

IAPMO IGC 396-~~2025~~202X



PUBLIC REVIEW DRAFT

Industry Standard for
Water Closet Flange



IAPMO Standard

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Published by

International Association of Plumbing and Mechanical Officials (IAPMO)

4755 East Philadelphia Street, Ontario, California, 91761, USA

1-800-854-2766 • 1-909-472-4100

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Printed in the United States of America

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Preface

This is the ~~first~~ Second edition of IAPMO IGC 396, Water Closet Flange. [This edition added requirements for stainless steel water closet flanges.](#)

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 January 27, 2025.**

Notes:

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 - (a) *standard designation (number);*
 - (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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 - (a) *the edition of the standard for which the interpretation is being requested;*
 - (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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Water Closet Flange

1 Scope

1.1 Scope

This Standard covers water closet flanges, including off set designs, intended for sanitary and waste applications 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.

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
Standard Specification for Gray Iron Castings

[ASTM A240/A240M](#)
[Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications](#)

ASTM A888
Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

ASTM B30
Standard Specification for Copper Alloys in Ingot Form

ASTM B117
Standard Practice for Operating Salt Spray (Fog) Apparatus

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

ASTM C564
Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings

ASTM D1654
Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments

ASTM D1784
Standard Classification System and Basis for Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds

ASTM D2661
Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings

ASTM D2665
Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings

ASTM D3960
Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and

Related Coatings

ASTM D3965

Standard Classification System and Basis for Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds

CISPI (Cast Iron Coil Pipe Institute)

CISPI Designation: 301 Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

IAPMO (International Association of Plumbing and Mechanical Officials)

IAPMO PS 97

Mechanical Cast Iron Water Closet Flanges

3 Abbreviations

3.1 Abbreviations

The following abbreviations apply in this Standard:

VOC — Volatile Organic Compounds

4 General Requirements

4.1 Water Closet Flange Materials

Water closet flanges and their components covered by this Standard shall be made of materials that are suitable for the intended end use.

4.1.1 Cast Iron (gray iron and ductile iron)

(a) Cast iron shall meet the requirements of CISPI 301, Section 4 and Section 11
or

(b) Grey iron for water closet flanges shall comply with the mechanical and chemical properties for grey iron specified in ASTM A48 Standard Specification for Gray Iron Castings or ASTM A888 Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications. Tensile strength shall not be less than 145 MPa (21,000 psi).

4.1.2 Brass

Brass shall comply with ASTM B584 with a minimum rating of C85710 as referenced in ASTM B30. And a tensile strength and yield per Table 2 of ASTM B584 with a minimum rating of C85700.

4.1.3 ABS

ABS water closet flanges shall comply with the requirements of ASTM D2661 with a minimum cell class rating of 32222 per ASTM D3965.

4.1.4 PVC

PVC water closet flanges shall comply with the requirements of ASTM D2665 with a minimum cell class rating of 12454 or 14333 per ASTM D1784.

4.1.5 [Stainless Steel](#)

[Stainless Steel water closet flanges shall be of stainless steel alloy types 300 or 400 in accordance with ASTM A240/A240M](#)

4.2 Coatings

Shall meet the requirements of Sections 4.1.3.1, 4.1.3.2, 4.1.3.3, or Section 6 of CISPI 301.

4.2.1 Lead Content

Water closet flange coatings shall not exceed a lead content greater than 0.06%.

4.2.2 VOC Content

Water closet flange coatings shall be testing in accordance with ASTM D3960 and shall not exceed 310 grams/liter (2.6 lbs/gallon).

4.2.3 Corrosion Resistance

Coatings shall meet the requirements of ASTM D1654 Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments using ASTM B117 Standard Practice for Operating Salt Spray (Fog) Apparatus.

4.3 Fasteners

Fasteners shall be made of stainless-steel alloys of the 300 series.

4.4 Gaskets

Gasket materials shall comply with ASTM C564 when provided.

4.5 Design and Construction Dimensions

4.5.1 The water closet flange shall sit flush with the mounting surface in accordance with the manufacturer's installation instructions.

4.5.2 A water closet flange shall meet the dimensional requirements of Table 1.

4.6 Mechanical Water Closet Flange

Mechanical water closet flanges shall be tested to the hydrostatic joint tightness requirements of IAPMO PS 97 Section 5.

5 Markings and Accompanying Literature

5.1 Markings

Water closet flanges complying with this Standard shall be marked with the:

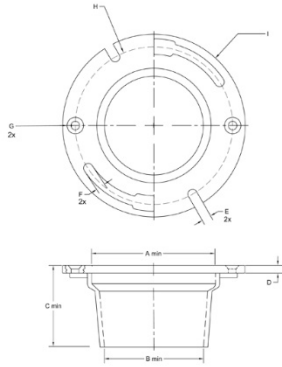
- (a) manufacturer's name or trademark
- (b) model number
- (c) IAPMO standard designation IAPMO IGC 396)
- (d) country of origin
- (e) foundry code
- (f) date code

5.2 Visibility

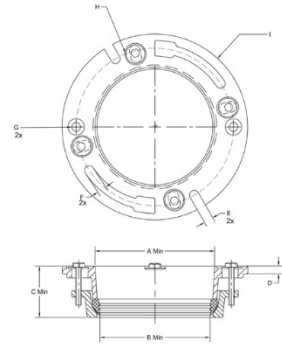
Markings shall be permanent, legible, and visible after installation.

5.3 Installation Instructions

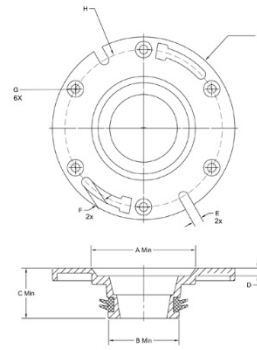
Water closet flanges shall be accompanied by instructions for their installation or be provided with a means to acquire the instructions.



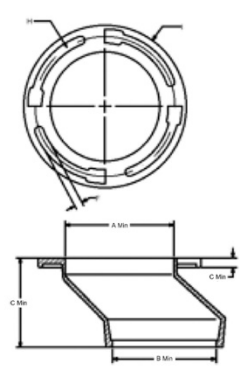
Reducing



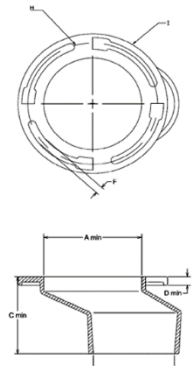
Mechanical



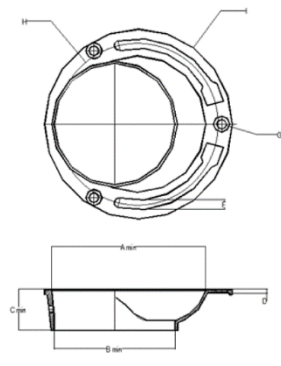
Inside Fit



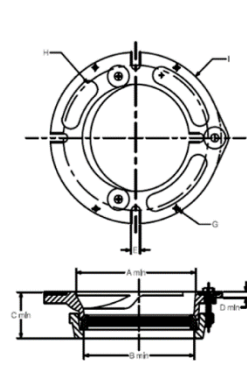
Off Set



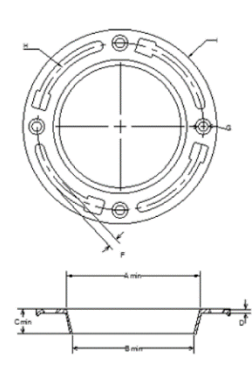
No Hub



Off Set Lead Solder



Off Set Mechanical



Lead Solder

Table 1
(See Section 4.5.2)

Style	Size	A min	B min	C min	D	Tolerance	E	Tolerance	F	Tolerance	G	Tolerance	H	Tolerance	I	Tolerance
Mechanical	3"	3"	3"	2"	0.3125"	± .125"	0.375"	+ 0.000" - 0.312"	0.375"	+ 0.000" - 0.312"	0.3437"	± .125"	6.25"	± .125"	7.375"	± .125"
Reducing	4" x 3"	4"	3"	3"	0.406"	± .125"	0.375"	+ 0.000" - 0.312"	0.375"	+ 0.000" - 0.312"	0.3437"	± .125"	6.25"	± .125"	7.250"	± .125"
Inside Fit	3"	4"	2.75"	2"	0.2002"	± .125 "	0.375"	+ 0.000" - 0.312"	0.375"	+ 0.000" - 0.312"	0.3125"	± .125"	6.25"	± .125"	7.250"	± .125"
Inside Fit	4"	4"	3.625"	2"	0.2044"	± .125"	0.375"	+ 0.000" - 0.312"	0.375"	+ 0.000" - 0.312"	0.3125"	± .125"	6.25"	± .125"	7.250"	± .125"
No Hub	3"	4"	3"	3.5"	0.3125"	± .125"	0.375"	+ 0.000" - 0.312"	0.375"	+ 0.000" - 0.312"	0.3437"	± .125"	6.00"	± .125"	7.250"	± .125"
No Hub	4"	5"	7"	4"	0.3125"	± .125"	0.375"	+ 0.000" - 0.312"	0.375"	+ 0.000" - 0.312"	0.3437"	± .125"	6.00"	± .125"	7.250"	± .125"
Off Set	4"	4"	3.938"	2"	0.5156"	± .125"	N/A	N/A	0.375"	+ 0.000" - 0.312"	N/A	N/A	6.25"	± .125"	7.250"	± .125"
Off Set Mechanical	4"	4"	4"	2"	0.5156"	± .125"	0.375"	+ 0.000" - 0.312"	N/A	+ 0.000" - 0.312"	0.1875"	± .125"	6.25"	± .125"	7.375"	± .125"
Off Set Lead Solder	4"	5"	4"	1.5"	0.1181"	± .125"	N/A	N/A	0.350"	+ 0.000" - 0.312"	0.3437"	± .125"	6.00"	± .125"	7.000"	± .125"
Lead Solder	4"	5"	4"	0.31"	0.27"	± .125"	N/A	N/A	0.375"	+ 0.000" - 0.312"	0.3437"	± .125"	6.25"	± .125"	7.250"	± .125"



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