

# VU120

Rectangular smoke control damper.



CE  
1812



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## Explanation of the abbreviations and pictograms

Wn = nominal width	hod = horizontal duct	KIT = kit (delivered separately for repair or upgrade)
Hn = nominal height	vew = vertical wall penetration	PG = connection flange to the duct
Sn = free air passage	V = volt	GKB (type A) / GKF (type F): "GKB" stands for standard plasterboards (type A according to EN 520) while "GKF" plasterboards offer a higher fire resistance for a similar plate thickness (type F according to EN 520)
E = integrity	W = watt	Cal-Sil = calcium silicate
I = thermal insulation	V AC = Volt alternating current	$\zeta$ [-] = pressure loss coefficient
S = smoke leakage	V DC = Volt direct current	Q = air flow
60/120 = fire resistance time	E.TELE = power supply magnet	$\Delta P$ = static pressure drop
Pa = pascal	E.ALIM = power supply motor	v = air speed in the duct
o -> i = meets the criteria from the outside (o) to the inside (i)	Auto = automatic	Lwa = A-weighted sound power level
i <-> o = fire side not important	Tele = remote controlled	ME = motorised
AA = automatic activation	Pnom = nominal capacity	H = habitat
multi = multi compartment	Pmax = maximum capacity	
1500 = pressure level 3 (1500Pa)	DAS MOD = modular product	
ved = vertical duct	OP = option (delivered with the product)	

	optimal free air passage and minimal pressure loss		superior air tightness (tested at 1500 Pa)
	intermediate dimensions on request		

# DECLARATION OF PERFORMANCE

CE\_DoP\_Rf-t\_V22\_EN - J-11/2019

1. Unique identification code of the product-type:	VU120
2. Intended use/s:	Smoke control damper to be used in smoke control systems, in multi-compartment applications.
3. Manufacturer:	Rf-Technologies NV, Lange Ambachtstraat 40, B-9860 Oosterzele
4. System/s of AVCP:	System 1
5. Harmonised standard / European Assessment Document: notified body / European Technical Assessment, Technical Assessment Body, notified body; certificate of constancy of performance:	EN 12101-8:2011, Efectis with identification number 1812; Efectis - 1812-CPR-1595
6. Declared performance according to EN 12101-8:2011	(fire resistance according to EN 1366-10, classification according to EN 13501-4)

Essential characteristics		Performance	
Range	Shaft type	Sealing	Installation
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Gap between duct and damper (≤ 6 mm) sealed with refractory kit (on a depth ≥ 105 mm)	1
		Gap between duct and damper (≤ 80 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Gap between duct and damper (≤ 80 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Gap between duct and damper (≤ 6 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Gap between duct and damper (≤ 80 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Gap between duct and damper (≤ 80 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Desenfire ≥ 25 mm HD	
		Promatect L500 ≥ 40 mm	
		Geoflam ≥ 35 mm	
		Techniver ≥ 45 mm	
Vertical / horizontal shaft	Vertical shaft	Gap between duct and damper (≤ 6 mm) sealed with refractory kit (on a depth ≥ 105 mm)	1
		Gap between duct and damper (≤ 80 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Gap between duct and damper (≤ 80 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Gap between duct and damper (≤ 6 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Gap between duct and damper (≤ 80 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Gap between duct and damper (≤ 80 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Desenfire ≥ 25 mm THD	
		Reinforced concrete (≥ 2150 kg/m <sup>3</sup> ) ≥ 70 mm	
		Promatect L500 ≥ 50 mm	
		Geoflam ≥ 45 mm	
Vertical shaft	Vertical / horizontal shaft	Gap between duct and damper (≤ 6 mm) sealed with refractory kit (on a depth ≥ 105 mm)	1
		Gap between duct and damper (≤ 80 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Gap between duct and damper (≤ 80 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Gap between duct and damper (≤ 6 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Gap between duct and damper (≤ 80 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Gap between duct and damper (≤ 80 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Techniver ≥ 50 mm	
		Glasroc F V500 ≥ 50 mm	
		Exthamat ≥ 35 mm	
		Desenfire ≥ 35 mm HD	
Vertical shaft	Vertical shaft	Gap between duct and damper (≤ 6 mm) sealed with refractory kit (on a depth ≥ 105 mm)	1
		Gap between duct and damper (≤ 80 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Gap between duct and damper (≤ 80 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Gap between duct and damper (≤ 6 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Gap between duct and damper (≤ 80 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Gap between duct and damper (≤ 80 mm) sealed with refractory kit (on a depth ≥ 105 mm)	
		Desenfire STR ≥ 25 mm	
		Masonry, concrete blocks, concrete ≥ 100 mm	
		Mortar	
		Mortar	

Harmonised standard  
EN 12101-8:2011



1 Type of installation: shaft-mounted 0/90°/180°/270°. Minimal distances authorised.

Nominal activation conditions/sensitivity:	Pass - automatic activation
Response delay (response time): closure time	Pass - automatic activation
Operational reliability: cycling	Belimo NF - 300 cycles (with load); Belimo SF - 300 cycles (with load); MANF - 300 cycles (no load); BLE - 10000 cycles (C10000) (no load)
Durability of response delay:	Pass
Durability of operational reliability:	Pass
High operational temperature (HOT 400/50):	NPD (no performance determined)

The operational temperature of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:  
Mathieu Steenland, Technical Manager

Oosterzele, 11/2019



# Product presentation VU120

## Product presentation VU120

The rectangular VU120 smoke evacuation damper is noted for its superior airtight properties. It was developed in accordance with the European product standard EN 12101-8 and tested according to the EN 1366-10 standard. The VU120 offers a fire resistance up to 120 minutes, and ensures minimum pressure loss.

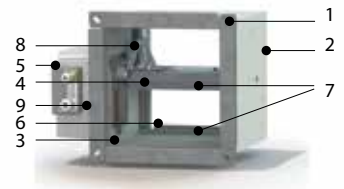
Smoke evacuation shutters and dampers are suitable for use in ventilating protected lobbies, venting to shafts either naturally or mechanically. They open to evacuate smoke in emergency situations whilst maintaining fire resistant integrity in standby position.

- ✓ superior air tightness (tested at 1500 Pa)
- ✓ optimal free air passage and minimal pressure loss



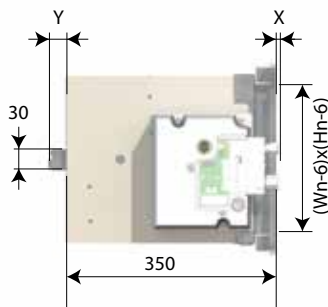
- tested according to EN 1366-10
- compliant with EN 12101-8
- approved for installation in calcium-silicate, 'Staff' and concrete shafts
- maintenance-free
- for indoor use
- intermediate dimensions on request

1. connection flange PG30 on the side of the mechanism
2. simple flat finish (PS) at the shaft side
3. casing made of refractory material
4. damper blade
5. operating mechanism
6. sealing and blade bumper
7. intumescent strip
8. transmission with locking (open/closed)
9. product identification



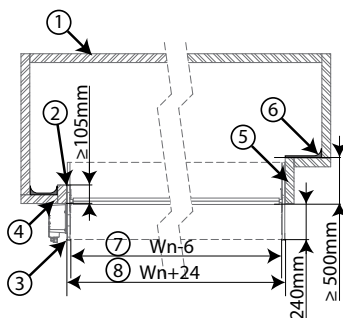
## Range and dimensions VU120

Wn/Hn per step of 50 mm; intermediate dimensions are subject to extra cost (heights between  $\geq 275$  and  $\leq 299$  mm are not possible). Exceeding blade: X = on the mechanism side, Y = on the wall side



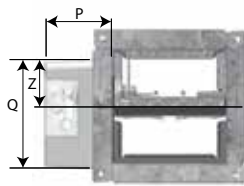
Hn (mm)	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
x	-	-	-	-	-	-	-	9	34	59	84	109	134	159	184	209	234
y	4	29	54	79	104	129	154	179	204	229	254	279	304	329	354	379	404

	$\geq$	$\leq$
(Wn x Hn) mm	200x200	1000x1000 1200x800

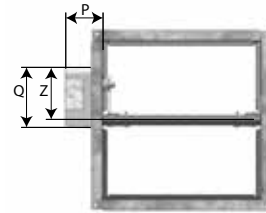


1. Shaft wall
2. Sealing
3. PG30 flange
4. Mounting without shaft extension
5. Mounting with shaft extension
6. Fibrous plaster filling (only for GEOFLAM Light)
7. Inside dimensions casing (Wn-6) x (Hn-6)
8. Outside dimensions casing (Wn+24) x (Hn+24)

Hn < 300 mm



Hn ≥ 300 mm



	MANF	NF	SF	BLE
<b>P</b>	115	85	85	110
<b>Q</b>	190	100	100	110
<b>Z</b>	85	105	105	85

	MANF	NF	SF	BLE
<b>P</b>	115	85	85	110
<b>Q</b>	190	100	100	110
<b>Z</b>	180	105	105	180

## Evolution - kits



**KITS BLE24**

BLE 24V actuator for smoke control dampers



**KITS BLE24-ST**

BLE 24V actuator for smoke control dampers with plug (ST)



**KITS BLE230**

BLE 230V actuator for smoke control dampers



**KITS NF24**

Actuator NF 24V



**KITS SF24**

Actuator SF 24V











**KITS NF230**




Actuator NF 230V

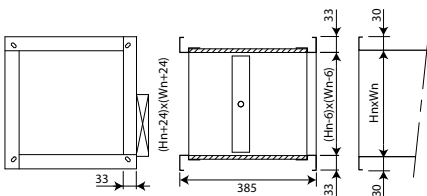


**KITS SF230**

Actuator SF 230V

	<b>KITS NF/SF-VD</b>	NF/SF-VD module (NF24/SF24: 24-48 V DC). Only for France.
	<b>KITS MANF EVO VD24 FDCU</b>	Upgradeable remote controlled unlocking mechanism with natural magnet 24 V DC + FDCU
	<b>KITS MANF EVO VD48 FDCU</b>	Upgradeable remote controlled unlocking mechanism with natural magnet 48 V DC + FDCU
	<b>KITS MANF EVO VM24 FDCU</b>	Upgradeable remote controlled unlocking mechanism with electromagnet 24 V DC + FDCU
	<b>KITS MANF EVO VM48 FDCU</b>	Upgradeable remote controlled unlocking mechanism with electromagnet 48 V DC + FDCU
	<b>KITS VD24 MAN EVO FDCU</b>	Natural magnet 24 V DC + FDCU
	<b>KITS VD48 MAN EVO FDCU</b>	Natural magnet 48 V DC + FDCU
	<b>KITS VM24 MAN EVO FDCU</b>	Electromagnet 24 V DC + FDCU
	<b>KITS VM48 MAN EVO FDCU</b>	Electromagnet 48 V DC + FDCU
	<b>KITS FDCU MAN</b>	Limit switch 'open/closed'

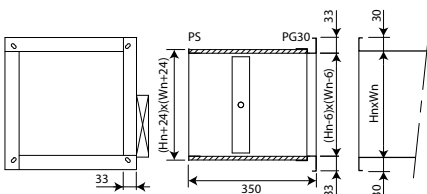
	<b>KIT FDCB MAN</b>	Auxiliary limit switch 'open/closed'
	<b>KIT ME MANF</b>	Resetting motor ME 24V/48V
	<b>MECT</b>	Testbox for mechanisms 24/48 V (magnet, motor, beginning and end of range switches)



**PG30**

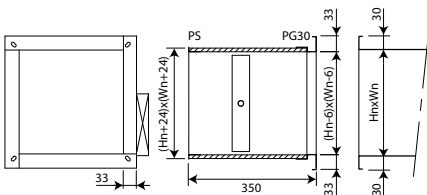
Alternative connection to standard PS at the shaft side: PG30 connection to ducts with 30 mm flanges, with elliptical holes  $\varnothing 8,5 \times 16$  mm.

## Flange types - at the time of order



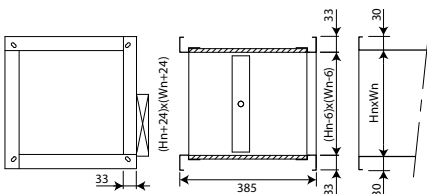
**PS**

No connection (standard connection shaft side). Also possible on shaft side: PG30, PG20, PG40, PM.



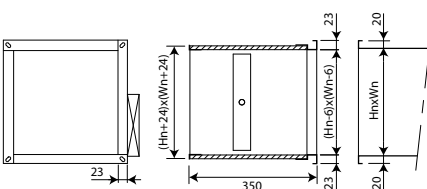
**PG30**

Connection to ducts with 30 mm flanges (either by sliding profile or with bolts). Also possible on shaft side instead of PS connection (at order time). Elliptical holes  $\varnothing 8,5 \times 16$  mm.



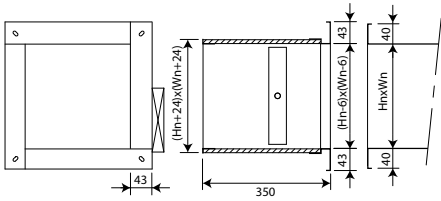
**PG30 2**

Alternative connection to standard PS at the shaft side: PG30 connection to ducts with 30 mm flanges, with elliptical holes  $\varnothing 8,5 \times 16$  mm.



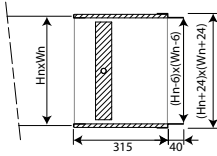
**PG20**

Connection to ducts with 20 mm flanges, elliptical holes  $\varnothing 6,5 \times 16$  mm. Also possible on shaft side instead of PS connection (at order time).



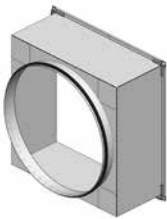
PG40

Connection to ducts with 40mm flanges, elliptical holes  $\varnothing 8,5 \times 16$ mm. Also possible on shaft side instead of PS / PG30 connection (at order time).



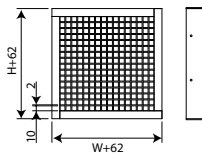
PM

Connection to ducts by insertion. This type of frame is used in case of lack of space for a standard PG30 frame. Possible on mechanism side instead of PG30 connection (at order time).



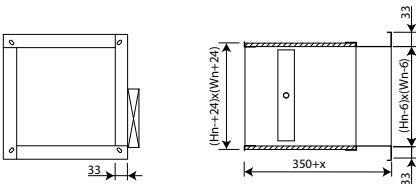
PRJ

Circular connection with rubber sealing ring on a rectangular damper with PG20 flange. Possible on mechanism side instead of PG30 connection (at order time).



PPT (+PG3V)

Grill, very well suited as protection grill on the end piece of a duct system (PG3V + PPT). Possible on mechanism side instead of PG30 connection (at order time).



PG3V

Elongated frame to avoid the damper blade from exceeding the tunnel. Connection to ducts with 30 mm flanges. The four corners of the frame are provided with elliptical holes  $\varnothing 8,5 \times 16$  mm. Maximum extension (in steps of 50 mm) on 1 side = 500 mm. Possible on mechanism side instead of PG30 connection (at order time).



## Storage and handling

As this product is a safety element, it should be stored and handled with care.

### Avoid:

- any kind of impact or damage
- contact with water
- deformation of the casing

### It is recommended:

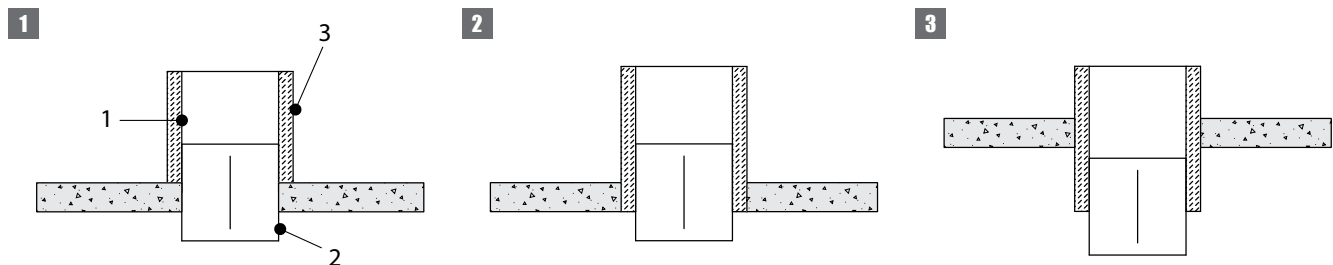
- to unload in a dry area
- not to flip or roll the product to move it
- not to use the damper as a scaffold, working table, etc.
- not to store smaller dampers inside larger ones

## Installation

### General points

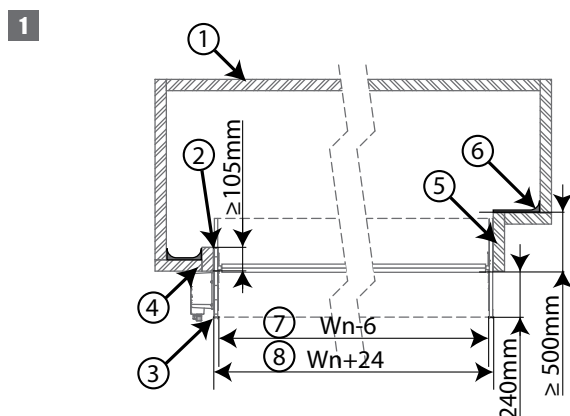
- The installation must comply with the installation manual and the classification report.
- The installation of the shaft must comply with the classification report delivered by the shaft manufacturer.
- Axis orientation: see the declaration of performance.
- Avoid the obstruction of adjoining shafts.
- Verify if the blade can move freely.
- Rf-t smoke dampers may be applied to ducts that have been tested according to EN 1366-8 and EN 1366-9 as appropriate, constructed from similar materials with a fire resistance, thickness and density equal or superior to these of the tested materials.
- ▲ Caution: when fitting, the product should be handled with care and remain protected from any sealing products.
- ▲ Caution: before putting the installation into operation, clean off all the dust and dirt.
- ▲ Caution: bear in mind the blade's clearance inside the smoke evacuation duct.

### Position in the shaft



1. Shaft - 2. Smoke evacuation damper - 3. Thermal insulation ensured by the shaft

### Installation in shaft - cross section view

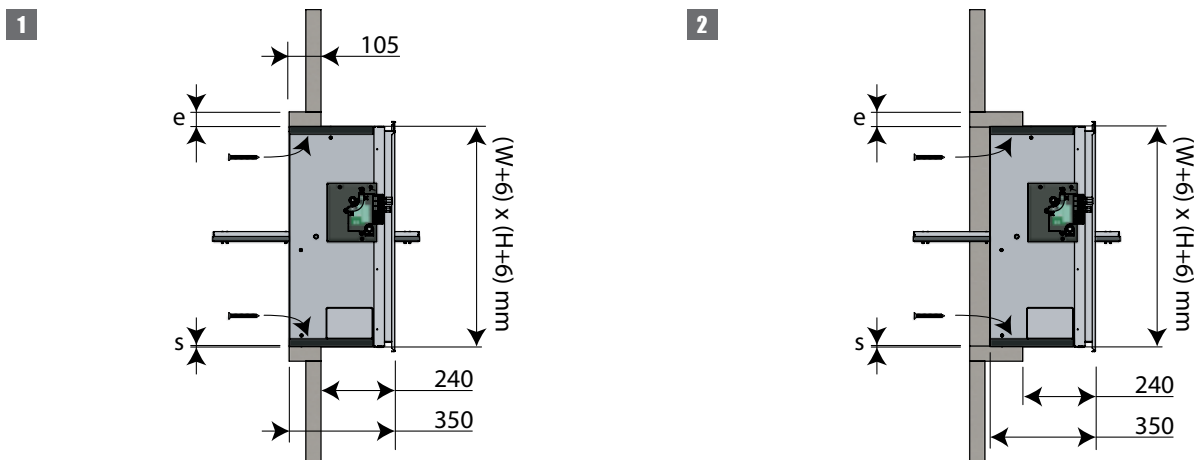


- 1. Shaft wall
- 2. Sealing
- 3. PG30 flange
- 4. Mounting without shaft extension
- 5. Mounting with shaft extension
- 6. Fibrous plaster filling (only for GEOFLAM Light)

### Installation into horizontal or vertical shaft PROMATECT L500

The product was tested and approved in:

Range	Shaft type	Sealing	Classification
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Promatect L500 ≥ 30 mm	EI 60 ( $v_{ed} h_{od} i \leftrightarrow o$ ) S 1500 AA multi
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Promatect L500 ≥ 40 mm	EI 90 ( $v_{ed} h_{od} i \leftrightarrow o$ ) S 1500 AA multi
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Promatect L500 ≥ 50 mm	EI 120 ( $v_{ed} h_{od} i \leftrightarrow o$ ) S 1500 AA multi



1. Make an opening with dimensions  $(W+A) \times (H+A)$  mm.

$A = 2 \times \text{thickness sleeve } (e) + 6 \text{ mm.}$

Fit a sleeve of the same type and thickness of the duct (thickness  $e$ ) of minimum 105 mm deep in the opening.

Fix the sleeve to the shaft wall.

First coat the opening with Promacol S.

Position the damper in the opening and fix the damper using 12 screws  $\varnothing 5 \times 60$  (horizontal shaft) or using 10 screws  $\varnothing 5 \times 60$  (vertical shaft).

**⚠ Caution:** make sure that the bolts don't exceed the sleeve's thickness!

The seal between the casing and the shaft ( $S$ ) must be completely filled with refractory coating (type Promacol S). Support the tunnel or tighten the blade in its closed position to prevent deformation of the casing during drying of the sealing material.

Fix the grill to the flange using glue type Polyflex.

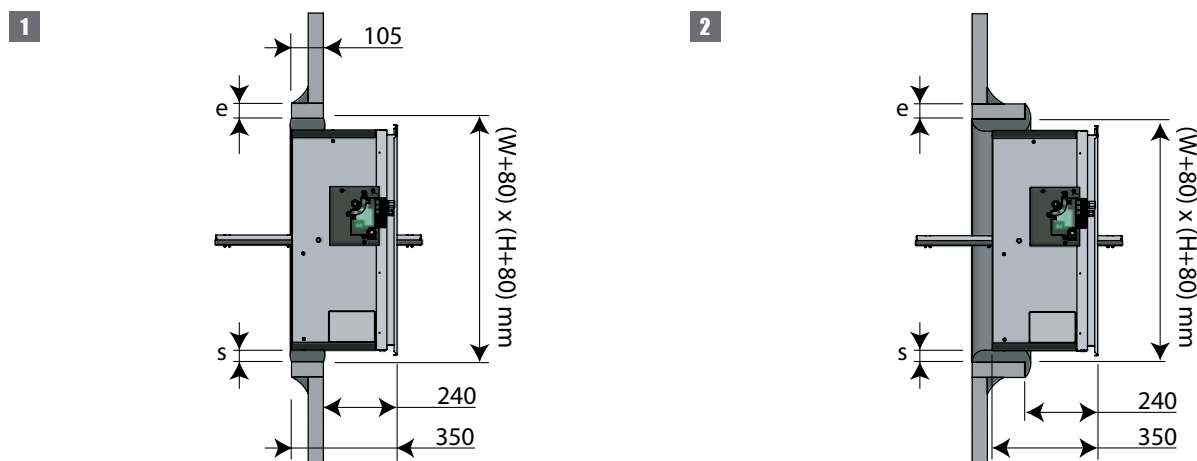
Check the movement of the damper blade.

Run a test on the mechanism of the damper.

## Installation into horizontal or vertical shaft GEOFLAM (LIGHT)

The product was tested and approved in:

Range	Shaft type	Sealing	Classification
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Geoflam ≥ 30 mm	EI 60 (v <sub>ed</sub> h <sub>od</sub> i ↔ o) S 1500 AA multi
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Geoflam ≥ 35 mm	EI 90 (v <sub>ed</sub> h <sub>od</sub> i ↔ o) S 1500 AA multi
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Geoflam ≥ 45 mm	EI 120 (v <sub>ed</sub> h <sub>od</sub> i ↔ o) S 1500 AA multi
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Geoflam Light ≥ 35 mm	EI 120 (v <sub>ed</sub> h <sub>od</sub> i ↔ o) S 1500 AA multi



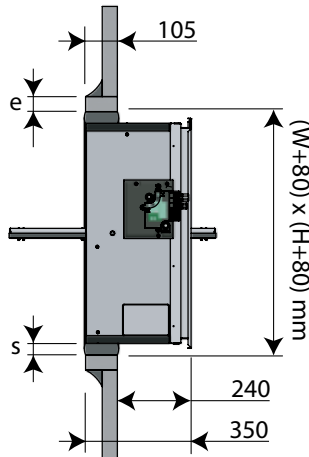
1. Make an opening with dimensions (W+80) x (H+80) mm. Fit a sleeve of the same type and thickness of the duct (thickness e) of minimum 105 mm deep in the opening. Seal the joints between uprights and cross pieces and between the lining and the wall with vegetable fibre caulking and plaster. The seal between the casing and the shaft (S) must be completely filled with fibre reinforced plaster. Support the tunnel or tighten the blade in its closed position to prevent deformation of the casing during drying of the sealing material. Fix the grill to the flange using glue type Polyflex. Check the movement of the damper blade. Run a test on the mechanism of the damper.

### Installation into horizontal or vertical shaft GEOTEC

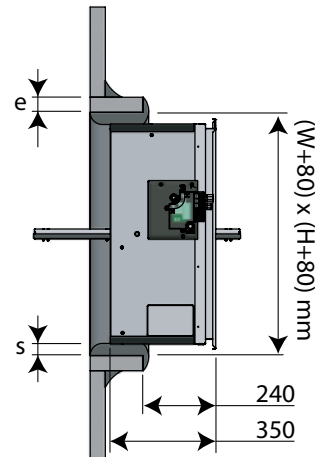
The product was tested and approved in:

Range	Shaft type	Sealing	Classification
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Geotec ≥ 30 mm	EI 60 (v <sub>ed</sub> h <sub>od</sub> i ↔ o) S 1500 AA multi
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Geotec ≥ 45 mm	EI 120 (v <sub>ed</sub> h <sub>od</sub> i ↔ o) S 1500 AA multi

1



2

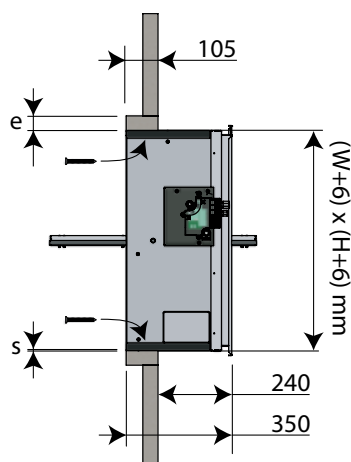
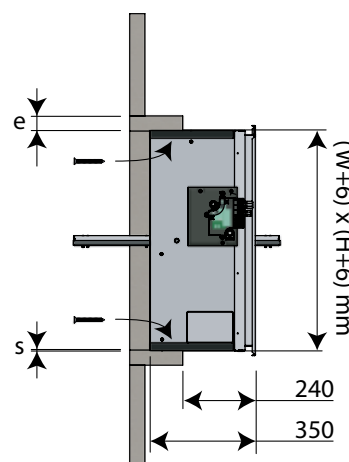


- In case of fastening with glue and screws:
  - Make an opening with dimensions  $(W+6) \times (H+6)$  mm.
  - Fit a sleeve of the same type and thickness of the duct (thickness  $e$ ) of minimum 105 mm deep in the opening.
  - Fix the sleeve to the shaft wall.
  - Mount the damper in the opening.
  - The seal between the casing and the shaft ( $S$ ) must be completely filled with fibre reinforced plaster. Support the tunnel or tighten the blade in its closed position to prevent deformation of the casing during drying of the sealing material.
  - Fix the grill to the flange using glue type Polyflex.
  - Check the movement of the damper blade.
  - Run a test on the mechanism of the damper.
- In case of sealing with fibrous plaster:
  - Make an opening with dimensions  $(W+80) \times (H+80)$  mm.
  - In case of Geotec you can also assemble the sleeve with glue and screws  $\varnothing 5 \times (2 \times e)$  mm and affix the assembled sleeve to the shaft wall with glue and screws  $\varnothing 5 \times (2 \times e)$  mm every 100 mm.

## Installation into horizontal or vertical shaft TECNIVER

The product was tested and approved in:

Range	Shaft type	Sealing	Classification
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Tecniver ≥ 35 mm	EI 60 (v <sub>ed</sub> h <sub>od</sub> i ↔ o) S 1500 AA multi
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Tecniver ≥ 45 mm	EI 90 (v <sub>ed</sub> h <sub>od</sub> i ↔ o) S 1500 AA multi
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Tecniver ≥ 50 mm	EI 120 (v <sub>ed</sub> h <sub>od</sub> i ↔ o) S 1500 AA multi

**1**

**2**


1. Make an opening with dimensions  $(W+A) \times (H+A)$  mm.

$A = 2 \times \text{thickness sleeve } (e) + 6 \text{ mm}$ .

Fit a sleeve of the same type and thickness of the duct (thickness  $e$ ) of minimum 105 mm deep in the opening.

Fix the sleeve to the shaft wall.

Put glue CF GLUE on the edges of the opening and the uprights and cross pieces.

Position the damper in the opening and fix the damper using 12 screws  $\text{Ø}5 \times 60$  (horizontal shaft) or using 10 screws  $\text{Ø}5 \times 60$  (vertical shaft).

**⚠ Caution:** make sure that the bolts don't exceed the sleeve's thickness!

The seal between the casing and the shaft ( $S$ ) must be completely filled with glue (type type CF glue). Support the tunnel or tighten the blade in its closed position to prevent deformation of the casing during drying of the sealing material.

Fix the grill to the flange using glue type Polyflex.

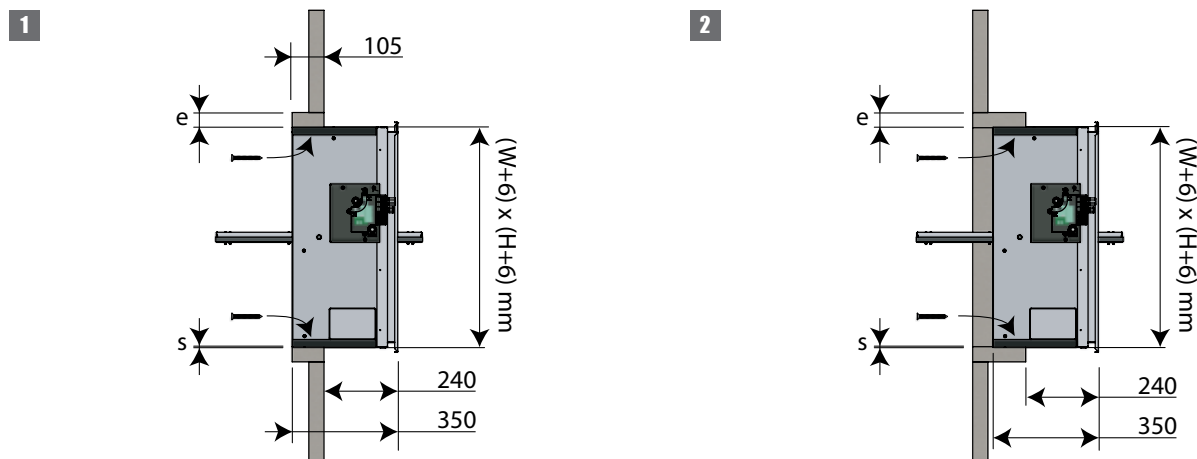
Check the movement of the damper blade.

Run a test on the mechanism of the damper.

## Installation into horizontal or vertical shaft GLASROC F V500

The product was tested and approved in:

Range	Shaft type	Sealing	Classification
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Glasroc F V500 ≥ 35 mm	Gap between duct and damper (≤ 6 mm) sealed with refractory kit (on a depth ≥ 105 mm) EI 60 (v <sub>ed</sub> h <sub>od</sub> i ↔ o) S 1500 AA multi
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Glasroc F V500 ≥ 50 mm	Gap between duct and damper (≤ 6 mm) sealed with refractory kit (on a depth ≥ 105 mm) EI 120 (v <sub>ed</sub> h <sub>od</sub> i ↔ o) S 1500 AA multi



1. Make an opening with dimensions  $(W+A) \times (H+A)$  mm.

$A = 2 \times$  thickness sleeve  $(e) + 6$  mm.

Fit a sleeve of the same type and thickness of the duct (thickness  $e$ ) of minimum 105 mm deep in the opening.

Fix the sleeve to the shaft wall.

Put glue GLASROC F V500 on the edges of the opening and the uprights and cross pieces.

Position the damper in the opening and fix the damper using 12 screws  $\varnothing 5 \times 60$  (horizontal shaft) or using 10 screws  $\varnothing 5 \times 60$  (vertical shaft).

**⚠ Caution:** make sure that the bolts don't exceed the sleeve's thickness!

The seal between the casing and the shaft ( $S$ ) must be completely filled with glue (type Glasroc F V500). Support the casing or tighten the blade in its closed position to prevent deformation of the casing during drying of the sealing material.

Fix the grill to the flange using glue type Polyflex.

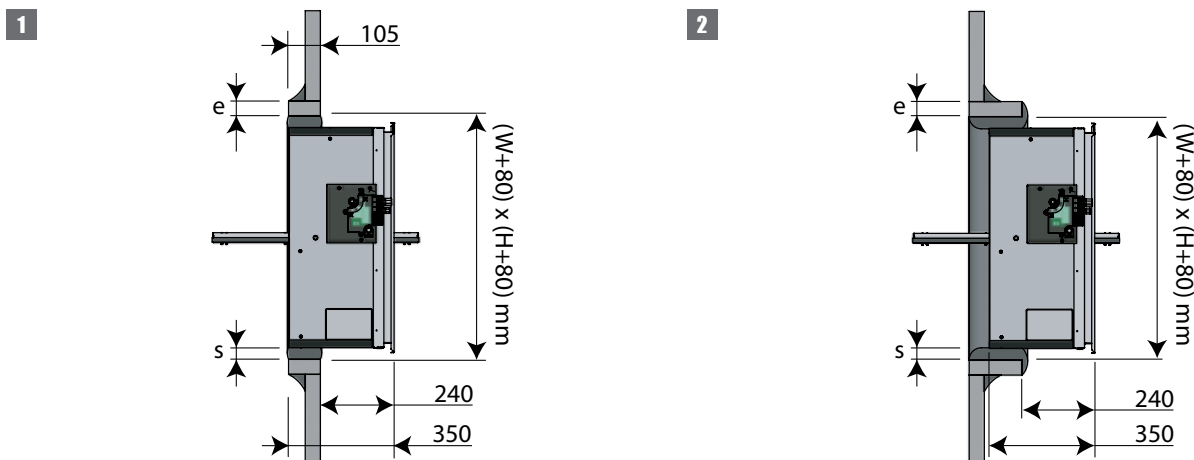
Check the movement of the damper blade.

Run a test on the mechanism of the damper.

## Installation into horizontal or vertical shaft EXTHAMAT

The product was tested and approved in:

Range	Shaft type	Sealing	Classification
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Exthamat ≥ 25 mm	EI 60 (v <sub>ed</sub> h <sub>od</sub> i ↔ o) S 1500 AA multi
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Exthamat ≥ 30 mm	EI 90 (v <sub>ed</sub> h <sub>od</sub> i ↔ o) S 1500 AA multi
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Exthamat ≥ 35 mm	EI 120 (v <sub>ed</sub> h <sub>od</sub> i ↔ o) S 1500 AA multi



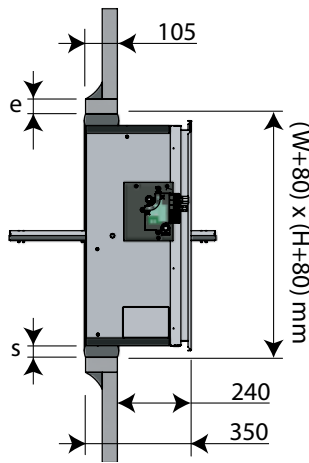
1. Make an opening with dimensions  $(W+80) \times (H+80)$  mm.  
Fit a sleeve of the same type and thickness of the duct (thickness  $e$ ) of minimum 105 mm deep in the opening.  
Seal the joints between uprights and cross pieces and between the lining and the wall with vegetable fibre caulking and plaster.  
The seal between the casing and the shaft ( $S$ ) must be completely filled with fibre reinforced plaster. Support the tunnel or tighten the blade in its closed position to prevent deformation of the casing during drying of the sealing material.  
Fix the grill to the flange using glue type Polyflex.  
Check the movement of the damper blade.  
Run a test on the mechanism of the damper.

## Installation into horizontal or vertical shaft DESENFIRE (HD/THD/STR)

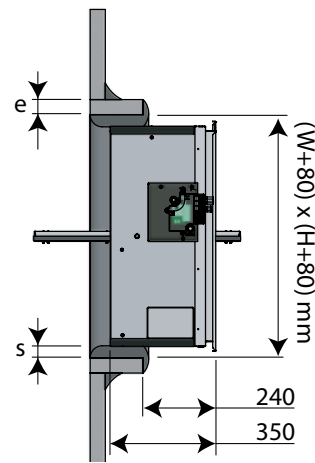
The product was tested and approved in:

Range	Shaft type	Sealing	Classification
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Desenfire HD ≥ 25 mm	EI 60 (v <sub>ed</sub> h <sub>od</sub> i ↔ o) S 1500 AA multi
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Desenfire HD ≥ 35 mm	EI 120 (v <sub>ed</sub> h <sub>od</sub> i ↔ o) S 1500 AA multi
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical / horizontal shaft	Desenfire STR ≥ 25 mm	EI 120 (v <sub>ed</sub> h <sub>od</sub> i ↔ o) S 1500 AA multi

1



2



1. Make an opening with dimensions  $(W+80) \times (H+80)$  mm.  
Fit a sleeve of the same type and thickness of the duct (thickness  $e$ ) of minimum 105 mm deep in the opening.  
Seal the joints between uprights and cross pieces and between the lining and the wall with vegetable fibre caulking and plaster.  
The seal between the casing and the shaft ( $S$ ) must be completely filled with fibre reinforced plaster. Support the tunnel or tighten the blade in its closed position to prevent deformation of the casing during drying of the sealing material.  
Fix the grill to the flange using glue type Polyflex.  
Check the movement of the damper blade.  
Run a test on the mechanism of the damper.

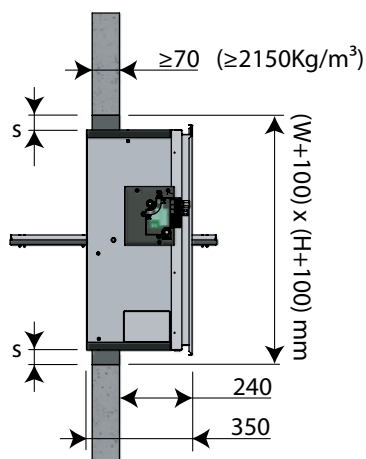


## Installation into vertical concrete shaft

The product was tested and approved in:

Range	Shaft type	Sealing	Classification
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical shaft	Mortar	El 90 (v <sub>ed</sub> i ↔ o) S 1500 AA multi
200x200 mm ≤ VU120+MANF/BLE + grill ≤ 1200x800 mm; 1000x1000. 200x200 mm ≤ VU120+NF/SF + grill ≤ 1200x650 mm; 950x750 mm	Vertical shaft	Mortar	El 120 (v <sub>ed</sub> i ↔ o) S 1500 AA multi

1



1. Make an opening with dimensions (W+20) x (H+20) mm till (W+100) x (H+100) mm.

Mount the damper in the opening. The joint between the damper and the shaft (S) needs to be filled right across the width of the duct with a standard concrete mortar.

Support the body and block the damper blade in its closed position to prevent deformation of the body during the drying process of the sealing.

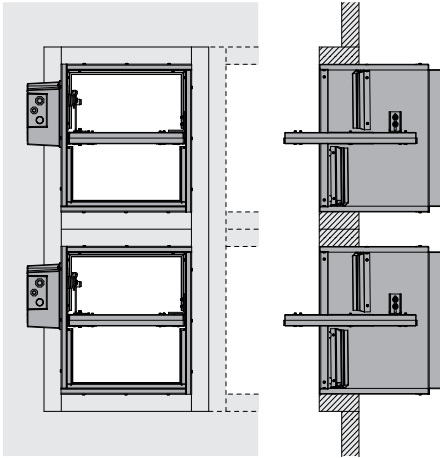
Fix the grill to the flange using glue type Polyflex.

Check the movement of the damper blade.

Run a test on the mechanism of the damper.

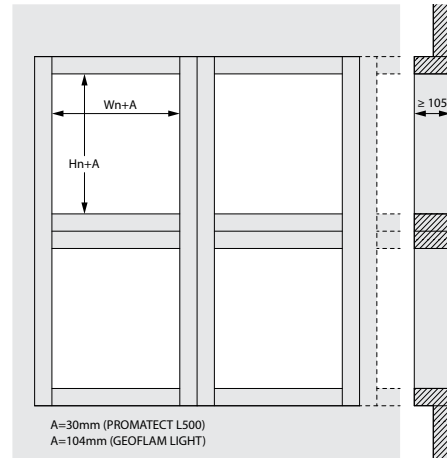
## Installation at minimal distances

1



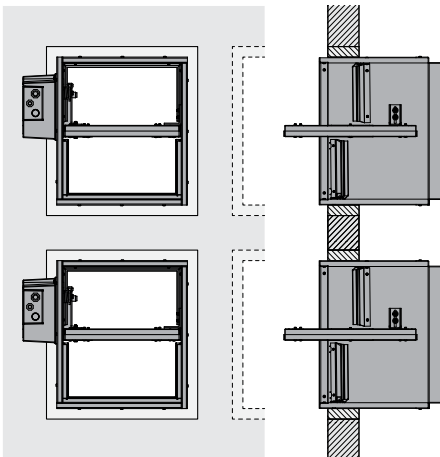
1. The smoke evacuation dampers can be installed at minimal distance on top of or next to each other, if they are mounted in separate sleeves made from the shaft material with the required fire resistance. It is advised not to exceed a 2 x 4 configuration (H x W).

2



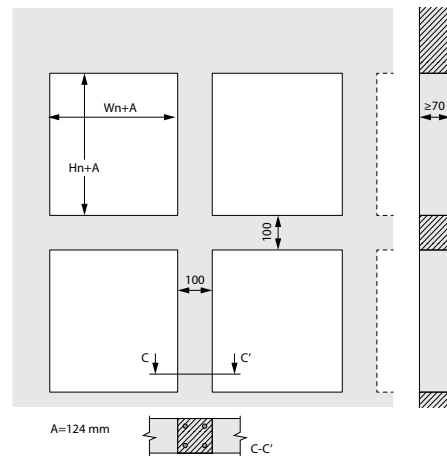
2. In case several smoke evacuation dampers are mounted at a minimal distance, the bearing and reinforcement points of the shaft must be adjusted in proportion to the increased weight. The installation of the shaft must comply with the classification report delivered by the shaft manufacturer.

3



3. When mounting more than 2 smoke evacuation dampers in a concrete shaft, you need to provide a continuous reinforcement in the vertical columns of at least 4 x Ø 8 mm.

4



## Maintenance

- No specific maintenance required.
- Schedule at least two running visual checks each year.
- Remove dust and all other particles before start-up.
- Follow the local maintenance regulations (i.e. BS9999 Annex V; NF S 61-933) and EN13306.

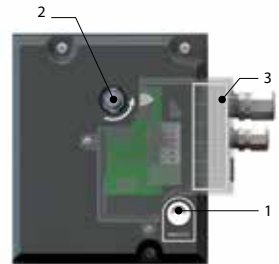
## Operation and mechanisms



### MANF Upgradeable remote controlled unlocking mechanism

The unlocking mechanism MANF EVO unlatches the damper blade via remote control by sending an electric impulse (VD) or by interruption (VM) of the magnets power supply. A begin- and end of range switch (FDCU) is standard available. The blade can be reset manually (MANF EVO) or by an electric motor ME (option and kit).

1. unlocking button
2. resetting handle
3. cable entrance



### Options - at the time of order

VD24	Natural magnet 24 V DC + FDCU
VD48	Natural magnet 48 V DC + FDCU
VM24	Electromagnet 24 V DC + FDCU
VM48	Electromagnet 48 V DC + FDCU
FDCU	Limit switch 'open/closed'
FDCB	Auxiliary limit switch 'open/closed'
ME	Resetting motor ME 24V/48V

### Unlocking

- **manual unlocking:** use the unlocking button (1).
- **automatic unlocking:** n/a
- **remote unlocking:** (option VD/VM MAN EVO FDCU) by sending an electrical impulse (VD) or by interrupting the power supply (VM) to the magnet's entrance.

### Resetting

- **manual resetting:** turn 90° counter-clockwise with a hex socket wrench 13 mm (2).
- **motorised resetting:** (option ME MANF) switch off the power supply for at least 10 sec. Power the actuator for at least 30 sec. (respect the prescribed voltage and polarity). The resetting stops automatically if a torque > 20 Nm is detected.

#### Caution:

- ⚠ Switch off the power supply after resetting.
- ⚠ Switch off the power supply for at least 15 sec. in between each resetting cycle.

#### Caution:

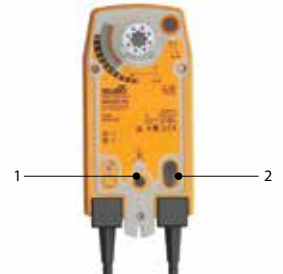
- ⚠ The mechanism may never be tested on its own, without being attached to the damper. Such a test might damage the mechanism or the operator might be injured.



## NF Remotely controlled spring return actuator (for small dimensions)

The servomotor is designed to control smoke evacuation dampers from a distance. This solution is suitable in case of counter-pressure. Beginning and end of range switches included.

1. access for manual resetting
2. locking button



### Unlocking

- **manual unlocking:** use the enclosed handle and turn 1/4 turn counter-clockwise; push the locking button to the left.
- **automatic unlocking:** n/a
- **remote unlocking:** by interrupting the power supply (for dampers with NF/SF-VD module: by sending an electrical impulse).

#### Caution:

- ⚠ If the power supply to the motor is interrupted, the blade of the damper opens.

### Resetting

- **manual resetting:** use the enclosed handle and turn counterclockwise. To block the motor, push the locking button to the right.
- **motorised resetting:** switch off the power supply for at least 10 sec (3 sec for NF/SF-VD module). Supply the actuator (respect the prescribed voltage) for at least 180 sec. The resetting stops automatically when the end of range is reached (damper closed).

#### Caution:

- ⚠ Do not use a drill or screwing machine.
- ⚠ Stop as soon as the motor is completely rearmed (end of range).

#### Caution:

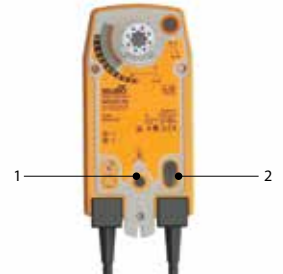
- ⚠ The mechanism may never be tested on its own, without being attached to the damper. Such a test might damage the mechanism or the operator might be injured.



## SF Remotely controlled spring return actuator (for large dimensions)

The servomotor is designed to control smoke evacuation dampers from a distance. This solution is suitable for use in case of counter-pressure. Beginning and end of range switches included.

1. access for manual resetting
2. locking button



### Unlocking

- **manual unlocking:** use the enclosed handle and turn 1/4 turn counter-clockwise; push the locking button to the left.
- **automatic unlocking:** n/a
- **remote unlocking:** by interrupting the power supply (for dampers with NF/SF-VD module: by sending an electrical impulse).

#### Caution:

- ▲ If the power supply to the motor is interrupted, the blade of the damper opens.

### Resetting

- **manual resetting:** use the enclosed handle and turn counterclockwise. To block the motor, push the locking button to the right.
- **motorised resetting:** switch off the power supply for at least 10 sec (3 sec for NF/SF-VD module). Supply the actuator (respect the prescribed voltage) for at least 180 sec. The resetting stops automatically when the end of range is reached (damper closed).

#### Caution:

- ▲ Do not use a drill or screwing machine.
- ▲ Stop as soon as the motor is completely rearmed (end of range).

#### Caution:

- ▲ The mechanism may never be tested on its own, without being attached to the damper. Such a test might damage the mechanism or the operator might be injured.



## BLE Actuator for remote control of smoke control dampers

The actuator B(L)E is specially designed to remotely control smoke control dampers. The BLE model is intended for VU90-HOT dampers with small dimensions ( $W+H < 1800$  mm) and for VU120 and VUW120 dampers.

1. access for manual resetting
2. plug (ST)



### Unlocking

- **manual unlocking:** VUW120: turn the enclosed handle clockwise / VU120 - VU90-HOT: turn the enclosed handle anti-clockwise.
- **automatic unlocking:** n/a
- **remote unlocking:** power cables 1 and 2.

#### Caution:

⚠ Do not use a drill or screwing machine.

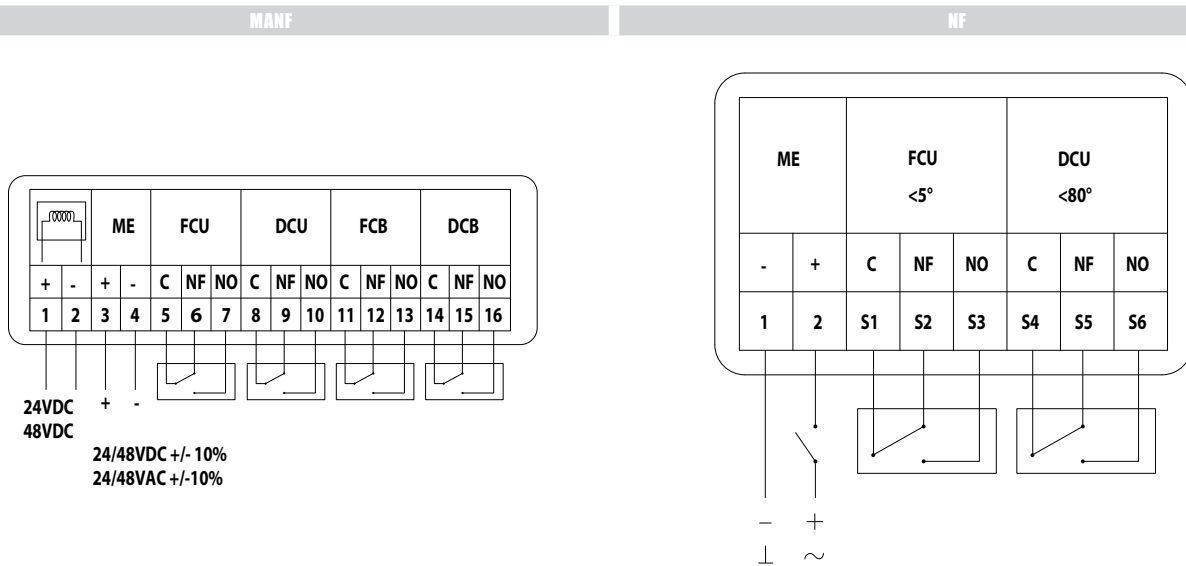
### Resetting

- **manual resetting:** VUW120: turn the enclosed handle anti-clockwise / VU120 - VU90-HOT: turn the enclosed handle clockwise.
- **motorised resetting:** power cables 1 and 3.

#### Caution:

⚠ Do not use a drill or screwing machine.

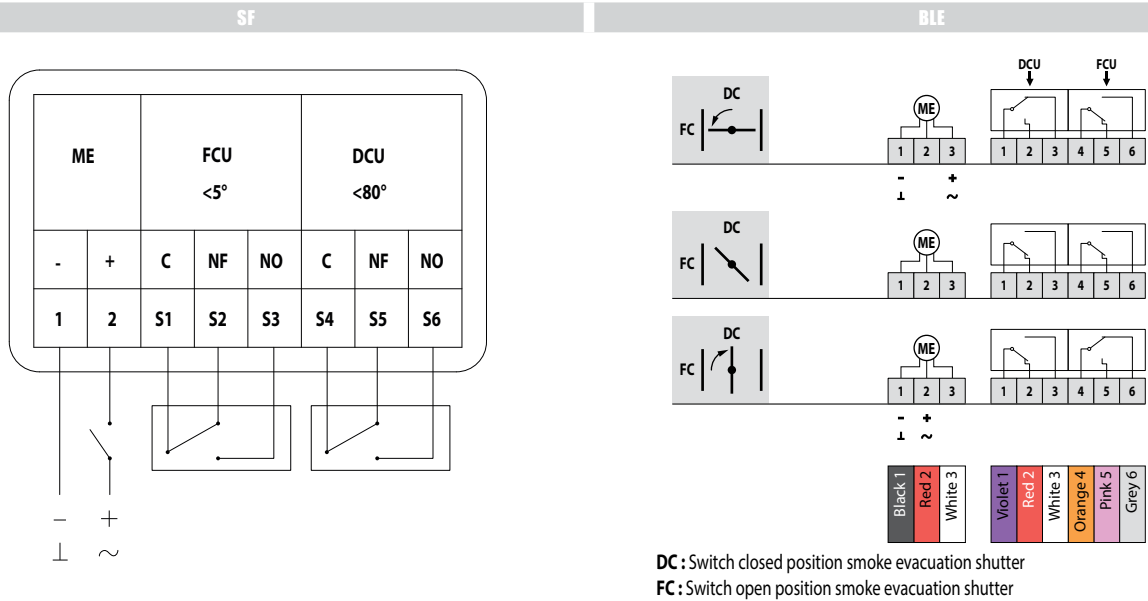
## Electrical connection



MEC	Nominal voltage motor	Nominal voltage magnet	Power consumption (stand-by)	Power consumption (operating)	Standard switches
MANF EVO	24 V DC / 24 V AC / 48 V DC / 48 V AC	24/48 V DC	VM: 1,5W / VD: - / ME: -	VD: 3,5W / ME: Pmax 20W (24V)/40W (48V)	1mA...1A, DC 5V...AC 48V
NF24	24 V AC/DC	N/A	2,5W	6W	1mA...3(0.5A),AC250V
NF230	230 V AC	N/A	2,5W	6W	1mA...3(0.5A),AC250V

MEC	Resetting time motor	Running time spring	Noise level motor	Noise level spring	Cable supply / control	Cable auxiliary switch	Protection class
MANF EVO	< 30 s	1 s	≤ 50 dB (A)	N/A			IP 42
NF24	< 60 s	20 s	≤ 45 dB (A)	ca. 63 dB (A)	1 m, 2 x 0.75 mm <sup>2</sup> (halogen-free)	1 m, 6 x 0.75 mm <sup>2</sup> (halogen-free)	IP 54
NF230	< 60 s	20 s	≤ 45 dB (A)	ca. 63 dB (A)	1 m, 2 x 0.75 mm <sup>2</sup> (halogen-free)	1 m, 6 x 0.75 mm <sup>2</sup> (halogen-free)	IP 54

## Electrical connection



MEC	Nominal voltage motor	Nominal voltage magnet	Power consumption (stand-by)	Power consumption (operating)	Standard switches
SF24	24 V AC/DC	N/A	2,5W	5W	1mA...3(0.5A),AC250V
SF230	230V AC	N/A	3,5W	6,5W	1mA...3(0.5A),AC250V
BLE24	24 V AC/DC	N/A	0,5W	7,5W	1mA...3A, DC 5V...AC 250V
BLE24-ST	24 V AC/DC	N/A	0,5W	7,5W	1mA...3A, DC 5V...AC 250V
BLE230	230V AC	N/A	1W	5W	1mA...3A, DC 5V...AC 250V

MEC	Resetting time motor	Running time spring	Noise level motor	Noise level spring	Cable supply / control	Cable auxiliary switch	Protection class
SF24	< 60 s	20 s	≤ 45 dB (A)	ca. 63 dB (A)	1 m, 2 x 0.75 mm <sup>2</sup> (halogen-free)	1 m, 6 x 0.75 mm <sup>2</sup> (halogen-free)	IP 54
SF230	< 60 s	20 s	≤ 45 dB (A)	ca. 63 dB (A)	1 m, 2 x 0.75 mm <sup>2</sup> (halogen-free)	1 m, 6 x 0.75 mm <sup>2</sup> (halogen-free)	IP 54
BLE24	< 30 s (90°)	N/A	ca. 62 dB (A)		1 m, 3 x 0.75 mm <sup>2</sup> (halogen-free)	1 m, 6 x 0.75 mm <sup>2</sup> (halogen-free)	IP 54
BLE24-ST	< 30 s (90°)	N/A	ca. 62 dB (A)		1 m, 3 x 0.75 mm <sup>2</sup> (halogen-free), with plug connectors, suitable for IXI-R1, IXI-R2(-230), BKNE230-24	1 m, 6 x 0.75 mm <sup>2</sup> (halogen-free), with plug connectors, suitable for IXI-R1, IXI-R2(-230), BKNE230-24	IP 54
BLE230	< 30 s (90°)	N/A	ca. 62 dB (A)		1 m, 3 x 0.75 mm <sup>2</sup> (halogen-free)	1 m, 6 x 0.75 mm <sup>2</sup> (halogen-free)	IP 54



## Weights

## VU120 + MANF EVO

Hn\Wn [mm]		200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
200	kg	10,3	11,2	12,1	13,1	14,0	14,9	15,8	16,8	17,7	18,6	19,5	20,5	21,4	22,3	23,3	24,2	25,1	26,0	27,0	27,9	28,8
250	kg	11,1	12,1	13,1	14,1	15,1	16,1	17,1	18,1	19,1	20,1	21,1	22,1	23,1	24,1	25,1	26,0	27,0	28,0	29,0	30,0	31,0
300	kg	12,0	13,1	14,1	15,2	16,3	17,3	18,4	19,4	20,5	21,6	22,6	23,7	24,7	25,8	26,8	27,9	29,0	30,0	31,1	32,1	33,2
350	kg	12,9	14,0	15,2	16,3	17,4	18,5	19,6	20,8	21,9	23,0	24,1	25,3	26,4	27,5	28,6	29,8	30,9	32,0	33,1	34,3	35,4
400	kg	13,8	15,0	16,2	17,4	18,5	19,7	20,9	22,1	23,3	24,5	25,7	26,9	28,1	29,2	30,4	31,6	32,8	34,0	35,2	36,4	37,6
450	kg	14,7	15,9	17,2	18,4	19,7	20,9	22,2	23,4	24,7	26,0	27,2	28,5	29,7	31,0	32,2	33,5	34,7	36,0	37,2	38,5	39,8
500	kg	15,5	16,9	18,2	19,5	20,8	22,1	23,5	24,8	26,1	27,4	28,7	30,1	31,4	32,7	34,0	35,3	36,7	38,0	39,3	40,6	41,9
550	kg	16,4	17,8	19,2	20,6	22,0	23,3	24,7	26,1	27,5	28,9	30,3	31,7	33,0	34,4	35,8	37,2	38,6	40,0	41,4	42,7	44,1
600	kg	17,3	18,8	20,2	21,7	23,1	24,6	26,0	27,5	28,9	30,4	31,8	33,3	34,7	36,2	37,6	39,1	40,5	42,0	43,4	44,9	46,3
650	kg	18,2	19,7	21,2	22,7	24,2	25,8	27,3	28,8	30,3	31,8	33,3	34,9	36,4	37,9	39,4	40,9	42,4	43,9	45,5	47,0	48,5
700	kg	19,1	20,6	22,2	23,8	25,4	27,0	28,5	30,1	31,7	33,3	34,9	36,5	38,0	39,6	41,2	42,8	44,4	45,9	47,5	49,1	50,7
750	kg	19,9	21,6	23,2	24,9	26,5	28,2	29,8	31,5	33,1	34,8	36,4	38,0	39,7	41,3	43,0	44,6	46,3	47,9	49,6	51,2	52,9
800	kg	20,8	22,5	24,2	26,0	27,7	29,4	31,1	32,8	34,5	36,2	37,9	39,6	41,4	43,1	44,8	46,5	48,2	49,9	51,6	53,3	55,0
850	kg	21,7	23,5	25,3	27,0	28,8	30,6	32,4	34,1	35,9	37,7	39,5	41,2	43,0	44,8	46,6	48,4	50,1	51,9	53,7	55,5	
900	kg	22,6	24,4	26,3	28,1	30,0	31,8	33,6	35,5	37,3	39,2	41,0	42,8	44,7	46,5	48,4	50,2	52,1	53,9	55,7		
950	kg	23,5	25,4	27,3	29,2	31,1	33,0	34,9	36,8	38,7	40,6	42,5	44,4	46,3	48,3	50,2	52,1	54,0	55,9			
1000	kg	24,3	26,3	28,3	30,3	32,2	34,2	36,2	38,2	40,1	42,1	44,1	46,0	48,0	50,0	52,0	53,9	55,9				

## VU120 + NF24 / + NF230

Hn\Wn [mm]		200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
200	kg	10,9	11,8	12,7	13,7	14,6	15,5	16,4	17,4	18,3	19,2	20,1	21,1	22,0	22,9	23,9	24,8	25,7	26,6	27,6	28,5	29,4
250	kg	11,7	12,7	13,7	14,7	15,7	16,7	17,7	18,7	19,7	20,7	21,7	22,7	23,7	24,7	25,7	26,6	27,6	28,6	29,6	30,6	31,6
300	kg	12,6	13,7	14,7	15,8	16,9	17,9	19,0	20,0	21,1	22,2	23,2	24,3	25,3	26,4	27,4	28,5	29,6	30,6	31,7	32,7	33,8
350	kg	13,5	14,6	15,8	16,9	18,0	19,1	20,2	21,4	22,5	23,6	24,7	25,9	27,0	28,1	29,2	30,4	31,5	32,6	33,7	34,9	36,0
400	kg	14,4	15,6	16,8	18,0	19,1	20,3	21,5	22,7	23,9	25,1	26,3	27,5	28,7	29,8	31,0	32,2	33,4	34,6	35,8	37,0	38,2
450	kg	15,3	16,5	17,8	19,0	20,3	21,5	22,8	24,0	25,3	26,6	27,8	29,1	30,3	31,6	32,8	34,1	35,3	36,6	37,8	39,1	40,4
500	kg	16,1	17,5	18,8	20,1	21,4	22,7	24,1	25,4	26,7	28,0	29,3	30,7	32,0	33,3	34,6	35,9	37,3	38,6	-	-	-
550	kg	17,0	18,4	19,8	21,2	22,6	23,9	25,3	26,7	28,1	29,5	30,9	32,3	33,6	35,0	-	-	-	-	-	-	-
600	kg	17,9	19,4	20,8	22,3	23,7	25,2	26,6	28,1	29,5	31,0	32,4	33,9	-	-	-	-	-	-	-	-	-
650	kg	18,8	20,3	21,8	23,3	24,8	26,4	27,9	29,4	30,9	-	-	-	-	-	-	-	-	-	-	-	-
700	kg	19,7	21,2	22,8	24,4	26,0	27,6	29,1	30,7	-	-	-	-	-	-	-	-	-	-	-	-	-
750	kg	20,5	22,2	23,8	25,5	27,1	28,8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
800	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
850	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
900	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
950	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1000	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

## VU120 + SF24 / + SF230

Hn\Wn [mm]		200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
500	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40,2	41,5	42,8
550	kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36,7	38,1	39,5	40,9	42,3	43,6	45,0
600	kg	-	-	-	-	-	-	-	-	-	-	-	-	35,6	37,1	38,5	40,0	41,4	42,9	44,3	45,8	47,2
650	kg	-	-	-	-	-	-	-	-	-	32,7	34,2	35,8	37,3	38,8	40,3	41,8	43,3	44,8	46,4	47,9	49,4
700	kg	-	-	-	-	-	-	-	-	32,6	34,2	35,8	37,4	38,9	40,5	42,1	43,7	45,3	46,8	-	-	-
750	kg	-	-	-	-	-	-	30,7	32,4	34,0	35,7	37,3	38,9	40,6	42,2	43,9	45,5	-	-	-	-	-

## VU120 + BLE24 / + BLE24-ST / + BLE230

Hn\Wn [mm]		200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
200	kg	10,9	11,8	12,7	13,7	14,6	15,5	16,4	17,4	18,3	19,2	20,1	21,1	22,0	22,9	23,9	24,8	25,7	26,6	27,6	28,5	29,4
250	kg	11,7	12,7	13,7	14,7	15,7	16,7	17,7	18,7	19,7	20,7	21,7	22,7	23,7	24,7	25,7	26,6	27,6	28,6	29,6	30,6	31,6
300	kg	12,6	13,7	14,7	15,8	16,9	17,9	19,0	20,0	21,1	22,2	23,2	24,3	25,3	26,4	27,4	28,5	29,6	30,6	31,7	32,7	33,8
350	kg	13,5	14,6	15,8	16,9	18,0	19,1	20,2	21,4	22,5	23,6	24,7	25,9	27,0	28,1	29,2	30,4	31,5	32,6	33,7	34,9	36,0
400	kg	14,4	15,6	16,8	18,0	19,1	20,3	21,5	22,7	23,9	25,1	26,3	27,5	28,7	29,8	31,0	32,2	33,4	34,6	35,8	37,0	38,2
450	kg	15,3	16,5	17,8	19,0	20,3	21,5	22,8	24,0	25,3	26,6	27,8	29,1	30,3	31,6	32,8	34,1	35,3	36,6	37,8	39,1	40,4
500	kg	16,1	17,5	18,8	20,1	21,4	22,7	24,1	25,4	26,7	28,0	29,3	30,7	32,0	33,3	34,6	35,9	37,3	38,6	39,9	41,2	42,5
550	kg	17,0	18,4	19,8	21,2	22,6	23,9	25,3	26,7	28,1	29,5	30,9	32,3	33,6	35,0	36,4	37,8	39,2	40,6	42,0	43,3	44,7
600	kg	17,9	19,4	20,8	22,3	23,7	25,2	26,6	28,1	29,5	31,0	32,4	33,9	35,3	36,8	38,2	39,7	41,1	42,6	44,0	45,5	46,9
650	kg	18,8	20,3	21,8	23,3	24,8	26,4	27,9	29,4	30,9	32,4	33,9	35,5	37,0	38,5	40,0	41,5	43,0	44,5	46,1	47,6	49,1
700	kg	19,7	21,2	22,8	24,4	26,0	27,6	29,1	30,7	32,3	33,9	35,5	37,1	38,6	40,2	41,8	43,4	45,0	46,5	48,1	49,7	51,3
750	kg	20,5	22,2	23,8	25,5	27,1	28,8	30,4	32,1	33,7	35,4	37,0	38,6	40,3	41,9	43,6	45,2	46,9	48,5	50,2	51,8	53,5
800	kg	21,4	23,1	24,8	26,6	28,3	30,0	31,7	33,4	35,1	36,8	38,5	40,2	42,0	43,7	45,4	47,1	48,8	50,5	52,2	53,9	55,6
850	kg	22,3	24,1	25,9	27,6	29,4	31,2	33,0	34,7	36,5	38,3	40,1	41,8	43,6	45,4	47,2	49,0	50,7	52,5	54,3	56,1	
900	kg	23,2	25,0	26,9	28,7	30,6	32,4	34,2	36,1	37,9	39,8	41,6	43,4	45,3	47,1	49,0	50,8	52,7	54,5	56,3		
950	kg	24,1	26,0	27,9	29,8	31,7	33,6	35,5	37,4	39,3	41,2	43,1	45,0	46,9	48,9	50,8	52,7	54,6	56,5			
1000	kg	24,9	26,9	28,9	30,9	32,8	34,8	36,8	38,8	40,7	42,7	44,7	46,6	48,6	50,6	52,6	54,5	56,5				

## Selection data

$$\Delta p = 0,6 \times v^2 \times \zeta$$

Hn\Wn [mm]		200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
200	ζ [-]	1,71	1,43	1,24	1,1	1	0,92	0,85	0,79	0,74	0,7	0,66	0,63	0,6	0,58	0,56	0,53	0,52	0,5	0,48	0,47	0,45
250	ζ [-]	1,4	1,17	1,02	0,9	0,82	0,75	0,69	0,65	0,61	0,57	0,54	0,52	0,49	0,47	0,45	0,44	0,42	0,41	0,39	0,38	0,37
300	ζ [-]	1,21	1,01	0,87	0,78	0,7	0,64	0,59	0,55	0,52	0,49	0,46	0,44	0,42	0,4	0,39	0,37	0,36	0,35	0,34	0,33	0,32
350	ζ [-]	1,06	0,89	0,77	0,68	0,62	0,57	0,52	0,49	0,46	0,43	0,41	0,39	0,37	0,36	0,34	0,33	0,32	0,31	0,3	0,29	0,28
400	ζ [-]	0,96	0,8	0,69	0,61	0,56	0,51	0,47	0,44	0,41	0,39	0,37	0,35	0,33	0,32	0,31	0,3	0,29	0,28	0,27	0,26	0,25
450	ζ [-]	0,87	0,73	0,63	0,56	0,51	0,46	0,43	0,4	0,38	0,35	0,34	0,32	0,3	0,29	0,28	0,27	0,26	0,25	0,24	0,24	0,23
500	ζ [-]	0,81	0,67	0,58	0,52	0,47	0,43	0,4	0,37	0,35	0,33	0,31	0,29	0,28	0,27	0,26	0,25	0,24	0,23	0,22	0,22	0,21
550	ζ [-]	0,75	0,62	0,54	0,48	0,43	0,4	0,37	0,34	0,32	0,3	0,29	0,27	0,26	0,25	0,24	0,23	0,22	0,22	0,21	0,2	0,2
600	ζ [-]	0,7	0,59	0,51	0,45	0,41	0,37	0,34	0,32	0,3	0,28	0,27	0,26	0,24	0,23	0,22	0,22	0,21	0,2	0,19	0,19	0,16
650	ζ [-]	0,66	0,55	0,48	0,42	0,38	0,35	0,32	0,3	0,28	0,27	0,25	0,24	0,23	0,22	0,21	0,2	0,2	0,19	0,18	0,18	0,17
700	ζ [-]	0,63	0,52	0,45	0,4	0,36	0,33	0,31	0,29	0,27	0,25	0,24	0,23	0,22	0,21	0,2	0,19	0,19	0,18	0,17	0,17	0,16
750	ζ [-]	0,6	0,5	0,43	0,38	0,34	0,32	0,29	0,27	0,25	0,24	0,23	0,22	0,21	0,2	0,19	0,18	0,18	0,17	0,16	0,16	0,16
800	ζ [-]	0,57	0,47	0,41	0,36	0,33	0,3	0,28	0,26	0,24	0,23	0,22	0,21	0,2	0,19	0,18	0,17	0,17	0,16	0,16	0,15	0,15
850	ζ [-]	0,54	0,45	0,39	0,35	0,31	0,29	0,27	0,25	0,23	0,22	0,21	0,2	0,19	0,18	0,17	0,17	0,16	0,16	0,15	0,15	
900	ζ [-]	0,52	0,43	0,38	0,33	0,3	0,28	0,25	0,24	0,22	0,21	0,2	0,19	0,18	0,17	0,17	0,16	0,15	0,15	0,14		
950	ζ [-]	0,5	0,42	0,36	0,32	0,29	0,27	0,25	0,23	0,21	0,2	0,19	0,18	0,17	0,17	0,16	0,15	0,15	0,14			
1000	ζ [-]	0,48	0,4	0,35	0,31	0,28	0,26	0,24	0,22	0,21	0,19	0,18	0,18	0,17	0,16	0,15	0,15	0,14				

VU120 - Free air passage (m<sup>2</sup>)

Hn\Wn [mm]		200	250	300	350	400	450	500	550	600	650	700
<b>200</b>	Sn [m <sup>2</sup> ]	0,0244	0,0313	0,0382	0,0451	0,0520	0,0588	0,0657	0,0726	0,0795	0,0864	0,0932
<b>250</b>	Sn [m <sup>2</sup> ]	0,0330	0,0423	0,0517	0,0611	0,0705	0,0798	0,0892	0,0986	0,1080	0,1174	0,1267
<b>300</b>	Sn [m <sup>2</sup> ]	0,0415	0,0533	0,0652	0,0771	0,0890	0,1009	0,1127	0,1246	0,1365	0,1484	0,1602
<b>350</b>	Sn [m <sup>2</sup> ]	0,0500	0,0644	0,0787	0,0931	0,1075	0,1219	0,1362	0,1506	0,1650	0,1794	0,1938
<b>400</b>	Sn [m <sup>2</sup> ]	0,0585	0,0754	0,0922	0,1091	0,1260	0,1429	0,1597	0,1766	0,1935	0,2104	0,2273
<b>450</b>	Sn [m <sup>2</sup> ]	0,0670	0,0864	0,1057	0,1251	0,1445	0,1639	0,1833	0,2026	0,2220	0,2414	0,2608
<b>500</b>	Sn [m <sup>2</sup> ]	0,0755	0,0974	0,1193	0,1411	0,1630	0,1849	0,2068	0,2286	0,2505	0,2724	0,2943
<b>550</b>	Sn [m <sup>2</sup> ]	0,0840	0,1084	0,1328	0,1571	0,1815	0,2059	0,2303	0,2547	0,2790	0,3034	0,3278
<b>600</b>	Sn [m <sup>2</sup> ]	0,0925	0,1194	0,1463	0,1731	0,2000	0,2269	0,2538	0,2807	0,3075	0,3344	0,3613
<b>650</b>	Sn [m <sup>2</sup> ]	0,1010	0,1304	0,1598	0,1892	0,2185	0,2479	0,2773	0,3067	0,3360	0,3654	0,3948
<b>700</b>	Sn [m <sup>2</sup> ]	0,1095	0,1414	0,1733	0,2052	0,2370	0,2689	0,3008	0,3327	0,3646	0,3964	0,4283
<b>750</b>	Sn [m <sup>2</sup> ]	0,1180	0,1524	0,1868	0,2212	0,2555	0,2899	0,3243	0,3587	0,3931	0,4274	0,4618
<b>800</b>	Sn [m <sup>2</sup> ]	0,1265	0,1634	0,2003	0,2372	0,2741	0,3109	0,3478	0,3847	0,4216	0,4584	0,4953
<b>850</b>	Sn [m <sup>2</sup> ]	0,1351	0,1744	0,2138	0,2532	0,2926	0,3319	0,3713	0,4107	0,4501	0,4895	0,5288
<b>900</b>	Sn [m <sup>2</sup> ]	0,1436	0,1854	0,2273	0,2692	0,3111	0,3530	0,3948	0,4367	0,4786	0,5205	0,5623
<b>950</b>	Sn [m <sup>2</sup> ]	0,1521	0,1964	0,2408	0,2852	0,3296	0,3740	0,4183	0,4627	0,5071	0,5515	0,5958
<b>1000</b>	Sn [m <sup>2</sup> ]	0,1606	0,2075	0,2543	0,3012	0,3481	0,3950	0,4418	0,4887	0,5356	0,5825	0,6294

Hn\Wn [mm]		750	800	850	900	950	1000	1050	1100	1150	1200	
<b>200</b>	Sn [m <sup>2</sup> ]	0,1001	0,1070	0,1139	0,1207	0,1276	0,1345	0,1414	0,1483	0,1551	0,1620	
<b>250</b>	Sn [m <sup>2</sup> ]	0,1361	0,1455	0,1549	0,1642	0,1736	0,1830	0,1924	0,2018	0,2111	0,2205	
<b>300</b>	Sn [m <sup>2</sup> ]	0,1721	0,1840	0,1959	0,2078	0,2196	0,2315	0,2434	0,2553	0,2671	0,2790	
<b>350</b>	Sn [m <sup>2</sup> ]	0,2081	0,2225	0,2369	0,2513	0,2656	0,2800	0,2944	0,3088	0,3232	0,3375	
<b>400</b>	Sn [m <sup>2</sup> ]	0,2441	0,2610	0,2779	0,2948	0,3117	0,3285	0,3454	0,3623	0,3792	0,3960	
<b>450</b>	Sn [m <sup>2</sup> ]	0,2801	0,2995	0,3189	0,3383	0,3577	0,3770	0,3964	0,4158	0,4352	0,4545	
<b>500</b>	Sn [m <sup>2</sup> ]	0,3162	0,3380	0,3599	0,3818	0,4037	0,4255	0,4474	0,4693	0,4912	0,5131	
<b>550</b>	Sn [m <sup>2</sup> ]	0,3522	0,3765	0,4009	0,4253	0,4497	0,4741	0,4984	0,5228	0,5472	0,5716	
<b>600</b>	Sn [m <sup>2</sup> ]	0,3882	0,4150	0,4419	0,4688	0,4957	0,5226	0,5494	0,5763	0,6032	0,6301	
<b>650</b>	Sn [m <sup>2</sup> ]	0,4242	0,4536	0,4829	0,5123	0,5417	0,5711	0,6004	0,6298	0,6592	0,6886	
<b>700</b>	Sn [m <sup>2</sup> ]	0,4602	0,4921	0,5239	0,5558	0,5877	0,6196	0,6515	0,6833	0,7152	0,7471	
<b>750</b>	Sn [m <sup>2</sup> ]	0,4962	0,5306	0,5650	0,5993	0,6337	0,6681	0,7025	0,7368	0,7712	0,8056	
<b>800</b>	Sn [m <sup>2</sup> ]	0,5322	0,5691	0,6060	0,6428	0,6797	0,7166	0,7535	0,7903	0,8272	0,8641	
<b>850</b>	Sn [m <sup>2</sup> ]	0,5682	0,6076	0,6470	0,6863	0,7257	0,7651	0,8045	0,8439	0,8832		
<b>900</b>	Sn [m <sup>2</sup> ]	0,6042	0,6461	0,6880	0,7299	0,7717	0,8136	0,8555	0,8974			
<b>950</b>	Sn [m <sup>2</sup> ]	0,6402	0,6846	0,7290	0,7734	0,8177	0,8621	0,9065				
<b>1000</b>	Sn [m <sup>2</sup> ]	0,6762	0,7231	0,7700	0,8169	0,8637	0,9106					

### Approvals and certificates

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All our products are submitted to a number of tests by official test institutes. Reports of these tests form the basis for the approvals of the products.



Efectis - 1812-CPR-1595



18.28

The NF-label guarantees: conformity with the standard NF S 61-937 Parts 1 and 10: "Systèmes de Sécurité Incendie Dispositifs Actionnés de Sécurité"; conformity with the national decree of March 22, 2004, changed on 14 March 2011 for the classification of fire resistance; the values of the characteristics mentioned in this document. Organisme Certificateur: AFNOR Certification, 11 Rue Francis de Pressensé, F93571 La Plaine Saint-Denis Cedex; Website: <http://www.afnor.org> <http://www.marque-nf.com>; Phone: +33 (0)1.41.62.80.00, Fax: +33 (0)1.49.17.90.00, Email: [certification@afnor.org](mailto:certification@afnor.org)