

GA Gas Unit Heater Assemblies Technical Guide



**INDIRECT-FIRED GAS HEATING ASSEMBLIES FOR LARGE OPEN SPACES
AND DOOR HEATING APPLICATIONS**



Since 1875, the L.J. Wing Company has been a leader in providing innovative solutions for difficult HVAC problems. The GA Series of gas-fired unit heater assemblies bundles two or four gas-fired duct furnaces with one of Wing's unique fixed or rotating discharges to provide a dependable source of heated air for large open space or door heating applications. This technical guide will help you size, select and specify the proper GA model to satisfy your project's heating requirements. If you have questions, please contact your local L.J. Wing representative; he will be glad to assist you.



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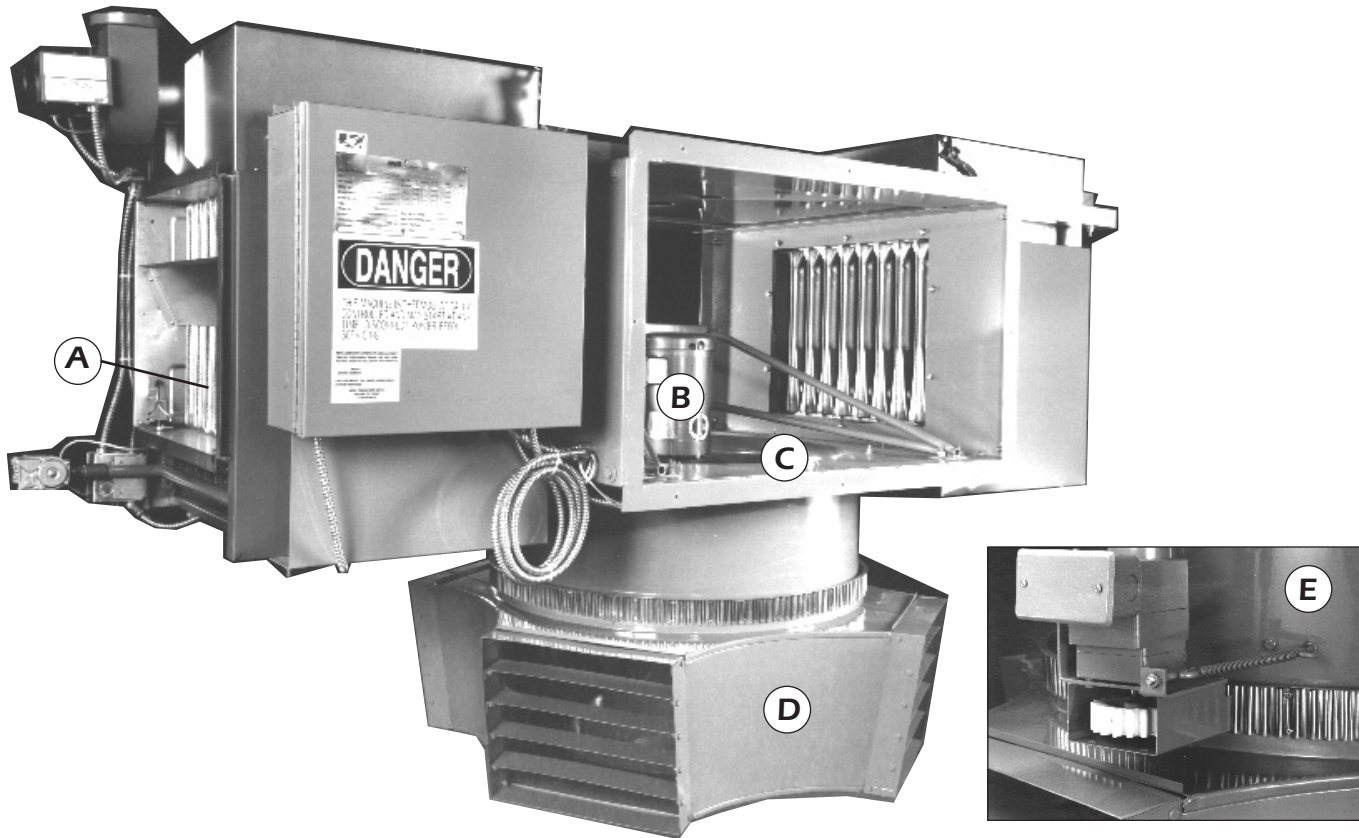
In the interest of product improvement, L.J. Wing reserves the right to make changes without notice.

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GENERAL INFORMATION

Equipment Features



- A. AGA and CGA Approved Duct Furnaces –** Have welded, one-piece, gas-tight aluminized steel heat exchangers, factory furnished power venter, sealed flue collector, and energy-saving electric ignition with electronic flame supervision. The heavy-gauge, die-formed, phosphatized casing inhibits rust and corrosion. Continuous slot, dual port steel burners deliver a constant even flame.
- B. Long-life Fan Duty Motors –** Have a totally enclosed, fan-cooled design (TEFC) with prelubricated, sealed ball bearings to insure extended trouble-free operation. Motors are built with Class B insulation.

- C. Axial Flow Fans –** Deliver air efficiently from high mounting heights with low power consumption. The non-overloading fan wheel working in conjunction with an inlet venturi will project heated air from heights of up to 65 feet down to the working level.
- D. Revolving or Fixed Discharge –** To distribute the air for either open space or door heating applications. Eight different discharge designs are available for open space heating applications, and two different discharge designs for door heating applications.
- E. Posittrak Revolving Discharge drive-** Has a small six rpm, high torque motor. The idler gear drive is a proven design, extensively tested in both the laboratory and the field.

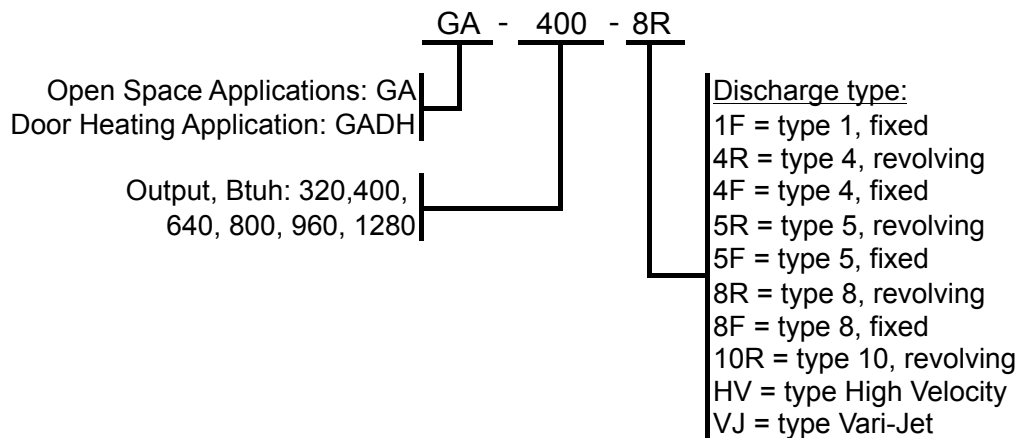
CAPACITIES AND MODEL DESCRIPTION

Capacities

| Size | ENERGY, BTU/HOUR | | SCFM | GAS USAGE, CUBIC FEET PER HOUR | FAN DATA | | WEIGHT, LBS. | SOUND POWER LEVEL, DB |
|----------------|------------------|-----------|--------|--------------------------------------|----------|-----|-----------------|-----------------------------|
| | INPUT | OUTPUT | | | HP | RPM | | |
| GA-320 | 400,000 | 320,000 | 6,000 | 400 | 3/4 | 850 | 1,120 | 70 |
| GA-400 | 500,000 | 400,000 | 7,500 | 500 | 1 1/2 | 850 | 1,200 | 72 |
| GA-640 | 800,000 | 640,000 | 12,000 | 800 | 2 | 850 | 1,600 | 74 |
| GA-800 | 1,000,000 | 800,000 | 15,000 | 1,000 | 3 | 850 | 2,400 | 75 |
| GA-960 | 1,200,000 | 960,000 | 18,000 | 1,200 | 5 | 850 | 2,800 | 76 |
| GA-1280 | 1,600,000 | 1,280,000 | 22,500 | 1,600 | 5 | 850 | 3,200 | 78 |

Note: Gas usage is calculated for natural gas with heating value of 1,000 Btu/cubic foot.

Model Description



LARGE OPEN SPACE APPLICATIONS

Unit Selection

For open space applications, first select the unit size from the capacities table based on the required heating output. Then use the table below to choose the appropriate discharge based on the required coverage area. Check to ensure that the intended mounting height does not exceed the maximum mounting height for the discharge selected.

Example:

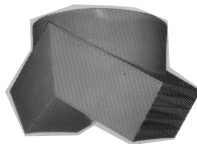
Select GA unit with heating output of 785,000 Btu/hr to cover an area of 126x126 feet. Unit will be mounted 22 feet above the floor.

Solution:

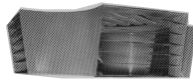
From capacities table, select one GA-800 with output of 800,000 Btu/hr. From table below, select either a 4R or 10R discharge since the maximum mounting heights of the 5R and 5F discharges are less than the desired mounting height and the coverage of all the other discharges are less than needed.



NO. 1F



NO. 4R & 4F



NO. 5R & 5F



NO. 8R & 8F



NO. 10R

| SIZE | 1F | | 4R | | 4F | | 5R | | 5F | | 8R | | 8F | | 10R | |
|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | MTG. HT. | COVERAGE | MTG. HT. | COVERAGE | MTG. HT. | COVERAGE | MTG. HT. | COVERAGE | MTG. HT. | COVERAGE | MTG. HT. | COVERAGE | MTG. HT. | COVERAGE | MTG. HT. | COVERAGE |
| GA-320 | 21' | 45x90 | 19' | 99x99 | 19' | 50x99 | 15' | 99x99 | 15' | 99x99 | 26' | 90x90 | 26' | 45x90 | 30' | 80x80 |
| GA-400 | 22' | 49x99 | 20' | 109x109 | 20' | 55x109 | 16' | 109x109 | 16' | 109x109 | 28' | 99x99 | 28' | 50x99 | 32' | 108x108 |
| GA-640 | 24' | 55x112 | 22' | 125x125 | 22' | 63x125 | 18' | 125x125 | 18' | 125x125 | 36' | 114x114 | 36' | 50x114 | 42' | 125x125 |
| GA-800 | 26' | 60x115 | 24' | 132x132 | 24' | 66x132 | 19' | 132x132 | 19' | 132x132 | 42' | 120x120 | 42' | 60x120 | 50' | 132x132 |
| GA-960 | 28' | 65x122 | 27' | 139x139 | 27' | 70x139 | 21' | 139x139 | 21' | 139x139 | 52' | 126x126 | 52' | 63x126 | 61' | 138x138 |
| GA-1280 | 30' | 65x122 | 29' | 145x145 | 29' | 73x145 | 23' | 145x145 | 23' | 145x145 | 56' | 132x132 | 56' | 66x132 | 65' | 144x144 |

NOTE: M = Maximum mounting height; C = Coverage. All dimensions in feet.

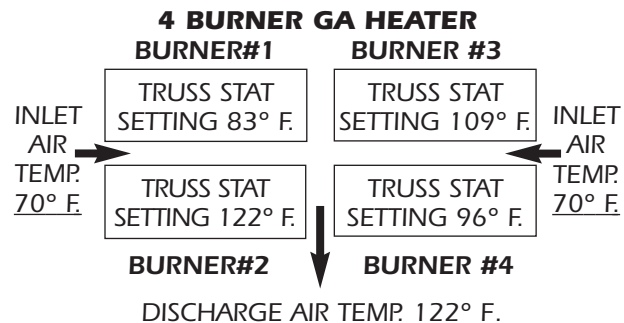
Energy-saving truss thermostats

Truss thermostats are used to control the discharge air temperature of GA Series unit heaters by turning "on" or "off" individual furnaces based on inlet air temperature. To accomplish this, a truss thermostat is mounted and wired on the inlet duct. It has a bulb-type sensor that is fixed to the outside of the unit.

In this manner, high temperature air that is stratified in the truss can be redistributed to the working levels when the need for it exists – without operating the burners. Process heat that would normally be wasted can be economically put to use.

Also, discharge temperatures can be effectively managed to assure optimum projection. Elevated truss temperatures will increase discharge temperatures. Extremely high temperature air is light in weight and therefore difficult to project from high mounting heights.

Here is a typical four truss thermostat set up:



With the room thermostat calling for heat, a typical four burner unit operates as follows:

| Ent. Air Temp. | Disc. Air Temp. | Burners on |
|----------------|-----------------|------------|
| 70 degrees F | 122 degrees F | 4 (all) |
| 83 degrees F | 122 degrees F | 3 |
| 96 degrees F | 122 degrees F | 2 |
| 109 degrees F | 122 degrees F | 1 |
| 122 degrees F | 122 degrees F | 0 (none) |

Note: Temperature rise through the unit is 52 degrees F.

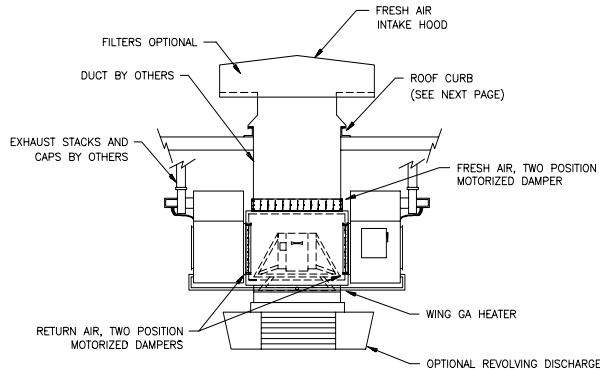
LARGE OPEN SPACE APPLICATIONS

Summer Ventilation

Operation

The arrangement shown below will enable the GA series of unit heaters to provide summer ventilation. The prime function is still operation as a space heater during the winter. In the summer the unit will distribute fresh, unheated outside air (filtered if necessary) to working levels by utilizing the highly effective Wing revolving discharge.

Summer ventilation is provided by attaching a fresh air intake fitted with a motorized damper as well as motorized return air dampers. The dampers are operated by a double-pole, double-throw summer-winter switch.



Damper sequence with fresh air damper only

- A. Winter position – Fresh air damper is closed; unit provides 100% recirculated air.
- B. Summer position – Fresh air damper is open; unit provides approximately 60% fresh air.

Damper sequence with both fresh air and return air dampers

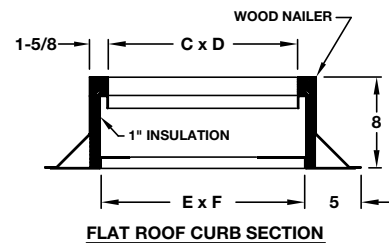
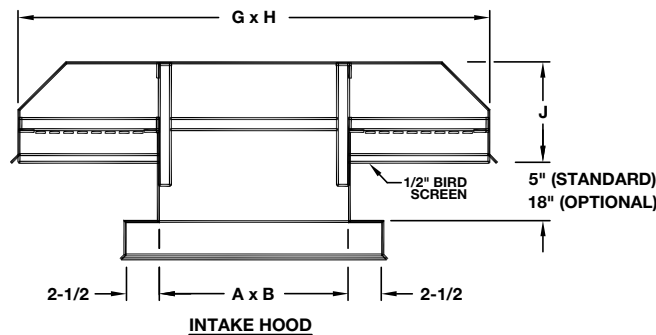
- A. Winter position – Fresh air damper is closed and return air dampers are open. Unit provides 100% recirculated air.
- B. Summer position – fresh air damper is open; return air dampers are closed. Unit provides 100% fresh air.

Summer ventilation accessories, including fresh air intake hood, roof curb, and summer/off winter switch, are shipped separately for field mounting by others.

Wing Gas-fired Unit heaters are provided with a square opening in the top panel. The opening is the same size as the intake air shaft. A 1-1/2 inch flat flange is provided around the opening to facilitate fastening to the duct. The intake duct should be supported independently of the heater.

Hoods and Roof Curbs

C000624



| GA | DIMENSIONS | | | | | | | | | WEIGHTS | |
|------|------------|--------|--------|--------|--------|--------|---------|-----|--------|---------|------|
| | A | B | C | D | E | F | G | H | J | HOOD | CURB |
| 320 | 33 1/8 | 33 1/8 | 33 7/8 | 33 7/8 | 35 1/8 | 35 1/8 | 58 | 59 | 11 1/4 | 470 | 39 |
| 400 | 33 1/8 | 33 1/8 | 33 7/8 | 33 7/8 | 35 1/8 | 35 1/8 | 58 | 59 | 11 1/4 | 470 | 39 |
| 640 | 39 1/8 | 39 1/8 | 39 7/8 | 39 7/8 | 41 1/8 | 41 1/8 | 68 7/8 | 69 | 13 1/4 | 542 | 45 |
| 800 | 57 1/8 | 45 5/8 | 57 7/8 | 46 3/8 | 59 1/8 | 47 5/8 | 80 5/16 | 101 | 16 1/4 | 689 | 58 |
| 960 | 57 1/8 | 45 5/8 | 57 7/8 | 46 3/8 | 59 1/8 | 47 5/8 | 80 5/16 | 101 | 16 1/4 | 689 | 58 |
| 1280 | 57 1/8 | 45 5/8 | 57 7/8 | 46 3/8 | 59 1/8 | 47 5/8 | 80 5/16 | 101 | 16 1/4 | 689 | 58 |

Notes:

1. All dimensions are in inches; all weights are in pounds.
2. Filtered intake hoods are provided with 2" thick, permanent, washable filters.
3. Hoods and curbs are available in either galvanized steel or aluminum construction.
4. Weights shown in table are for steel hoods and steel curbs. For aluminum hoods, multiply table weight by 0.67; for aluminum curbs, multiply table weight by 0.60.

DOOR HEATING APPLICATIONS

Unit Selection

Recommended sizes

When equipped with either Hi-Velocity (type HV) or Vari-Jet (type VJ) discharges, GA Gas-fired heating assemblies function ideally as door heaters. Designed for installation over any door, the door heaters can be arranged to cover one or several doors as needed with heated, high velocity discharge air.

Wing's unique Vari-Jet discharge is specifically designed to accomplish area heating in addition to door heating. When the door is opened, a large damper is automatically moved to direct a high velocity of heated air over the opening.

Upon closing the door, the damper automatically repositions to provide room and perimeter heating at normal velocity. A room thermostat then takes control until activated again by the door switch.

The following chart shows recommended heater sizes for average conditions with doors facing prevailing winter winds and not allowing for negative pressures caused by exhaust systems. For doors not facing prevailing winds, heaters one size smaller can be used.

GADH Selection table

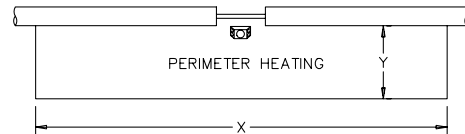
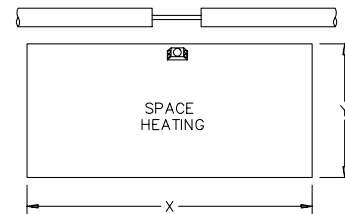
| Door Dimensions WxH | Outdoor Temperature (Degrees F) | | | |
|------------------------|---------------------------------|-----|------|---------|
| | 10 | 0 | -10 | -20 |
| 12x22 | 800 | 960 | 1280 | (2) 800 |
| 12x16 | 640 | 800 | 960 | 1280 |
| 12x12 | 400 | 640 | 800 | 960 |
| 10x12 | 320 | 400 | 640 | 800 |
| 8x10 | 320 | 320 | 400 | 640 |
| 8x8 | -- | 320 | 320 | 400 |

The heater should be mounted just above the door. If necessary to mount away from door, a specially designed discharge is available with a 45-degree cant towards the door. The GA door heater should not be mounted in a tilted position.

Floor Coverage for GADH with Vari-Jet Discharge

| GADH Model | Space Heating | | Perimeter Heating | | Max Mounting height |
|------------|---------------|----|-------------------|----|---------------------|
| | X | Y | X | Y | |
| 320 | 70 | 33 | 101 | 18 | 10 |
| 400 | 75 | 34 | 108 | 19 | 11 |
| 640 | 93 | 42 | 134 | 23 | 14 |
| 800 | 110 | 50 | 145 | 27 | 16 |
| 960 | 118 | 53 | 160 | 29 | 22 |
| 1280 | 132 | 60 | 180 | 33 | 22 |

Notes: Mounting height is measured from floor to bottom of heater discharge. Above figures are maximum for normal conditions. Consult your Wing representative when conditions require greater mounting heights or greater coverage.



Control Methods

A thermostat, a door switch, or both may be used to control GA units in door heating applications.

When using a thermostat, it is mounted just inside the door where cold incoming air will strike it. It has the advantage of keeping the heater operating after the door is closed if the area is still cold, and in warm weather, or when cold air is not flowing into the door opening, it will not start the heater.

A door switch is often used because it starts the heater quickly as soon as the door opens. The door switch also is necessary if a thermostat cannot be properly located. A manual cut-out switch may be installed with the door switch, so that the heater will not be operated when the door is opened in warm weather.

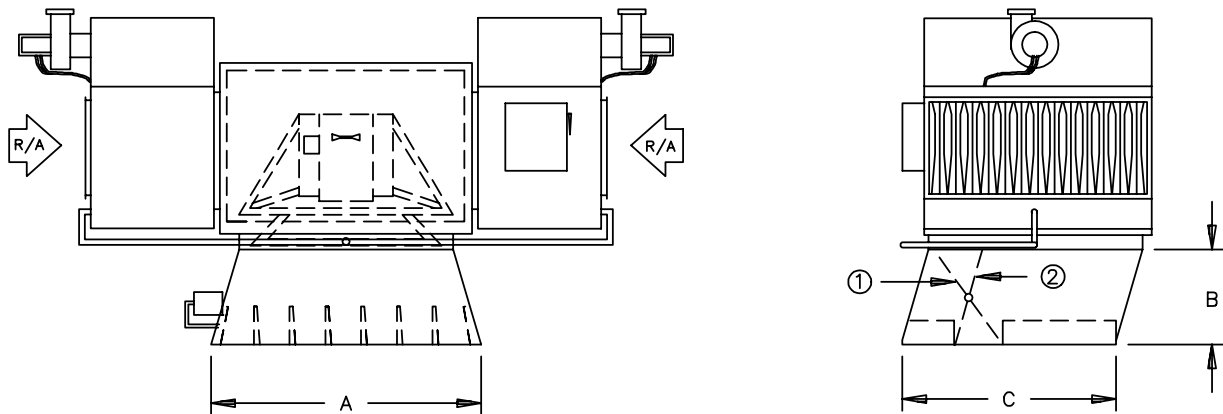
When both a thermostat and a door switch are employed, they should be connected in parallel so that either one will start the heater.

DOOR HEATING APPLICATIONS

Vari-Jet Discharges

When equipped with Wing's exclusive Vari-Jet discharge, the GA series of gas unit heaters can function as combination door and space heaters to provide area heating as well as door heating. It features a unique discharge with an electrically controlled damper. As shown in the schematic below, when the door is opened, the damper is automatically moved to position 1 to direct a high velocity curtain of air over the opening. When the

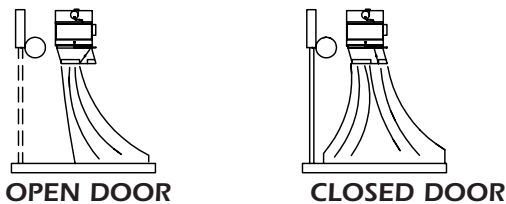
door is closed, the damper is automatically repositioned to position 2 so that the air is widely diffused at normal velocity to provide room or perimeter heating. A room thermostat controls the Vari-Jet discharge, shutting off the unit when the heating requirements are satisfied. If the door is subsequently reopened, the door switch automatically starts the unit.



| SIZE | A | B | C |
|-------------|----------------------------------|--------------------------------|---------------------------------|
| GA-320, 400 | 43 ¹³ / ₁₆ | 16 | 28 ⁷ / ₁₆ |
| GA-640 | 50 ¹ / ₂ | 17 ⁵ / ₈ | 38 ³ / ₄ |
| GA-800, 960 | 47 ⁵ / ₈ | 15 ¹ / ₄ | 42 ¹ / ₄ |
| GA-1280 | 55 ⁵ / ₈ | 15 ¹ / ₈ | 49 ¹ / ₂ |

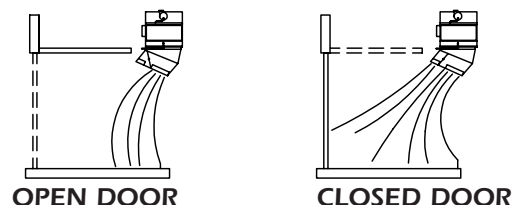
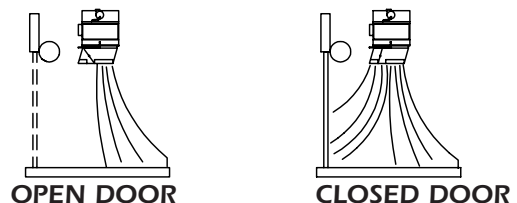
Space Heating

The unit is mounted with the room discharge section located away from the door. With the door closed, the heated air is discharged outward into the room to improve heating of nearby areas.



Perimeter Heating

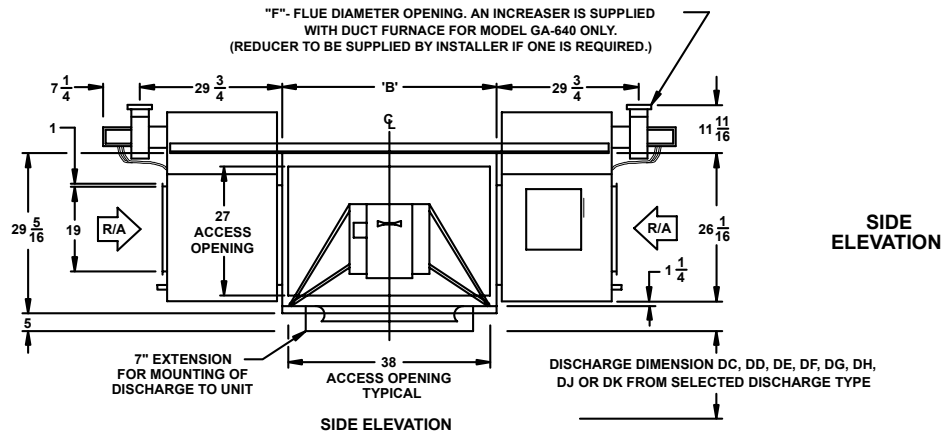
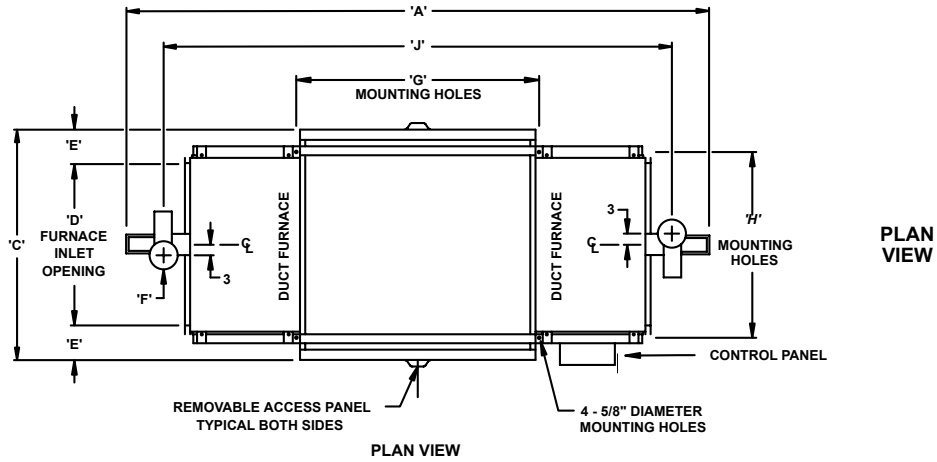
The Vari-Jet can be mounted vertically for rolling or sliding doors or with the Vari-Jet mounted in an angular discharge position for overhead doors. With the door closed, a perimeter heat flow pattern spreads for a long distance along the wall, preventing cold air from cascading down the wall and causing drafts across the floor area.



DIMENSIONS

Dimensions – GA-320, GA-400, and GA-640

C000206



| SIZE | DISCHARGE SIZE | A | B | C | D | E | F | G | H | J | APPROX. WT. LBS. |
|--------|----------------|-------------------|------------------|----|------------------|------------------|---|------------------|------------------|-------------------|------------------|
| GA-320 | 28 | 118 $\frac{3}{4}$ | 44 $\frac{3}{4}$ | 46 | 23 $\frac{3}{4}$ | 11 $\frac{1}{8}$ | 5 | 46 $\frac{3}{4}$ | 31 $\frac{5}{8}$ | 104 $\frac{1}{4}$ | 1,070 |
| GA-400 | 28 | 118 $\frac{3}{4}$ | 44 $\frac{3}{4}$ | 46 | 29 $\frac{1}{4}$ | 8 $\frac{3}{8}$ | 5 | 46 $\frac{3}{4}$ | 31 $\frac{5}{8}$ | 104 $\frac{1}{4}$ | 1,150 |
| GA-640 | 36 | 126 $\frac{1}{4}$ | 52 $\frac{1}{4}$ | 60 | 45 $\frac{3}{4}$ | 7 $\frac{1}{8}$ | 6 | 54 $\frac{1}{4}$ | 48 $\frac{1}{8}$ | 112 $\frac{1}{4}$ | 1,960 |

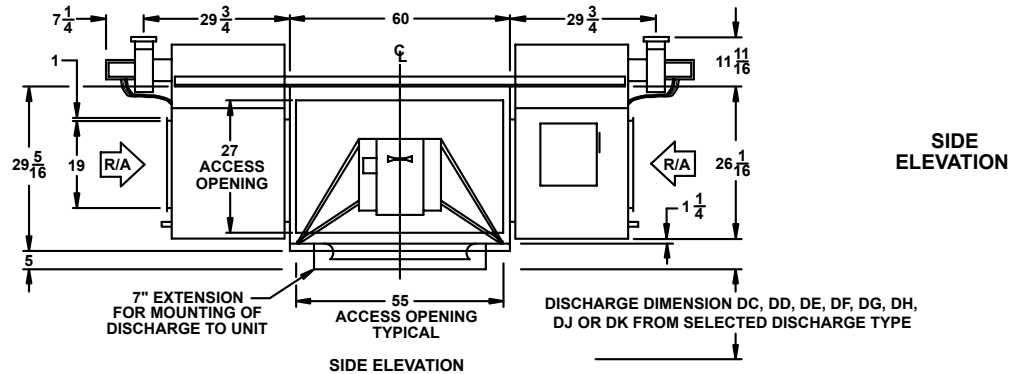
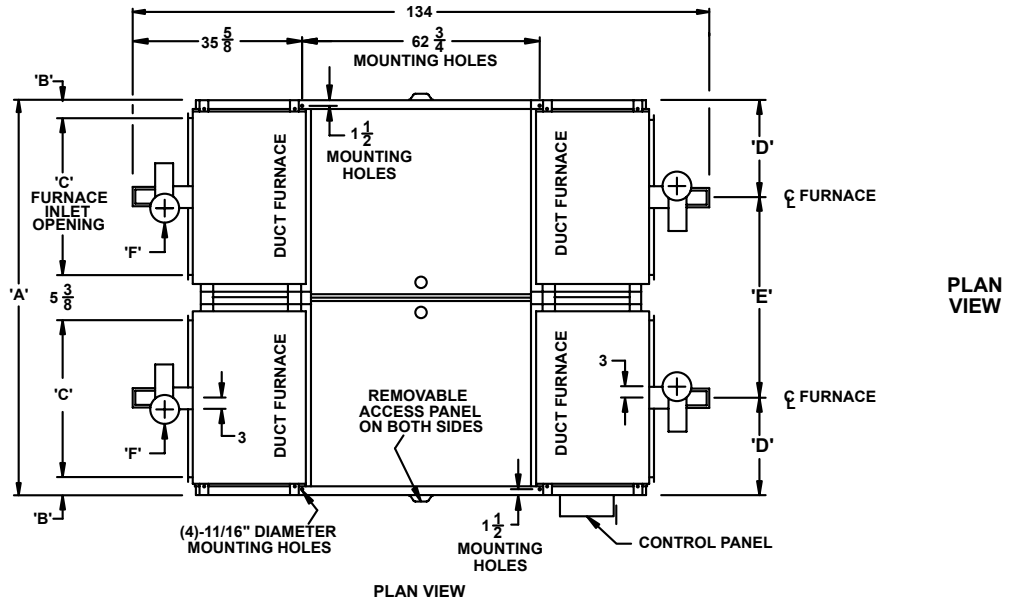
NOTES:

- CLEARANCE FOR REMOVAL OF ACCESS PANEL ON EITHER SIDE MUST BE PROVIDED.
- ALL DISCHARGE OUTLETS ARE PROVIDED WITH ADJUSTABLE LOUVERS OR DEFLECTORS. DEFLECTORS ON DESIGN 8R OR 8F MAY BE MOUNTED TOP OR BOTTOM.
- DISCHARGE 1F, 1F-HV AND VARI-JET MAY BE MOUNTED IN ANY 90° POSITION.
- DISCHARGE 4F, 5F AND 8F DISCHARGES MAY BE ROTATED MANUALLY TO ANY POSITION.
- EACH UNIT IS SHIPPED WITH A FIELD REMOVABLE ANGLE IRON SHIPPING FRAME.
- ALL DIMENSIONS ARE IN INCHES.
- UNIT CAN BE PROVIDED WITH AN OPTIONAL SINGLE POINT CONNECTION GAS MANIFOLD.
- STATED APPROXIMATE WEIGHT ABOVE INCLUDES THE WEIGHT OF EITHER A FIXED OR A REVOLVING DISCHARGE.

DIMENSIONS

Dimensions – GA-800, GA-960, and GA-1280

C000207



| SIZE | DISCHARGE SIZE | A | B | C | D | E | F | APPROX. WT. LBS. |
|---------|----------------|---------|---------|--------|----------|--------|---|------------------|
| GA-800 | 40 | 82 3/4 | 9 7/16 | 29 1/4 | 24 1/16 | 34 5/8 | 5 | 2400 |
| GA-960 | 40 | 82 3/4 | 3 15/16 | 34 3/4 | 21 5/16 | 40 1/8 | 6 | 2800 |
| GA-1280 | 44 | 104 3/4 | 3 15/16 | 45 3/4 | 26 13/16 | 51 1/8 | 6 | 3200 |

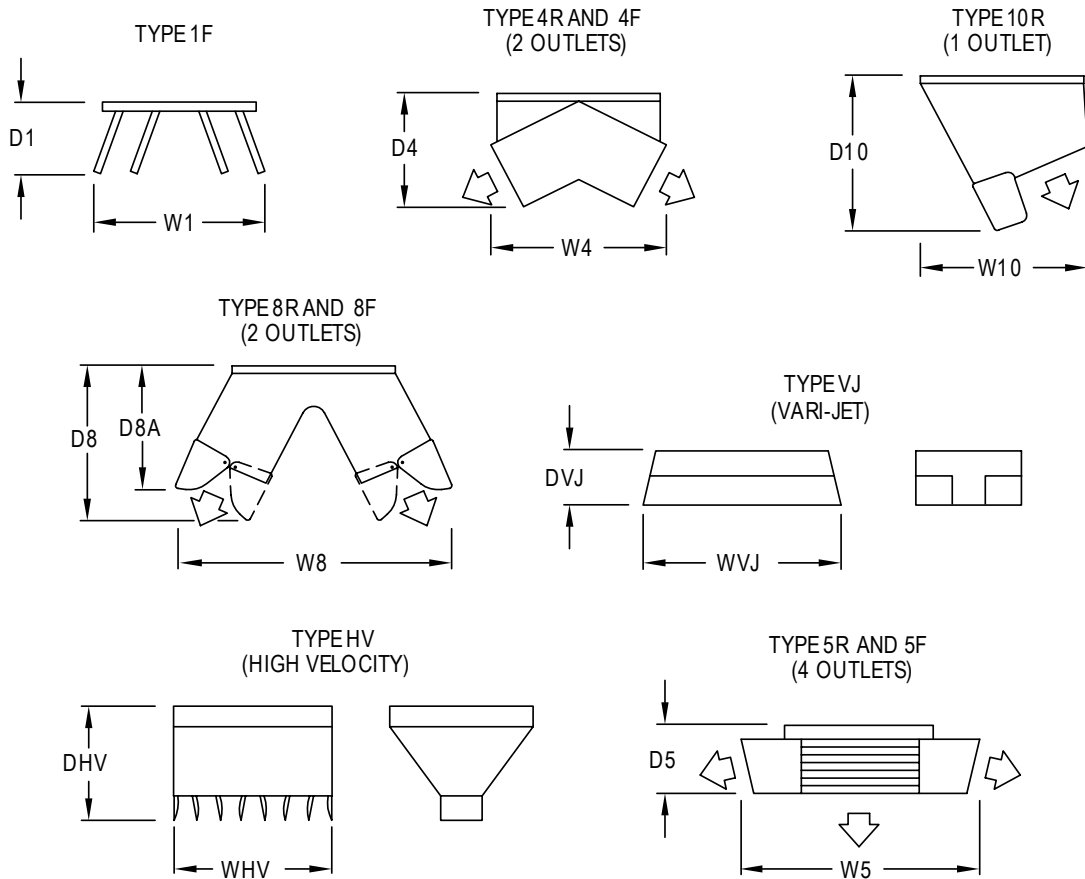
NOTES:

- CLEARANCE FOR REMOVAL OF ACCESS PANEL ON EITHER SIDE MUST BE PROVIDED.
- ALL DISCHARGE OUTLETS ARE PROVIDED WITH ADJUSTABLE LOUVERS OR DEFLECTORS. DEFLECTORS ON DISCHARGE 8R OR 8F MAY BE MOUNTED ON THE TOP OR BOTTOM.
- DISCHARGE 1F, 1F-HV AND VARI-JET MAY BE MOUNTED IN ANY 90° POSITION.
- DISCHARGE 4F, 5F AND 8F MAY BE ROTATED MANUALLY TO ANY POSITION.
- EACH UNIT IS SHIPPED WITH A FIELD REMOVABLE ANGLE IRON SHIPPING FRAME.
- ALL DIMENSIONS ARE IN INCHES.
- AN EXHAUST DUCT INCREASER IS SHIPPED WITH EACH DUCT FURNACE SUPPLIED ON MODELS GA-960 AND GA-1280 ONLY. DUCT REDUCERS, IF REQUIRED, ARE TO BE SUPPLIED BY THE INSTALLING CONTRACTOR.
- UNIT CAN BE PROVIDED WITH AN OPTIONAL SINGLE POINT CONNECTION GAS MANIFOLD.
- STATED APPROXIMATE WEIGHT ABOVE INCLUDES THE WEIGHT OF EITHER A FIXED OR A REVOLVING DISCHARGE.

DIMENSIONS

Discharges

C000599



| SIZE | DISCHARGE SIZE | D1 | W1 | D4 | W4 | D5 | W5 | D8 | D8A | W8 |
|---------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| GA-320 | 28 | 10 $\frac{1}{8}$ | 41 $\frac{1}{4}$ | 27 $\frac{3}{8}$ | 42 | 16 $\frac{5}{8}$ | 50 | 34 $\frac{3}{4}$ | 33 | 64 |
| GA-400 | 28 | 10 $\frac{1}{8}$ | 41 $\frac{1}{4}$ | 27 $\frac{3}{8}$ | 42 | 16 $\frac{5}{8}$ | 50 | 34 $\frac{3}{4}$ | 33 | 64 |
| GA-640 | 36 | 10 $\frac{1}{8}$ | 56 $\frac{1}{2}$ | 32 | 47 $\frac{1}{4}$ | 18 $\frac{1}{4}$ | 57 | 45 $\frac{1}{4}$ | 41 $\frac{1}{2}$ | 77 |
| GA-800 | 40 | 10 $\frac{1}{8}$ | 62 $\frac{7}{8}$ | 36 $\frac{1}{8}$ | 54 | 20 $\frac{1}{8}$ | 66 $\frac{1}{2}$ | 52 $\frac{3}{4}$ | 47 $\frac{1}{2}$ | 89 $\frac{1}{2}$ |
| GA-960 | 40 | 10 $\frac{1}{8}$ | 62 $\frac{7}{8}$ | 36 $\frac{1}{8}$ | 54 | 20 $\frac{1}{8}$ | 66 $\frac{1}{2}$ | 52 $\frac{3}{4}$ | 47 $\frac{1}{2}$ | 89 $\frac{1}{2}$ |
| GA-1280 | 44 | 10 $\frac{1}{8}$ | 62 $\frac{7}{8}$ | 38 | 54 | 22 | 66 $\frac{1}{2}$ | 51 $\frac{3}{4}$ | 45 $\frac{3}{4}$ | 86 |

| SIZE | DISCHARGE SIZE | D10 | W10 | DHV | WHV | DVJ | WVJ |
|---------|----------------|------------------|------------------|------------------|------------------|------------------|--------------------|
| GA-320 | 28 | 44 $\frac{1}{8}$ | 39 $\frac{3}{4}$ | 23 $\frac{1}{8}$ | 39 $\frac{1}{8}$ | 16 | 37 $\frac{11}{16}$ |
| GA-400 | 28 | 44 $\frac{1}{8}$ | 39 $\frac{3}{4}$ | 23 $\frac{1}{8}$ | 39 $\frac{1}{8}$ | 16 | 37 $\frac{11}{16}$ |
| GA-640 | 36 | 49 $\frac{7}{8}$ | 45 $\frac{7}{8}$ | 17 $\frac{5}{8}$ | 45 $\frac{1}{8}$ | 17 $\frac{3}{8}$ | 50 $\frac{1}{2}$ |
| GA-800 | 40 | 57 $\frac{3}{8}$ | 53 $\frac{1}{4}$ | 23 $\frac{5}{8}$ | 51 $\frac{5}{8}$ | 15 $\frac{1}{4}$ | 47 $\frac{5}{8}$ |
| GA-960 | 40 | 57 $\frac{3}{8}$ | 53 $\frac{1}{4}$ | 23 $\frac{5}{8}$ | 51 $\frac{5}{8}$ | 15 $\frac{1}{4}$ | 47 $\frac{5}{8}$ |
| GA-1280 | 44 | 55 $\frac{1}{8}$ | 56 | 15 $\frac{1}{8}$ | 51 $\frac{5}{8}$ | 15 $\frac{1}{8}$ | 55 $\frac{5}{8}$ |

NOTES:

1. "R" DESIGNATES REVOLVING TYPE DISCHARGE.
2. "F" DESIGNATES FIXED TYPE DISCHARGE.
3. ALL DIMENSIONS ARE IN INCHES

ELECTRICAL

Amp Draw Table

| ITEM | SOURCE | AMPS | MOTOR HORSEPOWER | | | | | |
|------|---------------------|--------------------|----------------------|-------|-----|------|------|-------|
| | | | 3/4 | 1 1/2 | 2 | 3 | 5 | 7 1/2 |
| A | Fan Motor | AMPS for 208V 3 Ph | 3.5 | 6.6 | 7.5 | 10.6 | 16.7 | 24.2 |
| | | AMPS for 230V 3 Ph | 3.2 | 6.0 | 6.8 | 9.6 | 15.2 | 22.0 |
| | | AMPS for 460V 3 Ph | 1.6 | 3.0 | 3.4 | 4.8 | 7.6 | 11.0 |
| | | AMPS for 575V 3 Ph | 1.3 | 2.4 | 2.7 | 3.9 | 6.1 | 9.0 |
| B | Control Transformer | AMPS | CONTROL CIRCUIT AMPS | | | | | |
| | | AMPS for 208V 3 Ph | 2.4 | | | | | |
| | | AMPS for 230V 3 Ph | 2.2 | | | | | |
| | | AMPS for 460V 3 Ph | 1.1 | | | | | |
| | | AMPS for 575V 3 Ph | 0.9 | | | | | |

NOTES:

1. Above motor amps are based on the latest edition of the National Electrical Code.
2. Control circuit amps are based on standard controls.

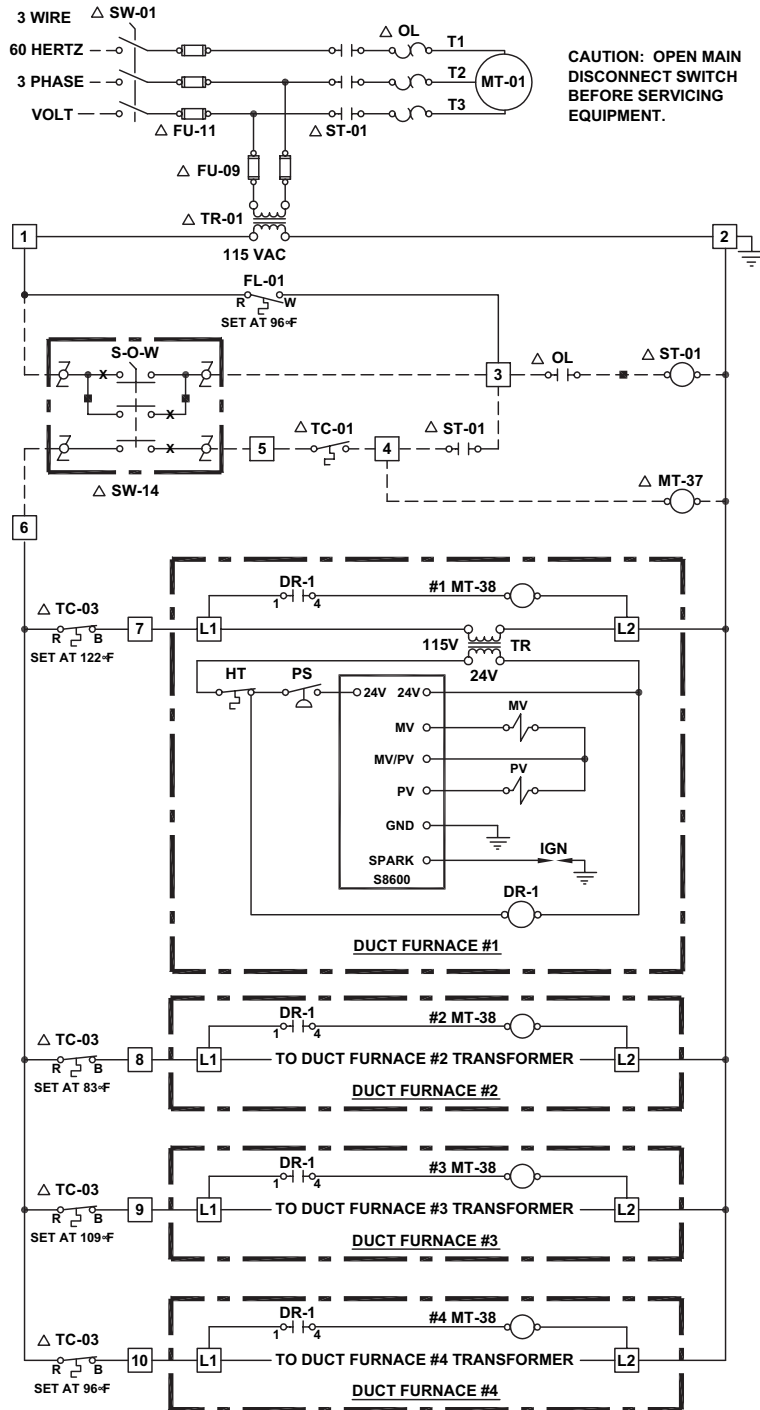
Procedure for sizing optional disconnect switch:

1. Find the required fan motor HP from capacity table on page 5.
2. Find amp draw for required fan motor HP and electrical service from above chart in **Item A**.
3. Find amps for control circuit from above chart in **Item B**.
4. Add amps from step 2 and step 3, then multiply by 1.25.

DIMENSIONS

Wiring Diagram – GA-800, GA-960, and GA-1280

C000204



CAUTION: OPEN MAIN DISCONNECT SWITCH BEFORE SERVICING EQUIPMENT.

UNIT SHALL BE GROUNDED ACCORDING TO THE LATEST PROVISIONS OF THE NEC

COMPONENT IDENTIFICATION

| | |
|---------|-------------------------------------|
| DR-1 | DUCT FURNACE DRAFTOR RELAY |
| FL-01 | SUPPLY FAN SWITCH |
| △ FU-09 | CONTROL TRANSFORMER FUSE |
| △ FU-11 | MAIN DISCONNECT FUSE |
| HT | FURNACE HIGH TEMPERATURE LIMIT |
| MT-01 | SUPPLY FAN MOTOR |
| △ MT-37 | REVOLVING DISCHARGE MOTOR |
| MT-38 | DUCT FURNACE DRAFTOR MOTOR |
| MV | DUCT FURNACE MAIN GAS VALVE |
| △ OL | MOTOR OVERLOAD |
| PS | DUCT FURNACE PRESSURE SWITCH |
| PV | DUCT FURNACE PILOT VALVE |
| △ ST-01 | SUPPLY FAN MOTOR STARTER |
| △ SW-01 | MAIN DISCONNECT SWITCH |
| △ SW-14 | SUMMER-OFF-WINTER SWITCH (REMOTE) |
| △ TC-01 | ROOM THERMOSTAT |
| △ TC-03 | TRUSS THERMOSTAT |
| TR | DUCT FURNACE TRANSFORMER - 115V/24V |
| △ TR-01 | CONTROL TRANSFORMER |

NOTES

NOTE: BECAUSE OF SHIPPING RESTRICTIONS FIELD CONNECTIONS AND/OR WIRING BETWEEN COMPONENTS OR SECTIONS MAY BE REQUIRED

- DENOTES COMPONENT TERMINAL NUMBER AND WIRING
- DENOTES JUMPER WIRE
- DENOTES WIRE CONNECTION
- DENOTES CONTROL CABINET TERMINAL BLOCK AND WIRE NUMBER
- △ DENOTES OPTIONAL COMPONENTS
- - - DENOTES FIELD WIRING BY OTHERS
- ⌘ DENOTES WIRE NUMBER LEADS

1-TO-99 TERMINAL BLOCK - 115 VOLT
101-TO-199 TERMINAL BLOCK - 24 VOLT

WITH OPTIONAL TRUSS STAT

TYPICAL SPECIFICATION AND SCHEDULE

Typical Specification

General

Furnish gas-fired unit heaters as manufactured by L.J. Wing, Dallas, Texas. The heaters shall have output heating capacities and airflows as shown on the schedule.

Each heater shall be self-contained and consist of two or four indirect gas-fired duct furnaces, fan plenum chamber, motor-driven fan propeller and a revolving or fixed discharge as scheduled. The heater shall be arranged to permit isolation of one or more duct furnaces for service without shutting down the entire assembly.

Burner Units

Each furnace shall have a factory furnished power venter, sealed flue collector and be equipped with energy-saving electric ignition having electronic flame supervision. All units shall display the A.G.A./C.G.A. seal of design compliance, and be factory tested to assure field operation.

Each furnace shall have a die-formed heavy gauge steel casing, phosphatized to inhibit rust and corrosion. Each furnace shall have a die-formed aluminized steel heat exchanger, and its own gas control piping train (arranged to facilitate field piping to a common supply manifold).

The safety controls will include a combustion air pressure switch to verify proper powered vent flow prior to allowing the gas valve to operate.

Fuel

Each unit shall be suited to operate on a clean (natural gas supply of 6 to 14 inches water column pressure having a heating value of 1,000 BTU per cubic foot and a specific gravity of 0.65) (mixture of liquid propane gas and air proportioned to deliver the heating value of the natural gas described above) (liquid propane gas having a heating value of _____ BTU per cubic foot and a specific gravity of _____).

Fan Unit

The fan unit shall consist of a propeller fan, directly driven by a motor of the horsepower and electrical characteristics as shown in the schedule and be used in conjunction with an inlet venturi.

Fan Plenum Chamber

The plenum shall be fabricated of heavy steel and be equipped with suitable angle iron supports for mounting and supporting the heaters. Removable panels shall be provided on both sides of the plenum to facilitate access to the fan motor.

Wiring and Controls

The individual furnace safety controls, fan motor, (and revolving discharge motor) shall be factory wired to an enclosed terminal strip to facilitate field wiring of operating controls.

A ____/110 volt control transformer shall be mounted and wired by the heater manufacturer.

Discharge

Revolving type

A gear-driven revolving discharge of the design scheduled shall be furnished. Discharge shall be complete with a motor-driven gear drive assembly for slow positive rotation.

Fixed type

A fixed discharge of the type scheduled shall be furnished. Discharge shall have adjustable air deflectors.

Finish

The fan plenum chamber, fan unit and discharge shall be painted inside and outside with air-dried alkyd enamel paint.

Notes

The Wing Gas-fired Unit Heater assemblies, when arranged according to manufacturer's suggestions, are normally acceptable to both FM and IRI. Obtaining insurer approval for the installation shall be the responsibility of the contractor.

Typical Schedule

| Model No. | Output, MBTUH | Motor HP | Electrical Volts/phase/HZ | Tag |
|-----------|---------------|----------|---------------------------|------|
| GA-640-VJ | 640 | 2 | 230/3/60 | UH-1 |