



Designation: F 1792 – 97

An American National Standard

Standard Specification for Special Requirements for Valves Used in Gaseous Oxygen Service¹

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1. Scope

1.1 This specification covers the special requirements for valves used in gaseous oxygen service. It is intended that this specification be invoked as an additional requirement in conjunction with primary valve specifications.

1.2 The values stated in this specification in inch-pound units are to be regarded as the standard. The SI equivalent shown in parenthesis are provided for information only.

2. Referenced Documents

2.1 ASTM Standards:

G 63 Guide for Evaluating Nonmetallic Materials for Oxygen Service²

G 88 Guide for Designing Systems for Oxygen Service²

G 93 Practice for Cleaning Methods for Materials and Equipment Used in Oxygen-Enriched Environments²

G 94 Guide for Evaluating Metals for Oxygen Service²

2.2 American National Standards Institute (ANSI):

B1.1 Unified Screw Threads³

2.3 American Society of Mechanical Engineers (ASME):
Boiler and Pressure Vessel Code⁴

2.4 Military Standards and Specifications:

MIL-STD-1330 Standard Practice for Precision Cleaning and Testing of Shipboard Oxygen, Helium, Helium-Oxygen, Nitrogen, and Hydrogen Systems⁵

MIL-V-5027 Valves, Check, Oxygen, High Pressure⁵

MIL-STD-278 Fabrication, Welding and Inspection; Casting Inspection and Repair for Machinery, Piping and Process Vessels in Ships of the United States Navy⁵

MIL-STD-271 Non-destructive Testing Requirements for Metals⁵

MIL-P-46122 Plastic Molding and Extrusion Material, Polyvinylidene Fluoride Polymer and Copolymer⁵

3. Ordering Information

3.1 Ordering documentation for valves under this specification shall include the following information, as required, to describe the equipment adequately.

3.1.1 ASTM Designation and Year of Issue.

3.1.2 Primary Valve specification (see 1.1).

3.1.3 End Preparations, if different than specified in 4.4.

3.1.4 Supplementary requirements, if any (see S1 through S4).

4. Valve Design and Construction

4.1 Valves shall incorporate the features specified in 4.2-4.6.

4.2 *Materials of Construction*—Material requirements shall be as follows:

4.2.1 The pressure containing/retaining envelope (including any bolting, union nuts, or other fastening devices establishing the integrity of the pressure containing/retaining envelope), bellows (where applicable), and end nipples, shall be Nickel-Copper (70-30). Internal trim which is in contact with the line media shall be Nickel-Copper (70-30), Bronze, Nickel-Aluminum-Bronze, Inconel Alloy 600, Brass, or other materials which are compatible with oxygen service.

4.2.2 Non-metallic Seat, Seat Insert, or seals. These materials shall be selected from TFE, Reinforced TFE, CTFE, plastic in accordance with MIL-P-46122, Polyamide (Vespel), or PEEK. The materials for O-rings and gaskets shall be compatible for Oxygen service.

4.2.3 *Lubricants*—Materials for lubricants shall be Halocarbon (25-5S), Dupont (Krytox 240 AC, 240 AZ), Braycote 601 or other lubricants compatible with oxygen service.

4.2.4 Guidance on the selection of materials for Oxygen service can be found in ASTM G 63, and G 94. Guidance on designing Systems for Oxygen service can be found in ASTM G 88.

4.3 General Requirements:

¹ This specification is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.11 on Machinery and Piping Systems.

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² *Annual Book of ASTM Standards*, Vol 14.02.

³ Available from American National Standards Institute, 25 W. 43rd St., 4th Floor, New York, NY 10036.

⁴ Available from American Society of Mechanical Engineers ASME International Headquarters, Three Park Ave., New York, NY 10016-5990.

⁵ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.