

Ventilation and Condensation

General

Roofs incorporating trussed rafters should be designed to service class 1 & 2 as defined in BS 5268: Parts 2 & 3. Guidance on the prevention of condensation in roofs is given in BS 5250.

Trussed rafters using metal fasteners should not be used where there is likely to be aggressive chemical pollution, unless special precautions are taken to ensure durability of the roof timbers and fasteners. Consideration should also be given to the possibility of the corrosion of fasteners in contact with some type of insulation materials.

Reasonable access to the roof space should be provided to allow periodic inspection of the timber and fasteners.

Thermal Insulation

In the majority of trussed rafter roofs, the insulation required to comply with the statutory regulations for thermal transmittance (U value), is provided by placing the insulating material between the ceiling tie members on top of the ceiling board. Placing insulation at this level results in a COLD ROOF SPACE.

Alternatively, the insulation may be fixed at rafter level, resulting in a WARM ROOF SPACE. A warm roof space is normally constructed where habitable rooms are to be provided within the roof, as in Attic or Room in the Roof construction.

Ventilation

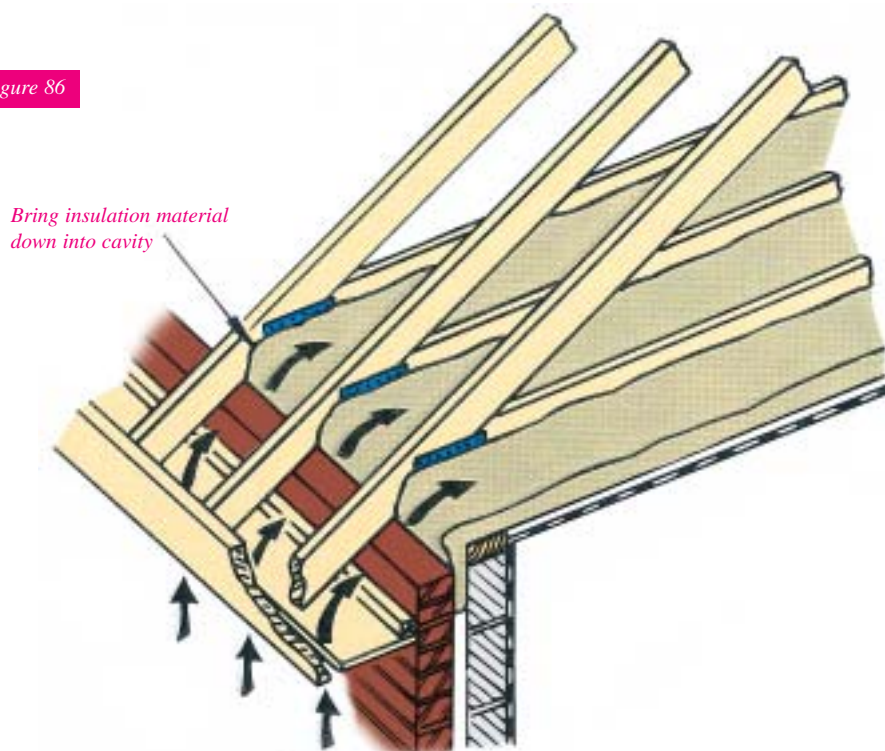
It is essential that cold roof spaces are effectively ventilated to the outside to prevent condensation, which may form in the roof void.

In addition, to minimise ingress of water vapour into the roof space from rooms below, all joists and service entry holes in the ceiling construction should be sealed effectively.

The location and size of ventilation openings should be determined by the Building Designer, taking particular account of possible blockage by insulating materials, sound transmission, spread of fire and entry of birds, driving rain or snow. Openings should be located near ceiling level in the eaves or external walls enclosing the roof space, or both, and should be equally distributed between at least two opposite sides of the roof. Additional ventilators may also be placed in the ridge.

The size and number of openings may be calculated, taking into account all the relevant factors, but disregarding any fortuitous ventilation through the roof covering, or they may be specified in accordance with the recommended minimum openings given on the following page. These are expressed as the minimum width of a continuous gap but, alternatively, a series of discrete openings of an equivalent total area may be specified, provided that the least dimension of any opening, gap or mesh is not less than 4mm.

Figure 86



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The ventilation of mono-pitched roofs at ceiling level only may allow air to stagnate at the apex of the roof. To prevent this, high level or ridge ventilation, equivalent in total area to that given in the table, should be provided in addition to the ventilation at ceiling level.

Similarly, air stagnation may occur in duo-pitched roofs of more than 20 degree pitch, or 10.00m span and consideration should be given to the provision of additional high level or ridge ventilation, equivalent to a continuous gap 5mm wide.

When insulation material is close to the roof covering, as at the eaves, or where it is placed at rafter level to form a warm roof space, (as in attic and raised tie construction),

Minimum ventilation openings

Pitch of roof (degrees)	0 to 15	Above 15
Low level ventilation at ceiling level. Minimum width of continuous gap on at least two opposite sides of roof.	25	10
High level ventilation for mono-pitched roofs at or near the ridge. Minimum width of continuous gap.	5	5

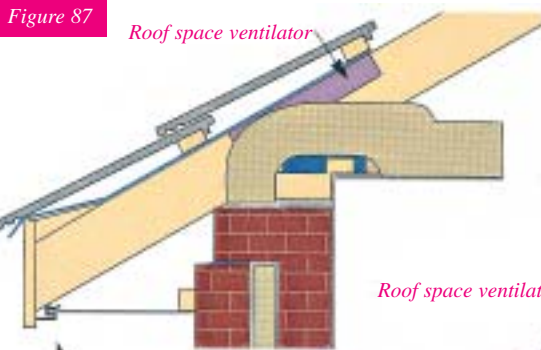


Figure 87

Roof space ventilator

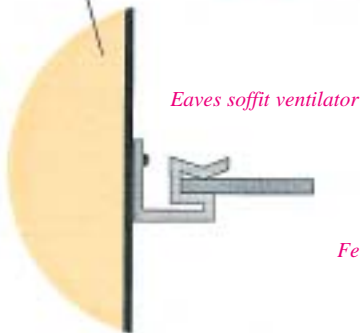


Figure 88

Eaves soffit ventilator

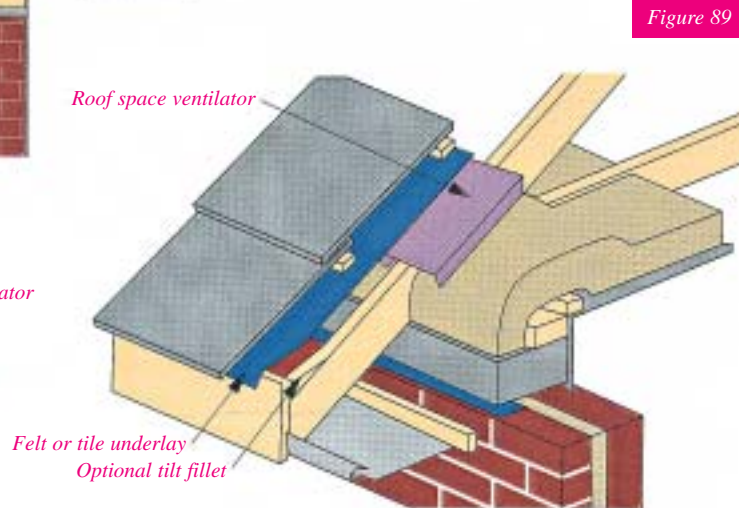


Figure 89

Roof space ventilator

Felt or tile underlay
Optional tilt fillet

it is essential to provide an air gap or not less than 50mm between the top of the insulation and the underside of the roof covering or sarking. This gap, which should allow uninterrupted air circulation immediately above the insulation, should be ventilated to the outside at the eaves and, when insulation is placed at the rafter level, also at the ridge. The minimum opening at the eaves to provide

adequate ventilation of the air gap above the insulation in a warm roof space should not be less than that shown in the table for low level ventilation and the ridge ventilation should be not less than that provided by a continuous gap 5mm wide. In normal circumstances, further ventilation of warm roof spaces is not required.