



**Summary of Substantive Changes
between the 2018 edition of ASME A112.14.3,
2012 edition of CSA B481 and the 2022 edition of
ASME A112.14.3/CSA B481.1 “Hydromechanical Grease Interceptors”
(New Harmonized Standard)**

Presented to the IAPMO Standards Review Committee on January 9, 2023

General: The changes to this standard will likely have an impact on currently listed products. The substantive changes are:

- Updated reference standards to current year. Inclusion of harmonized standards.
- Addition of functional leakage requirement.
- Sizing and installation is a combination of the two standards.

Section 1, Scope:

1.1 ~~Scope~~-Inclusions

This Standard ~~covers general product requirements~~ specifies construction and marking requirements, as well as the performance criteria for the testing and rating of hydromechanical grease interceptors, ~~as defined in CSA B481.0) using lard~~ rated by flow in litres per minute and gallons per minute.

2 Reference publications: Publications referenced in this standard will be to the editions listed in Section

Section 4 of CSA, Material requirements has been relocated to Annex D, Material specifications for mild steel, thermoplastics, fibreglass, and concrete. Language to sections have been revised as follows:

4.1 General

Grease interceptors shall be constructed of materials that can sustain the anticipated use without breaking, cracking, or leakage.

4.2 Optional material specifications

Upon request of the purchaser or the authority having jurisdiction, the materials or construction may be evaluated to the specifications described in Annex Q.

4.3 Annex D.3 Thermoplastics

~~Thermoplastics used for the construction of the body of the grease interceptor and not including interior components, inlet, and outlet shall comply with the material requirements specified in CSA B181.3 and shall have a minimum wall thickness of 3.96 mm (0.156 in). Thermoplastics used to fabricate piping and internal components of the grease interceptor shall comply with the CSA B181.0.~~

Annex D.3.1 General

Thermoplastics used in the construction of the body, piping, and internal components shall meet the cell class requirements in

a) CSA B181.3, Clause 5.1 for polyethylene (PE) and polypropylene (PP);

b) CSA B181.2, Clause 4.1 for polyvinylchloride (PVC) and chlorinated polyvinylchloride (CPVC);

c) CSA B181.1, Clause 4.1 a) for acrylonitrile-butadiene-styrene (ABS); and

d) the applicable standards in the CSA B1800 Series for all other plastics.

Annex D.3.2 Wall thickness



Thermoplastics used for the construction of the body shall have minimum wall thickness of 3.96 mm (0.156 in).

CSA 4.5 Concrete

CSA 4.5.1 General

~~Concrete shall comply with the applicable material requirements of CSA B66.~~

CSA 4.5.2 Concrete coatings and linings

~~Concrete coatings and linings shall be tested for corrosion resistance by exposure to adverse conditions in accordance with ASTM C581 for the reagents specified in Clause 4.4.1.~~

5.1 General

Grease interceptors shall

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~~(a) be constructed to perform at the maximum flow rate for which they are designed;~~

~~(b) have a minimum FOG containment volume capacity of 25% of the flow rating of the interceptor;~~

~~Note: The minimum FOG containment volume capacity of a 100 L/min (26.5 gpm) interceptor is 25 L (6.6 gal);~~

~~(c) have a minimum solids containment capacity of 25% of the flow rating of the interceptor, if designed to contain solids;~~

~~Note: The minimum solids containment capacity of a 100 L/min (26.5 gpm) interceptor is 25 L (6.6 gal).~~

~~(d) be constructed to withstand a hydrostatic water column of 36 mm H₂O (1.5 inches H₂O) above the cover seal of the interceptor applied for 15 min to the inlet as described in Clause 6.3.~~

~~Note: Grease removal devices complying with ASME A112.14.4 are exempt from this requirement;~~

~~(e) have inlet and outlet connections as follows:~~

~~(i) threaded connections shall comply with ASME B1.20.1;~~

~~(ii) hub or hubless connections shall comply with the dimensional requirements of an applicable Standard for the material used; or~~

~~(iii) other connections shall comply with the National Plumbing Code of Canada or applicable provincial plumbing code requirements;~~

~~(f) have a means to prevent siphoning;~~

~~(g) be protected against galvanic corrosion if dissimilar metallic materials are used in their construction;~~

~~(h) have a removable cover;~~

~~(i) have adequate access~~

~~(i) for proper cleaning and removal of FOG and sediments, allowing, at a minimum, access by a 50 mm (2 in) diameter vacuum hose; and~~

~~(ii) for personnel to reach removable internal components; and~~

~~(j) be free of defects that could affect appearance, serviceability, containment, and performance.~~

a) be constructed to perform at the maximum flow rate for which they are rated, as established in accordance with Clause 6.3;

b) be constructed with a water tight cover as demonstrated during the functional leakage requirement in Clause 6.2.1;

c) have inlet and outlet connections as follows:

i) threaded connections shall comply with ASME B1.20.1;

ii) spigot connections shall comply with the OD requirements of ASME A112.3.1, ASME B1.20.1, ASTM A53/A53M, ASTM B306, ASTM A888, or ASTM D2665;

iii) solvent cement connections shall comply with ASTM D2661 or ASTM D2665; or

iv) plastic push fit drain, waste, and vent connections shall comply with ASME A112.4.4.



d) be protected against galvanic corrosion if dissimilar metallic materials are used in their construction; and

e) have a removable cover, or other internal access for

i) proper cleaning and removal of FOG and sediments; and

ii) personnel to reach removable internal components.

6.2 Leakage requirements

6.2.1 Functional leakage requirements

The interceptor shall be equipped with a watertight cover. No leakage shall be observed during the rating test in Clause 6.3. Failure of the test shall be constituted by the presence of bubbles or puddling.

Fasteners may be retightened during the test to stop leakage.

6.2.2 Hydrostatic pressure test

6.2.2.1 Application

Grease interceptors intended for sale in Canada shall be tested in accordance with Clause 6.2.2.2.

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6.3 Rating test

6.3.1 Construction of test equipment

6.3.1.1 Test sink

6.3.1.1.1 Compliance criteria

Test sinks shall comply with the following.:

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e) For flow rates of greater than 756 L/min (200 gpm), not more than two sinks shall be used.

6.3.2.4.4 Flow control and/or vent device

The flow control and/or vent device, if required by the manufacturer, shall be adequate in size for the interceptor to be tested and shall be equipped with the proper size orifice and/or other details to provide the proposed flow rate of the subject interceptor based on the simultaneous drainage of both sink compartments as detailed hereinafter (see Clause 6.3.6.4,2). The waste piping on either side of the flow control and/or vent shall be fitted with unions to permit removal of the device. If the flow control orifice required exceeds 51 mm (2 in) in diameter, thereby requiring a flow control larger than 51 mm (2 in), the outlet piping shall be no less than 77 mm (3 in).

<u>Type</u>	<u>Manufacturer installation parameters</u>	<u>Laboratory flow control configuration</u>
<u>A</u>	<u>Units directly connected, with an external flow control, with an air intake (vent)</u>	<u>Use laboratory flow control with air intake open (see Figure 1)</u>
<u>B</u>	<u>Units directly connected, with an external flow control, without an air intake (vent)</u>	<u>Use laboratory flow control with air intake closed (see Figure 1)</u>
<u>C</u>	<u>Units directly connected, with internal flow control</u>	<u>No laboratory flow control (see Figure 2)</u>
<u>D</u>	<u>Units indirectly connected, without an external flow control, with or without internal flow control</u>	<u>Flow is controlled by a valve (see Figure 3)</u>

ASME 3.2.2.2 6.3.3.2 Floor sink location



A ~~152~~127 mm (65 in) deep floor sink to receive the indirect waste discharge from the test sink shall be located in the floor supporting the test sink. The rim of the floor sink shall be located at floor level.

6.3.4.3 Sink waste piping

Sink connections for 189 L/min (50 gpm) sinks and 378 L/min (100 gpm) sinks shall comply with the respective requirements of Clause 6.3.2.4.1. Horizontal piping exiting the test sinks shall comply with the corresponding requirements from Clause 6.3.2.1 and 6.3.3-4-2 for pipe sizing and elevation.

6.3.4.4 Horizontal waste piping upstream of flow control and/or vent device

The outlets of the sink waste piping adapted to a 102 mm (4 in) pipe size before combining into one of the following fittings:

- a) a combination double wye and 1/8 bend, or
- b) a double wye with 1/8 bend.

ASME 3.2.2.4.3 6.3.3.4.3 Floor sink to interceptor piping

The floor sink shall be a minimum of 228 mm (9 in) x 228 mm (9 in) x 127 mm (5 in) deep in size with a discharge pipe sized to match the inlet of the interceptor being tested. A P-trap fitting, ~~of a size appropriate for the flow rate teste, but not less than 3 in. (76 mm).~~ Horizontal piping of the same size and 3 ft (0.91 m) in length with a vent sized to match the outlet pipe of the floor sink, shall be connected between to the outlet of the floor sink. Horizontal piping from the P-trap shall be of the same size and 910 mm (36 in) in length with a minimum 51 mm (2 in) vent connected to the ~~floor sink elbow and the~~ vertical waste riser, which shall extend downward to connect to the grease interceptor inlet by means of ~~an a 90°~~ elbow and ~~a short~~ horizontal nipple pipe.

Note: Splash guards may be used on the floor sink to ensure all lard and water enters the floor sink.

ASME 3.2.1.4.3 6.3.4.5 Flow control and/or vent device

Flow control, if required by manufacturer, shall be adequate in size for the interceptor to be tested, and equipped with the proper size orifice and/or other details to provide the proposed flow rate of the subject interceptor based on the simultaneous drainage of both sink compartments as detailed hereinafter (see Clause 6.3.6.4.2). The waste piping on either side of the flow control and/or vent shall be fitted with unions to permit removal of the device. If the flow control orifice required exceeds 51 mm (2 in) in diameter, thereby requiring a flow control larger than 51 mm (2 in), the outlet piping shall be no less than 77 mm (3 in). For flow rates greater than 378 L/min (100 gpm), the flow control shall be installed as illustrated in Figure 4.

ASME 3.2.1.4.4 6.3.4.6 Vertical waste riser

The vertical waste riser shall be connected to the outlet of the flow control ~~and/or vent device, if required,~~ and shall extend downward to connect to the grease interceptor inlet by means of an elbow and a short horizontal nipple. ~~Test flows exceeding~~ For flow rates greater than 189 378 L/min (50-100 gpm), the vertical waste riser, interceptor inlet and outlet sizes connections shall be ~~no not~~ less than 77 102 mm (34 in) in diameter.

ASME 3.2.2.4.1 6.3.5.4.1 Sink connections

The sink outlet waste connection from each sink compartment shall be ~~38~~ 51 mm (1-1/2 2 in) in size, and each connection shall be fitted with a quick-opening valve.

ASME 3.2.2.4.2 6.3.5.4.2 Combined horizontal waste piping

~~The combined horizontal waste piping into which the sink outlets connect shall be 3 in. (76 mm), installed with the centerline 11 in. (0.28 m) below the bottom of the sink and properly hung and braced from the sink reinforcement and supports. This waste pipe shall connect to a single 3 in. (76 mm) valve that shall~~



~~serve to regulate the total discharge flow rate. The pipe connected to the valve outlet shall turn downward 90 deg and shall terminate 1 in. (25 mm) above the rim and at the centerline of the floor sink. Sink connections for 189 L/min (50 gpm) sinks and 378 L/min (100 gpm) sinks shall comply with the respective requirements of Clause 6.3.2.4.1. Horizontal piping exiting the test sinks shall comply with the corresponding requirements from Clauses 6.3.2.1 and 6.3.3.4.2 for pipe sizing and elevation. The pipe connected to the valve outlet for each sink shall turn downward 90° and shall terminate 25 mm (1 in) above the rim and at the centreline of the floor sink.~~

ASME 3.3-6.3.6 Preliminary test procedure

ASME 3.3.1-6.3.6.1 Media analysis

Before conducting rating tests on any grease interceptor, simple analysis of the test media shall be made to determine the following characteristics:

a) Water: hydrogen ion concentration shall have a pH value from 6.0 to 8.0. If the water pH does not fall within the prescribed range, the pH shall be adjusted using hydrochloric acid (commercially available muriatic acid is acceptable). The pH shall be verified before every rating test and adjusted if necessary on every increment.

b) Lard: specific gravity shall be in the range of 0.870 to 0.885, at 65.5 °C (150 °F). The specific gravity shall be measured with a hydrometer on every lot of lard. For hydrometers calibrated at temperatures other than 65.5 °C (150 °F), the measured value shall be corrected in accordance with ASTM D1298.

Note: For example, hydrometers calibrated at 15.5 °C (60 °F), for the value measured at 65.5 °C (150 °F) the correction for temperature is calculated using the following formula;

$$SG_{corr} = SG_{meas} \times 0.9987996$$

where

SG_{corr} = specific gravity with correction for temperature

SG_{meas} = specific gravity measured

c) Viscosity in ~~seconds~~ centipoise (cP), at 65.5 °C (150 °F). The viscosity shall be measured with a digital viscometer at a minimum speed of 60 rpm in a temperature bath maintained at 65.5 °C ± 3.3 °C (150 °F ± 5 °F). The viscosity shall be verified for every batch of lard.

ASME 3.3.4.1-6.3.6.4.2 Check flow rate tests

The flow rates of the test sinks shall be calibrated using the following procedure:

a) Setup:

- i) establish the sink compartment capacities;
- ii) connect the sink to the interceptor with the flow control and/or vent or equivalent device, as required;
- iii) confirm equipment is properly sized and installed; and
- iv) confirm the interceptor discharge pipe is properly vented and extended to the skimming tank.

b) Test:

The following series of check flow rate tests shall be made. Three tests shall be made for each of the following four conditions:

following ~~four~~ conditions:

~~(1) With the waste outlet from the adjacent compartment closed off, drain, gauge, and compute the flow rate from compartment No. 1.~~

~~(2) With the waste outlet from the adjacent compartment closed off, drain, gauge, and compute the flow rate from compartment No. 2.~~

i) drain compartments No. 1 and No. 2 simultaneously, and gauge and compute the flow rate on



the basis of the time required to drain compartment No. 1; and
ii) drain compartments No. 1 and No. 2 simultaneously, and gauge and compute the flow rate on the basis of the time required to drain compartment No. 2.

c) Criteria:

The time for the measured discharge shall not be less than 108.6 seconds or exceed 114 seconds.

~~NOTE: Flow rates determined in (b)(I) and (b)(Z) are only for purposes of checking against actual flow rates of test increments.~~

6.3.6.5 Flow rate above 378 L/min (100 gpm)

When combining flow rates from multiple sinks, the flow rates from each sink shall be calculated individually and both added together. The combined flow rates from the sinks shall meet the tolerances prescribed in Clause 6.3.6.4.3.

6.3.8 Skimming

6.3.8.1 Procedure

During the skimming procedure, a mixture of water and grease shall be removed from the skim tank and placed in a separatory funnel equipped with a drain cock. The procedure shall be continued until the visible grease has been removed from the surface of the water in the skim tank.

6.3.8.2 Single tank level maintenance procedure for flows above 378 L/min (100 gpm)

For laboratories with single skim tanks complying with Clause 6.3.1.2 b) iii) B), the water level in the skim tank shall be adjusted as follows:

a) Prior to each increment, the water level shall be lowered by a volume equal to the volume in the grease sinks upstairs. For example, the water shall be lowered by the following distances:

i) 568 L/min (150 gpm) test: 340 mm (13.4 in); and

ii) 757 L/min (200 gpm) test: 452 mm (17.8 in).

b) During the increment, the drain valve on the skim tank shall be closed in order to retain 100% of the water from the test sinks during the 5 min separation time.

~~**ASME 3.5 Skimming Procedure**~~ **6.3.8.3 Separation time in skim tank**

~~The skimming procedure shall be initiated no less than 5 min after the increment to be skimmed has discharged into the tank.~~

6.3.8.4 Skimming equipment

~~A sheet metal hand baffle, slightly shorter than the width of the skimming tank and 305 mm (12 in) in width, shall be employed to push all surfaced grease to one corner of the tank from which the grease can be readily skimmed by means of a rectangular pan.~~

~~The mixture of water and grease thus removed shall be placed in a separatory funnel equipped with a drain cock. All grease shall be squeegeed from the baffle and pan. This process shall be continued until the visible grease has been removed from the surface of the water in the skim tank.~~

6.3.8.5 Skimming method

When splash guards are utilized, they shall be squeegeed into the tank prior to the skim procedure. The first 25 mm (1 in) of the baffle plate shall be immersed at one end of the skimming tank and the baffle moved toward the opposite end, as in Clause 6.3.8.4, to concentrate surfaced grease. The baffle shall be moved at a rate sufficient to prevent turbulence from drawing the accumulating grease below the baffle, and to minimize grease passing through the clearance space between the baffle and the tank walls.

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6.3.8.6 Separatory funnel procedure

The mixture shall be allowed to stand in the funnel for 5 min, at the end of which time the water shall be drawn off from the bottom of the funnel. The remainder shall be drained from the separatory funnel into one or more pre-weighed cans or bottles and immediately inverted upside down.

The inverted cans or bottles shall be cooled to solidify the grease. The ~~cans~~ containers may be placed in a freezer or refrigerator to expedite the cooling process. After the solidified contents shall then be scraped and kneaded with a small putty knife, and the water thus worked from the mixture shall be poured off. If the quantity of water thus removed is greater than several drops, the heating and solidification process shall be repeated. When only a few drops of water are removed in this manner, the mixture shall be assumed to be completely dewatered and weights are taken for computation purposes. Lard has solidified, any water that has collected near the cap/lid shall be poured off. The sample may be heated and cooled as necessary to ensure that all water has been removed.

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6.5 Chemical and corrosion resistant grease interceptors

When the manufacturer claims chemical and/or corrosion resistance, the product shall be tested according to Annex E.

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7 Marking and literature

7.1 Required markings

Grease interceptors shall be marked with (see Figures 7a and 7b)

- a) the name, trademark, or other known mark of the manufacturer;
- b) the product model number;
- c) the applicable ASME/CSA Standard designation (i.e., "ASME A112.14.3/CSA B481.1");
- d) the flow rating;
- e) the removal efficiency, expressed as a percentage, measured at the rated grease capacity (i.e., "92% efficient at 22.7 kg/50 lb capacity");
- f) the grease containment capacity;
- g) for grease interceptors intended for sale in Canada, the access cover load classification, determined in accordance with Clause 6.1.1. (i.e., L, M, H, X, or S); and
- h) a mark indicating whether an external flow control device is required (i.e., "Required (part number)" or "Not required"), an internal flow control device is required, or no flow control device is required.

In addition, the inlets and outlets of the grease interceptors shall be clearly identified to indicate the direction of flow.

7.2 Optional markings

Grease interceptors that are intended to comply with the Clauses listed in this section shall be marked as follows:

- a) Grease interceptors that have been tested and comply with a load rating in accordance with Clause 6.1 shall be marked with the access cover load classification (i.e., L, M, M, X, or S), along with their minimum and maximum temperatures tested in °C with (°F) if required;

Note: These markings are mandatory in Canada.



b) Grease interceptors that have been tested and comply with Clause 6.2.2 may be marked with "water and air tight seal". Grease interceptors not complying with Clause 6.2.2 shall not be marked with this label.

c) Grease interceptors that have been tested and comply with the chemical and corrosion resistance tests in Annex E may be marked "Chemical and corrosion resistant". Grease interceptors not complying with Annex E shall not be marked with this label.

d) Grease interceptors that have been tested and comply with the corrosion resistance test in Annex E may be marked "Corrosion resistant for outdoor use". Grease interceptors not complying with Annex E shall not be marked with this label.

CSA-7.2 CSA 7.3 Marking quality

Markings shall be

- a) permanent or indelible;
- b) legible or readable; and
- c) visible after installation.

A permanent label or chip on the cover of the grease interceptor may be used.

7.4 Permanent markings

Examples of acceptable means of applying permanent markings shall include firing on, etching, sand blasting, mechanical stamping, stamping with a permanent (non-water soluble) ink, or casting in.

Adhesive labels that comply with CAN/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.

CSA-7.3 7.5 Cover marking

For grease interceptors intended for sale in Canada, the cover shall be marked permanently with the following:

- a) the load classification in accordance with Clause 6.1.1 (L, M, H, X, or S);
- b) for covers with no classification, a note: "Do not step on cover" / "Ne pas marcher sur le couvercle"; and
- c) If for outdoor use, the minimum and maximum temperatures tested in °C with (°F) if required.

Note: For grease interceptors intended for sales outside of Canada and that comply with the corresponding clauses, these markings are optional.