment. Air shutter adjustment is fixed when side access burner drawer is supplied.

Controls

A factory installed junction box is provided for all power connections. Standard units are provided with a 24-volt combination single-stage redundant gas valve, consisting of a combination pilot solenoid valve, automatic electric gas valve, pilot filter, pressure regulator, pilot adjustment and manual shutoff. A flue vent fan relay and combustion air proving switch is also provided as standard. Standard equipment includes spark-ignited intermittent pilot system with electronic flame supervision. A 24V control transformer and a high limit are provided.

Flue Vent Fan

Flue vent fan is factory assembled to a sealed flue collection chamber and provides power venting. The flue vent fan is activated in response to a low voltage (24V) single-stage thermostat. A combustion air pressure switch is provided as standard to verify proper powered vent flow prior to allowing the gas valve to operate.

Control Options***Two-Stage Gas Valve***

Provides two stages of heat. Ignition is at low fire (50 percent of the furnace's rated input). Requires the use of a two-stage thermostat. (Thermostat not included.)

Electronic Modulating Gas Valve

Provides modulated heat output. Ignition is at full fire (100 percent input), and modulates the gas input from 100 percent to 50 percent rated input. Available for use with room thermostat or duct thermostat with



Mechanical Specifications

remote setpoint adjustment. Duct thermostat available with optional override room thermostat which causes the unit to go to full fire when the room temperature falls below the override room thermostat.

Electronic Modulating 4–20 mA/0–10 Vdc Input

Provides modulated heat output. Ignition is at full fire (100 percent input), and modulates the gas input from 100 percent to 40 percent rated input. The modulating gas valve operates in response to a 4–20 mA or a 0–10 Vdc input from an external DDC control.

Heat Exchanger Options

Type 409 Stainless Steel

Heat exchanger tubes and headers are seam welded 20-gauge Type 409 stainless steel.

Type 321 Stainless Steel

Heat exchanger tubes and headers are seam welded 20-gauge Type 321 stainless steel.

Stainless steel heat exchangers are recommended for applications where entering air is below 40°F (4.4°C) and/or duct furnaces are located downstream from cooling coils.

Additional Options

- Type 409 Stainless Steel Burners
- Orifices for Elevations over 2,000 ft
- Type 409 Stainless Steel Flue Collector
- Summer/Winter Switch
- Horizontal and Vertical Louvers

Side Access Burner Drawer

Allows entire burner drawer to slide out from the side of the unit for service or inspection.

Fan Time Delay Relay

The fan time delay relay delays the fan start until the heat exchanger reaches a predetermined temperature. It also allows the fan to operate after burner shutdown, removing the residual heat from the heat exchanger. (Recommended on applications that require intermittent fan.)

Field-Installed Accessories

- Natural to LP (Propane) Gas Conversion Package
- LP (Propane) to Natural Gas Conversion Package
- High Gas Line Pressure Regulator—Reduces main gas line pressure to a minimum of 7 inches wc (water column). Pressure at the jobsite must be specified. The regulator is selected to accommodate that specific pressure.

Drain Pan

Recommended for use with installations on the downstream side of a cooling coil.

Thermostats

- Low voltage room thermostat, single-stage
- Low voltage room thermostat, two-stage
- Low voltage duct thermostat, single-stage
- Low voltage duct thermostat, two-stage
- Universal tamper-proof guard for all room thermostats
- Low voltage room thermostat, single-stage with summer/winter switch

- Room thermostat, electronic modulating control
- Duct thermostat, electronic modulating control
- Override room thermostat, for use with duct thermostat and electronic modulating control.

Warranty

The heat exchanger, flue collector and burners are covered by a 1-year warranty from the date of manufacture.

Separated Combustion Indoor Duct Furnaces (Model GM)

General

Units are completely factory assembled, piped, wired, and test fired. All units are ETL certified, 80 percent efficient and conform with the latest ANSI Standards for safe and efficient performance. Units are provided with four-point suspension hangers. Units are available for operation on either natural or LP (propane) gas. Standard terms and conditions apply.

Separated Combustion

The separated combustion indoor duct furnace is designed to be installed in dusty, dirty, or mildly corrosive environments, or where high humidity or slightly negative pressures exist. All critical components including the burners, pilot, and flue systems are fully enclosed within the unit and protected from the elements insuring clean and efficient combustion.

Casing

Casings are die-formed, 20-gauge galvanized steel and finished in baked enamel. The bottom panel is easily removed to provide service access to the burners, pilot and orifice. Duct discharge flanges for simple ductwork connection are provided.

Heat Exchanger

Standard heat exchanger construction consists of seam welded 20-gauge aluminized steel tubes and 18-gauge aluminized steel headers.

Burners

Burners are die-formed, corrosion resistant aluminized steel, with stainless steel port protectors. Port protectors prevent scale or foreign matter from obstructing the burner ports. Burners individually removable for ease of inspection and servicing. Each burner is provided with an individually adjustable, manually rotated air shutter adjustment.

Controls

A factory installed junction box is provided for all power connections. Standard units are provided with a 24V combination single-stage redundant gas valve, consisting of a combination pilot solenoid valve, automatic electric gas valve, pilot filter, pressure regulator, pilot adjustment and manual shutoff. A flue vent fan relay and combustion air proving switch is also provided as standard. Standard equipment includes spark-ignited intermittent pilot system with electronic flame supervision. A 24V control transformer, high limit and fan time delay relay are provided. The fan time delay relay delays the fan start until the heat exchanger reaches a predetermined temperature. It also allows the fan to operate after burner shutdown, removing residual heat from the heat exchanger.

Two-Stage Gas Valve

Provides two stages of heat. Ignition is at low fire (50 percent of the furnace's rated input). Requires the use of a two-stage thermostat. (Thermostat not included.)

Electronic Modulating Gas Valve

Provides modulated heat output. Ignition is at full fire (100 percent input), and modulates the gas input from 100 percent to 50 percent rated input. Available for use with room thermostat or duct thermostat with



Mechanical Specifications

remote setpoint adjustment. Duct thermostat available with optional override room thermostat which causes the unit to go to full fire when the room temperature falls below the override room thermostat.

Electronic Modulating 4–20 mA/0–10 Vdc Input

Provides modulated heat output. Ignition is at full fire (100 percent input), and modulates the gas input from 100 percent to 40 percent rated input.

The modulating gas valve operates in response to a 4–20 mA or a 0–10 Vdc input from an external DDC control.

Flue Vent Fan

Flue vent fan provides power venting. Provided factory assembled to a sealed flue collection chamber.

A combustion air pressure switch is provided as standard to verify proper powered vent flow prior to allowing the gas valve to operate.

Factory-Installed Options

Heat Exchanger Options

Type 409 Stainless Steel

Heat exchanger tubes and headers are seam welded 20-gauge Type 409 stainless steel.

Type 321 Stainless Steel

Heat exchanger tubes and headers are seam welded 20-gauge Type 321 stainless steel.

Stainless steel heat exchangers are recommended for applications where entering air is below 40°F (4.4°C) and/or duct furnaces are located downstream from cooling coils.

Additional Options

- Type 409 Stainless Steel Burners
- Type 409 Stainless Steel Flue Collector
- Orifices for elevations over 2,000 ft
- Summer/Winter Switch
- Horizontal and Vertical Louvers

Field-Installed Accessories

- Natural to LP (Propane) Gas Conversion Package
- LP (Propane) to Natural Gas Conversion Package
- High Gas Line Pressure Regulator—Reduces main gas line pressure to a minimum of 7 inches wc (water column). Pressure at the jobsite must be specified. The regulator is selected to accommodate that specific pressure.

Thermostats

- Low voltage room thermostat, single-stage
- Low voltage room thermostat, single-stage with summer/winter switch
- Low voltage duct thermostat, single-stage
- Low voltage room thermostat, two-stage
- Low voltage duct thermostat, two-stage
- Universal tamper-proof guard for all room thermostats

Discharge Nozzles

- “Y” Splitter

- 30° Downward
- 60° Downward
- 90° Downward

Combustion Air Inlet Kits

Combustion air inlet kits utilize one 4-, 5- or 6-inch termination (depending on unit capacity) in which both the discharge flue gas and the combustion air inlet pass.

Vertical Combustion Air Inlet Kit

Kit includes a flue vent terminal, a non-recirculation deflector disk, an air inlet vent cap, and a combustion air inlet box.

Horizontal Combustion Air Inlet Kit

Kit includes a flue vent terminal, a non-recirculation deflector disk, an air inlet screen, and a combustion air inlet box.

Warranty

The heat exchanger, flue collector and burners are covered by a 1-year warranty from the date of manufacture.

Tubular Duct Furnaces (Model GU)

General

The GU duct furnace is designed for use with existing systems for any ducted air application. Trane's indoor tubular duct furnaces are completely factory assembled, piped, wired, and test-fired. Units are ETL listed as having a minimum 82 percent thermal efficiency and are approved for operation with either natural or propane (LP) gas. All models conform to the latest ANSI standards for safe and efficient performance. All duct furnaces are ETL certified for installation upstream or downstream from cooling coils (stainless steel heat exchangers are recommended). All units combine the latest tubular heat exchanger and in-shot burner technology and are provided with a four-point suspension system.

The GU duct furnace can be field converted to separated combustion using the included air inlet collar. Conversion to separated combustion is recommend for units to be installed in dusty, dirty or mildly corrosive environments or where high humidity or slightly negative pressures exist. All critical components including the burners, direct spark ignition, flue system and controls are fully enclosed within the unit and protected from the elements, ensuring clean and efficient combustion.

Cabinet

Tubular duct furnace cabinets are double wall construction consisting of a 20-gauge exterior panel, 1/2-inch Microlite insulation, and a 16-gauge interior liner. Exterior and interior panels are finished in baked grey enamel.

Heat Exchanger

Heat exchanger construction consists of 20-gauge aluminized steel. The tubular design provides maximum and uniform heat transfer. The low pressure drop enables heated air to be evenly distributed without the need for an auxiliary bypass. The curved, non-welded serpentine design, experiences less thermally induced stress making it highly durable for longer service life.

Controls

All models are equipped with direct spark ignition, a 115-volt power venter, a vent system pressure switch, a high limit switch, a 24-volt control transformer, and an integral control board with fan time delay. The highly reliable and efficient direct spark ignition system incorporates the integrated electronic control board to regulate the system sequence of operation, including an onboard LED indicator for simple troubleshooting. Designed with ease of service in mind, the control board, single stage redundant gas



Mechanical Specifications

valve and burner assembly are easily accessed via the side control panel. The unit is standard right hand access and is field convertible to left hand access for installation flexibility.

Control Options

Two Stage Gas Valve

Provides two stages of heat. Ignition is at low fire (50 percent of the furnace's rated input). Requires the use of a two-stage thermostat.

Electronic Modulating Gas Valve

Provides modulated heat output. Ignition is at full fire (100 percent input), and modulates the gas input from 100 percent to 50 percent rated input. Available for use with room thermostat or duct thermostat with remote setpoint adjustment. Duct thermostat available with optional override room thermostat which causes the unit to go to full fire when the room temperature falls below the override room thermostat.

Electronic Modulating 4–20 mA/0–10 Vdc Input

Provides modulated heat output. Ignition is at full fire (100 percent input), and modulates the gas input from 100 percent to 50 percent rated input. The modulating gas valve operates in response to a 4–20 mA or a 0–10 Vdc input from an external DDC control.

Flue Vent Fan

Flue vent fan is factory assembled to a sealed flue collection chamber and provides power venting. A combustion air pressure switch is provided as standard to verify proper powered vent flow prior to allowing the gas valve to operate.

Factory-Installed Options

Heat Exchanger Options

Type 409 Stainless Steel

Heat exchange tubes, vestibule panel, and flue collector are 20-gauge Type 409 stainless steel.

Additional Options

- Supply Voltages (Via Field Mounted Transformer): 208, 230/60/1 and 208, 230, 460/60/3
- Low Ambient Control
- 24V SPST Relay
- Stainless Steel Drip Pan
- Horizontal and Vertical Louvers

Field Installed Accessories

High Gas Line Pressure Regulator

- Reduces main gas line pressure to a minimum of 7-inch wc (water column). Pressure at the jobsite must be specified. The regulator is selected to accommodate that specific pressure.

Thermostats

- Low voltage room thermostat, single-stage
- Low voltage room thermostat, single-stage with summer/winter switch
- Low voltage duct thermostat, single-stage
- Low voltage room thermostat, two-stage
- Low voltage duct thermostat, two-stage
- Universal tamper-proof guard for all room thermostats

Venting and Combustion Air Inlet Kits

All tubular duct furnace models are ETL listed to use Category III vent pipe. Units converted to separated combustion using the included air inlet collar can utilize standard two-pipe vent method. If venting a separated combustion duct furnace concentrically (through a single roof or wall termination), Trane-s ETL listed Combustion Air Inlet Kit is required for proper installation.

Combustion Air Inlet Kits utilize one 5- or 6-inch termination (depending on unit capacity) in which both the discharge flue gas and the combustion air inlet pass.

Vertical Combustion Air Inlet Kit

Kit includes a flue vent terminal, a non-recirculation deflector disk, and air inlet vent cap, and a combustion air inlet box.

Horizontal Combustion Air Inlet Kit

Kit includes a flue vent terminal, a non-recirculation deflector disk, an air inlet screen, and a combustion air inlet box.

Warranty

The heat exchanger, flue collector and burners are covered by a 10-year warranty from the date of manufacture.

Gas Fired High Efficiency Unit Heaters (Model HI)

General

Unit are completely factory assembled, piped and wired, and complying with ANSI Z83.8-2016/CSA 2.6.-2016. Unit has a power vented design. Gravity vented units are not acceptable.

Capacities and Performance

All heaters have a minimum thermal efficiency of 94%. Unit performance are the sizes, capacities and configurations as scheduled on drawings.

Unit

Most cabinetry and trim pieces are fabricated of minimum 20-gauge 430 brushed stainless steel. Unit are insulated with foil faced insulation. Insulation has a fire hazard classification of 25/50 Flame Spread/Smoke Developed Rating per ASTM E 84, UL 723 and CAN/UCL S102-M88. All line voltage wiring is completely enclosed in flexible conduit.

Heat Exchanger and Burner

- Combustion tubes are constructed of 0.043-inch thickness 409 stainless steel. Heat exchanger tubes consist of 0.020-inch thickness 304 Stainless steel. Heat exchangers fins are constructed of 0.010-inch thick aluminum or brass. Fins have a fully drawn collar to ensure accurate spacing. Clamshell heat exchangers are not acceptable.
- Burner is metal fiber mesh type constructed of stainless steel.
- Flue collector is constructed of 321 stainless steel. Flue collector is constructed with condensate drain at the bottom of flue collector to prevent condensate pooling.

Unit Fan

- Unit fan is a propeller type. Propeller blades are constructed of aluminum and hubbed to the fan shaft. Fan blade is locked into location via set screw.
- Motor sizes are minimum sizes as indicated on schedule. If not indicated, motor size is large enough so driven load does not require motor to operate in service factor range above 1.0.
- Units are equipped with 115/1/60 volt open drip proof motors which include internal automatic reset thermal overload protection.

Mechanical Specifications

- For voltages other than 115/1/60, a unit must be supplied with the corresponding field installed transformer to step the voltage down to 115/1/60.
- All fans are provided with factory installed fan-blade guard, complying with OSHA specifications. Guard must be removable for maintenance.
- Units are equipped with dual motors and fan blades for optimum air distribution for all sizes except 100,000 BTU. Units with an input of 100,000 BTU's are equipped with a single motor and fan blade for optimum air distribution.

Controls

Unit is provided with an electronic modulating gas control. Gas control is capable modulating the gas input from 100 to 33% of the rated input.

Outdoor Air Reset Modulation

Unit is enabled for heating when a call for heating is received from the thermostat. The unit modulates based on the outside air temperature. At the OA design temperature and below, the unit runs at 100% fire. When the temperature is above 65°F, the unit runs at low fire. When the outside air temperature is between the setpoint and 65°F, the unit modulates to linear relationship between these two points. A W2 call causes the unit to run at 100% input.

- (Optional) Outdoor Air Reset - (Global Enable) - The manager unit broadcasts the outside air temperature and thermostat to all networked member units. Each member unit then modulates based on its individual outside air design temperature.
- (Optional) Outdoor Air Reset (Individual Enable) - The manager unit broadcasts the outside air temperature to all networked member units, however each unit is enabled by an individual thermostat. Each member unit then modulates based on its individual outside air design temperature.

Indoor Air Reset Modulation

Unit is enabled for heating when a call for heating is received from the thermostat. The unit modulates based on recent demand duration and firing rate, averaging over time, optimizing the unit run time at the minimum firing input rate needed to meet the heating load.

- (Optional) Indoor Air Reset Modulation, Networked - The manager unit broadcasts the thermostat and its calculated input to all networked member units.

2-10V/4-20mA Input Modulation

Unit modulates based on 2-10 Vdc or 4-20 mA input from the building automation system. A value of 10V/20mA causes the unit to run at 100% fire and a value of 2V/4mA causes the unit to run at minimum fire.

- (Optional) 2-10V/4-20mA Input Modulation, Networked - The manager unit broadcasts the thermostat and its calculated input to all networked member units.

Room Sensing Modulation

Unit is enabled when the space temperature falls below the room temperature setpoint. The unit modulates based on the temperature difference between the room temperature setpoint and measured space temperature.

- (Optional) Room Sensing Modulation, Networked - The manager unit broadcasts the call for heat and its calculated input to all networked member units.

2-Stage Thermostat

Unit is enabled for heating via a 2-stage thermostat. When an input on W1 is received, the unit runs at minimum fire. If an input is received on W2, the unit fires at 100%.

- (Optional) Thermostat Operation, Networked - The manager unit broadcasts the thermostat to all networked member units.

Modbus Control

Operation of the unit is controlled by remote Modbus commands over a RS484 cable.

- (Optional) Modbus Control, Networked - The manager unit broadcasts all calls and input requests to all networked member units.

Combustion Blower

A variable speed integral combustion blower for combustion air is provided. Outside air for combustion has an individual air inlet located in the upper section of the burner compartment. Combustion blower matches the air volume to gas input to ensure a 1:1 ratio across the entire 3:1 turndown range. A blocked inlet air pressure switch is installed and its normally closed contacts wired in series with the main gas valve.

Power Venting

A variable speed integral power vent fan for venting is provided. Power venter matches the air volume to combustion blower to ensure proper airflow through the heat exchanger. A blocked vent air pressure switch is installed and its normally open contacts wired in series with the main gas valve.

A direct spark ignition system with integrated control is provided. Flame rectification is independent of the spark igniter allowing true indication of complete ignition of the burner. Standing pilot is not acceptable. For size 200 and above units, the unit is equipped with (2) direct spark ignitors and flame sensors.

Integrated electronic control board is used to regulate the system sequence of operation, including external LED indicators for ease of troubleshooting.

Control Transforms

Heaters are equipped with a 120/24 volt transformer. The control transformer and pressure switches are factory mounted in a power venter compartment.

Safeties

- **High Limit Switch** - Units are equipped with a low voltage automatic reset high temperature control, wired to de-energize the main gas valve and maintain fan operation until the high temperature control resets.
- **Blocked Vent Air Pressure Switch** - Units are equipped with an air pressure switch to confirm power venter operation and proper flue gas flow prior to beginning ignition sequence and during operation.
- **Blocked Inlet Air Pressure Switch** - Units are equipped with an air pressure switch to confirm combustion blower operation and proper combustion air flow prior to beginning ignition sequence and during operation.
- **Manual Rollout Safety Switch** - Unit are equipped with a manual rollout safety switch. If flame rollout is detected, unit de-energizes the gas valve.
- **Flame Sensor** - monitors ignition and normal operation. If flame is not detected after three ignition periods, the control de-energizes the gas valve and lockout the unit requiring manual reset.
- **Condensate Float Switch** - monitors the condensate level in the flue collector. If the condensate rises above the setpoint, the unit de-energizes the gas valve and forces the unit to post-purge mode.
- **Flue Temp Switch** - monitors the flue gas temperature. If the flue gas temperature rises about 140°F, the unit de-energizes the gas valve and forces the unit to post-purge mode.
- **Auto-Reset Fuse** - Control board is equipped with integral automatically reset fuses. If the current exceeds 1.8 amps, the fuse opens interrupting the flow of electric current to the control board. This immediately turns the unit off. Once the current or voltage is reduced to acceptable levels, the temperature decreases and the fuses automatically reset.

Thermostat terminal strip is integral to the control board located on the interior of the electrical control panel for ease of installation and wiring. Line voltage wiring terminates inside power venter section.



Mechanical Specifications

(Optional) Thermostat

Unit is provided with a ship loose thermostat for field install. Thermostats are mercury free.

- Single stage heating only thermostat is provided. Subbase includes fan switching relay. Temperature range: 50-100°F. range. (Optional) Thermostat is standard round style. (Optional) Thermostat includes tamper proof guard
- Two Stage Thermostat with subbase is provided. Thermostat includes two stage heating and two stage cooling with system and fan switching and built in 10°F heating/cooling differential. Thermostat includes fan switching relay. Temperature range: Heating 40-90°F., Cooling 50-99 °F.

Factory wiring permits the use of propeller fan for continuous air circulation when combined with thermostat with built in fan switch.

Discharge Louvers

Louvers are individually adjustable and removable with horizontal blades for directing air flow.

Accessories

- **(Optional) Pressure Regulator** - Unit is provided with high pressure regulator to reduce supply gas pressure. High pressure regulator ships loose for field install.
- **(Optional) Condensate Pump** - Condensate pump is of vertical centrifugal pump design. Pump includes a ½ gallon collection tank. The pump is controlled by a float/switch mechanism which turns the pump on when approximately 2-1/4-inch of water collects in the tank, and automatically switches off when the tank drains to approximately 1-1/4-inch. Pump is certified for use with condensate up to 140°F. (Optional) Unit includes a field installed Condensate Pump Shelf that mount directly to the bottom of the unit. Shelf is designed to support the weight of the Condensate Pump.
- **(Optional) Condensate Neutralizer** - Condensate Neutralizer ships loose for field install. Condensate neutralizer is sized for corresponding MBH input of condensing unit heater. (Optional) Condensate Neutralizer is designed for inline mounting. (Optional) Condensate Neutralizer is designed for wall mounting.
- **(Optional) Stratification Sensor** - Unit is provided with a ship loose air stratification sensor. Sensor is field installed in control box knockout. If there is a call for heat and the air temperature near the unit is equal to or greater than 100°F the unit enters stratification mode. The supply fan continues to run to blow the hot air at the unit down into the space but the mechanical (gas) heat turns off if currently enabled. The mechanical (gas) heat then goes through a post-purge. The supply fan turns off if the call for heat ends. If the air temperature near the unit falls below 90°F and a call for heat is still present, the unit goes through a pre-purge then the mechanical (gas) heat turns back on. During stratification mode, the orange LED is a solid orange color indicating a call for heat and the unit is in stratification mode.
- **(Optional) PVC Concentric Vent Kit** - Kit is provided ship loose for field install. Kit includes a concentric vent box to allow for combustion air and exhaust gas piping to exit the building via a single wall or roof penetration. Kit also include:
 - (1) Combustion Air Inlet Cap
 - (1) Air Inlet Pipe
 - (1) Vent Pipe
 - (1) Intake/Vent Concentric "Y"
 - (1) Installation Instructions on box

Horizontal Blower Assembly (Model HBAC)

General

Units are completely factory assembled, and have four-point suspension hangers and filter racks as standard.

Cabinet

Casings are 20-gauge corrosion resistant ZAM®¹ (zinc, aluminum, magnesium) coated steel. Side panels are removable for easy servicing and motor maintenance. Duct flanges are provided for simple ductwork connection. Standard filters are 1-inch permanent washable type.

Motors

Factory-mounted motors are open drip-proof, 115,208, 230/60/1 or 208, 230, 460/60/3 with built-in thermal overload protection.

Blowers

Blowers are belt driven with adjustable pitch motor sheave. Blower is dynamically balanced for quiet operation.

Factory-Installed Options

Insulation

Blower assembly and transition are insulated with fire-resistant, odorless, matte-faced 1-inch glass fiber material.

Totally Enclosed Motor

Field Installed Accessories

Optional Filters

- 1-Inch permanent (standard)
- 1-inch throwaway

Transition

When used with a GL or GM duct furnace, a sheet metal transition is supplied to connect the blower assembly to the duct furnace.

¹ ZAM is a registered trademark of NIPPON STEEL NISSHIM CO. LTD.



Notes

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