IAPMO PS 51-2016
PUBLIC REVIEW DRAFT
Industry Standard for
Expansion Joints and Flexible
Expansion Joints for DWV Piping
Systems

IAPMO®
**IAPMO Standard**

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Contents

Preface

IAPMO Standards Review Committee

1 Scope
   1.1 Scope
   1.2 Alternative Materials
   1.3 Terminology
   1.4 Units of Measurement

2 Reference Publications

3 Definitions and Abbreviations
   3.1 Definitions
   3.2 Abbreviations

4 General Requirements
   4.1 General
   4.2 Plastic Expansion Joints and Plastic Flexible Expansion Joints
   4.3 Metals
   4.4 Elastomeric Expansion Joints
   4.5 Sealing Elements and Lubricants
   4.6 Fasteners and Bolts
   4.7 Travel Distance
   4.8 Dimensions

5 Testing Requirements
   5.1 Tests for Plastic Piston Expansion Joints and Flexible Expansion Joints
   5.2 Tests for Elastomeric Mechanically Fastened Expansion Joints
   5.3 Tests for Metallic Expansion Joints and Flexible Expansion Joints

6 Markings and Accompanying Literature
Preface


This Standard was developed by the IAPMO Standards Review Committee (SRC) in accordance with the policies and procedures regulating IAPMO industry standards development, Policy S-001, Standards Development Process. This Standard was approved as an IAPMO Industry Standard on Month DD, YYYY.

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(b) relevant section, table, or figure number, as applicable;
(c) wording of the proposed change, tracking the changes between the original and the proposed wording; and
(d) rationale for the change.
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(b) the definition of the problem, making reference to the specific section and, when appropriate, an illustrative sketch explaining the question;
(c) an explanation of circumstances surrounding the actual field conditions; and
(d) the request for interpretation phrased in such a way that a “yes” or “no” answer will address the issue.
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(12) Proposals for amendments to this Standard will be processed in accordance with the standards-writing procedures of IAPMO industry standards development, Policy S-001, Standards Development Process.
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<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Position</th>
<th>Location</th>
</tr>
</thead>
<tbody>
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<td>Saratoga Springs, Utah, USA</td>
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</tr>
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<td><strong>Secretary</strong></td>
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IAPMO PS 51-2016
Expansion Joints and Flexible Expansion Joints for DWV Piping Systems

1 Scope

1.1 Scope
This Standard covers plastic, elastomeric, and metallic expansion joints and flexible expansion joints intended for use in drain, waste, and vent systems and specifies requirements for materials, physical characteristics, performance testing, and markings.

1.2 Alternative Materials
The requirements of this Standard are not intended to prevent the use of alternative materials or methods of construction provided such alternatives meet the intent and requirements of this Standard.

1.3 Terminology
In this Standard,
(a) “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy to comply with the Standard;
(b) “should” is used to express a recommendation, but not a requirement;
(c) “may” is used to express an option or something permissible within the scope of the Standard; and
(d) “can” is used to express a possibility or a capability.

Notes accompanying sections of the Standard do not specify requirements or alternative requirements; their purpose is to separate explanatory or informative material from the text. Notes to tables and figures are considered part of the table or figure and can be written as requirements.

1.4 Units of Measurement
SI units are the primary units of record in global commerce. In this Standard, the inch/pound units are shown in parentheses. The values stated in each measurement system are equivalent in application, but each unit system is to be used independently. All references to gallons are to U.S. gallons.

1.5 Amendments
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2 Reference Publications
This Standard refers to the following publications, and where such reference is made, it shall be to the current edition of those publications, including all amendments published thereto.

ASTM International
ASTM A48/A48M
Standard Specification for Gray Iron Castings

ASTM A536
Standard Specification for Ductile Iron Castings

ASTM B584
Standard Specification for Copper Alloy Sand Castings for General Applications

ASTM D412
Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers — Tension

ASTM D471
Standard Test Method for Rubber Property — Effect of Liquids

ASTM D573
Standard Test Method for Rubber — Deterioration in an Air Oven

ASTM D1149
Standard Test Methods for Rubber Deterioration — Cracking in an Ozone Controlled Environment

ASTM D1784

ASTM D2240
Standard Test Method for Rubber Property — Durometer Hardness

ASTM D2661
ASTM D2665

ASTM D3965
Standard Classification System and Basis for Specifications for Rigid Acrylonitrile-Butadiene-Styrene (ABS) Materials for Pipe and Fittings

ASTM D6147
Standard Test Method for Vulcanized Rubber and Thermoplastic Elastomer — Determination of Force Decay (Stress Relaxation) in Compression

3 Definitions and Abbreviations

3.1 Definitions
The following definitions shall apply in this Standard:

Blow holes — holes in casting due to air or gas in the metal or mold.

Cold shuts (Incomplete castings) — casting defects occurring when two streams of metal become so cold that they do not fuse together upon meeting.

Fins — projections on castings due to imperfect joints.

Expansion joint — an assembly designed to absorb movement including expansion and contraction of DWV pipe.

Flexible expansion joint — an assembly designed, with the addition of articulating ball joints on the ends, to absorb movement including expansion, contraction, and offset of DWV pipe.

3.2 Abbreviations
The following abbreviations shall apply in this Standard:

ABS — acrylonitrile-butadiene-styrene
DWV — drain, waste, and vent
IRHD — international rubber hardness degree
PVC — polyvinylchloride
UNS — unified numbering system
4 General Requirements

4.1 General
Expansion joints and flexible expansion joints shall
(a) be free of defects that can adversely affect their functionality or cause leaks;
(b) not restrict the flow capacity of the drainage system; and
(c) not obstruct the flow.

4.2 Plastic Expansion Joints and Plastic Flexible Expansion Joints

4.2.1 General
Plastic expansion joints and flexible expansion joints shall be made from
(a) a single virgin compound procured from a single manufacturer; or
(b) a blend of virgin compound and clean reworked material generated from the
manufacturer's own production of expansion joints.

Expansion joints containing reworked material shall comply with all of the applicable
requirements of this Standard.

4.2.2 ABS

4.2.2.1 Compounds
ABS compounds used for manufacturing expansion joints shall comply with cell classification 32222 for DWV fittings, as specified in ASTM D3965.

4.2.2.2 Dimensions
ABS expansion joints shall comply with the applicable dimensional requirements of ASTM D2661.

4.2.3 PVC

4.2.3.1 Compounds
PVC compounds used for manufacturing expansion joints and flexible expansion joints shall comply with cell classification 12454 or 14333, as specified in ASTM D1784.

4.2.3.2 Dimensions
PVC expansion joints and flexible expansion joints shall comply with the applicable dimensional requirements of ASTM D2665.

4.3 Metals

4.3.1 Cast Iron
Cast iron used for manufacturing expansion joints shall be Class 25 grey iron as specified in ASTM A48/A48M.
4.3.2 **Ductile Iron**
Ductile iron used for manufacturing expansion joints and flexible expansion joints shall be a 60-42-10 ductile iron as specified in ASTM A536.

4.3.3 **Copper Alloys**
Brass used for manufacturing expansion joints shall be copper alloys with UNS designations C83600, C83800, or C84400 as specified in ASTM B584.

4.3.4 **Workmanship**
Castings shall
(a) be sound, free of blow holes, cold shuts, fins, and other imperfections;
(b) have uniform wall thickness; and
(c) be true to pattern.

4.4 **Elastomeric Expansion Joints**

4.4.1 **General**
Elastomeric components shall be free from pitting, cracks, air marks, porosity, and other imperfections that could affect its performance in service.

4.4.2 **Materials**
Elastomeric materials used for manufacturing expansion joints shall comply with the properties specified in Table 1.

4.5 **Sealing Elements and Lubricants**

4.5.1 Gaskets and parts used to effect sealing between moving parts shall not loosen or detach during handling and operation of the expansion joints.

4.5.2 When used, lubricants shall be suitable for the intended application.

4.6 **Fasteners and Bolts**
Metallic mechanical fasteners shall be made of 300 series stainless steel.

4.7 **Travel Distance**

4.7.1 Expansion joints and flexible expansion joints shall be capable expanding and contracting (i.e., travel distance) in accordance with the manufacturer’s specifications.

4.7.2 Flexible expansion joints shall be capable of deflecting (in order to provide offset from one extreme to another) in accordance with the manufacturer’s specifications.

4.8 **Dimensions**

4.8.1 **Mechanically Fastened Expansion Joints**
Mechanically fastened expansion
(a) joints shall fit properly over the pipe on which it is intended to be used; and
(b) joint ends shall comply with the socket end dimensions specified in Table 2.
4.8.2 Expansion joint outlets shall not be smaller than the expansion joint inlets (i.e., expansion joints shall not reduce the size of the drainage system).

5 Testing Requirements

5.1 Tests for Plastic Piston Expansion Joints and Flexible Expansion Joints

5.1.1 General
The tests specified in Sections 5.1.2 to 5.1.4 shall be conducted only on plastic piston expansion joints that use rubber ring seals or similar devices to affect sealing.

5.1.2 Cycling Test for Plastic Piston Expansion Joints and Flexible Expansion Joints

5.1.2.1 Cold Cycling Test for Expansion Joints
The test specimen shall be subjected to 100 cycles from one extreme of the expansion range to the other at a test ambient temperature of 0 ± 2 °C (32 ± 4°F). The cross head speed shall be approximately 508 mm/min (20 in/min).

5.1.2.2 Cold Cycling Test for Ball Joints
The test specimen with ball joints for offset shall have the ball joints deflected 100 cycles from one extreme of deflection to the other extreme at a test ambient temperature of 0 ± 2 °C (32 ± 4°F).

5.1.2.3 Hot Cycling Test for Expansion Joints
The test specified in Section 5.1.2.1 shall be conducted except that the test ambient temperature shall be 50 ± 3 °C (122 ± 6°F).

5.1.2.4 Hot Cycling Test for Ball Joints
The test specified in Section 5.1.2.2 shall be conducted except that the test ambient temperature shall be 50 ± 3 °C (122 ± 6°F).

5.1.3 Hydrostatic Pressure Test for Plastic Piston Expansion Joints and Flexible Expansion Joints

5.1.3.1 Test Procedure
The hydrostatic pressure test for plastic piston expansion joints and flexible expansion joints shall be conducted following completion of the cycling test specified in Section 5.1.2, as follows:
(a) Assemble an expansion joint or flexible expansion joint and two pipe stubs approximately 150 mm (6 in) long jointed in accordance with the manufacturer’s installation instructions.
(b) Fit axial restraints to the test assembly.
(c) Extend the expansion joint or flexible expansion joint to approximately the middle of its full expansion length.
(d) Subject the test specimen to hydrostatic pressure of 100 kPa (15 psi) with water at 23 ± 2 °C (73 ± 4°F).
(e) Maintain the pressure and temperature for at least 1 h.
5.1.3.2 Performance Requirement
There shall be no leakage.

5.1.4 Breakaway Force Test for Plastic Piston Expansion Joints and Flexible Expansion Joints

5.1.4.1 Test Procedure
The breakaway force test for plastic piston expansion joints and flexible expansion joints shall be conducted as follows:
(a) Store, for at least 30 d and at ambient laboratory conditions, two expansion joints or flexible expansion joints, as follows:
   (i) one untested expansion joint or flexible expansion joint; and
   (ii) one expansion joint or flexible expansion joint that has successfully complied with the test in Section 5.1.3.
(b) Position each expansion joint or flexible expansion joint at approximately the middle of the expansion range during the storage period. Where ball joints exist as a part of the flexible expansion joint the ball joints shall be at the neutral or non-deflected position.
(c) At the end of the storage period, apply a force to move each test specimen from one extreme of the expansion range to the other (i.e., the breakaway force). Ensure that the force is applied along the longitudinal axis of the expansion joint. For ball joints apply a bending moment to force the ball joint to move from the neutral position to the extreme deflected position in one direction to the other (i.e. the deflection moment).

5.1.4.2 Performance Requirement
The force required to move the expansion joint from one extreme of the expansion range to the other shall not exceed the forces specified in Table 3. The deflection moment required to deflect the ball joints shall not exceed the moments specified in Table 6.

5.2 Tests for Elastomeric Mechanically Fastened Expansion Joints

5.2.1 General
The tests specified in Sections 5.2.2 and 5.2.3 shall be conducted on elastomeric mechanically restrained expansion joints using pipe stubs that comply with the applicable nationally recognized standards.

5.2.2 Expansion Test for Elastomeric Expansion Joints

5.2.2.1 Test Procedure
The expansion test for elastomeric expansion joints shall be conducted as follows:
(a) Assemble an elastomeric expansion joint and two pipe stubs (see Section 5.2.1) approximately 150 mm (6 in) long jointed in accordance with the manufacturer’s installation instructions.
(b) Fit axial restraints to the test assembly.
(c) Measure the length of the expansion joint while in its relaxed length.
(d) Place the assembly in a vertical position on a tensile machine in its relaxed length.
(e) Compress it from its relaxed length in accordance with Table 4.
(f) Return the expansion joint to its relaxed length.
(g) Extend it from its relaxed length in accordance with Table 4.
5.2.2.2 Performance Requirements
There shall be no slipping, tearing, cracking, or any other failure.

5.2.3 Hydrostatic Pressure Test for Elastomeric Expansion Joints

5.2.3.1 Test Procedure
The hydrostatic test for elastomeric expansion joints shall be conducted as follows:
(a) Assemble an elastomeric expansion joint and two pipe stubs (see Section 5.2.1) approximately 150 mm (6 in) long jointed in accordance with the manufacturer’s installation instructions.
(b) Fit axial restraints to the test assembly.
(c) Subject the test specimen to hydrostatic pressure of 100 kPa (15 psi) with water at 23 ± 2 °C (73 ± 4°F).
(d) Maintain the pressure and temperature for at least 1 h.

5.2.3.2 Performance Requirements
There shall be no leakage or slippage of the joint.

5.2.4 Breakaway Force Test for Elastomeric Expansion Joints

5.2.4.1 Test Procedure
The breakaway force test for elastomeric expansion joints shall be conducted by applying a force, along the longitudinal axis of the expansion joint, to move the test specimen to within half the travel distance specified by the manufacturer from its relaxed length.

5.2.4.2 Performance Requirements
The force required to move the elastomeric expansion joint to within half the travel distance specified by the manufacturer (i.e., the breakaway force) from its relaxed length shall not exceed the forces specified in Table 5.

5.3 Tests for Metallic Expansion Joints

5.3.1 General
The tests specified in Sections 5.3.2 and 5.3.3 shall be conducted on metallic expansion joints only.

5.3.2 Hydrostatic Pressure Test for Metallic Expansion Joints

5.3.2.1 Test Procedure
The hydrostatic pressure test for metallic expansion joints and flexible expansion joints shall be conducted as follows:
(a) Assemble an expansion joint and two pipe stubs approximately 150 mm (6 in) long jointed in accordance with the manufacturer’s installation instructions.
(b) Seal the expansion joint or flexible expansion joint and fill with water to point of overflow.
(c) Extend the expansion joint to approximately the middle of its full expansion length.
(d) Subject the test specimen to hydrostatic pressure equivalent to a sustained water head of 3.05 m (10 ft).
(e) Maintain the water head for at least 15 min.
5.3.2.2 Performance Requirement
There shall be no leakage.

5.3.3 Air Test for Metallic Expansion Joints

5.3.3.1 Test Procedure
The air test for metallic expansion joints and flexible expansion joints shall be conducted as follows:
(a) Pressurize the expansion joint 34.5 kPa (5 psi) using an air compressor.
(b) Maintain the pressure, without introduction of additional air, for at least 15 min.

5.3.3.2 Performance Requirement
There shall be no leakage of air.

5.3.1 General
The tests specified in Sections 5.3.2 to 5.3.4 shall be conducted only on metallic piston expansion joints that use rubber ring seals or similar devices to affect sealing.

5.3.2 Cycling Test for Metallic Piston Expansion Joints and Flexible Expansion Joints

5.3.2.1 Cycling Test for Expansion Joints
The test specimen shall be subjected to 100 cycles from one extreme of the expansion range to the other at a test ambient temperature of 23 ± 2 ºC (73 ± 4ºF). The cross head speed shall be approximately 508 mm/min (20 in/min).

5.3.2.2 Cycling Test for Ball Joints
The test specimen with ball joints for offset shall have the ball joints deflected 100 cycles from one extreme of deflection to the other extreme of at a test ambient temperature of 23 ± 2 ºC (73 ± 4ºF).

5.3.3 Hydrostatic Pressure Test for Metallic Piston Expansion Joints and Flexible Expansion Joints

5.3.3.1 Test Procedure
The hydrostatic pressure test for metallic piston expansion joints and flexible expansion joints shall be conducted following completion of the cycling test specified in Section 5.3.2, as follows:
(a) Assemble an expansion joint or flexible expansion joint and two pipe stubs approximately 150 mm (6 in) long jointed in accordance with the manufacturer’s installation instructions.
(b) Fit axial restraints to the test assembly.
(c) Extend the expansion joint or flexible expansion joint to approximately the middle of its full expansion length.
(d) Subject the test specimen to hydrostatic pressure of 100 kPa (15 psi) with water at 23 ± 2 ºC (73 ± 4ºF).
(e) Maintain the pressure and temperature for at least 1 h.

5.3.3.2 Performance Requirement
There shall be no leakage.
5.3.4 Breakaway Force Test for Metallic Piston Expansion Joints and Flexible Expansion Joints

5.3.4.1 Test Procedure
The breakaway force test for metallic piston expansion joints and flexible expansion joints shall be conducted as follows:
(a) Store, for at least 30 d and at ambient laboratory conditions, two expansion joints or flexible expansion joints, as follows:
(iii) one untested expansion joint or flexible expansion joint; and
(iv) one expansion joint or flexible expansion joint that has successfully complied with the test in Section 5.3.3.
(b) Position each expansion joint or flexible expansion joint at approximately the middle of the expansion range during the storage period. Where ball joints exist as a part of the flexible expansion joint the ball joints shall be at the neutral or non-deflected position.
(c) At the end of the storage period, apply a force to move each test specimen from one extreme of the expansion range to the other (i.e., the breakaway force). Ensure that the force is applied along the longitudinal axis of the expansion joint. For ball joints apply a bending moment to force the ball joint to move from the neutral position to the extreme deflected position in one direction to the other (i.e. the deflection moment).

5.3.4.2 Performance Requirement
The force required to move the expansion joint from one extreme of the expansion range to the other shall not exceed the forces specified in Table 7. The deflection moment required to deflect the ball joints shall not exceed the moments specified in Table 8.
6 Markings and Accompanying Literature

6.1 Expansion joints complying with this Standard shall be marked with:
(a) the manufacturer’s name or trademark;
(b) the nominal size;
(c) the words “DWV Expansion Joint”;
(d) the direction of flow; and
(e) when applicable,
   (i) the compound designation (i.e., ABS or PVC);
   (ii) the minimum and maximum length of travel plus a centerline mark on the barrel of the
        expansion joint, for plastic expansion joints only;
   (iii) the total travel specified by the manufacturer, for elastomeric expansion joints only;
   (iv) the model number;
   (v) a centerline mark on the expansion joint body to indicate the location of a hanger clamp
      support for horizontal installations;
   (vi) any installation restrictions (e.g., “expansion joint not suitable for use in vertical
      installations”, or “rain and storm water systems only”).

6.2 Markings shall be permanent, legible, and visible after installation.

6.3 Expansion joints shall be accompanied by instructions for their installation. The installation
instructions shall specify any installation restrictions.
# Table 1

**Physical Property Requirements for Elastomers**

*(See Section 3.4.2)*

<table>
<thead>
<tr>
<th>Property</th>
<th>ASTM Test Method</th>
<th>Conditions</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elongation</td>
<td>D412</td>
<td>Unaged</td>
<td>Minimum 350%</td>
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<td>After aging in an oven for 96 h at 70 °C (158°F) in accordance with ASTM D573</td>
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<td>After aging in an oven for 168 h at 70 °C (158°F)</td>
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<td>After aging in an oven for 96 h at 70 °C (158°F) in accordance with ASTM D573</td>
<td>Maximum change of 8 units</td>
</tr>
<tr>
<td>Low-temperature Hardness</td>
<td>D2240</td>
<td>Type A or D durometer at -10 °C (14°F)</td>
<td>Maximum increase of 15 units</td>
</tr>
<tr>
<td>Ozone Resistance</td>
<td>D1149</td>
<td>Ozone at 40 °C (104°F) at 20% extension</td>
<td>No cracks</td>
</tr>
<tr>
<td>Tensile strength</td>
<td>D412</td>
<td>Unaged</td>
<td>Minimum 2 MPa (290 psi)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>After aging in an oven for 96 h at 70 °C (158°F) in accordance with ASTM D573</td>
<td>Maximum change of 15%</td>
</tr>
<tr>
<td>Water absorption</td>
<td>D471</td>
<td>After 48 h in water at 70 °C (158°F)</td>
<td>Maximum of 5% change in volume</td>
</tr>
</tbody>
</table>
## Table 2
**Minimum Socket Depth**  
(See Section 3.8.1)

<table>
<thead>
<tr>
<th>Nominal Pipe Size</th>
<th>Minimum Socket Depth, mm (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>23 (0.90)</td>
</tr>
<tr>
<td>3</td>
<td>32 (1.25)</td>
</tr>
<tr>
<td>4</td>
<td>38 (1.50)</td>
</tr>
<tr>
<td>6</td>
<td>51 (2.00)</td>
</tr>
<tr>
<td>8</td>
<td>51 (2.00)</td>
</tr>
</tbody>
</table>

## Table 3
**Maximum Breakaway Force for Plastic Piston Expansion Joints**  
(See Section 5.1.4.2)

<table>
<thead>
<tr>
<th>Nominal Pipe Size</th>
<th>Force, N (lbf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2</td>
<td>220 (50)</td>
</tr>
<tr>
<td>2</td>
<td>275 (62)</td>
</tr>
<tr>
<td>3</td>
<td>330 (74)</td>
</tr>
<tr>
<td>4</td>
<td>445 (100)</td>
</tr>
<tr>
<td>6</td>
<td>4,450 (1,000)</td>
</tr>
<tr>
<td>8 to 10</td>
<td>8,900 (2,000)</td>
</tr>
</tbody>
</table>

## Table 4
**Travel Distance for Elastomeric Expansion Joints — Expansion Test**  
(See Section 5.2.2.1)

<table>
<thead>
<tr>
<th>Nominal Pipe Size</th>
<th>Minimum Compression Travel, mm (in)</th>
<th>Minimum Extension Travel, mm (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 and smaller</td>
<td>36 (1.40)</td>
<td>38 (1.50)</td>
</tr>
<tr>
<td>3</td>
<td>13 (0.50)</td>
<td>32 (1.25)</td>
</tr>
<tr>
<td>4 and larger</td>
<td>15 (0.60)</td>
<td>25 (1.00)</td>
</tr>
</tbody>
</table>
### Table 5
**Maximum Breakaway Force for Elastomeric Expansion Joints**
(See Section 5.2.4.2)

<table>
<thead>
<tr>
<th>Nominal Pipe Size</th>
<th>Force, N (lbf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2</td>
<td>275 (62)</td>
</tr>
<tr>
<td>2</td>
<td>355 (80)</td>
</tr>
<tr>
<td>3</td>
<td>420 (95)</td>
</tr>
<tr>
<td>4</td>
<td>555 (125)</td>
</tr>
</tbody>
</table>

### Table 6
**Maximum Deflection Moment for Plastic Ball joints**
(See Section 5.1.4.2)

<table>
<thead>
<tr>
<th>Nominal Pipe Size</th>
<th>Moment, N-m(ft-lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2</td>
<td>13.6 (10)</td>
</tr>
<tr>
<td>2</td>
<td>16.3 (12)</td>
</tr>
<tr>
<td>3</td>
<td>20.3 (15)</td>
</tr>
<tr>
<td>4</td>
<td>27.1 (20)</td>
</tr>
<tr>
<td>6</td>
<td>47.5 (35)</td>
</tr>
<tr>
<td>8</td>
<td>67.8 (50)</td>
</tr>
</tbody>
</table>

### Table 7
**Maximum Breakaway Force for Metallic Piston Expansion Joints**
(See Section 5.3.4.2)

<table>
<thead>
<tr>
<th>Nominal Pipe Size</th>
<th>Force, N (lbf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>890 (200)</td>
</tr>
<tr>
<td>4</td>
<td>1,113 (250)</td>
</tr>
<tr>
<td>6</td>
<td>2,225 (500)</td>
</tr>
<tr>
<td>8</td>
<td>3,783 (850)</td>
</tr>
<tr>
<td>10</td>
<td>5,785 (1,300)</td>
</tr>
<tr>
<td>12</td>
<td>8,900 (2,000)</td>
</tr>
</tbody>
</table>
### Table 8
Maximum Deflection Moment for Metallic Ball joints
(See Section 5.3.4.2)

<table>
<thead>
<tr>
<th>Nominal Pipe Size</th>
<th>Moment, N·m(ft-lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>272 (200)</td>
</tr>
<tr>
<td>4</td>
<td>300 (220)</td>
</tr>
<tr>
<td>6</td>
<td>612 (450)</td>
</tr>
<tr>
<td>8</td>
<td>816 (600)</td>
</tr>
<tr>
<td>10</td>
<td>1,054 (775)</td>
</tr>
<tr>
<td>12</td>
<td>1,632 (1,200)</td>
</tr>
</tbody>
</table>

(See Section ------)