2021 Building Regulations Part F, Volume 1: Dwellings
Guidance for Fabricators & Installers

Meeting English Building Regulations Part F (Ventilation Requirements)

This document aims to provide practical guidance on the English Building Regulations Part F, relating to ventilation of dwellings. It is the intention of the regulations to ensure adequate ventilation of all types whilst the energy efficiency of housing is improved at the same time. As the saying goes, 'Ventilate when you Insulate'.

The below is a Titon summary of the main points contained within Approved Document F, Volume 1: Dwellings. The current Approved Document can be downloaded at https://www.gov.uk/government/publications/ventilation-approved-document-f. Please note that whilst we make every effort to accurately advise on the regulations as we see them, it is the responsibility of the installer to meet the relevant requirements.

Type of work being carried out

If you are installing windows in a New Build property, or are fitting replacement windows in an existing property

The regulations clearly distinguish between three schemes of ventilation, one of which will apply. The scheme of ventilation should be ascertained before carrying out any installation work:

- **Natural ventilation with trickle vents and intermittent extract fans** see page 3
  Applies to less airtight dwellings. The majority of dwellings will have this form of ventilation (particularly older dwellings).
- **Continuous mechanical extract ventilation** see page 4
  Usually with a central extract system or individual room extract fans.
- **Mechanical ventilation with heat recovery (MVHR)**
  Do not install trickle vents alongside MVHR systems.

If you are installing windows in a new home extension or conservatory see page 5

General trickle ventilation provisions

Trickle vent specification and marking

- The size of trickle vents is rated in Equivalent Area (EA), given in mm^2.
- All trickle vents must have their Equivalent Area (EA) rating clearly marked on the product, visible from inside the dwelling after installation.
- The EA rating indicates the effective airflow and is critical for compliance.
- All EA specifications within the regulations can be regarded as minimums.

Installation Height and Controls

- Install trickle vents at a height of at least 1700mm above floor level - to minimise cold draughts while maintaining occupant accessibility.
- Trickle vents must be controllable by the occupant - either manually or automatically.
- Extract fans and trickle vents that are fitted in the same room should be at least 500mm apart.

Room Definitions

- A wet room is defined as any room in which daily use may generate water vapour (i.e. kitchens, bathrooms, utility rooms, toilets).
- A habitable room is any room in which occupants regularly spend time, but is not a wet room (i.e. living rooms, bedrooms etc.)
- Any room into which people do not normally go (i.e. storage rooms, garages) is exempt from these provisions.
- For dwellings with basements, please refer to the Building Regulations section 1.38 or call for advice.

Natural ventilation with trickle vents and intermittent extract fans

New Build

The housebuilder will specify the EA requirements per room, taking into account the required whole dwelling ventilation rate.

- Trickle vents must be installed in all rooms with external walls.
- In buildings with multiple exposed facades, provision should be made for similar trickle vent EA on each façade to enable effective cross-ventilation.
- Where facades face sustained loud noise (e.g. main roads), the use of noise-attenuating trickle vents should be specified (see page 6).
- The minimum total EA of trickle vents in each room should follow the guidance in Table 1.7:

Table 1.7 Minimum equivalent area of background ventilators for natural ventilation[1]

Room	Minimum equivalent area of background ventilators for dwellings with multiple floors	Minimum equivalent area of background ventilators for single-storey dwellings
Habitable rooms[2][3]	8000mm²	10,000mm²
Kitchen[2][3]	8000mm²	10,000mm²
Utility room	No minimum	No minimum
Bathroom[4]	4000mm²	4000mm²
Sanitary accommodation	No minimum	No minimum

NOTES:

1. The use of this table is not appropriate in any of the following situations and expert advice should be sought.
   - If the dwelling has only one exposed façade.
   - If the dwelling has at least 70% of its openings on the same façade.
   - If a kitchen has no windows or external façade through which a ventilator can be installed.
2. Where a kitchen and living room accommodation are not separate rooms (i.e. open plan), no fewer than three ventilators of the same equivalent area as for other habitable rooms should be provided within the open-plan space.
3. The total number of ventilators installed in a dwelling's habitable rooms and kitchens should be no fewer than five, except in one-bedroom properties, where there should be no fewer than four.
4. If a bathroom has no window or external façade through which a ventilator can be installed, the minimum equivalent area specified should be added to the ventilator sizes specified in other rooms.

- The NOTES section in Table 1.7 should also be followed.
- If a habitable room has no external walls, refer to the provisions on page 5.

Replacement Windows in existing dwellings

If the existing windows have trickle vents, replacement windows must also include trickle vents that:

- Have an EA at least equal to that of the existing windows.

If the EA rating of the existing trickle vents is unknown or the existing windows have no trickle vents fitted, the replacement windows must provide minimum EA as follows:

- Habitable rooms and kitchens: 8000mm² EA.
- Bathrooms: 4000mm² EA.

All newly installed trickle vents must be **controllable (either manual or automatic).**
If installation conditions prevent the installation of a trickle vent of the minimum specified EA value, then you must fit a trickle vent with the **maximum achievable** EA value.

Trickle Vents with Continuous Mechanical Extract Ventilation

New Build

The housebuilder will specify the EA requirements per room, taking into account the required whole dwelling ventilation rate.

- Trickle vents must be installed in all rooms with external walls.
- In buildings with multiple exposed facades, provision should be made for similar trickle vent EA on each façade to enable effective cross-ventilation.
- Where facades face sustained loud noise (e.g. main roads), the use of noise-attenuating trickle vents may be specified.
- The minimum total EA of trickle vents in each room should meet the regulations as follows:
  - Do NOT install trickle vents in wet rooms (i.e. kitchens, bathrooms or utility rooms).
  - Each habitable room must have trickle vents that provide at least 4000mm² EA.
  - The total number of trickle vents in the dwelling must be at least equal to the total number of bedrooms plus two.
- If a habitable room has no external walls, refer to the provisions on page 5.

Replacement Windows in existing dwellings

Replacement windows should meet the following regulations:

- Do NOT install trickle vents in wet rooms (i.e kitchens, bathrooms or utility rooms).
- Each habitable room must have trickle vents that provide at least 4000mm² EA

All newly installed trickle vents must be controllable (either manual or automatic).

Ventilation for Home Extensions and Additions

In all cases, the total opening area of the new windows in the extension should follow the guidance in Table 1.4:

Table 1.4 Purge ventilation openings

Opening type	Minimum total area of openings
Hinged or pivot windows with an opening angle of 15 to 30 degrees	1/10 of the floor area of the room
Hinged or pivot windows with an opening angle of greater than or equal to 30 degrees	1/20 of the floor area of the room
Opening sash windows	
External doors	

New Conservatory

- Conservatories that are smaller than 30m² total floor area are exempt from Part F requirements.
- Otherwise, follow the guidance on page 5.

New Habitable Room (not including a Conservatory)

- If the new habitable room is connected to an existing habitable room which now has no windows opening to the outside, follow the guidance on page 5.
- If the new habitable room is connected to an existing habitable room which still has windows opening to the outside, the following conditions apply:
  - If the existing habitable room has a total trickle vent EA of less than 5000mm², follow the guidance on page 5.
  - If the existing habitable room has a total trickle vent EA of more than 5000mm², both of the following should be provided:
    - Trickle vents of at least 12000mm² EA between the new room and the outside.
    - Trickle vents of at least 12000mm² EA between the two rooms.

New Wet Room

- If the method of ventilation in the new wet room is via intermittent extract, then the following provisions apply:
  - Fit trickle vents that provide at least 5000mm² EA.

Ventilation of a Habitable Room through another room

The provisions in this section only apply if you have been directed here from one of the previous sections.

This section relates to the provision of ventilation to an internal habitable room (usually a room without windows, or with limited ventilation) via another habitable room or conservatory (we'll refer to this as 'the ventilating room').

The ventilating room should have:

- Windows with a total opening area as shown in Table 1.4:

Table 1.4 Purge ventilation openings

Opening type	Minimum total area of openings
Hinged or pivot windows with an opening angle of 15 to 30 degrees	1/10 of the floor area of the room
Hinged or pivot windows with an opening angle of greater than or equal to 30 degrees	1/20 of the floor area of the room
Opening sash windows	

- Trickle vents that provide at least 10000mm² EA.

Between the two rooms there should also be a permanent opening with a minimum area of 1/20 of the combined floor area of the two rooms.

Summary for Fabricators and Installers:

- Ensure **correct sizing and marking** of trickle vents.
- Install vents at **proper height** and with **easy occupant control.**
- Apply **specific guidance for new builds, replacement windows and Extensions**.
- Avoid installing trickle vents with MVHR systems.
- Use **noise-attenuating ventilators** where necessary.
- Follow **minimum EA and ventilator count requirements** strictly for compliance.

Please note that we publish maintenance instructions for all of our trickle vents, and recommend that you provide them to the housebuilder or homeowner along with other relevant compliance documents.

Guidance for Acoustic Trickle Vents

Approved Document E specifies the minimum sound insulation standards that new building projects and renovations must meet to protect occupants from noise.

- The acoustic performance of trickle vents is expressed as a decibel rating (dB, but often given as Dn,e,w). Higher Dn,e,w values indicate better sound reduction performance. A trickle vent with a Dn,e,w rating of 44dB would provide better sound attenuation than one rated at 35dB.
- The World Health Organisation (WHO) defines noise levels above 65dB as noise pollution.
- BS 8233:2014 recommends:
    - Noise levels in habitable rooms should not exceed 35dB.
    - Restful sleep is only achievable when ambient noise levels remain below 30dB.
- Local planning laws may impose additional requirements for interior noise levels.
- Titon produce a full range of acoustic vents, backed up with regulatory expertise, tailored technical support and a reliable supply chain – please contact us if you require further advice.