



**American Water Works
Association**

The Authoritative Resource on Safe Water®

ANSI/AWWA C227-11
(Revision of ANSI/AWWA C227-07)

AWWA Standard

Bolted, Split-Sleeve Restrained and Nonrestrained Couplings for Plain-End Pipe



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6666 West Quincy Avenue
Denver, CO 80235-3098
T 800.926.7337
www.awwa.org

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Committee Personnel

The Steel Water Pipe Manufacturers Technical Advisory Committee (SWPMTAC) Task Group on C227, which updated this standard, had the following personnel at the time:

Bob Card, *Chair*

R.J. Card, Consultant, Sugar Hill, Ga.	(AWWA)
A. Collins, JCM Industries, Nash, Texas	(AWWA)
T. Crail, Straub Coupling, Bonsall, Calif.	(AWWA)
S. Hill, Romac Industries Inc., Bothell, Wash.	(AWWA)
J.L. Luka, American SpiralWeld Pipe Company, Columbia, S.C.	(AWWA)
C. Shelley, Victaulic, Atlanta, Ga.	(AWWA)
G. Tate, Viking Johnson, Hitchin, U.K.	(AWWA)
A. Thoemke, Victaulic, Atlanta, Ga.	(AWWA)

The AWWA Standards Committee on Steel Pipe, which reviewed and approved this standard, had the following personnel at the time of approval:

John H. Bambei Jr., *Chair*

Dennis Dechant, *Vice-Chair*

John Luka, *Secretary*

General Interest Members

W.R. Brunzell, Brunzell Associates Ltd., Skokie, Ill.	(AWWA)
R.J. Card, Lockwood, Andrews & Newnam Inc., Sugar Hill, Ga	(AWWA)
R.L. Coffey, HDR Engineering Inc., Omaha, Neb.	(AWWA)
H.E. Dunham, MWH Inc., Bothell, Wash.	(AWWA)
S.N. Foellmi, Black & Veatch Corporation, Irvine, Calif.	(AWWA)
M.B. Horsley,* Black & Veatch Corporation, Kansas City, Mo.	(AWWA)
J.K. Jeyapalan, Consultant, New Milford, Conn.	(AWWA)
R.A. Kufaas, Norske Corrosion & Inspection Services, Surrey, B.C.	(AWWA)
J.L. Mattson, Corrosion Control Technologies, Sandy, Utah	(AWWA)
W.J. Moncrief,* HDR Engineering Inc., San Diego, Calif.	(AWWA)
R. Ortega,* Lockwood Andrews & Newnam Inc., Houston, Texas	(AWWA)
E.S. Ralph,† Standards Engineer Liaison, AWWA, Denver, Colo.	(AWWA)
A.E. Romer, AECOM, Newport Beach, Calif.	(AWWA)

* Alternate

† Liaison, nonvoting

J.R. Snow,* MWH Americas Inc., Denver, Colo.	(AWWA)
H.R. Stoner, Consultant, North Plainfield, N.J.	(AWWA)
C.C. Sundberg, CH2M HILL Inc., Issaquah, Wash.	(AWWA)
G.J. Tupac, G.J. Tupac & Associates Inc., Sun City West, Ariz.	(AWWA)
W.R. Whidden, Post Buckley Schuh & Jernigan, Orlando, Fla.	(AWWA)
K.E. Wilson,† Council Liaison, Post Buckley Schuh & Jernigan Inc., Tampa, Fla.	(AWWA)

Producer Members

S.A. Arnaout, Hanson Pressure Pipe Inc., Dallas, Texas	(AWWA)
H.H. Bardakjian, Consultant, Glendale, Calif.	(AWWA)
M. Bauer, Tnemec Company Inc., Kansas City, Mo.	(AWWA)
R.R. Carpenter, American SpiralWeld Pipe Company, Birmingham, Ala.	(MSS)
D. Dechant, Dechant Infrastructure Service, Aurora, Colo.	(AWWA)
W.B. Geyer, Steel Plate Fabricators Association, Lake Zurich, Ill.	(AWWA)
B.D. Keil, Northwest Pipe Company, Pleasant Grove, Utah	(AWWA)
J.L. Luka,* American SpiralWeld Pipe Company, Columbia, S.C.	(AWWA)
R.D. Mielke,* Northwest Pipe Company, Raleigh, N.C.	(AWWA)
J. Olmos, Ameron International, Rancho Cucamonga, Calif.	(AWWA)
J.A. Wise, Canus International Sales Inc., Surrey, B.C.	(AWWA)

User Members

G.A. Andersen, New York City Bureau of Water Supply, Little Neck, N.Y.	(AWWA)
J.H. Bambei Jr., Denver Water, Denver, Colo.	(AWWA)
B. Cheng, Metro Vancouver, Burnaby, B.C.	(AWWA)
D.W. Coppes, Massachusetts Water Resources Authority, Southborough, Mass.	(NEWWA)
R.V. Frisz, US Bureau of Reclamation, Denver, Colo.	(USBR)
G. George, Tacoma Water, Tacoma, Wash.	(AWWA)
T.J. Jordan, Metropolitan Water District of Southern California, La Verne, Calif.	(AWWA)
M. McReynolds,* Metropolitan Water District of Southern California, La Mirada, Calif.	(AWWA)
G. Oljaca,* Metro Vancouver, Burnaby, B.C.	(AWWA)
G.P. Stine, San Diego County Water Authority, Escondido, Calif.	(AWWA)
N.A. Wigner, Los Angeles Department of Water & Power, Los Angeles, Calif.	(AWWA)
J.V. Young, City of Richmond, Richmond, B.C.	(AWWA)

* Alternate

† Liaison, nonvoting

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Foreword

*This foreword is for information only and is not a part of ANSI*AWWA C227.*

I. Introduction.

I.A. *Background.* This standard describes bolted split-sleeve couplings used to join plain-end pipe. It also includes materials of construction, inspection, and testing. These couplings have been used on water pipe since 1981.

I.B. *History.* In October 1999, the AWWA Standards Council authorized the AWWA Standards Committee for Steel Pipe to develop a new standard for the use of bolted, split-sleeve couplings for plain-end pipe. The first edition of that standard was approved by the AWWA Board of Directors on Jan. 21, 2007. This edition was approved on Jan. 23, 2011.

I.C. *Acceptance.* In May 1985, the US Environmental Protection Agency (USEPA) entered into a cooperative agreement with a consortium led by NSF International (NSF) to develop voluntary third-party consensus standards and a certification program for direct and indirect drinking water additives. Other members of the original consortium included the American Water Works Association Research Foundation (AwwaRF, now Water Research Foundation[†]) and the Conference of State Health and Environmental Managers (COSHEM). The American Water Works Association (AWWA) and the Association of State Drinking Water Administrators (ASDWA) joined later.

In the United States, authority to regulate products for use in, or in contact with, drinking water rests with individual states.[‡] Local agencies may choose to impose requirements more stringent than those required by the state. To evaluate the health effects of products and drinking water additives from such products, state and local agencies may use various references, including

1. An advisory program formerly administered by USEPA, Office of Drinking Water, discontinued on Apr. 7, 1990.
2. Specific policies of the state or local agency.

* American National Standards Institute, 25 West 43rd Street, Fourth Floor, New York, NY 10036.

† Water Research Foundation, 6666 W. Quincy Avenue, Denver, CO 80235.

‡ Persons outside the United States should contact the appropriate authority having jurisdiction.

3. Two standards developed under the direction of NSF, NSF*/ANSI 60, Drinking Water Treatment Chemicals—Health Effects, and NSF/ANSI 61, Drinking Water System Components—Health Effects.

4. Other references, including AWWA standards, *Food Chemicals Codex*, *Water Chemicals Codex*,[†] and other standards considered appropriate by the state or local agency.

Various certification organizations may be involved in certifying products in accordance with NSF/ANSI 61. Individual states or local agencies have authority to accept or accredit certification organizations within their jurisdiction. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

Annex A, "Toxicology Review and Evaluation Procedures," to NSF/ANSI 61 does not stipulate a maximum allowable level (MAL) of a contaminant for substances not regulated by a USEPA final maximum contaminant level (MCL). The MALs of an unspecified list of "unregulated contaminants" are based on toxicity testing guidelines (noncarcinogens) and risk characterization methodology (carcinogens). Use of Annex A procedures may not always be identical, depending on the certifier.

ANSI/AWWA C227 does not address additives requirements. Thus, users of this standard should consult the appropriate state or local agency having jurisdiction in order to

1. Determine additives requirements, including applicable standards.
2. Determine the status of certifications by parties offering to certify products for contact with, or treatment of, drinking water.
3. Determine current information on product certification.

II. Special Issues.

II.A. *Advisory Information on Product Application.* Though details differ, all couplings of this type work in a similar fashion and have similar components as depicted in the standard. Coupling manufacturers should be contacted for detailed design information regarding the capabilities of the couplings supplied and proper methods of field installation.

III. Use of This Standard. It is the responsibility of the user of an AWWA standard to determine that the products described in that standard are suitable for use in the particular application being considered.

* NSF International, 789 N. Dixboro Road, Ann Arbor, MI 48105.

† Both publications available from National Academy of Sciences, 500 Fifth Street, NW, Washington, DC 20001.

III.A. *Purchaser Options and Alternatives.* The following information should be provided by the purchaser.

1. Standard used—that is, ANSI/AWWA C227, Bolted, Split-Sleeve Restrained and Nonrestrained Couplings for Plain-End Pipe, of latest revision.
2. Quantity.
3. Nominal pipe size(s).
4. Flange specification for flanged coupling adaptors, if used.
5. Whether compliance with NSF/ANSI 61, Drinking Water Treatment Chemicals—Health Effects, is required.
6. Details of other federal, state or provincial, and local requirements (Sec. 4.2.1).
7. Standard classification of rubber gaskets (Sec. 4.2.5).
8. Special service conditions and operating temperature range (Sec. 4.2.6).
9. Anticipated angular deflection of pipes (Sec. 4.4 and Table 2).
10. Special requirements, such as coatings (Sec. 4.5.2), linings (Sec. 4.5.2), gasket material (Table 1), gaskets for electrical insulation (Sec. 4.2.7), and special types of bolting (Sec. 4.2.9.1).
11. Actual outside diameter(s) (OD) of pipe ends, including coating (Sec. 4.6.2).
12. Purchaser's pipe-end preparation requirements (Sec. 4.6.2).
13. Type of pipe(s), including specification to which it is made, or specifications and tolerance of pipe ends (Sec. 4.6.2.1).
14. Additional nondestructive weld evaluation (Sec. 5.1.1.2).
15. Material certifications (Sec. 5.1.1.4).
16. Purchaser's inspection requirements (Sec. 5.1.2).
17. Rated pressure, including transient pressure and test pressure (Sec. 5.2.1).
18. Hydrostatic test data report (Sec. 5.2.2.2).
19. Purchaser's proof test requirements (Sec. 5.2.3).
20. Type of gasket material (Sec. 4.2.5).
21. Certificate of compliance (Sec. 6.3).

III.B. *Modification to Standard.* Any modification of the provisions, definitions, or terminology in this standard must be provided by the purchaser.

IV. Major Revisions. Major changes made to the standard in this revision include the following:

1. The reference to ANSI/AWWA C222, Polyurethane Coatings has been deleted from the standard since split-sleeve couplings must be bent during installation and the C222 coating could be damaged (Section 2 and Sec. 4.5.2).
2. Definitions for static and dynamic deflection were added (Section 3).
3. A second sentence was added to Sec. 4.3.1 to ensure restrained couplings will not pull apart under internal pressure.

4. Sec. 4.4, Performance, was rewritten to clarify performance issues relating to angular deflection.

5. Table 2 was revised to reflect allowable deflections for nonrestrained couplings.

6. Table 3 was revised to list pipe joint gap by coupling body width rather than by pipe size.

V. Comments. If you have any comments or questions about this standard, please call AWWA Engineering and Technical Services at 303.794.7711, FAX at 303.795.7603, write to the department at 6666 West Quincy Avenue, Denver, CO 80235-3098, or e-mail at standards@awwa.org.



**American Water Works
Association**

AWWA Standard

Bolted, Split-Sleeve Restrained and Nonrestrained Couplings for Plain-End Pipe

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes bolted, split-sleeve couplings (couplings) used to join plain-end pipe of similar outside diameter. Couplings may be manufactured from carbon steel or stainless steel and are intended for use in systems conveying water, wastewater, or air used in water treatment. This standard covers nominal coupling sizes from $\frac{3}{4}$ in. (20 mm) through 144 in. (3,600 mm).

Sec. 1.2 Purpose

The purpose of this standard is to provide the minimum requirements for bolted, split-sleeve couplings for plain-end pipe, including requirements for materials, design, testing and inspection, installation, marking, and shipping.

Sec. 1.3 Application

This standard can be referenced in purchaser's documents for bolted, split-sleeve couplings for plain-end pipe. The stipulations of this standard apply when this document has been referenced and then only to bolted, split-sleeve couplings for plain-end pipe.