

ADCAS Statement on Penetration of Fire Compartmentation by Ventilation Systems

Compartmentation

Building regulations and guidance such as Approved Document B describe the control of fire by compartmentation. What does this mean? Compartmentation as a principle relies on keeping the fire in the space of origin and preventing it from spreading to other areas. This is generally achieved using passive fire protection principles such as fire dampers, fire stopping and penetration seals.

Whenever you pass a duct of any type through a compartment boundary (fire resisting wall or floor), you break the compartmentation, and it must be re-instated. This requires very careful consideration of the information provided by duct or fire damper provider/manufacture. The damper or duct and the associated fire stopping must be installed to match the same level of protection as the compartment boundary provided.

Active systems such as sprinklers work within the space of origin to help reduce temperatures and therefore support the passive fire protection measures. However, the performance of the fire resisting ductwork or fire damper needs to match the performance of the barrier through which it penetrates.

Standard ventilation duct

General

Compartmentation re-instatement is required where ventilation ducts of all types of material pass through compartment boundaries. This will generally be by using tested CE marked fire dampers, although for certain types of materials correctly tested pipe collars might be appropriate. ADCAS members generally deal with steel ducts, so fire dampers will generally be applicable.

Various trades may be involved in this installation, e.g. the duct installer, the compartment barrier installer, the fire stopping contractor. All parties involved are responsible for the correct installation of the fire damper and re-instatement of compartmentation and must liaise accordingly and use the instructions given.

Fire damper selection

Close consideration must be made to the selection of the fire damper product, depending upon the application with consideration of performance and the type of compartment boundary.

- 1) Boundary type – concrete wall, masonry wall, dry wall, concrete floor
- 2) Fire integrity time (E)
- 3) Reduced leakage (S) in particular when the zone is a protected escape corridor.
- 4) In the wall - the damper must be aligned with the wall, normally central to it. It must be installed as the manufacturers detail, suitable for the boundary type. Any variation to this will mean it may not provide the period of protection required.
- 5) If proposed to be mounted on to the surface of the boundary – only use dampers that have proven test evidence for this application.
- 6) What type of firestopping is to be used – as specified by the fire damper manufacturer, note each fire damper will have its unique method to be used.

Check the installation

Request an as installed drawing for the fire damper(s) and a drop test schedule which should identify the types used and that the function has been verified and witnessed. There may be more than one method used on a given site due to different wall types etc. Check the details of the positioning, the materials used and any fastenings. Consider allowance in the contract for at least one product to be removed to check the as installed drawing – select at random.

Fire resisting duct and smoke control duct

General

As above, compartmentation re-instatement is required where fire resisting ducts and smoke control ducts of all types of material pass through compartment boundaries.

Also, whilst some suppliers both manufacture and install the ducting, various trades may be involved in this installation, e.g. the duct installer, the compartment barrier installer, the insulation contractor, the fire stopping contractor. All parties involved are responsible for the correct installation of the ducting and re-instatement of compartmentation and must liaise accordingly and use the instructions given.

Suppliers of fire resisting ductwork and smoke control ductwork or additional material suppliers (e.g. fire resisting insulation) provide essential guidance for their products to ensure that they will work, remain compliant, be safe and be secure during their expected operational lifetimes.

A critical element of a fire resisting duct or a smoke control duct is the strengthening detail at the penetration – usually on the centre line of the compartment boundary (e.g. wall or floor).

Reinstatement of the compartmentation is not simply closing the gap around some steel ductwork and then adding some other materials on the outside of the base material. Even additional material suppliers will have an installation detail for the junction and support of the ductwork at the compartment boundary that must be followed.

We recommend that the full installation is certified by the system supplier that is 3rd party accredited for the installation, thereby the liability is then not split and potentially diluted between different companies. Note if you are the main contractor or client and accept different systems to be combined to provide the solution, you take on the liability of the overall performance.

Fire resisting duct and smoke control duct selection

Close consideration must be made to the selection of the ducting product, depending upon the application with consideration of performance and the type of compartment boundary.

- 1) Application: Fire resisting or smoke control/evacuation
- 2) Boundary type – concrete wall, masonry wall, dry wall, concrete floor
- 3) Fire integrity time (E)
- 4) Fire insulation time (I)
- 5) Reduced leakage (S) - in particular when the zone is a protected escape corridor.
- 6) What type of stiffening is to be supplied at the compartment boundary?
- 7) What type of firestopping is to be used – as specified by the system supplier. Note each fire resisting ductwork system will have its unique method to be used.

Check the installation

Request an as installed drawing for the boundary strengthening and firestopping for the ductwork. There may be more than one method used in different areas. Check the details of the positioning, the materials used and any fastenings. Consider allowance in the contract for at least one product to be removed to check the as installed drawing – select at random.

Other information

Declaration of Performance (DoP)

For fire and smoke control products, the Declaration of Performance (DoP) provides the full information on the fire resistance performance, known as the classification. This performance will be achieved if the product is installed, operated, and maintained correctly.

Certificate of Conformity (CoC)

If it is available, the clients should request that the installer provide a certificate of conformity for the installed fire resisting ductwork system. This should be part of an independent 3rd party installers scheme. This is not a legal requirement but is the best practice guide supported by [ADCAS](#).

Building Regulation 38

Building Regulation 38 requires full information on all fire safety installations to be handed over to the client, so that they can put the correct maintenance regimes in place. This would include the re-fixing of any fire stopping or penetration seals should they get damaged for any reason.

If you do not follow the instructions, you might be liable for a product not working correctly and therefore putting lives at risk