



CLASSIFICATION REPORT No. 13 - A - 1040 - Version 6

In accordance with standards EN 12101-8: 2011 and EN 13501-4

**Reference laboratory
assessment**

13 - A - 1040 - Version 7

Concerning

A range of hinged door type smoke control dampers, installed on a horizontal smoke extraction duct:

- commercial references of ducts:
PROMATECT L 500 th = 30 / 40 / 50 mm
GEOFLAM th = 30 / 35 / 45 mm
GEOFLAM LIGHT th = 35 mm
TECNIVER th = 35 / 45 / 50 mm
GLASROC F/V500 th = 35 / 50 mm
EXTHAMAT P th = 25 / 30 / 35 / 45 mm
DESENFIRE 25HD / 25THD / 35HD / 25STR
GEOTEC® S th = 30 / 45 mm
Prefabricated concrete th = 70 mm

- commercial references of dampers:
KAMOUFLAGE 1V 60/120 P
KAMOUFLAGE H 1V 60 P

Applicant

RF TECHNOLOGIES
Lange Ambachtstraat 40
B – 9860 OOSTERZELE

This report annuls and replaces classification report No. 13 - A - 1040 - Version 5.

DISCLAIMER : The current document is a translation of the corresponding and official French version. In all situations where the meaning of the current document is unclear or ambiguous, the French document should be used for purposes of disambiguation.

LIST OF REVISIONS

Revision index	Date	Modification	Made by
1	24/11/2016	- Assembly of dampers in ducts type GEOTEC® S (GEOSTAFF) of thickness 30 mm and 45 mm - Validation of ATOUT option	CSC
2	23/05/2017	- Installation of dampers on ducts of EXTHAMAT P th = 35 / 45 mm (EXTHA) of thickness 35 mm and 45 mm	RST
3	14/03/2018	Modifications to direct scope of application	MFE
4	14/02/2019	- Installation of dampers in ducts of EI90 performance - Change to cold seal	MFE
5	16/01/2020	Cold seal adding : VAME-D217 Installation of dampers on ducts of DESENFIRE 25 STR (MF INDUSTRIES), th = 25 mm.	RST
6	08/07/2021	Validation of smoke control dampers mounted into builders work (created on site) in the Classification paragraph	RST

1. INTRODUCTION

The classification report defines the classification assigned to the KAMOUFLAGE P type smoke damper in compliance with the operating procedures given in the standard EN 13501-4: 2016 "Fire classification of construction products and building elements - Part 4: Classifications from the fire resistance test data on the products used in the smoke extraction systems: ducts and smoke control dampers and in the standard EN 12101-8 "Smoke control dampers".

2. ORGANISATION

Efectis France
Voie Romaine
F - 57280 MAIZIERES-LES-METZ

Notified body : 1812

3. APPLICANT

RF TECHNOLOGIES
Lange Ambachtstraat 40
B – 9860 OOSTERZELE

4. REFERENCE DOCUMENT

14 - A - 177	(EFFECTIS France)
13 - A - 1039 - Révision 5	(EFFECTIS France)
13 - E - 687	(EFFECTIS France)
13 - A - 503	(EFFECTIS France)
13 - T - 858	(EFFECTIS France)
15364A	(WFRG)
15392A	(WFRG)
15463A	(WFRG)
15511A	(WFRG)
12 - E - 440	(EFFECTIS France)
12 - E - 468	(EFFECTIS France)
13 - H - 023	(EFFECTIS France)
11 - E - 554	(EFFECTIS France)
11 - E - 655	(EFFECTIS France)
12 - U - 321	(EFFECTIS France)
EFR-15-T-001066	(EFFECTIS France)
EFR-15-T-003475	(EFFECTIS France)
EFR-15-G-003599	(EFFECTIS France)
EFR-16-G-000333b	(EFFECTIS France)
EFR-18-T-000270	(EFFECTIS France)
EFR-18-T-000496	(EFFECTIS France)

5. REFERENCES AND ORIGIN OF THE ELEMENTS EXAMINED

References: KAMOULAGE 1V 60/120 P
KAMOULAGE H 1V 60 P

Source: RF TECHNOLOGIES
Lange Ambachtstraat 40
B – 9860 OOSTERZELE

6. PRINCIPLE OF ASSEMBLY

6.1. TYPE OF FUNCTION

KAMOULAGE (H) 1V 60 / 120 P type dampers are defined as "smoke control dampers".

Their function is to resist fire, as specified by the fire resistance performance characteristics given in section 5 of standard EN 13501-4.

6.2. GENERAL

The elements tested are a range of smoke control dampers fitted in a horizontal smoke extraction duct.

The KAMOULAGE H P range is identical in all respects to the KAMOULAGE 1V P range. It is intended for residential housing blocks.

The smoke control dampers, with one pivoting door, are constructed as follows:

- a tunnel with frame,
- a door,
- a control mechanism.

Each damper has flush-mount measurements of between:

- 350 x 385 to 700 x 1075 mm (l x h) for dampers with one door,

Free passage:

- for KAMOULAGE (H) 1V P: (W -26) x (H -26) mm.

The smoke control duct is as described in procès-verbaux:

- no. 08-A-380 and comprises panels 30, 40 or 50 mm thick for panels in PROMATECT L500,
- no. 10-A-067 - Version 2 and comprises panels 30, 35 or 45 mm thick for panels in GEOFLAM F,
- no. 13-A-895 and comprises 35 mm thick panels in GEOFLAM LIGHT,
- no. 08-A-462 - Version 2, 08-A-115 Version 1 and 13-A-1041 and comprises panels 35, 45 or 50 mm for panels in TECNIVER,
- no. PV 2013 CERIB 1296 for a vertical multi-compartment smoke extraction duct prefabricated in reinforced concrete of minimum thickness 70 mm,
- no. EFR-16-001013-Version 1 and comprises 30 mm thick panels in GEOTEC® S,
- no. EFR-16-001960 and comprises 30 mm thick panels in GEOTEC® S,
- no. EFR-16-002203 and comprises 45 mm thick panels in GEOTEC® S,
- no. EFR-16-002205 and comprises 45 mm thick panels in GEOTEC® S.
- no. EFR 15-001253 - Version 1 and comprises 25 mm thick panels for panels in DESENFIRE HD 25

- no. EFR-15-001255 - Version 1 and comprises 25 mm thick panels for panels in DESENFIRE THD 25
- no. EFR-15-000723 - Version 1 and comprises 35 mm thick panels for panels in DESENFIRE THD 35
- no. EFR-16-003582 and comprises 25 mm thick panels for panels in DESENFIRE STR 25
- no. EFR-15-000198 and comprises 35 mm thick panels for panels in GLASROC F V500/35
- no. EFR-15-000201 and comprises 50 mm thick panels for panels in GLASROC F V500/50
- no. EFR-16-001070 and comprises 25 mm thick panels for panels in EXTHAMAT
- no. 13-A-032 and comprises 30 mm thick panels for panels in EXTHAMAT
- no. 13-A-049 and comprises 35 mm thick panels for panels in EXTHAMAT

6.3. DETAILED DESCRIPTION OF ELEMENTS

6.3.1. KAMOUFLAGE (H) 1V P and KAMOUFLAGE H 1V P smoke control dampers

6.3.1.1. Door

The door is formed of an assembly of two panels and support sections (two vertical, one horizontal) in galvanised steel 1.25 mm thick:

- one panel on the side facing the fire, in refractory of type Promatect H 15 mm thick or IGNIBOARD (manufacturer Keen Eagle) 15 mm thick, and of bulk density 900 kg/m³,
- one plasterboard panel 9.5 mm thick (GKB A10, KNAUF) on the side away from the fire.

The three sections are located between the two panels:

- the vertical support profiles are U-shaped, with dimensions 47.5 x 29.3 mm
- the horizontal profile is C-shaped, with dimensions 69.5 x 47.5 mm.

These three sections are fixed to the Promatect H panel with four steel rivets Ø 4.8 mm, and to the plasterboard panel with steel screws Ø 3.5 mm (number of screws = height of the plasterboard panel/200 mm, round top). The screws are spaced at uniform intervals the height of the panel.

6.3.1.2. Damper tunnel

The tunnel is formed of a framework in extruded aluminium profiles 60 x 64 mm, assembled using Zamak connectors.

Inside, each profile is fitted along its length with a refractory panel in Promatect H of section 10 x 81 mm (th x w) fixed with steel rivets Ø 4.8 mm at 420 mm intervals.

6.3.1.3. Sealing

Cold sealing is provided by:

- a profiled rubber seal 7.3 x 23 mm or profiled rubber seal VA-D217-B 17.6 x 7.3 mm (w x th) crimped into the extruded tunnel profile.
Or
- a profiled silicone seal 14.7 x 14.4 mm reference VAME-D217 crimped into the extruded tunnel profile.

Hot sealing is provided by an RFT EX-539P type intumescent seal or "Rectorseal Blaseseal" type seal (manufactured by Rectorseal) 15 x 2 mm, retained in the Promatect door panel using steel clips 8 x 12 mm (w x h) at 30 mm intervals.

6.3.1.4. Holding in open position

An arm in stainless steel sheet, 4 mm thick and having dimensions 20 x 242 mm ($h \geq 500$ mm) or 20 x 151 mm ($h < 500$ mm) ($l \times h$) is fixed to the door. It is guided in a special slot made in the upper section of the tunnel framework.

6.3.1.5. Hinging

The door hinges on two 1.25 mm thick sheet steel hinges, having a \varnothing 5 mm rotating shaft, that are fixed to the door by two M5 steel bolts and nuts, and to the tunnel with three steel rivets \varnothing 4.8 mm.

One or two gas springs, reference LIFT-O-MAT® (STABILUS®), are fixed to the top and bottom of the tunnel body and to the door via a balljoint system, and control the opening of the door.

A galvanised steel bracket (one per gas spring) 250 or 460 x 30 x 39.5 mm and 3 mm thick sits between the door and the gas spring. This is fixed by a steel rivet \varnothing 4.8 x 24 mm and by the hinge retention bolts.

Total force of standard KAM P gas struts										
	300	350	400	450	500	550	600	650	700	
385		300	300	300	400	400	450	450		
415	300	300	300	400	400	500	600			
445	300	300	300	400	400	500	600	600		
475	300	300	400	400	500	500	600	700		
505	300	300	400	400	500	600	600	700		
535	300	300	400	400	500	600	600	700		
565	300	300	400	400	500	600	700	800		
595	300	300	400	500	500	600	700	800		
625	300	300	400	500	600	600	700	800		
655	300	400	400	500	600	600	700	800		
685	300	400	400	500	600	700	800	900		
715	300	400	400	500	600	700	800	900		
745	300	400	500	500	600	700	800	900		
775	300	400	500	500	600	700	800	900		
805	300	400	500	600	700	800	900			
835	300	400	500	600	700	800	900			
865	400	400	500	600	700	800	900			
895	400	400	500	600	700	800	900			
925	400	400	500	600	700	800				
955	400	500	500	600	700	900				
985	400	500	600	700	800	900				
1015	500	500	600	700	800	900				
1045	500	500	600	700	800	900				
1075	500	500	600	700	800					

Total force of optional ATOUT KAM P gas struts										
	300	350	400	450	500	550	600	650	700	
385		250	250	350	350	450	450	X		
415		300	300	400	400	500	500	600		
445		300	300	400	400	500	500	900	700	
475		300	400	400	500	500	500	900	700	
505		300	400	400	500	500	600	900	700	
535		300	400	400	500	500	900	700	1200	
565		300	400	400	500	500	900	700	1200	
595		300	400	500	500	500	900	700	1200	
625		300	400	500	500	600	900	700	1300	
655		300	400	500	500	900	700	800	900	
685		400	400	500	500	900	700	800	900	
715		400	400	500	500	900	700	1200	900	
745		400	400	500	500	900	700	900		
775		400	500	500	800	700	800	900		
805		400	500	500	800	700	800	900		
835		400	500	500	800	700	1200	900		
865		400	500	500	900	700	1200			
895		400	500	500	900	700	900			
925		400	500	600	700	800	900			
955		400	500	600	700	800	900			
985		400	500	600	700	800	900			
1015		500	500	600	700	1200				
1045		500	500	600	700	900				
1075		500	500	600	700	900				

The gas strut forces given in the two above tables correspond to the total force of the gas struts mounted on the damper. Depending on the size of the damper, one or two gas struts of force 150, 200, 250, 300, 350, 400 or 450 N may be mounted on the damper.

6.3.1.6. Mechanism

The doors are held in the closed position by an Rf-T VAL type lock, consisting of three parts in Zamak, three springs, two parts in galvanised steel, a lock and a counter-panel.

The lock is fitted into the horizontal support profile using Ø 5 mm steel screws.

6.3.1.7. Operation

The door can be opened manually using an appropriate steel key, or electrically by demagnetising the lock. The opening command, whether manual or electrical, releases the bolt from the steel part fixed to the section on the side opposite to the hinges. This allows the door to open.

6.3.1.8. Sealing frame

The damper is installed within a sealing frame that is first fitted into the opening in the duct. A KAP type sub-frame comprising a galvanised steel bracket 32 x 18.5 mm and 2 mm thick is installed on the duct fitting.

6.3.1.9. Options for KAMOUFLAGE (H) 1V P 60/120 dampers

- For painting the damper doors:

The Kamouflage type damper doors may be coated with a layer of paint on the unexposed side.

6.3.1.10. KAMOUFLAGE ATOUT option:

It is possible to pre-fit an aluminium panel maximum thickness 0.8 mm or a steel panel maximum thickness 0.5 mm in the door of the dampers.

This panel attached to the door by a double-sided adhesive strip width 60 mm uniformly applied over the surface of the panel on the side away from the fire.

When this panel is added, the maximum permitted excess weight per surface area for each size of damper is 3.9 kg/m².

- Painting of the damper frame:

The frame to receive the Kamouflage type dampers may be coated with a layer of paint on the unexposed side.

- Application of wallpaper onto the damper slat:

The KAMOUFLAGE type damper doors may be covered with one layer of wallpaper glued to them.

- Application of an aluminium film onto the exposed side of the plasterboard door panel:

30 µm thick aluminium film may be glued to the exposed side of the plasterboard panel that forms the damper door.

- Application of mastic in the angle formed by the damper frame and surface of the duct:

The space between the frame section and the surface of the duct may be filled with acrylic mastic to provide a uniform finish at the joint between frame and wall.

7. INSTALLATION OF ELEMENTS TESTED

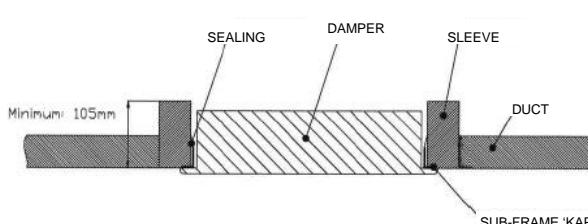
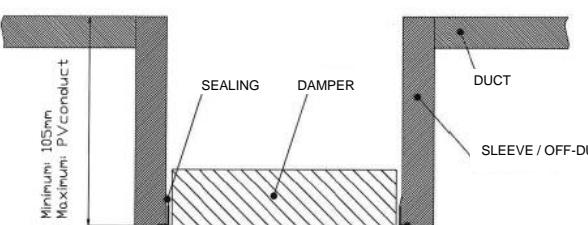
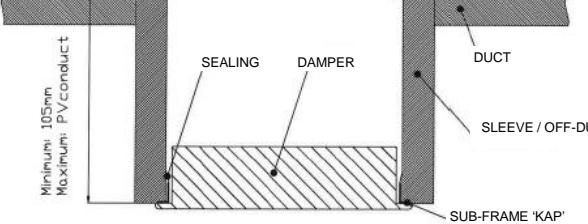
For installation of each damper:

- a cut-out is made on one side of the duct, dimensions $(W + 2 \times \text{duct thickness} + 20) \times (H + 2 \times \text{duct thickness} + 20)$ mm as the damper is always fixed using a sub-frame (KAP type);
- the damper is installed in the sub-frame and fixed to the latter with four aluminium bolts M6 x 50 mm.

The cut-out for the damper is then strengthened with a sleeve of plasterboard panels of the same type as those used for the duct, having a total depth of 105 mm.

The dampers are fixed to the duct by sleeves. This sleeve may be affixed independently:

- Within the duct,
- In the axis of the duct,
- On the outside of the duct,
- Offset from the duct (in an off-duct).

		Within the duct
		Within the duct
In the axis of the duct		On the outside of the duct / Offset from the duct (in an off-duct)
		

7.1. INSTALLATION ON A PROMATECT L500 TYPE DUCT

The sleeve comprises four cross-pieces, also made of PROMATECT L500 of the same thickness as that used for the duct (30, 40 or 50 mm), clipped together and to the wall.

Following this, each opening receives a KAP type sub-frame. Before assembly the openings are first coated with Promacol S, then the sub-frame is fixed to the sleeve with VBA 6 x 30, 40 or 50 mm screws and finished with PROMACOL S, thus reducing the free dimension of the opening to $(l + 10) \times (H + 10)$ mm.

7.2. INSTALLATION ON A GEOFLAM OR GEOFLAM LIGHT DUCT

The sleeve comprises two cross-pieces and two uprights, also made of DESENFIRE of the same thickness as that used for the duct (30, 35 or 45 mm) or DESENFIRE HD of the same thickness as that used for the duct (35 mm).

The edges of the opening are coated with PLACOL-type (BPB) adhesive plaster before embodying the crosspieces of the sleeve into the opening.

Sealing of the joints between the cross-pieces, sleeve and wall is achieved with vegetable fibre caulking + MOLDA plaster (DUO or NORMAL) (BPB).

Following this, each opening receives a KAP type sub-frame. The subframe is caulked to the duct with vegetable fibre + MOLDA plaster (DUO or NORMAL) (BPB), reducing the free opening to dimensions $(W + 10) \times (H + 10)$ mm.

7.3. INSTALLATION ON A TECNIVER TYPE DUCT

The sleeve comprises four crosspieces, also in TECNIVER of the same thickness as that used for the duct (35, 45 or 50 mm), glued and screwed together and to the wall using VBA Ø 5 x 70 mm screws at 150 mm intervals.

The sealing of the joints between uprights and cross-pieces and between the sleeve and the wall is achieved with CF GLUE®.

Following this, each opening receives a KAP type sub-frame. Before these are installed, openings are first coated with CF GLUE®, then the sub-frame is glued to the sleeve, reducing the free opening to dimensions $(W + 10) \times (H + 10)$ mm.

7.4. INSTALLATION ON A GLASROC F V500 DUCT

The sleeve comprises four cross-pieces also made of GLASROC F V500 of the same thickness as that used for the duct (35 or 50 mm), glued and screwed together and to the wall with VBA Ø 5 x 70 mm screws, at 150 mm intervals.

Sealing of the joints between uprights and cross members and between the sleeve and the wall is achieved using GLASROC® F V500 adhesive.

Following this, each opening receives a KAP type sub-frame. Before these are installed, openings are first coated with GLASROC® F V500, then the sub-frame is glued to the sleeve, reducing the free opening to dimensions $(W + 10) \times (H + 10)$ mm.

7.5. INSTALLATION ON AN EXTHAMAT P DUCT

The sleeve comprises two cross-pieces and two uprights, also made of EXTHAMAT P of the same thickness as that used for the conduit (25, 30, 35 or 45 mm).

The edges of the opening are coated with adhesive plaster before embodying the crosspieces and uprights of the lining into the opening.

Sealing of the joints between uprights and cross-pieces and between the sleeve and the wall is achieved using vegetable fibre caulking + plaster.

Where installation is with a sub-frame, the subframe is caulked to the duct, reducing the free opening to dimensions (W + 10) x (H + 10) mm.

7.6. FOR ASSEMBLY ON A GEOTEC® S DUCT

The sleeve comprises four cross-pieces, also in GEOTEC® S of thickness 30 or 45 mm, glued and caulked together and to the wall or glued and screwed together and onto the wall using VBA Ø 5 x respectively 80/90 mm screws at 100 mm intervals.

The edges of the opening are coated with adhesive plaster of type GEOCOL or GEOCOL S (GEOSTAFF) before embodying the crosspieces of the sleeve into the opening.

Sealing of the joints between the cross-pieces and between the sleeve and the wall is with caulking or plaster tile glue GEOCOL or GEOCOL S (GEOSTAFF).

Following this, each opening receives a KAP type sub-frame. The sub-frame is fastened to the duct by caulking or by plaster tile glue GEOCOL or GEOCOL S (GEOSTAFF) and by Ø 5 x 30 or 45 mm screws, so reducing the free opening to dimensions (W + 10) x (H + 10) mm.

7.7. INSTALLATION ON A DESENFIRE HD/THD/STR DUCT

The sleeve comprises two cross-pieces and two uprights, also made of DESENFIRE of the same thickness as that used for the duct itself (25HD, 25THD, 25STR or 35HD mm)

The edges of the opening are coated with FACILIS (SEMIN)-type adhesive plaster before embodying the cross-pieces and uprights of the sleeve into the opening.

Sealing of the joints between uprights and cross-pieces and between the sleeve and the wall is achieved using vegetable fibre caulking + LAFARGE plaster.

Each opening then receives a sub-frame of type KAP, the sub-frame being attached to the duct with vegetable fibre caulking + LAFARGE plaster, so reducing the free opening to dimensions (W + 10) x (H + 10) mm.

8. FIRE RESISTANCE CLASSIFICATIONS

8.1. CLASSIFICATION REFERENCES

This classification procedure was performed in accordance with Section 7.3.5. of Standard EN 13501-4.

8.2. CLASSIFICATIONS

The elements are classified according to the following combinations of performance and class parameters.

Dampers with this classification have undergone 300 cycles unloaded.

No other classification is permitted.

- For dampers KAMOUFLAGE 1V 60 P or KAMOUFLAGE H 1V 60 P installed in a duct of PROMATECT L500 th = 30 MM, TECNIVER th = 35 MM, GLASROC F/V500 th = 35 mm, GEOFLAM th = 30 mm, GEOTEC® S th = 30 mm, EXTHAMAT th = 25 mm, DESENFIRE 25HD:

E	I	-	t	S	Ved	ho	i	<->	o	Operating pressure	multi	AA
E	I		60	S	-	Hod	i	<->	o	-1500/+0 Pa	multi	AA

- For dampers KAMOUFLAGE 1V/2V P installed in a duct of PROMATECT L500 th = 40 MM, GEOFLAM th = 35 mm, EXTHAMAT P th = 30 mm, TECNIVER th = 45 mm or DESENFIRE th = 25THD:

E	I	-	t	S	Ved	ho	i	<->	o	Operating pressure	multi	AA
E	I		90	S	-	Hod	i	<->	o	-1500/+0 Pa	multi	AA

- For dampers KAMOUFLAGE 1V 120 P installed in a duct of PROMATECT L500 th = 50 MM, GEOFLAM 45, GEOFLAM LIGHT 35, GLASROC F V500/50 mm, TECNIVER L50, DESENFIRE45, DESENFIRE HD 35, DESENFIRE STR 25, EXTHAMAT P 45 MM, GEOTEC® S th = 45 MM ou EXTHAMAT P th = 35 MM or 45 mm:

E	I	-	t	S	Ved	ho	i	<->	o	Operating pressure	multi	AA
E	I		120	S	-	Hod	i	<->	o	-1500/+0 Pa	multi	AA

- For dampers KAMOUFLAGE 1V 120 P mounted into builders work (created on site) ducts, concrete or aerated concrete ducts, provided that the concrete/aerated concrete construction has a thickness that complies with the supporting construction information shown in EN 1363-1 and EN 1366-2 for the time period of classification required.

E	I	-	t	S	Ved	ho	i	<->	o	Operating pressure	multi	AA
E	I		120	S	-	Hod	i	<->	o	-1500/+0 Pa	multi	AA

9. SCOPE OF APPLICATION OF THE RESULTS

9.1. GENERAL

The requirements relating to the scope of application of all fire-resistant dampers submitted for testing in accordance with EN 1366-10 apply, as well as the following elements.

9.2. DIMENSIONS OF SMOKE CONTROL DAMPERS

Dampers with the following flush-mounted dimensions may be used:

- 350 x 385 to 700 x 1075 mm (l x h) for dampers with one door (KAMOUFLAGE 1V P or KAMOUFLAGE H 1V P).

These dampers may be installed in ducts of all dimensions permitted within the direct scope of application given in EN 1366-8 and in procès-verbaux quoted into the document.

Multi-compartment smoke extraction dampers may be used on ducts implemented (on-site) during masonry works, on ducts and walls in concrete or cellular concrete, on condition that the multi-compartment smoke extraction ducts have been submitted to test on a duct or in a wall of materials of the least bulk density and thickness (for example, a panel or sheet metal element) and on condition that the structure in concrete or cellular concrete has a thickness conforming with information relating to the support structure stated in EN 1363-1 and EN 1366-2 for the duration of the classification required. Appropriate fixing elements, resistant to fire and suitable for the materials, must be used.

9.3. APPLICATION OF SMOKE CONTROL DAMPERS AT DIFFERENT POSITIONS IN THE DUCTS

The results given in section 7.2 of this classification report apply only to dampers installed on the horizontal face of a smoke extraction duct.

9.4. PRESSURE DIFFERENCES

In accordance with standard EN 1366-10 - section 9.4 the performance levels specified in section 7.2 of this classification report are valid for any smoke extraction duct operating at a service pressure between -1500 Pa and +0 Pa.

9.5. ELEVATED TEMPERATURES

The multi-compartment smoke control dampers submitted for test in accordance with the standardised fire test curve in EN 1363-1 are suitable for single-compartment applications for the same period of time.

9.6. TRIGGERING METHOD

Smoke control dampers submitted for testing for automatic activation (AA) systems are not suitable for use in manual activation (MA) systems.

9.7. APPLICATION TO DUCT CONSTRUCTIONS OTHER THAN THOSE SUBMITTED TO TEST

Multi-compartment smoke control dampers may be used in ducts that have been tested in accordance with EN 1366-9 and EN 1366-8 as appropriate, constructed from materials of the same bulk density as those tested or from the same material but of greater bulk density or thickness.

Maizières-lès-Metz, 08 July 2021



Charlotte SCHNELLER

Project leader

Signé par : Charlotte SCHNELLER



Romain STOUVENOT

Supervisor

Signé par : Romain STOUVENOT

This classification report does not confer type approval or element certification.

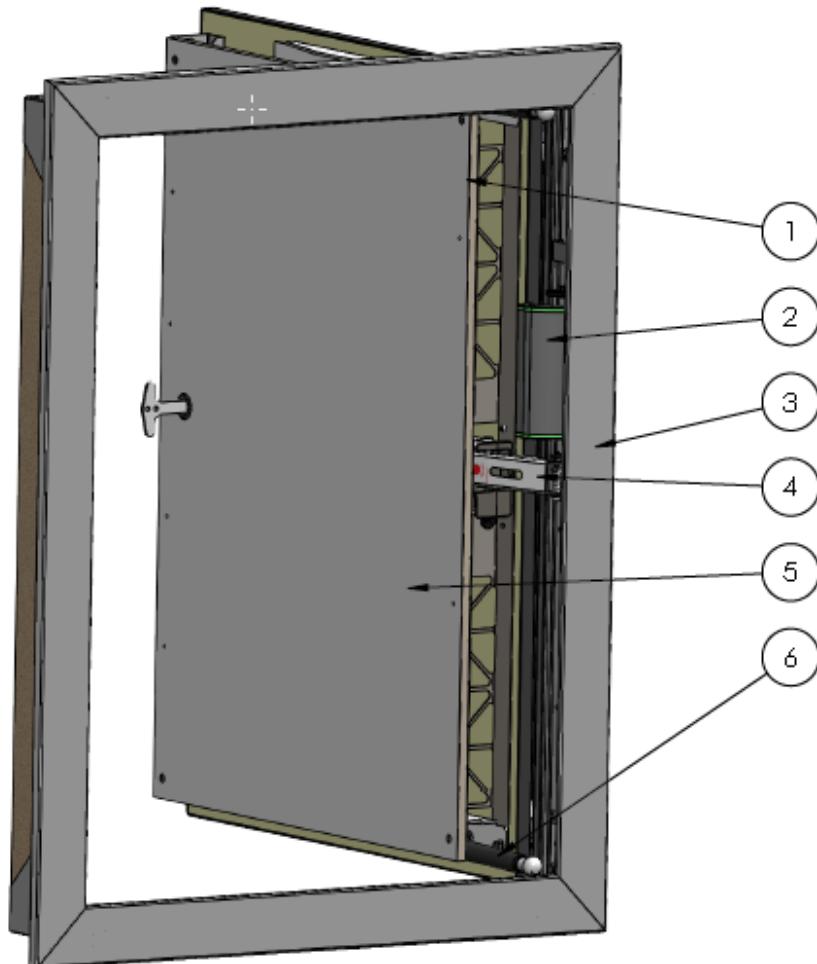
ILLUSTRATIONS APPENDIX

Reference-Subject-Date

1V-KAMOUFLAGE-P_COMMERCIAL_16-05-2019

Plate

A 2/2

**MAIN PARTS**

1. Damperblade
2. Connections box
3. Frame
4. Non return system
5. Cover plate
6. Gas spring



Reference - Subject - Date

1V-2V Mounting frame - KAP 27-08-2019

Plate

B 1/2

DETAIL B
SCALE 1 : 1