

Guide Specifications

GWM-IE

High Efficiency

Gas- Modulating Condensing Boiler

April 25, 2013



Note: This specification is for the **Lennox Industries GWM-IE Gas-Modulating Condensing Boiler**. 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.

HEATING BOILERS

SECTION 23 52 00

PART 1 - GENERAL

1.1 SECTION INCLUDE

A. Condensing Boilers

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 standards, 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. Air-Conditioning, Heating, and Refrigeration Institute (AHRI) certified
- B. Canadian Standards Association (CSA) certified
- C. Units rated in accordance with Department of Energy (DOE) test procedures
- D. Units hydrostatically tested to American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section IV Standards
- E. Energy Star Certified

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. Nominal gas heat input: 050=50,000 btuh , 075=75,000 btuh, 100=100,000 btuh, 150=150,000 btuh, 200=200,000 btuh
- B. Annual Fuel Utilization Efficiency (AFUE): 95%

- C. Electronic Ignition
- D. Fuel Requirements: [Natural Gas] [and]/[or] [LPG/Propane Gas]
- E. Electrical Characteristics
 - 1. 60 HZ
 - 2. 120 V
 - 3. Single Phase
 - 4. 120V/24V Transformer

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
 - 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction and approving application method
- B. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings).

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 Helical Heat Exchanger – 5 years in non-residential applications
- 2. All other covered components – 1 year in non-residential applications

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 GAS FURNACE

- A. Product: Gas Fired Hot Water Boilers (Wall Hung)
- B. Manufacturer: Lennox Industries
 - 1. Contact: 2140 Lake Park Blvd.; Richardson, TX 75080; Telephone: (800) 453-6669; website: www.lennoxcommercial.com
- C. Proprietary Products/Systems:
 - 1. Cabinet:
 - a. Heavy gauge steel
 - b. Baked-on enamel paint finish
 - c. Front cover slides on and off for easy servicing
 - d. Combustion air and vent connections located on top of cabinet
 - e. Condensate drain connection furnished on bottom of cabinet
 - f. Water supply and return connections furnished on bottom of cabinet
 - g. Knockouts provided in bottom of cabinet for line and low voltage connections
 - h. Wall Hanging Support Bracket furnished with boiler
 - i. Flange on back of boiler cabinet engages support bracket for easy mounting
 - 2. Heating System:
 - a. Stainless Steel Helical Heat Exchanger Assembly
 - 1. Helical design and inner finned tubing
 - 2. Self-cleaning design

3. Sight glass on top of heat exchanger for easy burner flame viewing
 - b. Stainless Steel Mesh Modulating Burner
 - c. Direct Electronic Spark Igniter
 - d. Automatic Gas Control
 1. 115 volt redundant combination gas control valve combines manual shut off option (On-Off), automatic electric valve (dual) and gas pressure regulation
 2. Dual valve design provides double assurance of %100 close off of gas to the main burners
 3. Gas shutoff valve is furnished in gas supply line to gas valve
 - e. Combustion Air Blower
 1. Permanently lubricated ball bearing design
 2. Loss of flame signal prevents unit operation in case of flue blockage
 - f. CPVC Flue Condensate Collector
 1. Corrosion resistant
 2. Condensate drain trap kit is included with the unit
 - g. Circulating Pump
 1. Cast Iron construction
 2. Pump motor is impedance protected
 3. Motor and impeller is removable as a single unit for servicing
 - h. Relief Valve and Air Vent
 1. Furnished as standard for field installation in top of cabinet
 2. Valve opens at 30 psig and is approved by ASME
 - i. Combination Temperature/Pressure Gauge
 1. Furnished for field installation in supply water line at bottom of unit cabinet
 - j. Brass Drain Valve
 1. 3/4 in. brass drain valve furnished for field installation in return water line at bottom of unit cabinet
 - k. LPG/Propane Conversion Kit (Furnished)
 1. Conversion kit required for field changeover from natural gas
3. Direct Vent Sealed Combustion System:
 - a. Boiler features a “sealed combustion” system and can only be installed in Direct Vent (two pipe) applications
 - b. In Direct Vent applications, combustion air is supplied from outdoors and flue gases are discharged outdoors
4. Venting:
 - a. Vent Temperature Sensor
 1. Loss of flame signal prevents unit operation in case of flue blockage
 2. Furnished as standard and factory installed on the CPVC Flue Condensate Collector
5. Integrated Primary/Secondary Piping with Pump:

- a. Primary and secondary piping with circular pump are factory installed and piped internal to the unit
- 6. Control Module/User Interface:
 - a. Fully Modulating Electronic Control
 - 1. Automatically adjusts heat input in increments of 20% to 100% (full input)
 - b. User Interface Control
 - 1. Buttons (MENU, ENTER, RESET, UP/DOWN ARROWS)
 - c. LCD Display
 - 1. Boiler Status Screens
 - 2. User Menu
 - a. Settings
 - b. Boiler Configuration
 - c. Central Heating Settings
 - d. Direct Hot Water Settings
 - d. Flame Sensor
 - 1. Flame sensitive sensor furnished and factory installed on the heat exchanger.
 - 2. Prevents unit operation if blockage occurs in the combustion products passageway
 - e. Integrated Low Water Cutoff Control
 - 1. Interrupts power immediately in low water condition
 - 2. Automatically restarts burner on return of water level
 - 3. Factory installed and wired
 - 4. Low water indicator LED
 - f. Transformer
 - 1. Supplies 24V power to Low Water Cutoff Control
 - g. Supply Water Switch
 - 1. Monitors boiler water temperature in conjunction with the main boiler control
 - 2. Shuts off boiler in case of abnormal supply water temperature
 - h. Return Water Temperature Sensor
 - i. Terminal Block
 - 1. Removable for easy wiring connections
 - j. High Voltage Junction Box
 - 1. For line voltage connections
 - 2. Located inside bottom of cabinet
- 7. [Optional Accessories:]
 - a. [Venting:]
 - 1. [Termination kit- Concentric]
 - 1. [2 or 3 in. kit contains concentric termination assembly, reducer bushing and 45° elbow]

2. [Kit requires single hole penetration of roof or wall for installation]
 3. [Roof penetration applications requires field supplied boot/flashing]
 4. [CSA certified]
- b. [Controls:]
1. [Thermostat]

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 [Boiler] in accordance with manufacturer's instructions and regulations of authorities having jurisdiction.

END OF SECTION