Ventilation and the Residential Energy Code (2015 MN Energy Code)

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Effective dates: (2012 ICC codes)

- 2015 MN Mechanical Code:
  - January 24, 2015
- 2015 MN Residential Building Code:
  - January 24, 2015
- 2015 MN Residential Energy Code:
  - February 14, 2015

R403.5 Mechanical ventilation

- Previously “exhaust only” systems have been allowed in the Minnesota Energy Code
- In the new code only “balanced” ventilation systems are allowed
  - Building envelope systems no longer provide enough air leakage or infiltration to offset the air being removed from the exhaust only system

R403.5 Mechanical ventilation

- All balanced systems shall be balanced so that the air intake within 10 percent of the exhaust
- So far HRVs and ERVs are the only ventilation systems being installed in new homes in Minnesota
- Balanced systems ***without heat recovery*** likely will not meet all code requirements

(MN Amendment) R403.5 Mechanical ventilation

- The building shall be provided with a balanced mechanical ventilation system that is +/- 10% of the system's design capacity and meets the requirements of R403.5.5 which establishes the **continuous** and **total** ventilation requirements for dwelling unit ventilation.

(MN Amendment) R403.5.5 HRV/ERV systems

- All balanced systems shall be balanced so that the air intake is within 10% of the exhaust output.

  A HRV or ERV shall meet either:

  1. HVI Standard 920, 72 hours minus 13 Fahrenheit cold weather test.
  2. Certified by a registered professional engineer

...ONLY"
...ÉRIEURE SEULEMENT"
Fabriqué au Canada

HZ 60
AMP 1.5

c UL us LISTED

E147773
4M43

DUCTED HEAT RECOVERY VENTILATOR

Type:
I-ID

2100 HVI CERTIFIED

CERTIFIED RATINGS

Model AVS 1.5ES Constructo
Options installed:Defrost

Complete ratings at:
www.hvi.org

Rated Air Flow @ 0.2 in wg (50 PA) 174 cfm (82 l/s)
0.4 in wg (100PA) 150 cfm (71 l/s)

Energy Performance Net Supply Air Flow	Apparent Sensible Effectiveness	Sensible Recovery Efficency	Moisture Transfer
66 cfm (31 l/s) at 32°F (0°C)	79%	67%	-1%
86 cfm (40 l/s) at 32°F (0°C)	75%	65%	-1%
115 cfm (54 l/s) at 32°F (0°C)	70%	61%	-1%
81 cfm (38 l/s) at -13°F (-25°C)*	76%	60%	2%
- (-) at 95°F (35°C)	N/A	N/A	N/A

* Test performed with optional active defrost installed

*Total Recovery Efficiency

déc. 2014

15 HRV

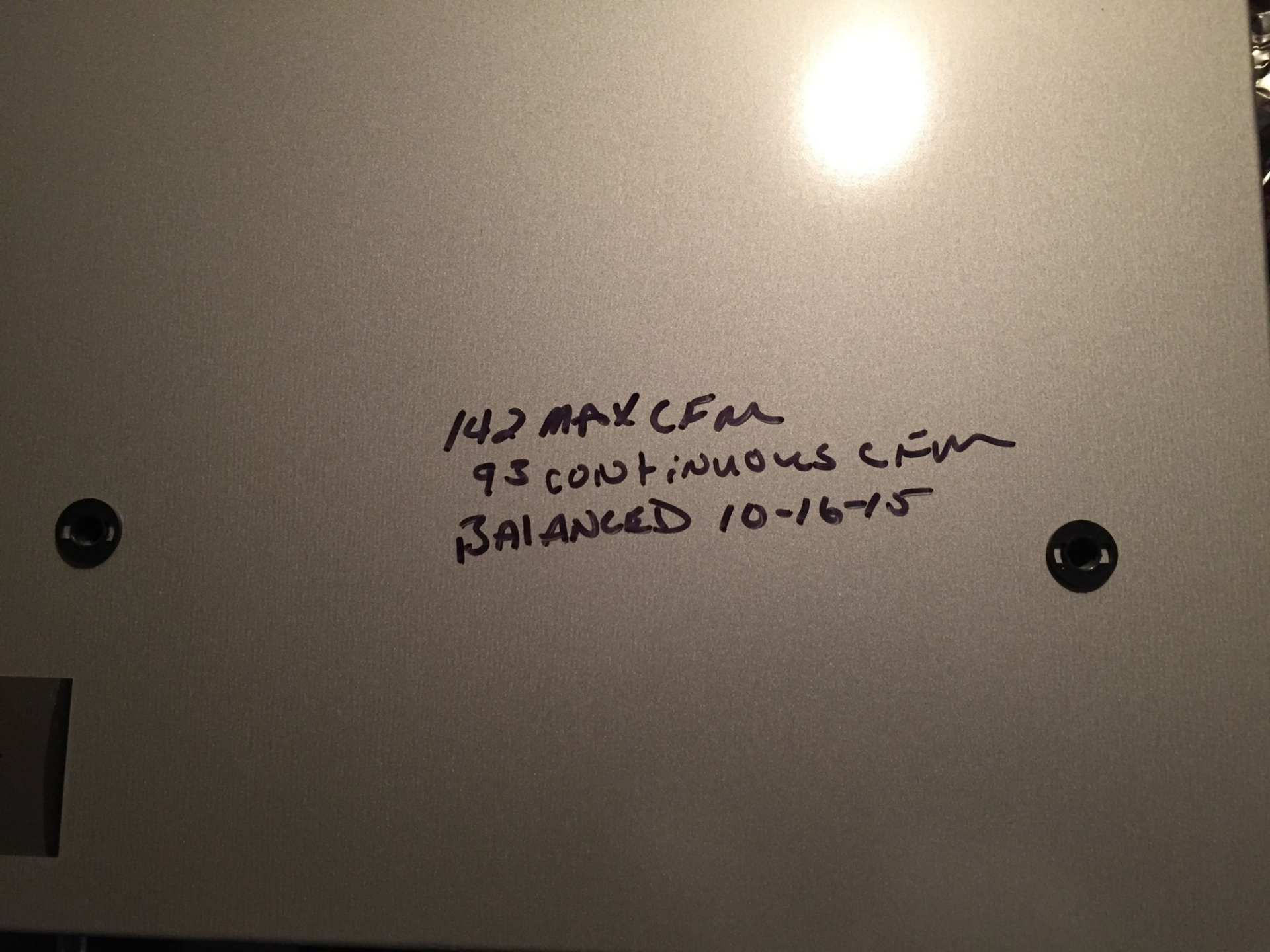
RON'S MECHANICAL INC.
952-445-8585

(MN Amendment) R403.5.6.1.3 Airflow verification

- All mechanical ventilation system airflows greater than 30 cfm at the building intake and exhaust shall be tested and verified.


MAGNEHELIC
HRV CONSTRUCTO® 1.5 ES
USER MANUAL
(952) 835-7777
BALANCED VENTILATION
131
130
Mark C. 3-10-5
MAINTENANCE RECORD


INCHES OF WATER
.10
.20
.30
.40
.50
0
5
10
15
20
25
X 100 FPM
0
MAGNEHELIC
CALIBRATED FOR
VERTICAL POSITION


142 MAX CFM
93 CONTINUOUS CFM
BALANCED 10-16-15

(MN Amendment) R403.5.12 Filtration

- All mechanically supplied outdoor air shall have a filter with a designated minimum efficiency of MERV 4 as defined by ASHRAE Standard 52.2

(MN Amendment) R403.5.14 Controls

- When the mechanical ventilation system is not designed to operate whenever the forced air circulation system is operating, the mechanical ventilation system shall incorporate an accessible backflow damper to prevent flow from the outside when the mechanical ventilation system is off.

IMC 401.5 Intake Openings

- **401.5 Intake opening protection.** Air intake openings that terminate outdoors shall be protected with corrosion-resistant screens, louvers or grilles…and shall be sized in accordance with Table 401.5 and shall be protected against local weather conditions.

IMC 401.5 Intake Openings

TABLE 401.5
OPENING SIZES IN LOUVERS, GRILLES AND SCREENS PROTECTING AIR INTAKE OPENINGS

OUTDOOR OPENING TYPE	MINIMUM AND MAXIMUM OPENING SIZES IN LOUVERS, GRILLES AND SCREENS MEASURED IN ANY DIRECTION
Intake openings in residential occupancies	Not < $^1/_4$ inch and not > $^1/_2$ inch
Intake openings in other than residential occupancies	> $^1/_4$ inch and not > 1 inch

For SI: 1 inch = 25.4 mm.

(MN Amendment)
IMC Chapter 5 Exhaust systems

- **501.3 Exhaust discharge.**
  - The air removed by every mechanical exhaust system shall be discharged outdoors at a point where it will not cause a nuisance...and the exhaust system shall be `equipped with a backdraft damper at the point of discharge.


deflect-o®
Quality Since 1950
Indianapolis, Indiana USA

ADC

Flexible Duct Performance & Installation Standards (5th Edition)

The "Greenbook" of Flex

Provides information about –

Characteristics of flexible duct

Testing, Listing, Reporting, and Certifying

Installation Requirements

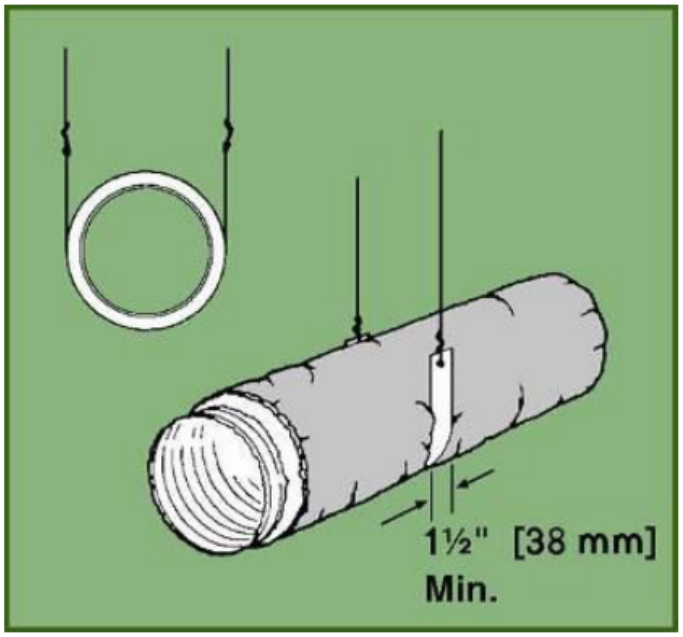
Typical Accessories

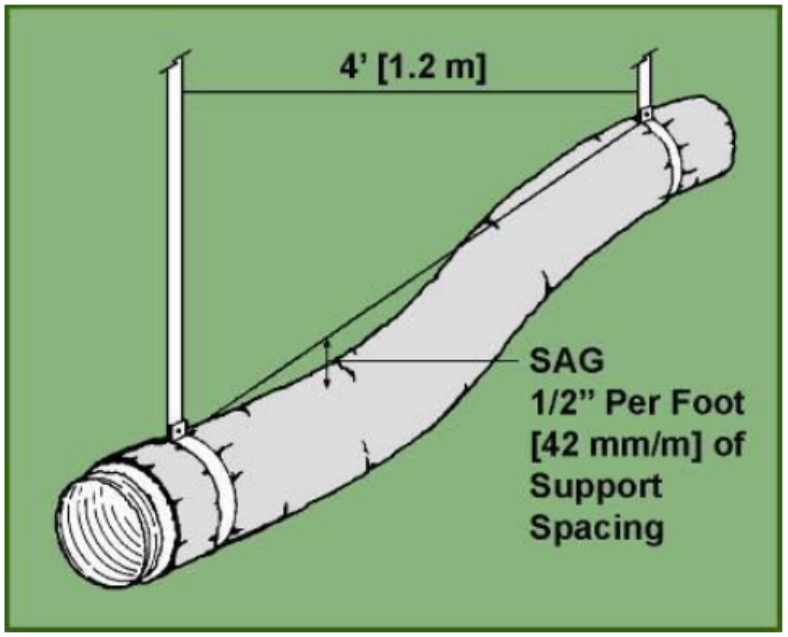
General Commentary

What material should I use to support flexible duct?

Per NFPA 90A and 90B, supplementary material used with air ducts shall meet the requirements of Class 1 when tested to UL 723 (Surface Burn Characteristic Testing), i.e. 25 Flame Spread & 50 smoke developed maximum.

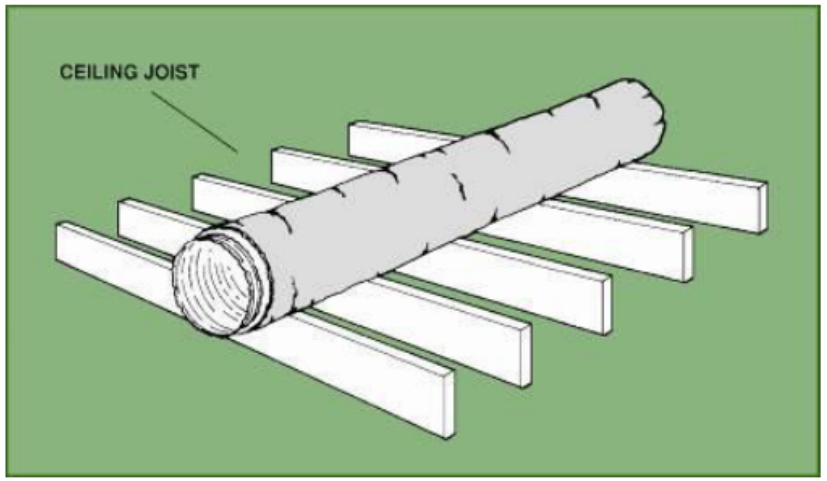
Per ADC, any strapping material in contact with the flexible duct shall be 1-1/2 inch wide minimum and be applied at intervals not to exceed 4 feet (6 feet for vertical supports). Sag should not exceed ½ inch per foot of support spacing.



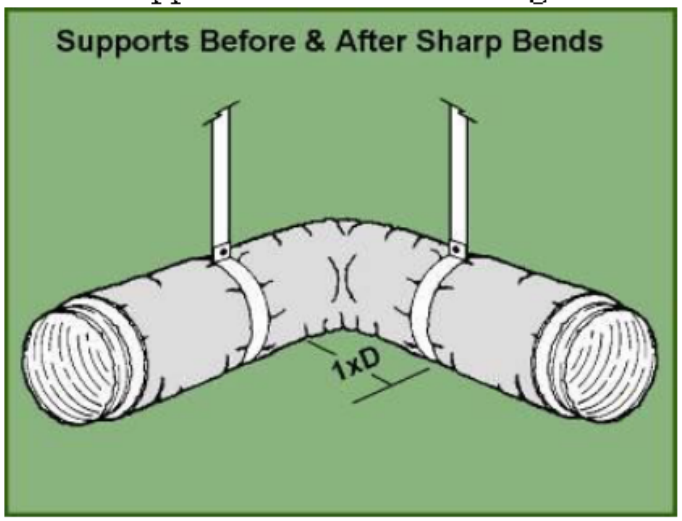


Additional Points on Supporting Flex Duct

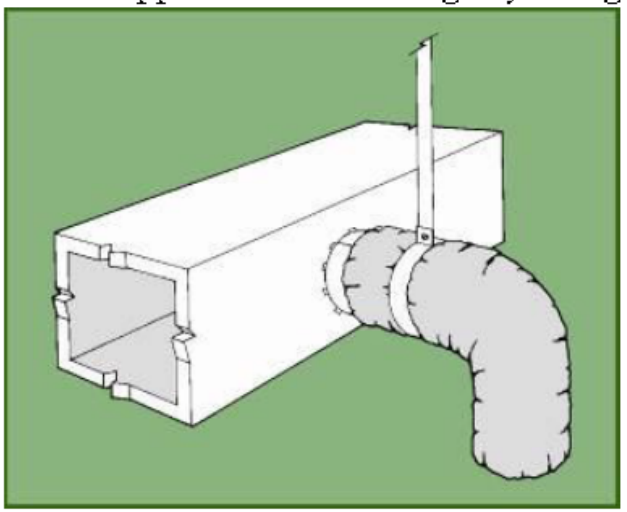
Ceiling joists or truss supports used to support flexible duct



Added supports before and after tight bends



Added support to avoid damage by fitting




TopNotch
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SERIES

Questions?

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