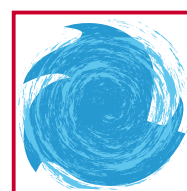


# **The Guide to Smoke Control Solutions for Flats**

**smoke control**



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Also available from the SCS group

**Before you make your own decision see what our customers have to say about us:**

*Through innovative solutions... Smoke Control have demonstrated their commitment to delivering systems that are cost effective and beneficial to contractor's programmes.*

**Dave Westwood, Supply Chain Manager  
Taylor Woodrow Construction**

*Smoke Control Services provide a proactive and transparent service... a service quality that many promise, but very few manage to achieve.*

**Huw Llewellyn, Technical Director  
Barratt South Wales**

# Smoke Control Made Simple

Statistics show that there are over 50,000 fires in dwellings in the UK annually and more than 300 fatalities, most of which are caused by the effects of smoke. In apartment buildings there is a need to protect the common escape routes to enable people to escape and to assist fire fighters if they need to enter the building to deal with an incident.

This guide contains everything you need to select a smoke control system for an apartment building. Start with the guide on page 6 and 7 to establish the most suitable method of protecting your building then move on to the detailed descriptions, builders work and electrical details for your chosen system. We have also included typical floor plans to help you on pages 3-5.

Our project engineering team can provide you with detailed information such as drawings, instructions and method statements and instant pricing using our standard cost matrices.

We also offer free seminars on smoke control in apartment buildings and smoke control for basement/enclosed car parks.

Contact our project engineering team on:

**0870 2406460 or [projects@smokecontrol.co.uk](mailto:projects@smokecontrol.co.uk)**

I hope you find this document useful and would be glad to receive your feedback and in particular any suggestions for improvement.



Allan Meek *Managing Director*

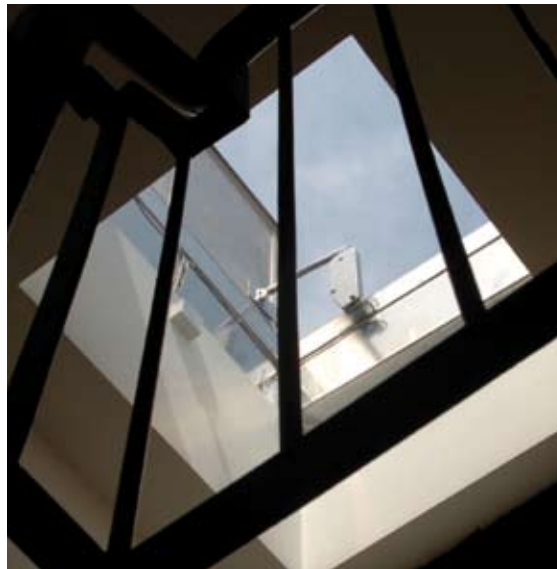


Specialist Contractor  
Awards 2005

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# Rules and Regulations

Approved Document B sets out the basic fire safety requirements of the Building Regulations and provides guidance on satisfying these requirements in most common building situations. The relative responsibilities of builders, designers, and owners of buildings are set out in the Regulatory Reform (Fire Safety) Order 2005, and the Construction (Design and Management) Regulations 2006.



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## Our Philosophy



It is our belief that blocks of flats are essentially similar and we have designed our systems to fit most buildings without bespoke engineering. This ensures compliance with Building Regulations without the need for dispensations or negotiation with approving authorities, so taking away the doubt and risk associated with fire engineered solutions. Some of our systems have LANTAC type approval which means that they are automatically accepted by all Local Authority Building Control departments in England and Wales.

Our company philosophy is to promote simple standard solutions which offer peace of mind through compliance with current regulations, are easy to accommodate within the building, have low energy usage and are low maintenance, which makes them high value and low risk.

*We offer standard all inclusive pricing for all systems so you can be sure there will be no hidden “extras” or nasty surprises when you employ our services.*

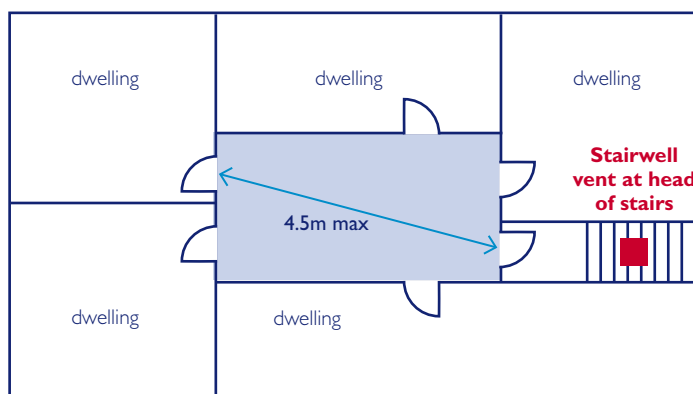


# Floors plans laid bare

These layouts clarify the information given in the Building Regulations to help you understand the requirements.

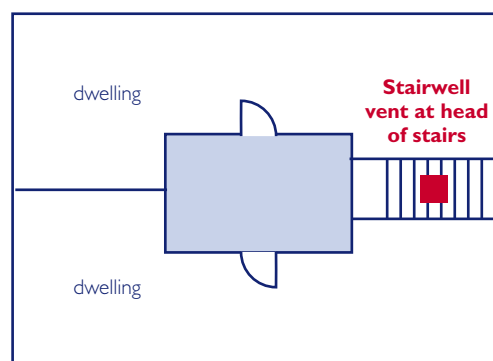
## Small single staircase buildings

This layout applies to buildings with a top floor between 4.5m and 11m above ground level. The arrangements shown also apply to the top storey. If the travel distance is between 4.5m and 7.5m then the lobby needs to be ventilated. Our standard solution is the **uniVent stairwell system** (page 8) however if the stairwell is external than an openable ventilator can be provided at every level instead.



uniVent stairwell system p8

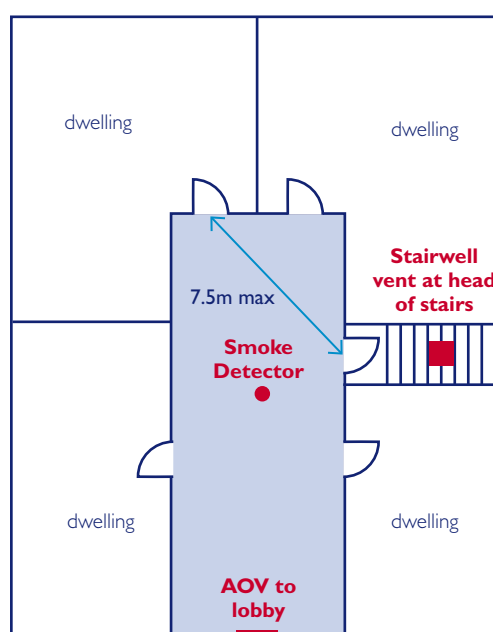
Typical arrangement of a small single staircase building with not more than 2 dwellings per storey. If the common lobby is omitted then the stairwell vent should be operated by smoke detection on each level.



uniVent stairwell system p10

## Single staircase buildings

Buildings with a floor more than 11m above ground level where the lobbies are external. The simplest solution would be the **uniVent AOV** (page 9) for the lobby with a **uniVent stairwell vent** (page 8) at the head of the stairs. The uniVent control kit incorporates smoke detection so a dedicated smoke detection system is not required.

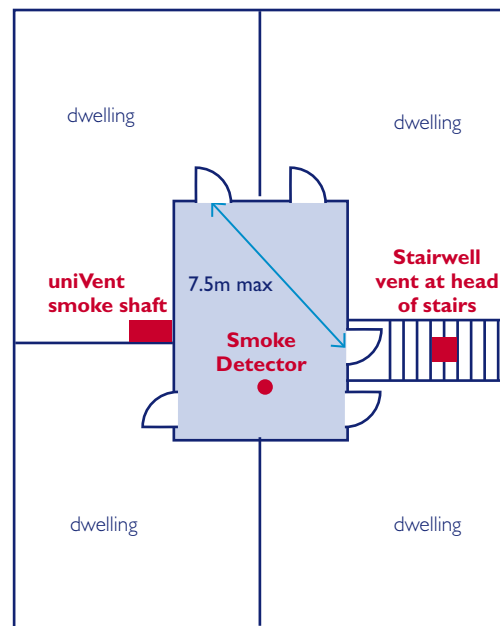


uniVent AOV p9 and uniVent stairwell system p8

## Single staircase buildings (cont)

Buildings with a floor more than 11m above ground where the lobbies are internal. The simplest and most cost effective solution would be the **uniVent smoke shaft** system (page 10) for the lobby with a **uniVent stairwell vent** (page 8) at the head of stairs.

The other approved option is the **uniForce pressurisation system** (page 11). This would typically require pressurisation fans at roof level with an air release shaft in the lobby.

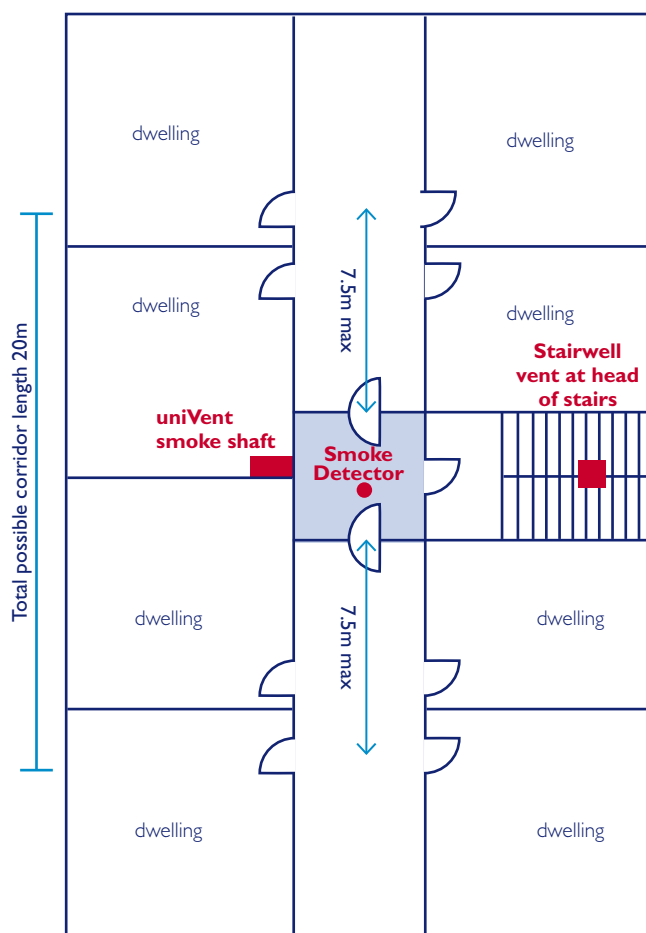


uniVent smoke shaft p10 and uniVent stairwell system p8

Buildings with a floor more than 11m above ground where the lobbies are internal. The simplest and most cost effective solution would be the **uniVent smoke shaft** system (page 10) for the lobby with a **uniVent stairwell vent** (page 8) at the head of stairs.

The other approved option is the **uniForce pressurisation system** (page 11). This would typically require pressurisation fans at roof level with an air release shaft in the lobby or **uniForce mechanical extract** (page 12).

This layout was made possible by the 2006 version of ADB which came into force in April 2007. The use of a central lobby allows much longer total travel distances for a single staircase building without the need for complex ventilation systems or fire engineering.

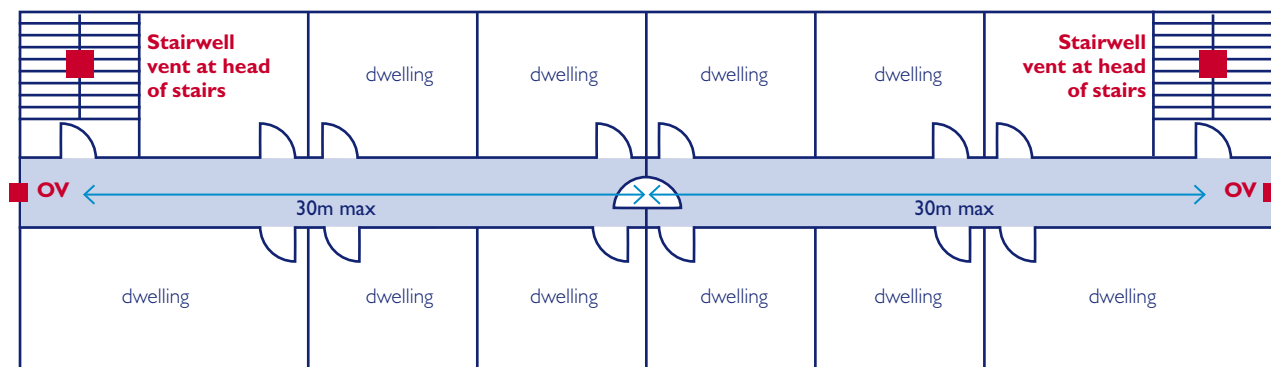


This layout can allow a total corridor length of up to 20 metres with a single staircase

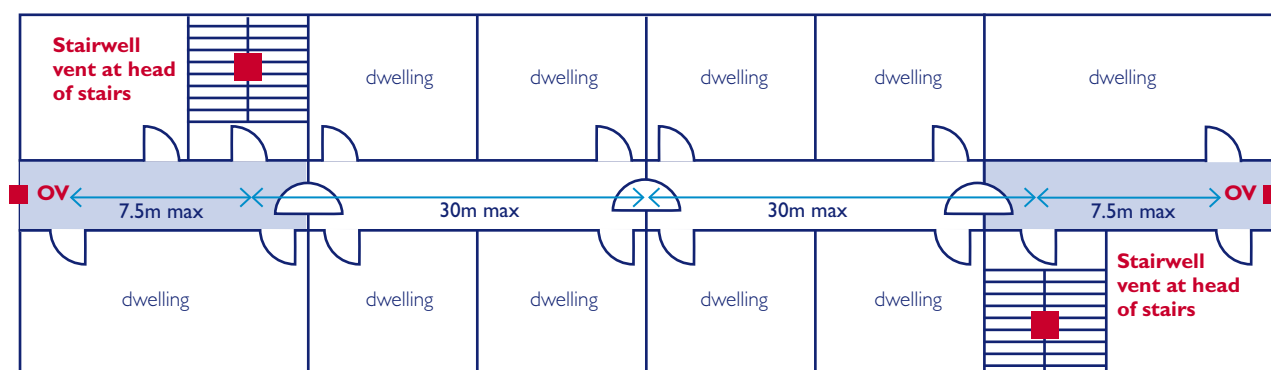
uniVent smoke shaft p10 and uniVent stairwell system p8

## Multi staircase buildings

Buildings with a floor more than 4.5m above ground where the lobbies are external. The simplest and most cost effective solution would be the **uniVent OV system** (page 9) for the lobbies with the **uniVent stairwell system** (page 8) at the head of stairs. Smoke detection is not required for multiple staircase buildings and the OV is opened manually, however the stairwell vent must open automatically with any OV so controls must be interfaced.

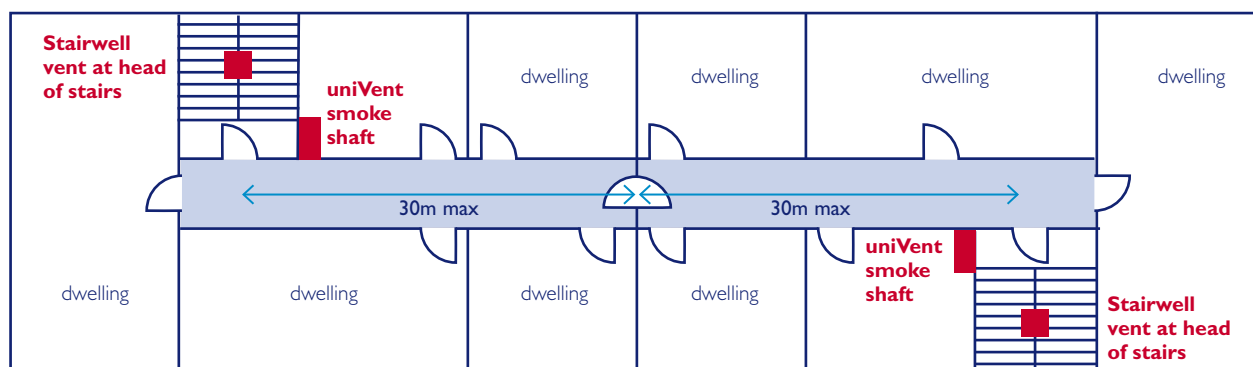


uniVent OV p9 and uniVent stairwell system p8



Buildings with a floor more than 4.5m above ground where the lobbies are internal. The simplest and most cost effective solution would be the **uniVent smoke shaft system** (see page 10) for the lobbies with a **uniVent stairwell vent** (page 8) at the head of stairs.

*See also the pressurisation option on page 11*



uniVent smoke shaft p10 and uniVent stairwell system p8

**Start Here**

Does your building have more than one staircase?

yes

no

Does the travel distance from the furthest flat to the stairs exceed 4.5m?

Does height of the top floor exceed 11m?

Does not meet Building Regulations. Contact Smoke Control for advice

no

yes

yes

yes

Has the building more than 3 stories above ground level?

Does the travel distance from the apartment to the stairs exceed 7.5m?

no

yes

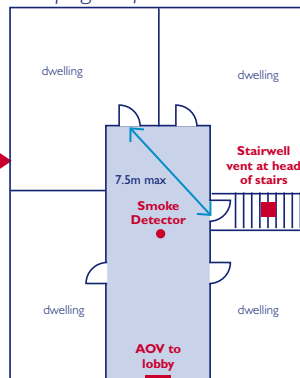
no

Are the lobbies on the external face of the building?

yes

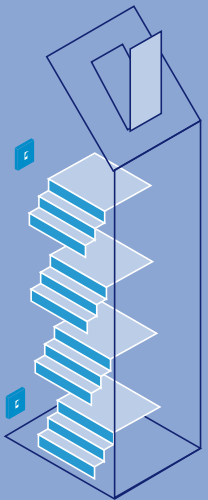
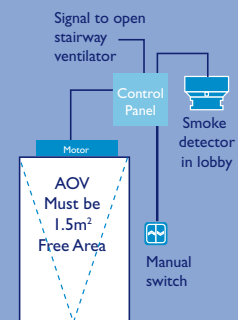
no

Typical Floor Plan  
see page 3 for details



**NATURAL VENTILATION**  
of lobbies and stairs is the most economical

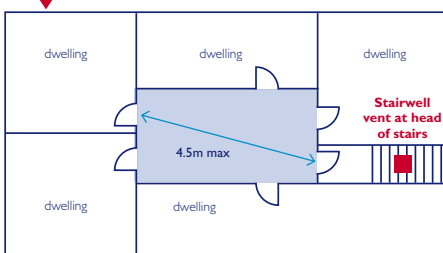
**AOV**  
(Automatic Opening Ventilator)  
For single staircase buildings



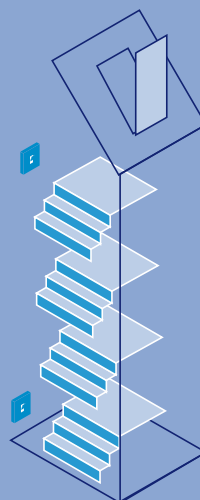
See page 9 for details

Small single staircase building\*

Typical Floor Plan  
see page 3 for details

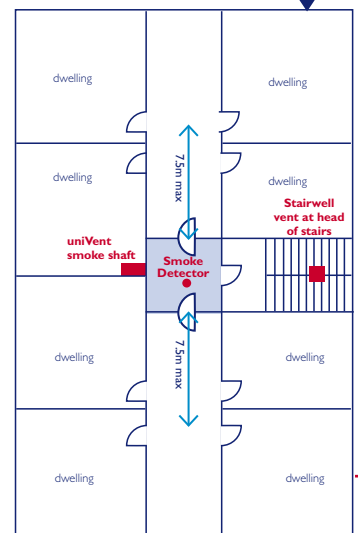


**STAIRWELL VENT**



See page 8 for details

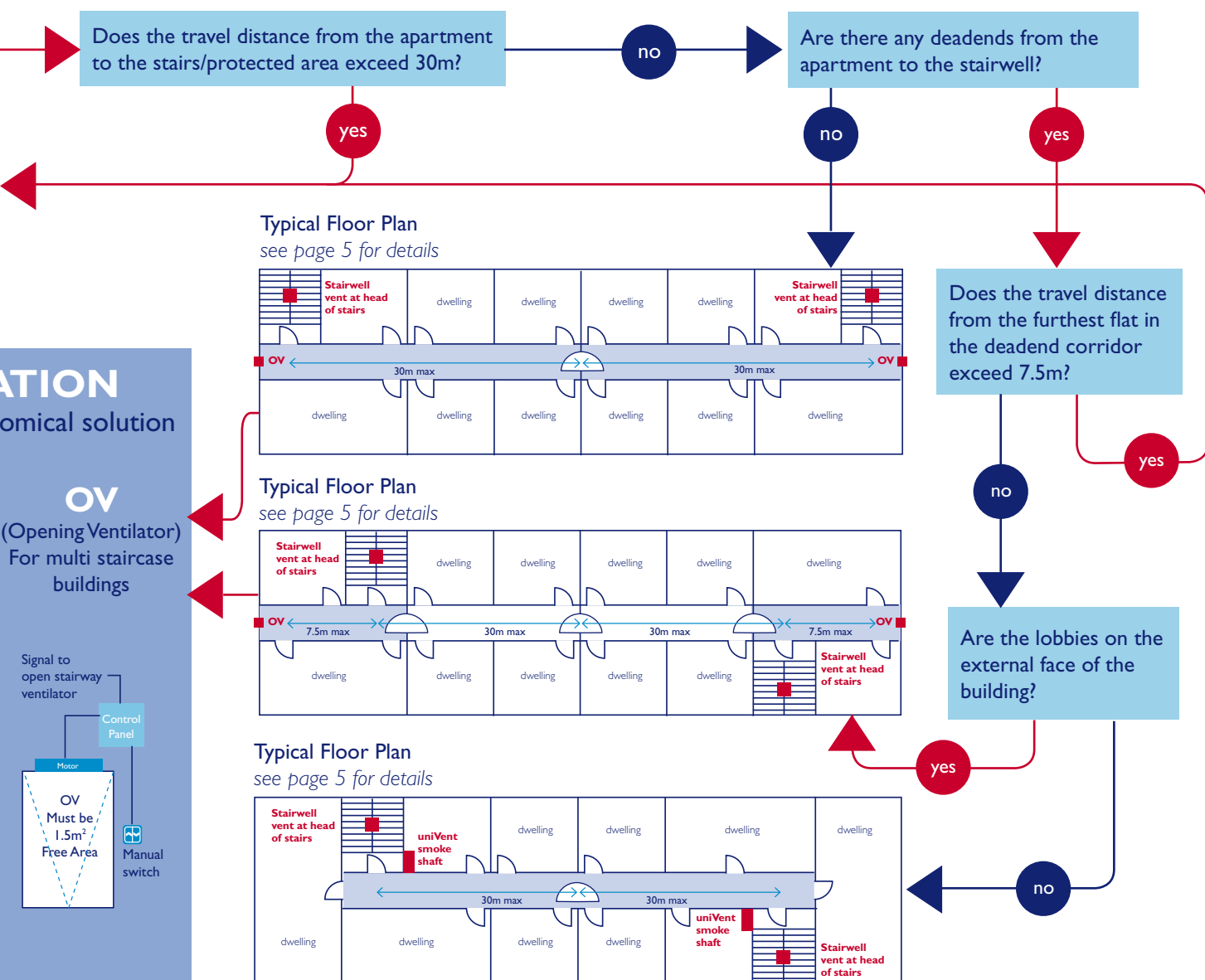
Typical Floor Plan  
see page 4 for details



**\*Notes**

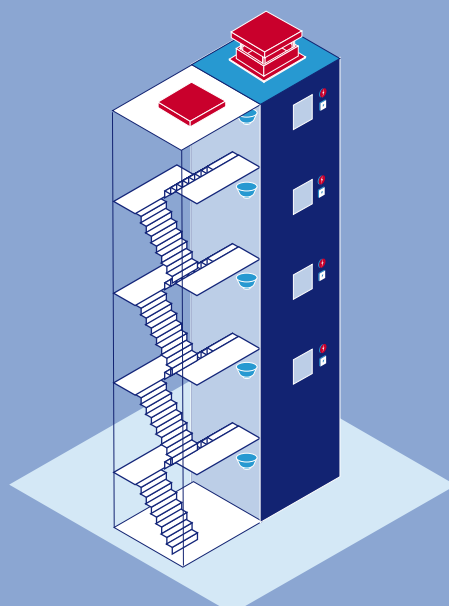
- 1 The arrangements shown also apply to the top storey.
- 2 If the travel distance exceeds 4.5m up to 7.5m then the lobby needs to be ventilated.
- 3 In diagram above if the common lobby is omitted then a 1m² AOV is required at the top of the stair operated on detection of smoke at any storey in the stair.
- 4 OV at each level or head of stair.



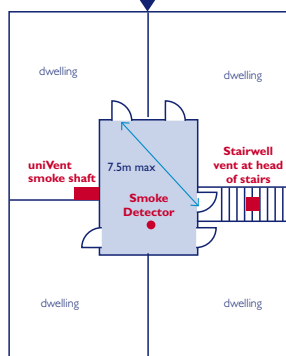


## UNIVENT SMOKE SHAFT

is most likely solution



See page 10 for details



**Stairwell Vent**  
Go to page 8

**Natural Ventilation AOV**  
Go to page 9

**Natural Ventilation OV**  
Go to page 9

**UniVent Smoke Shaft**  
Go to page 10

**Order a poster of this chart by phoning**  
**0870 2406460 or email**  
**projects@smokecontrol.co.uk**

# SCS Standard Systems

The following pages illustrate the SCS approach to smoke control in apartment buildings. Our policy is to recommend natural ventilation systems wherever possible as these are the most economical and reliable solutions which comply with the requirements of Approved Document B. Our mechanical solutions are valuable alternatives where spatial constraints prevent the use of natural ventilation.

## uniVent Stairwell System

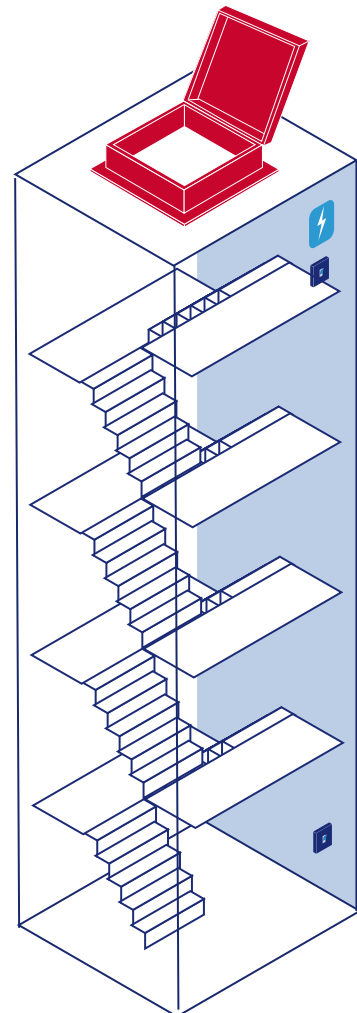
**A complete solution for ventilation of stairwells comprising a roof ventilator and control system.**

The stairwell ventilator is a low profile automatic opening hatch with an opening angle of  $120^\circ$  to minimise wind effects. Manufactured from corrosion resistant aluminium with rockwool insulation, it has a geometric free area of  $1.0\text{m}^2$  and is available in a variety of finishes.

The control kit comprises a local control panel with a battery backed 24VDC supply and two remote control switches for positioning at the top and bottom of the staircase. The control panel can accept a signal from lobby ventilators to automatically open with lobby ventilation.

### Product Codes

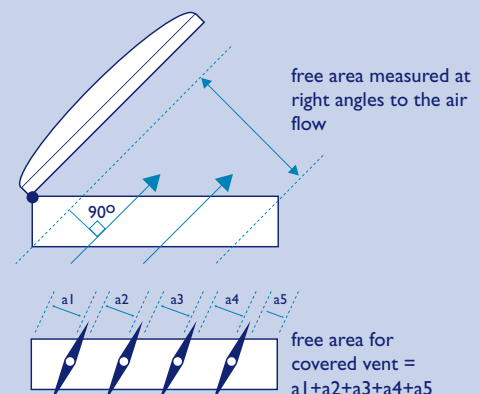
2/UST/	I	I	I smoke detection = yes
	0		0 smoke detection = no
	I		I wiring = yes
	0		0 wiring = no
			No of stairs



## Free area of smoke ventilators

The free area of a smoke ventilator specified in the Approved Document may be measured by either:

- The declared aerodynamic free area in accordance with BS EN 12101-2:2003 - Smoke and heat control systems - part 2 specification for natural smoke and heat exhaust ventilators or:
- The total unobstructed cross sectional area measured in the plane where the area is at a minimum and the right angle to the direction of airflow. (see diagram opposite)



## uniVent AOV and OV System

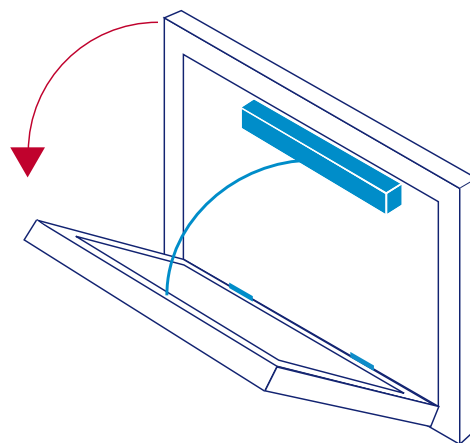
An automatic actuator solution to convert windows to Opening Ventilators (OV) or Automatic Opening Ventilators (AOV).

High quality slimline chain drive actuator with brackets for installation to a wide range of windows. Can be used as both an AOV and an OV with the appropriate control kit. 380mm stroke, 300N force, 24VDC.

The control kit for the OV comprises a local control panel with a battery backed 24VDC supply, and a remote control switch. An optical smoke detector is included in the AOV kit. The control panel can send a signal to automatically open a stairwell ventilator.

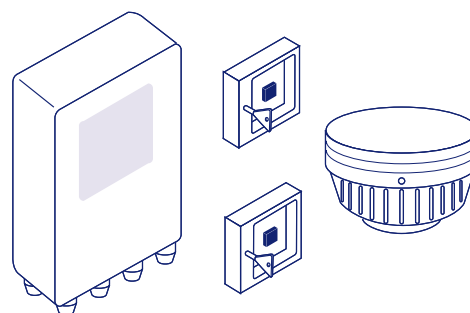
### Product Codes

2/AOV/	1	1	9	
				No. of floors
			1	smoke detection = yes
			0	smoke detection = no
			1	wiring = yes
			0	wiring = no
				No. of cores



Chain actuated bottom hung outward opening window fitted to allow minimum 60° opening

### Control Kit



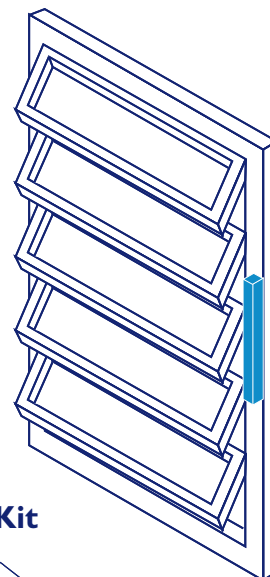
## Univent Louvre

**A most attractive and versatile ventilator designed to integrate with all types of building façade.**

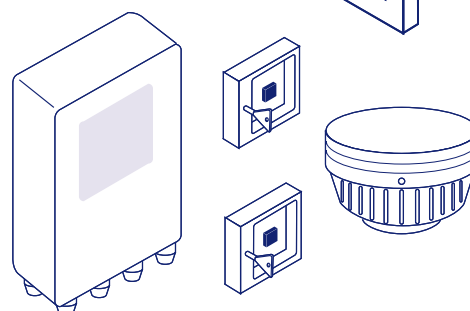
Featuring a thermally broken aluminium frame and double glazed louvres blades, the unit offers good air leakage and insulation characteristics. Can be used as both an AOV and an OV with the appropriate control kit.

### Product Codes

1000w x 1800 high louvre	S29000
1000w x 1200 high louvre	S29001
OV Control Kit KI	1000
AOV Control Kit KI	1001

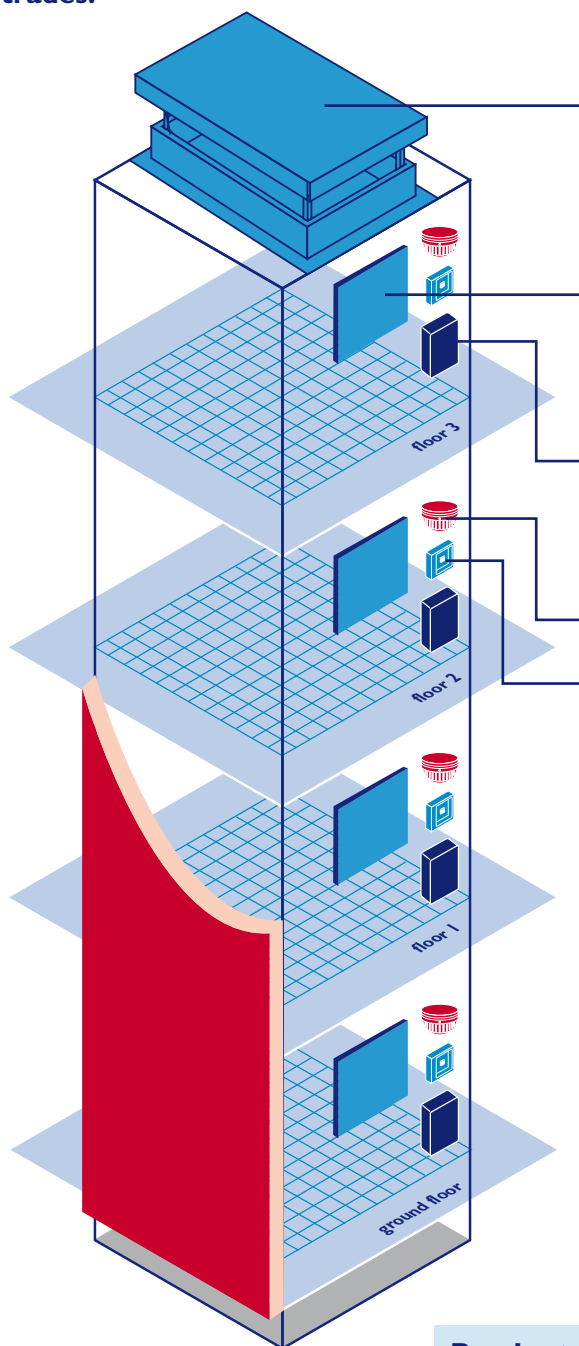


### Control Kit



# uniVent Smoke Shaft

The first integrated smoke shaft system, developed in 2002 and installed in hundreds of buildings across the UK. Completely updated to meet the latest building regulations uniVent is the easiest most economical method of protecting lobbies and staircases. All components are matched for simple installation and commissioning with minimal interfaces with other trades.



**Automatic discharge ventilator (ADV)** located at the head of the chimney with an innovative vertically rising lid to reduce the effect of cross winds ensuring efficient exhaust of gases. Low profile and with good air tightness and insulation properties the ventilator is supplied with integral electronic controls.

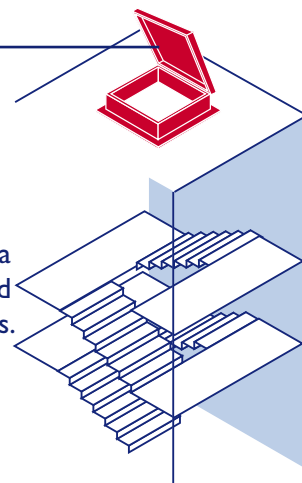
**Automatic obby ventilator (ALV)** manufactured from insulated galvanised steel with a polyester powder coated finish and integral electronic actuator. Available in 1.0m<sup>2</sup> or 1.5m<sup>2</sup> free area versions.

**Local control panel** installed at each ventilator position. The panel includes a battery backed 24VDC power supply and a pre programmed logic controller for automatic commissioning of complete system.

**Optical smoke detector** for reliable triggering.

**Local override switch** adjacent to each ventilator which includes LEDs to display system status and an audible alarm for power failure.

**Automatic stairwell vent (AOV)** a low profile automatic opening hatch with an opening angle of 120° to minimise wind effects. Manufactured from corrosion resistant aluminium with rockwool insulation, it has a geometric free area of 1.0m<sup>2</sup> and is available in a variety of finishes.



Smoke shaft 1.5m<sup>2</sup>

## Product Codes

2/US	ME	I	0	0	I	5	
							No. of floors
							Smoke detection I = yes / 0 = no
							I floor grid I = yes / 0 = no
							Wiring I = yes / 0 = no
							Lobby vents I = yes / 0 = no
							ME means of escape
							FF firefighting
							No. of shafts

# uniForce Pressurisation

A fully compliant system engineered to save time in design, installation and commissioning, the uniForce pressurisation system offers a modular solution based on the number of stories in the building and the level of protection required.

Pressurisation systems can be used to protect escape routes in buildings by raising the pressure in the protected zone to prevent smoke entering. Correctly designed and installed schemes can provide a high standard of protection both for evacuation and fire fighting activities.

System design, implementation and commissioning can be a time consuming and laborious process but uniForce eliminates much of the leg work traditionally associated with pressurisation systems. Using data from over twelve years of projects, SCS has applied lean thinking to the problem and developed a range of elements which can be put together to form a complete and fully compliant solution. A preliminary uniForce specification can be produced in minutes from basic building details and will include:

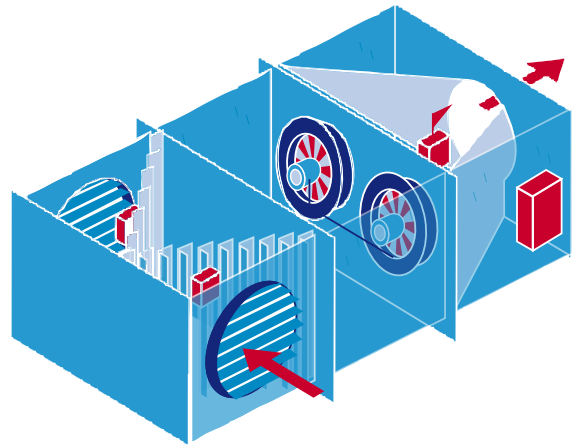
- Pressurising air plant incorporating all the components required to meet current legislation including airflow monitoring, in-duct smoke detection and standby fan provision with automatic changeover
- An air release system selected from a range of standard solutions to suit the building layout and use
- A complete control system including motor control centres with inverter control and remote fireman's override switches

Because all components are from the same supplier and have been tested together you can be sure the system will work first time which is of prime importance both for safety and for timely occupation of the building.

The SPU is delivered in three sections for easy handling and assembly on site. The complete unit comprises:

- **Inlet section** with smoke detection and shut off dampers
- **Fan section** with backdraft shutters
- **Discharge section** with airflow monitoring and integral control panel

All components are pre-wired to the control panel with plug in connections for ease of commissioning.



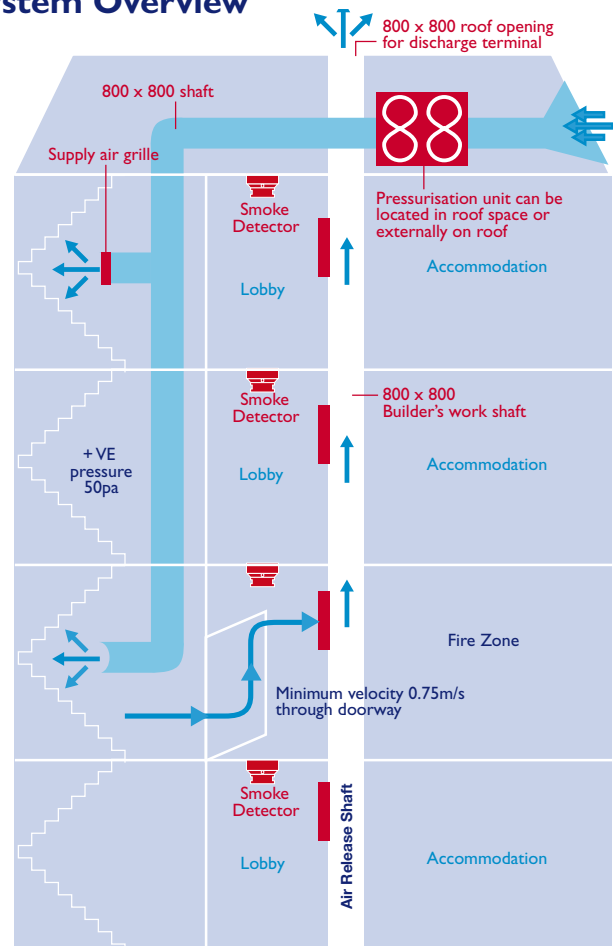
## Smoke pressurisation unit - SPU

Ref	Length	Width	Height	Weight	Flowrate
SPU 50	1800	1200	600	260kg	5.0m³/s
SPU 110	2400	1800	900	372kg	11.0m³/s

### Product Codes

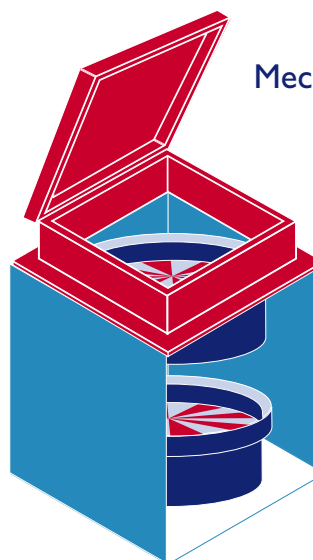
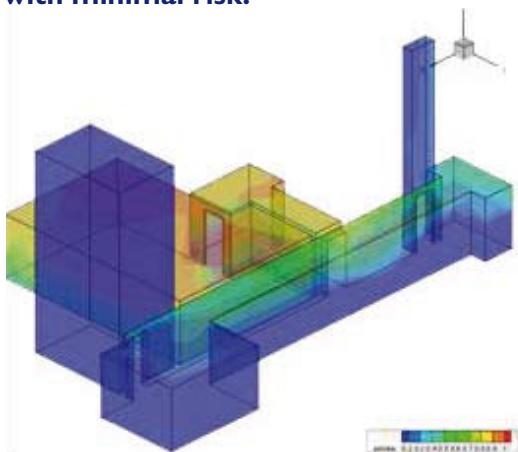
2/AFP	I	I	W	I	
					No. of floors
					Pressurisation Unit
					Wiring I = yes / 0 = no
					Smoke I = yes / 0 = no
					Detection
					No. of systems

## System Overview



# uniForce Mechanical Smoke Extract

The uniForce mechanical extract system is used to protect escape routes by removing smoke from a lobby before it has a chance to accumulate. Developed and optimised in partnership with Swansea University to eliminate a large amount of bespoke design uniForce offers a simple modular solution with minimal risk.



Mechanical Extract Unit

## Product Codes

2/UFE	I	I	W	I	
					No. of floors
					Extract Unit
					Wiring I = yes / 0 = no
					Smoke I = yes / 0 = no
					Detection
					No. of systems

UniForce Mechanical Extract System is particularly suitable for buildings where space constraints prevent the use of simpler, more cost effective uniVent solutions.

A provisional design proposal can be achieved in minutes by simply selecting the relevant modular components;

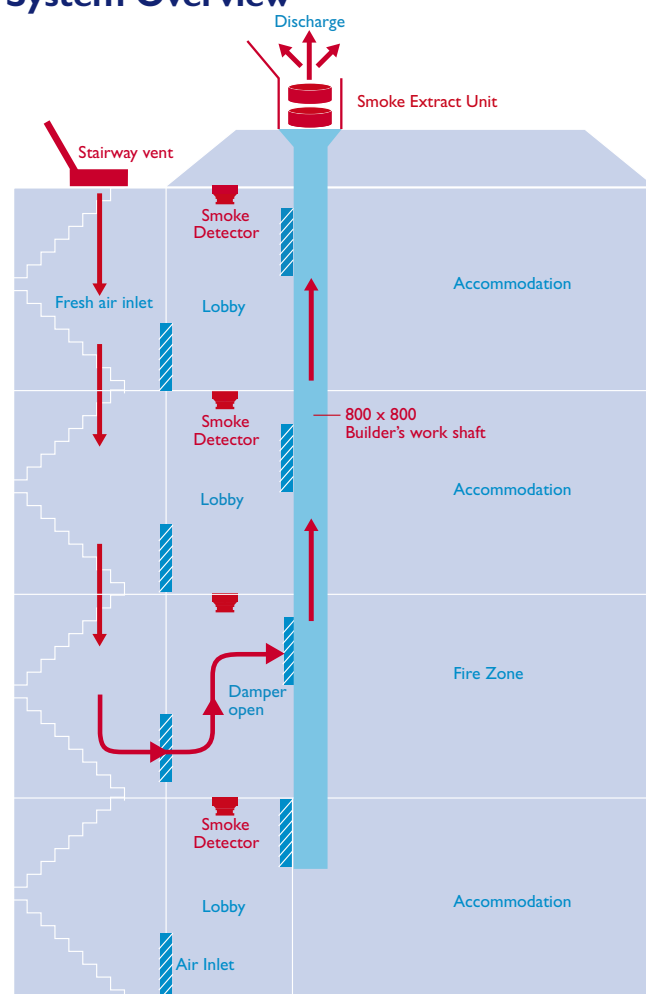
- Extract Fan set is selected by simply taking into account the number of floors to be protected and the size of shaft selected.
- The inlet damper and control system on each floor utilises a modular philosophy, it is simply a matter of selecting how many you need.
- The main fan control panel is a separate standard product reducing manufacture time and removing the requirement for bespoke design and literature

Because all components have been designed and tested to work together you can have complete confidence that the system will work first time, every time, offering peace of mind during the commissioning process.

## Smoke extract unit - SEU

Ref	Length	Width	Height	Weight	Flowrate
SEU 1	800	800	100	200kg	4.0m³/s
SEU 2	1100	1100	1400	350kg	8.0m³/s

## System Overview





## Also available from the SCS Group

### Guide to Car Park Ventilation

A simple guide to car park ventilation demystifying the regulations and covering natural and mechanical ventilation including jet fan systems for control of smoke and pollution. The SCS unijet system is LANTAC approved.

### Seminar Programme

A programme of technical seminars covering smoke control applications in residential buildings and underground car parks. Delivered in plain English with handy hints and tips to overcome common problems.

### Easivent Product Catalogue

A range of natural ventilation and smoke control products including window actuators, ventilators and controls available at low cost and quick delivery.  
See [www.easivent.co.uk](http://www.easivent.co.uk)

### Control panels from SCS Automation

High quality control panels for all applications, particularly building services. Schneider and Danfoss approved partners. Our sister company specialises in control and automation systems for industrial and commercial applications particularly building services.



For further information contact our  
project management team on

**0870 240 6460**

*P* +44 (0) 870 240 6460

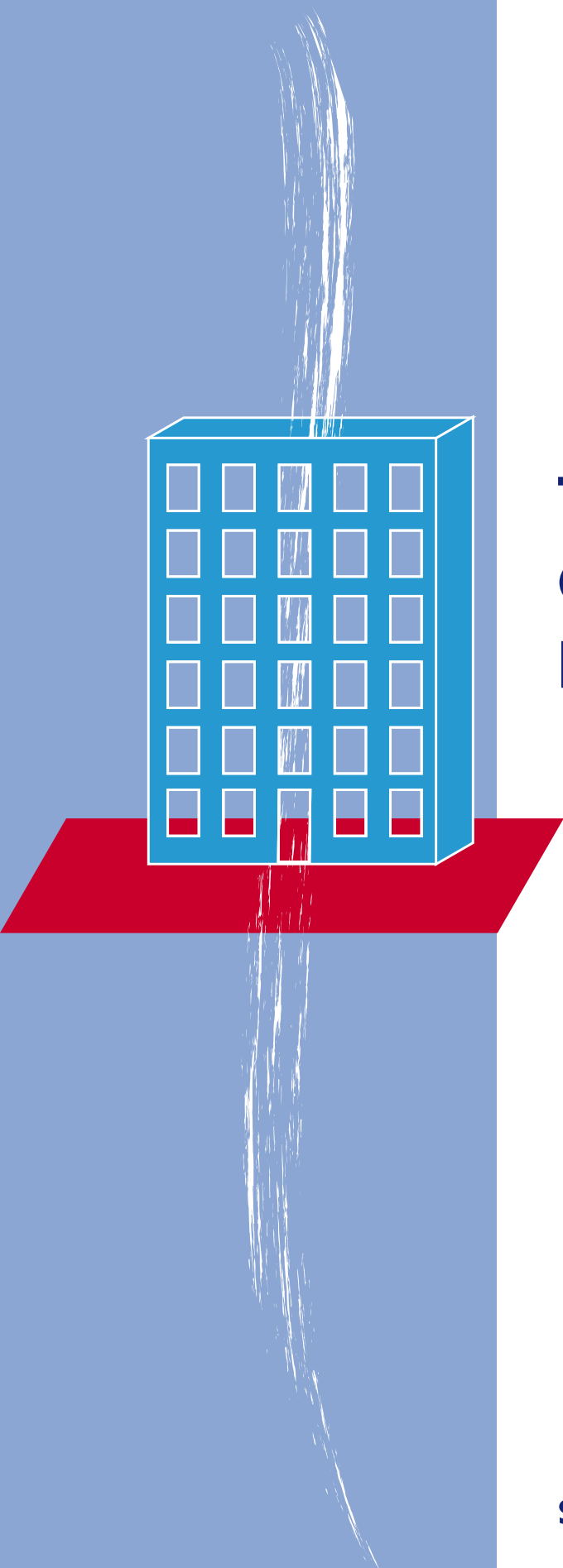
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# **The Guide to Smoke Control Solutions for Flats**

**smoke control**

