

**NC Department of Insurance
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Mechanical Fastener Requirements for Domestic Clothes Dryer Duct

Code: 2018 NC Mechanical Code

Date: September 13, 2024

Section: 504.8.2

Code: 2018 NC Residential Code

Section: M1502.4.2

Question:

Are dryer ducts for domestic clothes dryer exhaust required to be mechanically fastened in addition to being sealed?

Answer:

Yes.

NCRC Section M1502.4.2¹ states the exhaust ducts shall be sealed in accordance with NCRC Section M1601.4.1 and shall be mechanically fastened. It prohibits the use of screws or similar fasteners which protrude into the inside of the duct, and it provides two options for mechanically fastening the ducts: nonmetallic mechanical fasteners (tie-straps) that are listed to UL 181B or metal band duct clamps, which are not required to be listed. NCMC Section 504.8.2 also requires mechanical fasteners for domestic clothes dryer ducts, and it requires the ducts to be sealed in accordance with NCMC Section 603.9. Please refer to Figures 1 and 2 for examples of mechanical fasteners below, and Figure 3 for an example of dryer manufacturer installation instructions which require mechanical fastening means.



Figure 1: Example of UL-listed Nonmetallic Tie Fastener



Figure 2: Example of Metal Band Duct Clamp

¹ **Excerpt from 2018 NC Residential Code: M1502.4.2 Duct installation.** Exhaust ducts shall be supported at intervals not to exceed 4 feet (3658 mm) and shall be secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Exhaust duct joints shall be sealed in accordance with Section M1601.4.1 and shall be mechanically fastened. Ducts shall not be joined with screws or similar fasteners that protrude into the inside of the duct. Ducts shall be sealed in accordance with Section M1601.4.1.

a. Nonmetallic mechanical fasteners (tie-straps) shall be listed to UL 181B.

b. Metal band duct clamps are not required to be listed.

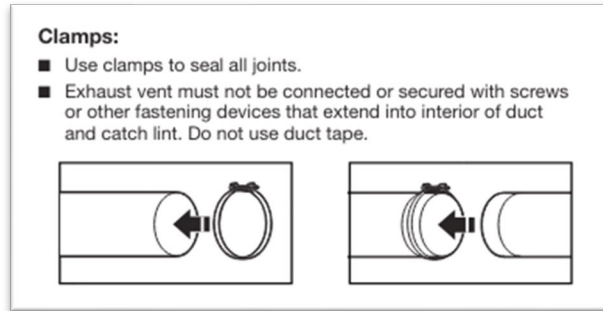


Figure 3: Example of Domestic Dryer Installation Instructions Which Require Mechanical Fasteners and Prohibit Fastening Devices that Extend into the Interior of Ductⁱⁱ

In addition, NCRC Section M1601.4.1 and NCMC Section 603.9 require in part that longitudinal and transverse joints, seams and connections in metallic and nonmetallic ducts shall be constructed as specified in SMACNA *HVAC Duct Construction Standards-Metal and Flexible*. Those sections also require joints, transverse seams and connections in ductwork to be both securely fastened and sealed.

Duct tape and other sealants are not a duct fastening means, they are a duct sealing means. Per SMACNA *HVAC Duct Construction Standards-Metal and Flexible*, “No sealant system is recognized as a substitute for mechanical attachments.” Sealing means are intended to prevent air from escaping from the duct: fastening means are intended to prevent the duct from separating from itself or from other segments. There is a hazard associated with dryer duct separating in concealed areas where lint could accumulate without occupants of the building being aware of the issue. It is understood that the longitudinal and transverse sealing of the joints absolutely helps to minimize any incidents of joints separating over the life of the exhaust system, and it is understood that neither tie-straps nor metal band duct clamps will crimp metal duct in the same way that those fasteners would crimp flex duct: however, the mechanical fasteners will provide reinforcement to the joints in addition to that of the tape, while also not protruding into the duct and catching lint.

ⁱⁱ Note that this example of a dryer manufacturer’s installation instructions does not conflict with the sealing and fastening requirements of the code as discussed in this interpretation. The clamps as required by the manufacturer’s directions can meet the M1502.4.2 provision for mechanical fasteners, and Section M1601.4.1 provides multiple options for the code-required sealant.