



Mechanical eClass

Lesson 1

Return-Air Location

COMMENTARY: *This section prohibits outdoor air and return air from being taken from locations that would be potential sources of contamination, odor, flammable vapors or toxic substances and also from locations that would negatively affect the operation of the furnace itself or other fuel-burning appliances.*

918.6 Prohibited sources. Outside or return air for a forced-air heating system shall not be taken from the following locations:

1. Closer than 10 feet (3048 mm) from an appliance vent outlet, a vent opening from a plumbing drainage system or the discharge outlet of an exhaust fan, unless the outlet is 3 feet (914 mm) above the outside air inlet.

COMMENTARY: *This is a change from the old code which only required a 2 foot height above the outside air inlet.*

2. Where there is the presence of objectionable odors, fumes or flammable vapors; or where located less than 10 feet (3048 mm) above the surface of any abutting public way or driveway; or where located at grade level by a sidewalk, street, alley or driveway.

3. A hazardous or unsanitary location or a refrigeration machinery room as defined in this code.

4. A room or space, the volume of which is less than 25 percent of the entire volume served by such system. Where connected by a permanent opening having an area sized in accordance with §M918.2 and §M918.3, adjoining rooms or spaces shall be considered as a single room or space for the purpose of determining the volume of such rooms or spaces.

EXCEPTION: The minimum volume requirement shall not apply where the amount of return air taken from a room or space is less than or equal to the amount of supply air delivered to such room or space.

COMMENTARY: *The intent of Item 4 is to prevent the system from being starved for return air by the placement of the main or only return air intake in an area not meeting the volume requirements of this item. This item is airflow balance related as opposed to Items 1, 2, 3, 5 and 6 which are contaminant related. This item does not prohibit the common practice of installing return air intakes in bedrooms and similarly sized rooms that typically have a volume that is far less than 25 percent of the total volume of the space served by the furnace. The return air system must be able to move the required air volume to the furnace regardless of the position of any doors to any rooms in the building served by the furnace.*

The intent of this section is to avoid arrangements that cause an air pressure imbalance. Air pressure imbalances can cause fuel-fired appliances to spill combustion products into the occupied space. Pressure imbalances can be avoided by making sure that the amount of supply air discharge to a room or space is approximately equal to the amount of return air taken from the room or space.

5. A closet, bathroom, toilet room, kitchen, garage, mechanical room, boiler room or furnace room.

6. A room or space containing a fuel-burning appliance where such room or space serves as the sole source of return air.

EXCEPTIONS:

1. This shall not apply where the fuel-burning appliance is a direct-vent appliance.

2. This shall not apply where the room or space complies with the following requirements:

2.1. The return air shall be taken from a room or space having a volume exceeding 1 cubic foot for each 10 Btu/h (9.6 L/W) of combined input rating of all fuel-burning appliances therein.

2.2. The volume of supply air discharged back into the same space shall be approximately equal to the volume of return air taken from the space.

2.3. Return-air inlets shall not be located within 10 feet (3048 mm) of any appliance firebox or draft hood in the same room or space.

3. This shall not apply to rooms or spaces containing solid fuel-burning appliances, provided that return-air inlets are located not less than 10 feet (3048 mm) from the firebox of such appliances.

COMMENTARY: This section allows a return to be placed in a room with a wood-burning fireplace as long as the return-air inlet is 10 feet or more from the firebox.