

**ALDOT-247-82**  
**MARKING OF HIGH-STRENGTH BOLTS, NUTS, AND WASHERS FOR STRUCTURAL STEEL JOINTS**

**1. Scope**

- 1.1. The purpose of this procedure is to set forth the method of identifying high-strength bolts, nuts, and washers by the manufacturer's markings.

**2. General**

- 2.1. Type 1. These bolts are made from medium-carbon steel, supplied in sizes M16 to M36, inclusive, in diameter. will have hex heads unless otherwise stipulated in appropriate drawings, plans, purchase orders or specifications.
- 2.2. Type 2. These bolts are made from what is described as low-carbon martensite steel, supplied in sizes M16 to M36, inclusive, in diameter. Bolts will have hex heads unless otherwise stipulated in appropriate drawings, plans, purchase orders or specifications.
- 2.3. Type 3. These bolts are made from steel having atmospheric corrosive resistance and weathering characteristics supplied in sizes M16 to M36, inclusive, in diameter. Bolts will have hex heads unless otherwise stipulated in appropriate drawings, plans, purchase orders or specifications.
- 2.4. Production Lot - for the purposes of assigning an identification number and from which test samples shall be selected, shall consist of all bolts processed essentially together through all operations to the shipping container that are of the same nominal size, the same nominal length, and produced from the same heat of steel.

**3. Nuts**

- 3.1. Nuts authorized for use with A 325M Bolts: Unless otherwise specified, nuts shall be heavy hex and the grade and surface finish of nut for each type of bolt shall be as follows:

<b>Bolt Type</b>	<b>Nut Grade and Finish</b>
Type 1 & 2, Plain (Noncoated)	8S, 8S3, Plain
Type 1 & 2, Zinc Coated	10S Zinc Coated
Type 3	8S3 Plain

**4. Markings on Heavy Hex Bolt Head**

- 4.1. All bolts, Type 1, 2 and 3, shall be marked A 325M and shall also be marked with a symbol identifying the manufacturer.
- 4.2. In addition to paragraph 4.1 above, Type 1 bolts shall be Marked 8S.
- 4.3. In addition to paragraph 4.1 above, Type 2 bolts shall be marked 8S with this marking underlined.

- 4.4. In addition to paragraph 4.1 above, Type 3 bolts shall be marked 8S3, and the manufacturer may add other distinguishing marks indicating that the bolt is atmospheric corrosion resistant and of a weathering type.
- 4.5. All markings shall be located on the top of the bolt head and may be either raised or depressed at the option of the manufacturer.

## **5. Markings on Heavy Hex Nuts**

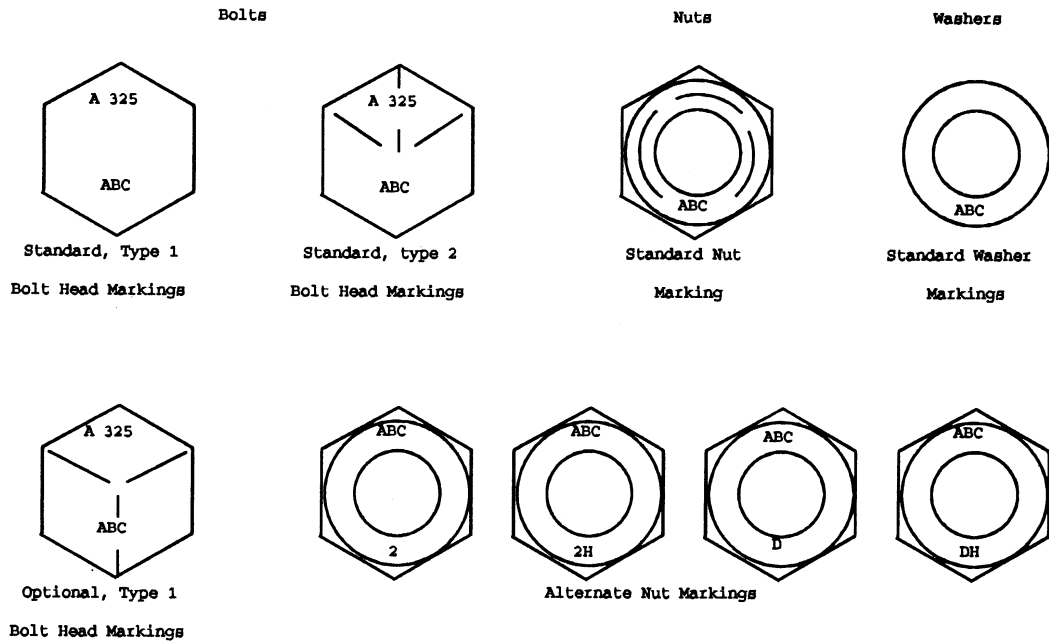
- 5.1. All nuts shall be marked with a symbol to identify the manufacturer.
- 5.2. In addition to the manufacturer's symbol, nuts of all classes shall be marked with property class designation (8S, 10S, 8S3, or 10S3) on the top or bearing surface, on the top of flange, or on one of the wrenching flats of the nut. Markings located on the top or bearing surface or on the top of the flange shall be positioned with the base of the numeral(s) oriented toward the nut periphery.
- 5.3. For Classes 8S3 and 10S3 nuts, the manufacturer may add other distinguishing marks to indicate the nut is atmospheric corrosion resistant and of a weathering grade of steel.
- 5.4. Marks on the above nuts may be raised or depressed at the option of the manufacturer. However, if markings are located on the bearing surface, they shall be depressed.

## **6. Markings on Circular Washers**

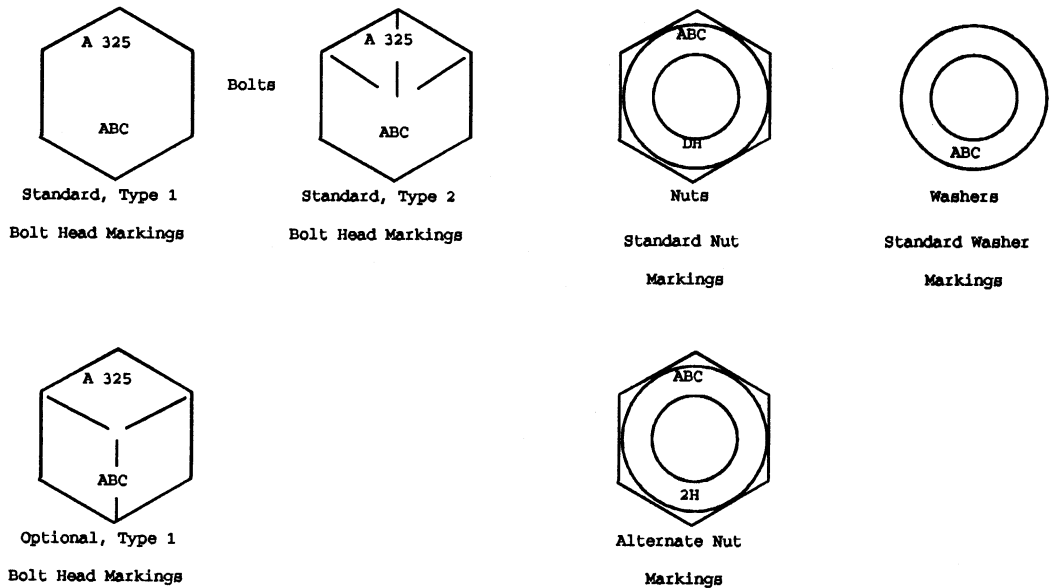
- 6.1. All circular washers shall be marked with a symbol identifying the manufacturer. Markings shall be depressed on one face of the washer. Clip washers need not be marked.
- 6.2. In addition to the manufacturer's mark, circular washers manufactured from steel having improved atmospheric corrosion resistance and of a weathering type shall be marked with the numeral 3.
- 6.3. Other identifying or distinguishing marks, or both, may be used by the manufacturer.
- 6.4. Additionally, washers shall be marked to identify their being metric size. Preferably, the metric marking shall be the symbol "M", but may be of other distinguishing design as determined by the manufacturer.

MARKINGS FOR HIGH STRENGTH A325 BOLTS  
 AND AUTHORIZED NUTS AND WASHERS

A. Plain (noncoated) Bolts with authorized plain nuts and washers



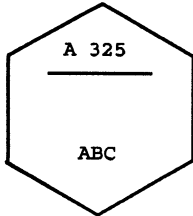
B. Galvanized ( Coated) Bolts with authorized nuts and washers



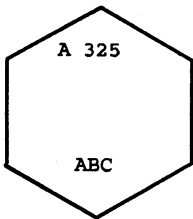
Note: ABC indicates Bolt manufacturer, in this case American Bolt Co.

C. Weathering Type Bolts with authorized nuts and washers

**Bolts**

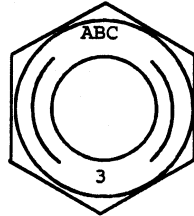


Standard, Type 3  
Bolt Markings

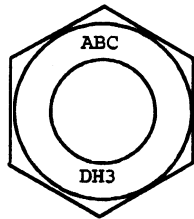


Standard, Type 3  
Bolt Markings

**Nuts**

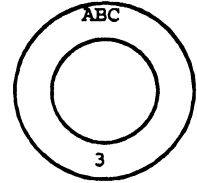


Standard Nut  
Marking



Alternate Nut Markings

**Washers**



Standard Washer  
Markings