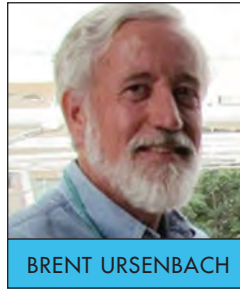


MECHANICAL CODE DISCUSSION

2015 International Residential Code: Exhaust Fans



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IN THE LAST PIPELINE ISSUE, the code discussion focused on flex duct materials and its use in venting fans. Following up on that discussion, the **2015 International Residential Code includes a new set of requirements, limiting the length, and often the minimum sizes of flex and smooth metal pipe, typically used in venting exhaust fans in single family dwellings.**

Quoting the new code language and Table:

M1506.2 Duct length.

The length of exhaust and supply ducts used with

ventilating equipment shall not exceed the lengths determined in accordance with Table M1506.2.

Exception: *Duct length shall not be limited where the duct system complies with the manufacturer’s design criteria or where the flow rate of the installed*

ventilating equipment is verified by the installer or approved third party using a flow hood, flow grid or other airflow measuring device.

Please do not use this table for dryer vents, as the IRC contains specific, unique requirements for the lint-laden air discharged by a dryer.

Please note the following substantial

room fans. A fan rated @ 0.10" w.c. does not meet this requirement.

A 50 CFM fan cannot be vented with 3" flex duct, of any length.

A 50 CFM fan can be vented with 3" smooth-wall pipe, with a maximum length of 5'.

**TABLE M1506.2
DUCT LENGTH**

DUCT TYPE Fan airflow rating (CFM @ 0.25 inch wc ^a)	FLEX DUCT								SMOOTH-WALL DUCT							
	50	80	100	125	150	200	250	300	50	80	100	125	150	200	250	300
Diameter ^b (inches)	Maximum length ^{c, d, e} (feet)															
3	X	X	X	X	X	X	X	X	5	X	X	X	X	X	X	X
4	56	4	X	X	X	X	X	X	114	31	10	X	X	X	X	X
5	NL	81	42	16	2	X	X	X	NL	152	91	51	28	4	X	X
6	NL	NL	158	91	55	18	1	X	NL	NL	NL	168	112	53	25	9
7	NL	NL	NL	NL	161	78	40	19	NL	NL	NL	NL	NL	148	88	54
8 and above	NL	NL	NL	NL	NL	189	111	69	NL	NL	NL	NL	NL	NL	198	133

For SI: 1 foot = 304.8 mm.
 a. Fan airflow rating shall be in accordance with ANSI/AMCA 210-ANSI/ASHRAE 51.
 b. For noncircular ducts, calculate the diameter as four times the cross-sectional area divided by the perimeter.
 c. This table assumes that elbows are not used. Fifteen feet of allowable duct length shall be deducted for each elbow installed in the duct run.
 d. NL = no limit on duct length of this size.
 e. X = not allowed. Any length of duct of this size with assumed turns and fittings will exceed the rated pressure drop.

changes in the new table above.

The fan CFM must be rated at 0.25" w.c.. The typical cheap bath fan is rated to flow 50 CFM @ .10" w.c., and the new code requires a minimum 50 CFM flow rate for intermittent use bath-toilet

The table assumes elbows are not used - add 15' for every 90° elbow.

The fan must include documentation, certifying airflow, based on testing in accordance with ANSI/AMCA 210-ANSI/ASHRAE 51.

Simply stated, the typical inexpensive 50 CFM fan, vented with 3" flex duct of any length, does not flow 50 CFM and does not comply with the 2015 IRC. A 50 CFM fan, rated @ 0.25" w.c. may be installed using 4" flex or smooth pipe, if the length limits fall within the table limits.

A couple of other reminders and updates to the 2015, IRC - Chapter 15, Exhaust Systems:

Domestic dryer duct power **ventilators** may be used on long length vents, if conforming to UL 705, for use in dryer exhaust duct systems. The dryer exhaust duct power ventilator shall be installed in accordance with the manufacturer's instructions.

Code Change:

Where the exhaust duct equivalent length exceeds 35



feet (10,668 mm), the equivalent length of the exhaust duct shall be identified on a permanent label or tag. The label or tag shall be located within 6 feet (1829 mm) of

the exhaust duct connection. *This is a revised requirement, only requiring the label when the length is longer than the 35' code requirement.* The purpose of this label is to alert owners/tenants where dryer vents are long and will

require a dryer approved for greater than 35' lengths.

Make-up air must be provided where a domestic range hood is capable of exhausting in excess of 400 CFM.

Flexible duct or connector may **not** be used for a residential range hood duct; only smooth walled pipe may be used.

Please feel free to contact me if you have comments or questions on this discussion, or any other code related questions.

Thanks again to those of you who contact me with questions – your questions provide subjects to discuss here! –Brent

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