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American National Standard for Zinc-Coated Ferrous Washerhead Bolts and Washer Nuts

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Foreword

(This Foreword is not a part of American National Standard for Ferrous Washerhead Bolts and Washer Nuts, ANSI C135.38-1987.

Suggestions for improvement of this standard will be welcome. They should be sent to ASC C135 c/o NEMA, 2101 L Street, N.W., Washington, DC 20037.

This standard was processed and approved for submittal to ANSI by Accredited Standards Committee on Pole Line Hardware, C135. Committee approval of the standard does not necessarily imply that all committee members voted for its approval. At the time it approved this standard, the C135 Committee had the following members:

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American National Standard for Zinc-Coated Ferrous Washerhead Bolts and Washer Nuts

1. Scope and Application

1.1 Scope. These standards cover ferrous washerhead bolts and washer nuts used in overhead line construction.

1.2 Application. The bolts and nuts covered by these standards shall conform in all respects to the basic dimensional and performance requirements hereinafter stated. The text, standard references, and Data Sheets Nos. 1 and 2 supplement each other and shall be considered as parts of this standard.

2. General

Unless otherwise specified, each washerhead bolt shall be furnished with one washer nut assembled thereon.

3. Material

3.1 All washerhead bolts shall be made from one of the following materials:

3.1.1 Hot headed washerhead bolts shall be made from hot-rolled or cold-rolled steel which has been produced by the open-hearth, basic-oxygen, or electric furnace process and which is of grade and quality suitable to meet requirements of these standards.

3.1.2 Cold headed washerhead bolts shall be made from a steel cold heading rod or wire which has been produced by the open-hearth, basic-oxygen, or electric furnace process and which is of grade and quality suitable to meet requirements of these standards and shall be reheated if necessary to meet requirements.

3.1.3 Fabricated washerhead bolts shall be made from washers which conform to paragraph 2.1 of ANSI Standards Publication for Zinc-Coated Ferrous Washers, C135.10, welded to the head of square head machine bolts which conform to ANSI Standard for Galvanized Steel Bolts and Nuts, C135.1-1979.

3.2 All washer nuts shall be made from one of the following materials:

3.2.1 Hot-rolled or cold-rolled steel which has been produced by the open-hearth, basic-oxygen, or electric furnace process and which is of a grade and quality suitable to meet the requirements of these standards.

3.2.2 Malleable iron, of a grade specified in ASTM A 197-47 (reaffirmed 1971) Standard Specification for Cupola Malleable Iron, or equivalent.

3.2.3 Nodular or ductile iron, of a grade specified in ASTM A 536-77 Standard Specification for Ductile Iron Castings, or the equivalent.

3.2.4 Material used in washers welded to square nuts to make washer nuts shall conform to paragraph 2.1 of ANSI Standard for Zinc-Coated Ferrous Washers, C135.10-1984. Nuts shall conform to ANSI Standard C135.1-1979.

4. Dimensions

4.1 General. All dimensions shall, before galvanizing, be in accordance with the text and Data Sheet Nos. 1 and 2.

4.2 Bolt length. The length of washerhead bolts shall be measured from the underside of the washerface to the last thread at the end of the bolt. Bolt length of optional head, welded washer, bolts will be reduced by the washer thickness.

4.3 Nut Dimensions. Washer nuts shall have a minimum threaded thickness of dimensions in accordance with ANSI/NEMA Standard for Zinc-Coated Steel Bolts and Nuts, C135.1-1979, except as noted on Data Sheet 2.

4.4 Bolt Head Dimensions. Washerhead bolts shall have dimensions in accordance with ANSI Standard C135.1-1979, except as noted on Data Sheet 1.

5. Threads

5.1 External threads may be machine rolled or cut in accordance with ANSI Standard C135.1-1979.

5.2 All nuts shall be tapped oversize after galvanizing in accordance with ANSI Standard C135.1-1979.

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6. Strength

Bolts and nuts assembled shall meet the strength requirements of ANSI Standard C135.1-1979.

7. Corrosion Protection

7.1 Washerhead bolts and washer nuts shall be zinc coated. The coating shall be applied by either:

7.1.1 The hot-dip process in accordance with the Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware, ASTM A-153-82, or

7.1.2 Any other method producing a zinc coating that meets the requirements of ASTM A-153-82 for adhesion, purity and thickness applicable to the class of material being coated.

8. Finish

8.1 Washerhead bolts and washer nuts shall be free from burrs, seams, laps, fins, and irregular surfaces that affect serviceability.

8.2 The threaded end of washerhead bolts not having semicone points shall be chamfered or rounded.

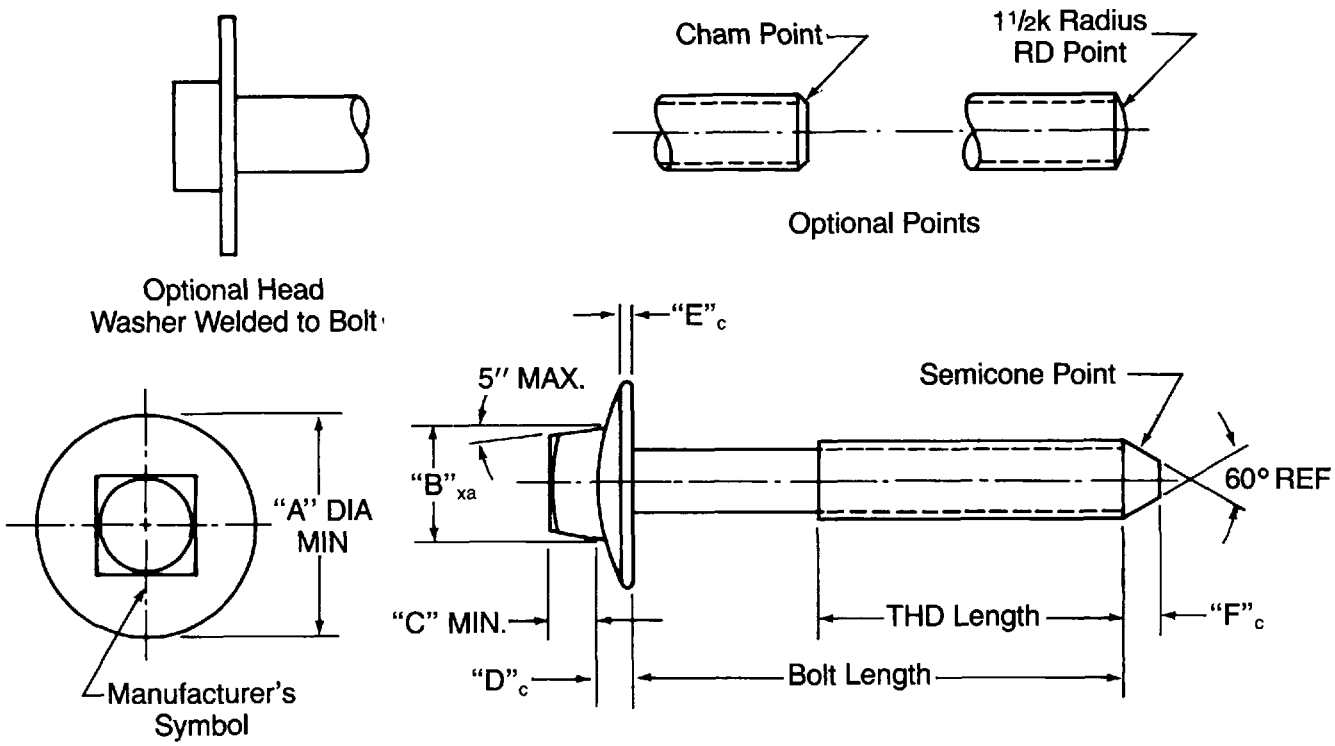
9. Marking

9.1 All washerhead bolt heads shall bear the manufacturer's symbol or identification mark.

9.2 Each box or shipping container shall be marked with the manufacturer's name and catalog number.

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DATA SHEET 1
WASHER HEAD BOLTS



DIMENSIONS (Inches)

Size	"A"	"B"	"C"	"D"	"E"	"F"	Length of Bolts
½	1½	¾	9/32	7/32	3/32	3/16	6, 7, 9, and 11
5/8	1 7/8	15/16	11/32	9/32	1/8	¼	6½, 10, 12, and 14
¾	2¼	1 1/8	7/16	5/16	1/8	3/8	5, 9, 10, 14, 16, and 20

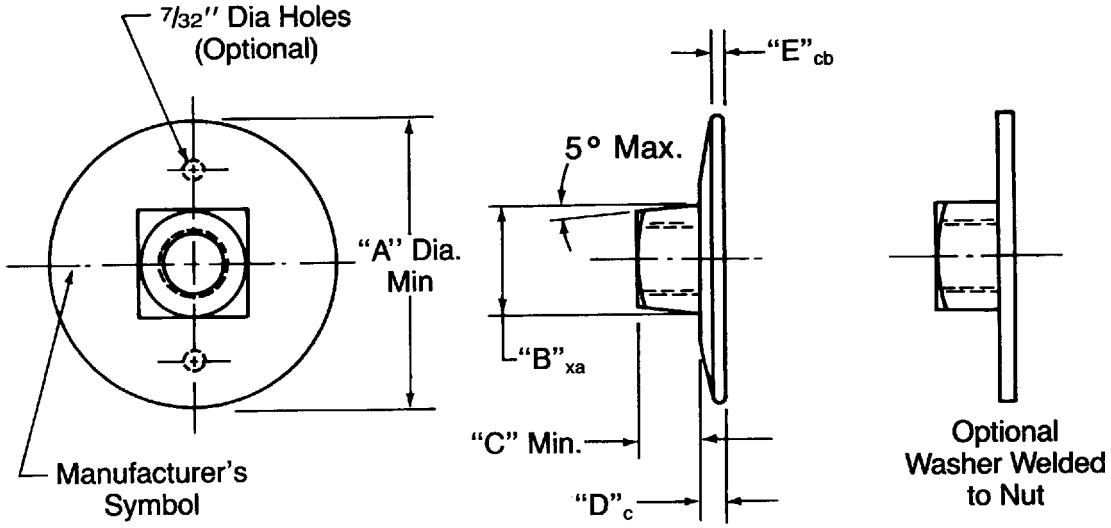
Bolt Length	Min. Thd. Length
4" to less than 8"	3"
8" to less than 12"	4"
12" and over	6"

a: 1/64 d: 1/8 g: 3/8 k: 1
b: 1/32 e: 3/16 h: 1/2 x: 0
c: 1/16 f: 1/4 j: 3/4

ALLOWABLE VARIATIONS
SINGLE LETTER INDICATES, SAME + or −, a: ± 1/64
TWO LETTERS INDICATE, FIRST + SECOND −, ax: + 1/64 − 0

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DATA SHEET 2
WASHER NUTS



Size	"A"	"B"	"C"	"D"	"E"
½	1½	13/16	3/8	5/32	3/32
5/8	17/8	1	31/64	¼	5/32
¾	2¼	11/8	19/32	¼	5/32

a: 1/64 d: 1/8 g: 3/8 k: 1
b: 1/32 e: 3/16 h: 1/2 x: 0
c: 1/16 f: 1/4 j: 3/4

ALLOWABLE VARIATIONS
SINGLE LETTER INDICATES, SAME + or −, a: ± 1/64
TWO LETTERS INDICATE, FIRST + SECOND −, ax: + 1/64 − 0

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