HG-515.4 Duty of Authorized Inspector.

(a) Each boiler shall be inspected during construction and after completion and, at the option of the Authorized Inspector, at such other stages of the work as he may designate. For specific requirements, see the applicable parts of this Section. Each Manufacturer or assembler is required to arrange for the services of Authorized Inspectors (see HG-515.2) to perform such inspections on all of this work within the scope of this Section, whether performed in the shop or in the field.

(b) When mass production of boilers or HLW-stamped vessels makes it impracticable for the Inspector to personally perform each of his required duties, the Manufacturer, in collaboration with the Inspector, shall prepare an inspection and quality control procedure setting forth, in complete detail, the method by which the requirements of this Section shall be maintained (for summaries of the responsibilities of the Manufacturer and the duties of the Inspector see HG-515.2 and HG-515.3 for boilers or HLW-600.2 and HLW-600.3 for HLW-stamped vessels). This procedure shall be included in the Manufacturer's written Quality Control System. It shall be developed, accepted, and implemented in accordance with Mandatory Appendix 7.

HG-520 MASTER AND PARTIAL DATA REPORTS

HG-520.1 Manufacturer's Master Data Report. Each manufacturer of heating boilers of wrought materials to which the Certification Mark with H designator is to be applied shall compile a Manufacturer's Data Report for each boiler he produces, except that an individual Manufacturer's Data Report may be used to include the serial numbers in uninterrupted sequence of identical boilers completed, inspected, and stamped in a continuous 8 hr period. Form H-2 or Form H-3 shall be used.

(a) The boiler Manufacturer shall have the responsibility of furnishing a copy of the completed Manufacturer's Data Report at the place of installation to the inspection agency, the purchaser, and the state, municipal, or provincial authority.

(b) The Manufacturer shall either keep a copy of the Manufacturer's Data Report on file for at least 5 years, or the boiler may be registered and the original Data Report filed with the National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, Ohio 43229

HG-520.2 Partial Data Reports.

(a) Manufacturer's Partial Data Reports for those parts of a boiler requiring inspection under this Code, which are furnished by other than the shop of the manufacturer responsible for the completed boiler, shall be executed by the parts manufacturer and shall be forwarded in duplicate to the manufacturer of the finished boiler.

(b) Partial Data Reports (Form H-4) shall be completed for all parts that require inspection under this Code that are fabricated by a manufacturer other than the manufacturer of the completed boiler. These Partial Data Reports, together with his own inspection, shall be the final Authorized Inspector's authority to witness the application of the Certification Mark to the completed boiler.

(c) Manufacturers with multiple locations, each with its own Certificate of Authorization, may transfer parts from one of their locations to another without Partial Data Reports, provided the Quality Control System describes the method of identification, transfer, and receipt of the parts.

HG-520.3 Supplementary Sheet. Form H-6, Manufacturer's Data Report Supplementary Sheet, shall be used to record additional data where space was insufficient on a Data Report Form. This Manufacturer's Data Report Supplementary Sheet will be attached to the Manufacturer's Data Report Form where used. If Form H-6 is used in conjunction with Form H-5 or H-5A, the Authorized Inspector's certification is not applicable.

HG-520.4 Multiple Page Data Reports. Requirements for completing multiple pages of Data Report Forms are shown in Mandatory Appendix 4.

HG-530 MARKING OF BOILERS

HG-530.1 Marking Requirements for Boilers (and Economizers Built to Mandatory Appendix 10) Other Than Those Constructed Primarily of Cast Iron or Cast Aluminum (See HG-530.2).

(a) All boilers to which the Certification Mark is to be applied shall be built according to the rules of this Section by a manufacturer who is in possession of a Certification Mark and a valid Certificate of Authorization. Each boiler shall be stamped with the Certification Mark shown in Figure HG-530.1 with the H designator and with the following data except as permitted in (f) below:

(1) the boiler manufacturer's name, preceded by the words "Certified by"

(2) maximum allowable working pressure

(3) safety or safety relief valve capacity (minimum), as determined according to HG-400.1(d) and HG-400.2(e)

Figure HG-530.1

Official Certification Mark to Denote the
American Society of Mechanical Engineers' Standard
(4) heating surface, as determined according to HG-403 (or power input for electric boilers)
(5) manufacturer’s serial number
(6) year built
(7) maximum water temperature

NOTE: The year built may be incorporated into the serial number as a prefix consisting of the last two digits of the year.

(b) The information listed in (a) above, including the Certification Mark, shall be applied by stamping, etching, or laser annealing that leaves a permanent, legible mark.

(1) The process controls for etching or laser annealing shall be described in the Quality Control System and shall be acceptable to the Authorized Inspector.

(2) The process controls shall be established so that the etched characters shall be at least 0.004 in. (0.10 mm) deep.

(3) The surface condition where etching is applied shall be clean, uncoated, and unpainted.

(4) Laser annealing is allowed only on stainless steel and aluminum.

(5) No coating that obscures the laser annealing marking shall be allowed.

(c) Items (a)(1) through (a)(7) listed in (a) above, with the markings arranged substantially as shown in Figure HG-530.2 or Figure HG-530.3, shall be marked with letters at least \( \frac{7}{16} \) in. (8 mm) high [except as permitted in (f)] and in some conspicuous place on the boiler proper or on a nameplate at least \( \frac{7}{64} \) in. (1.2 mm) thick permanently fastened to the boiler proper.

(d) The location of the marking shall be as follows:

(1) Horizontal Tubular Flue Type Boilers: on the front head above the central rows of tubes or flues.

(2) Locomotive Firebox, Compact, or Vertical Firetube Type Boilers: over or near the fire door or handhole or washout plug opening on the front end or side.

(3) Watertube Type Boilers: on a head of the top outlet drum. Waterwalls and headers shall carry identifying markings.

(4) Split-Section and Section Firebox Type Wrought Boilers: over or near the fire door or handhole or washout plug opening on the front end or side. Each section shall carry identifying markings.

(5) Scotch Type Boilers: on either side of the shell near the normal water level line adjacent to the front tubeshell.

(e) On any of the above type boilers where there is not sufficient space in the places designated and on other types and new designs of boilers, the marking shall be located in a conspicuous place.

(f) When there is insufficient space for the marking required above, smaller letter dimensions may be used, provided

(1) marking shall be as required in (a) through (c) above, and

(2) character size shall be no smaller than \( \frac{7}{32} \) in. (4 mm)

(g) The marking on the boiler proper shall not be covered with insulating or other material unless

(1) the required markings are duplicated and stamped directly on the boiler casing in some conspicuous place using letters and numerals at least \( \frac{7}{16} \) in. (8 mm) high

(2) an opening with a removable cover is provided in the jacket or other form of casing so that, when removed, the marking or nameplate on the boiler proper can be viewed

(3) the required data are duplicated by stamping, etching, or permanent marking with letters at least \( \frac{7}{8} \) in. (3 mm) high on a nonferrous nameplate at least 3 in. x 4 in. (75 mm x 100 mm) size and permanently attaching the nameplate to the casing in some conspicuous place by mechanical means or by an adhesive system meeting the requirements of Mandatory Appendix 3

(h) The Certification Mark may be preapplied to a nameplate. The nameplate may be attached to the boiler after the final fabrication and examination sequence but before the hydrostatic test, provided the procedure for sequence of marking is described in the manufacturer’s accepted quality control system.

(i) The Certification Mark shall not be used by an organization to which it was not issued.
HG-530.2 Marking Requirements for Cast Iron or Cast Aluminum Boilers.

(a) All cast iron boiler parts or sections to which the Certification Mark is to be applied shall be built according to the rules of this Section by a Manufacturer who is in possession of a Certification Mark and a valid Certificate of Authorization. Each boiler section, including end and intermediate cored sections, shall be cast or etched with the Certification Mark shown in Figure HG-530.1 with the H designator and with the following data cast in letters or numerals at least 5/16 in. (8 mm) high:

1. the boiler or parts Manufacturer’s name or acceptable abbreviation, preceded by the words “Certified by:” (or “Cert. by” on cast boiler sections only where space for marking is limited; the abbreviation “Cert. by” shall not be used on nameplates)

2. maximum allowable working pressure

3. pattern number

4. casting date

Arrangement of data cast or etched on sections shall be substantially as shown in Figure HG-530.6 for cast aluminum hot water heating boilers.

The process controls for etching shall be described in the Quality Control System. Etched information shall have a minimum depth of 0.004 in. (0.1 mm) and shall not compromise the minimum wall thickness. The surface condition where etching is applied shall be clean, uncoated, and unpainted.

Other data may be cast or etched on the sections. The marking “ASME” or “ASME standard” shall not be used.

(b) All cast aluminum boiler parts or sections to which the Certification Mark is to be applied shall be built according to the rules of this Section by a Manufacturer who is in possession of a Certification Mark and a valid Certificate of Authorization. Each boiler section, including end and intermediate cored sections, shall be cast, stamped, or etched with the Certification Mark shown in Figure HG-530.1 with the H designator and with the following data cast in letters or numerals at least 5/16 in. (8 mm) high:

1. the boiler or parts Manufacturer’s name or acceptable abbreviation, preceded by the words “Certified by:” (or “Cert. by” on cast boiler sections only where space for marking is limited; the abbreviation “Cert. by” shall not be used on nameplates)

2. maximum allowable working pressure

3. pattern number

4. casting date

5. the material specification identification number and grade or an abbreviation traceable to the material certification.

In lieu of directly marking the castings, the data in items (b)(1), (b)(2), and (b)(5) may be stamped or etched on a permanently attached 5/64 in. (0.2 mm) thick nonferrous nameplate using letters and numerals at least 5/6 in. (3 mm) high.

Arrangement of data marked on sections or on a nameplate shall be substantially as shown in Figure HG-530.6 for cast aluminum hot water heating boilers.
or the vessel may be registered and the original Data Report filed with the National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, Ohio 43229.

**HLW-601.2 Partial Data Reports.**

(a) Manufacturer's Partial Data Reports for those parts of a vessel requiring inspection under this Code, which are furnished by other than the shop of the manufacturer responsible for the completed heater, shall be executed by the parts manufacturer and shall be forwarded in duplicate, to the manufacturer of the finished vessel.

(b) Partial Data Reports (Form HLW-7) shall be completed for all parts that require inspection under this Code that are fabricated by a manufacturer other than the manufacturer of the completed vessel, regardless of whether individual Manufacturer's Data Reports are compiled for the completed units. These Partial Data Reports, together with his own inspection, shall be the final Inspector's authority to witness the application of a Certification Mark to the completed vessel.

(c) Manufacturers with multiple locations, each with its own Certificate of Authorization, may transfer parts from one of their locations to another without Partial Data Reports, provided the Quality Control System describes the method of identification, transfer, and receipt of the parts.

**HLW-601.3 Supplementary Sheet.** Form H-6, Manufacturer's Data Report Supplementary Sheet, shall be used to record additional data where space was insufficient on a Data Report Form. This Manufacturer's Data Report Supplementary Sheet will be attached to the Manufacturer's Data Report Form where used.

(FIGURE HLW-504)

(a) Complete Data Report

Sections A, B, and C so that all manufacturer's reports are in accordance with the applicable Rules of this Code. Forms are shown in Mandatory Appendix 4.

**HLW-602 STAMPING OF WATER HEATERS AND STORAGE TANKS**

**HLW-602.1 Stamping Requirements for Vessels.** All vessels to which the Certification Mark is to be applied shall be built according to the rules of this Part by a manufacturer who possesses a Certification Mark and a valid Certificate of Authorization per procedure of HG-540. Each vessel shall be marked or stamped with the Certification Mark with the HLW designer shown in Figure HLW-602.1 and the form of stamping shown in Figure HLW-602.2 with the HLW designer with the following data:

(a) the manufacturer's name, preceded by the words "Certified by."

(b) maximum allowable working pressure.

(c) maximum allowable input in Btu/hr; electric heaters may use kW or Btu/hr (expressed at the rate of 3,500 Btu/hr/kW) or both. In lieu of the input markings, storage tanks shall be marked "Storage Only."

(FIGURE HLW-602.2)

(d) manufacturer's serial number (this may be a serial number or a combination model and serial number).

(e) year built (the year built may be incorporated into the serial number).

**HLW-602.2 Stamping a Proof Tested Vessel.** A completed vessel or one tested prior to lining may have the required Certification Mark and marking applied, provided

(a) the proof test was stopped before any visible yielding

(b) all welding was qualified as required by HLW-451

(c) the MAWP is calculated by the method of HLW-502.1(d)(2)

(d) the interior of a lined vessel must be inspected to verify that it was not damaged, and

(e) the completed vessel is subjected to the hydrostatic test provisions of HLW-505

(FIGURE HLW-602.3)

When the Certification Mark and marking required by HLW-602.1(a) through HLW-602.1(e), is applied directly to the water heater vessel, it shall be stamped with letters and figures at least \( \frac{3}{16} \) in. (8 mm) high or on a stamping plate at least \( \frac{3}{32} \) in. (1.2 mm) thick permanently fastened to the water heater vessel.
Stamping plates bearing the stamping and marking required in HLW-602.1 may be used in lieu of stamping these data directly on the water heater vessel if the stamping plates are permanently attached to the water heater vessel. In this case the required data on the stamping plate shall be in characters not less than \( \frac{1}{6} \) in. (3 mm) high.

If the required marking or stamping is to be covered by insulation, jacket, or other form of casing, one of the following shall be provided:

1. an opening with a removal cover for viewing the marking or stamping.
2. a nameplate, located in a conspicuous place on the jacket, duplicating the required Certification Mark and data. This plate shall be at least 3 in. \( \times \) 4 in. (75 mm \( \times \) 100 mm) in size marked with letters and numerals at least \( \frac{1}{6} \) in. (3 mm) high and of either metallic material attached by mechanical means or of any material attached by an adhesive system meeting the requirements of Mandatory Appendix 3.

**HLW-602.3.1** When there is insufficient space for the nameplate required in HLW-602.3, smaller letter dimensions may be used, provided:

1. stamping shall be as required in HLW-602.1.

Insert the following new paragraph:

(c) When a stamping plate or nameplate is used the information listed in HLW-602.1, including the Certification Mark, shall be applied by stamping, etching, engraving, dot peening, laser annealing or any process that leaves a permanent, legible mark. No coating that obscures the marking shall be allowed. For any process, other than direct stamping, the following additional requirements apply:

1. The process controls shall be described in the Quality Control System and shall be acceptable to the Authorized Inspector.
2. Controls shall be established so that the characters shall be at least 0.004 in. (0.10 mm) deep for any process that removes or displaces material.
3. The surface condition for processes that are employed that do not remove or displace material (e.g., etching, laser annealing) shall be clean, uncoated, and unpainted.
4. Laser annealing is allowed only on stainless steel and aluminum.

have a precautionary statement warning that the water heaters are to be operated only on deionized water having a minimum specific resistivity of 1.0 M\( \Omega \)/cm clearly marked and located on the water heater so that it will be readily visible.