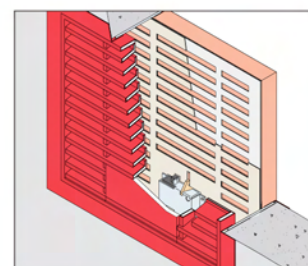
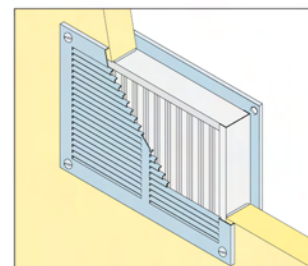
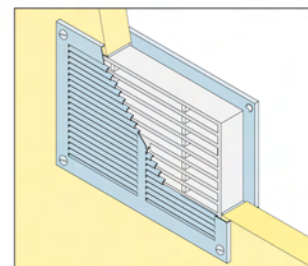
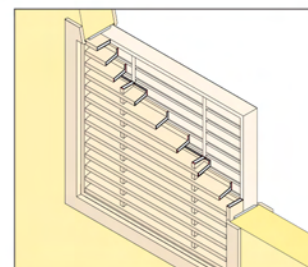




Fire and Smoke Resistant Damper/Air Transfer Grilles

- A comprehensive range of damper/air transfer grilles providing protection against fire and smoke at all temperatures
- Test evidence second to none
- Can provide fire performance ratings from 30 minutes to in excess of 180 minutes
- Fully tested for smoke performance
- Products for all applications - doors, walls, ducts, floors & ceilings
- Low maintenance
- Co-ordinated with other Lorient products and ironmongery
- Expert technical advice provided free of charge based on hundreds of fire and smoke tests and unrivalled experience





Lorient Polyproducts

Fire and smoke protection measures are provided as a life saving precaution. This places a great responsibility on designers and manufacturers - they must have complete confidence in the measures they recommend.

Lorient Polyproducts is an acknowledged leader in the design and manufacture of products which provide fire and smoke protection. The company has many years of accumulated knowledge and experience which are shared freely with its customers - so they too have confidence in the products and information supplied.

Within Lorient there is a dedicated technical centre. This facility is used to develop all Lorient products and is also made available to customers for their own product development.

Lorient also has detailed knowledge of the regulatory requirements concerning fire safety. Complying fully with these requirements is a major step towards ensuring building safety and reducing the risk of litigation in the event of fire.

Lorient places great emphasis on the durability of its products and the ease with which they can be installed. All Lorient products have a service life which runs into decades - they are easy to fit requiring no special tools or skills.

To meet the demands of the interior designer Lorient has developed an extensive range of colours and finishes which can be used to complement many materials.

For the future, Lorient welcomes new challenges and will continue to generate success for its customers through sustained investment in carefully researched products.

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Fire and Smoke - Life Threatening Forces

When fire breaks out in a building the threat is twofold. Firstly, there is the fire itself and the hot smoke generated in the immediate vicinity. Secondly, there is cold smoke which, if unchecked, spreads rapidly, preceding the fire and hot smoke, threatening people and property some distance from the fire.

Every year in the UK alone some 600 people are killed and 16,000 injured in fires, many of the casualties being attributable to breathing the toxic products of combustion from a remote fire. Fire and smoke also cause extensive damage to building fabric and contents. It has been estimated that the total value of fire related losses is some £2,200 million per annum. The majority of these deaths, injuries and losses occur in buildings where fire and smoke protection measures have been inadequate.

■ Design Needs

The Building Regulations require large buildings to be sub-divided into smaller volumes or areas bounded by building elements which resist the spread of fire and smoke. Building a fire resistant wall or floor is a relatively simple task. However, systems of natural and mechanical ventilation require the movement of air through ducts and grilles formed in fire resistant constructions. Ensuring these airways remain open and yet provide protection against fire, hot smoke and cold smoke is a more complex problem.

■ The Solution

The Lorient solution is to fit intumescent air transfer grilles at the point of penetration. Under normal circumstances these allow air to pass freely between compartments. In the event of fire the slats and framing components swell to many times their original thickness, fusing together to form a non-combustible mass which provides fire resistance to match the surrounding construction and preventing the passage of hot smoke and gases.

The Lorient range of intumescent air transfer grilles combined with automatic smoke control systems provides protection against cold smoke. These electrically powered dampers/shutters are connected to a standard smoke or fire alarm/detection system which, when triggered, causes the dampers/shutters to close thereby preventing the passage of cold smoke. Under normal circumstances the dampers/shutters remain open allowing the free passage of air.



■ Regulatory Requirements

The requirements for fire and smoke containment with respect to 'means of escape' are contained in Approved Document B to the Building Regulations (England and Wales), Part E of the Scottish Technical Standards and Part E to the Building Regulations (Northern Ireland). It is vital that means of escape are not endangered by fire and smoke transmission through doors or ventilation ducts.

A study of these requirements shows that practically all internal fire resistant door assemblies are also required to prevent the passage of cold smoke. This needs to be considered separately from performance in relation to fire and hot smoke. Air transfer grilles must not compromise the smoke integrity of a doorset.

■ Relevant Standards

There are several British Standards which relate to the products and solutions featured in this brochure. They include:-

- BS 476: Pt. 22: 1987: Methods for determination of the fire resistance of non-loadbearing elements of construction
- BS 476: Section 31.1: 1983: Methods for measuring smoke penetration through doorset and shutter assemblies
- BS 5588: Fire precautions in the design and construction of buildings. (An Approved Document for compliance with Building Regulations)

Ventilation with Fire and Smoke Protection

Designers recognise the need for buildings to be well ventilated for the health and comfort of occupants. Frequent changes of air flush out airborne infections, and warm and cool air need to be circulated to maintain comfortable temperatures.

■ Ventilation through Doors, Walls, Floors & Ceilings

A study of regulatory requirements reveals that nearly all internal fire resistant doors (and, therefore, the walls in which they are located) need also to provide protection against cold smoke. Any steps taken to allow ventilation through such walls and doors must not allow the passage of cold smoke in the event of fire.

The common practice of undercutting the door in the belief that the threshold is a low risk area has now been totally discredited. **It creates a major smoke hazard.** Similarly, fitting a conventional grille to a wall or door will totally negate other measures taken to prevent the spread of fire, hot smoke and cold smoke.

Lorient intumescent air transfer grilles and automatic smoke control systems provide protection against fire, hot smoke and cold smoke.

■ Ventilation through Ducting

Experience has shown that ducting can, in the event of fire, provide a conduit for fire, hot smoke and cold smoke. Intumescent air transfer grilles, fitted into the duct, at the point where they penetrate fire resistant constructions, prevent the passage of fire and hot smoke. Lorient intumescent air transfer grilles fitted in conjunction with a Lorient automatic smoke control system will also provide protection against cold smoke. They have been shown by specific testing to be equivalent to a conventional damper, not only in fire and smoke barrier properties but also they exhibit high insulation values.

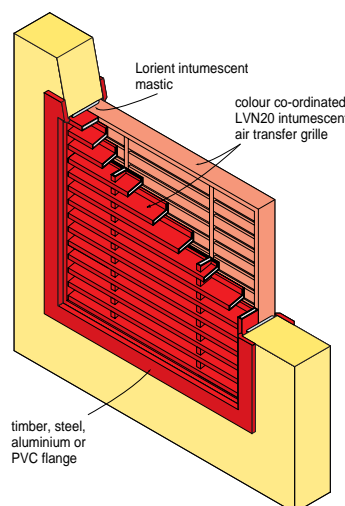
Product Range

Listed below are the features and attributes of each of the intumescent air transfer grilles in the Lorient range. Further information on the products, including sizes, shapes and finishes, can be found on pages 8 and 9.

Application details and additional performance information can be found on pages 11 to 16.

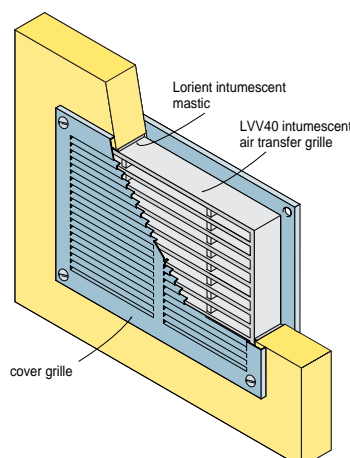
■ Non-vision Style LVN20 and LVN25:

- can be used to provide resistance to fire and hot smoke of up to 60 minutes
- angled slats to ensure complete visual privacy
- supplied in two halves to accommodate different thicknesses of doors
- complete seal achieved in approximately five minutes when tested in accordance with BS 476: Parts 20 & 22



■ Vision Style LVV40 and LVC40:

- can be used to provide resistance to fire and hot smoke of up to 60 minutes
- excellent airflow characteristics which result in silent efficient operation in normal use
- complete seal achieved in approximately five minutes when tested in accordance with BS 476: Parts 20 and 22



■ High Performance Vision Style

LVH44 and LVHC44:

Heavy duty intumescent air transfer grilles designed for use in the aggressive environments often found in industrial premises.

- can be used to provide fire resistance of up to 180 minutes
- complete seal achieved in approximately two minutes when tested in accordance with BS 476: Parts 20 and 22
- exhibit excellent airflow characteristics and give silent efficient operation with normal to high air velocities
- can be used in ducting where the steel and aluminium casing protects the intumescent material from the corrosive effect of hot gases travelling at high velocities
- can be used in high humidity
- have a steel frame which contributes to fire resistance by preventing the inward deformation of surrounding structures thus protecting the intumescent materials
- are resistant to vibration damage
- are suitable for horizontal and vertical applications
- are suitable for external applications



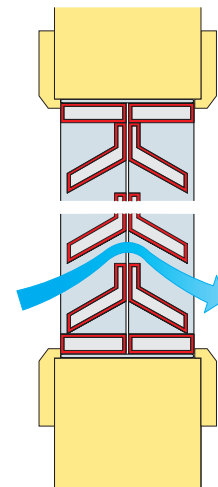
Operation

Vision, Non-vision and High Performance Styles

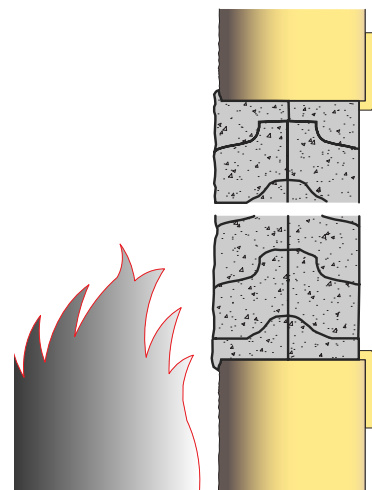
Lorient grilles are made up of either PVC or metal slats with an intumescent core.

A sudden increase in temperature resulting from the presence of flames or hot gases causes the slats and framing components to swell to many times their original thickness, fusing together to provide an effective barrier to the passage of fire and hot smoke.

The use of intumescent materials means there are no moving parts. The product is trouble free in operation and easy to maintain - periodic testing is unnecessary.



LVN20 air transfer grille in normal 'cold' condition showing free-air movement



LVN20 air transfer grille operating in hot condition showing intumescent material expanding to fill the space in doors

Lorient Smoke Control Systems

All ducts and airways in doors and walls can be protected against fire and hot smoke using Lorient intumescent air transfer grilles. However, these grilles will not prevent the passage of cold smoke which can be equally dangerous.

■ Damper/Shutter Assembly

To address this problem Lorient has developed a smoke damper/shutter assembly for use in conjunction with Lorient intumescent air transfer grilles.* The assembly comprises three slotted plates - two fixed plates sandwiching a central moving plate. The central plate is operated by a fail-safe motorised actuator. A movement of just 10mm changes the relative positions of the slots from "through flow" to "fully closed".



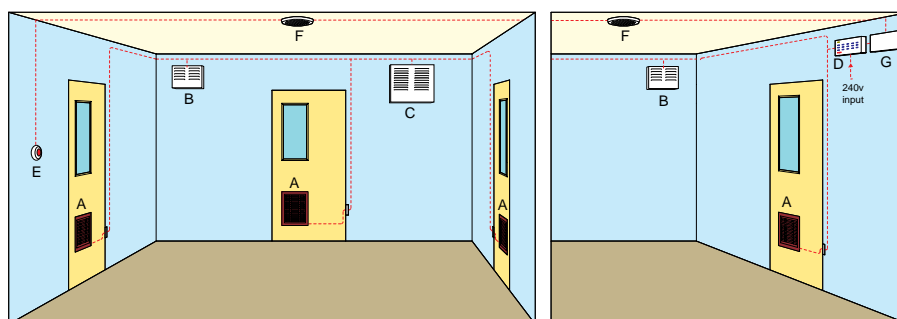
Above left: Talkback damper/shutter in "through flow" position
Above right: Talkback damper/shutter in "fully closed" position

*Note: 'S' suffix added to product code. Shutter assembly cannot be added to standard air transfer grilles retrospectively.

Control Systems for Smoke Damper/Shutter Assemblies

Lorient can supply two smoke control systems. The Talkback system can control up to sixteen dampers/shutters and features a status monitoring display. The Limited Channel system is a simplified version which can control up to three dampers which are in close proximity.

Typical Installation of the Lorient Talkback System



- A: Door mounted fire and smoke damper
- B: End of duct extract fire and smoke dampers
- C: Wall mounted fire and smoke damper
- D: Power and monitor unit
- E: Fire point
- F: Smoke sensors
- G: Fire alarm

■ Talkback Damper/Shutter Control System

Most large buildings require a significant number of FD30S and FD60S fire doors (30 or 60 minute fire doors which also provide protection against cold smoke) within any one fire zone. These doors may be a considerable distance apart, or even on different floors.

The Talkback system has been designed to control up to sixteen damper/shutter assemblies from one centralised, status monitoring unit. A unique 2-way communication system operates between the Damper Control and Monitor Unit (DCM) and the damper/shutter actuators. This facilitates a rapid assessment of the status of the installation and immediately identifies and locates any defective shutters.

Talkback is designed to give peace of mind to a building's occupants in that it:

- is fail-safe - the dampers/shutters will automatically close in the event of an alarm, power failure or damage to the wiring
- resets automatically - when the alarm is cancelled or power restored
- is self-testing - every 24 hours the dampers/shutters are automatically closed and opened to check they are working and to dislodge any dust and debris between the moving parts
- continuously monitors the status of each damper/shutter and displays this on the DCM
- is easy and quick to install - simple loop wiring is used and the damper/shutter units are supplied ready assembled and tested
- uses a safe, low voltage DC supply to open and close the dampers/shutters
- has been successfully tested in accordance with the requirements of the Electro Magnetic Compatibility and Low Voltage Directive and therefore bears the CE mark



■ Limited Channel Control System

There are many situations where only a small number of smoke dampers/shutters are required, for example, in a boiler room or laundry cupboard. For such cases Lorient has designed a simple control system.

The Limited Channel system uses a Damper Control Unit (DCU) which can activate up to three dampers/shutters simultaneously. Since the dampers/shutters will be limited in number, and close to the DCU, it is relatively simple to check manually whether the dampers/shutters are open or closed. Therefore there is no indication of the system's status on the DCU.

The Limited Channel System:

- is fail-safe - the dampers/shutters will automatically close in the event of an alarm, power failure or damage to the wiring
- resets automatically - when the alarm is cancelled or power restored
- is a simplified low-cost solution
- uses a safe, low voltage DC supply which is compatible with conventional smoke or fire detection systems
- has been successfully tested in accordance with the requirements of the Electro Magnetic Compatibility and Low Voltage Directive and therefore bears the CE mark

Operation

Under normal circumstances the damper/shutter is held in the open position by an actuator. The actuator is connected to a Lorient control unit which is, in turn, connected to a standard 24V fire or smoke alarm or detection system.

When the alarm is triggered, power to the actuator is switched off. The damper/shutter immediately closes providing a barrier to the passage of cold smoke or gas. The damper/shutter will also close if power is interrupted for any other reason.

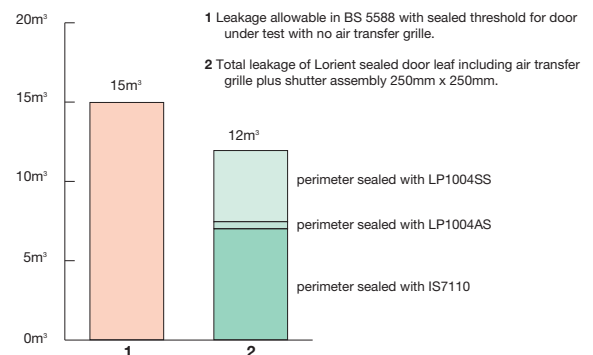
If the alarm is cancelled or power is restored, the dampers/shutters are automatically re-set to the open position. If the alarm is genuine and continues, the dampers/shutters remain closed.

Performance

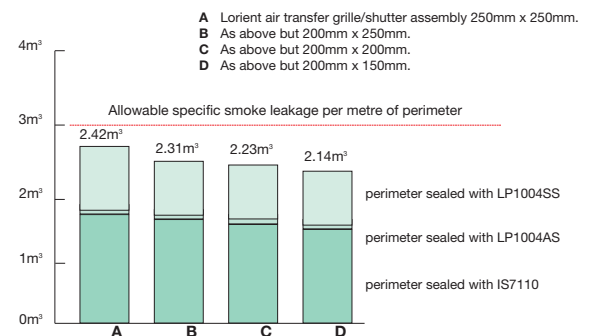
The dampers/shutters are supplied factory assembled and tested. When used in conjunction with Lorient intumescent air transfer grilles, tests have shown that they provide an effective barrier to fire and smoke at

all temperatures. It is therefore possible to create airways through fire resistant constructions and still meet the requirements of Building Regulations and the recommendations of BS 5588. The graphs show the estimated smoke leakage rates determined from tests carried out under the conditions of BS 476: Pt 31.1. The results have been interpolated to show the leakage rates using different sizes of damper/shutter assemblies.

Smoke leakage determined under the conditions of BS 476 Part 31.1 at a pressure differential of 25Pa. Door size 2023 x 822mm



Total smoke leakage of door leaf and damper/air transfer grille related to door perimeter



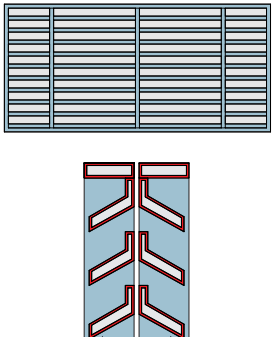
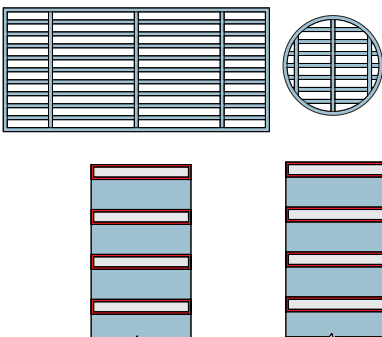
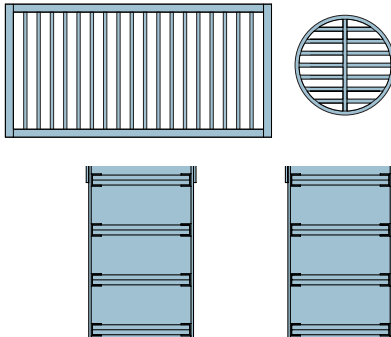
Installation

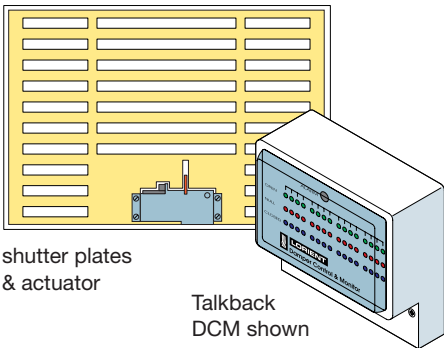
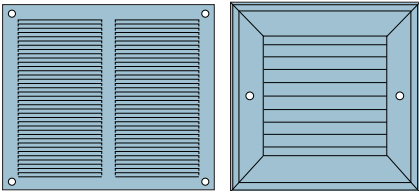
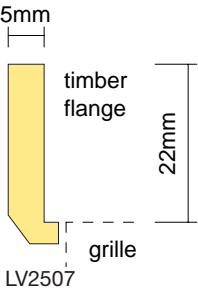
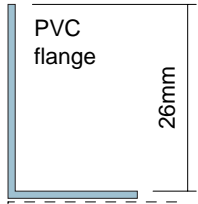
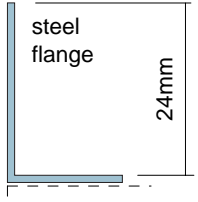
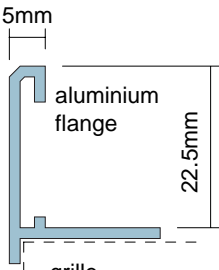
Lorient provides free technical support for the design, specification and installation of its smoke control systems. Given the importance of the protection provided, it is recommended that Lorient is involved in the earliest stages to ensure the most effective and economical system is specified and installed.

A comprehensive technical companion which covers the design and operation of Lorient smoke control systems is available, please consult our Technical Department.



Product Range – Standard Sizes

Comments	LVN20 & LVN25	LVV40 & LVC40	LVH44 & LVHC44
	 <p>two sizes of non-vision intumescent air transfer grille supplied in two halves to accommodate different door thicknesses</p>	 <p>standard vision intumescent air transfer grille for walls, doors and rectangular or circular ventilation ducts.</p> <p>Suitable for use in some horizontal applications. Please refer to Lorient's Technical Department</p>	 <p>high performance steel vision intumescent air transfer grille for use in doors, walls, floors, ceilings and ventilation ducts</p>
Width:	100mm - 600mm (in 50mm increments)	100mm - 600mm (in 25mm increments)	100mm - 600mm*
Height:	100mm - 600mm (in 50mm increments)	100mm - 600mm (in 25mm increments)	100mm - 600mm*
Diameter:	-	up to 600mm diameter (nominal to suit standard PVC pipes or steel ducts)	-
Thickness:	2 pieces x 20mm or 2 pieces x 25mm	40mm	44mm
Free area:	30% approx.	60% approx.	60% approx.
Use with:	integral steel or PVC flanges or separate timber or aluminium flanges no cover grille required	steel, PVC, aluminium or timber flanges metal cover grille	metal cover grille NB: LVH44 and LVHC44 can be used in external applications
Fitting:	screwed and bedded in Lorient intumescent mastic	screwed and bedded in Lorient intumescent mastic	screwed and bedded in Lorient intumescent mastic
Materials and Finish:	PVC, silver as standard also available in white	PVC, silver as standard	zintec steel <i>Note: * Larger apertures possible. Please refer to Lorient's Technical Department.</i>

Smoke Control Systems  shutter plates & actuator Talkback DCM shown Talkback or Limited Channel	Cover Grilles  optional cover grilles for walls, doors and ends of ducts pressed steel and aluminium options available	Flanges  LV2507  LV1826
standard sizes available are: 200mm x 200mm 300mm x 300mm 400mm x 400mm 450mm x 450mm 500mm x 500mm and 600mm x 600mm Modular systems are available, please ask for details	sizes to suit standard damper/air transfer grilles	 LV2516
30% approx.	NB: will change the free air flow characteristics of the air transfer grille	
LVN20S, LVV40S, LVH44S, LVH20S <i>Note: "S" on the end of the code denotes smoke shutter.</i>	LVV40 LVH44 LVH20S	 LV2221
<i>NB: for special applications, the Lorient smoke dampers/shutters can be used on their own. Please refer to Lorient's Technical Department.</i>	screw fixed	screw fixed
DCM off-white	pressed steel, white, beige, silver, primer or mill matching colours are available aluminium, natural satin anodized	refer to Lorient for details



■ Fire Resistant Dampers/Air Transfer Grilles









Lorient fire resisting dampers/air transfer grilles can be:

- factory fitted in a tested fire resisting doorset
- “retro fit” to an already installed fire door
- fitted in fire resisting walls, partitions, floors and ceilings
- installed in duct work (LVV40, LVC40, LVH44, LVHC44 and LVH20S only)




















Application Details

The following pages show the levels of protection provided by Lorient fire resistant dampers/air transfer grilles when used in doors, compartment walls, ducts, floors and ceilings.

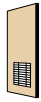
■ Use of Symbols

-  indicates that the application detail shown provides protection against fire
-  indicates that the application detail shown provides protection against cold smoke
-  signifies an intumescent air transfer grille set in a door leaf
-  signifies an intumescent air transfer grille set in a compartment wall
-  signifies an intumescent air transfer grille set in a duct
-  signifies an intumescent air transfer grille set in a floor or ceiling
-  signifies the fire and smoke damper/air transfer grille when used in conjunction with one of the above applications
-  indicates in minutes the fire protection provided by the intumescent air transfer grille

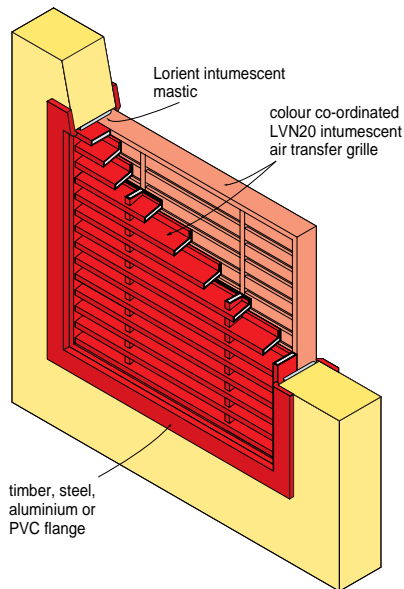
■ Product Selector Table for Fire Resistant Dampers/Air Transfer Grilles

level of protection	type of protection	vertical/ horizontal	 doors	 walls	 floors & ceilings	 ducts				
<div>30</div>		vertical	LVN20	page 11	n/a	n/a	n/a	n/a	n/a	
		vertical	LVN25	page 11	n/a	n/a	n/a	n/a	n/a	n/a
		vertical	LVV40/LVC40	page 11	n/a	n/a	n/a	n/a	n/a	n/a
		horizontal	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	 	vertical	LVN20S	page 12	n/a	n/a	n/a	n/a	n/a	n/a
<div>60</div>		vertical	LVN25	page 11	n/a	n/a	n/a	LVV40	page 15	
		vertical	LVV40/LVC40	page 11	LVV40/LVC40	page 13	n/a	n/a	LVC40	page 15
		horizontal	n/a	n/a	n/a	n/a	LVH44/LVHC44	page 14	n/a	n/a
	 	vertical	LVN20S	page 12	LVV40S	page 13	n/a	n/a	LVH20S	page 16
<div>90</div>		vertical	LVH44/LVHC44	page 11	n/a	n/a	n/a	n/a	n/a	
		horizontal	n/a	n/a	n/a	n/a	LVH44/LVHC44	page 14	n/a	n/a
	 	vertical	LVH20S	page 12	n/a	n/a	n/a	n/a	n/a	n/a
<div>120</div>		vertical	LVH44/LVHC44	page 11	LVH44/LVHC44	page 13	n/a	n/a	LVH44/LVHC44	page 16
		horizontal	n/a	n/a	n/a	n/a	LVH44/LVHC44	page 14	n/a	n/a
	 	vertical	LVH20S	page 12	LVH44S	page 13	n/a	n/a	LVH20S	page 16
<div>180</div>		vertical	n/a	n/a	LVH44/LVHC44	page 13	n/a	n/a	LVH44/LVHC44	page 16
		horizontal	n/a	n/a	n/a	n/a	LVH44/LVHC44	page 14	n/a	n/a
	 	vertical	n/a	n/a	LVH44S	page 13	n/a	n/a	n/a	n/a

Doors LVN20 (for 44mm & 54mm)



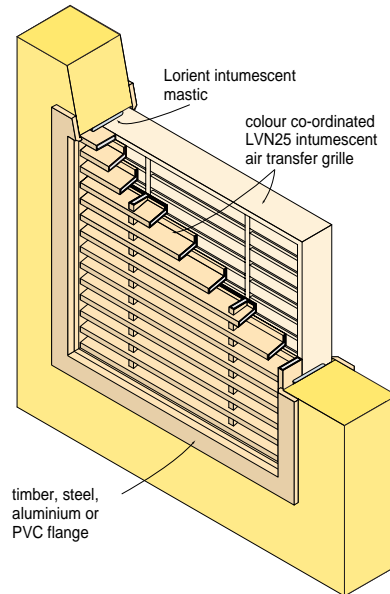
For installation in lower half of door leaf.



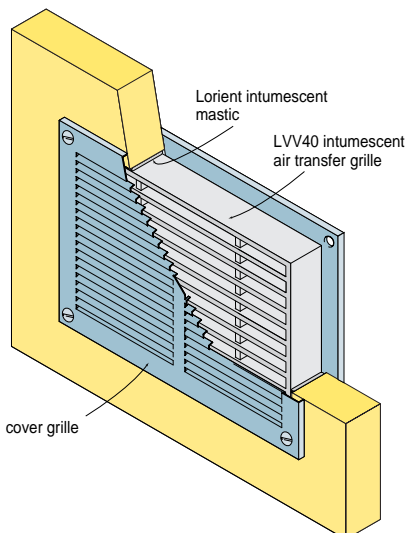
Doors LVN25 (for 54mm only)



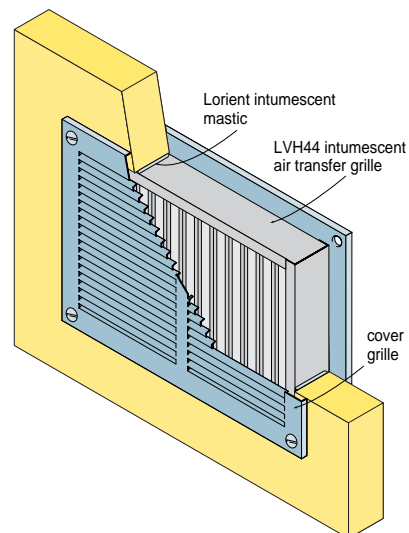
For installation in lower half of door leaf.



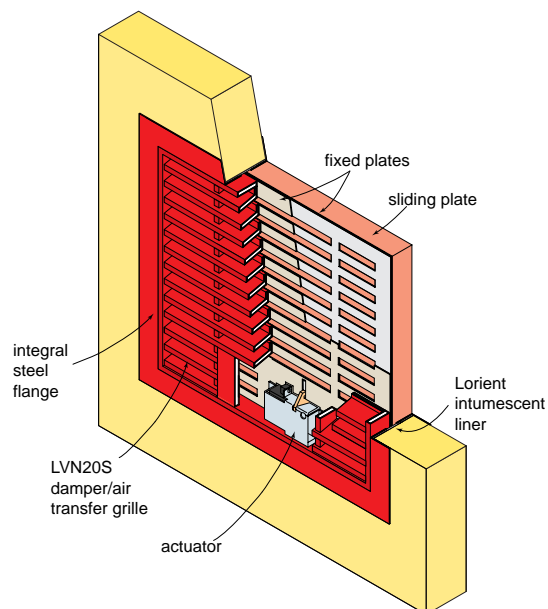
Doors LVV40 & LVC40



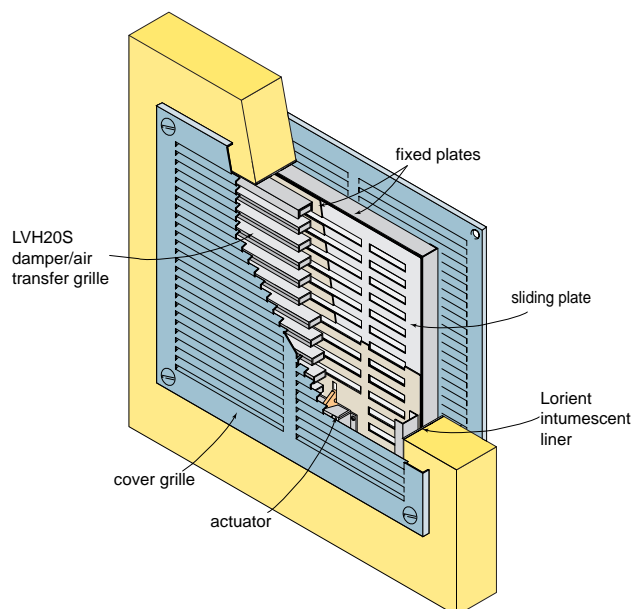
Doors LVH44 & LVHC44



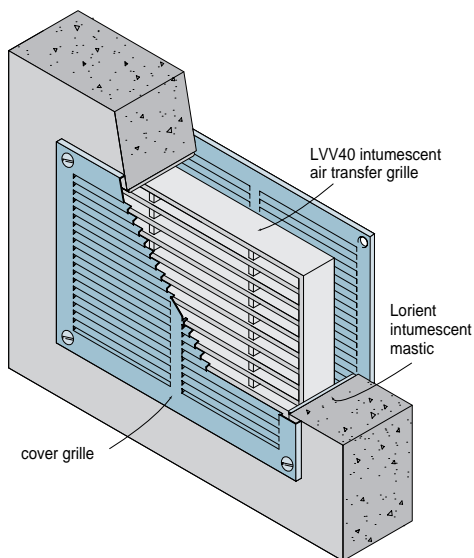
Doors LVN20S - door thickness min. 44mm



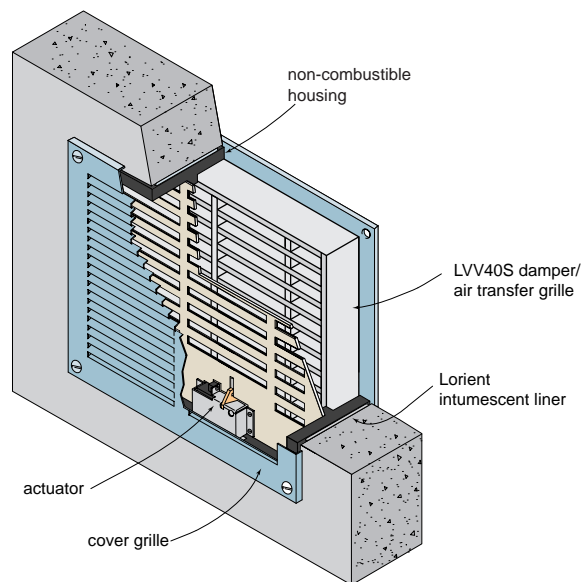
Doors LVH20S - door thickness min. 50mm



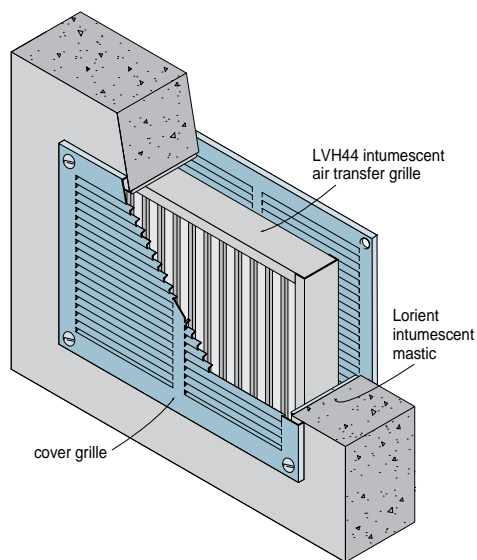
Walls LVV40 & LVC40



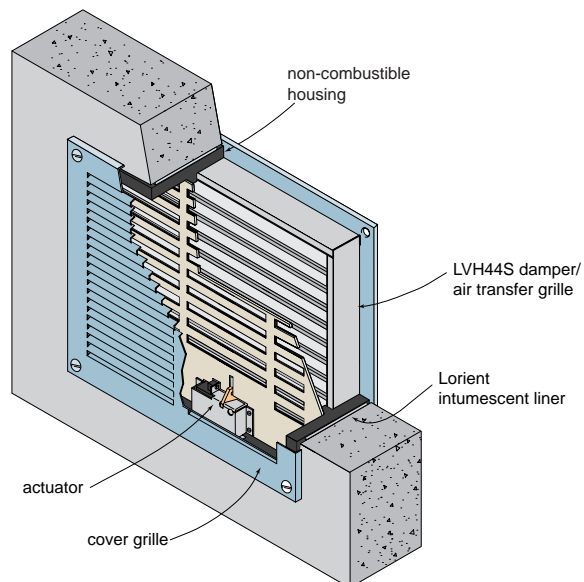
Walls LVV40S - wall thickness min. 100mm



Walls LVH44 & LVHC44

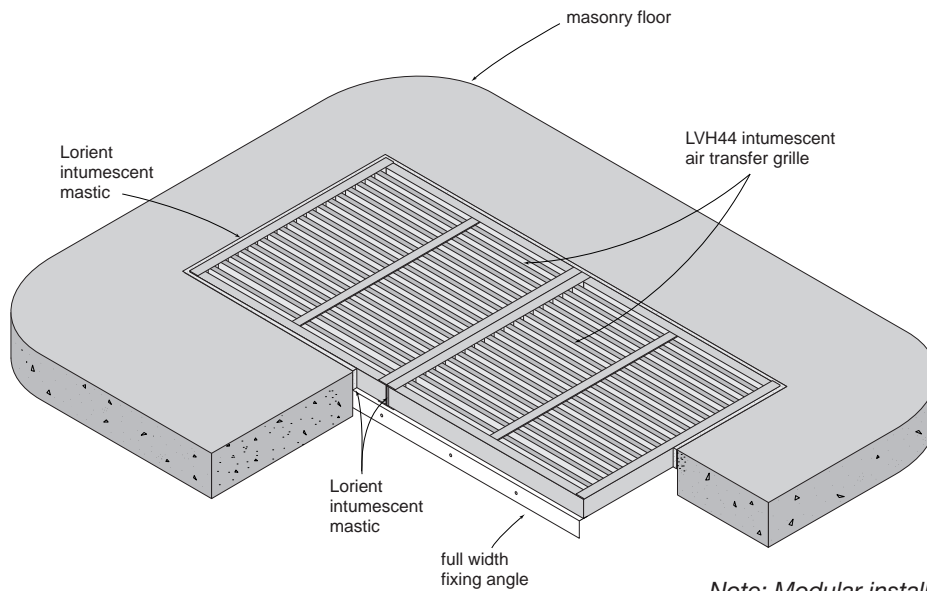
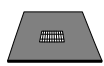


Walls LVH44S - wall thickness min. 100mm



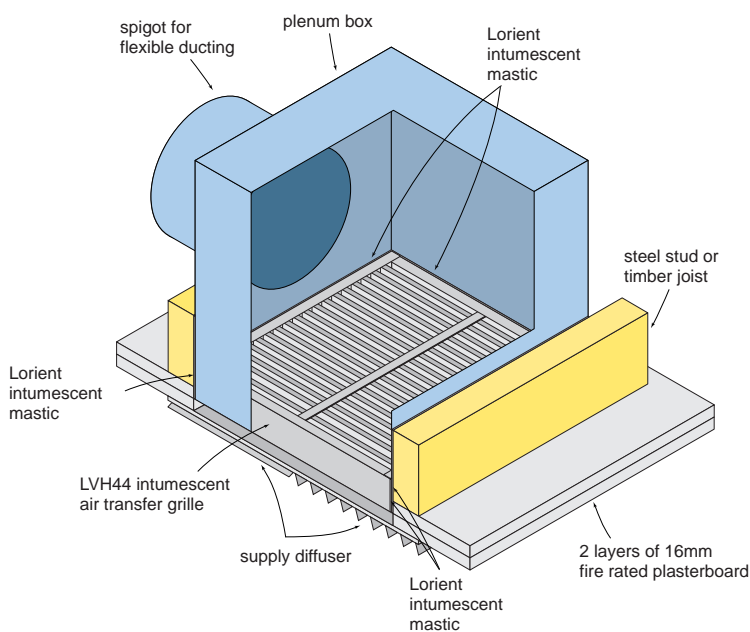
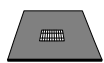
Note: LVH44's can be produced for apertures 1200mm x 2400mm or 2400mm x 1200mm ie: 2.88m², for 120 minutes. Please refer to Lorient's Technical Department.

Floors LVH44 & LVHC44 - floor thickness min. 50mm



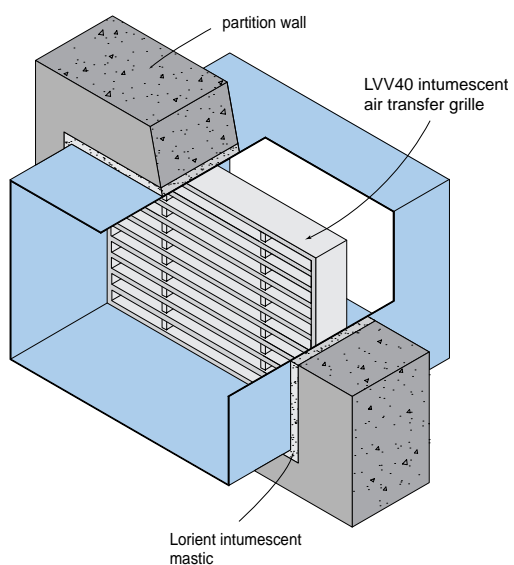
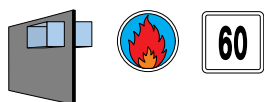
Note: Modular installation shown. The maximum size for this method of installation is 1200mm x 600mm. Please consult Lorient for larger sizes.

Ceilings LVH44 & LVHC44 - ceiling thickness min. 50mm

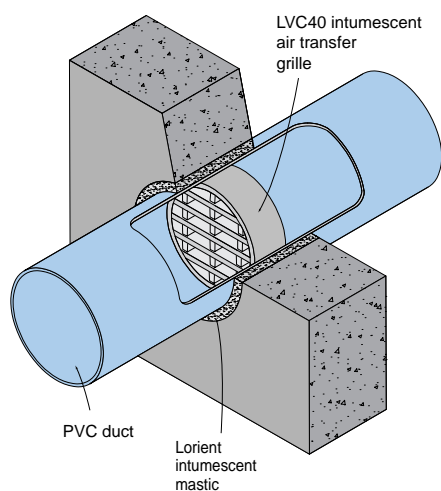
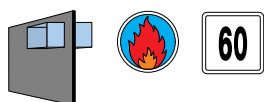


Note: The maximum size for this installation is 300mm x 300mm.

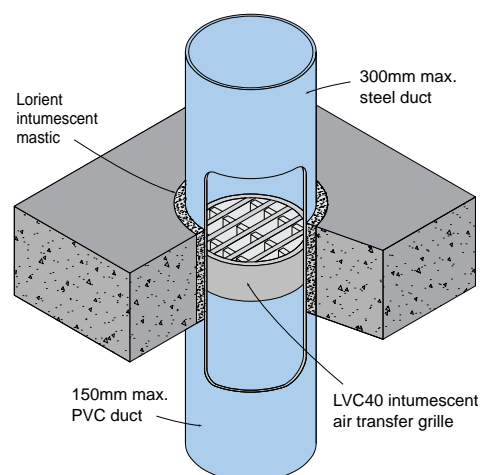
Ducts LVV40



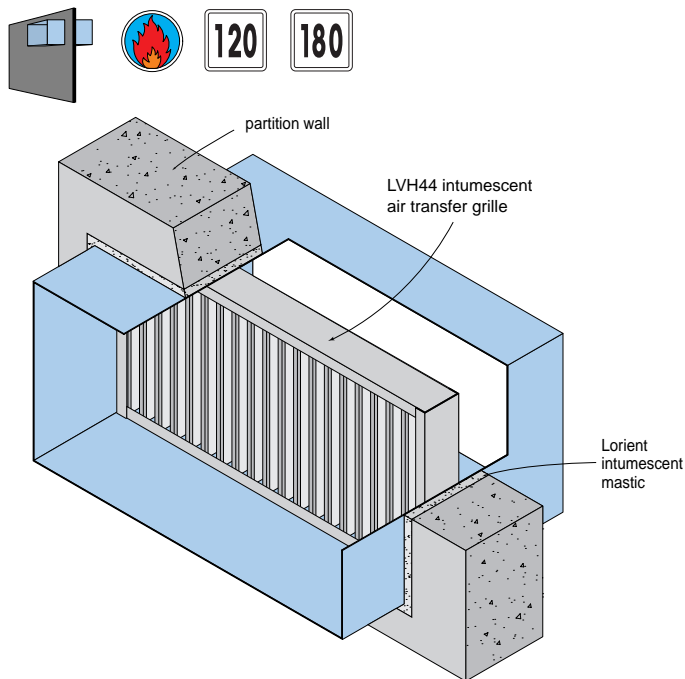
Ducts LVC40



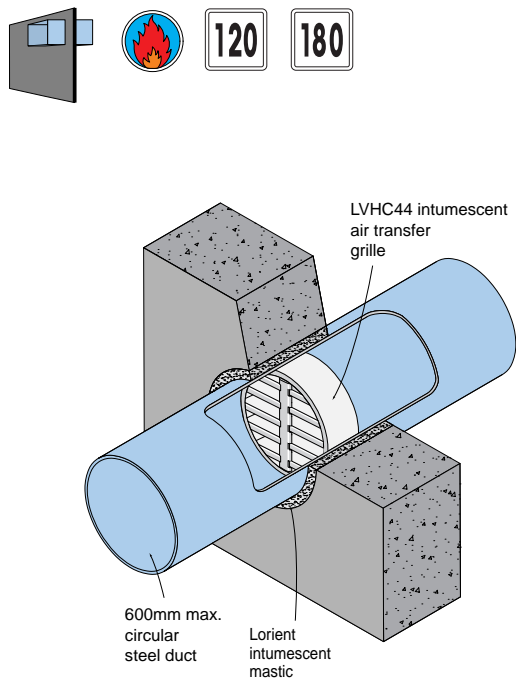
Ducts LVC40



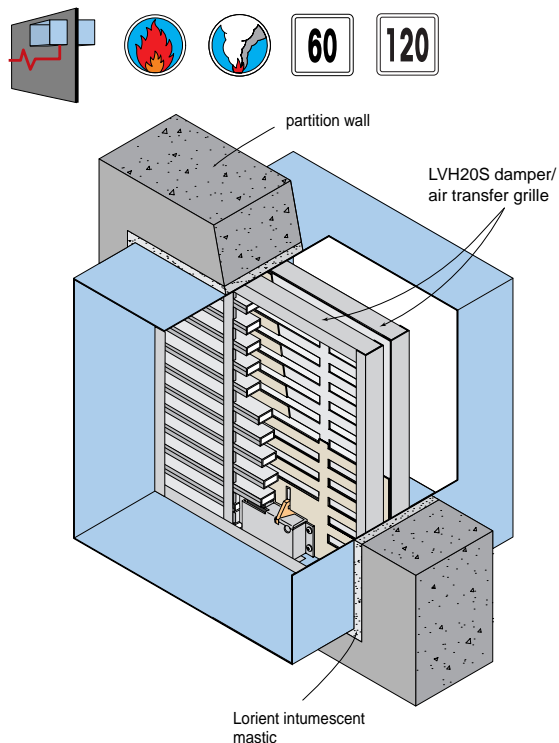
Ducts LVH44



Ducts LVHC44



Ducts LVH20S



Note: This application depends on what the duct is carrying.

LVH20S's can be provided for apertures 900 x 900mm.

Please refer to Lorient's Technical Department.

Mastic

Lorient produces intumescent mastic for bedding in damper/air transfer grilles.

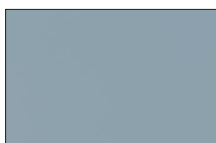
- When exposed to fire, it will expand to many times its original volume while maintaining adhesion
- Suitable also for sealing gaps between fire resistant walls and floors, between conduits and walls/floors and between fire resistant walls and structural supports



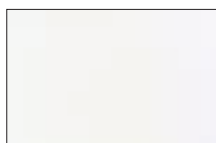
Finishes

Fire door assemblies and dampers/air transfer grilles are often chosen for their appearance as well as their performance.

Standard Colours



Silver (0701)

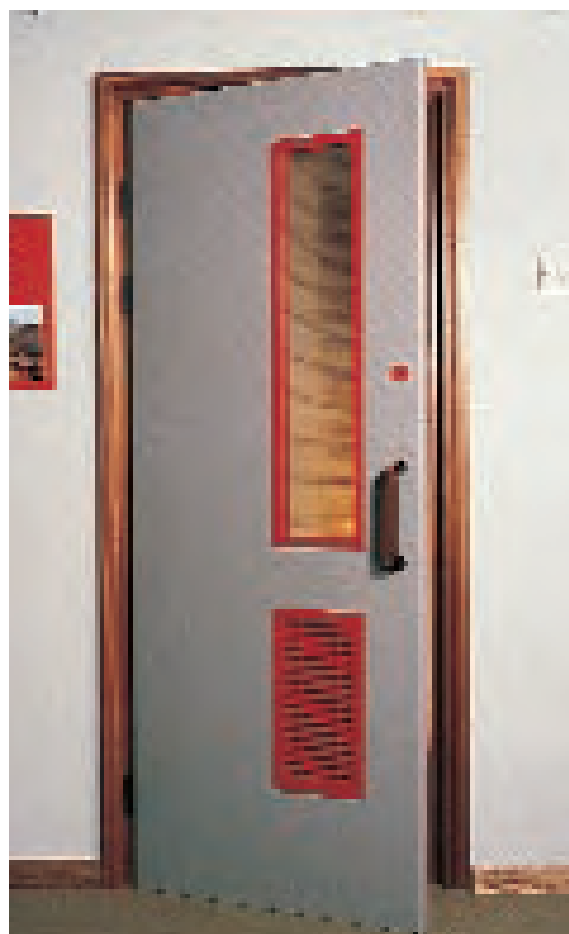


White (0303)

Note: The limitations of the printing process means the colours and finishes shown here may not be exactly the same as the grilles supplied. Lorient can supply samples to assist colour matching.

Special Colours

Lorient offers a colour matching service and can usually formulate a precise colour match on receipt of appropriate details such as a BS or RAL colour reference or a material sample. A modest set up charge is made to cover costs, please ask for further details.



Timber flanges are available in the following materials:

Hardwood Finishes:

Ash, Beech, Ramin, Utile

Softwood Finishes:

Columbian Pine

All timber flanges are supplied 'in the white' ready for finishing as required.

PVC/steel flanges and air transfer grilles can be colour matched.



Additional Information

■ Technical References

BS EN ISO 9001:2000

Certificate No. Q6104



Lorient is quality assured under the disciplines of BS EN ISO 9001:2000.

Accreditation to this standard is effectively a guarantee of Lorient's ability to conduct its business to the complete satisfaction of the customer in terms of design solutions, manufacturing consistency and management procedures.

The status of this internationally recognised accreditation generates customer confidence and eliminates the risk of poor performance. Regular audits of the company procedures are carried out by qualified BSI staff to ensure continuing compliance with all aspects of the Standard.

■ Handling and Storage

No special precautions are required when handling Lorient dampers/air transfer grilles but they should always be treated with care. The products do not fall within the scope of COSHH Regulations.

Lorient dampers/air transfer grilles should be stored away from heat, in the dry, and protected from impact damage.

■ Maintenance

Lorient intumescent air transfer grilles, including those positioned behind cover grilles, will require periodic cleaning with a damp cloth.

Lorient automatic smoke control systems should be evaluated as part of the periodic testing of smoke and fire alarm installations.

■ EMC and LVD (Electro Magnetic Compatibility and Low Voltage Directive)

Lorient smoke control systems have been successfully tested in accordance with the requirements of EMC and LVD and, therefore, bear the CE Mark (Conformité Européen).

Copies of the relevant test reports are available on request.

■ Technical Services and Support

Lorient is always happy to provide specialist advice on fire and smoke protection, for both refurbishment and new build projects. We offer:-

- a telephone help line
- site visits
- copies of relevant test reports
- samples
- technical and performance specifications
- help and advice on meeting Building Regulations and Standards
- CPD accredited seminars, please ask for details



Please Note: Recommendations as to methods, use of materials and construction details are based on the experience and knowledge of Lorient and are given in good faith as a general guide and a service to designers, contractors and manufacturers.