

REGULATIONS AND STANDARDS

New Zealand Building Code and Healthy Homes

The following two category requirements have been established for mandatory extraction ventilation in New Zealand.

The New Zealand Building Code for New Building Consents

The building regulatory system sets out a framework to promote good quality decisions being made during the Building Consent process. The legislation and regulations work together, as the building regulatory system. The functional clauses of the NZ Building Code are grouped and described by a letter and number. Clause G of the NZ Building Code covers services, with G4 setting out the performance requirements for ventilation. The Building Code is enshrined in law. The New Zealand Building Code, G4, has been changed. This is supported by Acceptable Solution G4/AS1 Fourth Edition that specifies mechanical ventilation in accommodation units that contain cooktops, showers and baths.

Residential Tenancy Regulations to the Healthy Homes Standards

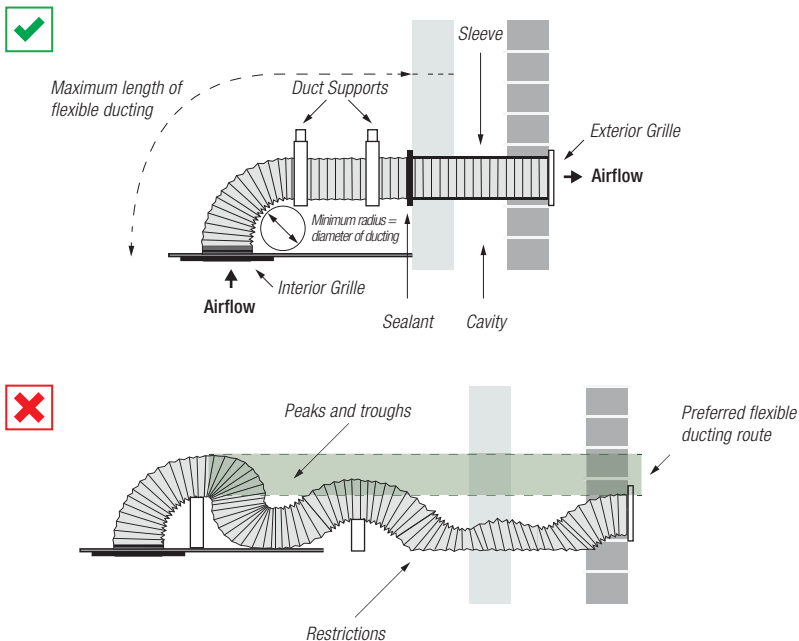
Residential Tenancy Regulations for rental properties only is changing to the Healthy Homes Standards, sub part 4 - Ventilation Standards.

Complying with the Acceptable Solution G4/AS1

To comply, the mandatory mechanical extract system must deliver minimum airflow rates for the complete installed ventilation system. This means that airflow rates must deliver the airflow after resistance of the ducting, internal and external grilles, as well as all other accessories, such as backdraught shutters, are included.

Fan selection is important as some types are far better at overcoming ducting system pressure drops.

Additionally, the quality of the ducting system installation can be all important. Rigid duct system are best as they are the most efficient. Good installation practice is vital for flexible duct systems.



REGULATIONS AND STANDARDS

Choosing the Right Fan to Comply

Fans cannot be selected on the basis of free-air performance only. Fans must now be selected on the basis of the complete installed system performance for a designated room as per the table below.

Room	Airflow Rate (min.)	
	Intermittent	Continuous
Toilet ¹⁾	25 l/s	10 l/s
Bathroom/shower	25 l/s	10 l/s
Laundry ²⁾	40 l/s	-
Kitchen	50 l/s	12 l/s

1) Toilets only require ventilation if they have no openable windows

2) Simx recommends 40 l/s for laundries with unvented non-condensing tumble dryers as covered in AS 1668: Part 2 2012

Recent unregulated extract fan practices in New Zealand has trended to basic, low pressure axial fan products, as installed system performance has not been defined for independent inspection testing and compliance signed off by local authorities.

Fan Type Considerations

Determining the best fan requires consideration of location, sound levels and aesthetic appeal. Different fan suit different applications. The longer the duct run, the greater the pressure that is required to overcome the resistance created by the duct. Low pressure is required for short run systems, such as through wall or window mounted fans, but far greater pressure is required for longer ducted systems where the fan and ducting is installed in the roof cavity.

Short Run Systems

As through wall and window mounted axial fans only have to extract air over a short distance, the installed system performance rates are only slightly lower than that of fan's free-air performance rate. Fan selection to ensure compliance for any room requirement is, therefore, a straightforward procedure.

Ducted Systems

The best solutions for ducted systems are centrifugal and mixed flow fans. These types of extraction fans are designed to develop the necessary pressure and resilience to overcome duct and grille system pressure-drop resistance. Axial inline fans are suitable for shorter duct runs, but will not be very forgiving when it comes to installation so care must be taken to ensure the best practice guidelines are followed.

Installed performance of a fan can, however, vary greatly dependent on the location, length of duct, number of bends and fittings such as backdraught shutters, cowls and grilles. For complete installed system performances to meet the standards, the following guidelines may be used as application limits dependent on *best practice* duct installation being employed along with the use of airflow efficient accessories such as grilles and backdraught shutters.

FAN SELECTION GUIDELINES

Through Wall and Window Fans

The following chart provides an easy fan selection guide for through wall or window fans to ensure compliance with the building code. An upgrade to the next available model is always recommended should more airflow be required.

Selection Reference Guide

Toilet	125mm fan
	150mm fan
Bathroom	125mm fan
	150mm fan
Laundry	150mm fan
Kitchen	150mm fan

Continuous Ventilation

As an alternative to the intermittent fans shown here we have some continuous running fans which provide a low level of trickle ventilation which runs constantly. These fans then have a boost facility via manual or automatic operation. These fans provide the most energy efficient and comfortable form of ventilation with low noise and excellent indoor air quality.



Genius



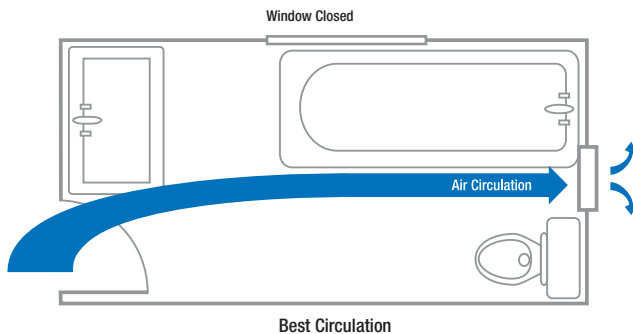
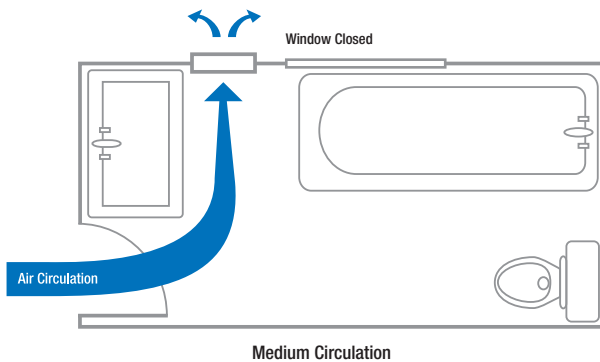
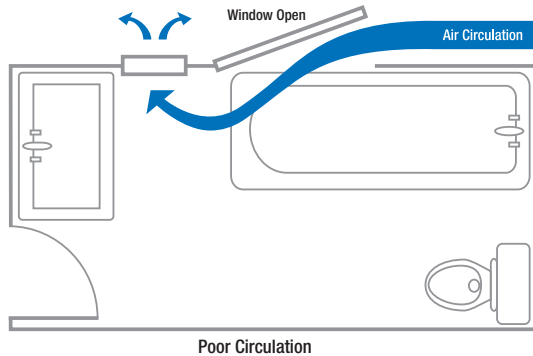
IntelliVent

See page 40 for more information on Genius and IntelliVent fans.

FAN APPLICATION GUIDELINES

1. Consider the Location in the Room

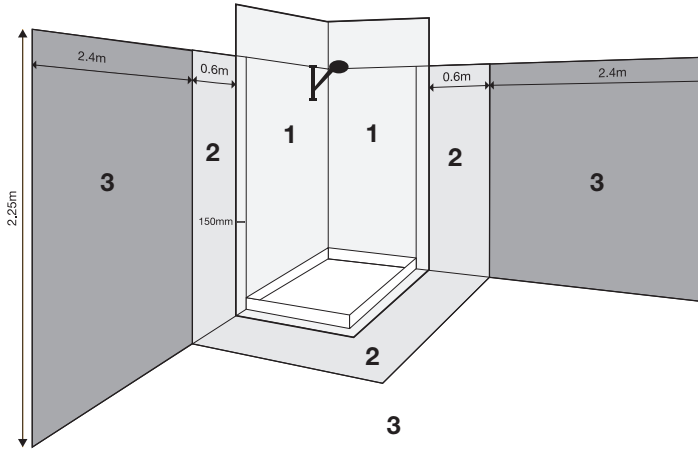
The right placement of an extraction fan will ensure optimum airflow through the bathroom. To ensure the fan works to its maximum efficiency, the extracted air needs to be replenished, or “made up”, with an equal amount of dry air drawn in from an adjacent room or hallway. This make-up air replenishment may be assisted with the installation of a door grille (FAN0159).



FAN APPLICATION GUIDELINES

2. Wet Area Zones & Recommended Fan Types

Wet area zones are determined by their proximity to the bath or shower. Use the wet area zone plan and table to identify what type of fan is required.



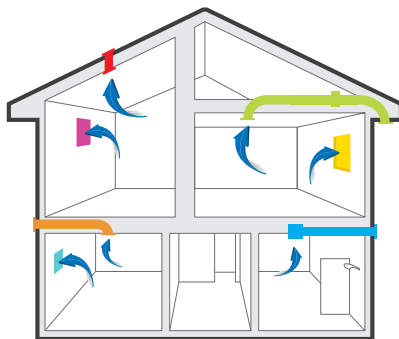
Zone	Description	Recommended Fan Type
1	Area immediately above the bath or shower tray up to the higher of either 2.25m or the height of the fixed plumbing connection	Safety extra low voltage or inline fans only
2	Area within 0.6m around the edge of the bath or shower tray	Any fan
3	Any area outside Wet Area Zones 1 & 2	Any fan

FAN APPLICATION GUIDELINES

3. Select a Fan Type

From the list below select a fan type, then see the following sections to identify the model you require. Ensure the model you select has a performance (m^3/h) greater than the performance calculated in Step 1.

Fan Type	Application	Key
Inline Extraction Fans	Wet area zone 1	
Wall/Ceiling Fans	Wall and ceiling	
Heat-Fan-Light Systems	Ceiling, multi-function	
Inline Extraction Fan Kits	Wet area zone 1, integrated light	
Through Wall Fan Kits	Wall	
Through Roof Fan Kits	Roof	
Safety Extra Low Voltage (SELV)	Wet area zone 1	
Window Fans	Window	



4. Saving Energy

The best way of calculating the most energy efficient fan for your needs, is to compare the specific fan powers of each one selected. The fan with the lower watts per l/s , will use less energy. If a fan has similar specific fan power to another, but much higher pressure for ducted installations, it will still be the more efficient option.

Max. Fan Watts (W)	Max. Fan Pressure (Pa)	Free Air Fan Performance		Specific Fan Power (W/l/s)	Sound (dB(A))
		(l/s)	(m^3/hr)		
25	60	101	364	0.25	40
20	35	36	130	0.56	41

5. Fan Switching Options

Option	Description
Standard	Remote switch
Timer	Remote switch with delayed OFF adjustable from 1-20 minutes
Pull Cord	Integral pull cord switch on fan
PIR Control	Motion sensor incorporated in fan
Auto Sense	Condition sensor incorporated in fan
Variable Speed Controller	Incorporated speed drive in fan