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MANUAL FOOD AND BEVERAGE DISPENSING EQUIPMENT. NATIONAL SANITATION FOUNDATION STANDARD NO. 18.

NATIONAL SANITATION FOUNDATION, ANN ARBOR, MICH.

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DESCRIPTORS- *EQUIPMENT STANDARDS, *FOOD HANDLING FACILITIES, *FOOD SERVICE, *SANITATION, PUBLIC HEALTH, SANITATION IMPROVEMENT,

THIS STANDARD COVERS THE SANITATION REQUIREMENTS FOR EQUIPMENT AND DEVICES WHICH DISPENSE FOOD OR BEVERAGE EITHER IN BULK OR PORTIONS. VENDING MACHINES OR BULK MILK DISPENSING EQUIPMENT ARE NOT COVERED IN THIS STANDARD. ITEMS COVERED INCLUDE THE BASIC PRINCIPLES OF DESIGN AND CONSTRUCTION, FOOD PROTECTION AND FREEDOM FROM HARBORAGES. MINIMUM REQUIREMENTS, ALTERNATE MATERIALS AND STANDARD REVIEW ARE INCLUDED IN SECTION 1. SECTION 2 INCLUDES DEFINITIONS, SECTION 3 COVERS MATERIALS SPECIFICATIONS, AND SECTION 4, DESIGN AND CONSTRUCTION. (RH)

NATIONAL SANITATION FOUNDATION

STANDARD NO. 18

Relating to

MANUAL FOOD AND BEVERAGE DISPENSING EQUIPMENT

As Prepared by

The Joint Committee on Food Equipment Standards

April 1966

The National Sanitation Foundation

P.O. Box 1468

Ann Arbor, Michigan 48106

9/67

THE NATIONAL SANITATION FOUNDATION

Purpose and Organization

In 1944, A SMALL GROUP of industrial and public health leaders were discussing mutual problems involving sanitation. They realized that more solutions to modern sanitation problems affecting industry and the public health could be developed through mutual understanding and cooperative action than through ordinances, inspections and law enforcement alone.

It occurred to them that great strides could result from the creation of an independent but authoritative liaison organization which would be a clearing house through which business and industry and health authorities could work together for the solution of their common problems and for the common good.

They foresaw that, through such an organization, they could jointly seek new facts in sanitary science to bring it up to date with technological advances of industry and with modern problems of the health officer in the field.

They could sponsor educational programs and sanitation services which would win everyone's cooperation in a nation-wide program designed to promote superior sanitation in modern products and services, and in the daily lives of the people.

Thus was born the National Sanitation Foundation. The Foundation is a non-profit, non-commercial organization seeking solutions to all problems involving cleanliness. It is dedicated to the prevention of illness, the promotion of health and the enrichment of the quality of American living through the improvement of the physical, biological and social environment in which we live today.

Distinguished representatives of the public health profession, of business and industry, and of the public serve on its Board of Trustees, Council of Public Health Consultants, Industrial Advisory Board and various committees.

The National Sanitation Foundation is endorsed by health agencies, both official and voluntary. More than 350 industrial and business firms have contributed nearly three quarters of a million dollars to its support. The Foundation is now in its twenty-second year of operation.

PREFACE

This Standard, relating to Manual Food and Beverage Dispensing Equipment, is one in a series of N.S.F. Standards. These Standards are issued in recognition of the long-felt need for a common understanding of the problems of sanitation involving industry and administrative health officials whose obligation it is to enforce regulations.

Sanitation in the United States, or in any country, can be as good or as bad as:

1. The people who work at it; i.e., sanitation personnel

2. The joint effort of public health, industry, and business

3. The education, or the understanding, of the public

It is a mistake to think of any one of the three factors as more or less important than the other-as much a mistake as saying that ignition is more or less important than carburetion in the operation of an engine. How the three factors are developed and coordinated will determine the success or failure of national, state, and local efforts to improve sanitation.

The National Sanitation Foundation offers the key to securing the much needed uniformity in the field of sanitation. The aim also is to improve environmental health as well as sanitation.

This revised Standard has gone through many drafts during the years of its preparation and use. It is the result of considerable study on the part of health men, consultations with technical representatives of industry, and field investigations of the National Sanitation Foundation's staff.

The improvement of environmental health and sanitation and the establishment of uniform requirements have been the primary aim in the preparation of this material. It is recognized that continued scientific progress will require changes in Standards over long periods.

The adoption of these Standards offers health officials an opportunity to present a united front in securing the basic equipment to make safe and clean food service possible as demanded by the general public. It gives users of such equipment the assurance of meeting health standards and passing inspection. Also, this gives manufacturers the advantage of applying uniform construction methods with confidence that equipment conscientiously built to meet these Standards will be generally acceptable.

Finally, as an aid to all concerned in recognizing approved equipment, the National Sanitation Foundation has established a policy under which the use of its insigne, nSf, will be authorized on equipment of types that meet the standards herein established for Manual Food and Beverage Dispensing Equipment.

Permission to use the National Sanitation Foundation Seal of Approval will be granted only after an investigation of the applicant's manufacturing methods and,where deemed necessary, tests of equipment show compliance with the Standard Continuance of the agreement is dependent upon continued evidence of compliance with the Standard upon periodic re-examination of equipment in factory and field.

Our sincere appreciation is extended to all members of the Committees herein listed who willingly devote their time to the development of this and other Standards. Special credit and thanks are due the members of the Joint Committee on Food Equipment Standards for the long hours spent in review, discussion and correspondence as well as to the Industry Advisory Committee for its untiring efforts through the years in which this work has been in progress.

Henry F. Vaughan, Dr. P.H., President
The National Sanitation Foundation

This is one of a series of nationally uniform sanitation standards and criteria established by the National Sanitation Foundation.

Current Standards and Criteria include:

No. 1 Soda Fountain and Luncheonette Equipment

No. 2 Food Service Equipment

No. 3 Spray-Type Dishwashing Machines

No. 4 Commercial Cooking and Warming Equipment

No. 5 Commercial Hot Water Generating Equipment

No. 6 Dispensing Freezers

No. 7 Commercial Refrigerators and Storage Freezers

No. 8 Commercial Powered Food Preparation Equipment

No. 9 Diatomite Type Filters for Swimming Pool Equipment

No.10 Sand Type Filters for Swimming Pool Equipment

No.11 Recessed Automatic Surface Skimmers

No.12 Automatic Ice Making Equipment

No.14 Thermoplastic Materials, Pipe, Fittings, Valves, Traps and Joining Materials

No.15 Thermoset Plastic Pipe, Fittings, Valves, Tanks Appurtenances, Joining Materials, & Thermoset Plastic Coatings for Use in Potable Water Supply Systems

No.16 Film Badge Services

No.17 Centrifugal Pumps for Swimming Pools

C-1 Vending Machines

C-2 The Evaluation of Special Equipment and/or Devices

C-3 Thermoset Reinforced Plastic

SUGGESTIONS CONCERNING REGULATIONS GOVERNING THE SANITATION OF MANUAL FOOD & BEVERAGE DISPENSING EQUIPMENT

It is strongly recommended that these Standards representing a cross section of opinion of workers in the field of environmental health be accepted and followed by enforcement officials. However, their incorporation in detail into local sanitary codes does not appear to be necessary and is likely to be cumbersome.

In municipalities, counties, and health districts in which the adoption of legislation by reference is considered legal, the following regulation should serve to implement the use of the Standard for Manual Food & Beverage Dispensing Equipment.

ALL MANUAL FOOD & BEVERAGE DISPENSING EQUIPMENT INSTALLED ON OR AFTER _____ IN FOOD SERVICE ESTABLISHMENTS IN THIS JURISDICTION SHALL MEET THE NATIONAL SANITATION FOUNDATION STANDARDS FOR SUCH EQUIPMENT, or, if considered desirable, it will be simpler to adopt the following more general regulation applying to all standards in the food service field:

ALL EQUIPMENT INSTALLED ON OR AFTER _____ FOR USE IN THE PREPARATION OF FOOD IN FOOD SERVICE ESTABLISHMENTS IN THIS JURISDICTION SHALL MEET NATIONAL SANITATION FOUNDATION STANDARDS.

In fact, the adoption of this broad regulation will save time as well as advertising and printing costs as, no doubt, many different standards, will be adopted. Otherwise, each standard will require the adoption of a specific regulation.

Wherever the legality of adopting legislation by reference is not recognized, delete the portion of either of the above regulations after the word "SHALL" and substitute therefore the words "BE OF A TYPE APPROVED BY THE HEALTH OFFICER." The health officer may be guided by the National Sanitation Foundation Standards in his approval of types.

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NATIONAL SANITATION FOUNDATION

STANDARD NO. 18

relating to

MANUAL FOOD AND BEVERAGE DISPENSING EQUIPMENT

SECTION 1. GENERAL

1.00 COVERAGE: This Standard covers the sanitation requirements for equipment and/or devices which dispenses food or beverage either in bulk or portions, but not including vending machines or bulk milk dispensing equipment. It includes the basic principles of design, construction and performance as are necessary to achieve easy cleanability, food protection and freedom from harborages.

1.01 MINIMUM REQUIREMENTS: These are minimum requirements and variations may be permitted when they tend to make units more resistant to wear, corrosion, or more easily cleanable. Units which have components, or parts, which are covered under existing NSF Standards or Criteria, shall comply with the applicable requirements thereof.

1.02 ALTERNATE MATERIALS: Whenever specific materials are mentioned, it is understood that the use of materials proven to be equally satisfactory from the standpoint of sanitation and protection of product, may be permitted.

1.03 STANDARD REVIEW: A complete review of this standard shall be conducted at intervals of not more than three years to determine what changes, deletions, or additions if any, are necessary to maintain current and effective requirements consistent with new technology and progress. These reviews shall be conducted by appro-

priate representatives from the industry, public health and user groups. Final adoption of revision shall be in accordance with the procedures established by the National Sanitation Foundation Joint Committee on Food Equipment Standards.

1.04 MANUAL: A manual covering recommended operation and sanitation practices to be followed in the use of the dispensing equipment shall be submitted by the manufacturer and shall be a basic consideration in the evaluation of the dispensing device. Significant changes in subsequent editions of the manual shall be submitted.

SECTION 2. DEFINITIONS

2.00 ACCESSIBLE: Accessible shall mean readily exposed for proper and thorough cleaning and inspection with the use of only simple tools, such as a screw driver, pliers or open-end wrench.

2.001 READILY ACCESSIBLE: Readily accessible shall mean exposed or easily exposed without the use of tools, for proper and thorough cleaning and visual inspection.

2.01 CLEANING: The term cleaning shall mean the physical removal of residue of dirt, dust, foreign material or other soiling ingredients or materials.

2.011 READILY (OR EASILY) CLEANABLE: Readily (or easily) cleanable shall mean readily accessible and of such material, finish and so fabricated that soil may be effectively removed by normal cleaning methods.

2.02 CLOSED: Spaces required to be "closed shall have no openings large enough for the entrance of insects or rodents. An opening of 1/32 inch or less shall be considered closed.

2.03 CORROSION-RESISTANT: "Corrosion-resistant" materials are those which maintain their original surface characteristics under prolonged influence of the foods to be contacted, the normal use of cleaning compounds, and sanitizing solutions, and other conditions of the use environment.

2.04 FOOD: Shall mean any raw, cooked or processed edible substance, beverage, concentrate, or ingredient used or intended for use or for sale in whole or in part for human consumption.

2.041 POTENTIALLY HAZARDOUS FOODS: The term "potentially hazardous foods" shall mean any food or beverage or ingredients consisting in whole or in part of milk, milk products, eggs, meat, fish, poultry, or other food capable of supporting rapid and progressive growth of microorganisms which can cause food infections or food intoxication. However, products in hermetically sealed containers processed to prevent spoilage, and dehydrated, dry or powdered products so low in moisture content as to preclude development of microorganisms, are excluded from the terms of these definitions.

2.05 REMOVABLE: Removable shall mean capable of being taken away from the main unit with the use of only simple tools, such as a screw driver, pliers, or open-end wrench.

2.051 READILY (OR EASILY) REMOVABLE: Readily (or easily) removable shall mean capable of being taken away from the main unit, without the use of tools.

2.06 SINGLE SERVICE ARTICLE: Single service articles shall mean cups, containers, lids, or closures; plates, knives, forks, spoons, stirrers, paddles; straws, place mats, napkins, doilies, wrapping materials; and all similar articles which are constructed wholly or in part from paper, paperboard, molded pulp, foil, wood, plastic, synthetic, or other readily destructible materials, and which are intended for one usage only and then to be discarded.

2.07 SANITIZING: Sanitizing shall mean effective bactericidal treatment of clean surfaces of equipment and utensils by a process which has been proven effective.

2.08 SEALED: Spaces required to be "sealed" shall have no openings that will permit the entry of insects, rodents, dirt or moisture seepage.

2.09 SMOOTH: The word "smooth" is used to define a surface free of pits and inclusions and having a cleanability equal to the following:

Food Zone: Number 3 (100 grit) finish on Stainless Steel Splash and Non-Food Zone: Commercial Grade hot rolled steel free of visible scale

2.10 TOXIC: The word 'toxic' shall mean adverse physiological effect on man.

2.11 ZONES (CONTACT SURFACES):

2.111 FOOD ZONE: The term "food zone" or "food contact surfaces" includes those surfaces of the equipment with which the food normally comes in contact, and those surfaces with which the food is likely, in normal operation, to come into contact and drain back onto surfaces normally in contact with the food or into the food.

2.112 SPLASH ZONE: The terms "Splash zone or splash contact surfaces" shall mean those surfaces, other than food contact surfaces, which are subject to routine splash, spillage and contamination during normal use.

2.113 NON-FOOD ZONE: The terms "non-food zone" or "non-food contact surfaces" shall mean all exposed surfaces not in the food and splash zones.

SECTION 3. MATERIALS

3.00 GENERAL: Only such materials shall be used in the construction of dispensing equipment as will withstand normal wear, penetration of vermin, the corrosive action of the foods or beverages to be dispensed, cleaning compounds and such other elements as may be found in the use environment and will not impart an odor, color or taste to the product.

3.01 FOOD CONTACT SURFACES: Surface materials in the food zone shall be smooth, corrosion-resistant, non-toxic,* stable and non-absorbent under use conditions and shall not impart odors, color and taste nor contribute to the adulteration of food. Exposed surfaces

*The requirements of the Federal Food, Drug & Cosmetics Act, as amended, shall be used as a general guide.

in the food zone shall be finished so as to be easily cleanable. Paint shall not be used.

3.02 SPLASH CONTACT SURFACES: Splash contact surfaces shall be smooth, easily cleanable and corrosion-resistant material, or shall be rendered corrosion-resistant with a material which is non-cracking, non-chipping and non-spalling. Lead based paint shall not be used.

3.03 NON-FOOD CONTACT SURFACES: Non-food contact surfaces shall be smooth and of corrosion-resistant material or shall be rendered corrosion-resistant. If coated, the coating shall be of non-cracking, non-chipping and non-spalling type. Lead base paints shall not be used.

3.04 WELDING: When welded seams are used, the weld area and deposited weld material shall meet the applicable corrosion-resistant requirements.

3.05 GASKETS: Gasket materials shall be non-toxic, stable under use conditions, odor free, non-absorbent and be unaffected by the foods or by normal cleaning and sanitization methods.

3.06 SOLDER:

3.061 SOFT SOLDER, when used as a food-contact surface shall be of such formulation as to be non-toxic under use conditions; shall contain at least 50% tin, shall contain no more lead than is necessary under good solder manufacturing practice; and shall, consistent with good industrial practice in the refining of its constituent elements, be free of cadmium, antimony, bismuth and other toxic materials. Other solders may be accepted, under the provisions of Item 1.02, if they are demonstrated to be non-toxic under use conditions.

3.062 HARD SOLDER (silver solder) when used as a food-contact surface, shall be of such formulation as to be non-toxic under use conditions; shall be corrosion-resistant; and shall be consistent with good industrial practice in the refining of its constituent elements, be free of cadmium, antimony, bismuth and other toxic materials. Other solders

may be accepted under the provisions of Item 1.02, if they are demonstrated to be non-toxic under use conditions.

3.07 PLASTIC RESIN SYSTEM: Plastic resin systems may be used provided they meet the applicable requirements of Items 3.00, 3.01, 3.02 and 3.03.

3.08 SOUND DAMPING AND/OR INSULATING MATERIALS: Sound damping and/or insulating materials shall when applied, comply with material requirements of the zone in which used.

SECTION 4. DESIGN AND CONSTRUCTION

FOOD CONTACT SURFACES:

4.00 GENERAL DESIGN AND CONSTRUCTION: Dispensing equipment shall be designed and constructed in such a manner as to exclude such vermin, dust or dirt from the food zone as may be encountered under the intended use conditions, and to be easily cleaned, maintained and serviced.

4.01 CLEANABILITY: All food contact surfaces shall be readily accessible and easily cleanable, either in an assembled position or when removed. Demountable parts shall be readily removable.

4.011 In equipment of such design that food contact surfaces are not readily removable, and in-place cleaning is intended, tubing, pipe, fittings, and valves shall be so arranged that cleaning and sanitizing solutions can be circulated under pressure, throughout the fixed system. Such solutions shall contact all interior surfaces. The system shall be self-draining or otherwise completely evacuated, and the manufacturers' recommended cleaning procedures shall result in thorough cleaning and sanitizing of the equipment. Dispensing equipment designed for cleaning-in-place, shall have a section of the line cleaned-in-place accessible for inspectional purposes or other inspectional method provided.

4.02 FUNCTION: Dispensing equipment shall be designed and constructed so that ingredients, or food (s) can be added and the finished food dispensed, removed or served in a sanitary manner.

4.03 INTERNAL CORNERS OR ANGLES OF FOOD CONTACT SURFACES: An internal angle formed by the intersection of surfaces at 135 degrees or less, and to be manually cleaned, shall have a minimum continuous and smooth radius of 1/8 inch.

4.031 LESSER RADII: Lesser radii may be used where necessary for proper functioning of parts (Such as sealing ring grooves, holes, or grooves), provided that they can be readily cleaned.

4.032 GREATER RADII: Greater radii may be required where cleaning product flow and maintenance requirements indicate.

4.04 EXTERNAL CORNERS AND ANGLES OF FOOD CONTACT SURFACES: All external corners and angles in the food zone shall be sealed, smooth as the surfaces being oined, with sufficient radii to eliminate sharp edge (s) which interfere with proper drainage.

4.05 JOINTS AND SEAMS: All joints and seams in the food zone shall be sealed and shall be as smooth as the surface being joined. Wherever feasible and practical, equipment parts in the food zone shall be stamped, extruded, formed or cast in one piece.

4.06 FASTENING METHODS: Exposed threads, screws, bolt and rivet heads, nuts and studs, shall be eliminated from food contact surfaces. Provided, however, that where exposed or unexposed threads are unavoidable because of functional requirements, they shall meet the following revisions:

(1) If exposed threads are used, they shall be American Standard 60° Stub, or equal, and shall not have more than 8 threads per inch, with a major diameter of not less than 5/8 inches;

(2) If unexposed threads are used, they shall be American Standard 60° Stub or equal.

4.07 SOLDERING: Whenever solder is used, it shall be securely bonded to the metal so that it will not crack or chip off and the surface shall be smooth. Flux and catalytic material shall be neutralized and removed.

4.071 The use of "Soft Solder" shall be limited to use in joining metal or sealing seams between abutting metal surfaces.

4.072 Soft solder shall not be used on food contact surfaces which may be exposed to acid type foods or beverages.

4.08 WELDING: Welded areas shall be smooth.

4.09 WORKED SURFACES: Food contact surfaces which during the course of fabrication are so altered as to reduce their corrosion-resistant characteristics, shall receive such additional treatment as is necessary to render, or return them to a corrosion-resistant state.

SPLASH AND NON-FOOD CONTACT SURFACES:

4.10 GENERAL DESIGN AND CONSTRUCTION: All dispensing equipment shall be designed and constructed in such a manner as to minimize the retention of moisture, the entry of dust, the shelter of vermin and dirt, and to facilitate inspection, servicing, maintenance and cleaning.

4.11 JOINTS AND SEAMS: In the splash zone, all joints and seams shall be sealed, except that joints may be made by overlapping sheets of metal in a vertical plane in such a manner as to eliminate dirt-catching horizontal ledges. Where exposed to seepage and condensation, all joints and seams of integral parts shall be sealed and made smooth.

4.12 FASTENING METHODS: In the non-food zone, exposed screw threads, projecting screws and studs shall be used only when it has been demonstrated that other fastening methods are impractical and they shall be eliminated from the Splash Contact Surfaces. Exposed rivets, screw or bolt heads in the Splash Zone shall be of low profile type such as brazier or modified brazier rivets or pan and oval heads respectively.

4.112 INTERIOR FASTENINGS: In areas subject to cleaning, interior fastenings shall be accomplished in such a manner as to minimize projections, ledges and recesses.

GENERAL:

4.13 EXPOSED EDGES AND NOSINGS: All exposed edges and nosings on horizontal surfaces shall be made integral with tops, regardless of profiles and where exposed to fingers and cleaning, they shall be smooth. Where the edges of tops or shelves are flanged down and turned back, the return under flange shall be angled down and the space between the top and the flange shall not be less than 3/4 of an inch, and the space between the sheared edge and the frame

angle or cabinet body shall not be less than 3/4 of an inch to provide access for cleaning or shall be closed.

4.14 REINFORCING AND FRAMING: Reinforcing and framing members not totally enclosed or within walls, are to be placed in such manner as to be easy to clean. All framing members shall be so placed as to eliminate harborage for vermin. The ends of all hollow sections not otherwise protected against the entrance of insect and rodent shall be closed or if subjected to splash and spillage they shall be sealed. A non-shrinking mastic may be used to close or seal irregular openings. Horizontal angle reinforcing and gussets shall not be used where spillage may accumulate thereon. Where angles are used horizontally, they shall be formed integrally with the sides.

4.15 FIXED PANELS: Where fixed panels are applied to the outside or inside or set into angle or other reinforced body or counter frames, the method of fastening shall be such as to minimize projections and openings.

4.16 REMOVABLE PANELS: Where necessary for inspection and maintenance, easily removable panels shall be provided. They shall be of adequate size to serve the purpose intended, but otherwise confined in size and so constructed that one person can handle them. Removable panels shall conform with applicable construction requirements for the zone in which they are to be used.

4.17 FINISHING: Painted finishes may be used where they improve sanitation by preventing oxidation or condensation, but not on wearing surfaces. Non-wearing surfaces subject to corrosion, that require cleaning shall be rendered corrosion-resistant by plating, coating or painting. Metal surfaces to be painted, shall meet the materials specifications for splash and non-food contact surfaces. Paint, plating or coatings when used, shall be of a type and so applied as to resist chipping, blistering and peeling. Lead based paint shall not be used.

4.18 DOORS AND COVERS (SPLASH ZONE): Doors and covers shall be manufactured to conform with standard of manufacture for the cabinet proper, and shall be sized to fit and close properly. Metal doors and covers to enclose openings and provide access to interior

compartments, shall be fabricated in either of two basic types of construction, i.e., single or double panel. Sliding doors, when used, shall slide easily and freely and be readily removable. Hinges in the splash zone shall be easy to clean and of simple take-apart design and construction. Piano-type hinges are not permissible in the splash zone. Handles and knobs on covers shall be designed, constructed and so installed to be easily cleanable.

4.181 SINGLE PANEL: Single panel door construction shall be such as to minimize the collection of soil particles, spillage, and other foreign matter, and preferably without channel sections at the bottom, but if channel sections are used, they shall be inverted or shall be shallow and wide enough to be easily cleanable and clean-out holes provided.

4.182 DOUBLE PANEL: Double panel door construction shall be fabricated in such a manner as to minimize the collection of food particles, spillage and foreign matter thereon. Hollow spaces of such doors shall be sealed. Vent openings into the hollow space may be provided when necessary, but when provided, they shall be effectively screened with a minimum of 16 mesh screen or equal against vermin, and protected against the entrance of seepage or spillage.

4.19 TRACKS AND GUIDES: All tracks and guides for doors, covers and access panels shall be built in such manner as to be easily cleaned and to minimize the collection of food particles, condensation, spillage and foreign matter. The following are examples of design features which are in compliance with this requirement.

(1) Providing overhead door suspension with lower guides which are constructed integral with the bottom.

(2) Providing clean-out holes at ends of track of guide bottom.

(3) Stopping tracks or guides at least 1/2 inch short of framing at each end.

(4) Forming tracks or guides integral with interior bottoms and without square corners.

(5) Providing clean-out slots, continuous or at intervals.

(6) Providing readily removable T strips and/or clean-out holes in channel-type bottom tracks.

4.20 OPENING AND RIMS: To prevent seepage, all top openings over food storage spaces and containers shall be protected by a raised rim at least 3/16 of an inch above the level to which liquids may accumulate.

4.21 OPENINGS TO FOOD ZONES: All openings to food zones shall be provided with covers or other equivalent protection, to prevent contamination of the food. Such covering shall be effected in a manner to prevent seepage, condensation or spillage from entering the food zone.

4.211 COVERS AND DOORS: When covers or doors are provided to prevent contamination from reaching the food zone they shall be so designed as to provide a flange which overlaps the opening, and shall be sloped to provide drainage from the cover surface. Any port opening through the covers shall be flanged upward at least 3/16 inch and shall be provided with a cover which overlaps the flange. Covers shall be designed with a sufficient clearance to avoid contact with foods which they cover. All covers are to be readily removable as a unit or in sections. Hinges or pivots shall be easy to clean and of simple take-apart design and construction. Piano hinges are not permissible in the food zone. Sliding or hinged covers, where used, shall be constructed in such a manner as to prevent seepage of liquids, condensation or other foreign materials into the food zone and liquid or solid accumulations on covers from falling into the food zone, when the covers are closed or opened. Handles & knobs on covers shall be designed, constructed & so installed as to be easily cleanable.

4.212 ENTRY PORTS: All joints and seams where piping, thermometers, equipment, rotary shafts, and other functional parts extending into the food zones, shall be closed and sealed at the point of entry, or a properly designed deflecting apron provided.

4.22 GASKETS: Exposed surfaces of gaskets shall be cleanable and shall not contain internal angles. All hollow sections of gaskets shall be sealed.

4.221 RETAINING GROOVES: Retaining grooves or devices for holding readily removable gaskets shall be easily cleanable and shall have a minimum radius of 1/16 inch.

4.222 FIXED GASKETS: Gaskets, other than readily removable, shall be securely fastened and in such a manner as to minimize accumulations of condensation, spillage and foreign matter.

4.23 SHELVING: All shelving shall be constructed to be readily cleanable.

4.231 REMOVABLE SHELVES: Removable shelves shall be readily removable and sized to facilitate their handling by one person. Where shelves are used as removable false bottoms, the flanged corners are to be sealed or sufficient notches open to permit cleaning.

4.232 DIVERTING SHELVES: Shelves intended to prevent seepage or retain spillage and/or splash shall have the back and ends of shelves turned up a minimum of 1 inch and corners and seams sealed.

4.233 FIXED SHELVES: Fixed shelving shall have the back side and ends (where against side panels) turned up a minimum of 1 inch and securely closed throughout their length, or an open space of 1 inch provided between the shelf and back and/or side panels, or the resulting joint and seam shall be sealed.

4.234 SHELF BRACKETS: When removable and/or adjustable shelving is provided, the shelf support brackets or pilaster shall be readily removable or easily cleanable.

4.24 LOUVERS AND OPENINGS: All ventilation louvers or openings into the equipment designed for use in other than food service establishments, shall be effectively screened with at least 16 mesh screening, or closed against insect and rodents. Such screens shall be in a removable sash to facilitate cleaning and replacement. Compressor compartments, or similar enclosures, may be exempt from this requirement, provided they are sealed from the product zone and readily accessible and cleanable. All louvers shall be of drip-proof construction.

4.25 LEGS AND FEET: Unless the equipment is designed so that it may be placed on a raised island or sealed to the floor, counter, or table so as to prevent seepage underneath, one or more of the following provisions shall be made for cleaning this area:

4.251 LEGS: The unit shall be mounted on legs of sufficient height to provide a clear space of not less than 6 inches between the lowest horizontal member of the unit and the floor, OR:

4.252 CASTERS, ROLLERS, GLIDERS: The unit shall be mounted on casters, rollers, or gliders of such material, design and construction as to permit its being easily moved by one person, and shall be so installed as to be easily cleanable and shall conform to Item 4.10. Casters shall conform to NSF Basic Criteria C-2.

OR:

4.253 PORTABLE: The unit shall be small enough and light enough to be easily moved by one person and shall have no utility connection or have a connection that can be easily disconnected without tools or have a utility connection of sufficient length to permit the unit to be moved for cleaning.

4.254 COUNTER AND TABLE UNITS: Equipment, other than portable, designed to be placed on counters or tables shall conform to the provision of Item 4.252 or be designed to be sealed to the counter, or be mounted on legs of sufficient height to provide a clear space between the lowest horizontal member or the unit and the counter or table top equivalent to 1/6 of the maximum depth of the area to be cleaned. Provided, however, that in no case shall the leg

height be less than 4 inches, nor shall the leg height be required to be in excess of 6 inches.

4.255 LEGS AND FEET - - DESIGN AND CONSTRUCTION: Legs and feet shall be of a material of sufficient rigidity to provide support with a minimum of cross-bracing and so fastened to the body of the equipment and so shaped as to provide minimum floor contact and to prevent the accumulation of dirt and the harborage of vermin. When the outside dimension of the leg is greater than the outside dimension of the foot by 1/2 inch or more in the same plane, the foot shall, at minimum adjustment, extend 1 inch below the leg. All openings to hollow sections between feet and legs shall be of drip-proof construction with no openings greater than 1/32 inch. All other openings to hollow sections shall be sealed. Legs and feet shall be of simple design, free from embelishments and exposed threads. Gussets, when used, shall be assembled to the equipment in such a manner as to insure easy cleanability and to eliminate insect harborage. The resultant assembly shall have no recessed areas or spaces.*

ITEMS OF SPECIAL SANITARY SIGNIFICANCE

4.26 PACKAGED FOOD STORAGE COMPARTMENT: Packaged food storage compartments within dispensing equipment, dispensing packaged liquid products, shall be so constructed as to be self-draining, or shall be provided with a drain outlet which permits complete

*The intent of this provision is to eliminate the uncleanable areas, generally encountered when open style gussets are used with cylindrical legs.

draining of the compartment. Drains from the storage compartment shall be not less than one inch nominal standard pipe size.

4.27 TEMPERATURE REQUIREMENTS STORAGE COMPARTMENTS:

The storage compartments, or any portion of the unit containing potentially hazardous foods or beverages, or of their ingredients within the dispensing equipment shall be

capable of maintaining the appropriate temperatures for the use intended. (See Item 1.01) Automatic controls shall be provided to insure the maintenance of these temperatures at all times except when foods are being inserted, or removed from the compartment.

Equipment dispensing potentially hazardous food, shall be provided with a temperature sensing and indicating devices for each temperature zone of the unit unless the food is in a frozen or semi-frozen state. Such devices shall have an accuracy of ± 2° F. at the critical range, shall be of an easy-to-read type and so located as to be readily visible to persons using the equipment. The sensing element of the device shall be easily cleaned and so located as to reflect the representative temperature of the foods in the appropriate temperature zone.

4.28 SINGLE SERVICE CONTAINERS AND UTENSIL STORAGE: All equipment shall be so designed that cups, containers, utensils, and all other single service items can be added directly from the original wrapping or package without handling the product contact surfaces of such items. Single service items within the equipment shall be protected from manual contact, dust, insects, rodents, and other contamination. Storage compartments, if provided, for single service utensils shall be provided with a sight glass or so designed as to permit determination as to the quantity of such items remaining without exposure to contamination.

4.29 COOLING EQUIPMENT: Tubing used for refrigerant coils shall be mounted in such a manner that food and insulation are protected against condensate.

4.30 REFRIGERATION COILS: If exposed, shall be finless type located where they can be easily and thoroughly cleaned by brushing. If a blower or fin type evaporator is used, it shall be enclosed in a housing to protect against spillage of food or beverage, and provide for drainage of any accumulation of condensate. Refrigeration coils shall be protected against spillage of foods or beverages.

4.31 WATER COOLING UNITS: The exterior of both refrigerant and water coils shall be accessible for cleaning by means of a brush. There shall be a readily accessible cock, plug, and drain to faci-

litate flushing and draining of the water bath compartment, the bottom of which shall be sloped to facilitate drainage.

4.32 INSTANTANEOUS COOLERS IN STORAGE COMPARTMENTS: When instantaneous coolers are used, the cooler must be sealed to the floor of the storage compartments or raised off the floor of the compartment at least 1", to allow for cleaning underneath it with a brush.

4.33 CONDENSER UNIT: A condenser unit which is an integral part of the dispensing equipment shall be sealed from the food and container storage spaces.

4.34 WATER INLETS AND STORAGE: Water, if supplied the machine under pressure, shall comply with the following:

4.341 Protection against back siphonage or back flow shall be provided by an air gap of not less than twice the diameter of the water supply inlet and in no case less than 1 inch; an approved type vacuum breaker, or such other method as may be proved effective by test.

4.342 All water connections and fittings within the machine shall be in accordance with the National Plumbing Code.

4.343 All water contact surfaces shall be considered as food contact surfaces.

4.344 The float valve or other level control, if used, in the water reservoirs shall be installed, handled and serviced in a sanitary manner. The float valve shall be constructed of non-toxic and corrosion resistant material.

4.345 Effective means shall be provided to prevent carbon dioxide

or carbonic acid or carbonated water from coming in contact with copper or copper alloy water tubing and devices in the equipment or service lines by means of two (or a double) check valves; or an air gap; or a device to vent carbon dioxide to the atmosphere; or other approved device which will provide positive protection against the entrance of carbon dioxide or carbonated water into the water supply system. Where check valves are used a screen of not less than 100 mesh to the inch shall be installed in the water supply immediately upstream from the check valves.

4.346 In all dispensing equipment which dispense carbonated beverages and which are connected to a water supply system the food and water contact surfaces from the check valves, or

other protective device downstream, including the device itself, shall be of such material as to preclude the production of toxic substances which might result from interaction with carbon dioxide or carbonated water.

4.35 CHECK VALVES: Check valves if required shall be double check valve assemblies and shall be designed and constructed and conform to the following additional requirements:

4.351 Each check valve shall be designed to effectively and completely close when there is no flow. The closing shall be sufficiently positive that the valve shall not leak when the inlet pressure is one (1) psi and the outlet pressure is zero.

4.352 Each check valve shall permit no leakage in a direction reverse to normal flow over the full range anticipated working pressure.

4.353 The loading of the check valves, if required, to comply with the Items 4.351 or 4.352 shall be done internally.

4.354 Check valve units for hot water over 140° F. shall be of an approved type designed to operate at temperatures of 140° F. or more without rendering any portion of the device inoperative.

4.355 The check valve and all moving parts and appurtenances shall be constructed of corrosion-resistant material.

4.356 MARKINGS: Each double check valve assembly shall have the following permanent markings plainly visible on the body or if integrally attached to the carbonating tank then same may appear on the carbonating tank.

4.3561 Manufacturer's name or trade mark

4.3562 Model number

4.3563 Check valve designed for hot water shall include the letter H in the model designation

4.3564 Direction of flow

4.36 WATER FILTERS: If used, water filters or other water conditioning devices shall be of type which is readily accessible to

permit periodic cleaning or replacement of the active element.

4.37 SAFETY REQUIREMENTS: Hot water heating devices, not open to atmosphere pressure shall be equipped with an approved safety valve set at 125 pounds maximum pressure and a high temperature cut-off at 210° F. Temperature and pressure limit devices may be either separate or combined.

4.371 If gas burning devices are used, they shall be properly vented. Safety shut-off devices shall be installed to close the gas supply in the event the pilot light becomes extinguished.

4.372 Safe-guards against the entrance of broken glass, metal, etc. from fixtures and devices within the dispensing equipment shall be provided.

4.373 Each dispenser shall be designed to prevent the machine from toppling or over-turn in normal usage.

4.374 Protection shall be afforded valves, gauges and fittings of all CO_2 cylinders installed in dispensing equipment, and durable straps, chains, clamps or other effective anchoring devices shall be provided to hold CO_2 cylinders in place so they will not tip or fall.