



Guide Specifications

GAS-FIRED UNIT HEATERS

LF24

Horizontal

September 5, 2012



Note: This specification is for **Lennox Industries LF24 Gas-Fired Unit Heaters**. Revise specification section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat* for other section numbers and titles.

This specification utilizes the Construction Specifications Institute (CSI) *Manual of Practice*, including *MasterFormat*[™], *SectionFormat*[™] and *PageFormat*[™]. Optional text and text requiring a decision is indicated by bolded brackets []; delete text not required in final copy of specification. Specifier Notes typically precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate symbols typically are used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

FUEL-FIRED UNIT HEATERS

SECTION 23 55 33

PART 1 - GENERAL

1.1 SECTION INCLUDE

A. Gas Fired Unit Heaters

Specifier Note: Revise paragraph below to suit project requirements. Add section numbers and titles per CSI *MasterFormat* and specifier's practice.

1.2 RELATED SECTIONS

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Conditions of the Contract or Division 1 References Section may establish the edition date of standards. This article does not require compliance with standard, but is merely a listing of references used. Article below should list only those industry standards referenced in this section. Retain only those reference standards to be used within the text of this Section. Add and delete as required for specific project.

1.3 REFERENCES

- A. Certifications:
 - 1. CSA International
 - 2. For use with natural or LPG/propane gas
 - 3. California Energy Commission (CEC)
- B. ISO 9001, units manufactured to quality standard

Specifier Note: Article below should be restricted to statements describing design or performance requirements and functional (not dimensional) tolerances of a complete system. Limit descriptions to composite and operational properties required to link components of a system together and to interface with other systems.

1.4 PERFORMANCE REQUIREMENTS

- A. Electrical Characteristics
 - 1. 60 HZ
 - 2. 115 V
 - 3. Single Phase
 - 4. [115 V/24 V][120V/24V] Transformer

5. Fuel Requirements: [Natural Gas] [and][/] [or] [LPG/Propane Gas]

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor before, during or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 1 Submittal Procedures Section.

1.5 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures
- B. Product Data: Submit product data, including manufacturer's SPEC-DATA® product sheet, for specified products
- C. Shop Drawings:
 - 1. Submit shop drawings in accordance with Section [01 33 00 - Submittal Procedures]
 - 2. Indicate:
 - a. Equipment, piping and connections, together with valves, strainers, control assemblies, thermostatic controls, auxiliaries and hardware and recommended ancillaries which are mounted, wired and piped ready for final connection to building system, its size and recommended bypass connections.
 - b. Piping, valves and fittings shipped loose showing final location in assembly
 - c. Control equipment shipped loose, showing final location in assembly
 - d. Field wiring diagrams
 - e. Dimensions, internal and external construction details, installation clearances, recommended method of installation, sizes and location of mounting bolt holes
 - f. Detailed composite wiring diagrams for control systems showing factory installed wiring and equipment on packaged equipment or required for controlling devices or ancillaries, accessories, controllers.
- D. Quality Assurance:
 - 1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties
 - 2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements
 - 3. Manufacturer's Instructions: Manufacturer's installation instructions

Specifier Note: Coordinate paragraph below with Part 3 Field Quality Requirements Article herein. Retain or delete as applicable.

- E. Manufacturer's Field Reports: Manufacturer's field reports specified herein
- F. Closeout Submittals: Submit the following:
 - 1. Warranty: Warranty documents specified herein
 - 2. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and

Operation Data) Section. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance. Include names and addresses of spare part suppliers.

3. Provide brief description of unit, with details of function, operation, control and component service
4. Commissioning Report: Submit commissioning reports, report forms and schematics in accordance with Section [01 81 00 – Commissioning]

1.6 QUALITY ASSURANCE

A. Qualifications:

1. Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project

1.7 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 1 Product Requirements
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays
- C. Packing, Shipping, Handling and Delivery:
 1. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact
 2. Ship, handle and unload units according to manufacturer's instructions
- D. Storage and Protection:
 1. Store materials protected from exposure to harmful weather conditions
 2. Factory shipping covers to remain in place until installation

Specifier Note: Coordinate article below with Conditions of the Contract and Division 1 Closeout Submittals (Warranty).

1.8 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents

Specifier Note: Coordinate paragraph below with manufacturer's warranty requirements.

- C. Warranty: Commencing on Date of Installation

Specifier Note: Refer to Lennox Equipment Limited Warranty certificate included with equipment for details.

1. Stainless Steel Heat Exchanger: 15 years, limited

2. Aluminized Steel Heat Exchanger: 10 years, limited
3. Solid-State Ignition Module: 1 year, limited (non-residential applications)
4. All Other Covered Components: [1 years, limited (non-residential)] [5 years, limited (residential)]

PART 2 - PRODUCTS

Specifier Note: Retain article below for proprietary method specification. Add product attributes, performance characteristics, material standards, and descriptions as applicable. Use of such phrases as “or equal” or “or approved equal” or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining “or equal” products.

2.1 HORIZONTAL GAS FIRED UNIT HEATERS

- A. Manufacturer: Lennox Industries
 1. 1. Contact: 2140 Lake Park Blvd.; Richardson, TX 75080; Telephone: (800) 453-6669; website: www.lennoxcommercial.com
- B. General:
 1. Air Flow: Horizontal
 2. Venting
 - a. Horizontal
 - b. Vertical
 3. All units to be shipped completely assembled at the factory
 4. Hanging brackets to be supplied by manufacturer for field mounting of unit heater
 5. Controls to be factory installed and wired
 6. All units must pass a factory run-test before shipping
 7. Installer to:
 - a. Make unit gas supply connections
 - b. Make electrical connections
 - c. Mount thermostat
 - d. Make flue connections

Specifier Note: LF24 models with BTUH requirements: 030 (30,000 Btuh), 045 (45,000 Btuh), 060 (60,000 Btuh), 075 (75,000 Btuh), 100 (100,000 Btuh), 115 (115,000 Btuh), 145 (145,000 Btuh), 175 (175,000 Btuh), 200 (200,000 Btuh), 230 (230,000 Btuh), 250 (250,000 Btuh), 300 (300,000 Btuh), 345 (345,000 Btuh), and 400 (400,000 Btuh).

8. See schedule for Btuh of unit required
- C. Proprietary Products/Systems:
 1. Cabinet:
 - a. Pre-painted

- b. Heavy gauge galvanized steel construction
- c. Internally insulated cabinet
- d. Adjustable louvers
- e. Contains all electrical and safety controls

Specifier Note: Wiring Junction box located inside the cabinet on LF24 models 030, 045, 060, 075.

Wiring Junction box mounted on the exterior of the cabinet on LF24 models 100, 115, 145, 175, 200, 230, 250, 300, 345, and 400.

- f. Wiring Junction box mounted [inside cabinet] or [on the exterior of the cabinet]

2. Heating System:

- a. Combination gas control valve
 - 1. 24 volt
 - 2. Manual shutoff valve
 - 3. Dual Valve:
 - a. Pressure regulator
 - b. Automatic electric valve
- b. Solid-state igniter
 - 1. Direct-spark
 - 2. Intermittent spark
- c. Electronic flame sensor
- d. Combustion air inducer
 - 1. Prepurge heat exchanger
 - 2. Pressure switch to prove operation
 - 3. Operates only during heating
 - 4. Blower motor is thermally protected
- e. Heat Exchanger:
 - 1. Tubular

Specifier Note: Aluminized Steel heat exchanger is available on all LF24 models. Stainless Steel heat exchanger is only available on the LF24 models 100, 115, 145, 175, 200, 230, 250, 300, 345, and 400.

- 2. [Aluminized Steel] [and]/[or] [Stainless steel]
- 3. Curving design
- 4. Laboratory lifecycle tested
- f. Inshot burners:
 - 1. Aluminized steel
 - 2. Venturi to mix gas and air for proper combustion
 - 3. Assembly to be removable as a single component
 - 4. Individual burner removable from assembly

- g. Limit Control:
 - 1. Factory installed
 - 2. Fixed temperature setting
 - 3. Protect heating system from abnormal operating conditions
- 2. Solid state control board
 - a. Fan timer control
 - b. Diagnostic LED for trouble shooting
 - c. Continuous fan operation
- 3. Low voltage terminal strip
- 4. Supply fan:
 - a. Motor:
 - 1. Direct drive
 - 2. Permanently lubricated
 - b. Propeller type fan blade
- 5. [Optional Accessories]:
 - a. [LPG/Propane Conversion Kit]
 - b. [Horizontal Vent Kits]
 - c. [Thermostat]

Specifier Note: Discharge Nozzles are only available on the LF24 models 100, 115, 145, 175, 200, 230, 250, 300, 345, and 400.

- d. [Discharge Nozzles]:
 - 1. [30° from horizontal]
 - 2. [45° from horizontal]
 - 3. [60° from horizontal]
 - 4. [90° from horizontal]

Specifier Note: Hanging Bracket Kit is only available on the LF24 models 100, 115, 145, 175, 200, 230, 250, 300, 345, and 400.

- e. [Hanging Bracket Kit]

Specifier Note: The High Altitude Pressure Switch Kit is only available on the LF24 models 100, 115, 145, and 175.

- f. [High Altitude Pressure Switch Kit]

2.2 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

Specifier Note: Article below is an addition to the CSI *SectionFormat* and a supplement to MANU-SPEC. Revise article below to suit project requirements and specifier's practice.

- A. Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions and [Lennox Industries] SPEC-DATA® sheets.

3.2 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.

3.3 INSTALLATION

- A. Install [Lennox LF24] gas fired unit heaters in accordance with manufacturer's instructions and regulations of authorities having jurisdiction.

END OF SECTION