Flexible Graphite Packing Sealing for Rising Stem Valves
This MSS Standard Practice was developed under the consensus of the MSS Technical Committee 308 and the MSS Coordinating Committee. The content of this Standard Practice is the resulting efforts of competent and experienced volunteers to provide an effective, clear, and non-exclusive standard that will benefit the industry as a whole. This MSS Standard Practice describes minimal requirements and 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 to this Standard Practice is established only by reference in other documents such as a code, specification, sales contract, or public law, as applicable. MSS has no power, nor does it undertake, to enforce or certify compliance with this document. Any certification or other statement of compliance with the requirements of this Standard Practice shall not be attributable to MSS and is solely the responsibility of the certifier or maker of the statement.

"Unless indicated otherwise within this MSS Standard Practice, other standards documents referenced to herein are identified by the date of issue that was applicable to this Standard Practice at the date of approval of this MSS Standard Practice (see Annex A). This Standard Practice shall remain silent on the validity of those other standards of prior or subsequent dates of issue even though applicable provisions may not have changed."

By publication of this Standard Practice, no position is taken with respect to the validity of any potential claim(s) or of any patent rights in connection therewith. MSS shall not be held responsible for identifying any patent rights. Users are expressly advised that determination of patent rights and the risk of infringement of such rights are entirely their responsibility.

In this Standard Practice, all text, notes, annexes, tables, figures, and references are construed to be essential to the understanding of the message of the standard, and are considered normative unless indicated as “supplemental”. All appendices, if included, that appear in this document are construed as “supplemental”. Note that supplemental information does not include mandatory requirements.

The U.S. customary units and SI (metric) units in this Standard Practice are regarded separately as the standard; each should be used independently of the other. Combining or converting values between the two systems may result in non-conformance with this Standard Practice.

This Standard Practice has been substantially revised from the previous 2011 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 and that of the previous edition.

Non-toleranced dimensions in the Standard Practice are nominal unless otherwise specified.

Excerpts of this Standard Practice may be quoted with permission. Credit lines should read 'Extracted from MSS SP-120-2017 with permission of the publisher, Manufacturers Standardization Society of the Valve and Fittings Industry'. Reproduction and/or electronic transmission or dissemination is prohibited under copyright convention unless written permission is granted by the Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. All rights reserved.

Originally Published: March 1997
Current Edition Approved: April 2017
Current Edition Published: May 2017

MSS is a registered trademark of the Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.

Copyright ©, 2017 by Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.

Printed in U.S.A.
FOREWORD

This Standard Practice was developed by a cooperative effort of representatives of valve and packing manufacturers. This Standard Practice is intended primarily to be an aid for the manufacture and procurement of packing systems with design features for rising-stem valves that utilize flexible graphite packing. However, this does not preclude the use of these system features for other types of packing systems since this Standard Practice represents the consensus input from a broad spectrum of industry applications.

This Standard Practice shall not be construed to be effective for all pressures and types of services expected of ASME B16.34 valves. Special service applications, such as low fugitive emissions control or toxic fluid, may require additional or different design measures that are outside the scope of this Standard Practice.

This 2017 edition includes a complete rewrite for valve stem packing from the previous general packing requirements updating to the current low emissions packing requirements. The definitions, packing types, materials and ring configuration types are now inclusive within this Standard Practice. In addition, valve stems, stuffing boxes, packing glands, lubrication of gland bolting, and paint free areas are detailed. Leakage performance is added to meet the current industry-driven requirements by U.S. Environmental Protection Agency actions and other international standards. The packing set height was updated. A new table for allowable clearance between the stem and stuffing box has also been added, with figures showing packing, stuffing box, and gland specific requirements. Additional revisions include various editorial and formatting corrections, and updating of the organizations and external references in Annex A.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>SECTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 SCOPE</td>
<td>1</td>
</tr>
<tr>
<td>2 DEFINITIONS</td>
<td>1</td>
</tr>
<tr>
<td>3 PACKING TYPES</td>
<td>1</td>
</tr>
<tr>
<td>4 PACKING SET MATERIALS</td>
<td>2</td>
</tr>
<tr>
<td>5 PACKING RINGS AND JOINT TYPES</td>
<td>2</td>
</tr>
<tr>
<td>6 VALVES</td>
<td>2</td>
</tr>
<tr>
<td>7 LEAKAGE PERFORMANCE</td>
<td>5</td>
</tr>
</tbody>
</table>

**TABLE**

1 Allowable Radial Clearance for Standard Cross Sections of Braided Packing .......... 3

**FIGURE**

1 Skive Cut Joint ........................................................................................................ 2
2 Stuffing Box Maximum Perpendicularity .................................................................. 4
3 Packing Gland Maximum Chamfers ........................................................................... 4
4 Packing Gland Minimum Insertion into Stuffing Box .............................................. 5

**ANNEX**

A Referenced Standards and Applicable Dates ........................................................... 6
MSS Standard Practices (SPs) related to or referenced in this publication:

ANSI/MSS SP-96  Terminology for Valves, Fittings, and Their Related Components

American National Standards Published by MSS, an ANSI-accredited Standards Developer:

ANSI/MSS SP-25  Standard Marking System for Valves, Fittings, Flanges, and Unions
ANSI/MSS SP-44  Steel Pipeline Flanges
ANSI/MSS SP-58  Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation
ANSI/MSS SP-96  Terminology for Valves, Fittings, and Their Related Components
ANSI/MSS SP-114  Corrosion Resistant Pipe Fittings Threaded and Socket Welding Class 150 and 1000
ANSI/MSS SP-134  Valves for Cryogenic Service, including Requirements for Body/Bonnet Extensions
ANSI/MSS SP-135  High Pressure Knife Gate Valves
ANSI/MSS SP-138  Quality Standard Practice for Oxygen Cleaning of Valves and Fittings
ANSI/MSS SP-144  Pressure Seal Bonnet Valves

Do not violate copyright laws

All Standard Practices are officially available only from MSS and through our authorized distributors:

About MSS

The Manufacturers Standardization Society (MSS) of the Valve and Fittings Industry is a non-profit technical association organized for development and improvement of industry, national and international codes and standards for Valves, Valve Actuators, Valve Modifications, Pipe Fittings, Flanges, Pipe Hangers and Supports, and Associated Seals. Since its establishment in 1924, MSS has been dedicated to developing standards for national and global applications, in cooperation with other standardizing bodies and regulatory authorities.

For more information on membership and eligibility requirements, visit:  http://msshq.org/Store/Membership.cfm

Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.
127 Park Street, NE, Vienna, VA 22180-4620 • Phone (703) 281-6613 • Fax (703) 281-6671
“The Technical Voice of the Industry”

MSS SP-120-2017