

Rochdale Building Control Guide

Approved Document F Means of ventilation

Coming into effect 1st October 2010

As we build homes that are more airtight it is increasingly becoming important to ensure that sufficient ventilation is provided to remove harmful pollutants and provide good quality air.

Rooms require ventilation, the main types are background, purge and mechanical. This guide seeks to provide details of how to comply with the revised requirements of Approved Document F.

General requirements

Owners are to be provided with sufficient information to operate the ventilation system to provide adequate air flow not later than 5 days after completion.

New dwellings – air flow rates should be measured on site and a notice given to Building Control (includes extract fans and cooker hoods).

A commissioning notice for fixed mechanical ventilation systems is required to be supplied to building control (in accordance with the domestic ventilation compliance guide).



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Work to existing buildings including extensions

Background ventilation

Background ventilation is typically by the provision of trickle ventilators located 1.7m above floor level with simple flap control.

The ventilation required is measured in equivalent area dependent upon the room use.

The amount of background ventilation for work to existing buildings is as follows:

Position	Intermittent extract
Dwellings	
Habitable rooms	5000mm ² equivalent area
Kitchen, Utility and bathroom	2500mm ² equivalent area
Buildings other than dwellings	
Occupiable rooms up to 10m ²	2500mm ² equivalent area
Occupiable rooms over 10m ²	250mm ² equivalent area per m ² of floor area
Kitchens	2500mm ² equivalent area
Bathrooms and shower rooms	2500mm ² equivalent area per bath or shower
Sanitary Accommodation and washing facilities	2500mm ² equivalent area per wc

Windows with night latch are not recommended due to difficulty in measuring equivalent area, likelihood of draughts and security risk.

Ventilation of one room through another.

A habitable room without openable windows can be vented through another provided that purge ventilation is provided based upon total floor area of both rooms, shown in table below.

A permanent opening must be provided between the rooms.

8000mm² equivalent area trickle ventilators are required, or alternatively single room heat recovery ventilator could be used for background ventilation.

Ventilation of one room through a conservatory.

Purge ventilation is provided based upon total floor area of conservatory and habitable room based upon table below.

Purge (rapid) ventilation

Opening	Height x width of opening
30 degrees or more	1/20 th floor area
15 – 30 degrees	1/10 th floor area
less than 15 degrees unsuitable for purge ventilation.	

Background ventilation should be provided by 8000m² trickle vents in external quality door & frame of conservatory and frame of door into conservatory.

It is recommended that ventilation systems in new and existing dwellings are in accordance with the *domestic ventilation compliance guide*.

Addition of wet room to a dwelling

Background ventilation should be provided of 2500mm² equivalent area or single room heat recovery ventilator or passive stack ventilator or continuous extract fan.

Purge ventilation should be provided in accordance with table above.

An undercut of 10mm above floor finish should be provided in internal door to provide 7600mm² minimum area for ventilation.

Refurbishing a kitchen or bathroom in an existing dwelling

If you carry out building work to an existing dwelling and there is an existing extract fan or passive stack ventilator you should retain or replace it, however if one does not exist you need not provide one.

New buildings other than dwellings

Ventilation in specialist non domestic buildings is generally required to be designed by a CIBSE engineer, however the following is information for general office buildings.

Extract ventilation rates

Room	Extract rate
Rooms containing printers and photocopiers (over 30 minutes use per hour)	Air extract 20l/s during machine use. (if in use constantly use the greater of extract and whole building ventilation rate.)
Office sanitary accommodation and washrooms.	Intermittent extract rate of: 15 l/s per shower/bath 6l/s per wc/urinal
Food and beverage preparation areas (not commercial kitchens)	Intermittent extract rate of: 15 l/s with microwave and beverages only 30 l/s adjacent to the hob with cookers 60 l/s elsewhere with cooker All to operate whilst food and beverage preparation is in progress.
Specialist buildings/spaces	Refer to table 6.3 in approved Document F

Whole building ventilation air supply to offices 10l/s per person

Location of ventilators for offices with natural air supply:

Extract vents located as high as practicable in the room and preferably less than 400mm below the ceiling.

PSV extract terminals to be located in the ceiling

For Whole building ventilation refer to CIBSE guide AM10: natural ventilation in non-domestic buildings.

Car park ventilation

This is via a calculation of mean predicted pollutant levels to limit carbon monoxide to an average concentration to 30 parts per million over an 8 hour period, and 90 parts per million in peak concentrations (ramps and exits).

Alternative approaches

1. Car parks can be naturally ventilated by well distributed permanent ventilation on each level with an aggregate equivalent area of a minimum $1/20^{\text{th}}$ of the floor area of that level (25% of which on two opposing walls).
2. Mechanically ventilated car parks having permanent natural ventilation openings of equivalent area of a minimum $1/40^{\text{th}}$ of the floor area and a mechanical ventilation system providing 3 air changes per hour minimum, or a mechanical ventilation system providing 6 air changes per hour minimum to basement car parks.

Non domestic ventilation systems should be commissioned in accordance with CIBSE Code M.

New dwellings

Guidance is based upon dwellings with air permeability less than $5\text{m}^3 / (\text{h}\cdot\text{m}^2)$ at 50 Pa.

Purge ventilation

Purge ventilation is required to each habitable room giving 4 air changes per hour minimum this is achieved by following guidance below.

Opening	Height x width of opening
30 degrees or more	1/20 th floor area
15 – 30 degrees	1/10 th floor area
less than 15 degrees unsuitable for purge ventilation.	

Extract ventilation rates

Extract ventilation is required to the following areas

Room	Intermittent extract	Continuous extract
Kitchen	30 l/s adjacent to hob or 60 l/s elsewhere	13 l/s
Utility	30 l/s	8 l/s
Bathroom	15 l/s	8 l/s
Sanitary Accommodation	6 l/s	6 l/s

Whole ventilation rate for supply of air to the habitable rooms should be no less than below.

Whole dwelling ventilation rates					
Number of rooms in a dwelling	1	2	3	4	6
Whole dwelling ventilation rate l/s	13	17	21	25	29

Air transfer

An undercut of 10mm above floor finish should be provided in internal doors to provide 7600mm² minimum area, this dimension should be 20mm above any unfinished floor surface.

Ventilation systems

Ventilation can be achieved by either:

System 1. Background ventilators and intermittent extract fans.

System 2. Passive stack ventilators.

System 3. Continuous mechanical extract.

System 4. Continuous mechanical supply and extract with heat recovery.

Total equivalent background ventilator area for system 1 is based upon the table below.

Total equivalent ventilator area (mm ²) for a dwelling of air permeability 5m ³ /(h.m ²) at 50Pa					
Total floor area (m ²)	Number of bedrooms				
	1	2	3	4	5
≤ 50	35000	40000	50000	60000	65000
51-60	35000	40000	50000	60000	65000
61-70	45000	45000	50000	60000	65000
71-80	50000	50000	50000	60000	65000
81-90	55000	60000	60000	60000	65000
91-100	65000	65000	65000	65000	65000
>100	Add 7000 mm ² for every additional 10 m ² floor area				

Background ventilators should be located for system 1 as below

Position	Intermittent extract
Dwellings	
Habitable rooms	5000mm ² equivalent area
Kitchen, Utility and bathroom	2500mm ² equivalent area

For system 2, 3 and 4 please refer to Approved Document F.

Ventilation systems for basements

Basements with a large permanent opening i.e. open stairway should have background ventilation system 1 or 2.

Ventilation of one room through another.

A habitable room without openable windows can be vented through another provided that purge ventilation is provided based upon total floor area of both rooms, shown in table below.

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less than 15 degrees unsuitable for purge ventilation.	

A permanent opening must be provided between the rooms.

8000mm² equivalent area trickle ventilators are required, or alternatively single room heat recovery ventilator could be used for background ventilation.

Ventilation of one room through a conservatory.

Purge ventilation is provided based upon total floor area of conservatory and habitable room based upon table above.

Background ventilation should be provided by 8000m² trickle vents in external quality door & window frame of conservatory and frame of door into conservatory.

Bibliography/Further Guidance

DCLG, 2010, *The Building Regulations 2000 Approved Document F means of ventilation*, Department for Communities and Local Government, London, <www.planningportal.gov.uk>

DCLG, 2010, *Domestic ventilation compliance guide*, Department for Communities and Local Government, London, <www.planningportal.gov.uk>

GGF, 2010, *A guide to trickle ventilators*, Glass and Glazing Federation, London, <www.ggf.co.uk>

CIBSE Application Manual AM10: Natural ventilation in non-domestic buildings. <www.cibse.org.>

Building Bulletin 101 Ventilation of school buildings.