

January 2012

*****Please note all bolts are required to be stamped with the manufacturer's symbol on the head of the bolt along with material identification. *****

Bolts and Nuts for Flanged Connections

Bolts and nuts shall be as indicated below (select the appropriate specification **and** finish):

Specification: (select one)

307 A

Bolts and nuts shall be carbon steel with a minimum 60,000 PSI tensile strength conforming to ASTM A307, Grade A. Bolts shall be standard ANSI B1.1, Class 2A coarse threads. Nuts shall conform to ASTM A563 and be standard ANSI B1.1, Class 2A coarse threads. All bolt heads and nuts shall be hexagonal. Identification on the head of the bolt shall be *A307 A*.

A307 A (short version)

Bolts and nuts shall conform ASTM A307 Grade A finished hex for bolts and ASTM F563 finished hex pattern for nuts.

307 B

Bolts and nuts shall be carbon steel with a minimum 60,000 PSI tensile strength conforming to ASTM A307, Grade B. Bolts shall be standard ANSI B1.1, Class 2A coarse threads. Nuts shall conform to ASTM A563 and be standard ANSI B1.1, Class 2A coarse threads. All bolt heads and nuts shall be heavy hexagonal for greater bearing area. Identification on the head of the bolt shall be *A307 B*.

A307 B (short version)

Bolts and nuts shall conform ASTM A307 Grade B heavy hex for bolts and ASTM F563 heavy hex pattern for nuts.

Grade 5 Carbon Steel Bolts

Bolts shall be carbon steel with a minimum 105,000 PSI tensile strength conforming to SAE J429. Bolts shall be standard ANSI B1.1, Class 2A coarse threads. Nuts shall conform to ASTM A563 and be standard ANSI B1.1, Class 2A coarse threads. All bolt heads and nuts shall be hexagonal. Identification on the head of the bolt shall be *three slash marks*.

Grade 5 Carbon Steel Bolts (short version)

Bolts and nuts shall conform to SAE J429 Grade 5 finished hex for bolts and ASTM A563 finished hex for nuts.

Finishes for Steel Fasteners

Finish: (select one)

- Bolts and nuts shall be plain finish.
- Bolts and nuts shall be Zinc plated to reduce the effects of corrosion.
- Bolts and nuts shall be provided with a hot dipped or mechanically galvanized finish to reduce the effects of corrosion. "Overtapped" nuts and holes may be required when hot dipped bolts are specified.

Bolts and nuts shall be finished with the **TRIPAC 2000** coating system to significantly reduce the effects of corrosion. A multi-step process shall be utilized to chemically clean, abrasive blast and prime with zinc/nickel phosphate primer prior to application of the Xylan fluoropolymer. Wear resistance (K-Factor) shall be in the range of 6 to 8 (excellent) and minimal effects should be seen after a 2000 hour Salt Spray test conforming to ASTM B-117. *Tripac 2000 Blue or District approved equal.*

T-316 Stainless Steel (Finished Pattern)

Bolts and nuts shall be T-316 stainless steel conforming to ASTM F593 for bolts and ASTM F594 for nuts. Bolts shall be threaded to conform to ANSI B 18.2.1, page C-1 for finished hex bolts. Nuts shall conform to ANSI B 18.2.2, page D-1. All bolt heads and nuts shall be hexagonal. Identification on the head of the bolt shall be *T-316, 316, F593G or F593H*.

**** Metric Head Marking is "A4" ****

T-316 Stainless Steel Finished Pattern (short version)

Bolts and nuts shall be T-316 stainless steel conforming to ASTM F593 for bolts and ASTM F594 for nuts. Bolts and nuts shall be finished hex.

T-316 Stainless Steel with T-2000 Blue Nut (Finished Pattern)

Bolts and nuts shall be T-316 stainless steel conforming to ASTM F593 for bolts and ASTM F594 for nuts. Bolts shall be threaded to conform to ANSI B 18.2.1, page C-1 for finished hex bolts. Nuts shall conform to ANSI B 18.2.2, page D-1. Nuts shall be finished with TRIPAC 2000 coating system to minimize galling and ensure proper torque. Anti-seize compound shall not be utilized with the blue nuts. All bolt heads and nuts shall be hexagonal. Identification on the head of the bolt shall be *T-316, 316, F593G or F593H*.

**** Metric Head Marking is "A4" ****

T-316 Stainless with T-2000 Blue Nut (short version)

Bolts and nuts shall be T-316 stainless steel conforming to ASTM F593 for bolts and ASTM F594 for nuts. Bolts and nuts shall be finished hex. Nuts shall be coated with Tripac 2000 Blue or District approved equal.

B8M T-316 Stainless Steel (Heavy Pattern)

Bolts and nuts shall be stainless steel conforming to ASTM A193 Grade B8M for bolts and ASTM A194 Grade 8M for nuts. Bolts shall be threaded to conform to ANSI B 1.1, Class 2A coarse threads. Nuts shall conform to ASTM A194. All bolt heads and nuts shall be heavy hexagonal. Identification on the head of the bolt shall be *B8M*.

B8M T-316 Stainless Steel Heavy Pattern (short version)

Bolts and nuts shall be T-316 stainless steel conforming to ASTM A193 Grade B8M for bolts and ASTM A194 Grade 8M for nuts.

B8M T-316 Stainless Steel with T-2000 Blue Nut (Heavy Pattern)

Bolts and nuts shall be stainless steel conforming to ASTM A193 Grade B8M for bolts and ASTM A194 Grade 8M for nuts. Bolts shall be threaded to conform to ANSI B 1.1, Class 2A coarse threads. Nuts shall conform to ASTM A194. Nuts shall be finished with TRIPAC 2000 coating system to minimize galling and ensure proper torque. Anti-seize compound shall not be utilized with the blue nuts. All bolt heads and nuts shall be heavy hexagonal. Identification on the head of the bolt shall be *B8M*.

B8M T-316 Stainless with T-2000 Blue Nut (short version)

Bolts and nuts shall be T-316 stainless steel conforming to ASTM A193 for bolts and ASTM A194 for nuts. Bolts and nuts shall be heavy hex. Nuts shall be coated with Tripac 2000 Blue or District approved equal

Mechanical Joint T-Head Bolts

A242 Steel T-Bolts

T-Bolts shall be ASTM A242 weathering steel with minimum yield strength of 45,000 PSI. All T-Bolts & nuts shall be threaded in accordance with ANSI/ASME B1.1, Class 2A fit, with coarse-thread series. Heavy hex nuts shall be used. Bolt heads shall be in accordance with the dimensions of ANSI/AWWA C111 / A21.11-95.

A242 Steel T-Bolts (short version)

T-Bolts and nuts shall conform to ASTM A242 weathering steel. Nuts shall be heavy hex.

A242 Steel T-Bolts with T-2000 Blue Coating

T-Bolts shall be ASTM A242 weathering steel with minimum yield strength of 45,000 PSI. All T-Bolts & nuts shall be threaded in accordance with ANSI/ASME B1.1, Class 2A fit, with coarse-thread series. Heavy hex nuts shall be used. Bolt heads shall be in accordance with the dimensions of ANSI/AWWA C111 / A21.11-95. T-Bolts and nuts shall be coated with Tripac 2000 Blue or District approved equal.

A242 Steel T-Bolts with T-2000 Blue Coating (short version)

T-Bolts and nuts shall conform to ASTM A242 weathering steel. Nuts shall be heavy hex. T-Bolts and nuts shall be coated with Tripac 2000 Blue or District approved equal.

Hydrant Break-Off Bolts

307A Break-Off Bolts

Bolts and nuts shall be carbon steel with a minimum 60,000 PSI tensile strength conforming to ASTM A307, Grade A. Bolts shall be standard ANSI B1.1, Class 2A coarse threads. Nuts shall conform to ASTM A563 and be standard ANSI B1.1, Class 2A coarse threads. All bolt heads and nuts shall be hexagonal. Identification on the head of the bolt shall be *A 307 A. 5/8" diameter break-off bolts shall have an 11/32" hole drilled in the shank 2 3/8" deep. 3/4" diameter break-off bolts shall have a 13/32" hole drilled in the shank 2 3/8" deep. The bored out holes shall be 100% filled with silicon to prevent moisture from corroding the bolt internally.*

Meter Bolts

Silicon Bronze Bolts

Bolts and nuts shall be silicon bronze conforming to ASTM F 468. Material shall meet UNS Alloy number C65100, Alloy 651, low silicon bronze B. Bolts shall be standard ANSI B1.1, Class 2A coarse threads. All bolt heads and nuts shall be hexagonal. Washers shall be of the same material as the bolts and nuts. Identification on the head of the bolt shall be *651.*