

KIT-PE StairShield & COMBATOR

Staircase overpressure kit with a fire brigade panel

SMOKE EXHAUST



STAIRCASE OVERPRESSURE KIT WITH A FIRE BRIGADE PANEL

KIT-PE StairShield & COMBATOR

FUNCTION

The stair pressurization kit is a system designed to maintain positive air pressure or overpressure in an enclosed stairwell or vertical escape space, such as an emergency exit, during a fire or other emergency.

When a fire occurs in a building, such as an office, a hallway, a lobby, or even a parking lot, hot air and smoke tend to rise and accumulate in the upper spaces of the building, including stairs. If the stairs are not pressurized, the smoke and heat find a perfect way to ascend, which would be the stairwell. This fact would make it difficult and/or impossible for people to escape from the building and for emergency teams to access the interior of the building.

Stair pressurization helps prevent smoke and heat ingress into enclosed stairwells and other vertical exhaust spaces by maintaining positive air pressure in the space. This positive pressure prevents smoke and heat from entering the stairs, allowing for greater safety in the evacuation of people and the entry of emergency teams.

In addition, pressurizing stairwells can also help maintain a viable escape route for people in other parts of the building by preventing smoke and fire from spreading through stairwells to adjoining floors of the building block.

STANDARDS

Regulations for pressurizing stairs vary by country and region, but there are international standards that establish best practices and technical specifications for pressurizing stairs in buildings.

In Europe, the EN 12101 standard establishes the requirements for components and control systems for fire ventilation systems, including stair pressurization.



Since November 2022, the European standard UNE-EN 12101-13:2022 has been in force in Spain which, together with UNE-EN 12101-6:2022, annuls and replaces the previous UNE EN 12101-6:2006. All standards will coexist until 01.02.2024, but from then on only UNE-EN 12101 13:2022 and UNE-EN 12101-6:2022 will be valid.

NEW! COMBATOR fire box next to the kit



Until the arrival of the new standard, it was only necessary to install a stair pressurization kit that automatically managed the operation of the fan to maintain a differential pressure of 30 to 50 Pa in the escape route.

The new standard implies the installation of this kit next to a fire department that allows them to control and monitor the stairwell pressurization system from a central location.

The fire box must be installed in a convenient location, usually on the ground floor, easily accessible, and is connected to the stair pressurization system.

This panel has 3 operating modes that allow firefighters to choose the most appropriate option to force different scenarios depending on whether they want to generate new escape routes for smoke or people:

- ✓ OFF, shutdown of the stair pressurization system
- ✓ Manual
- ✓ Automatic (mode activated by default)

The kit includes visual alarms that alert if a problem with the system is detected, such as a drop in pressure or a blockage in the duct.

DIFFERENCES BETWEEN STANDARDS

EN 12101 is a series of European standards that establishes the requirements for ventilation components and systems for fire safety. EN 12101-6 and EN 12101-13 are two parts of this series that focus on requirements for

system components smoke and heat exhaust ventilation issues in case of fire.

The main differences are the following:

Old 12101-6:2006	New 12101-13:2022 + 12101-6:2022
Requirements in calculation	Requirements in calculation and kit composition
With door closed: 50Pa	With door closed: >30Pa
With door open:	With door open:
<ul style="list-style-type: none"> ✓ Class A speed = 0,75m/s [residential] ✓ Class C-D speed = 2,85m/s* [tertiary] 	<ul style="list-style-type: none"> ✓ Class 1 speed = 1m/s [residential] ✓ Class 2 speed = 2m/s [tertiary]
At heights >11m, gratings must be driven and installed every 3 floors.	

* This velocity refers to the equivalent of considering 10 Pa pressure differential with open doors.

PRESSURIZATION CONTROL ACCORDING TO EUROPEAN STANDARDS

UNE EN 12101-13:2022

Update of the previous UNE EN 12101-6:2006 standard for the design, installation, commissioning and maintenance of differential pressure systems, for protection against smoke in escape routes.

The use of one or another standard for the design of the pressurization system depends on the regulatory situation in each country.

UNE EN 12101-6:2022

Standard for testing the performance of differential pressure kits used for protection against smoke in escape routes.

CONSTRUCTIVE FEATURES

Stair pressurization kit to automatically control the differential pressure and maintain it at 30-50 Pa in a single stage in accordance with the UNE-EN 12101-6 standard.

- ✓ Consisting of a control panel (KIT-PE) and a delivery unit (any fan to supply air) that will provide the stairs or escape route with sufficient pressure.
- ✓ Available for three-phase and single-phase equipment.
- ✓ The KIT-PE has everything necessary to operate autonomously, so the installer's work will be much simpler and he will only have to connect the kit to the fan and the fire detection center.

The KIT-PE is composed of the following elements:

- ✓ **StairShield**
- ✓ **COMBATOR**

KIT-PE includes a flow sensor to redundantly ensure air circulation in the system and in the correct direction.

MODELS

KIT-PE

StairShield

DAMPER 1 StairShield

DAMPER 2 StairShield

dual StairShield

DAMPER 1 *dual* StairShield

DAMPER 2 *dual* StairShield

DIFFERENCES KIT-PE & KIT-PE DAMPER

- ✓ The difference between a **KIT-PE** and a **KIT-PE DAMPER** is that, without a damper, the kit is only responsible for pressurizing the staircase, and with a damper it prevents smoke from entering the staircase and will continue pressurizing if you have a second damper. regulation gate. Depending on the installation, one system or another will be required.

KIT- PE StairShield

- ✓ Frequency inverter programmed to maintain constant pressure.
- ✓ Maximum output frequency: 50Hz
- ✓ High precision DPT differential pressure probe. Steel frame fitted with a 3mm double bar lock to limit external access. IP66 protection. Complies with IEC 62208, UL, CUL, BV, DNV and GL regulations.
- ✓ Magnetothermal protector.
- ✓ Line and error LED.
- ✓ Test button.
- ✓ Operation mode selector.

KIT- PE COMBATOR

- ✓ Firefighter control panel for StairShield, made of resistant plastic material.

The selection of overpressure kits must be made based on the maximum intensity absorbed by the fan to be regulated.

- ✓ Systems with a damper, this is placed in suction, and is followed by a smoke sensor.

Below is the fan that will provide air to the stairs.

KIT-PE

StairShield



- ✓ Kit according to the new regulations with a team of firefighters.
- ✓ It only manages one fan. One kit per staircase is necessary.

Code	Model
KPESSIO1	KIT PE STAIRSHIELD I 2,5A (0,4kW) in: 230Vac II, out: 230Vac III
KPESSIO3	KIT PE STAIRSHIELD I 4,2A (0,75kW) in: 230Vac II, out: 230Vac III
KPESSIO4	KIT PE STAIRSHIELD I 7A (1,5kW) in: 230Vac II, out: 230Vac III
KPESSIO5	KIT PE STAIRSHIELD I 10A (2,2kW) in: 230Vac II, out: 230Vac III
KPESSIII01	KIT PE STAIRSHIELD III 2,2A (0,75kW) in: 400Vac III, out: 400Vac III
KPESSIII02	KIT PE STAIRSHIELD III 3,6A (1,5kW) in: 400Vac III, out: 400Vac III
KPESSIII03	KIT PE STAIRSHIELD III 5A (2,2kW) in: 400Vac III, out: 400Vac III
KPESSIII04	KIT PE STAIRSHIELD III 8A (4kW) in: 400Vac III, out: 400Vac III
KPESSIII05	KIT PE STAIRSHIELD III 12A (5,5kW) in: 400Vac III, out: 400Vac III
KPESSIII06	KIT PE STAIRSHIELD III 16A (7,5kW) in: 400Vac III, out: 400Vac III
KPESSIII07	KIT PE STAIRSHIELD III 23A (11,0kW) in: 400Vac III, out: 400Vac III
KPESSIII08	KIT PE STAIRSHIELD III 29,5A (15,0kW) in: 400Vac III, out: 400Vac III
KPESSIII09	KIT PE STAIRSHIELD III 41A (18,5kW) in: 400Vac III, out: 400Vac III

Code	Model
COMBSS	COMBATOR STAIRSHIELD



KIT-PE

dual StairShield



- ✓ Allows two fans to be controlled and is useful when there is only one staircase or escape route.
- ✓ The number of fans is doubled, but the pressurization system is not doubled. The fact that there are two fans is to increase the security of the system and that, in the event of failure of one of the fans, the second can start up.
- ✓ In residential blocks it is the most suitable option according to the regulations given that there is usually only one stairwell.

Code	Model
KPESSDI01	KIT PE DUAL STAIRSHIELD I 2,5A (0,4kW) in: 230Vac II, out: 230Vac III
KPESSDI03	KIT PE DUAL STAIRSHIELD I 4,2A (0,75kW) in: 230Vac II, out: 230Vac III
KPESSDI04	KIT PE DUAL STAIRSHIELD I 7A (1,5kW) in: 230Vac II, out: 230Vac III
KPESSDI05	KIT PE DUAL STAIRSHIELD I 10A (2,2kW) in: 230Vac II, out: 230Vac III
KPESSDIII01	KIT PE DUAL STAIRSHIELD III 2,2A (0,75kW) in: 400Vac III, out: 400Vac III
KPESSDIII02	KIT PE DUAL STAIRSHIELD III 3,6A (1,5kW) in: 400Vac III, out: 400Vac III
KPESSDIII03	KIT PE DUAL STAIRSHIELD III 5A (2,2kW) in: 400Vac III, out: 400Vac III
KPESSDIII04	KIT PE DUAL STAIRSHIELD III 8A (4kW) in: 400Vac III, out: 400Vac III
KPESSDIII05	KIT PE DUAL STAIRSHIELD III 12A (5,5kW) in: 400Vac III, out: 400Vac III
KPESSDIII06	KIT PE DUAL STAIRSHIELD III 16A (7,5kW) in: 400Vac III, out: 400Vac III
KPESSDIII07	KIT PE DUAL STAIRSHIELD III 23A (11,0kW) in: 400Vac III, out: 400Vac III
KPESSDIII08	KIT PE DUAL STAIRSHIELD III 29,5A (15,0kW) in: 400Vac III, out: 400Vac III
KPESSDIII09	KIT PE DUAL STAIRSHIELD III 41A (18,5kW) in: 400Vac III, out: 400Vac III

Code	Model
COMBSSD	COMBATOR DUAL STAIRSHIELD

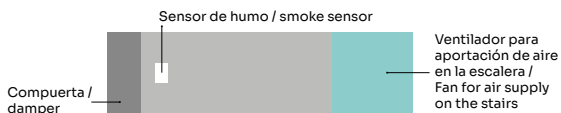


KIT-PE

DAMPER 1 StairShield



✓ Allows you to control a motorized regulation **damper** and a **fan**. In the event of detecting smoke, the damper will close and the fan will stop so that smoke does not enter the stairs.



Code	Model
KPESSIO1D1	KIT PE DAMPER 1 STAIRSHIELD I 2,5A (0,4kW) in: 230Vac II, out: 230Vac III
KPESSIO3D1	KIT PE DAMPER 1 STAIRSHIELD I 4,2A (0,75kW) in: 230Vac II, out: 230Vac III
KPESSIO4D1	KIT PE DAMPER 1 STAIRSHIELD I 7A (1,5kW) in: 230Vac II, out: 230Vac III
KPESSIO5D1	KIT PE DAMPER 1 STAIRSHIELD I 10A (2,2kW) in: 230Vac II, out: 230Vac III
KPESSIII01D1	KIT PE DAMPER 1 STAIRSHIELD III 2,2A (0,75kW) in: 400Vac III, out: 400Vac III
KPESSIII02D1	KIT PE DAMPER 1 STAIRSHIELD III 3,6A (1,5kW) in: 400Vac III, out: 400Vac III
KPESSIII03D1	KIT PE DAMPER 1 STAIRSHIELD III 5A (2,2kW) in: 400Vac III, out: 400Vac III
KPESSIII04D1	KIT PE DAMPER 1 STAIRSHIELD III 8A (4kW) in: 400Vac III, out: 400Vac III
KPESSIII05D1	KIT PE DAMPER 1 STAIRSHIELD III 12A (5,5kW) in: 400Vac III, out: 400Vac III
KPESSIII06D1	KIT PE DAMPER 1 STAIRSHIELD III 16A (7,5kW) in: 400Vac III, out: 400Vac III
KPESSIII07D1	KIT PE DAMPER 1 STAIRSHIELD III 23A (11,0kW) in: 400Vac III, out: 400Vac III
KPESSIII08D1	KIT PE DAMPER 1 STAIRSHIELD III 29,5A (15,0kW) in: 400Vac III, out: 400Vac III
KPESSIII09D1	KIT PE DAMPER 1 STAIRSHIELD III 41A (18,5kW) in: 400Vac III, out: 400Vac III

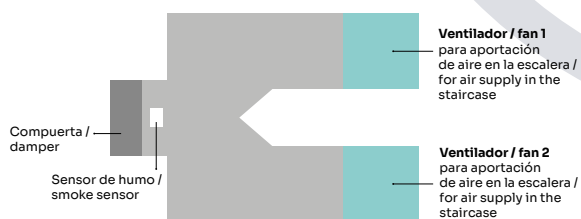
Code	Model
COMBSSD1	COMBATOR DAMPER 1 STAIRSHIELD

KIT-PE

DAMPER 1 *dual* StairShield



✓ Allows you to control a motorized regulation **damper** and **two fans with alternative operation**. In the case of detecting smoke, the damper will close and the fan that was running will stop. If there is no smoke, but one of the fans fails, there will always be the other to continue pressurizing.



Code	Model
KPESSDI01D1	KIT PE DAMPER 1 DUAL STAIRSHIELD I 2,5A (0,4kW) in: 230Vac II, out: 230Vac III
KPESSDI03D1	KIT PE DAMPER 1 DUAL STAIRSHIELD I 4,2A (0,75kW) in: 230Vac II, out: 230Vac III
KPESSDI04D1	KIT PE DAMPER 1 DUAL STAIRSHIELD I 7A (1,5kW) in: 230Vac II, out: 230Vac III
KPESSDI05D1	KIT PE DAMPER 1 DUAL STAIRSHIELD I 10A (2,2kW) in: 230Vac II, out: 230Vac III
KPESSDI101D1	KIT PE DAMPER 1 DUAL STAIRSHIELD III 2,2A (0,75kW) in: 400Vac III, out: 400Vac III
KPESSDI102D1	KIT PE DAMPER 1 DUAL STAIRSHIELD III 3,6A (1,5kW) in: 400Vac III, out: 400Vac III
KPESSDI103D1	KIT PE DAMPER 1 DUAL STAIRSHIELD III 5A (2,2kW) in: 400Vac III, out: 400Vac III
KPESSDI104D1	KIT PE DAMPER 1 DUAL STAIRSHIELD III 8A (4kW) in: 400Vac III, out: 400Vac III
KPESSDI105D1	KIT PE DAMPER 1 DUAL STAIRSHIELD III 12A (5,5kW) in: 400Vac III, out: 400Vac III
KPESSDI106D1	KIT PE DAMPER 1 DUAL STAIRSHIELD III 16A (7,5kW) in: 400Vac III, out: 400Vac III
KPESSDI107D1	KIT PE DAMPER 1 DUAL STAIRSHIELD III 23A (11,0kW) in: 400Vac III, out: 400Vac III
KPESSDI108D1	KIT PE DAMPER 1 DUAL STAIRSHIELD III 29,5A (15,0kW) in: 400Vac III, out: 400Vac III
KPESSDI109D1	KIT PE DAMPER 1 DUAL STAIRSHIELD III 41A (18,5kW) in: 400Vac III, out: 400Vac III

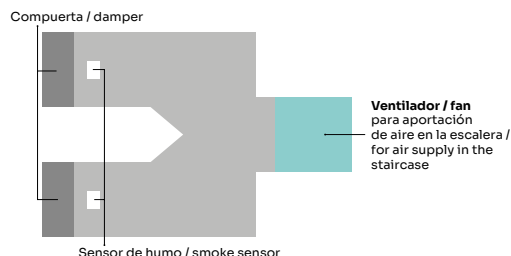
Code	Model
COMBSSDD1	COMBATOR DAMPER 1 DUAL STAIRSHIELD

KIT-PE

DAMPER 2 StairShield



- ✓ Allows the control of **two** motorized regulation **dampers** and **a fan**. If smoke is detected, the damper will close and only if the other damper does not detect smoke, the fan will continue to work to continue pressurizing.



Code	Model
KPESSIO1D2	KIT PE DAMPER 2 STAIRSHIELD I 2,5A (0,4kW) in: 230Vac II, out: 230Vac III
KPESSIO3D2	KIT PE DAMPER 2 STAIRSHIELD I 4,2A (0,75kW) in: 230Vac II, out: 230Vac III
KPESSIO4D2	KIT PE DAMPER 2 STAIRSHIELD I 7A (1,5kW) in: 230Vac II, out: 230Vac III
KPESSIO5D2	KIT PE DAMPER 2 STAIRSHIELD I 10A (2,2kW) in: 230Vac II, out: 230Vac III
KPESSIII01D2	KIT PE DAMPER 2 STAIRSHIELD III 2,2A (0,75kW) in: 400Vac III, out: 400Vac III
KPESSIII02D2	KIT PE DAMPER 2 STAIRSHIELD III 3,6A (1,5kW) in: 400Vac III, out: 400Vac III
KPESSIII03D2	KIT PE DAMPER 2 STAIRSHIELD III 5A (2,2kW) in: 400Vac III, out: 400Vac III
KPESSIII04D2	KIT PE DAMPER 2 STAIRSHIELD III 8A (4kW) in: 400Vac III, out: 400Vac III
KPESSIII05D2	KIT PE DAMPER 2 STAIRSHIELD III 12A (5,5kW) in: 400Vac III, out: 400Vac III
KPESSIII06D2	KIT PE DAMPER 2 STAIRSHIELD III 16A (7,5kW) in: 400Vac III, out: 400Vac III
KPESSIII07D2	KIT PE DAMPER 2 STAIRSHIELD III 23A (11,0kW) in: 400Vac III, out: 400Vac III
KPESSIII08D2	KIT PE DAMPER 2 STAIRSHIELD III 29,5A (15,0kW) in: 400Vac III, out: 400Vac III
KPESSIII09D2	KIT PE DAMPER 2 STAIRSHIELD III 41A (18,5kW) in: 400Vac III, out: 400Vac III

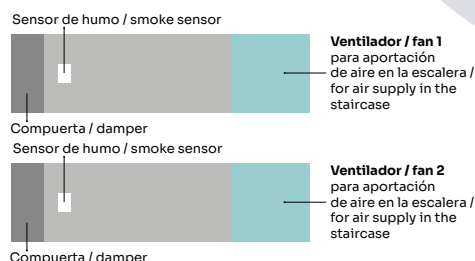
Code	Model
COMBSSD2	COMBATOR DAMPER 2 STAIRSHIELD

KIT-PE

DAMPER 2 dual StairShield



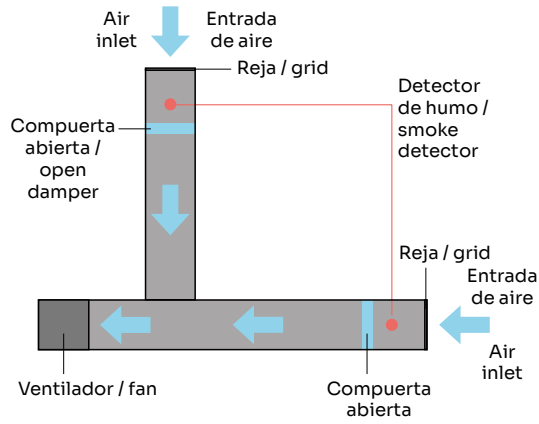
- ✓ Allows you to control **two** motorized regulation **dampers** and **a fan for each damper** that **operate separately**. If smoke is detected, the damper that detects it will close and will stop the fan so that the smoke does not enter. Meanwhile, the other fan will continue pressurizing as long as its damper does not detect a smoke signal.



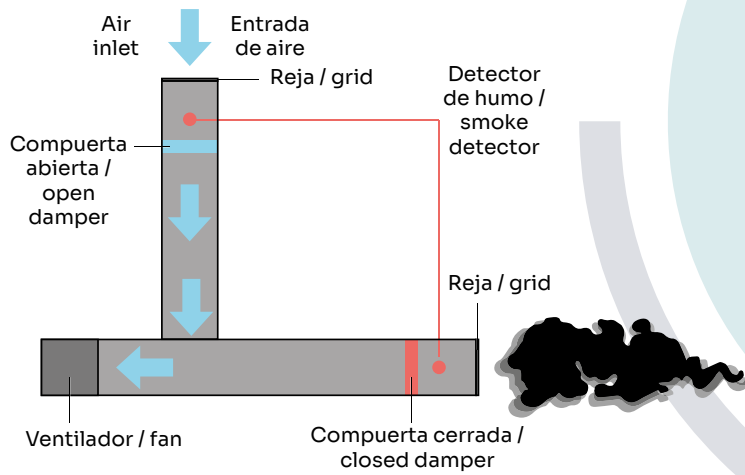
Code	Model
KPESSDI01D2	KIT PE DAMPER 2 DUAL STAIRSHIELD I 2,5A (0,4kW) in: 230Vac II, out: 230Vac III
KPESSDI03D2	KIT PE DAMPER 2 DUAL STAIRSHIELD I 4,2A (0,75kW) in: 230Vac II, out: 230Vac III
KPESSDI04D2	KIT PE DAMPER 2 DUAL STAIRSHIELD I 7A (1,5kW) in: 230Vac II, out: 230Vac III
KPESSDI05D2	KIT PE DAMPER 2 DUAL STAIRSHIELD I 10A (2,2kW) in: 230Vac II, out: 230Vac III
KPESSDIIII01D2	KIT PE DAMPER 2 DUAL STAIRSHIELD III 2,2A (0,75kW) in: 400Vac III, out: 400Vac III
KPESSDIIII02D2	KIT PE DAMPER 2 DUAL STAIRSHIELD III 3,6A (1,5kW) in: 400Vac III, out: 400Vac III
KPESSDIIII03D2	KIT PE DAMPER 2 DUAL STAIRSHIELD III 5A (2,2kW) in: 400Vac III, out: 400Vac III
KPESSDIIII04D2	KIT PE DAMPER 2 DUAL STAIRSHIELD III 8A (4kW) in: 400Vac III, out: 400Vac III
KPESSDIIII05D2	KIT PE DAMPER 2 DUAL STAIRSHIELD III 12A (5,5kW) in: 400Vac III, out: 400Vac III
KPESSDIIII06D2	KIT PE DAMPER 2 DUAL STAIRSHIELD III 16A (7,5kW) in: 400Vac III, out: 400Vac III
KPESSDIIII07D2	KIT PE DAMPER 2 DUAL STAIRSHIELD III 23A (11,0kW) in: 400Vac III, out: 400Vac III
KPESSDIIII08D2	KIT PE DAMPER 2 DUAL STAIRSHIELD III 29,5A (15,0kW) in: 400Vac III, out: 400Vac III
KPESSDIIII09D2	KIT PE DAMPER 2 DUAL STAIRSHIELD III 41A (18,5kW) in: 400Vac III, out: 400Vac III

Code	Model
COMBSSDD2	COMBATOR DAMPER 2 DUAL STAIRSHIELD

Clean air situation

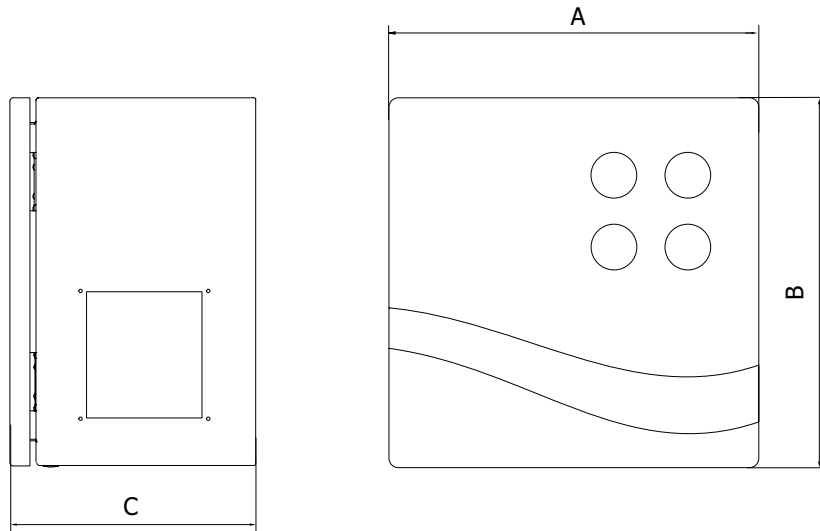


Smoke situation



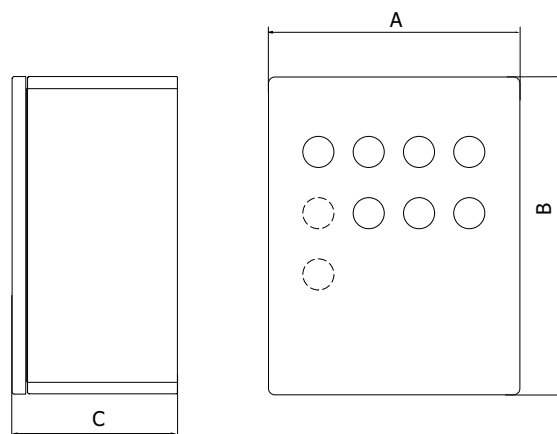
DIMENSIONS

KIT-PE



Model	A	B	C
KIT PE STAIRSHIELD	500	500	210
KIT PE DUAL STAIRSHIELD	500	500	210
KIT PE DAMPER 1 STAIRSHIELD	500	500	210
KIT PE DAMPER 1 DUAL STAIRSHIELD	500	500	210
KIT PE DAMPER 2 STAIRSHIELD	500	500	210
KIT PE DAMPER 2 DUAL STAIRSHIELD	500	500	210

KIT-PE



Model	A	B	C
COMBATOR STAIRSHIELD	240	190	95
COMBATOR DUAL STAIRSHIELD	240	190	95
COMBATOR DAMPER 1 STAIRSHIELD	240	190	95
COMBATOR DAMPER 1 DUAL STAIRSHIELD	240	190	95
COMBATOR DAMPER 2 STAIRSHIELD	240	190	95
COMBATOR DAMPER 2 DUAL STAIRSHIELD	240	190	95



VORTICE GROUP COMPANIES

VORTICE S.P.A

Strada Cerca, 2
Frazione di Zoate
20067 Tribiano
(Milan) Italy
Tel. (+39) 02 906991
Fax (+39) 02 90699625
vortice.com

VORTICE LIMITED

Beeches House-Eastern
Avenue Burton upon Trent
DE13 0BB United Kingdom
Tel. (+44) 1283 492949
Fax (+44) 1283 544121
vortice.ltd.uk

VORTICE INDUSTRIAL S.R.L.

Via B. Brugnoli 3,
37063 Isola della Scala
(Verona) Italy
Tel. (+39) 045 6631042
Fax (+39) 045 6631039
vorticeindustrial.com

CASALS VENTILACIÓN AIR INDUSTRIAL S.L.

Ctra. Camprodon, s/n 17860
Sant Joan de les
Abadesses
(Girona) Spain
Tel. (+34) 972720150
casals.com

VORTICE LATAM S.A.

Bodega #6
Zona Franca Este Alajuela,
Alajuela 20101
Costa Rica
Tel. (+506) 2201 6934
vortice-latam.com

VORTICE VENTILATION SYSTEM

(Changzhou) Co.LTD
No. 388 West Huanghe Road
Building 19, Changzhou
Post Code: 213000 China
Tel. (+86) 0519 88990150
Fax (+86) 0519 88990151
vortice-china.com

The descriptions and illustrations in this catalogue are intended to be indicative and not binding. Without prejudice to the essential characteristics of the products described and illustrated here, CASALS VENTILACIÓN reserves the right to make, at any time and without notice, changes to parts, aesthetic details or supply of accessories to its products that are deemed to be appropriate for improvement or for any construction or commercial requirement.

This printout completely cancels and replaces all the previous ones.