ASME A112.36.2-2022/ CSA B79.2:22

National Standard of Canada
American National Standard

Cleanouts

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Preface

This is the first edition of ASME A112.36.2/CSA B79.2, *Cleanouts*. It supersedes CSA B79, *Commercial and residential drains and cleanouts*, published in 2008, and the ASME A112.36.2M-1991(2012) Cleanouts Standards.

This Standard was prepared by the ASME/CSA Harmonization Task Group on Cleanouts under the jurisdiction of the ASME A112 Standards Committee on Plumbing Materials and Equipment and the CSA Technical Committee on Drains and Interceptors. The ASME A112 Standards Committee operates under the jurisdiction of the ASME Board on Standardization and Testing and the CSA Technical Committee operates under the jurisdiction of the CSA Strategic Steering Committee on Construction and Civil Infrastructure.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was approved as an American National Standard by the American National Standards Institute on May 6, 2022.

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ASME A112.36.2-2022/CSA B79.2:22
Cleanouts

1 Scope

1.1 Inclusions

This Standard covers cleanouts, including floor and wall types, used in concealed piping in and adjacent to residential, commercial, industrial, institutional, and other buildings open to the public.

1.2 Illustrations

Figure 1 included in this Standard is intended only to describe and portray typical floor and wall type cleanouts and is not intended to restrict design or to specify requirements.

1.3 Terminology

In this Standard, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the Standard.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

1.4 Units of measure

The values given in either SI (metric) or U.S. Customary units of measure are equivalent in application; however, each measurement system is to be used independently of the other. In this Standard, U.S. Customary units are shown in parentheses. Combining values from the two measurement systems can result in non-conformance with this Standard.

1.5 Alternatives

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

2 Reference publications

This Standard refers to the following publications, and where such reference is made, it shall be to the edition listed below, including all amendments published thereto.

ASME (The American Society of Mechanical Engineers)

A112.3.1-2007(R2017)
Stainless steel drainage systems for sanitary DWV, storm, and vacuum applications, above- and below-ground

B1.20.1-2013 (R2018)
Pipe threads, general purpose, Inch

B16.25-2017
Buttwelding ends

ASME (The American Society of Mechanical Engineers)/CSA Group

ASME A112.18.1-2018/CSA B125.1-18
Plumbing fixture fittings

CSA Group

B602:20
Mechanical couplings for drain, waste, and vent pipe and sewer pipe

C22.2 No. 0.15:15 (R2020)
Adhesive labels

ASTM International (American Society for Testing and Materials)

A48/A48M-03 (2016)
Standard specification for gray iron castings

A53/A53M-20
Standard specification for pipe, steel, black and hot-dipped, zinc-coated, welded and seamless

A74-20
Standard specification for cast iron soil pipe and fittings

A123/A123M-17
Standard specification for zinc (hot-dip galvanized) coatings on iron and steel products

A153/A153M-16a
Standard specification for zinc coating (hot-dip) on iron and steel hardware

A307-14e1
Standard specification for carbon steel bolts, studs, and threaded rod 60 000 PSI tensile strength

A312/A312M-19
Standard specification for seamless, welded, and heavily cold worked austenitic stainless steel pipes

A536-84(2019)e1
Standard specification for ductile iron casings

A563-15
Standard specification for carbon and alloy steel nuts

A888-20
Standard specification for hubless cast iron soil pipe and fittings for sanitary and storm drain, waste, and vent piping applications

B26/B26M-18e1
Standard specification for aluminum-alloy sand castings

B85/B85M-18e1
standard specification for aluminum- alloy die castings

B117-19
Standard practice for operating salt spray (fog) apparatus

B209/B209M-14
Standard specification for aluminum and aluminum-alloy sheet and plate

B221-20
Standard specification for aluminum and aluminum-alloy extruded bars, rods, wire, profiles, and tubes

B584-14
Standard specification for copper alloy sand castings for general applications

B633-19
Standard specification for electrodeposited coatings of zinc on iron and steel

B766-86 (2015)
Standard specification for electrodeposited coatings of cadmium

C564-20a
Standard specification for rubber gaskets for cast iron soil pipe and fittings

C1440-17
Standard specification for thermoplastic elastomeric (TPE) gasket materials for drain, waste, and vent (DWV), sewer, sanitary, and storm plumbing systems

D395-18
Standard Test Methods for Rubber Property — Compression Set

D412-16 (2021)
Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers — Tension

D471-16a (2021)
Standard Test Method for Rubber Property — Effect of Liquids

D573-04 (2019)
Standard Test Method for Rubber — Deterioration in an Air Oven

D624-00 (2020)
Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers

D1149-18
Standard Test Methods for Rubber Deterioration — Cracking in an Ozone Controlled Environment

D1784-20
Standard classification system and basis for specification for rigid poly(vinyl chloride) (PVC) compounds and chlorinated poly (vinyl chloride) (CPVC) compounds

D2661-14e1
Standard specification for acrylonitrile-butadiene-styrene (ABS) schedule 40 plastic drain, waste, and vent pipe and fittings

D2665-20
Standard specification for poly(vinyl chloride) (PVC) plastic drain, waste, and vent pipe and fittings

D3222-20
Standard specification for unmodified poly(vinylidene fluoride) (PVDF) molding extrusion and coating materials

D3350-14
Standard specification for polyethylene plastics pipe and fittings materials

D3965-16
Standard classification system and basis for specifications for rigid acrylonitrile-butadiene-styrene (ABS) materials for pipe and fittings

D4101-17e1
Standard classification system and basis for specification for polypropylene injection and extrusion materials

D5575-18
Standard classification system for copolymers of vinylidene fluoride (VDF) with other fluorinated monomers

CISPI (Cast Iron Soil Pipe Institute)

301-18
Standard specification for hubless cast iron soil pipe and fittings for sanitary and storm drain, waste, and vent piping applications

UL (Underwriters Laboratories)

969, edition 5
Standard for marking and labelling systems

3 Definitions and abbreviations

3.1 Definitions

The following definitions shall apply in this Standard:

Blowhole — a hole in a casting caused by air or gas in the metal or mold.

Cleanout — a fitting that permits access to a drainage system.

Closure — a plug or sealing component to prevent the release of sewer gas and water.

Cold shut — a casing defect formed when two streams of metal become so cold that they do not fuse upon meeting, creating an incomplete casting.

Cover — an optional cosmetic or mechanical appurtenance to provide access to a cleanout closure.

Standard plumbing tools — tools that are normally utilized by plumbers for installing and maintaining plumbing equipment.
Note: *Standard plumbing tools include screwdrivers, key wrenches, flat-jawed wrenches, and pliers.*

Top rim — the part of a cleanout that structurally supports the cover.

3.2 Abbreviations

The following abbreviations shall apply in this Standard:

ABS — acrylonitrile-butadiene-styrene
DWV — drain, waste, and vent
ID — inside diameter
NPSL — National Pipe Straight Locknut
NPSM — National Pipe Straight Mechanical
NPT — National Pipe Tapered
OD — outside diameter
PE — polyethylene
PP — polypropylene
PVC — polyvinylchloride
PVDF — polyvinylidene fluoride

4 Materials

4.1 General

Cleanouts shall be made of materials suitable for the intended service. Castings shall be sound and free of blowholes, cold shuts, fins, and other imperfections, and true to pattern.

4.2 Metals

4.2.1 Aluminum

Aluminum sand castings shall comply with ASTM B26. Aluminum die castings shall comply with ASTM B85. Aluminum sheet and plate shall comply with ASTM B209. Aluminum extruded bars, rods, wire, profiles, and tubes shall comply with ASTM B221.

4.2.2 Bronze

Bronze castings shall comply with the requirements of copper alloy UNS No. C83450, No. C83600, No. C83800, or No. C84400, as specified in ASTM B584.

4.2.3 Cast iron

Cast iron shall comply with the requirements of Class 25, as specified in ASTM A48/A48M.

4.2.4 Ductile iron

Ductile iron shall comply with the requirements of Grade 60-40-18, Grade 60-42-10, Grade 60-45-12, or Grade 80-55-06, as specified in ASTM A536.

4.2.5 Nickel-bronze

Nickel-bronze shall comply with the requirements of ASTM B584. The copper alloy shall be UNS No. C97300, No. C97600, No. C99700, or an alloy with a minimum content as follows:

Element	Minimum content, %
Copper	60
Zinc	16
Nickel	12
Lead	5
Tin	3

4.2.6 Stainless steel

Stainless steel alloys shall be of the 300 or 400 series.

4.3 Polymeric compounds

4.3.1 Acrylonitrile-butadiene-styrene (ABS)

ABS shall meet or exceed the requirements of cell classification 32222, as specified in ASTM D3965.

4.3.2 Polyethylene (PE)

PE shall comply with the requirements of ASTM D3350.

4.3.3 Polypropylene (PP)

PP shall comply with the requirements of ASTM D4101.

4.3.4 Polyvinylchloride (PVC)

PVC shall meet or exceed the requirements of cell classification 12454 or 14333, as specified in ASTM D1784.

4.3.5 Polyvinylidene fluoride (PVDF)

PVDF shall comply with the requirements of ASTM D3222 or ASTM D5575.

4.4 Fastener materials

4.4.1 Steel fasteners

Materials used for studs, nuts, bolts, cap screws, and other steel fasteners shall comply with or exceed the mechanical requirements of Grade A steel, as specified in ASTM A307 or ASTM A563.

4.4.2 Removable fasteners

Removable fasteners for covers shall be made of corrosion-resistant material or coated in accordance with Clause 4.5.

4.5 Finishes

4.5.1 General

Coated or plated components shall be prepared in such a way that a suitable surface for proper bonding of the finish is provided. Coated areas visible after installation shall be free of defects and uncoated areas shall not be stained.

4.5.2 Non-organic finishes

4.5.2.1 Preparation

Parts to be coated with non-organic finishes shall be prepared as specified in Items a) to e), as appropriate:

a) Parts to be cadmium-plated shall be prepared and plated in accordance with ASTM B766.
b) Parts to be chrome-plated shall be polished before plating and subsequently given a commercial grade copper-nickel-chromium plate.
c) Parts to be given a commercial grade bronze chromate treatment shall first be given a commercial grade cadmium plate treatment.
d) Parts to be zinc plated shall be prepared in accordance with ASTM B633.
e) Parts to be hot-dip galvanized shall be coated in accordance with ASTM A153/A153M or ASTM A123/A123M.

4.5.2.2 Corrosion-resistance test for non-organic finishes

4.5.2.2.1 Test specimen

Test specimens shall be received from the manufacturer and shall not have been subjected to any other test.

4.5.2.2.2 Test procedure

Coated parts shall be tested in accordance with ASTM B117 for 24 h. Coated and uncoated parts may be polished or cleaned with a common household or metal cleaner before evaluation.

4.5.2.2.3 Pass/fail criteria

Upon completion of the testing specified in Clause 4.5.2.2.2,

a) coatings shall not show more than one surface defect in any 650 mm^2 (1.0 in^2) area that is visible after installation, or up to three surface defects on a 25 mm (1.0 in) length of parting line;
b) surface defects shall not be larger than 0.8 mm (0.03 in) in any dimension; and
c) if widely scattered surface defects are observed after testing (as occasionally occurs), such defects shall not significantly deface or adversely affect the function of the coated part.

4.5.3 Organic finishes

Organic finishes shall comply with the applicable coatings requirements of ASME A112.18.1/CSA B125.1.

5 Design requirements

5.1 Outlet connections

5.1.1 General

The outlets identified in Clause 5.1 shall have one of the connections specified in Clauses 5.2.2 to 5.2.4.

5.1.2 Threaded outlet connections

Threaded outlet connections shall be American National Standard Taper Pipe Threads for general use (NPT), as specified in ASME B1.20.1, and female connections shall have the minimum dimensions specified in Table 1.

5.1.3 Inside caulk outlet connections

Inside caulk outlet connections shall have the dimensions specified in Table 2.

5.1.4 Hub (push-on) outlet connections

Hub (push-on) outlet connections shall have the dimensions specified in Table 3.

5.1.5 Spigot (no hub or mechanical joint) outlet connections

Outlet end of spigot (no hub or mechanical joint) connections shall comply with the outside diameter and minimum wall thickness specified in ASTM A53, ASTM A74, ASTM A312/312M, ASTM A888, ASTM D2661, ASTM D2665, or CISPI 301.

5.1.6 Solvent-cemented outlet connections

Solvent-cemented outlet connections shall comply with the requirements of ASTM D2661 for ABS joints or ASTM D2665 for PVC joints.

5.1.7 O-ring, gasketed, and rubber coupling outlet connections

O-ring or gasketed outlet connections and rubber couplings for gasketed outlet connections shall comply with the applicable requirements of ASME A112.3.1, ASTM C564, ASTM C1440, or CSA B602.

5.1.8 Butt welded outlet connections

Outlet connections intended for butt welding shall comply with the requirements of ASME B16.25.

5.2 Closure types

5.2.1 Minimum size requirements

The minimum size requirements shall be as specified in Table 4.

5.2.2 Straight thread gasket closure

Figure 2 shows a tapered shoulder gasket seal type plug with NPSL or NPSM threads, either raised or countersunk, with provision for a cover either raised or countersunk, with provision for a cover securing screw, where required. The gasket shall be lead or elastomer material in order to provide a gas tight seal.

5.2.3 Tapered thread closure

Figure 3 shows a plug with NPT threads. It may be either raised head or countersunk with provision for a cover securing screw, where required. The seal is formed by the makeup of threads.

5.2.4 Alternate closure types

Alternate closure types shall comply with the sealing test prescribed in Clause 6.2. Elastomeric components shall meet the following minimum requirements:

Test name	ASTM method	Minimum
Tensile	D412	6895 kPa (1000 psi)
Accelerated aging	D573	15% max tensile change, 20% max elongation change
Compression set	D395 method B	25% max after 22 h at 70 °C (158 °F)
Oil immersion	D471	80% max volume change tested at 40 °C (104 °F)
Ozone cracking	D1149	No cracks after 100 h at 1 ppm 38 °C (100 °F)
Tear strength	D624	Die C, 2.68 kg/mm (150 lb per inch) of thickness
Water absorption	D471	20% max by weight after 7 days at 70 °C (158 °F)

Note: *An alternate closure type is a closure other than a straight thread gasket closure or a tapered thread closure.*

5.3 Threaded fasteners

Threaded fasteners shall have standard commercial threads and shall be capable of being installed and removed by standard plumbing tools or manufacturer-provided tools.

5.4 Cleanout covers

5.4.1 General

Covers shall be removable without the use of special tools, unless provided by the manufacturer.

5.4.2 Leakage test

Cleanout covers intended to be water tight shall not leak when tested in accordance with Clause 6.2. Products with closure types complying with Clause 5.2.2 or 5.2.3 are exempt from this requirement.

6 Test methods and performance requirements

6.1 Load testing for floor cleanout covers

6.1.1 Load classifications

For loading test purposes, the cleanout cover, or top rim, shall be assigned one of the following load classifications, in accordance with the type of traffic that the cleanout cover, or top rim, will be subjected to under typical conditions of use:

Load classification	Safe live load (minimum design load), kg (lb)	Test load, kg (lb)
LD light duty	200 (441)	400 (882)
MD medium duty	900 (1984)	1800 (3968)
HD heavy duty	1650 (3638)	3300 (7276)
XHD extra heavy duty	3402 (7500)	6804 (15 000)
SD special duty	4536 (10 000)	9072 (20 000)

6.1.2 Load failure

The load at failure shall be

a) for brittle materials (see Clause 6.1.3), the load at which the first fracture on any part of the test specimen appears; and

b) for ductile materials (see Clause 6.1.3), the load at which the permanent set (at the point of loading) is greater than 2% of the longest transverse dimension of the specimen (see Figure 5).

6.1.3 Test specimen material classification

Test specimens made of several materials shall be deemed made of brittle or ductile materials, depending upon the material of which its structural portion is made.

6.1.4 Test platen

The platen shall have a diameter of

a) 90 mm (3.5 in), covers 114 mm (4.5 in) or larger in diameter, or in width for rectangular covers; or

b) 50 mm (2 in), covers smaller than 114 mm (4.5 in).

6.1.5 Test procedure

The load test shall be conducted as follows:

a) Mount the test specimen in accordance with the manufacturer's instructions.

b) Using the platen specified in Clause 6.1.4, gradually apply a load at the centre of the specimen until the test load specified in Clause 6.1.1, or the load at failure, as specified in Clause 6.1.2, is reached, whichever is reached first (i.e., whichever load is smaller).

6.1.6 Safe live load

The safe live load shall be

a) calculated by dividing by two the test load or the load at failure determined in Clause 6.1.5, whichever is smaller; and

b) used to determine the load classification, in accordance with Clause 6.1.1.

6.2 Sealing test for alternate closures and water-tight cleanout covers

6.2.1 Test method

6.2.1.1 Assembly and pressurization

The cleanout cover and/or closures shall be assembled in accordance with the manufacturer's instructions. The assembly shall be pressurized with water head pressure of 3.048 m ± 51 mm (10 ft ± 2 in). The water head pressure shall be measured from the highest point of the sealing surface

as illustrated in Figure 4, and allowed to stand for 15 min. The assembly shall be checked for any sign of leakage. Alternative test apparatus that achieve the same pressure and tolerances are acceptable.

Note: *Verify the air has been purged from test assembly before testing.*

6.2.1.2 Disassembly and retesting

If there is no leakage, the pressure shall be released and the assembly stored at laboratory atmospheric conditions for at least 96 h. The cleanout cover and/or closures shall then be removed and, after 1 h, reassembled and retested in accordance with Clause 6.2.1.1.

6.2.2 Pass/fail criteria

The cleanout cover and/or closures shall not leak. Any leakage at the cleanout cover and/or closure joint shall be cause for rejection.

7 Markings

7.1 Cleanouts

7.1.1 Permanent mark

Cleanouts shall be permanently marked with the manufacturer's name or trademark or, in the case of private labelling, the name, trademark, or other mark of the customer for whom the cleanout was manufactured.

7.1.2 Mark location

The markings specified in Clause 7.1.1 shall appear on the cleanout cover or near the top rim (as applicable) of the cleanout body.

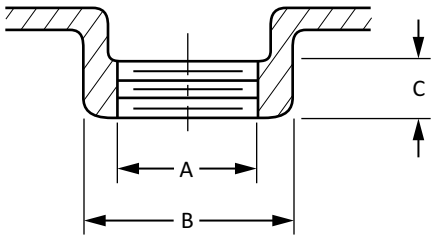
7.2 Elastomeric components

Elastomeric components of push-on compression joints shall be permanently marked with the manufacturer's name or trademark.

7.3 Permanent markings

Acceptable means of applying permanent markings shall include, but not be limited to, firing on, etching, sand blasting, mechanical stamping, stamping with a permanent (non-water soluble) ink, and casting in. Adhesive labels that comply with CSA C22.2 No. 0.15 or UL 969 shall also be considered permanent when placed on a surface that is not normally submerged in water. The exposure conditions specified in Clause 7.1 of UL 969 shall apply.

Table 1
Threaded connections
(See Clause 5.1.2.)



A, NPT connection size	B, minimum OD, mm (in)	C, minimum thread length, mm (in)
1-1/2	59 (2.31)	11 (0.43)
2	73 (2.87)	11 (0.43)
2-1/2	85 (3.34)	16 (0.62)
3	105 (4.12)	19 (0.75)
4	130 (5.12)	20 (0.78)
5	159 (6.25)	22 (0.87)
6	184 (7.25)	25 (1.00)
8	235 (9.25)	27 (1.06)