



RULE MAKING ORDER

(RCW 34.05.360)

CR-103 (710/97)

Agency: **State Building Code Council**

- Permanent Rule
- Emergency Rule
- Expedited Adoption
- Expedited Repeal

(1) Date of Adoption: **November 17, 2000**

(2) Purpose:

To make changes to the Washington State Amendments to the 1997 Uniform Mechanical Code, Chapter 51-42 WAC.

(3) Citation of existing rules affected by this order:

Repealed:

Amended: WAC 51-42 Sections 405, 1103, 1105, 1109, 1110, 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1121, 1122, 1123, 1124, 1126, 1301

Suspended:

(4) Statutory authority for adoption: RCW 19.27.031, 19.27.074

Other authority:

PERMANENT RULE ONLY (Including EXPEDITED ADOPTION)

Adopted under notice filed as WSR 00-16-130 on Aug 2, 2000 (date).

Describe any changes other than editing from proposed to adopted version: The proposed amendments to the following sections were **not** adopted: 1101

EMERGENCY RULE ONLY

Under RCW 34.05.350 the agency for good cause finds:

- (a) That immediate adoption, amendment, or repeal of a rule is necessary for the preservation of the public health, safety, or general welfare, and that observing the time requirements of notice and opportunity to comment upon adoption of a permanent rule would be contrary to the public interest.
- (b) That state or federal law or federal rule or a federal deadline for state receipt of federal funds requires immediate adoption of a rule.

Reasons for this finding:

EXPEDITED REPEAL ONLY

Under Preproposal Statement of Inquiry filed as WSR on (date).

(5.3) Any other findings required by other provisions of law as precondition to adoption or effectiveness of rule?

- Yes No If Yes, explain:

(6) Effective date of rule:

Permanent Rules or Expedited Rule Making

- 31 days after filing
- Other (specify): **July 1, 2001***

*(If less than 31 days after filing, specific finding in 5.3 under RCW 34.05.380(3) is required)

Emergency Rules

- Immediately
- Later (specify)

CODE REVISER USE ONLY

CODE REVISER'S OFFICE
STATE OF WASHINGTON

JAN 3 2001

1140

01-02-098

AM
PM

NAME (TYPE OR PRINT)

Jim Lewis

SIGNATURE

Jim Lewis for Jim Lewis

TITLE

Council Vice Chair

DATE

Jan 3, 2001

(COMPLETE REVERSE SIDE)

NOTE: If any category is left blank, it will be calculated as zero.

No descriptive text.

Count by whole WAC sections only, from the WAC number through the history note.
A section may be counted in more than one category.

The number of sections adopted in order to comply with:

Federal statute:	New	Amended	Repealed
Federal rules or standards:	New	Amended	Repealed
Recently enacted state statutes:	New	Amended	Repealed

The number of sections adopted at the request of a nongovernment entity:

New	18	Amended	3	Repealed
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The number of sections adopted on the agency's own initiative:

New		Amended		Repealed
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The number of sections adopted in order to clarify, streamline, or reform agency procedures:

New		Amended		Repealed
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The number of sections adopted using:

Negotiated rule making:	New	Amended	Repealed
Pilot rule making:	New	Amended	Repealed
Other alternative rule making:	New 18	Amended 3	Repealed

NEW SECTION

WAC 51-42-0405 Section 405--Direct gas-fired make-up air systems.

405.1 General. Direct gas-fired make-up air heaters shall not be installed for comfort heating in other than Group F, S, or U Occupancies.

EXCEPTION: Direct gas-fired make-up air heaters may be installed in accordance with Section 909.

AMENDATORY SECTION (Amending WSR 98-02-056, filed 1/6/98, effective 7/1/98)

WAC 51-42-1103 Refrigeration system classification.

1103.1 General. For the purposes of applying Tables 1104.1, 1104.2(1), and 1104.2(2), refrigeration systems shall be classified as high-probability or low-probability system based on the potential hazard resulting from a leakage of refrigerant into an occupancy-classified area other than the machinery room.

1103.2 High-probability systems. Direct systems and indirect open-spray systems shall be classified as high-probability systems.

EXCEPTION: An indirect open-spray system shall not be required to be classified as a high-probability system if the pressure of the secondary coolant is at all times (operating and standby) greater than the pressure of the refrigerant.

1103.3 Low-probability((V)) systems. Double-indirect open-spray systems, indirect closed systems and indirect-vented closed systems shall be classified as low-probability systems, provided that all refrigerant-containing piping and fittings are isolated when the quantities in Table 1104.1 are exceeded.

AMENDATORY SECTION (Amending WSR 98-02-056, filed 1/6/98, effective 7/1/98)

WAC 51-42-1105 Machinery room, general requirements.

1105.1 General. Where required by Table 1104.2(1), a machinery room shall be provided to enclose refrigeration systems located indoors. Access to the machinery room shall be restricted to

authorized personnel. For rooms where occupational exposure could occur, see WAC 296-62-07515 and 296-62-3112.

1105.2 Dimensions. A machinery room shall be dimensioned so as to provide clearances required by Chapter 3. There shall be clear head room of not less than 7 feet 3 inches (2210 mm) below equipment located over passageways.

1105.3 Doors. Each machinery room shall have self-closing, weather-stripped doors opening in the direction of egress travel. Doors and door openings shall comply with the requirements of the Building Code.

1105.4 Openings. Openings to other parts of the building that permit passage of escaping refrigerant to other parts of the building are prohibited. Ducts and air handlers in the machinery room that operate at a lower pressure than the room shall be sealed to prevent any refrigerant leakage from entering the airstream.

- EXCEPTIONS:
- 1. Egress doors serving the machinery room.
 - 2. Access doors and panels in air ducts and air-handling units, provided that such openings are gasketed and tight fitting.

1105.5 Refrigerant vapor detector. Machinery rooms shall contain a refrigerant vapor detector with an audible and visual alarm. The detector, or a sampling tube that draws air to the detector, shall be located in an area where refrigerant vapor from a leak will concentrate. The alarm shall be actuated at a value not greater than the corresponding TLV-TWA values shown in Table 1104.1. Detectors and alarms shall be placed in approved locations. Detection and alarm systems shall be powered and supervised, monitored and annunciated, and installed and maintained as required by Section 6313 of the Fire Code.

- EXCEPTION:
- Detectors are not required for ammonia systems complying with Section 1106.8.

1105.6 Tests. Periodic tests of the detector, alarm and mechanical ventilating system shall be performed in accordance with manufacturer's specifications and as required by the code official.

1105.7 Fuel-burning equipment. Open flames that use combustion air from the machinery room shall not be installed in a machinery room.

- EXCEPTIONS:
- 1. Matches, lighters, halide leak detectors and similar devices.
 - 2. Where the refrigerant is carbon dioxide or water.
 - 3. Fuel-burning equipment shall not be prohibited in the same machinery room with refrigerant-containing equipment where combustion air is ducted from outside the machinery room and sealed in such a manner as to prevent any refrigerant leakage from entering the combustion chamber, or where a refrigerant vapor detector is employed to automatically shut off the combustion process in the event of refrigerant leakage.

1105.8 Sign. A sign shall be posted on the machinery room door prohibiting access of unauthorized personnel.

1105.9 Ventilation. Machinery rooms shall be mechanically ventilated to the outdoors. Mechanical ventilation shall be capable of exhausting the minimum quantity of air both at the normal operating and emergency conditions. Multiple fans or multispeed fans shall be allowed in order to produce the emergency ventilation rate and to obtain a reduced airflow for normal

ventilation. Fans providing refrigeration machinery room temperature control or automatic response to refrigerant vapor are allowed to be automatically controlled to provide intermittent ventilation as conditions require.

EXCEPTION: Where a refrigerating system is located outdoors more than 20 feet (6096 mm) from any building opening and is enclosed by a penthouse, lean-to or other open structure, natural or mechanical ventilation shall be provided. Location of the openings shall be based on the relative density of the refrigerant to air. The free-aperture cross section for the ventilation of the machinery room shall be not less than:

$$((Q = 100 \times \sqrt{G}$$

For SI: $Q = 0.07 \times \sqrt{G}$)

$$F = \sqrt{G}$$

For SI: $F = 0.138 \sqrt{G}$

where:

F = The free opening area in square feet (m²).

G = The mass of refrigerant in pounds (kg) in the largest system, any part of which is located in the machinery room.

1105.9.1 Discharge location. The discharge of the air shall be to the outdoors in accordance with Chapter 5. Exhaust from mechanical ventilation systems shall be discharged not less than 20 feet (6096 mm) from a property line or openings into buildings.

1105.9.2 Supply air. Provisions shall be made for supply air to replace that being exhausted. Openings for supply air shall be located to avoid intake of exhaust air. Air supply and exhaust ducts to the machinery room shall serve no other area, shall be constructed in accordance with Chapter 5 and shall be covered with corrosion-resistant screen of not less than 1/4 inch (6.4 mm) mesh. The supply air shall be taken from directly outside the building. Intakes shall be fitted with backdraft dampers or similar approved flow control means to prevent reverse flow.

1105.9.3 Quantity--normal ventilation. During occupied conditions the mechanical ventilation system shall exhaust the larger of the following:

1. Not less than 0.5 cfm per square foot (0.0025 m³/s • m²) of machinery room area or 20 cfm (0.009 m³/s) per person; or
2. A volume required to maintain a maximum temperature rise of 18°F (-7.8°C) based on all of the heat-producing machinery in the room.

1105.9.4 Quantity--emergency conditions. Upon actuation of the refrigerant detector required in Section 1105.5, the mechanical ventilation system shall exhaust air from the machinery room in the following quantity:

$$\text{For SI: } \begin{aligned} & ((F = \sqrt{G} \\ & F = 0.138 \sqrt{G}) \end{aligned}$$

$$\text{For SI: } \begin{aligned} & Q = 100 \times \sqrt{G} \\ & Q = 0.07 \times \sqrt{G} \end{aligned}$$

where:

Q = The airflow in cubic feet per minute (m^3/s).

G = The design mass of refrigerant in pounds (kg) in the largest system, any part of which is located in the machinery room.

1105.10 Termination of relief devices. In the equipment room, pressure relief devices, fusible plugs and purge systems shall terminate outside of the structure at a location not less than 15 feet (4572 mm) above the adjoining grade level and not less than 20 feet (6096 mm) from any window, ventilation opening or exit.

NEW SECTION

WAC 51-42-1109 Refrigerant piping, containers and valves. This section is not adopted.

NEW SECTION

WAC 51-42-1110 Erection of refrigerant piping. This section is not adopted.

NEW SECTION

WAC 51-42-1111 Refrigerant control valves. This section is not adopted.

NEW SECTION

WAC 51-42-1112 Pressure-limiting devices. This section is not adopted.

NEW SECTION

WAC 51-42-1113 Pressure-relief devices. This section is not adopted.

NEW SECTION

WAC 51-42-1114 Pressure-relief device settings. This section is not adopted.

NEW SECTION

WAC 51-42-1115 Marking of pressure-relief devices. This section is not adopted.

NEW SECTION

WAC 51-42-1116 Over-pressure protection. This section is not adopted.

NEW SECTION

WAC 51-42-1117 Discharge piping. This section is not adopted.

NEW SECTION

WAC 51-42-1118 Special discharge requirements. This section is not adopted.

NEW SECTION

WAC 51-42-1119 Ammonia discharge. This section is not adopted.

NEW SECTION

WAC 51-42-1120 Detection and alarm systems. This section is not adopted.

NEW SECTION

WAC 51-42-1121 Equipment identification. This section is not adopted.

NEW SECTION

WAC 51-42-1122 Testing of refrigeration equipment. This section is not adopted.

NEW SECTION

WAC 51-42-1123 Maintenance and operation. This section is not adopted.

NEW SECTION

WAC 51-42-1124 Storage of refrigerants and refrigerant oils.
This section is not adopted.

NEW SECTION

WAC 51-42-1126 Tables not adopted.

Table 11-A - Refrigerant groups, properties and allowable quantities. This table is not adopted.

Table 11-B - Permissible refrigeration systems and refrigerants. This table is not adopted.

Table 11-C - Value of f (f) for equation 11-7. This table is not adopted.

Table 11-D - Field leak test pressures in psig. This table is not adopted.

Table 11-E - Condensate waste size. This table is not adopted.

NEW SECTION

WAC 51-42-1301 Section 1301--General.

1301.2 Other authorities. In addition to the Uniform Mechanical Code, provisions of chapter 480-93 WAC regarding gas pipeline safety may also apply to single meter installations serving more than one building. The provisions of chapter 480-93 WAC are enforced by the Washington Utilities and Transportation Commission.