

**Smoke Master SMPA**  
*Compact pressurisation system*



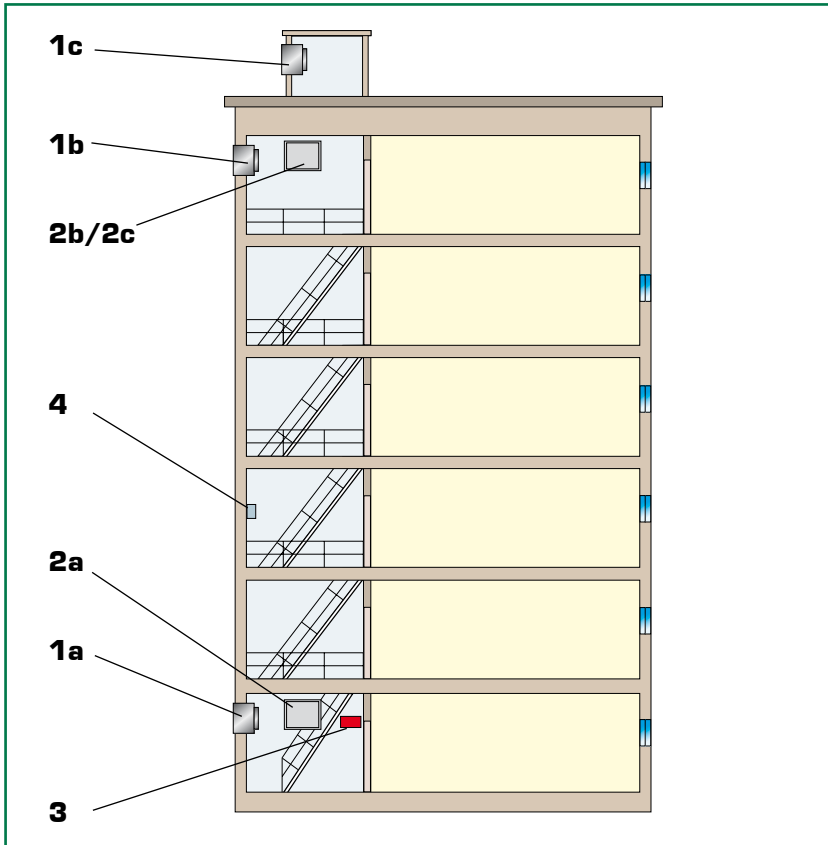
**FläktWoods**



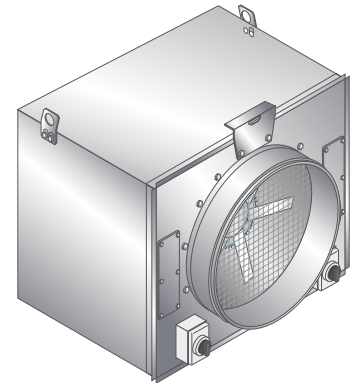
# Contents

System overview .....	4
Design and operation .....	5
Technical specification .....	6
Electric and control equipment .....	7
Apartment air release path .....	9
Installation .....	10
Product code .....	11

# System overview



**1a, 1b or 1c**



SMPA-1

Fan unit

**2a, 2b or 2c**



SMPZ-2

Control unit

**3**



SMPZ-3

Control panel

**4**



SMIZ-4

Differential pressure transmitter

SMOKE MASTER SMPA is an all-inclusive total solution for exit route pressurisation. The system has been designed and the components constructed to meet the EN 12101-6 requirements. The system has been subjected to a variety of tests at Fläkt Woods' own laboratories. SMPA has been designed for pressurisation of exit routes of different types, such as the stairwells of residential buildings, underground exit routes, and the exit routes from car parks. The SMPA-1 fan unit is available with three sizes which makes it suitable for use over a wide range of air volumes.

Due to its compact structure, the SMPA fan unit (SMPA-1) has small overall dimensions and, therefore, it is also suitable for a variety of renovation projects. In blocks of flats, the fan unit can be installed in the upper or lower part of the stairwell.

An SMPA total solution comprises a smoke hatch integrated into the encapsulated fan unit, a control panel, and a control unit. The apartment air release solutions with spindle motors, smoke detectors, and control units are supplied by our partners.

# Design and operation

## General

The product development of the SMPA pressurisation system has accounted for the EN-12101-6, (RIL 232-2007) requirements and different pressurisation classes. In practice, projects need to pay special attention to choosing the correct pressurisation class, because different pressurisation classes will result in very different pressurisation air flows. There are many things that affect the choice of pressurisation class, such as the size of the building and the instructions for exit. The pressurisation class should always be chosen in cooperation with the experts of the local fire department. The aim of pressurisation design is to create without delay a 50 Pa overpressure in the stairwell (exit route) in the event of a fire in an apartment.

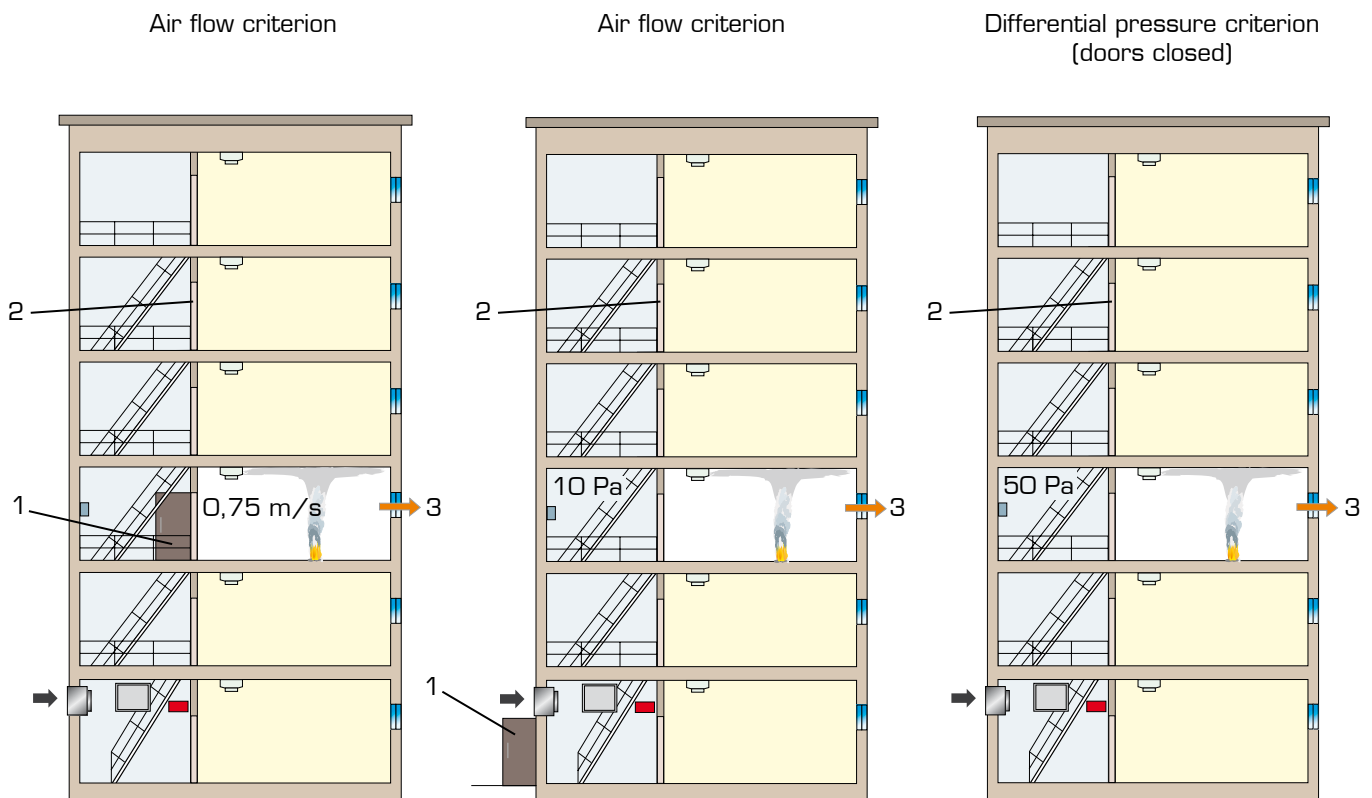
The pressurisation fan is automatically activated by a smoke detector in the apartment on fire. The smoke detector shall also automatically open the air release path (smoke extract window) in the apartment. The air release path shall have a minimum opening (free area) of 0.5 m<sup>2</sup>, if the air flow velocity through an open door is desired to reach 0.75 m/s.

If the door of the apartment on fire opens, the system automatically increases the air flow so that it will reach a velocity of at least 0,75 m/s in the direction of the space on fire.

## Dimensioning and quick guide

Design and choose in cooperation with rescue authorities the suitable pressurisation class for the site. Select on the basis of the pressurisation class and the number of storeys the most suitable size from the SMPA product family. Please contact Fläkt Woods for expert consultation on the suitability of SMPA for the project.

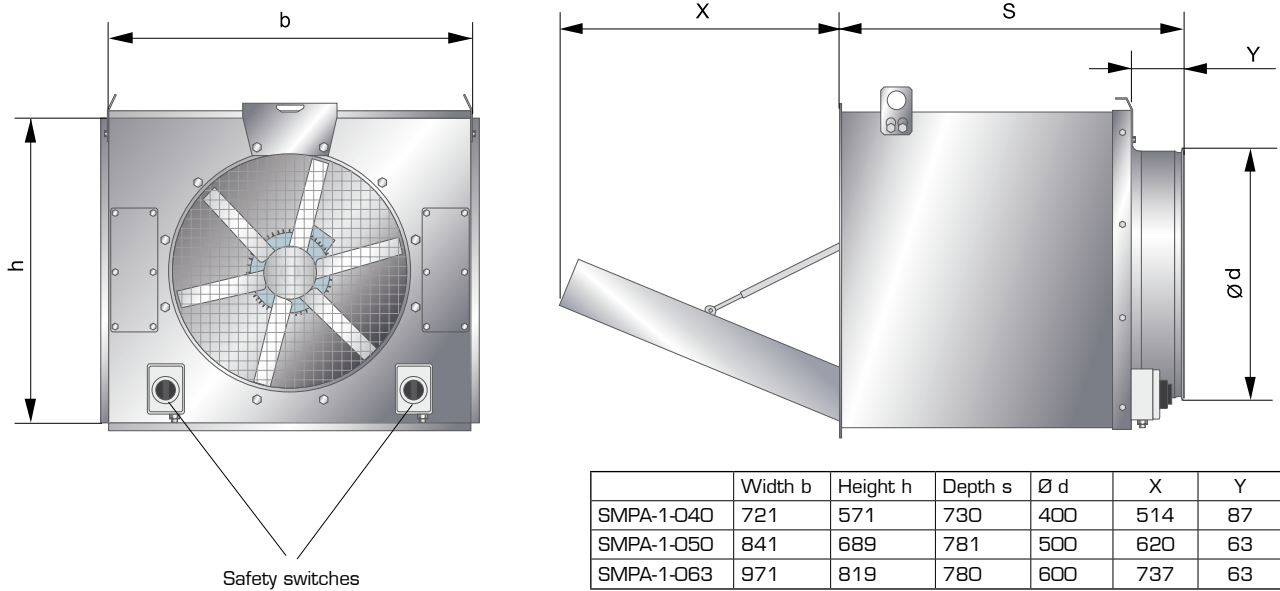
Pressurisation class A		Pressurisation class C	
number of storeys	SMPA	number of storeys	SMPA
3-8	O40	8-12	O50, O63
8-12	O40, O50	12-	O63
12-	O50, O63	-	-



Design conditions for pressurisation class C. 1. Door open, 2. Door closed, 3. Air release path.

# Technical specification

## Dimensions



## Materials:

**Fan unit:** The outer and inner casings are made of galvanized steel sheet and the shroud has 100 mm mineral wool insulation. The smoke hatches are made of galvanized steel sheet and insulated with mineral wool.

## Weights kg

SMPA-1-040	90
SMPA-1-050	120
SMPA-1-063	170

# Electric and control equipment

## General:

Every SMOKE MASTER SMPA system comes with the necessary electric and control equipment.

The SMPA basic package includes the following electric and control equipment:

- control unit SMPZ-2
- control panel SMPZ-3
- differential pressure transmitter SMIZ-4
- safety switches

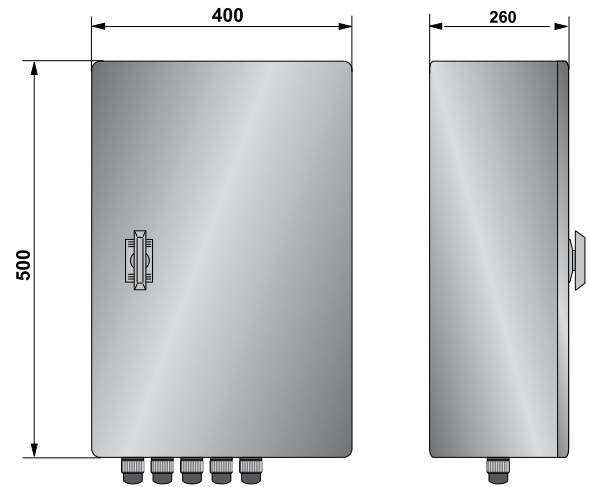
## Control unit SMPZ-2

- junction box
- frequency converter
- automatic control system

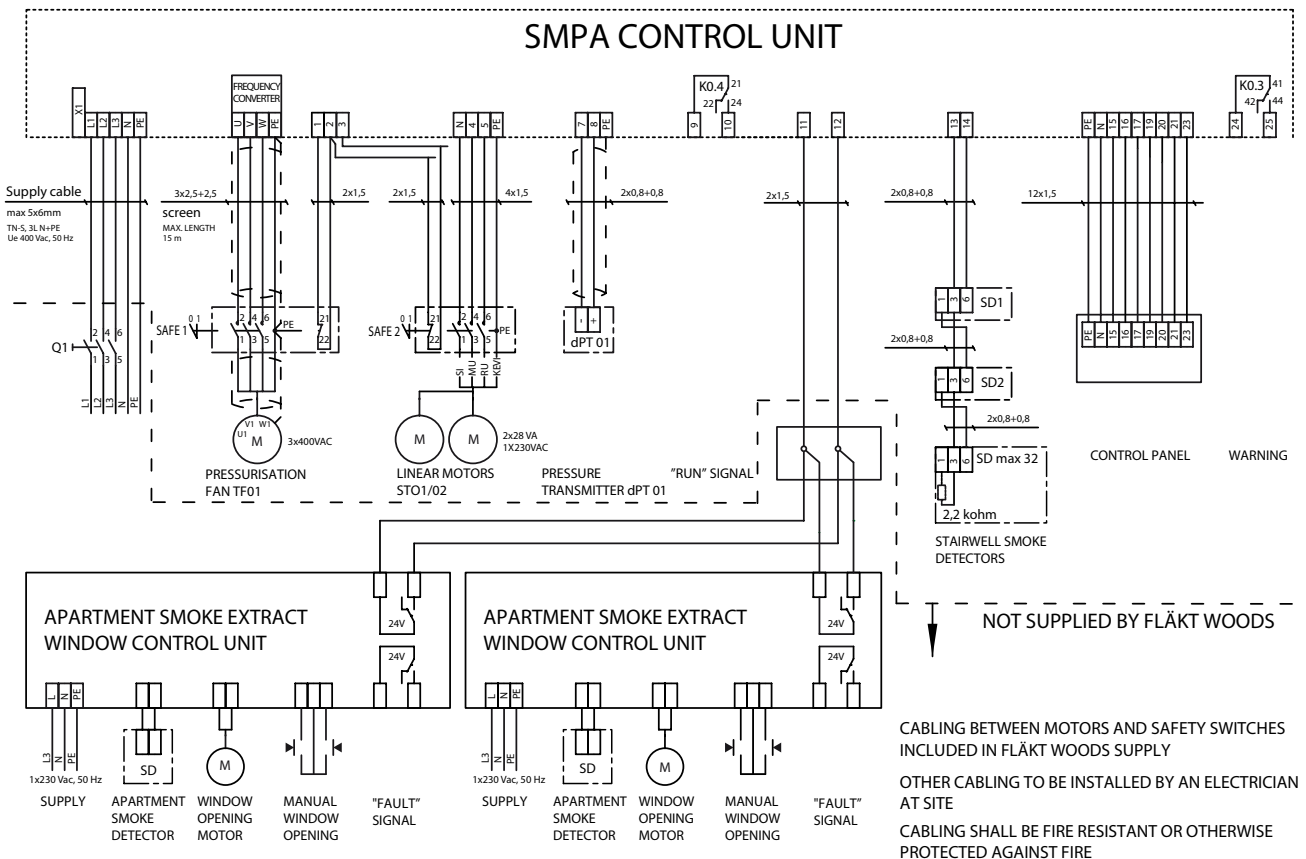


## SMPA electric connection data

System		Pressurisation fan		
Size	Total current	Power	Current	Speed of rotation
SMPA-040	4,5 A	1,6 kW	3,8 A	2800 rpm
SMPA-050	12,0 A	6,2 kW	11,6 A	2910 rpm
SMPA-063	16,0 A	8,3 kW	15,6 A	2910 rpm



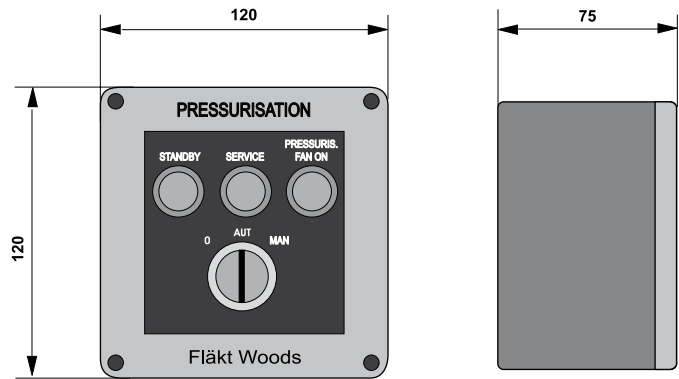
## Wiring diagram and electric connections



# Electric and control equipment

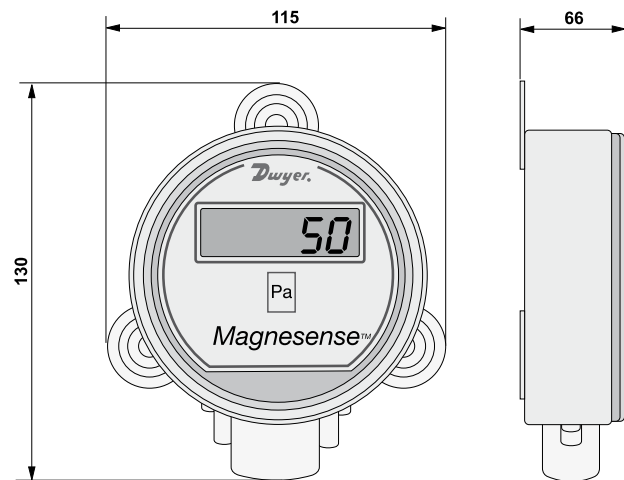
## Control panel SMPZ-3

- for controlling pressurisation
- with indicator lights

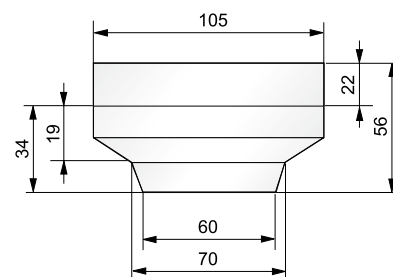


## Differential pressure transmitter SMIZ-4

- for controlling the fan
- to be installed in the stairwell



## Smoke detector FDRC-2-SMIA (Optional extra)





## Apartment air release path

### General

For proper operation of the pressurisation system, there must be an automatically opening air release path in the smoke detector is activated, allowing gases to escape outside. The air release path shall be located near the apartment entrance to prevent interior doors, etc. from restricting the gas flow. The air release path can be a window, a smoke extraction damper, or other appropriate solution. A key design principle to consider is that the minimum free area of the air release path shall be 0.5 m<sup>2</sup>, in order to reach an air flow of at least 0.75 m/s through an open door. Air release paths to be incorporated into the facade shall always be designed in close cooperation with the architect and fire authorities, which means that the need for smoke extract solutions in apartments is an issue that should be addressed already at the initial meeting of a new project.

The SMOKE MASTER SMPA control unit needs a signal from the apartment system via a potential free, normally open contact. Complete smoke extraction window solutions (with spindle motors, control units, and smoke detectors) facilitate the design and implementation process. The following companies supply smoke extraction window solutions that are compatible with the Fläkt Woods SMOKE MASTER SMPA system:

MOVETEC Oy, ESPOO, FINLAND  
Tel. +358 400 412543, +358 9 5259230  
[www.movetec.fi](http://www.movetec.fi)

ROCA Finland Oy, TURKU, FINLAND  
Tel. +358 20 7438937  
[www.roca.fi](http://www.roca.fi)

### Pressurisation without apartment air release path

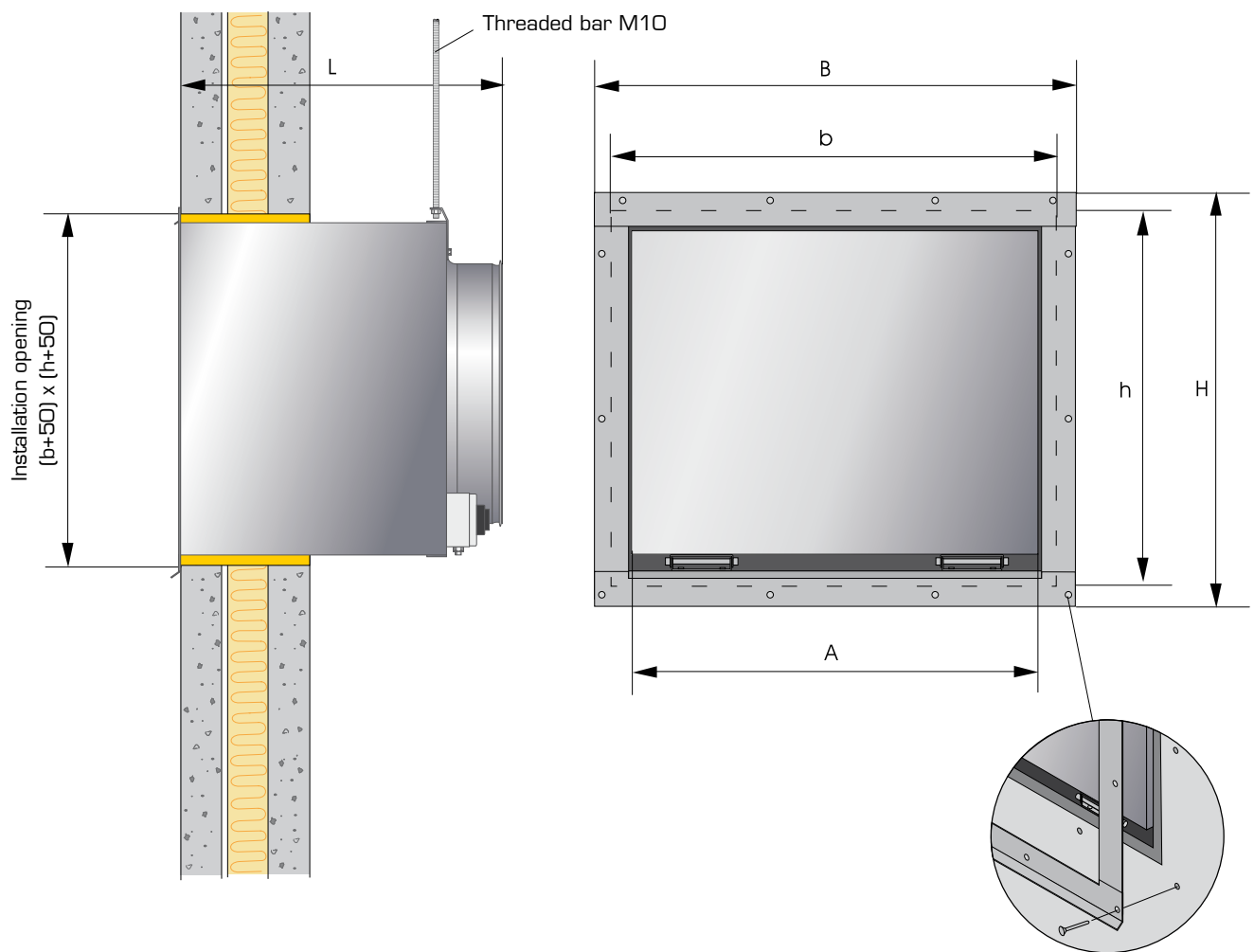
For the pressurisation system to comply with the relevant standards, there should be a air release path in each apartment. In reality, however, it may not always be possible, for some reason or another, to use apartment smoke extraction windows.

If a decision is made, in consultation with rescue authorities and building control officers, to deviate from the standards and use the SMOKE MASTER SMIA pressurisation system without air release paths in the apartments, the following should be observed: To minimise the risk of having a door open to a burning apartment, door closers or similar equipment should be used to ensure that the doors close in the event of a fire. Moreover, through guidance and fire drills the occupants can be advised to close the apartment doors in case of fire. If the smoke detectors are placed in the stairwell, there should be detectors at each landing. Fläkt Woods supplies smoke detectors (FDRC-2-SMPA) that allow direct connection to the control unit.

# Installation

These instructions are also supplied with every SMPA system. For more information, please contact your local Fläkt Woods dealer.

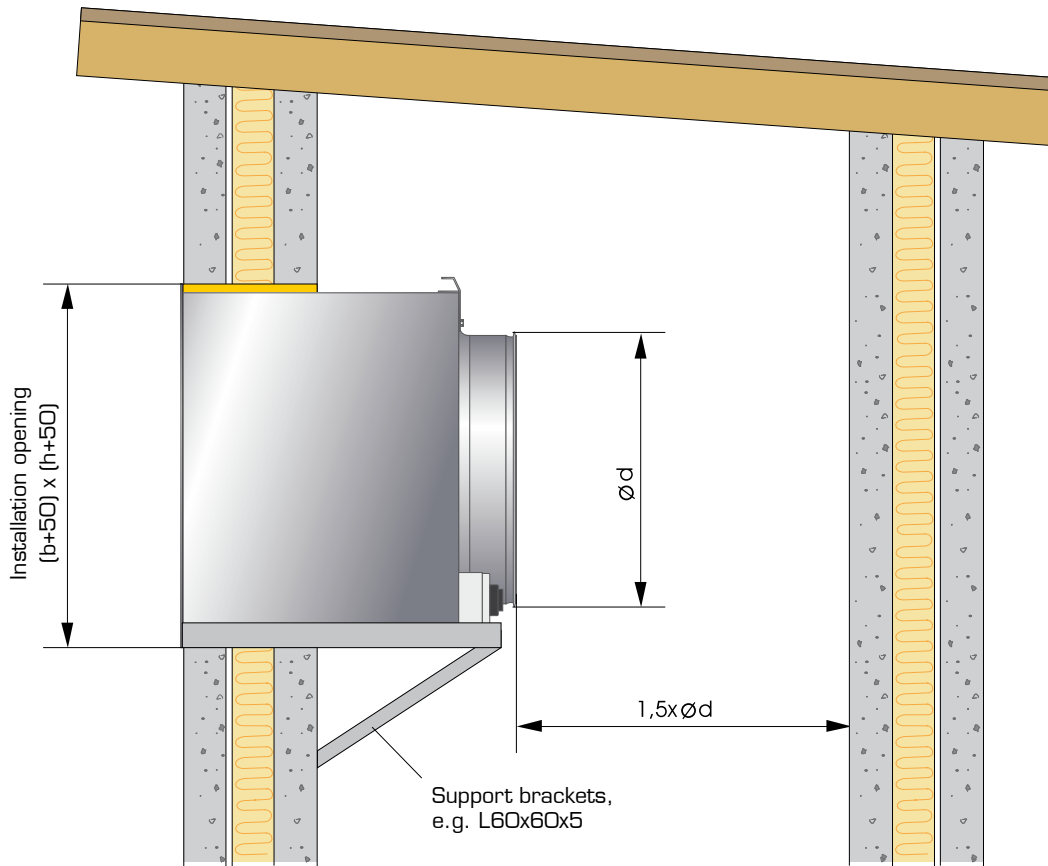
## 1. Wall mounting



Size	A	B	b	H	h	L
O40	689	836	721	707	571	730
O50	802	952	837	820	686	778
O63	932	1080	965	947	813	778

# Installation and Product code

## 2. Roof mounting



Product code  
**Pressurisation and smoke exhaust system SMPA-aaa**  
 Size (cm) \_\_\_\_\_  
 040, 050, 063

Optional extras:  
**Smoke detector**

**FDRC-2-SMIA**

The basic package includes:

- |                                   |        |
|-----------------------------------|--------|
| Fan unit                          | SMPA-1 |
| Control unit                      | SMPZ-2 |
| Control panel                     | SMPZ-3 |
| Differential pressure transmitter | SMIZ-4 |

Component codes (when ordering individual components):

Fan unit \_\_\_\_\_ SMPA-1-aaa  
 Size (cm) \_\_\_\_\_  
 040, 050, 063

Control unit \_\_\_\_\_ SMPZ-2-aaa  
 Size (cm) \_\_\_\_\_  
 040, 050, 063

Control panel \_\_\_\_\_ SMPZ-3  
 Differential pressure transmitter \_\_\_\_\_ SMIZ-4

# We Bring Air to Life

Fläkt Woods is a global leader in air management. We specialise in the design and manufacture of a wide range of air climate and air movement solutions. And our collective experience is unrivalled.

Our constant aim is to provide systems that precisely deliver required functions and performance, as well as maximise energy efficiency.

## Solutions for all your air climate and air movement needs

Fläkt Woods is providing solutions for ventilation and air climate for buildings as well as fan solutions for industry and infrastructure.

### ● Air Handling Units (AHUs)

Modular, compact and small AHU units. Designed to ensure optimisation of indoor air quality, operational performance and service life.

### ● Air Terminal Devices and Ducts

Supply and exhaust diffusers and valves for installation on walls, ceiling or floor are all included in our large range and fit all types of applications.

### ● Chilled Beams

Active induction beams for ventilation, cooling and heating, and passive convection beams for cooling. For suspended or flush-mounted ceiling installation - and multi-service configuration. With unique Comfort Control and Flow Pattern Control features.

### ● Residential ventilation

A complete range of products for residential ventilation. Consists of ventilation units, exhaust air fans and cooker hoods designed to optimise indoor comfort and save energy.

### ● Fans

Advanced axial, centrifugal and boxed fans for general and specialist applications. Comprehensive range including high temperature and ATEX compliant options. Engineered for energy efficiency and minimised life cycle cost.

### ● Chillers

Air-cooled and water-cooled chillers with cooling capacity up to 1800 kW. Designed to minimise annual energy consumption in all types of buildings.

### ● Controls and drives

Variable speed drives and control systems, all tested to ensure total compatibility with our products. Specialist team can advise on energy saving and overall system integration.

## Fläkt Woods Oy

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The logo for Fläkt Woods, featuring the company name in a bold, green, sans-serif font. A stylized green swoosh or arc is positioned above the 't' in 'Woods' and below the 'ä' in 'Fläkt'.