

## The ASME Story

We often hear of Heat Exchanger manufacturers offering “Code” units. But is it really an ASME Code Stamped unit complete with a U-1 data report or is only “Designed to” or “Tested in accordance?”

**All Bell & Gossett ASME Code Stamped units come complete with full “U” stamp and U-1 data report.**

Hopefully the information below helps to clarify the ASME Code issue.

### 1. What is an ASME Code vessel?

The letters ASME are an abbreviation of the words “American Society of Mechanical Engineers.” This society established and maintains design, construction, and inspection standards providing for maximum protection of life and property. Before an ASME vessel can be fabricated, a manufacturer must apply for and receive a Certificate of Authorization from the Boiler and Pressure Vessel Committee of the American Society of Mechanical Engineers. Thereafter, in conformance with this certificate of Authorization, an ASME Code vessel must be designed, fabricated and inspected in accordance with the rules of the ASME Code.

### 2. How is an ASME Code vessel identified?

Either of the symbols “U” or “UM” may be used to identify an ASME Code vessel. The symbol used must be either stamped on the vessel itself or on the manufacturer’s data plate attached to the vessel. When the symbol “U” is used, a manufacturer’s data report for pressure vessels (Form U-1, as required by the provisions of the ASME Code rules), will be furnished on request. When the “UM” symbol is used, a certificate (Form U-3) is also furnished only on request.

### 3. What is a “U” symbol?

When the “U” symbol is used, it indicates that a manufacturer has complied with all the provisions of the ASME Code for pressure vessels. In addition, it means that the vessel has passed inspection by a third party authorized inspector commissioned by the National Board of Boiler and Pressure Vessel inspectors or by having the manufacturer follow the requirements of ASME UG 90 (c)(2). ASME UG 90 (c)(2) which requires a manufacturer to have an authorized inspector on location for a minimum of 40 hours per week and to be audited by ASME more rigorously, but this allows the manufacturer to provide witness inspection. Bell and Gossett utilizes both these processes which provides processing of “U” stamped ASME code vessels without delays due to scheduling an authorized inspector. The Form U-1 Data Report furnished, on request, with each vessel contains the signature of the authorized inspector. This certifies that the vessel has met the requirements of the ASME Code. Those manufacturers, who register with the National Board, will send two copies

of Form U-1 to the National Board Headquarters. Once registered with the National Board, copies of ASME Data Reports are available at no charge to the jurisdictional authorities.

#### **4. What is a “UM” Symbol?**

The “UM” symbol limits construction of pressure vessel to 5 cubic feet in volume (37.4 gal.) and 250 psi. design pressure or 1 cubic foot in volume (11 gal.) and 600 psi. pressure. Such vessels are not inspected by an authorized inspector of the National Board. Also, they may be exempt from inspection by local inspectors. Form U-3, furnished upon request, is only a manufacturer’s certification that the vessel complies with the rules of ASME for “UM” symbol vessels. Because “UM” construction is limited, it is not accepted in some localities.

#### **5. Why does Bell & Gossett use the “U” symbol instead of the “UM”?**

In order to avoid the complication and confusion that could be created with the restricted acceptance of “UM” stamped vessels, all Bell & Gossett ASME Code pressure vessels are manufactured with the “U” stamp, which indicates that:

- a. They are inspected by an authorized inspector, and registered with the National Board.
- b. Manufacturer’s Data Reports for Pressure Vessels (Form U-1) are issued with each vessel on request
- c. The vessels are accepted in all jurisdictions with no restrictions.

#### **6. Why is all this important to a user of a pressure vessel?**

In many states, cities, counties, and provinces of Canada, ASME Code “U” symbol is required of a pressure vessel when it is installed in a public building designed for human occupancy. Also, the “U” symbol construction is required by most insurance companies before insurance will be issued to the owner of a public building designed for human occupancy. As the importance of code construction becomes recognized within a municipality, the rules are often changed in favor of code construction. Consequently, code requirements are becoming increasingly important to the user of pressure vessels for the following reasons:

- a. If a non-code vessel is accepted and installed within a jurisdiction requiring code construction and is thereafter subject to inspection, the qualifying inspector will not accept the installation nor will insurance be allowed. A non-code vessel cannot be converted to code after it has been shipped from the manufacturer as non-code. Therefore, a new vessel would then have to be purchased under the code construction standards. This can be a very costly change.
- b. If a non-code vessel is installed in an area which does not at first require code construction but later changes to this requirement, a new code unit may have to be purchased to satisfy local and insurance requirements; a very costly change.
- c. If a vessel is accepted and installed with the symbol “UM” and the jurisdiction does not accept this symbol, the user may have to change the vessel to the proper “U” symbol – again, a very costly change.
- d. Some uninformed manufacturers may apply the “UM” symbol on a vessel over the 37.4 gallon volume limit as set forth by ASME. If such a vessel over the 27.4 gallon volume is accepted and installed with the “UM” symbol it is a direct violation of the ASME code and such a vessel will not be accepted.
- e. To insure acceptance under any circumstance the user should specify and accept only unfired pressure vessels manufactured and stamped under the “U” symbol. Acceptance under all jurisdictions is then guaranteed.



## **7. Why should a Manufacturer be registered with the National Board?**

Being registered with the National Board insures that a permanent record of the Data Report for the pressure vessel is maintained. Manufacturers not registered with the National Board are only required to maintain their own records for a period of five (5) years. The life of a pressure vessel normally far exceeds this time frame. It is very possible that a pressure vessel over five (5)-years-old may not have any proof over ever being certified. In addition, the Data Report provides vital design information should the pressure vessel need to be repaired or modified.

## **8. How can a specification be written to include ASME construction?**

The following wording written into any specification will provide for an ASME Code vessel. "A manufacturer's data report for pressure vessels, Form U-1 as required for the ASME code rules, is to be furnished to the owner. This form must be signed by a qualified inspector, holding a National Board Commission, certifying that construction conform to the latest ASME Code Section VIII Div. 1 for pressure vessels. The ASME symbol "U" must also be stamped on the Heat Exchanger." In addition, it should be stated "The Manufacturer must be registered with the National Board."

# the ASME

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|--|---------------|----------|------------------|
| M'FR & NAT'L B'D   |               | 00000    |                  |
| <b>BELL &amp; GOSSETT PRODUCTS</b>   |               |          |                  |
|   | WP SHELL SIDE | 125      | P.S.I. AT 375 °F |
|  | WP TUBE SIDE  | 125      | P.S.I. AT 375 °F |
| DIV. 1<br>W<br>RES   | FACT. NO.     | 126602   |                  |
|  | CAT. NO.      | WU104-25 |                  |
|  | YEAR          | 1972     |                  |
| TUBE SIDE  | SH. .25       | HD. .25  | R. 10            |
| SHELL SIDE   | SH. .25       | HD. .25  | R. 10            |
|  <b>FLUID HANDLING DIVISION</b><br>MORTON GROVE, ILLINOIS, U.S.A.<br><small>INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION</small> |               |          |                  |

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