

3-A[®] Sanitary Standards for Compression-Type Valves, Number 53-06

Standards Developing Organizations

3-A Sanitary Standards, Inc. (3-A SSI)

In Collaboration With

United States Public Health Service (USPHS)/

United States Food and Drug Administration (USFDA)

United States Department of Agriculture (USDA)

European Hygienic Engineering & Design Group (EHEDG)

Effective: May 22, 2009

Note: The highlighted text denotes changes to the previous document.

Disclaimers

3-A Sanitary Standards and 3-A Accepted Practices are developed through the efforts of experts, working on a volunteer basis, using science-based information and their professional experiences to reach consensus decisions on the sanitary (hygienic) criteria in these 3-A documents.

3-A SSI, its employees and its volunteer committees/working groups shall not incur any obligation or liability for damages, including consequential damages, arising from or in connection with the development, use, interpretation, or reliance upon this 3-A Sanitary Standard.

3-A Sanitary Standards and 3-A Accepted Practices do not include provisions for mechanical, electrical, or personnel safety. Such safety criteria are established by government regulations and other standards development organizations (SDOs). Other SDO standards may be referenced.

Drawings and illustrations contained herein are examples to assist in understanding the criteria in this 3-A Sanitary Standard. Appendix drawings and illustrations are not intended to show all variations of the equipment or system nor are they exclusive of alternate approved methods. Appendix drawings and illustrations are non-normative.

Foreword

This 3-A Sanitary Standard establishes minimum sanitary (hygienic) requirements for design, materials, fabrication, and/or installation of Compression-Type Valves.

This 3-A Sanitary Standard is for use on a voluntary basis by directly and materially affected organizations such as equipment and machinery fabricators, processors, regulatory agencies and by other SDOs to assure adequate public health protections exist for the equipment or systems and covered products. 3-A SSI uses these documents as its source of sanitary criteria for 3-A Symbol authorization.

This 3-A Sanitary Standard was developed jointly by 3-A SSI, the United States Public Health Service (USPHS), the United States Department of Agriculture – Dairy Programs (USDA), and the European Hygienic Engineering & Design Group (EHEDG).

It is our intent to encourage inventive genius and provide a forum to discuss new developments. Suggestions for improvement and new technology are welcome at any time for consideration by 3-A SSI. Please forward comments to 3-A SSI, 6888 Elm Street, Suite 2D, McLean, VA 22101-3829, USA or by fax: 703-761-6284, or by e-mail to:

3-ainfo@3-a.org.

A SCOPE

A1 These standards cover the sanitary aspects of compression-type valves (reference 3-A drawings, number 3-A-100-24 and 3-A-100-25) used on processing equipment and on equipment and lines which hold or convey milk or milk products.

A2 In order to conform to these 3-A Sanitary Standards, compression-type valves shall comply with the following in design, material and fabrication criteria and the applicable documents referenced herein.¹

B DEFINITIONS

B1 *Product*: Shall mean the milk and milk products.

B2 *Compression-Type Valve*: Shall mean a valve which directs, regulates, or prevents product flow between two or more inlet/outlet ports by the compression of a seal(s) on a rising stem and a seal face(s) on the valve body.

B3 Surfaces

B3.1 *Product Contact Surfaces*: Shall mean all surfaces that are exposed to the product or from which liquid may drain, drop or be drawn into the product.

B3.2 *Nonproduct Contact Surfaces*: Shall mean all other exposed surfaces.

B4 *Bond*: Shall mean the adhesive or cohesive forces holding materials together. This definition excludes press and shrink fits.

B5 Surface Modification²

B5.1 *Surface Treatments*: Processes where chemical composition or mechanical properties of the existing surface are altered. There is no appreciable build up of new material or removal of existing material.

B5.1.1 Surface treatments include:

1. Mechanical (grinding, polishing, shot peening)³
2. Electropolishing

B5.2 *Coatings, Overlays and Encapsulations*: A process where a different material is deposited to create a product contact surface. There is a build-up of new material. The coating, overlay, or encapsulation material does not alter the physical properties of the substrate.

B5.2.1 Coating process limited to:

1. Engineering Plating (e.g., Electrodeposition)⁴

C MATERIALS**C1 Metals**

C1.1 Product contact surfaces shall be of stainless steel of the American Iron and Steel Institute (AISI) 300 Series⁵ or corresponding Alloy Cast Institute⁶ (ACI) types (See Appendix, Section E), or metal which under conditions of intended use is equally corrosion resistant, nontoxic and nonabsorbent, or heat resistant glass piping except that:

C1.2 Valve stems made of the materials provided for in C1.1 may have their product contact surfaces modified by coating(s).

C2 Nonmetals

C2.1 Rubber and rubber-like materials may be used for gaskets (either bonded or removable), compression-type valve plugs, O-rings, seals and parts used in similar applications.

¹ Use current revisions or editions of all referenced documents cited herein.

² *Advanced Materials and Processes*, Volume 137(1), "Coatings and Coating Practices" by H. Herman, "Surface Modification" by F. A. Smidt. ASM International, Materials Park, OH 44073, Phone: (216) 338-5151.

³ AMS-S-13165, *Shot Peening of Metal Parts*. Society of Automotive Engineers (AWS), 400 Commonwealth Dr., Warrendale, PA 15096-0001.

⁴ SAE-AMS-QQ-C-320, Chromium Plating (Electrodeposited). SAE-AMS QQ-N-290A, Nickel Plating (Electrodeposited). Society of Automotive Engineers (AWS), 400 Commonwealth Dr., Warrendale, PA 15096-0001.

⁵ The data for this series are contained in the *AISI Steel Products Manual, Stainless & Heat Resisting Steels*, Table 2-1. Available from the American Iron and Steel Society, 186 Thorn Hill Rd., Warrendale, PA 15086 (724) 776-1535.

⁶ Steel Founders Society of America, Cast Metal Federation Building, 455 State Street, Des Plaines, IL 60016 (708) 299-9160.