



*NSF International Standard /
American National Standard*

NSF/ANSI 18 - 2023

Manual Food and Beverage Dispensing Equipment



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Chair, Joint Committee on Food Equipment
c/o NSF International
789 North Dixboro Road, P.O. Box 130140
Ann Arbor, Michigan 48113-0140 U.S.A.
Phone: (734) 769-8010 Fax: (734) 769-0109
Email: info@nsf.org
Web: <www.nsf.org>

NSF International Standard /
American National Standard
for Food Equipment –
**Manual Food and Beverage
Dispensing Equipment**

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Abbreviations

The following table is provided as a reference for unit abbreviations for common forms of measurement used within NSF documents.

time	second	s
	minute	min
	hour	h
	day	d
	week	wk
	month	mo
	year	yr
length	inch	in
	foot	ft
	yard	yd
	micrometer	µm
	nanometer	nm
	millimeter	mm
	centimeter	cm
	meter	m
	kilometer	km
liquid measure	milliliter	mL
	liter	L
	liters per day	LPD
	liters per minute	LPM
	ounce	oz
	pint	pt
	quart	qt
	gallon	gal
	gallons per minute	GPM
	gallons per day	GPD
weight	microgram	µg
	picogram	pg
	nanogram	ng
	milligram	mg
	centigram	cg
	gram	g
	kilogram	kg
	pound	lb
	ton	t
	metric ton	mt
miscellaneous	colony forming unit	cfu
	pounds per square inch	psi

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Foreword²

The purpose of this standard is to establish minimum food protection and sanitation requirements for the materials, design, construction, and performance of manual food and beverage dispensing equipment.

This standard contains requirements for equipment and devices that manually dispense food or beverages, in bulk or in portions. This standard may also be applied to components of food and beverage dispensing equipment.

The requirements established in this standard are intended to be consistent with the Food Code, recommendations of the U.S. Public Health Service, Food and Drug Administration.

This edition of the standard contains the following revision:

Issue 22

This revision adds language regarding equipment mounting as Sections [5.16.5](#) and [5.16.6](#).

The Interpretation Annex contains responses to interpretation requests. The responses will be published in each version of the standard until such time that the interpretation response is no longer applicable.

This standard was developed by the NSF Joint Committee on Food Equipment using the consensus process described by the American National Standards Institute.

This standard and the accompanying text are intended for voluntary use by certifying organizations, regulatory agencies, and/or manufacturers as a basis of providing assurances that adequate health protection exists for covered products.

Suggestions for improvement of this standard are welcome. This standard is maintained on a continuous maintenance schedule and can be opened for comment at any time. Comments should be sent to: Chair, Joint Committee on Food Equipment at standards@nsf.org, or c/o NSF International, Standards Department, P.O. Box 130140, Ann Arbor, Michigan 48113-0140, U.S.A.

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NSF/ANSI Standard for Food Equipment –

Manual Food and Beverage Dispensing Equipment

1 General

1.1 Purpose

This standard establishes minimum food protection and sanitation requirements for the materials, design, construction, and performance of manual food and beverage dispensing equipment and their related components.

1.2 Scope

This standard contains requirements for equipment and devices that manually dispense food or beverages, in bulk or in portions. The materials, design, and construction requirements of this standard may also be applied to an item that is manufactured as a component of food and beverage dispensing equipment. This standard does not apply to vending machines, dispensing freezers, or bulk milk dispensing equipment covered by the scope of other NSF standards.

Dispensing equipment components and materials covered under other NSF or NSF/ANSI standards or criteria shall also comply with the requirements therein. This standard is not intended to restrict new unit design, provided that such design meets the minimum specifications described herein.

1.3 Alternate materials, design, and construction

While specific materials, design, and construction may be stipulated in this standard, dispensing equipment that incorporates alternate materials, design, or construction may be acceptable when such equipment meets the applicable requirements herein.

1.4 Measurement

Decimal and SI conversions provided parenthetically shall be considered equivalent. Metric conversions and significant figure rounding have been made according to IEEE/ASTM SI 10.³

2 Normative references

The following documents contain requirements that, by reference in this text, constitute requirements of this standard. At the time of publication, the indicated editions were valid. All of the documents are subject to revision and parties are encouraged to investigate the possibility of applying the most recent editions of the documents indicated below. The most recent published edition of the document shall be used for undated references.

³ ASTM International. 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959. <www.astm.org>

40 C.F.R. § 180.940, *Tolerance exemptions for active and inert ingredients for use in antimicrobial formulations (Food-contact surface sanitizing solutions)*⁴

APHA/AWWA/WEF, *Standard Methods for the Examination of Water and Wastewater* (hereinafter referred to as *Standard Methods*), 21st edition⁵

ANSI/ASSE 1001-2008, *Performance Requirements for Atmospheric Type Vacuum Breakers*⁶

ANSI/ASSE 1020-2004, *Performance Requirements for Pressure Vacuum Breaker Assembly*⁶

ANSI/ASSE 1022-2003, *Performance Requirements for Backflow Preventer for Beverage Dispensing Equipment*⁶

ANSI/ASSE 1024-2004, *Performance Requirements for Dual Check Backflow Preventers*⁶

ASSE 1032-2004, *Dual Check Valve Type Backflow Preventers for Carbonated Beverage Dispensers – Post Mix Type*⁶

IEEE/ASTM SI 10-2016, *American National Standard for Metric Practice*³

NSF/ANSI 4, *Commercial Cooking, Rethermalization, and Powered Hot Food Holding and Transport Equipment*

NSF/ANSI 42, *Drinking Water Treatment Units – Aesthetic Effects*

NSF/ANSI 51, *Food Equipment Materials*

NSF/ANSI 53, *Drinking Water Treatment Units – Health Effects*

NSF/ANSI 58, *Reverse Osmosis Drinking Water Treatment Systems*

NSF/ANSI 170, *Glossary of Food Equipment Terminology*

3 Definitions

Terms used in this standard that have special technical meaning are defined in NSF/ANSI 170.

4 Materials

The requirements contained in this section are intended to protect food from contamination and ensure that the materials used in the manufacture of manual food and beverage dispensing equipment resist wear, penetration by vermin, and the effects of foods, heat, cleaning compounds, sanitizers, and other substances that may contact the materials in the intended use environment. Materials used in unexposed non-food zone areas shall be exempt from all requirements in Section 4.

⁴ National Archives and Records Administration, Office of the Federal Register. 7 G Street NW, Suite A-734, Washington, DC 20401. <www.ecfr.gov>

⁵ ASSE International. 18927 Hickory Creek Drive, Suite 220, Mokena, IL 60448. <www.asse-plumbing.org>

⁶ American Public Health Association, American Water Works Association, and Water Environment Federation. <www.standardmethods.org>

4.1 Conformance with NSF/ANSI 51

Materials shall conform to the requirements in NSF/ANSI 51 applicable to the zone in which the material is used.

4.2 Sound-dampening materials

Sound-dampening materials shall meet the requirements of the zone in which they are located except that they are not required to be smooth. Noncuring sound-dampening materials shall not be used in exposed areas.

5 Design and construction

This section contains design and construction requirements for equipment covered within the scope of this standard.

5.1 General sanitation

5.1.1 Equipment shall be designed and manufactured to prevent the harborage of vermin and the accumulation of dirt and debris, and to permit the inspection, maintenance, servicing, and cleaning of the equipment and its components.

5.1.2 Equipment shall be designed and manufactured so that food may be added, processed, finished, dispensed, removed, and/or served in a sanitary manner.

5.1.3 Food zones shall be readily accessible and easily cleanable or shall be designed for CIP when a readily accessible design is not feasible.

5.1.4 Food zones for which CIP is intended shall be designed and manufactured so that cleaning and sanitizing solutions may be circulated or passed throughout the fixed system. The design shall ensure that cleaning and sanitizing solutions contact all food contact surfaces. The system shall be self-draining or capable of being completely evacuated. Equipment and appurtenances designed for CIP shall have a section of the cleaned area accessible for inspection or shall provide for other acceptable inspection methods. The manufacturer shall provide written instructions for the cleaning and sanitizing of all food zone surfaces for which CIP is intended. The type and concentration of sanitizing agent recommended in the instructions by the manufacturer shall comply with 40 C.F.R. § 180.940.⁴

NOTE — CIP procedures are not required for oil distribution systems that only circulate fresh, edible oil throughout the fixed system.

5.1.5 Splash zone surfaces shall be accessible and easily cleanable.

5.1.6 Non-food zone surfaces shall be accessible and cleanable.

5.1.7 Unexposed non-food zone surfaces shall be accessible or closed.

5.2 Internal angles and corners, food zone

5.2.1 All internal angles or corners of less than 135° in a food zone shall be smooth and shall have radii as set forth below.

5.2.1.1 The radius shall not be less than $\frac{1}{8}$ in (0.13 in, 3.2 mm).

5.2.1.2 For metals, solder or other fillet material shall not be used to affect the required minimum radius of an internal angle or corner.

5.2.1.3 For materials other than metal, the radii specified in items Sections [5.2.1.1](#) and [5.2.1.2](#) shall be affected using parent material or a material proven to be bonded and otherwise equal to or better than the parent material.

5.2.1.4 Lesser radii may be used when necessary to ensure the proper functioning of equipment components such as sealing ring grooves. Greater radii shall be provided when necessary to allow for adequate cleaning, maintenance, and product flow.

5.3 External angles and corners

Exposed external angles and corners in a food zone shall be sealed and smooth (see [Figure 1](#)).

5.4 Joints and seams

5.4.1 Permanent joints and seams in a food or splash zone shall be sealed and smooth.

5.4.2 Permanent joints and seams in a non-food zone shall be closed. Welded joints and seams in a non-food zone shall be deburred.

5.4.3 Joints formed by overlapping sheets of material shall not create upwardly facing horizontal ledges.

5.4.4 Sealants shall only be used to seal joints and seams that are structurally sound and are less than $\frac{1}{8}$ in (0.13 in, 3.2 mm) wide before sealing. Sealants may be used to fill spaces around collars, grommets, and service connections.

5.4.5 Equipment shall be designed and manufactured so that field joints may be made sanitary with the use of trim strips, welding, soldering, properly designed draw fastening, or other appropriate methods.

5.5 Fasteners

5.5.1 Fasteners shall not be used in a food zone.

5.5.2 Fasteners shall be easily cleanable. Fasteners meeting this requirement include, but are not limited to, slot-head and Phillips-head screws, hex head fasteners, and flush-break pop rivets. Hex key screws and non-flush-break pop rivets may be used in a splash zone or a non-food zone provided that the heads are capped or filled.

5.5.3 Fasteners shall be tight fitting to the surface except as permitted in Section [5.5.4](#).

5.5.4 No more than one locking washer and one flat washer shall be used per fastener head. The diameter of the washer adjacent to the fastening surface shall not be less than the diameter of the washer under the fastener head. External-tooth lock washers shall not be used.

5.5.5 There shall be no exposed threads, projecting screws, or studs in a food or splash zone. There shall be no more than 2.5 exposed threads or $\frac{1}{4}$ in (0.25 in, 6.4 mm) of exposed threads, whichever is less, in a non-food zone. Exposed threads on electrical cord strain relief devices in a non-food zone shall be exempt.

5.5.6 The sharp point of a fastener shall not be exposed.

5.6 Insulation

Insulated spaces in the food and splash zones shall be sealed. Insulated spaces in the non-food zone shall be closed.

5.7 Reinforcing and framing

5.7.1 Exposed reinforcing and framing members and gussets shall be easily cleanable. Reinforcing and framing members shall be designed and manufactured to prevent the harborage of vermin (see [Figure 2](#)).

5.7.2 Horizontal surfaces of reinforcing and framing members and gussets shall not be located where debris may accumulate.

5.7.3 Vertical channels that form hollow sections shall be closed at each end, open at each end, or readily accessible along the entire channel. All other hollow sections shall be closed at each end.

5.8 Inspection and maintenance panel

Where necessary for equipment inspection and maintenance, removable panels of adequate size shall be provided. Each panel shall be sized to permit removal and replacement by one person.

5.9 Doors

5.9.1 Doors shall be sized to fit their openings and shall close properly.

5.9.2 Sliding doors shall slide freely and shall be readily removable.

5.9.3 Channel sections on single panel doors shall be shallow and wide enough to be easily cleanable and shall have clean-out holes. Exposed channel sections on single panel doors shall be inverted or easily cleanable. Clean-outs shall be provided if channels are not inverted (see [Figure 3](#)).

5.10 Door tracks and guides

5.10.1 Door tracks and guides shall be easily cleanable. The width at the top of a door channel track shall be greater than the depth of the track.

5.10.2 Tracks and guides shall:

- have clear open slots, continuously or at intervals along their entire length; or
- have clean-out holes at each end; or
- terminate at least $\frac{1}{2}$ in (0.50 in, 13 mm) short of framing at each end; or
- be integral with the equipment surface and have no square corners.

This shall not apply to lower guides for overhead door suspension that are integral with the equipment surface and channel-type bottom tracks equipped with readily removable strips.

5.11 Hinges

5.11.1 Hinges located in a food zone shall be easily cleanable while in place or shall be designed to be disassembled, without the use of tools, for routine cleaning. Hinges located in a splash zone shall be easily cleanable while in place or shall be designed to be disassembled (with or without the use of tools) for routine cleaning.

5.11.2 Continuous hinges shall not be used in a food zone.

5.11.3 Hinges on splash zone doors and covers weighing 80 lb (36 kg) or more shall have no more than five knuckles in total per hinge set and shall have sealed joints and seams on the hinge body (except for seams at the pivot joint).