

**MSS SP-134-2010**

# Valves for Cryogenic Service Including Requirements for Body/Bonnet Extensions

**Standard Practice**  
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This MSS Standard Practice was developed under the consensus of the MSS Technical Committee 114 and the MSS Coordinating Committee. The content of this Standard Practice is the result of the efforts of competent and concerned volunteers to provide an effective, clear, and non-exclusive specification that will benefit the industry as a whole. This MSS Standard Practice is intended as a basis for common practice by the manufacturer, the user, and the general public. The existence of an MSS Standard Practice does not in itself preclude the manufacture, sale, or use of products not conforming to the Standard Practice. Mandatory conformance is established only by reference in a code, specification, sales contract, or public law, as applicable.

*"Unless otherwise specifically noted in this MSS Standard Practice, other standards referred to herein are identified by the date of issue that was applicable to this Standard Practice at the date of issue of this Standard Practice. See Annex B. This Standard Practice shall remain silent on the applicability of those other standards of prior or subsequent dates of issue even though applicable provisions may not have changed. References contained herein which are bibliographic in nature are noted as 'supplemental' in the text."*

In this Standard Practice all notes, annexes, tables, and figures are construed to be essential to the understanding of the message of the standard, and are considered part of the text unless noted as "supplemental". All appendices, if included, that appear in this document are construed as "supplemental". Supplemental information does not include mandatory requirements for this Standard Practice.

This document has been substantially revised from the previous 2006a edition. It is suggested that if the user is interested in knowing what changes have been made, that direct page by page comparison should be made of this document.

U.S. customary units in this Standard Practice are the standard; (SI) metric units are for reference only.

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Originally Approved: December 2005  
Originally Published: July 2006  
Current Edition Approved: April 2010  
Current Edition Published: September 2010

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Valve and Fittings Industry, Inc.  
Printed in U.S.A.

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## VALVES FOR CRYOGENIC SERVICE INCLUDING REQUIREMENTS FOR BODY/BONNET EXTENSIONS

### 1. SCOPE

1.1 This Standard Practice covers requirements for material, design, dimensions, fabrication, non-destructive examination and pressure testing of stainless steel and other alloy cryogenic service valves with body/bonnet extensions. Requirements for check valves for cryogenic service, which may not require body/bonnet extensions, are also covered. This Standard Practice applies to cryogenic gate, globe, butterfly, ball and check valves and may be used in conjunction with other valve-specific standards including the following identified in this Standard Practice as a parent standard:

ASME B16.34, Valves-Flanged,  
Threaded, and Welded End

API 600, Steel Gate Valves-Flanged and  
Buttwelding Ends, Bolted Bonnets

API 602, Steel Gate, Globe, and Check  
Valves for Sizes NPS 4 (DN 100) and  
Smaller for the Petroleum and Natural  
Gas Industries

API 603, Corrosion-resistant, Bolted  
Bonnet Gate Valves-Flanged and Butt-  
Welding Ends

API 608, Metal Ball Valves-Flanged,  
Threaded and Welding End

API 609, Butterfly Valves: Double  
Flanged, Lug- and Wafer-type

API 6D/ISO 14313, Specification for  
Pipeline Valves

1.2 The requirements in this Standard Practice are not intended to supersede or replace requirements of a parent valve standard.

1.3 This Standard Practice includes additional construction detail requirements specifically related to valves, including body/bonnet extensions essential for cryogenic applications.

### 2. DEFINITIONS

2.1 **General** Definitions given in MSS SP-96 apply to this Standard Practice.

2.2 **Cryogenics** The science of materials at extremely low temperatures.

2.3 **Cryogenic Fluid** A gas that can be changed to a liquid by removal of heat by refrigeration methods to a temperature at  $-100^{\circ}\text{F}$  ( $-73^{\circ}\text{C}$ ) or lower.

2.4 **Cryogenic Temperature** For this Standard Practice a temperature range of  $-100^{\circ}\text{F}$  ( $-73^{\circ}\text{C}$ ) to  $-425^{\circ}\text{F}$  ( $-254^{\circ}\text{C}$ ) is cryogenic.

2.5 **Cold Box** An enclosure that insulates a set of equipment from the environment without the need for insulation of the individual components inside the cold box.

2.6 **Cold Box Extension** A valve body/bonnet extension section that removes the operating mechanism of the valve outside the cold box and is required to be longer than a non-cold box extension.

2.7 **Non-Cold Box Extension** A body/bonnet extension that is used for valves that are normally individually insulated.

2.8 **Parent Valve Standard** Endorses the ASME B16.34 construction requirements but have additional construction detail requirements exceeding or not addressed by ASME B16.34.

2.9 **Gas Column** That portion of body/bonnet extension that allows for the formation of an insulating column of vapor.

2.10 **Double Block and Bleed Valve** Valve with two seating surfaces that when in the closed position, blocks flow from both valve ends when the cavity between the seating surfaces is vented through a bleed connection provided in the valve body.