MSS SP-127-2001

Bracing For Piping Systems Seismic - Wind - Dynamic Design, Selection, Application

Standard Practice

Developed and Approved by the
Manufacturers Standardization Society of the
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This MSS Standard Practice was developed under the consensus of the MSS Technical Committee 403 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 SP, any standard referred to herein is identified by the date of issue that was applicable to the referenced standard(s) at the date of issue of this MSS SP. (See ANNEX C.)

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 appearing in this document are construed as "supplemental". "Supplemental" information does not include mandatory requirements.

U.S. customary units in this SP are the standard; the metric units are for reference only.

Non-toleranced Dimensions in this Standard Practice are nominal, and, unless otherwise specified, shall be considered "for reference only".

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FOREWORD

This standard was developed by a cooperative effort of representatives of the pipe hanger manufacturers. It is based on the best practice current at this time and on the collective experience of the industry. There are three companion standards, MSS SP-58, MSS SP-69 and MSS SP-89, relating to hanger materials, design, manufacture, fabrication, selection, application and installation. In addition, The MSS Pipe Hanger Committee has developed guidelines for pipe supports contractual relationships and on hanger terminology as covered in MSS SP-77 and MSS SP-90 respectively.

TABLE OF CONTENTS

BRACING FOR PIPING SYSTEMS, SEISMIC - WIND - DYNAMIC

1. PURPOSE

1.1 Piping systems shall be protected to reduce the risk of piping overstress where subject to seismic, wind and other dynamic forces.

2. SCOPE

2.1 This Standard Practice establishes the material, design, fabrication and inspection criteria to be used in the manufacture of standard types of bracing assemblies.

2.2 This Standard Practice presents recommended guidelines for incorporating stability in piping systems for protection against seismic, wind, and other dynamic forces.

2.3 This Standard Practice is intended for use on piping systems where formal engineered bracing design may not have been performed.

2.4 This Standard Practice applies to rigidly connected metallic pipe only (welded, flanged, mechanical jointed, etc). For other types of pipe and pipe connections, contact the pipe manufacturer for information.

3. OBJECTIVE

3.1 To serve as a seismic, wind and other dynamic bracing specification for selection and application by being referenced in whole or in part.

3.2 To serve as a guide to proven industry practice during engineering design and writing of job specifications covering seismic, wind and other dynamic bracing of piping systems.

3.3 To provide the erector with information on types of seismic, wind and other dynamic bracing to be used for specific application and installations, where such information is not provided.

3.4 To serve as a companion document to MSS SP-58, which provides recommendations for materials, design and manufacture of pipe hangers and supports.

3.5 To serve as a companion document to MSS SP-69, which provides recommendations for the selection and application of pipe hangers and supports.

3.6 To serve as a companion document to MSS SP-89, which provides recommendations for fabrication and installation of pipe hangers and supports.

4. GENERAL REQUIREMENTS

4.1 All piping systems shall be braced for seismic forces in accordance with the requirements contained in this document, with the following exceptions:

a) Piping in boiler and mechanical equipment rooms 1 inch (25 mm) and less nominal pipe size.

b) All other piping 2 inch (50 mm) and less nominal pipe size, except as noted in 4.1 a.

c) All piping suspended by individual hangers a distance of 12 inches (300 mm) or less in length from the top of the pipe to the bottom of the structure where the hanger is attached. In addition, rods must have top connections that cannot develop moments.

d) Bracing of fire sprinkler systems shall be in accordance with NFPA 13, and as required by the applicable building code.

4.2 All piping systems subject to wind loading shall be braced for wind forces in accordance with the requirements contained in this document.

4.3 All piping systems subject to other dynamic loading shall be braced as required.

4.4 Piping systems shall be braced to resist both lateral and longitudinal horizontal forces.

4.5 Lateral bracing shall be spaced at a maximum of 40 ft (12 in).