



Department of Consumer and Business Services

TRAINING & OUTREACH PROGRAM

2022 Oregon Mechanical Specialty Code

Code Update Training

Covering significant changes to this iteration of the mechanical code



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PRESENTATION FORMAT

CHANGE SUMMARY: Highlights the change and provides a brief synopsis for quick reference.

Model code revisions from the 2018 IMC made in the 2021 IMC are shown as **red underline** for additions and as **red double-strikethrough** for deletions.

Oregon amendments for 2022 are shown as **blue underline** for additions and **blue double-strikethrough** for deletions.

Oregon amendments from previous code cycles are shown as **pink (without underline)**

CHAPTER 1 — SCOPE AND ADMINISTRATION

CHANGE SUMMARY: The chapter has been updated to reflect modifications to the administrative provisions of the OSSC.

Chapter 1 structure and format was updated to align with the format of the Building Code Chapter 1.

- No significant changes; the same principals apply between the codes.*
- Section titles and numbering have closer alignment*

Not an exact duplication

CHAPTER 3 — GENERAL

CHANGE SUMMARY: More flexibility allowed for locations to discharge condensate.

Section 307.2.1 now allows for flexibility to consider alternative disposal locations or methods.

“...or other *approved* location” was added to not limit where condensate could be discharged.

The list locations for discharge of condensate:

1. Units larger than 6 tons (21.1 kW) nominal capacity shall discharge to a sanitary sewer drain, storm sewer drain or other approved location. Where discharging to a sanitary sewer, such drains shall be indirectly connected in accordance with the *Plumbing Code*.
2. Units 6 tons (21.1 kW) and smaller nominal capacity shall discharge in accordance with Item 1 or shall discharge to a gutter, roof drain or other approved location.
3. Condensate drains from rooftop units shall discharge in accordance with Item 1 or 2 or shall discharge onto rooftops where the condensate does not discharge into a street, alley or other areas so as to cause a nuisance.

CHAPTER 3 — GENERAL

CHANGE SUMMARY: New model code requirement section 307.2.1.1 provides clarifying language for discharge locations.

307.2.1.1 Condensate discharge. Condensate drains shall not directly connect to any plumbing drain, waste or vent pipe. Condensate drains shall not discharge into a plumbing fixture other than a floor sink, floor drain, trench drain, mop sink, hub drain, standpipe, utility sink or laundry sink. Condensate drain connections to a lavatory wye branch tailpiece or to a bathtub overflow pipe shall not be considered as discharging to a plumbing fixture. Except where discharging to grade outdoors, the point of discharge of condensate drains shall be located within the same occupancy, tenant space or dwelling unit as the source of the condensate.

This new section clarifies what has been standard practice for the discharge of condensate at a plumbing fixture. Clarifies the indirect drain connection to the plumbing system: where drains become part of the *Plumbing Code*

(Note: additional revision for secondary drains from furnaces in Section C307.2)

CHAPTER 4 – VENTILATION

CHANGE SUMMARY: Dwelling unit ventilation methods

401.2 Ventilation required. Every occupied space shall be ventilated by natural means in accordance with Chapter 12 of the Building Code or by mechanical means in accordance with Section 403. ~~Where the air infiltration rate in a dwelling unit is less than 5 air changes per hour when tested with a blower door at a pressure of 0.2 inch water column (50 Pa) in accordance with Section R402.4.1.2 of the International Energy Conservation Code, the dwelling unit shall be ventilated by mechanical means in accordance with Section 403. Dwelling units complying with the air leakage requirements of the International Energy Conservation Code or ASHRAE 90.1 shall be ventilated by mechanical means in accordance with Section 403.~~ Ambulatory care facilities and Group I-2 occupancies shall be ventilated by mechanical means in accordance with Section 407.

Exception: Rooms within a private dwelling that contain a bathtub, shower or spa facility shall be provided with mechanical ventilation in accordance with the provisions of Table 403.3.1.1.

2018 IMC language (2019 OMSC) and the revised **2021 IMC** regarding air leakage for dwelling units is stricken. Dwelling units may use natural or mechanical ventilation method(s).

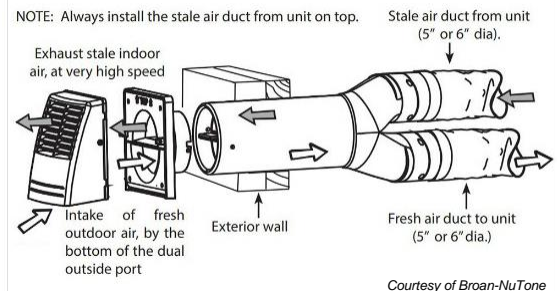
CHAPTER 4 – VENTILATION

CHANGE SUMMARY: 401.4 combination intake/outlet (no separation distances; not special approval)

Section 401.4, Intake opening location, Part 3., is modified to allow factory-built intake/exhaust.

- Intake openings shall be located not less than 3 feet (914 mm) below contaminant sources where such sources are located within 10 feet (3048 mm) of the opening.
Separation is not required between intake air openings and living space exhaust air openings of an individual dwelling unit or sleeping unit where an approved factory-built intake/exhaust combination termination fitting is used to separate the air streams in accordance with the manufacturer's instructions.

This allows energy recovery/packaged ventilation units. Not for range hood or dryer exhaust.



CHAPTER 4 – VENTILATION

CHANGE SUMMARY: Table 403.3.1.1 Footnote g modification for energy recovery

- g. Mechanical exhaust is required and recirculation from such spaces is prohibited. For environmental air exhaust occupancies other than science laboratories, where there is a wheel type energy recovery ventilation (ERV) unit in the exhaust system design, the volume of air leaked from the exhaust airstream into the outdoor airstream within the ERV shall be less than 10 percent of the outdoor air volume. except that recirculation shall be permitted where the resulting supply airstream consists of not more than 10 percent air recirculated from these spaces. Recirculation of air that is contained completely within such spaces shall not be prohibited (see Section 403.2.1, Items 2 and 4).

CHAPTER 4 – VENTILATION

CHANGE SUMMARY: 403.3.1.3 Demand control ventilation minimum air flow

403.3.1.3 System operation. The minimum flow rate of outdoor air that the ventilation system must be capable of supplying during its operation shall be permitted to be based on the rate per person indicated in Table 403.3.1.1 and the actual number of occupants present. Where demand-controlled ventilation is employed to adjust the outdoor airflow rate based on the actual number of occupants present, the minimum quantity of outdoor air shall not fall below that determined from the area outdoor airflow rate column of Table 403.3.1.1 during periods when the building is expected to be occupied.

Demand control can reduce the “per person” rate to zero. The “per square foot” cannot be reduced when the building is “occupied”.

**TABLE 403.3.1.1
MINIMUM VENTILATION RATES**

OCCUPANCY CLASSIFICATION	OCCUPANT DENSITY #/1000 FT ² ^a	PEOPLE OUTDOOR AIRFLOW RATE IN BREATHING ZONE, R _p CFM/PERSON	AREA OUTDOOR AIRFLOW RATE IN BREATHING ZONE, R _a CFM/FT ² ^a	EXHAUST AIRFLOW RATE CFM/FT ² ^a
Correctional facilities				
Booking/waiting	50	7.5	0.06	—
Cells				
without plumbing fixtures	25	5	0.12	—
with plumbing fixtures ^e	25	5	0.12	1.0
Day room	30	5	0.06	—
Dining halls (see “Food and beverage service”)	—	—	—	—
Guard stations	15	5	0.06	—

CHAPTER 5 — EXHAUST SYSTEMS

CHANGE SUMMARY: Independent system clarifications

501: More clarification of independent systems:

- Can't combine residential kitchen exhaust or hazardous exhaust systems with other systems.

501.2 Independent system required. Single or combined mechanical exhaust systems for environmental air shall be independent of all other exhaust systems. Dryer, [domestic kitchen and hazardous](#) exhaust shall be independent of all other systems. Type I exhaust systems shall be independent of all other exhaust systems except as provided in Section 506.3.5. Single or combined Type II exhaust systems for food-processing operations shall be independent of all other exhaust systems. [Commercial](#) kitchen exhaust systems shall be constructed in accordance with Sections 506 through 509.

“There’s something very important I forgot to tell you...Don’t cross the streams” Dr. Egon Spengler, 1984

CHAPTER 5 — EXHAUST SYSTEMS

CHANGE SUMMARY: Manicure/Pedicure exhaust must operate continuously during occupied hours

502.20.1: Manicure/pedicure stations: the station exhaust system(s) must operate continuously during operating hours.

Methods:

- Interlock with HVAC system
- Occupancy sensor
- Separate programmable timeclock
- Other options?

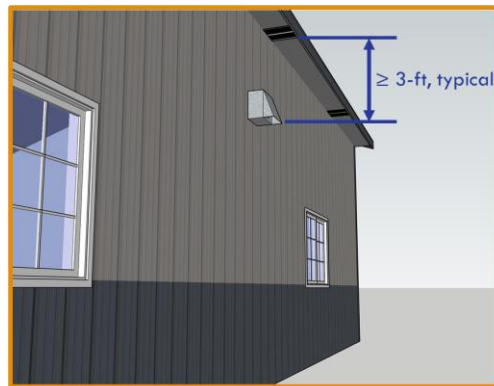


CHAPTER 5 — EXHAUST SYSTEMS

CHANGE SUMMARY: Dryer exhaust termination Section 504.4.1

New section to address possibility of dryer exhaust being reintroduced into the building. Concern of rising water vapor entering vented attic openings. 3-foot minimum clearance unless the dryer MII sets (allows) closer installation distance.

504.4.1 Termination location. Exhaust duct terminations shall be in accordance with the dryer manufacturer's installation instructions. Where the manufacturer's instructions do not specify a termination location, the exhaust duct shall terminate not less than 3 feet (914 mm) in any direction from openings into buildings, including openings in ventilated soffits.



CHAPTER 5 — EXHAUST SYSTEMS

CHANGE SUMMARY: Clarification for domestic booster fan prohibition in dryer exhaust

OMSC 504.6: New language to clarify that booster fans can't be used with a domestic clothes dryer.

This new language does not override allowance for exhaust duct power ventilators (DDPV) under Section 504.5. The section requires a DDPV Specific UL 507 listing for specialty fans constructed for dryer exhaust.

Reminders:

- Maximum distance for a DDPV system is per the MII
- Specific requirements for placement of the fan and pressure switches

CHAPTER 5 — EXHAUST SYSTEMS

CHANGE SUMMARY: Factory-Built Grease Duct slope Exception, 506.3.7

Sections 506.3.7 through 506.3.8 have guidance for long runs of field-fabricated grease duct, including slope and placement of low-point cleanouts. A new Exception to Section 506.3.7 allows for the slope of factory-built grease ducts to be per the listing and manufacturer's installation instructions. These systems will have factory-built cleanouts per the material/system listing.

506.3.7 Prevention of grease accumulation in grease ducts. Duct systems serving a Type I hood shall be constructed and installed so that grease cannot collect in any portion thereof, and the system shall slope not less than one-fourth unit vertical in 12 units horizontal (2-percent slope) toward the hood or toward a grease reservoir designed and installed in accordance with Section 506.3.7.1. Where horizontal ducts exceed 75 feet (22 860 mm) in length, the slope shall be not less than one unit vertical in 12 units horizontal (8.3-percent slope).

Exception: [Factory-built grease ducts shall be installed at a slope that is in accordance with the listing and manufacturer's installation instructions.](#)

CHAPTER 5 — EXHAUST SYSTEMS

CHANGE SUMMARY: Smoker Ovens

New Exception #4 for Section 507.1. The exception allows smoker ovens to be installed without a hood when the unit has integral exhaust system and is listed for installation without a Type I hood.

- Previously unclear application of Section 507 to meat smokers.
 - Grease and smoke resulting from cooking process. So could have required under a Type I hood.
 - Unclear if creating smoke fell under definition of Extra-Heavy Duty Cooking Appliance: *“Extra-heavy-duty cooking appliances are those utilizing open flame combustion of solid fuel at any time.”*

Result: Path for these listed appliances to not be located under a hood.

CHAPTER 5 — EXHAUST SYSTEMS

CHANGE SUMMARY: Energy Recovery Ventilation Prohibited Applications

Type II kitchen exhaust removed from the “prohibited applications” list for Energy Recovery Ventilation (ERV).

514.2 Prohibited applications. Energy recovery ventilation systems shall not be used in the following systems:

1. Hazardous exhaust systems covered in Section 510.
2. Dust, stock and refuse systems that convey explosive or flammable vapors, fumes or dust.
3. Smoke control systems covered in Section 513.
4. Commercial kitchen exhaust systems serving Type I ~~or Type II~~ hoods.
5. Clothes dryer exhaust systems covered in Section 504.

Exception: The application of ERV equipment that recovers sensible heat only utilizing coil-type heat exchangers shall not be limited by this section.

Reminder: The Exception was added during the 2019 OMSC cycle

CHAPTER 6 — DUCT SYSTEMS

CHANGE SUMMARY: Non-metallic pipe and duct within plenums

Section 602.2.1 requires materials in a plenum to have a 25/50 flame spread/smoke developed index. Exception 5.3 has allowed “Materials listed and labeled for installation within a plenum and listed for the application.”

NEW for 2022 in Section 602.2.1.8: When using insulation to wrap plastic pipe or duct, the insulation not only must meet the 25/50, but must also be tested as an assembly with the pipe/duct that is covered.



CHAPTER 6 – DUCT SYSTEMS

CHANGE SUMMARY: Duct penetrations of fire barriers

Section 607.5.2 has allowed metal ducts to penetrate 1-hour assemblies without requiring a fire damper in buildings with automatic sprinklers via Exception 3.

New clarification about extent of the metal duct requirements and where flexible duct may be used:

- The system must be fully ducted
- Non-metal flexible connectors to equipment/air handlers are allowed when located within a mechanical room
- Non-metal flexible air connectors are allowed from the metal duct to diffusers in the same room

CHAPTER 6 – DUCT SYSTEMS

CHANGE SUMMARY: Subducts penetrating shaft enclosures

Section 607.5.5 has two exception paths to not require fire dampers and smoke dampers at shaft enclosure penetrations. Exception 1 has been modified to match requirements of Exception 2 (for Group B and R occupancies):

- Minimum steel duct wall thickness
- Continuously operating exhaust fan at the upper terminus of the shaft

New Section 607.5.5.1 for clarification that fire dampers and smoke dampers shall not be installed in shafts required to maintain continuous upward airflow and where closure of the damper may result in loss of airflow

CHAPTER 6 – DUCT SYSTEMS

CHANGE SUMMARY: Balancing of air distribution, ventilation, and exhaust

2021 OMSC Section 403.3.1.5, Balancing, was relocated to Chapter 6, Section 608, BALANCING, in 608.1.

- Ductwork Chapter is the appropriate location; directs installation of methods to construct duct systems
- Scope is not changed

608.1 Balancing. Air distribution, ventilation and exhaust systems shall be provided with means to adjust the system to achieve the design airflow rates and shall be balanced by an approved method. Ventilation air distribution shall be balanced by an approved method and such balancing shall verify that the air distribution system is capable of supplying and exhausting the airflow rates required by Chapter 4.

CHAPTER 8 – CHIMNEYS AND VENTS

CHANGE SUMMARY: Blocked vent switch for oil-fired appliances

New Section 801.21, Blocked vent switch, added for safe operation of oil-fired appliances.

- Unit burner will stop operation in the event of an obstructed combustion venting system
- Manual reset is required

When new oil-fired appliances are installed, appliances must have the safety switch.

CHAPTER 9 – SPECIFIC APPLIANCES, FIREPLACES AND SOLID-FUEL BURNING APPLIANCES

CHANGE SUMMARY: Wood-burning residential hydronic heaters

A category of wood-fired hydronic heaters is now recognized in the commercial code via Section 905

- Must be EPA certified. Same process as for residential wood stoves
- Open systems: Not under pressure, so not covered by the Boiler program

Usually an outdoor appliance. Units sometimes called wood boilers

CHAPTER 9 – SPECIFIC APPLIANCES, FIREPLACES AND SOLID-FUEL BURNING APPLIANCES

CHANGE SUMMARY: Unvented alcohol fuel burning decorative appliances

New Section 930 for unvented alcohol fuel-burning decorative appliances. Doesn't require venting to outdoors

- Code was previously silent on this issue
- UL 1370 listing and labeling required

(Stoves/cooktops or heaters are not listed for installation in a dwelling unit)

CHAPTER 11 – REFRIGERATION

CHANGE SUMMARY: General Changes

Ammonia Refrigeration: involves Sections 1101 through 1108. Ammonia refrigeration requirements referencing IAR standards.

- Fewer specific items in the code relative to ammonia systems
- Relying on the IAR installation standards (Like references to ASHRAE refrigeration standards)

Refrigeration Piping: Section 1107 has been expanded for clarity

- Piping installation now sections 1107 through 1110

Machine Room Means of Egress:

- Section 1105.9 points to the Building Code, where egress requirements are set. Avoids duplication or conflicts between codes. Applies to rooms over 1,000 square feet

APPENDIX C – FUEL GAS

CHANGE SUMMARY: Concealed condensate piping

Section 307.2 modified for concealed secondary drain piping

- Where the secondary drain for combustion condensate is concealed, the outlet of the secondary drain shall be clearly marked with embossed or engraved tag or in an *approved* manner

Flow out of a secondary drainage = need for maintenance

APPENDIX C — FUEL GAS

CHANGE SUMMARY: Corrugated Stainless Steel Tubing (CSST)

Clarification that CSST must be installed per the manufacturer's installation instructions (MII). Some MII require bonding of the pipe greater than minimum Electrical Code (OESC) requirements.

Modifications to Section C310.1 and new Section C310.1.1 clarify the intent:

- The MII for some CSST materials require larger wire size for bonding than the minimum required under the OESC
- Bonding of the pipe is electrical work. The materials and methods must be per the OESC

APPENDIX C — FUEL GAS

CHANGE SUMMARY: Miscellaneous gas piping changes

Section C402.7: *Press-connect joint* systems.

- Listed press-connect joint systems may be used for gas systems operating over 5 p.s.i. where the system is listed per ANSI LC4/CSA6.32 for that operating pressure

Section C403.8.3: Threaded joint sealing

- The section is renamed and adds clarifying language about thread sealing materials

Section C409.7: Shut-off valves in tubing systems

- Exception adopted as Oregon amendment is rescinded. Deletes allowance for valves at gas fireplaces to not be secured

APPENDIX C — FUEL GAS

CHANGE SUMMARY: Chimney lining Exception deleted

The exception to Section C503.5.6.1 has been deleted from model code

- When an appliance is replaced, the existing chimney shall be lined without exception

APPENDIX C — FUEL GAS

CHANGE SUMMARY: Miscellaneous Venting changes

Section C503.8: Venting system terminal clearances

- The model code adds through-the-wall vent terminal clearance distances in new Table C503.8, with new Figure C503.8 to show clearances for ease of use.
- Does not apply to the combustion air intake for direct-vent appliances

Section C503.10.7: Vent connector junctions

- New text addresses the junction of appliance vent connectors: wye or tee fitting must be used when vent connectors are joined together
- Not allowed: cutting a hole in the side of one connector pipe, then attaching smaller connector to the hole

APPENDIX C — FUEL GAS

CHANGE SUMMARY: Miscellaneous changes for specific appliances

Section C618.6: Warm air furnaces

- New language to this section clarifies that furnace return air shall not be taken from the mechanical room containing the furnace
- Open return air in the mechanical room creates a negative pressure in the furnace mechanical room. Intended to prevent backdraft of products of combustion into the mechanical room.



Department of Consumer
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