

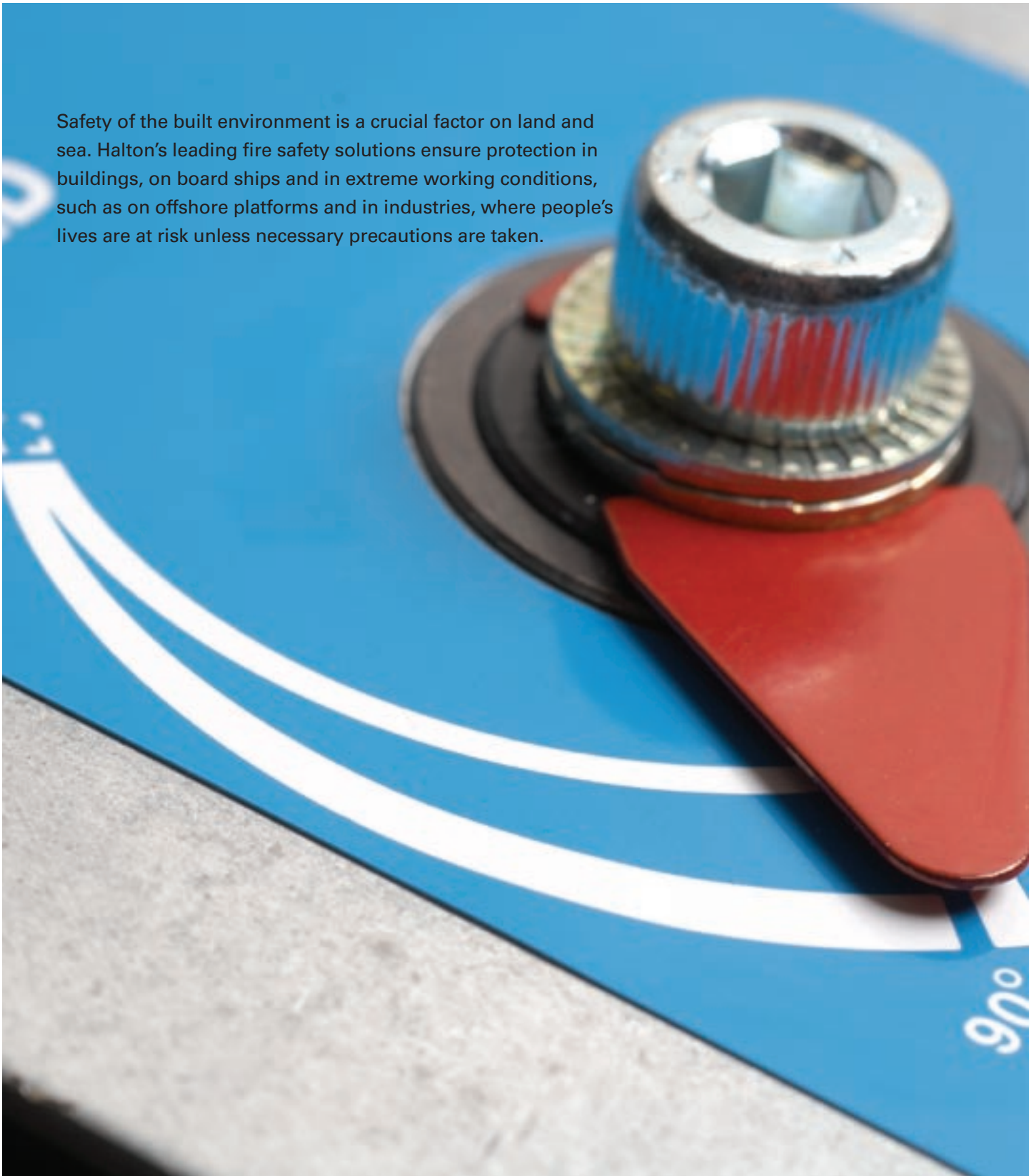
Halton – Ventilation fire safety



Care for Indoor Air

Halton
CARE FOR INDOOR AIR

Safety of the built environment is a crucial factor on land and sea. Halton's leading fire safety solutions ensure protection in buildings, on board ships and in extreme working conditions, such as on offshore platforms and in industries, where people's lives are at risk unless necessary precautions are taken.



Ensuring ventilation fire safety

Fire and smoke pose a significant threat in the built environment. Ventilation fire safety solutions are primarily designed to protect people and to ensure their safety in case of fire. However, adequate precautions will also protect the building structure. Halton fire safety solutions are widely used, from the most demanding industrial applications to commercial and institutional buildings around the world.

Solutions that comply with British and European standards.

In the European Union member countries, fire dampers must be tested according to the EN 1366-2 standard and classified according to the EN 13501-3. Fire dampers are classified in terms of their integrity (E), smoke leakage (S), insulation (I) and fire resistance time in minutes. All Halton fire dampers are tested and classified according to these standards. Also Halton smoke and smoke exhaust dampers are sure choice, because they are all based on tested fire dampers.

Reliable fire safety made easy. Halton fire safety solutions ensure fire and smoke safety of the highest class while they simplify the design and purchasing processes. The entire product category is approved for use in all installation cases up to the stated fire class. Design and installation is easy, because Halton products suit all installation cases without any additional accessories or detailed installation specifications for every damper. Consequently, the risk of installation mistakes decreases while the quality and overall efficiency are much improved.

Simple, predictable systems are safe.

Requirements for ventilation fire safety products and installations are set in national building codes. They regulate the fire resistance requirements based on e.g. building usage, height, and fire loads. The fundamental requirement for the construction is to maintain their load-bearing capacity and to prevent fire from spreading from the fire compartment.

During normal operation, it is accepted that there are openings in the construction for ventilation installations. During fire, however, the construction must prevent spread of fire. Technical systems should also be equipped to detect fire, to prevent spread of smoke and to enable safe evacuation. To accomplish the targets, there are three simple system strategies:

- Compartmentation of ventilation system with automatic fire damper system,
- Limiting the spread of smoke within a fire compartment with automatic smoke damper system and smoke detectors,
- Exhausting the smoke from compartment in fire with separate automatic smoke exhaust ventilation system.





Fire damper range:

Insulated EIS 60-120 fire dampers

- Halton FDI for circular ducts (EIS 60)
- Halton FDR for rectangular ducts (EIS 120)
- Halton FDC for circular ducts (EIS 120)

Non-insulated ES 90/60 fire and smoke dampers

- Halton FDE for circular ducts (ES 90)
- Halton FDS for rectangular ducts (ES 60)

Fire damper management system range MSH:

- Unit for 8 or 16 fire dampers
- Unit with smoke detector operation

Fire valves:

- Halton FRH, compliant with BS 476:1987 and NT FIRE 10

Fire safety solutions – compartmentation

Fire dampers are located in each fire compartment wall or ceiling to prevent the spread of heat and fire from one compartment to another through the ventilation system. As a basic rule, the ventilation system must not impair the fire safety provided by the building structure. Accordingly, the fire dampers are usually selected to meet the fire resistance period of the fire compartment-separating element. The fire dampers are classified for tightness (E), insulation (I), smoke tightness (S) and fire resistance in minutes.

Fire dampers for all applications. The Halton fire damper range is type approved and compliant with the latest European EN 1366-2 and EN 13501-3 standards. The range consists of insulated EIS and non-insulated ES fire dampers up to the fire resistance period of 120 minutes. When using non-insulated products, additional insulation may be applied to the ductwork to reach the insulation requirement according to the national building code in certain countries.

The Halton range makes the design and installation of fire dampers simple. All products are approved for use both in concrete, masonry and lightweight walls and floors up to the stated fire class. Products are also installation-ready for all usage situations as they are delivered.

In brief, as a result, there's no need to specify installation details for each damper. Ordering and storage are simplified and product pricing is transparent without installation accessories that create hidden costs. The Halton fire damper range offers a sound, easy and efficient choice for the whole design and contracting chain.

Fire damper operation. The fire dampers are either manual or motorised. The manual fire dampers are closed individually by a thermal fuse, whereas the motorized dampers can also be connected to smoke detectors and management systems. A fire damper management system provides improved safety by minimizing the risk of fire and smoke spreading through the ventilation system and protects the ventilation system itself from major damages. It also enables automated damper testing to ensure the system reliability during the building lifetime.

Fire damper management system operation. The fire is recognized by smoke detectors that can be located in rooms and the ductwork. The management system activated by the smoke alarm closes all fire dampers in the common service area, shuts off fans in the air handling unit and sends an alarm indication. The system can also be activated by an external alarm or a thermal fuse of any fire damper. Furthermore, the management system enables a time-controlled, external or manual testing of the fire damper operation. The system sends a service indication to the building management system upon failure. Manual fire dampers require a manual testing schedule.



Smoke damper range:

Insulated EIS 60 smoke damper
 • Halton SDI for circular ducts (EIS 60)

Non-insulated ES 90 smoke damper
 • Halton SDE for circular ducts

Non-insulated ES 60 and ES 90 smoke damper
 • Halton SDS for rectangular ducts

Smoke damper management system range MSH:

- Unit for 8 or 16 fire dampers
- Unit with smoke detector operation

Limiting the spread of smoke

It is smoke, not fire that causes the most casualties. Toxic smoke can cause unconsciousness in only a few minutes. And even if injuries to people are avoided, smoke is likely to cause major financial losses by damaging property. Afterwards, the rebuilding period may also lead to loss of business. Therefore smoke must be efficiently prevented from spreading – and therefore the new standards and revised building codes place great emphasis on smoke management.

To ensure occupants a safe escape route, special attention is paid to hotels, hospitals, care homes and large assembly and business premises where the occupants may have limited mobility or the building is not familiar to them.

Smoke dampers can be used to prevent the spread of smoke of smoke, heat and flames between compartments in the early stages of fire.

Hotels, hospitals and care homes. Hotel guests have a limited knowledge about the building layout and therefore require more safety in emergency situations. Furthermore, sleeping people increase the requirements for smoke safety. Hospital patients, elderly people and small children need more time to be evacuated from the premises. Consequently, it is recommended that all accommodation rooms are considered as separate smoke compartments, isolated with fire and smoke dampers to gain vital time for evacuation.

Smoke damper range. The separating structures between accommodation rooms do not typically have similar structural requirements as load bearing structures. Thus, in most cases it is sufficient to use non-insulated smoke dampers.

The smoke dampers are equipped with electrical spring return actuators configured for safety position - closed. They should be used in combination with an automatic smoke alarm system to ensure fast reactions in an emergency situation.

The Halton smoke damper range is based on a type approved fire damper construction which complies with the latest European EN 1366-2 and EN 13501-3 standards. The product category offers a complete range of smoke dampers both for circular and rectangular ducts.

Smoke damper management system operation.

Smoke is recognized by smoke detector in an accommodation room. The smoke management system closes smoke dampers in all accommodation rooms in the same fire compartment thus preventing smoke from spreading between rooms and sends an alarm indication.

Furthermore, the management system enables time-controlled, external or manual testing of the smoke damper operation. The system sends a service indication to the building management system upon failure.

Normal operation



▶ Smoke exhaust fan off
⊕ Damper closed

Compartment in fire



▶ Smoke exhaust fan on
⊕ Damper open



EDE



EDS

Smoke exhaust damper range:

- Halton EDE for circular ducts
- Halton EDS for rectangular ducts

Smoke Exhaust Solutions

A burning building creates a lot of heat, smoke and toxic fire gases. They all reduce visibility, make exhaust and fire fighting more difficult, and increase the risk of combustion and fire stress to the building structures. In order to secure personal safety, effective fire fighting and minimal damages to structures and property, the developing smoke must be extracted during the early stages of the fire. The key tasks for the smoke exhaust system are ensuring that people find their evacuation routes and facilitating the evacuation itself by keeping the routes free from smoke. It will also support fire fighting and rescue operations by forming a smokeless zone of make-up air with good visibility, lower temperature and toxin-free air.

Hot fire gases can be removed from the fire space either by gravitation through openings in the roof or mechanically with the aid of smoke and heat exhaust fans. The efficiency of smoke exhaust is substantially dependent on the supply of make-up air into the fire space. Automatic smoke exhaust system should be used in spaces that are critical for personal safety. Typically, these are cases where safe evacuation may be endangered or where the size or location of the space, large amount of people or other factors require special attention to effective fire fighting and rescue operations. In spaces where automatic smoke exhaust is not necessary, it can be organized manually. Manual smoke exhaust systems are operated by the fire brigade.

Smoke exhaust dampers open a passage for smoke and make-up air during fire. To avoid waste of energy during normal use of the building, smoke exhaust dampers should be airtight. If they are mounted in an external wall, insulation of the damper is needed.

Smoke exhaust damper operation. In case of fire, the fire dampers and ventilation fans are closed. Smoke dampers and replacement air dampers in the compartment are in fire opened and the smoke exhaust fan is activated. Smoke dampers are either automatic or manual. In the automatic system, the smoke exhaust dampers are opened by a management system after a smoke alarm. The smoke exhaust system must be tested annually – with an automatic system, also the damper testing can be automated, which improves the system reliability.

Smoke exhaust damper range. The Halton smoke exhaust dampers are equipped with electrical spring return actuators configured for safety position - open as standard. The product range is especially designed for the automatic and mechanical smoke management systems.

Reliable fire safety made easy

Choose Halton as your fire safety partner. To meet the highest standards, all Halton products are tested to the finest detail and comply with the latest British BS and European EN standards. To ensure top quality and full environmental responsibility, Halton complies with ISO 9001 and 14001 quality systems. The product and production quality is annually inspected by VTT.

Solutions for all fire and smoke safety applications. Halton offers a full range of

fire dampers, smoke dampers and smoke exhaust dampers together with a fire damper management system and relevant smoke detection equipment. Seamless interoperability is ensured by testing the components together. Consequently, the Halton range offers a sound fire safety solution for the entire life cycle up to the most demanding requirements.

The Halton solutions are an excellent choice for the design and construction teams. Designed

	Features	EIS fire dampers			ES fire dampers	
						
		FDI	FDC	FDR	FDE	FDS
	Conformity	EN1366-2, EN13501-3	EN1366-2, EN13501-3	EN1366-2, EN13501-3	EN1366-2, EN13501-3	EN1366-2, EN13501-3
Connection	Connection type	Circular	Circular	Rectangular / Circular	Circular	Rectangular / Circular
	Connection size	D 100...630	D 160...500	H 200...1000 W 200...1000 D 630...1000	D 100...500	H 200...1500 W 200...800 D 200...800
Classification	Flame and hot gas tight (E)	60	30...120	30...120	30...120	30...60 (90w)
	Insulated (transfer of heat) (I)	60	30...120	30...120	15	
	Gas and smoke tight (S)	60	30...120	30...120	30...90	60
Installation	Wall installation (concrete, masonry) vertical	•	•	•	•	•
	Ceiling installation (concrete) horizontal	•	•	•	•	•
	Wall installation (light plasterboard) vertical	•	•	•	•	•
Release	Spring release, manual adjustment	•	•	•	•	
	Spring release, electrical actuator 24 Vac /230 Vdc, with fuse	•	•	•	•	•
	Spring release, electrical actuator 24 Vac /230 Vdc, no fuse		•	•		
	Spring release, pneumatic actuator					•
	Pneumatic release, manual adjustment	•			•	
	Electric release 24V Vdc/230V Vac, manual adjustment	•			•	
	Electromagnetic release 24 V Vdc, manual adjustment	•			•	
	Casing Leakage (EN 1751)	C	C	C	C	C







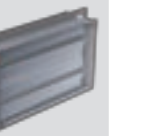
* Based on on fire damper tested to EN 1366-2

to match all installation cases as delivered, they simplify the design, purchasing and installation processes considerably. Similarly, Halton's pricing structure is simple and transparent, as additional installation accessories are not required.

Motorized and manual systems. Fire and smoke dampers can be equipped with an actuator for testing the system. The status of the dampers is

also available to the building management system to ensure proper operation of the ventilation system.

With increasing emphasis on smoke safety, the share of motorized fire and smoke dampers is increasing. Earliest possible response to fire requires the use of smoke detectors and motorized fire dampers.

EIS smoke dampers		ES smoke dampers		Fire valves	Smoke exhaust dampers	
						
SDI	SDE*)	SDS*)	FRH		EDE	EDS
EN1366-2, EN13501-3	EN 1366-2, EN 13501-3	EN 1366-2, EN 13501-3	BS 476:1087 NT FIRE 10			
Circular	Circular	Circular	Rectangular / Circular	Circular		
D 100...630	D 100...500	H 200...1500 W 200...800 D 200...800	D 100...200		D 100...500	H 200...1500 W 200...800 D 200...800
60	30...120	30...60 (90w)	120		3	2
60	15				C	C
60	30...90	30...60			•	•
•	•	•	•		•	•
•	•	•	•		•	•
•	•	•	•		•	•
			•			
•	•	•				
C	C	C				

		Fire Damper Management System MSH	
Models		8S	16S
Connections	Firedampers, max.	8	16
	Smoke sensors, max.	30	30
	BMS, Outputs (3)	Alarm/Service/Fan	Alarm/Service/Fan
	BMS, Input	Test	Test
Functions	Damper Control, Fire	Smoke/Fuse/External	Smoke/Fuse/External
	Damper Control, Test	Time/Manual/External	Time/Manual/External

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