



Many parts of SPS 323 were adopted into SPS 327.
What you see in **red** was not adopted into the camping units.
There is one item highlighted in **yellow**, this is different from SPS 323.

Subchapter III — Heating, Ventilating, and Air Conditioning

SPS 327.38 Scope. The provisions of this subchapter shall apply to the design, installation, and construction of all heating, ventilating, and air conditioning systems in camping units covered by this code.

SPS 327.39 Design. Where a heating system is provided in a camping unit, the heating system shall be designed in accordance with this section. Where a cooling system is provided in a camping unit, the cooling requirements of this section shall be met.

(1) DISTRIBUTION SYSTEMS. Distribution systems shall be sized and located to satisfy the heating and cooling loads of each conditioned space. ~~When requested, a layout of the distribution system shall be furnished to show that the system meets the requirements of this code.~~

(2) Ventilation. General. 1. All exhaust vents shall terminate outside the camping unit.

2. Automatic or gravity dampers that close when the system is not operating shall be provided for outdoor air intake and exhaust.

(b) Balancing. 1. General. Except as provided under subd. 2., mechanical ventilation systems shall be balanced.

2. Exception. Passive intake air ducts providing makeup air for intermittent exhaust fans shall be sized to provide at least 40% of the total air that would be exhausted with all intermittent exhaust ventilation in the camping unit operating simultaneously.

3. Kitchen range hoods. a. Kitchen range hoods that exhaust air from the kitchen area are considered as exhaust ventilation for balancing and makeup purposes.

b. Kitchen range hoods that are listed and installed to recirculate air without exhausting it are not required to be balanced.

4. Infiltration. a. Infiltration may be considered as makeup air for balancing purposes only where there are no naturally vented space- or water-heating appliances in the camping unit.

b. For the purpose of complying with this subdivision, naturally vented space-heating or water-heating appliances are those that take combustion or dilution air from inside the camping unit, including unsealed fireplaces and draft hood appliances with power venting.

Note: Whole-house fans that are used in the summer to bring cool night air in through open windows and exhaust into the attic are considered to be a supplemental cooling system rather than part of the ventilation system.

~~Note: See s. SPS 322.39 (5) for additional requirements on mechanical ventilation~~

Habitable rooms Not Included

Clearance from combustibles SPS 323.04(1) (c), Table 323.04-A & B Not Included

(c) Rooms with toilets, tubs, or showers. Any room with a toilet, tub, or shower shall be provided with exhaust ventilation capable of exhausting 50 cubic feet per minute on an intermittent basis or 20 cubic feet on a continuous basis.

Wisconsin Department of Safety and Professional Services

(3) CONTROLS. The temperature rise through the equipment shall not exceed 100° F unless listed. Controls shall be provided to maintain the inside temperature. Where forced, warm-air systems are used, controls shall be installed to control air movement.

SPS 327.40 Selection of equipment. All heating and central cooling equipment shall be selected on the basis of air-handling capacity, pumping capacity, and thermal capacity to handle the calculated design heating or cooling load.

SPS 327.41 Types and location of equipment.

(1) GENERAL. (a) All heat producing appliances and cooling appliances shall be listed by a testing agency acceptable to the department.

(b) Installation and maintenance of gas-fueled appliances shall comply with the appliance listing and the requirements of NFPA 54, National Fuel Gas Code, except as otherwise required under this subchapter.

(2) FURNACES. (a) The input and output capacity of furnaces shall be listed on the nameplate. All nameplates shall show evidence that the equipment has been listed by a recognized testing laboratory.

(b) Furnaces shall be fired with the fuel for which they have been approved. ~~except as provided in par. (d).~~ Fuels shall be supplied to the furnace in the volume and at the pressure required on the label.

SPS 323.04(2)(b) through SPS 323.04 (6)(c)b. Not Included

(5) WATER HEATERS. (a) A water heater with a tank may be installed in a closet located in a bathroom or bedroom where the closet is used exclusively for the water heater, where the enclosed space has a weather-stripped solid door with a self-closing device, and where all air for combustion is obtained from the outdoors.

Note: Section SPS 327.42 still requires combustion air to be provided to the appliance.

NEW (b) A tankless water heater may be installed in any closet or cabinet. The tankless water heater shall be installed in accordance with the manufacturer's installation instructions.

SPS 323.045 through SPS 323.05, and tables Not Included

SPS 327.42 Combustion air. (1) SCOPE. (a) Naturally vented appliances and other appliances that require air for combustion and dilution of flue gases to be taken from within the camping unit shall comply with this section.

(b) Appliances that are provided with a direct supply of outside air for combustion in accordance with the manufacturer's installation instructions and listing are not required to comply with this section.

(c) Where the appliance listing and manufacturer's instructions are more stringent than the provisions of this section, the listing and manufacturer's instructions apply.

(d) Listed fireplace stoves are not required to comply with this section if permitted in the manufacturer's instructions.

(e) Listed factory-built fireplaces shall comply with the manufacturer's recommendations.

~~Masonry fireplaces shall conform to the requirements of s. SPS 321.29~~

(2) METHODS FOR PROVIDING AIR. Air for combustion and dilution shall be provided in accordance with one of the following:

(a) ~~If the vapor retarder is not continuous on walls and ceilings exposed to the outside atmosphere as allowed by s. SPS 322.38~~ Air may be provided from inside the camping unit in accordance with sub. (3).

(b) Air may be provided from outside the camping unit in accordance with sub. (4).

Wisconsin Department of Safety and Professional Services

(c) The appliance may be installed in accordance with its listing and manufacturer's instructions.

~~Where all walls and ceilings exposed to the outside atmosphere are provided with a continuous vapor retarder, any requirements for unusually tight construction shall be met.~~

(d) An engineered system providing an adequate supply of air for combustion ventilation and dilution of flue gases may be installed if approved by the department.

(3) Air from inside the camping unit. (a) 1. The equipment shall be located in a space with a volume not less than 50 cubic feet per 1000 Btu/h of the combined input rating of all fuel-burning appliances drawing combustion and dilution air from that space.

2. The space may be made up of more than one room if the rooms are connected through doorways without doors or connected through sets of openings described in par. (b).

(b) 1. When needed to connect rooms, two openings shall be provided, one within one foot of the ceiling of the room and one within one foot of the floor.

2. The net free area of openings shall be calculated in accordance with sub. (5).

3. The net free area of each opening shall be a minimum of one square inch per 1000 Btu/h of combined input rating of the fuel burning appliances drawing combustion and dilution air from the communicating rooms, but shall be not less than 100 square inches.

(4) Air from outside the camping unit. (a) When air for combustion and dilution is provided from outside the camping unit, as allowed under sub. (2) (b), one of the methods specified in pars. (b) to (d) shall be used.

(b) Openings may be provided to connect rooms containing appliances to the outdoors.

1. a. Two openings shall be provided, one within one foot of the ceiling of the room and one within one foot of the floor.

b. Openings may connect directly to the outdoors or to the outdoors through a horizontal or vertical duct.

c. The net free area of openings shall be calculated in accordance with sub. (5).

2. The net free area of each direct opening to the outdoors not using a duct shall be a minimum of one square inch per 4000 Btu/h of combined input rating of the fuel-burning appliances drawing combustion and dilution air from the room.

3. a. The net free area of each opening connected to the outdoors through a horizontal duct shall be a minimum of one square inch per 2000 Btu/h of combined input rating of the fuel-burning appliances drawing combustion and dilution air from the room.

b. The cross-sectional area of the duct shall be equal to or greater than the required size of the opening.

4. a. The net free area of each opening connected to the outdoors through a vertical duct shall be a minimum of one square inch per 4000 Btu/h of combined input rating of the fuel-burning appliances drawing combustion and dilution air from the room.

b. The cross-sectional area of the duct shall be equal to or greater than the required size of the opening.

(c) 1. Where all appliances drawing air for combustion and dilution from the room are gas appliances, air may be provided via a single opening to connect the room to the outdoors in accordance with this paragraph.

2. a. The opening shall be located within one foot of the ceiling of the room.

b. The opening may connect directly to the outdoors, may connect to the outdoors through a horizontal duct, or may connect to the outdoors through a vertical duct.

c. The net free area of the opening shall be calculated in accordance with sub. (5).

3. a. The net free area of the opening shall be a minimum of one square inch per 3000 Btu/h of combined input rating of the fuel-burning appliances drawing combustion and dilution air from the

Wisconsin Department of Safety and Professional Services

room, and not less than the combined cross-sectional flow areas of the appliance flue collars or draft hood outlets.

b. The cross-sectional area of the duct shall be equal to or greater than the required size of the opening.

4. The appliances shall have a minimum clearance to the surfaces of the room of one inch at the sides and back of the appliance and 6 inches at the front of the appliance.

(d) 1. A combination of openings to the outside and openings to other rooms may be used in accordance with this paragraph.

2. a. One opening shall connect directly to the outdoors, connect to the outdoors through a horizontal duct, or connect to the outdoors through a vertical duct.

b. The net free area of the openings shall be calculated in accordance with sub. (5).

c. The net free area of the opening shall be a minimum of one square inch per 5000 Btu/h of combined input rating of the fuel burning appliances drawing combustion and dilution air from the room.

d. The cross-sectional area of a duct, if used, shall be equal to or greater than the required size of the opening.

3. a. The equipment shall be located in a space with a volume not less than 50 cubic feet per 1000 Btu/h of the combined input rating of all fuel-burning appliances installed in that space.

b. The space may be made up of more than one room if the rooms are connected through openings without doors or connected through sets of openings described in subd. 4.

4. a. When needed to connect rooms, two openings shall be provided, one within one foot of the ceiling of the room and one within one foot of the floor.

b. The net free area of openings shall be calculated in accordance with sub. (5).

c. The net free area of each opening shall be a minimum of one square inch per 1000 Btu/h of combined input rating of the fuel burning appliances drawing combustion and dilution air from the communicating rooms, but shall be not less than 100 square inches.

(5) NET FREE AREA CALCULATION. (a) The required size of openings for combustion and dilution air shall be based on the net free area of each opening.

(b) The net free area of an opening shall be that specified by the manufacturer of the opening covering or by a source approved by the department.

(c) In the absence of such information, openings covered with metal louvers shall be deemed to have a net free area of 75 percent of the area of the opening, and openings covered with wood louvers shall be deemed to have a net free area of 25 percent of the area of the opening.

Interlocking of Dampers and Simultaneous Operation Not Included

SPS 327.43 Mechanical draft systems. Where a mechanical draft system, such as a fan is used, provision shall be made to prevent the flow of gas to the main burners when the draft system is not performing so as to satisfy the operating requirements of the system for safe performance.

SPS 327.44 Equipment maintenance information. Required regular maintenance actions for equipment shall be clearly stated and incorporated on a readily accessible label. The label may be limited to identifying, by title or publication number, the operation and maintenance manual for that particular model and type of equipment. Maintenance instructions shall be furnished for equipment which requires preventive maintenance for efficient operation. Manufacturer's manuals for all installed heating and cooling equipment and service water heating equipment shall be provided.

SPS 323.07 Air Distribution Systems, and table 323.07 Not Included

Wisconsin Department of Safety and Professional Services

SPS 327.45 Ductwork. (1) DUCT USE. Ducts designed for the transmission of air shall be used for no other purpose.

(2) INTERIOR DUCTS. All interior ducts shall be constructed in accordance with the following:

(a) *Supply and return air ducts.* Supply and return air ducts shall comply with this paragraph except that ducts attached to appliances may be constructed of materials specified in the appliance listing.

1. Kitchen exhaust ducts and ducts for air exceeding 250° F shall be constructed of sheet metal or lined with sheet metal or constructed of other noncombustible noncorrugated materials.

2. Ducts connected to furnaces shall be constructed of sheet metal for at least 6 feet from the furnace.

3. Spaces formed by unlined wood joists, studs or wood I-joists with solid webs may be used as return air ducts. Spaces used as return air ducts shall be cut off from all remaining unused portions of the space by tight-fitting stops of sheet metal or of wood joist material. Bridging shall be removed from the joist space.

(b) *Under-floor plenums.* An under-floor space may be used as a plenum in a camping unit in accordance with this section.

1. ~~The use of the under-floor space shall be limited to buildings not more than 2 stories in height.~~ Except for the floor immediately above the under-floor plenum, supply ducts shall be provided extending from the plenum to registers or other floor levels.

2. The under-floor spaces shall not be used for storage, shall be cleaned of all loose scrap material and shall be tightly and substantially enclosed.

3. The enclosing material of the under-floor space, including the side wall insulation and vapor barriers, shall not be more flammable than one-inch wood boards. ~~(flame-spread-classification of 200).~~

4. Access shall be through an opening in the floor which shall be 18 inches by 24 inches.

5. The furnace supplying warm air to the under-floor space shall be equipped with an automatic control which will start the air circulating fan when the air in the furnace bonnet reaches a temperature not higher than 150° F. Such control shall be one that cannot be set higher than 150° F.

6. The furnace supplying warm air to the under-floor space shall be equipped with an approved temperature limit control that will limit outlet air temperature to 200° F.

7. A noncombustible receptacle shall be placed below each floor opening into the air chamber. The receptacle shall be securely suspended from the floor members and shall be not more than 18 inches below the floor opening. The area of the receptacle shall extend 3 inches beyond the opening on all sides. The perimeter of the receptacle shall have a vertical lip at least one inch high at the open sides if it is at the level of the bottom of the joist, or 3 inches high if the receptacle is suspended.

8. Floor registers shall be designed for easy removal to permit access for cleaning the receptacles.

9. Exterior walls and interior stud partitions shall be firestopped at the floor.

10. Each wall register shall be connected to the air chamber by a register box or boot.

11. A duct conforming to par. (a) shall extend from the furnace supply outlet at least 6 inches below combustible framing.

12. The entire ground surface and enclosing exterior walls of the under-floor space shall be covered with a vapor barrier having a vapor permeability rating of one perm or less and a flame spread rating of 200 or less.

13. Fuel gas lines may not be located within the under-floor space.

SPS 323.08 (2)(b) 14. & 15. & 16. Not Included

Wisconsin Department of Safety and Professional Services

Exterior Ducts, Underground Ducts, Duct Construction, Duct Support, Joints and Seams, Vibration Control, Air Passageways of Envelops Dwellings, and tables Not Included

SPS 327.46 Dampers, registers, and grilles. (1) Volume and backdraft dampers. (a) Volume duct dampers shall be provided to permit balancing of the system.

(b) Volume dampers shall be provided with access.

Note: Acceptable means of access include a manufactured access panel, an air grille used as a cover, a plastic ceiling cap, or a damper accessible through an air diffuser or grille.

~~(c) Supply ducts may not terminate in a garage unless a backdraft damper is provided.~~

(2) Air registers and grilles. (a) *Supply air registers.* All supply air outlets shall be provided with registers or devices which will provide a uniform distribution of air.

(b) *Return air grilles.* Return air grilles shall not be located in bathrooms, kitchens, utility spaces, or a confined space in which a draft diverter or draft regulator is located. All other habitable spaces shall have permanent openings to a return air grille equal in area to the supply outlet serving those areas. At least one return air opening shall be provided for each floor.

SPS 327.47 Piping. (1) PIPE SIZES AND ARRANGEMENT. All steam and hot water supply and return piping, air-line piping and auxiliary equipment shall be of appropriate sizes, elevations and arrangements to accomplish the calculated results without stress or other detriment.

Note: The sizes of pipe to be used for mains and risers may be selected from the ASHRAE Guide and Data Book, published by the American Society of Heating, Refrigerating and Air Conditioning Engineers; or the manuals published by the Institute of Boiler and Radiator Manufacturers or the Mechanical Contractors Association of America.

(2) EXPANSION AND CONTRACTION. The piping for the heating system shall be equipped with anchors, expansion swings, or joints, supports and similar devices to relieve stress and strain caused by temperature change of the pipe material.

(3) PIPE INSULATION. Unguarded steam, hot water supply and return piping shall be covered with insulating material where the pipes pass through occupied areas and the surface temperature exceeds 180° F.

(4) STEAM AND HOT WATER PIPES. No pipe carrying hot water or steam at a surface temperature exceeding 250° F shall be placed within one inch of any combustible material, pass through a combustible floor, ceiling, or partition unless the pipe is protected by a metal sleeve one inch larger in diameter than the pipe or with approved pipe covering.

(5) BALANCING. Balancing cocks shall be provided in each circuit of a hot water distribution system.

SPS 323.11 General requirements, SPS 323.12 Masonry chimneys, SPS 323.13 Factory-built chimneys Not included

SPS 327.48 Venting system location. A venting system shall terminate at least 3 feet above any forced air inlet located within 10 feet horizontally. This provision does not apply to the combustion air intake of a direct-vent appliance.

SPS 323.15 Chimney connectors, smoke pipes and stovepipe Not Included

SPS 327.49 Multiple appliance venting. Two or more listed gas-or liquid-fueled appliances may be connected to a common gravity-type flue provided the appliances are equipped with listed primary safety controls and listed shutoff devices and comply with the following requirements.

(1) The appliances shall be located in the same story, except for engineered venting systems.

Wisconsin Department of Safety and Professional Services

(2) The appliances shall be joined at a manifold or Y-type fitting as close to the chimney as possible, unless the connector from each appliance enters a separate chimney inlet and the inlets are offset at least 12 inches vertically or the separate inlets occur at right angles to each other.

SPS 323.155 (3), SPS 323.156 Condensate drains Not Included

SPS 327.50 Fuel storage. (1) LP gas storage tanks. (a) All LP gas storage tanks shall be constructed, installed, and maintained to conform with the applicable sections of ch. SPS 340.

(b) LP gas tanks may not be located inside camping units.

(c) LP gas tanks shall have welded steel supports and be permanently installed on concrete pads or foundations.

(2) Oil storage tanks. (a) The total oil storage capacity inside any camping unit shall be limited to 550 gallons in one tank, or not more than 275 gallons in each of 2 tanks cross-connected to a single burner.

(b) Oil storage tanks on the inside of any camping unit shall be located at the same level as the burner it serves.

Note: Except as provided in pars. (a) and (b), the installation of oil storage tanks is regulated under ch. ATCP 93, Flammable, Combustible, and Hazardous Liquids.

(3) Gas piping systems. Gas piping systems, extending from the point of delivery to the connection with each gas-fired appliance or device, shall be installed to conform with NFPA 54, National Fuel Gas Code.

(4) Shutoff and control devices. (a) Any oil-fired appliance or device connected to a fuel piping system shall have an accessible, approved manual shutoff valve installed upstream of any connector.

(b) Automatic gas-burning heating appliances shall be equipped with listed devices which will shut off the gas to the pilot light and main burner or burners in the event of pilot failure.

(c) Liquid fuel-burning appliances shall be equipped with primary safety controls which will shut off the flow of fuel to the burner or burners in the event of ignition failure.

Equipment Location and Operation Not Included