National Protection Learning Information Note

Subject:	NFCC Reference:
Acoustically operated door release mechanisms (AODRM) for holding open fire doors	**PPRU-L001/2022**

Report Overview:

In response to a number of recent enquires, this information note is designed to raise awareness of the suitability of acoustically operated door release mechanisms (AODRM) when used to hold open (and subsequently release) fire doors in premises. Of significance, is identifying situations where they do not provide the appropriate level of robustness in operation, which could lead to a fire door remaining open under fire conditions placing occupants and firefighters at risk. It is not intended to comment on the provision of any particular manufacturer of AODRM.

It is therefore important that Fire Safety Regulators (FSRs) are aware of the limitations of these mechanisms when carrying out their function as a regulator, and to provide advice regarding the potential consequences when their inappropriate use has been identified.

Background:

Fire doors are an integral fire safety measure that have proved their worth and performance in fire for many years and across multiple fire incident scenarios. It is integral to their function that they need to be closed fully in their frame during a fire, to contain the majority of fire and products of combustion, protect the means of escape for occupants, and provide a relatively smoke free route to the room of fire origin for firefighters carrying out operational duties.

It is acknowledged however, that there are circumstances where the constant negotiation of a closed fire door can hinder the day to day running of a premises including occupant flow, especially for those who have some form of mobility impairment, to the point where it adversely affects the use of the premises. In these circumstances, the holding open of fire doors with electrically powered door release mechanisms is now an accepted practice, whereby the activation of the premises automatic fire detection and alarm system (AFDS) communicates with the door holding device, causing the door to close.

There are multiple forms of electrically powered door release mechanisms, however, these are generally categorised into one of two types:

1. Those that are hard wired (supplied with a dedicated wired electrical supply and connected to the premises AFDS via cable). The AFDS panel commuicates with the door release mechanism via the cable.
2. Those that are battery operated and rely on communication with the AFDS acoustically, i.e there is no cable betweeen the AFDS and the release mechanism.

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AODRM fall under type 2 detailed above, it is essential that these devices are installed as per manufacturers instructions, and by a competent person. Devices can be either an overhead type or mounted to the bottom of a fire door.

Advances in technology have played a significant part in the reduction of the unsafe practice of holding open fire doors, such as wedges placed at the base of the door, a practice which all FSRs would be expected to robustly challenge as part of carrying out their function.

Wider learning:

The most common wirelessly activated release mechanism is an AODRM. These work by reacting to the sound of the AFDS, enabling the door to close. They are relatively simple devices and have the obvious advantage of being much easier, cheaper, and quicker to install compared to the wired versions. These should not be confused with radio activated systems, which are wireless release mechanisms that communicate with a transponder connected to the premises AFDS and are outside the scope of this note due to their mode of communication and operation.

The use of hold open devices, including AODRM, is covered in *BS 7273-4:2015+A1:2021, the Code of Practice for the Operation of Fire Protection Measures – Actuation of Release Mechanisms for Doors (BS 7273-4)*. This British Standard states the commissioning and maintenance requirements and clearly details the circumstances when AODRM can and cannot be used.

Of importance, is the suitability of the hold open device relating to the specific circumstance in which it is being used i.e., the position, purpose, and function of the fire door it is holding open. Before considering installing any hold open and release device, reference should be made to BS 7273 alongside the premises' fire risk assessment (FRA), to ensure any device is sufficiently robust in operation.

Annex B (normative) of BS 7273-4 provides the category (A, B or C) for the actuation of release mechanisms in specific circumstances:

- Category A – Critical actuation
- Category B – Standard actuation
- Category C – Indirect actuation

Category A is the most robust; BS 7273-4, Clause 4.2.1 'Critical Actuation (Category A)' states that any door that is deemed to be Category A needs to be directly connected to the Control and Indicating Equipment (CIE) of the AFDS. This enables any faults/ issues (faulty AFD system, loss of power etc.) that affects any system upon which the door release depends upon for its correct operation, to be communicated to the hold open mechanism causing the door to close.

BS 7273-4, Clause 4.2.1, Note 2; states that acoustically actuated systems i.e. AODRMs are *not suitable* for category A circumstances.

In addition, the location and position of automatic detectors to initiate the release of the hold open device, regardless of category, needs to be reviewed by a competent person to ensure there is appropriate coverage. Further guidance is provided in BS 7273-4. It is essential that FSRs have access to British Standard 7273-4 and make themselves familiar with its content, including table B.1 (Selection *of Category of Actuation for Release of Self-closing Fire Doors"*) in particular to assure themselves of the appropriate applications for the provision of AODRMs.

Where AODRM are appropriate for use and FSRs identify them during their regulatory activity or receive enquiries regarding their installation, points to consider are (not exhaustive):

- They are always installed in accordance with manufacturer's instructions and by someone who is competent to do so.
- An appropriate AFDS is installed to ensure they operate as intended.
- Doors fitted with AODRM should be provided with appropriate signage.
- In sleeping risk premises, each door fitted with a release mechanism should be closed at a predetermined time each night and remain closed throughout the sleeping hours. The method of achieving this may be either local or central, automatic, or manual, depending on the type of release mechanism installed, but compliance with this will be a matter for the management regime of the premises. Care should be given if utilising a central control as the sudden release of a self-closing fire door without any prior warning, may cause injury to anyone passing through at the time.
- Doors fitted with release mechanisms in other types of premises should be managed to ensure the continuous action of the closer on the door being held in the open position has not damaged the door and/or the closer. Such doors should be subjected to an increased regularity of maintenance inspection to ensure that the door has not been damaged by being continually held in the open position.
- The management of the premises/ workplace should ensure that there are procedures in place (either manual or automatic) to de-activate any or all the devices in the following circumstances:
  - When there is a fault with the AFDS,
  - When the AFDS is isolated for any reason e.g. maintenance,
  - Any other circumstances when the sound of the fire alarm will not trigger the device.
- Weekly testing should be carried out by activating the AFDS to cause actuation of all acoustic door release mechanisms. The test should be of sufficient duration to ensure proper actuation. It should be confirmed that each release mechanism operates correctly and that the door closes fully.

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Related Guidance:

- *BS 7273-4:2015+A1:2021, the Code of Practice for the Operation of Fire Protection Measures – Actuation of Release Mechanisms for Doors (BS 7273-4)*.
- DCLG Residential Care Premises Guide, Part 2, Pg 85, 'Protection of Corridors', "*To avoid the risk of doors being wedged open you may wish to install controlled door closing devices with an electromagnetic 'hold open' function which allow the door to close when the fire alarm actuates. Where fitted such doors should be closed at night*".
- Fire Door Inspections in Healthcare Buildings. First Edition January 2021

NFCC Comments:

The use of AODRM, must always be determined and clearly recorded in the premises fire risk assessment with the information in BS 7273-4 used as a benchmark. Any departure from the standard should be adequately accounted for within the fire risk assessment, with appropriate and sufficient evidence provided to justify any such departure.

During audit activities it is essential that FSRs operate a suitable sample of fire doors that are fitted with any form of hold-open device, to ensure that they close fully into their frames and that the RP is able to demonstrate that they understand how to reset them once activated.

In addition to the locations identified in table B.1 of BS 7273-4, it is the recommendation of NFCC that Critical (Category A) devices are used on escape routes in premises where the evacuation strategy is based on progressive horizontal evacuation (PHE). In these premises, it is even more important that the means of escape is protected at the earliest opportunity. This is to support the requirement for occupants to remain in the risk area for longer periods than those who can self-evacuate.

NFCC PPRU have intentionally not reproduced tables from Annex B of BS 7273-4 or examples of Category A instances within this note. This is to encourage and promote FSRs referring to, reading, and becoming familiar with the content and layout of the appropriate BS, and to ensure the contents i.e. tables and clauses, are considered as one and not in isolation.

An NFCC animation to aid understanding of PHE can be accessed here. If you are unable to access this link try pasting this url into your IP address bar.
https://player.vimeo.com/video/646838504?h=c3a273ad7b&app_id=122963

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