



**Bolts and Nuts**

Size, length and number of bolts and nuts are shown in Table Nos. 8-3 (Details and Accessories-AWWA C110 or C115 flange) and 8-11 (Details and Accessories-flange faced and drilled per ANSI B16.1 Class 250). Bolts are specified in ANSI B18.2.1 and nuts are specified in ANSI B18.2.2. Bolts and nuts of low-carbon steel conforming to ASTM A307 are specified in the Appendix of AWWA C110 and C115 for flanged pipe when rubber gaskets are used. Nuts of regular or heavy hex design are used according to customer specifications. Also, per the Appendix of AWWA C110 and C115, high-strength bolts should not be used when a gray iron flange is involved in the connection.

lengths of pipe) or with any underground flanges\* that could be subjected to undesirable beam loading. Toruseal® gaskets are normally furnished of high-quality black, molded SBR rubber with required properties per ANSI/AWWA C111/A21.11. Standard Toruseal® SBR rubber gaskets are ANSI/NSF Standard 61 certified for contact with potable water. Other type rubber is available on special order. AMERICAN Toruseal® gaskets meet the description of “specially designed gaskets” shown in the appendices of AWWA C110, C111, and C115, and “special gaskets” shown in the body of AWWA C111.

\*As noted in the appendices of appropriate ANSI/AWWA standards, the use of flanged joints underground is generally not recommended because of the rigidity of the joint.



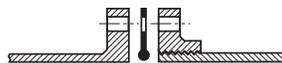
**NSF 61 certified Toruseal® Gasket**

**AMERICAN Toruseal® Flange Gasket**

The AMERICAN Toruseal® flange gasket is available for improved joint performance. It is vastly superior to conventional full-face or ring gaskets. Although recommended for all normal water and sewer service, it especially must be used in demanding services such as very large diameter flanged piping, specially designed long-span installations (i.e. spans involving 2 or 3

**Gaskets**

AMERICAN Toruseal® gaskets are recommended for AWWA standard flanged joints in normal water and sewage service. The ANSI B16.21 standard specifies the inside of 3"-12" non-metallic full-face and ring gaskets to be greater (the same as standard steel pipe outside diameters) than nominal. Any flat gaskets used for ductile iron flanged pipe must have “nominal” inside diameters as shown in the appendix of ANSI/AWWA C115/A21.15, not the larger inside diameters per ANSI B16.21. **The larger I.D. gaskets per ANSI B16.21 are not recommended by AMERICAN.**



**AMERICAN Toruseal® Flange Gasket**

Full-Face — Nominal 1/8" Thickness — Dual Raised Torus Bulbs

Table No. 8-2

Pipe Size in.	Pressure Rating* psi	Gasket Weight lbs	Approx. Bolt Torque** ft.-lbs	Pipe Size in.	Pressure Rating* psi	Gasket Weight lbs	Approx. Bolt Torque** ft.-lbs
4	350	0.3	100	24	350	1.6	400
6	350	0.3	150	30	250	2.1	400
8	350	0.5	150	36	250	2.7	500
10	350	0.6	200	42	250	3.5	500
12	350	0.8	200	48	250	4.0	500
14	350	0.9	250	54	250	4.3	600
16	350	1.1	250	60	250	6.4	600
18	350	1.1	300	64	250	9.1	600
20	350	1.3	300	-	-	-	-

Notes:  
 \*Pressure rating designated is maximum water working pressure and is based on the 350 psi allowable rating of 24" and smaller flanges in C111 and the 250 psi maximum rating of other sizes of C110 or C115 flanges. Contact AMERICAN on higher pressure or temperature requirements.  
 \*\*Bolt torque applicable only to flanged joints with Toruseal® gaskets.  
 Clean flange faces and faced pipe ends thoroughly prior to installation. Do not use joint or gasket compounds with Toruseal® gaskets (assemble joints dry).  
 For use with standard flange bolts. Holes match AWWA C110, C111, and C115 flange drilling. They also match certain flange drilling classes of AWWA C207 and ANSI B16.1 and B16.42 flanges.  
 Toruseal® gaskets may be used with steel pipe flanges in the 14"-54" sizes in some cases. Check AMERICAN for details, or when connecting to any flange configured differently than flanges per AWWA C110 or C115.