SECTION 15625

GAS FIRED DUCT FURNACES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Gas fired duct furnaces (Natural Gas).

1.02 RELATED SECTIONS

A. Section 15170 - Motors, Drives, and Accessories: Fan motors.

B. Section 15245 - Vibration Isolation.

C. Section 15290 - Ductwork Insulation: Duct Liner.

D. Section 15575 - Breechings, Chimneys, and Stacks.

E. Section 15980 - Instruments and Control Elements: Thermostats, time clocks.

F. Section 16180 - Equipment Wiring Systems: Electrical characteristics and wiring connections.

1.03 REFERENCES

A. ASHRAE 103 - Heating Seasonal Efficiency of Central Furnaces and Boilers, Methods of Testing.

B. NEMA MG 1 - Motors and Generators.

C. NFPA 31 - Installation of Oil Burning Equipment.

D. NFPA 54 (AGA Z223.1) - National Fuel Gas Code.

E. NFPA 70 - National Electrical Code.

F. NFPA 90A - Installation of Air Conditioning and Ventilating Systems.

G. NFPA 90B - Installation of Warm Air Heating and Air Conditioning Systems.

H. NFPA 211 - Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances.

I. UL 727 - Oil-Fired Central Furnaces.

1.04 SUBMITTALS

A. Section 01300: Procedures for submittals.

B. Product Data: Provide manufacturer's literature and data indicating rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.

C. Shop Drawings: Indicate assembly, required clearances, and locations and sizes of field connections.

1.05 SUBMITTALS AT PROJECT CLOSEOUT

A. Section 01700 - Contract Closeout

B. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts listing.

C. Warranty: Submit manufacturers warranty and ensure forms have been filled out in Owners name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years experience.

1.07 REGULATORY REQUIREMENTS

A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

PART 2 - PRODUCTS

2.01 GAS FIRED DUCT FURNACES (NATURAL GAS)

A. Manufacturers:
1. Trane.
2. Reznor.
3. Sterling.

B. General:
1. Units are completely factory assembled, piped, wired, and test fired. All units are AGA certified and conform with the latest ANSI standards for safe and efficient performance. Units are provided with four point suspension hangers on centrifugal fan unit heaters and duct furnaces.

C. Casing:
1. 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 orifices. The pilot is also accessible through a side panel access plate.
2. High limit switch is accessible through a side panel access.
3. Duct discharge flanges shall be provided for simple ductwork connection.

D. Heat Exchanger:
1. Heat exchanger construction consists of seam welded 20 gauge 409 stainless steel tubes and headers.

E. Draft diverter:
1. Standard draft diverter construction is corrosion resistant aluminized steel.

F. Burners:
1. 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 are 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 on duct furnaces when the side access burner drawer is supplied.

G. Horizontal Blower Assembly:
   1. Casings are 18 gauge galvanized steel with baked enamel finish. Side panels are removable for easy servicing and motor maintenance duct flanges shall be provided.
   2. Centrifugal fan is belt driven with adjustable pitch motor sheave. Fan is dynamically balanced for quiet operation.
   3. Blower assembly and transition shall be insulated with fire-resistant, odorless, mat faced one-inch glass fiber material.
   4. Sheet metal transition to connect the blower assembled to the duct furnace.

H. Motors:
   1. Motors are 208V, 60 Hz, three phase, open drip-proof with built-in thermal overload protection.

I. Controls:
   1. A factory installed junction box is provided for all power connections. Standard units are provided with a 24-volt combination single-stage automatic gas valve, including main operating valve and pilot safety shutoff, pressure regulator, manual main and pilot shutoff valve, and adjustable pilot valve. Gas valve is suitable to a maximum inlet pressure of 0.5 psi (14 inch W.C.) On natural gas. A 24V control transformer, a spill (blocked vent) switch, and high limit relay shall be provided.

J. Intermittent Pilot Ignition:
   1. Solid state ignition control system ignites the pilot by spark during each cycle of operation. When pilot flame is proven, main burner valve opens to allow gas flow to burners. Pilot and burners are extinguished during off cycle. Required on California units.

K. Two Stage Gas Valve:
   1. 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.

L. Side Access Burner Drawer
   1. Allows entire burner drawer to slide out from the side of the unit for service or inspection.

M. One-inch permanent filters (centrifugal with enclosure only)

N. Drain Pan (Duct furnace only)
   1. Recommended for use with installations on the downstream side of a cooling coil.

O. Thermostats
   1. Low voltage duct thermostat, two-stage.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that space is ready for installation of units and openings are as indicated on Shop Drawings.

B. Verify that proper power supply is available.

C. Verify that proper fuel supply is available for connection.

3.02 INSTALLATION

A. Install in accordance with NFPA 90A and NFPA 90B.

B. Install gas fired units to NFPA 54.

C. Install oil fired units to NFPA 31.

D. Provide vent connections to NFPA 211.

E. Install duct furnace with vibration isolation.

F. Provide operating controls; refer to Section 15975.

G. Provide connection to electrical power systems; refer to Division 16.

H. Install with required service clearances and listed clearances to combustible and non-combustible surfaces. Coordinate final clearances with installation of 2nd floor ceiling/plenum.

END OF SECTION