

RECOMMENDED MANROSE[®] EXTRACTION PRODUCTS FOR POTENTIAL APPLICATIONS

There are four different levels of regulations and/ or acceptable solutions for residential Bathrooms and Kitchens in New Zealand. These cascade down, in the table below, from the highest performance standard at the top, to the lowest at the bottom. These standards are explained on the following pages. It is important to note that the Manrose product recommendations are guidelines, and responsibility for compliance remains with the installer, as the performance of the complete system is dependent on the quality of the installation practice used and is specific to each site. Manrose product packaging for these applications carries one of the four blue stamps shown below.

SEE PAGE 9-17		DESIGNED FOR G4 BUILDING CODE & HEALTHY HOMES – BATHROOMS & KITCHENS
SEE PAGE 18-22		DESIGNED FOR G4 BUILDING CODE & HEALTHY HOMES – BATHROOMS
SEE PAGE 23		DESIGNED FOR HEALTHY HOMES STANDARD - BATHROOMS & KITCHENS
SEE PAGE 24-26		DESIGNED FOR HEALTHY HOMES STANDARD - BATHROOMS

Regulations and Standards

New Zealand Building Code and Healthy Homes

The following two category requirements have been established for mandatory mechanical 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

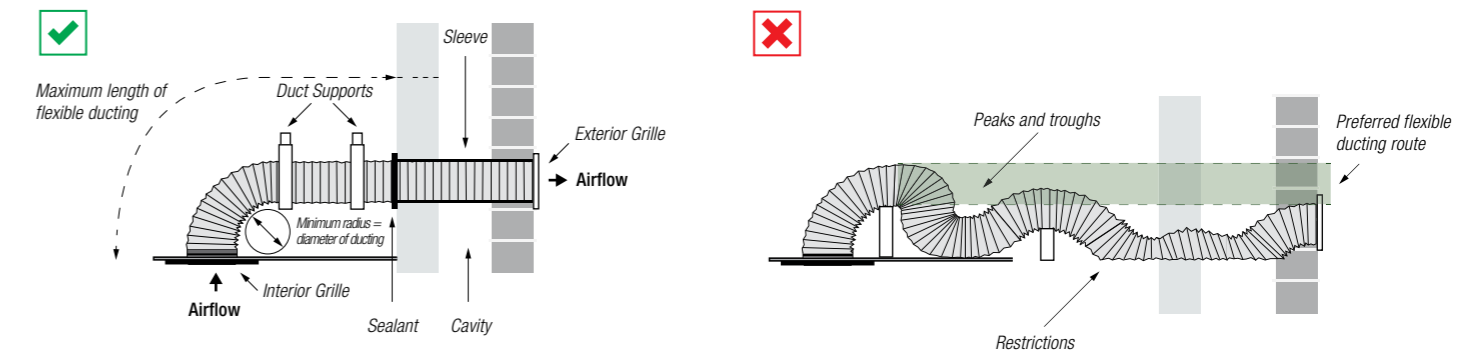
Residential Tenancy Regulations for rental properties only has changed to the Healthy Homes Standards, sub part 4 - Ventilation Standards.

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 systems are best as they are the most efficient. Good installation practice is vital for flexible duct systems.



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

With earlier unregulated extract fan practices in New Zealand, the market trended to basic, low pressure axial fan products, as installed system performance was not defined for independent inspection testing and compliance signed off by local authorities. This approach has changed under the latest mandatory regulations.

Fan Type Considerations

Determining the best fan requires consideration of location, sound levels and aesthetic appeal. Different fans 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 and where the fan and ducting, with more bends, 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. See page 6 for further information.

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

Ceiling Extraction Fans - Manrose Contour Centrifugal Range

The new Manrose CONTOUR range of centrifugal fans offers model options that easily exceed the **New Zealand Building Code G4/AS1** requirements for that specific room installation. To make it even easier for correct product selection, Manrose Contour fans are identified by their intended application purpose.

Selection Reference Guide

- Toilet Manrose Contour Toilet fan - FAN7030
- Bathroom Manrose Contour Bathroom fan - FAN7031
- Laundry Manrose Contour Kitchen and Laundry fan - FAN7032
- Kitchen Manrose Contour Kitchen and Laundry fan - FAN7032

Further, the Manrose CONTOUR fan range also includes the CONTOUR High Steam Area Fans (FAN7033 & FAN7034) for the more demanding applications and/or complete performance peace-of-mind. See page 9 for details.

Toilet
25 l/s

		Metres of Ducting									
		1	2	3	4	5	6	7	8	9	10
No. of Bends	1	Yellow									
	2	Yellow									
	3	Yellow									
	4	Yellow				Blue		Blue			
	5	Blue									

Toilets only require ventilation if they have no openable windows



Bathroom
25 l/s

		Metres of Ducting									
		1	2	3	4	5	6	7	8	9	10
No. of Bends	1	Blue									
	2	Blue									
	3	Blue									
	4	Blue									
	5	Blue									

- Fan Selection**
- Yellow Contour Toilet - FAN7030
 - Blue Contour Bathroom - FAN7031
 - Light Green Contour Kitchen & Laundry - FAN7032

Laundry
40 l/s

		Metres of Ducting									
		1	2	3	4	5	6	7	8	9	10
No. of Bends	1	Light Green									
	2	Light Green									
	3	Light Green									
	4	Light Green									
	5	Light Green									

Simx recommends 40 l/s for laundries with unvented non-condensing tumble dryers

Kitchen
50 l/s

		Metres of Ducting									
		1	2	3	4	5	6	7	8	9	10
No. of Bends	1	Light Green									
	2	Light Green									
	3	Light Green									
	4	Light Green									
	5	Light Green									

Fan Selection Guidelines

Inline Extraction Fans

The following chart provides easy fan selection guidelines, if good ducting system selection and installation best practices have been employed. This is to ensure compliance with the building code. An upgrade to the next available model is always recommended for higher airflow rates and more complex installations. These are guideline recommendations to assist with fan selection for NZBC G4/AS1 compliance.

Selection Reference Guide

- Toilet Manrose Hyper150 EC axial fan for simple runs
Manrose Mixflo 150 mixed flow fan for longer runs
- Bathroom Manrose Hyper150 EC axial fan for simple runs
Manrose Mixflo 150 mixed flow fan for longer runs
- Laundry Manrose Mixflo 150 axial fan
- Kitchen Manrose Mixflo 150 or Manrose Blue Jet mixed flow fans for best efficiency/airflow or on long ducts

Toilet
25 l/s

		Metres of Ducting									
		1	2	3	4	5	6	7	8	9	10
No. of Bends	1	Yellow									
	2	Yellow									
	3	Yellow									
	4	Yellow									
	5	Light Green									

Toilets only require ventilation if they have no openable windows

Bathroom
25 l/s

		Metres of Ducting									
		1	2	3	4	5	6	7	8	9	10
No. of Bends	1	Yellow									
	2	Yellow									
	3	Yellow									
	4	Yellow						Light Green		Light Green	
	5	Light Green									

- Fan Selection**
- Yellow Hyper150 EC
 - Light Green Mixflo 150
 - Blue Blue Jet

Laundry
40 l/s

		Metres of Ducting									
		1	2	3	4	5	6	7	8	9	10
No. of Bends	1	Light Green									
	2	Light Green									
	3	Light Green									
	4	Light Green									
	5	Light Green									

Simx recommends 40 l/s for laundries with unvented non-condensing tumble dryers

Kitchen
50 l/s

		Metres of Ducting									
		1	2	3	4	5	6	7	8	9	10
No. of Bends	1	Light Green									
	2	Light Green									
	3	Light Green									
	4	Light Green									
	5	Blue				Blue		Blue		Blue	

Fan Selection Guidelines

Through Wall and Window Fans

The through wall and window fans listed in the following sections provide an easy fan selection guideline for Manrose through wall or window fans designed for the **New Zealand Building Code G4 Acceptable Solution** when best practice duct system selection and installation is used. An upgrade higher pressure and free-air performance is always recommended for better results.

Fan Models with Simple Selection Reference Guidelines - to be used in conjunction with the following pages

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

Healthy Home Compliance - for Residential Tenancies rental properties only

Application	Designer	Wall / Ceiling Fans			Through Wall / Ceiling Fan Kits			Window Fans
		Pro-Series	Classic	Designer	Pro-Series	Classic	Classic	
Toilet	150mm	FAN7183	FAN0594	FAN0120	FAN7190	FAN0621	FAN0135	FAN0107
	125mm	FAN7180	FAN0589	FAN0072	FAN7187	FAN0614	FAN0080	-
Bathroom	150mm	FAN7183	FAN0594	FAN0120	FAN7190	FAN0621	FAN0135	FAN0107
	125mm	FAN7180	FAN0589	FAN0072	FAN7187	FAN0614	FAN0080	-
Laundry	150mm	FAN7183	FAN0594	FAN0120	FAN7190	FAN0621	FAN0135	FAN0107
Kitchen	150mm	FAN7183	FAN0594	FAN0120	FAN7190	FAN0621	FAN0135	FAN0107

Continuous Ventilation

As an alternative to the traditional intermittent fans, the products shown below can be set as 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.



Filtered Passive Ventilation

The Puro Filtered Passive Vent Kit DCT4565 is recommended for use in conjunction with Manrose and Vent-Axia extract fans to deliver improved indoor air quality. This is especially recommended with the continuously operating fans above.



Choose the Right Fan

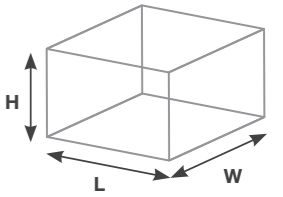
Extraction fans should be placed as close as possible to the steam source (e.g. over or near the shower). Inline fans are the most appropriate solution as the extraction grille can be placed directly above the steam source. Use following steps 1-6 as your guide to selecting the right fan for your application.

1. Calculate the Room Size

- Calculate the room volume in cubic metres (L x W x H) e.g. 2.8m x 2.6m x 2.4m = 17.47m³.
- Multiply the room volume by the following guidelines for air changes per hour (ACH) for that room. Always use the higher limit.

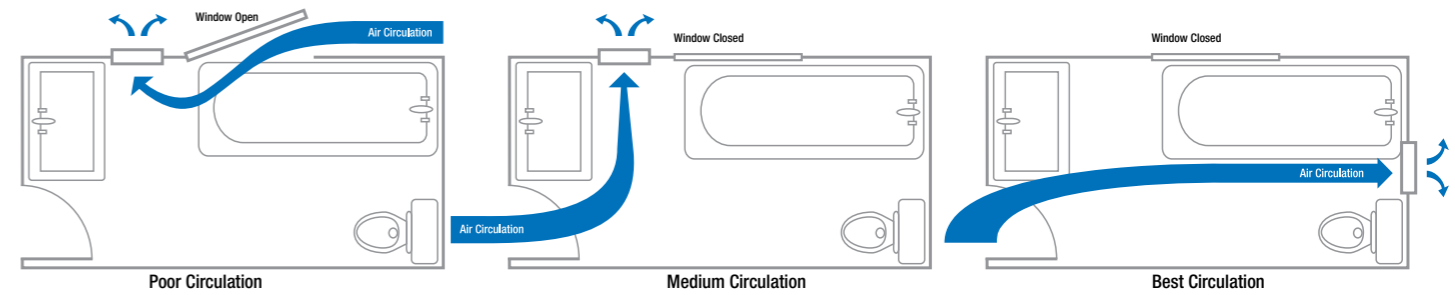
Toilets	6-10 ACH
Bathrooms, showers, ensuites	11-15 ACH
Kitchens, laundries	15-20 ACH

- The result is the minimum airflow performance required in cubic metres per hour that can be assessed against the fans Free Air Fan Performance, listed on the following pages, after a large downgrading allowance is made for the considerable slowing effect of a complete installed system. See page 3 for a description of duct system losses that will also occur from fascias, grilles, cowls and backdraft shutters. Manrose technical support can be consulted for their recommendations.



2. Consider the Location in the Room

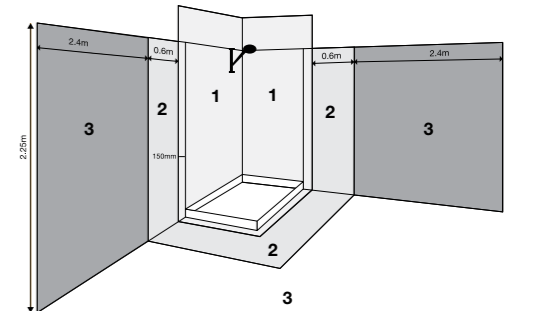
The right placement of an extraction fan will ensure optimum airflow through the bathroom. To ensure the fan works to its maximum efficiency, the extracted air needs to be replenished, or "made up", with an equal amount of dry air drawn in from an adjacent room or hallway. This make-up air replenishment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



3. 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, inline fans only, or contour without light
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



4. 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 (m³/h) greater than the performance calculated in step 1.

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



5. Saving Energy

The best way of calculating the most 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 (l/s)	Free Air Fan Performance (m ³ /hr)	Specific Fan Power (W/l/s)	Sound (dB(A))
25	60	101	364	0.25	40
20	35	36	130	0.56	41

6. Fan Switching Options

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