

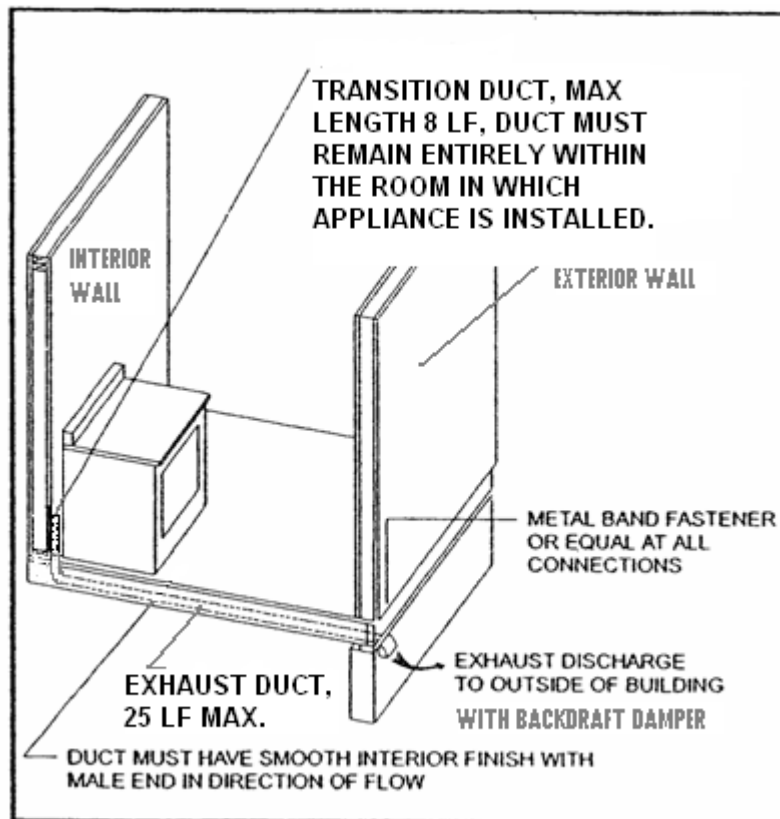


**DOMESTIC CLOTHES DRYER EXHAUSTS**

**International Mechanical Code 2006, Section 504 Exhaust Systems**

Code and commentary is taken from the 2006 International Mechanical Code and Commentary, Copyright 2007 by the International Code Council, as adopted by reference in the *2007 Kentucky Residential Code, Second Edition, Revised January 6, 2012*; and from the *2009 NFPA 54 National Fuel Gas Code* as adopted by reference in the *2007 Kentucky Residential Code*.

**Disclaimer:** This is not a listing of all code sections involving building or utilities which involve this subject, but only the sections most often questioned. Refer to the 2007 Kentucky Residential Code book for information not listed in this handout and for other requirements of the building code.



The following current code requirements are applicable to the installation of domestic clothes dryers in single family dwellings and two-family dwellings. Refer to the code if more detailed information is needed.

**1. Domestic Clothes Dryer Ducts. (IMC 504.6)**

“Exhaust ducts for domestic clothes dryers shall be constructed of metal and shall have a smooth interior finish. The exhaust duct shall be a minimal nominal size of 4 inches in diameter. The entire exhaust system shall be supported and secured in place. The male end of the duct at overlapped duct joints shall extend in the direction of airflow. Clothes dryer transition ducts used to connect the appliance to the exhaust duct system shall be limited to single lengths not to exceed 8 feet and shall be listed and labeled for the application. Transition ducts shall not be concealed within construction.” [Note: Once they pass through a wall, floor or ceiling the code determines the duct is concealed and must be an “exhaust duct” and not a “transition duct”.]

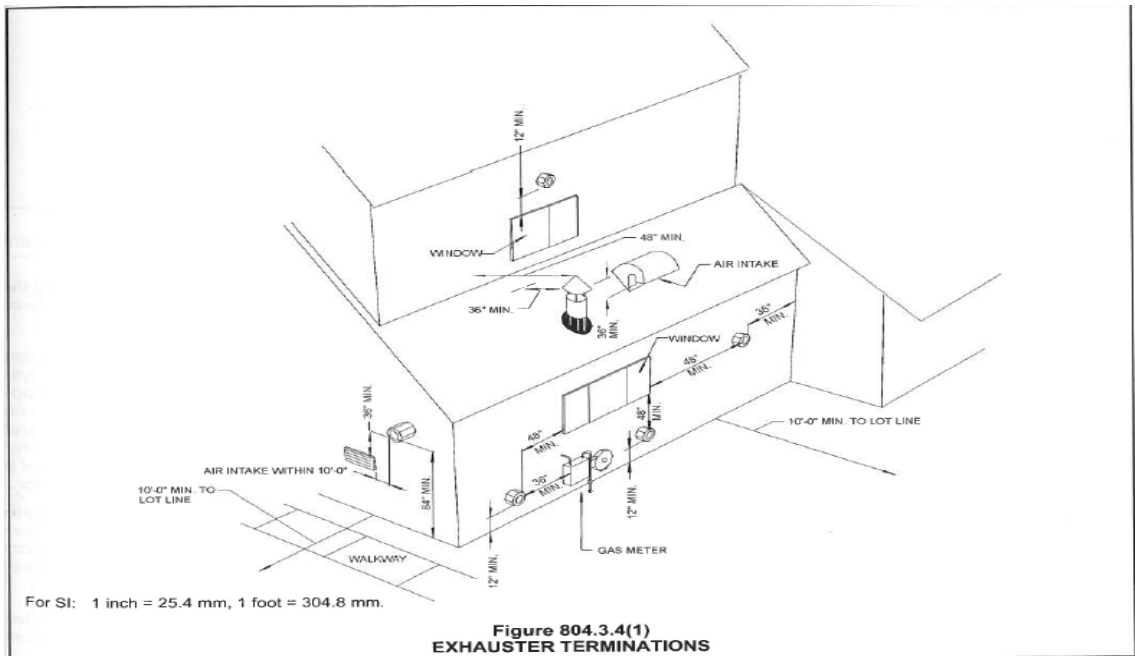
**2. Transition Duct Connectors. (IMC 504.6)**

specifically addresses transition duct connectors. “Within the context of this section, a transition duct is a flexible connector used as a transition between the dryer outlet and the

connection point to the exhaust duct system. Transition duct connectors must be listed and labeled as transition ducts for clothes dryer applications. Transition ducts are currently listed to comply with UL 2158A... **Transition ducts are metalized (foil) fabric supported on a spiral wire frame.** They are more fire resistant than the typical plastic spiral duct. Transition duct connectors are limited to 8 feet in length and must be installed in compliance with their listing and the manufacturer’s instructions. “These duct connectors must not be concealed by any portion of the structure’s permanent finish materials such as drywall, plaster paneling, [e.g. flooring, ceiling, wall], built-in furniture or cabinets or any other similar permanently affixed building component; they must remain entirely within the room in which the appliance is installed (Section G2439.5, International Fuel Gas Code, Chapter 24, 2006 IRC).” Transition duct connectors cannot be joined to extend beyond the 8-foot maximum length limit. **Transition ducts are to be cut to length as needed to avoid excess.** Transition duct connectors are necessary for domestic dryers because of appliance movement, vibration and outlet location...This edition of the code specifically states that the transition duct is not to be included in the 25-foot maximum length.”

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3. **Maximum Length. (IMC 504.6.1)** “The maximum length of a clothes dryer exhaust duct shall not exceed 25 feet from the dryer location (the point in the room containing the clothes dryer, where the exhaust duct starts at the wall, floor or ceiling opening) to the outlet terminal (the point at the immediate exterior of the house where the dryer exhausts ends with a backdraft damper to the outside). The maximum length of the duct shall be reduced 2 ½ feet for each 45 degree bend and 5 feet for each 90 degrees bend. The maximum length of the exhaust duct does not include the transition duct.”
4. **Exhaust installation. (IMC 504.4)** “Dryer exhaust ducts for clothes dryers shall terminate on the outside of the building and shall be equipped with a backdraft damper. Screen shall not be installed at the duct termination. Ducts shall not be installed or connected with sheet metal screws or other fasteners that will obstruct the exhaust flow. Clothes dryer exhaust ducts shall not be connected to a vent connector, vent or chimney. Clothes dryer exhaust ducts shall not extend into or through ducts or plenums. “Attics and crawlspaces are not considered to be outdoors, and exhaust ducts cannot terminate in those spaces (see commentary, Section G2439.1).”
5. **Cleanout (504.3).** Each vertical riser shall be provided with a means for cleanout.
6. **Joints and seams. (IMC 603.9)** Joints of duct systems shall be made substantially airtight by means of tapes, mastics, gaskets or other approved closure systems. Closure systems used with flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked “181B-FX” for pressure sensitive tape, or “181 B-M” for mastic.” *The shiny metallic faced duct tape required for clothes dryer exhaust system installations is marked “UL 181” or “UL 181-B FX”. Ordinary cloth type webbed duct tape is not approved.*
7. **Make-up air. (IMC 504.5)** “Installations exhausting more than 200 cfm shall be provided with make-up air. Where a closet is designed for the installation of a clothes dryer, when make-up air is needed, an opening having an area not less than 100 square inches shall be provided in the closet enclosure. A typical domestic clothes dryer will exhaust approximately 200 cfm. For closet installations, an opening with a minimum area of 100 square inches must be cut in the closet door or in the closet enclosure. Where louvers or grilles are used, the solid portion of the louver or grille must be evaluated in accordance with Section 709.1” “Note that clothes dryers in closets should be listed for that application.”
8. **Termination. (IMC 804.3.3)** “The termination of chimneys or vents equipped with power exhausters shall be located a minimum of 10 feet from the lot line or from adjacent buildings. The exhaust shall be directed away from the building.
9. **Horizontal terminations. (804.3.4)** Horizontal terminations shall comply with the following requirements:
  1. Where located adjacent to walkways, the termination of mechanical draft systems shall not be less than 7 feet above the level of the walkway.
  2. Vents shall terminate at least 3 feet above any forced air inlet located within 10 feet.
  3. The vent system shall terminate at least 4 feet below, 4 feet horizontally from or 1 foot above any door, window or gravity air inlet into the building.
  4. The vent termination point shall not be located closer than 3 feet to an interior corner formed by two wall perpendicular to each other.
  5. The vent termination shall not be mounted directly above or within three feet horizontally from an oil tank vent or gas meter.
  6. The bottom of the vent



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termination shall be located at least 12 inches above finished grade.

**9. Vertical terminations. (804.3.5)** Vertical terminations shall comply with the following requirements:

1. Where located adjacent to walkways, the termination of mechanical draft systems shall not be less than 7 feet above the level of the walkway.
2. Vents shall terminate at least 3 feet above any forced air inlet located within 10 feet horizontally.
3. Where the vent termination is located below an adjacent roof structure, the termination point shall be located at least 3 feet from such structure.
4. The vent shall terminate at least 4 feet below, 4 feet horizontally from or 1 foot above any door, window or gravity air inlet into the building.
5. A vent cap shall be installed to prevent rain from entering the vent system.
6. The vent termination shall be located at least 3 feet horizontally from any portion of the roof structure.

**10. Exhauster sizing. (804.3.7)** Mechanical flue exhausters and the vent system served shall be sized in accordance with the manufacturer's installation instructions.

**11. State Inspection Required. (IMC 107.1)** The dryer exhaust system and the bathroom exhaust system are now required to be installed by the state licensed mechanical contractor and inspected by the state HVAC inspector. Locally contact Danny Joe Allen, state HVAC inspector at (270)287-7425, or contact the state office at (502)573-0395.

**Comments:**

**Annually, 12,700 clothes dryer fires occur in residential buildings resulting in 15 deaths and 300 injuries. [according to the National Fire Incident Reporting System (NFIRS)]**

**Considerations in configuring exhaust duct length:** "Each change in direction increases the duct's resistance to airflow, which reduces the velocity of the airflow. As discussed in the commentary for Section 504.6, the lower velocity will allow lint particles in the dryer exhaust system to drop out of the air stream and collect in the duct, usually near the bend in the duct or a low point in the duct. As the lint builds up in the duct, the efficiency of the dryer will be reduced and eventually the volume of the lint will become a potential fire hazard."

**Table 1. Loss Measures for Clothes Dryer Fires in Buildings  
[All fires, 3-year average (2002-2004)]**

Measure	All Buildings	Non-residential Buildings	Residential Buildings
Loss per fire	\$8,891	\$7,462	\$9,176
Injuries per 1000 fires	37.2	58.9	33.0
Deaths per 1000 fires	1.0	0.0	1.2

Source: NFIRS 5.0 data only; Loss per fire is computed for only those fires where loss information was provided.

**BUILDING CODE CLARIFICATION HANDOUTS AVAILABLE LISTING, effective 5-31-12**

- There are 22 handouts available on various subjects, check our website [www.hcpdc.com](http://www.hcpdc.com) or ask to see the listing for them at our office.