EFECTIS France
Voie Romaine
F-57280 Maizières-lès-Metz
Tel: +33 (0)3 87 51 11 11
Fax: +33 (0)3 87 51 10 58

CLASSIFICATION REPORT

Laboratoire agréé Efectis par le Ministère de l'Intérieur

CLASSIFICATION REPORT No. EFR-19-003530 - Revision 1

In accordance with standards EN 12101-8: 2011 and EN 13501-4: 2016

Laboratory assessment reference

EFR-19-003530 - Revision 1

Concerning

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

- Commercial reference of duct:
  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 = 90 mm

- Commercial reference of damper:
  KAMOUFLAGE MP 1V/ 60/120

Applicant

RF TECHNOLOGIES
Lange Ambachtstraat 40
B – 9860 OOSTERZELE

This classification report annuls and replaces the classification report No EFR-19-003530.

LIST OF REVISIONS

Revision index	Date	Modification	Made by
0	23/09/2019	Creation of the document	MFE
1	06/01/2020	Installation of dampers on ducts of DESENFIRE 25 STR (MF INDUSTRIES), th = 25 mm.	RST

1. INTRODUCTION

The classification report defines the classification assigned to the KAMOUFLAGE MP type smoke damper in accordance with the operating procedures given in 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: 2011 “Smoke control dampers”.

2. ORGANISATION

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

3. APPLICANT

RF TECHNOLOGIES
Lange Ambachtstraat 40
B - 9860 OOSTERZELE

4. TEST REFERENCES

			Time for criteria			
Test Nr	Duct	Damper size	Isolation « I »	integrity « E »	Maintenance of opening	Smoke « S »
11-E-554	Conduit en Promatect e = 30 mm	KAMOUFLAGE 1V 700 x 1075 mm	72 min	72 min	70 min	62 min
11-E-655	Conduit en Promatect e = 30 mm	KAMOUFLAGE 2V 1100 x 1105 mm	72 min	78 min	74 min	78 min
WFRG 15364A	Conduit en Promatect e = 30 mm	AVANTAGE 1V 700 x 1075 mm	66 min	66 min	66 min	62 min
12-E-440	Conduit en Geoflam 30 mm	KAMOUFLAGE 1V 700 x 1075 mm	68 min	68 min	68 min	68 min
12-E-468	Conduit en Geoflam 45 mm	AVANTAGE 1V 700 x 1075 mm	150 min	150 min	150 min	150 min

			Time for criteria			
Test Nr	Duct	Damper size	Isolation « I »	integrity « E »	Maintenance of opening	Smoke « S »
WFRG 15364A	Conduit en Promatect e = 30 mm	AVANTAGE 1V 700 x 1075 mm	66 min	66 min	66 min	65 min
11-E-554	Conduit en Promatect e = 30 mm	KAMOUFLAGE 1V 700 x 1075 mm	72 min	72 min	70 min	62 min
WFRG 15392A	Conduit en Promatect e = 30 mm	AVANTAGE 2V 1100 x 1105 mm	72 min	72 min	72 min	72 min
WFRG 15511A	Conduit en EXTHAMAT 45 mm	AVANTAGE 1V 700 x 1075 mm	132 min	132 min	132 min	132 min

			Time for criteria			
Test Nr	Duct	Damper size	Isolation « I »	integrity « E »	Maintenance of opening	Smoke « S »
WFRG 15364A	Conduit en Promatect e = 30 mm	AVANTAGE 1V 700 x 1075 mm	66 min	66 min	66 min	65 min
11-E-554	Conduit en Promatect e = 30 mm	KAMOUFLAGE 1V 700 x 1075 mm	72 min	72 min	70 min	62 min
11-E-655	Conduit en Promatect e = 30 mm	KAMOUFLAGE 2V 1100 x 1105 mm	72 min	78 min	74 min	78 min
WFRG 15392A	Conduit en Promatect e = 30 mm	AVANTAGE 2V 1100 x 1105 mm	72 min	72 min	72 min	72 min
13-H-023	Conduit en TECNIVER 55 mm	AVANTAGE 1V 700 x 1075 mm	132 min	132 min	132 min	132 min

Test Nr	Duct	Damper size	Isolation « I »	integrity « E »	Maintenance of opening	Smoke « S »
15511A	AVANTAGE 1V	700 x 1075 mm	EXTHAMAT e = 45 mm	132 min	132 min	132 min

Test Nr	Duct	Damper size	Isolation « I »	integrity « E »	Maintenance of opening	Smoke « S »
12-U-321	KAMOUFLAGE 1V	700 x 1075 mm	Promatect L500 e = 50 mm	108 min	135 min	99 min

Test Nr	Duct	Damper size	Isolation « I »	integrity « E »	Maintenance of opening	Smoke « S »
15463A	AVANTAGE 1V	700 x 1075 mm	Promatect L500 e = 55 mm	132 min	132 min	132 min

Test Nr	Duct	Damper size	Isolation « I »	integrity « E »	Maintenance of opening	Smoke « S »
11-E-655	KAMOUFLAGE 2V	1100 x 1105 mm	Promatect L500 e = 30 mm	78 min	72 min	78 min

Test Nr	Duct	Damper size	Isolation « I »	integrity « E »	Maintenance of opening	Smoke « S »
12-E-440	KAMOUFLAGE 1V	700 x 1075 mm	GEOFLAM e = 30 mm	68 min	68 min	68 min

Test Nr	Duct	Damper size	Isolation « I »	integrity « E »	Maintenance of opening	Smoke « S »
12-E-440	KAMOUFLAGE 1V	700 x 1075 mm	GEOFLAM e = 30 mm	68 min	68 min	68 min

Test Nr	Duct	Damper size	Isolation « I »	integrity « E »	Maintenance of opening	Smoke « S »
12-E-468	AVANTAGE 1V	700 x 1075 mm	GEOFLAM e = 45 mm	150 min	150 min	150 min

5. REFERENCE AND ORIGIN OF THE ELEMENTS EXAMINED

Reference: KAMOUFLAGE MP 1V 60/120

Source: RF TECHNOLOGIES
Lange Ambachtstraat 40
B – 9860 OOSTERZELE

6. PRINCIPLE OF ASSEMBLY

6.1. TYPE OF FUNCTION

KAMOUFLAGE 1V 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 vertical smoke extraction duct.

The smoke control dampers, with one or two pivoting doors, are constructed as follows:

- a tunnel with frame,
- one or two doors,
- 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 KAMOUFLAGE 1V: (W -38) x (H-38) mm.

The smoke control duct is as described in classification reports:

- no. 08 - A - 380 (EFECTIS France) and comprises panels 30, 40 or 50 mm thick for panels in PROMATECT L500,
- no. 10 - A - 067 - Version 2 (EFECTIS France) and comprises panels 30, 35 or 45 mm thick for panels in GEOFLAM F,
- no. 13 - A - 895 (EFECTIS France) and comprises 35 mm thick panels in GEOFLAM LIGHT,
- no. 08 - A - 462 - Version 2 (EFECTIS France), 08 - A - 115 - Version 1 (EFECTIS France) and 13 - A - 1041 (EFECTIS France) 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 (EFECTIS France) and comprises 30 mm thick panels for panels in EXTHAMAT,
- no. 13 - A - 049 (EFECTIS France) and comprises 35 mm thick panels for panels in EXTHAMAT.

6.3. DETAILED DESCRIPTION OF ELEMENTS

6.3.1. KAMOUFLAGE MP 1V 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 Igniboard or Promatect H 15 mm thickness 15 mm, and of bulk density 900 kg/m^3,
- one plasterboard panel 10 mm thick (GKB A10, KNAUF) on the side away from the fire.

The three sections are located between the two panels:

- 2 vertical support profiles are U-shaped, with dimensions 66,2 x 33 mm,
- the horizontal profile is C-shaped, with dimensions 66,2 x 72,2mm mm.

These three sections are fixed to the Promatect H or Igniboard panel with four steel rivets Ø 4.8 mm, The plasterboard panel was fixed to the U-shaped vertical profiles by means of 2 aluminum profiles of section 26.25 x 11.25 mm (w x h) which were screwed on the plasterboard by means of screws Ø 3.5 mm (quantity of screws = height of the panel / 200 mm, round top). The screws were spaced at uniform intervals along the height of the panel.
.

6.3.1.2. Damper tunnel

The tunnel is formed of a framework in extruded aluminium profiles 79,1 x 69,4 mm, assembled using Zamak connectors.

Inside, each profile is fitted along its length with a refractory panel in Promatect H of section 10 x 101 mm (th x l) 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 14.7 x 14.4 mm or profiled rubber seal 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. Hinging

The door hinges on two 1.25 mm thick sheet steel hinges, having a Ø 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 Ø 4.8 mm.

6.3.1.5. Mechanism

The damper blade was held in the closed position by a VAL-ME (RFT) lock, consisting of three parts in Zamak, three springs, two parts in galvanized steel, an electromagnet and a counter-plate. The lock was fitted into the horizontal support profile using Ø 5 mm steel screws.

Manual operation was done by means of a steel key. Electrical operation was achieved by electrically demagnetization of the electromagnet, commanded by the PCB of the motor.

The lock was rearmed when opening the damper blade by means of a steel link rod of diameter 4 mm which connected the lock with the output axis of the motor. This link rod was connected to the output axis by means of a steel cam with a diameter of 56 mm and a thickness of 3 mm.

6.3.1.6. Position detection

On the PCB, integrated in the motor, there were 2 position sensors of type KEEN EAGLE. These switches were operated by a plastic cam on the output axis of the motor, integrated in the housing of the motor.

The position switches and the power supply of the motor related to a connector type “atem euro connector block” fitted in a connection box that was clipped in the aluminum profile at the side of the hinges.

6.3.1.7. Manual operation

The manual operation of the door works by means of the key that operated the lock and de-coupled the motor from the drive arms by means of a decoupling mechanism.
This mechanism consisted out of 3 steel arms that connected the key with a clutch mechanism, integrated in the motor. The linkage between the 3 arms was done by means of 2 steel pins Ø 6 x 14 mm.

6.3.1.8. Motor

The damper blade was opened and closed by means of an electric motor type KAM MP MEC. The motor was fixed to the horizontal C-shaped profile by means of 4 bolts Ø 5 x 12 mm.

The motor drove a squared steel output axis with sectional dimensions of 10 x 10 mm (w x h) that ran over the whole height of the damper blade. At both extremities of the output axis, a stainless steel drive arm of dimensions 201 x 4 mm (L x th) was fitted. A steel drive pin and a steel roller Ø 10 mm x 7 mm was fitted on both driving arms. Each roller was guided in a slot, a steel guiding beam of dimensions 300 x 67.9 x 2 mm (w x h x th), which was fitted on the aluminum frame of the damper tunnel by means of steel rivets Ø 4.8 mm.

The hold-open of the blade was ensured by the blocking of the lever in the slot of the transom profile.

6.3.2. Options

- <u>For painting the damper door doors:</u>

The KAMOUFLAGE MP damper door doors may be coated with a layer of paint on the unexposed side.

- <u>KAMOUFLAGE MP ATOUT option:</u>

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

- <u>Painting of the damper door:</u>

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

- <u>Application of wallpaper onto the damper slat:</u>

The KAMOUFLAGE MP type damper door 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.

- Mounting of dampers using a sub-frame (type EASY-KAP ME/MP) or sub-frame with foldable anti-fall grill (type EASY-KGC ME/MP 1V):

An EASY-KAP/EASY-KGC ME/MP sub-frame may be installed on the duct to accept the damper.
Fixing of the sub-frame to the duct is provided by four screws Ø 4.8 x 30 mm.
Fixing of the damper to the sub-frame is by four steel bolts M6 x 30 mm.

- 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.

- Addition of a supplementary panel to the door of the dampers:

It is possible to add to the plasterboard panel and/or to the damper's aluminium tunnel a 3rd skin of a material having the following properties:

- Fire reaction classification of material forming the panel: M1 or A2s1d0.

This 3rd panel is either glued or screwed to the plasterboard panel.

Where this panel is added the maximum permitted excess surface weight for each size, in order that the total weight does not exceed the weight of the door of the largest damper in the range is shown in the following tables:

The excess surface weight is expressed in the tables in kg/door.

- for the 1V range:

Additionnal weight on the door (in kg/ m²)

	350	400	450	500	550	600	650	700
385	12,41	9,62	7,34	5,38	3,72	2,27	0,96	0,75
415	13,56	10,55	8,10	6,00	4,22	2,65	1,25	0,82
445	14,74	11,52	8,89	6,64	4,74	3,06	1,56	0,89
475	15,92	12,48	9,68	7,29	5,26	3,47	1,87	0,97
505	17,06	13,41	10,43	7,89	5,74	3,85	2,15	1,04
535	18,24	14,37	11,22	8,54	6,26	4,26	2,46	1,11
565	18,07	15,32	12,00	9,17	6,76	4,65	2,76	1,18
595	17,78	16,27	12,77	9,80	7,27	5,05	3,06	1,26
625	17,47	16,75	13,53	10,41	7,75	5,42	3,33	1,44
655	17,20	16,44	14,32	11,05	8,27	5,83	3,65	1,67
685	16,91	16,12	15,09	11,68	8,78	6,23	3,94	1,87
715	16,03	15,80	14,97	12,31	9,28	6,62	4,24	2,08
745	15,69	15,46	14,60	12,92	9,77	7,00	4,52	2,27
775	15,39	15,15	14,26	13,33	10,29	7,41	4,83	2,50
805	15,07	14,02	13,90	12,94	10,79	7,80	5,13	2,70
835	14,76	13,67	13,55	12,56	11,30	8,20	5,43	2,92
865	14,42	13,29	13,18	12,15	11,16	8,58	5,71	3,10
895	14,12	12,95	12,84	11,78	10,75	8,99	6,02	3,33
925	13,80	12,60	11,39	11,39	10,33	9,28	6,31	3,54
955	13,49	12,25	11,00	11,00	9,92	8,83	6,61	3,75
985	13,15	11,87	10,59	10,60	9,48	8,36	6,89	3,93
1015	12,85	11,53	10,21	8,85	9,07	7,92	6,76	4,16
1045	12,53	11,18	9,82	8,42	8,65	7,47	6,28	4,37
1075	12,21	10,82	9,43	7,99	8,23	7,02	5,80	2,42

7. INSTALLATION OF ELEMENTS TESTED

7.1. FOR A DUCT IN PROMATECT, GEOFLAM, GEOFLAM LIGHT, TECNIVER, EXTHAMAT P, GLASROC, DESENFIRE OR GEOTEC® S

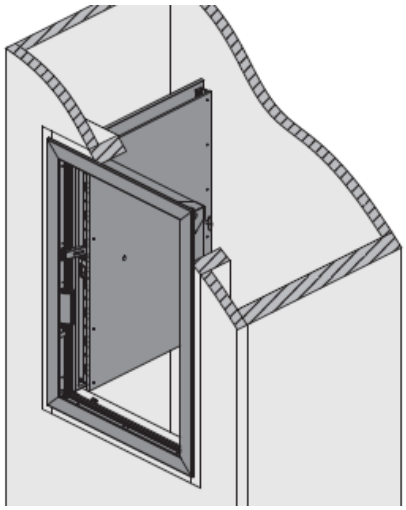
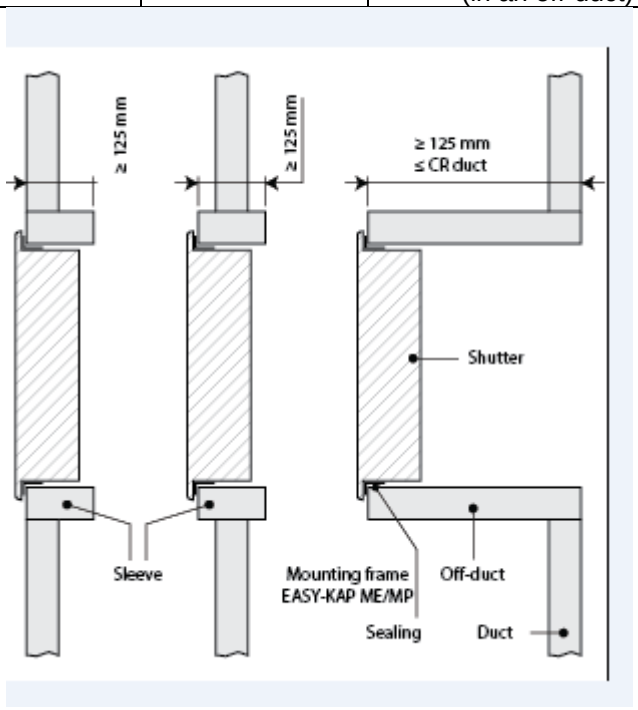
For the installation of each damper an opening is made on one face of the duct:

- for installation with sub-frame (type EASY-KAP/EASY-KCG ME/MP):
  - a cut-out of dimensions (W + 2 x duct thickness + 20) x (H + 2 x duct thickness + 20) mm.

- for installation without sub-frame:
  - of dimensions (W + 2 x duct thickness + 10) x (H + 2 x duct thickness + 10) 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 125 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	In the axis of the duct	On the outside of the duct / Offset from the duct (in an off-duct)
			

Finally, for installation of each damper:

- for installation with sub-frame (type EASY-KAP/EASY-KCG ME/MP):
  - the damper is installed into the sub-frame and mounted onto the latter with four VBA steel screws Ø 3.5 x 32 mm.

- for installation without sub-frame:
  - the damper is installed into the duct and fixed to the latter with four steel screws Ø 6 x 40 mm.

7.1.1. Installation on PROMATECT L500 type duct

The sleeve comprises two cross-pieces and two uprights, also made of PROMATECT L500 of the same thickness as that of the duct itself (30, 40 or 50 mm), fixed together and to the wall.
Where installation is with a sub-frame 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 (W + 10) x (H + 10) mm.

7.1.2. Installation on GEOFLAM or GEOFLAM LIGHT type duct

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

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

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

Where installation is with a subframe, the subframe is caulked to the duct with vegetable fibre + MOLDA plaster (DUO or NORMAL) (BPB), reducing the free opening to dimensions (W + 10) x (H + 10) mm.

7.1.3. Installation on TECNIVER type duct

The sleeve comprises two cross-pieces and two uprights, 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®.

For installation with subframe, openings are first coated with CF GLUE®, then the sub-frame is glued to the sleeve, reducing the free opening to dimensions (W + 10) x (H + 10) mm.

7.1.4. For 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.

7.1.5. Installation on 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.

For installation with subframe, openings are first coated with CF GLUE®, then the sub-frame is glued to the sleeve, reducing the free opening to dimensions (W + 10) x (H + 10) mm.

7.1.6. Installation on 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, 25 STR 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.

Where installation is with a subframe, the subframe is caulked to the duct with vegetable fibre + LAFARGE plaster, reducing the free opening to dimensions (W + 10) x (H + 10) mm.

7.1.7. For assembly on a GEOTEC® S duct

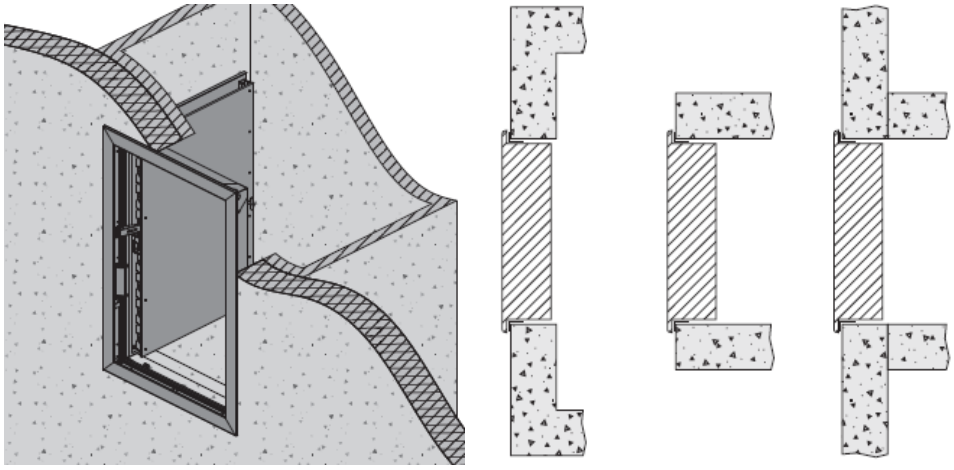
The sleeve comprises two cross-pieces and two uprights, also in GEOTEC® S of the same thickness as that used for the duct (30 or 45 mm), glued and caulked together and to the wall or glued and screwed together and onto the wall using VBA Ø 5 x as applicable 80 / 90 mm screws at 100 mm intervals.

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

Where mounted with a 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 as applicable 30 / 45 mm screws at 100 mm intervals, so reducing the free opening to dimensions (W + 10) x (H + 10) mm.

7.2. INSTALLATION ON PREFABRICATED CONCRETE DUCT TH = 90 MM



The dampers are fixed into the duct:

- Without sub-frame:

An opening of maximum dimensions (W+10) x (H+10) mm is made in the concrete duct of minimum thickness of 90 mm. The damper is installed in the opening and fixed by four steel screws Ø 6 x 40 mm.

- By sealing of the sub-frame:

An opening of maximum dimensions (W+100) x (H+100) mm is made in the concrete duct of minimum thickness 90 mm.
A sub-frame is sealed into the opening using mortar, so reducing the free opening to dimensions (Wn+10) x (Hn+10) mm. Two anchoring tabs are provided on each sub-frame upright and must be unfolded during the sealing.
Lastly, the damper is installed in the sub-frame and secured by four M6 bolts.

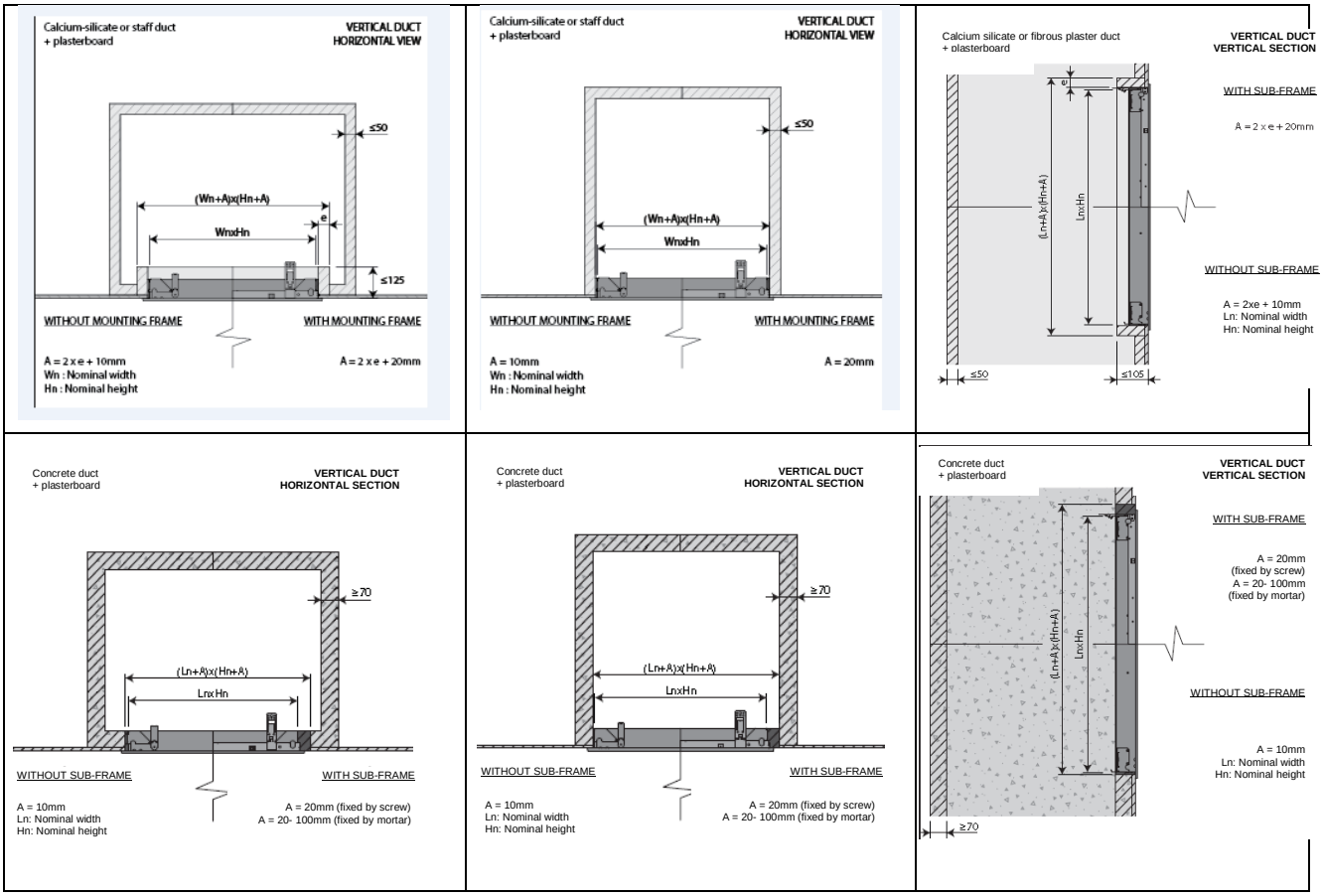
- By screwing the sub-frame:

An opening of maximum dimensions (W+20) x (H+20) mm is made in the concrete duct of minimum thickness 90 mm.
A sub-frame is fastened into this opening by screws using the tabs provided in the sub-frame by means of 4 screws Ø 6 mm.
Lastly, the damper is installed in the sub-frame and secured by four M6 bolts.

The maximum internal cross-section of the concrete ducts (validated) is 800 x 500 mm.

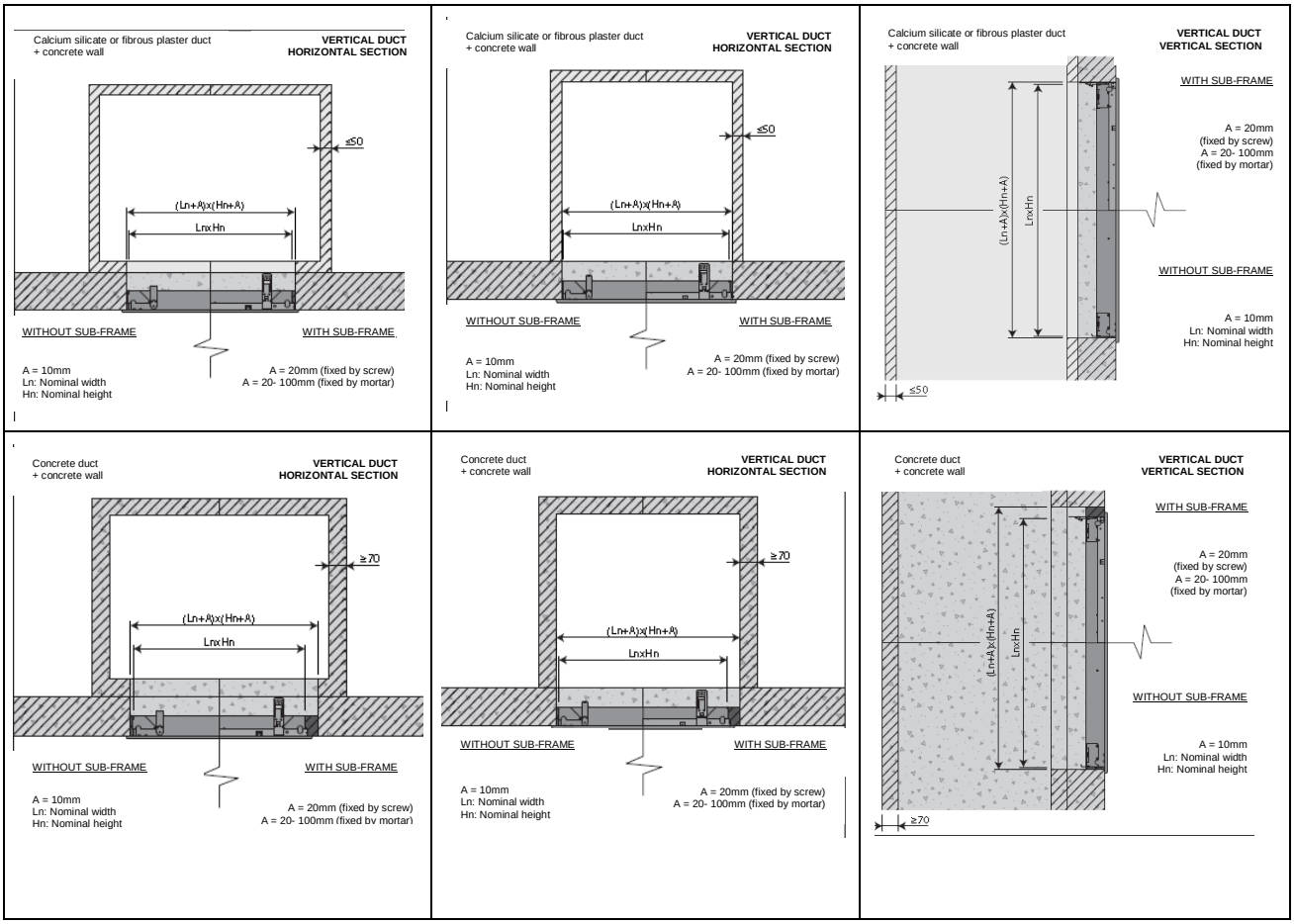
7.3. FITTING OF A CORRIDOR'S DECORATIVE PLASTER PANEL IN FRONT OF THE SLEEVE OR DUCT CONTAINING THE DAMPERS

The decorative plaster panel (trim) for the passage can be fitted in front of the sleeve or duct containing the dampers.



7.4. IMPLEMENTATION OF A WALL IN FRONT OF THE SLEEVE OR DUCT CONTAINING THE DAMPERS

A wall can be implemented in front of the sleeve or duct containing the dampers.

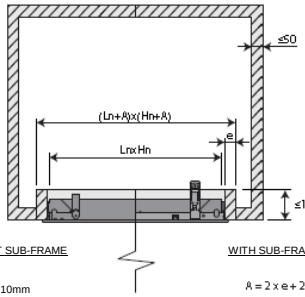


7.5. INSTALLATION OF DAMPERS IN A DUCT HAVING SIZES ADAPTED TO THE DIMENSIONS OF THE DAMPER

The dampers can be installed in the ducts whose widths are adapted to the dimensions of the damper, on condition that the ducts are validated in the EFECTIS France reference classification report EFR-19-003530 (while observing the maximum cross-section of the pre-fabricated concrete ducts).

Calcium silicate or fibrous plaster duct

VERTICAL DUCT HORIZONTAL SECTION



WITHOUT SUB-FRAME

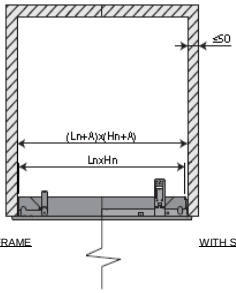
A = 2xe + 10mm
Ln: Nominal width
Hn: Nominal height

WITH SUB-FRAME

A = 2 x e + 20mm

Calcium silicate or fibrous plaster duct

VERTICAL DUCT HORIZONTAL SECTION



WITHOUT SUB-FRAME

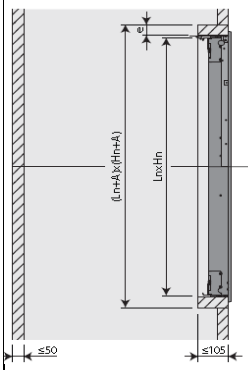
A = 10mm
Ln: Nominal width
Hn: Nominal height

WITH SUB-FRAME

A = 20mm

Calcium silicate or fibrous plaster duct

VERTICAL DUCT VERTICAL SECTION



WITH SUB-FRAME

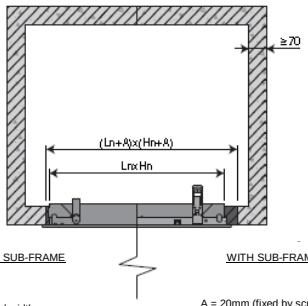
A = 2 x e + 20mm

WITHOUT SUB-FRAME

A = 2xe + 10mm
Ln: Nominal width
Hn: Nominal height

Concrete duct

VERTICAL DUCT HORIZONTAL SECTION



WITHOUT SUB-FRAME

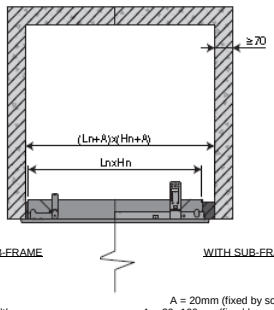
A = 10mm
Ln: Nominal width
Hn: Nominal height

WITH SUB-FRAME

A = 20mm (fixed by screw)
A = 20- 100mm (fixed by mortar

Concrete duct

VERTICAL DUCT HORIZONTAL SECTION



WITHOUT SUB-FRAME

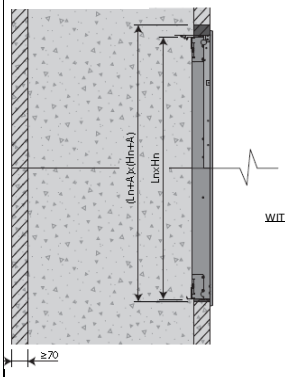
A = 10mm
Ln: Nominal width
Hn: Nominal height

WITH SUB-FRAME

A = 20mm (fixed by screw)
A = 20- 100mm (fixed by mortar)

Concrete duct

VERTICAL DUCT VERTICAL SECTION



WITH SUB-FRAME

A = 20mm
(fixed by screw)
A = 20- 100mm
(fixed by mortar)

WITHOUT SUB-FRAME

A = 10mm
Ln: Nominal width
Hn: Nominal height

8. FIRE RESISTANCE CLASSIFICATIONS

8.1. CLASSIFICATION REFERENCES

This classification procedure was performed in accordance with Section 7.2.4. 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 10200 cycles unloaded.

No other classification is permitted.

For dampers type KAMOUFLAGE MP 1V 60 installed in a duct:

Note: damper sizes must be adapted to the sizes of the prefabricated concrete duct (because the maximum internal section of the duct is less than the maximum section of the dampers).

- in PROMATECT L500 th = 30 mm
- in GEOFLAM th = 30 mm
- in TECNIVER L35 th = 35 mm
- in GLASROC F/V500 th = 35 mm
- in GEOTEC® S th = 30 mm
- in prefabricated concrete th = 90 mm
- in EXTHAMAT th = 25 mm
- in DESENFIRE HD th = 25 mm

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

For dampers of KAMOUFLAGE MP 1V 120

Note: damper sizes must be adapted to the sizes of the prefabricated concrete duct (because the maximum internal section of the duct is less than the maximum section of the dampers).

- in a PROMATECT L500 duct th = 40 mm
- in a GEOFLAM duct th = 35 mm
- in an EXTHAMAT duct th = 30 mm
- in a DESENFIRE THD duct th = 25 mm
- in a TECNIVER L35 duct th = 45 mm
- in a prefabricated concrete duct th = 90 mm

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

For dampers type KAMOUFLAGE MP 1V 120 installed in a duct:

- in a PROMATECT L500 duct th = 50 mm
- in a GEOFLAM duct th = 45 mm
- in a GEOFLAM LIGHT duct th = 35 mm
- in a GEOTEC S duct th = 45 mm
- in an EXTHAMAT duct th = 35 mm
- in a DESENFIRE HD duct th = 35 mm
- in a DESENFIRE duct th = 45 mm
- in a DESENFIRE STR duct th = 25 mm
- in a TECNIVER L50 duct th = 45 mm
- in a GLASROC F/V500 duct th = 50 mm

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

9. DIRECT 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),

These dampers may be installed into ducts of all dimensions authorised in the scope of application stated in EN 1366-8 and in reports 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 vertical face of a smoke extraction duct.

9.4. PRESSURE DIFFERENCES

In accordance with standard EN 1366-10 - section 9.3, the performance levels specified in section 7.2 of this classification report are valid for any smoke extraction duct operating with a pressure drop of -1500 or overpressure of 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. CYCLING TESTS

In accordance with standard EN 1366-10 - section 9.5.3, the performances specified in section 7.2 of this classification report that are valid for a smoke control damper that operates only in an emergency, are not applicable to other installations.

9.7. ACTIVATION METHOD

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

9.8. 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 density as those tested or from the same material but of greater bulk density or thickness, as long as the service pressure authorised in the classification document for the intended smoke extraction duct is compatible.
Such use may not be made if there has been any change in the surface protection materials. Any paint finish must be identical to that of the duct when it is tested or evaluated.

Maizières-lès-Metz, 6 January 2020

X Romain STOUVENOT

Chargé d'Affaires
Signé par : Romain STOUVENOT

X Roman CHIVA

Superviseur
Signé par : CHIVA

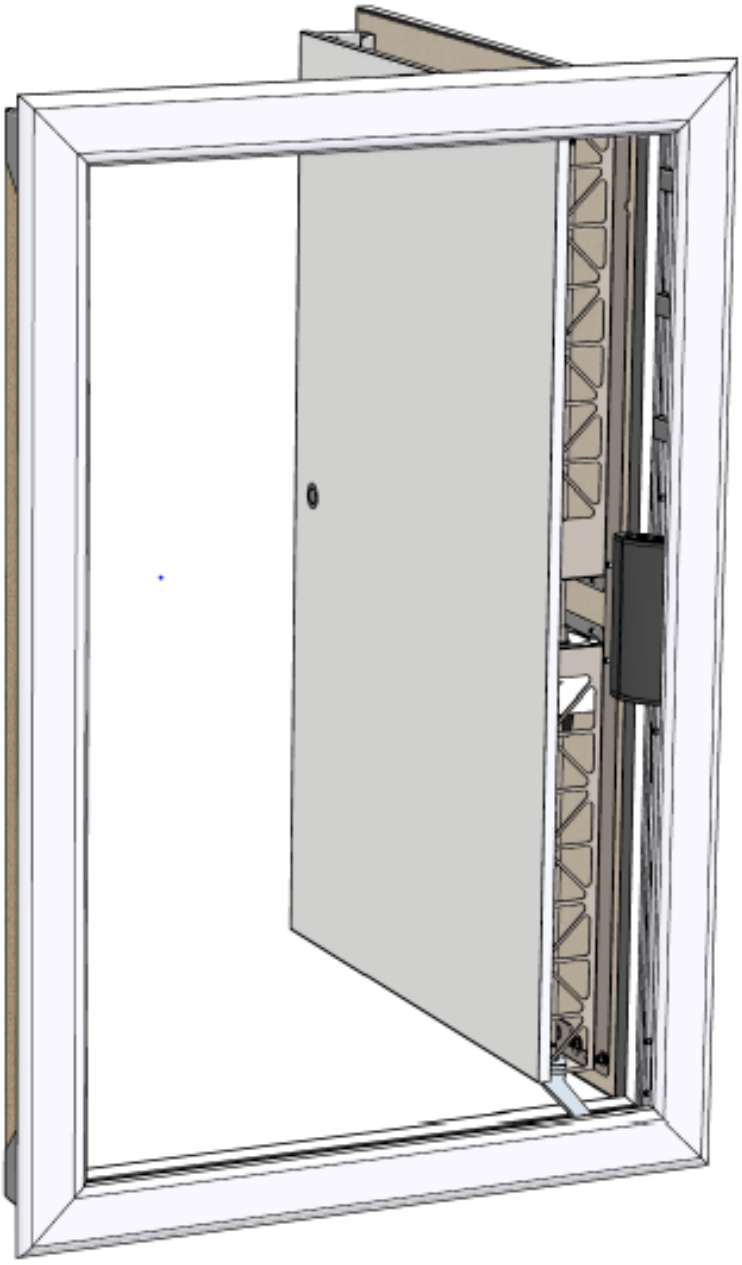
ILLUSTRATIONS APPENDIX

Reference - Subject - Date

KAMOUFLAGE_ME-MP_COMMERCIAL_21-02-2019

Plate

A 1/1



Kamouflage ME/MP

Plan Title:

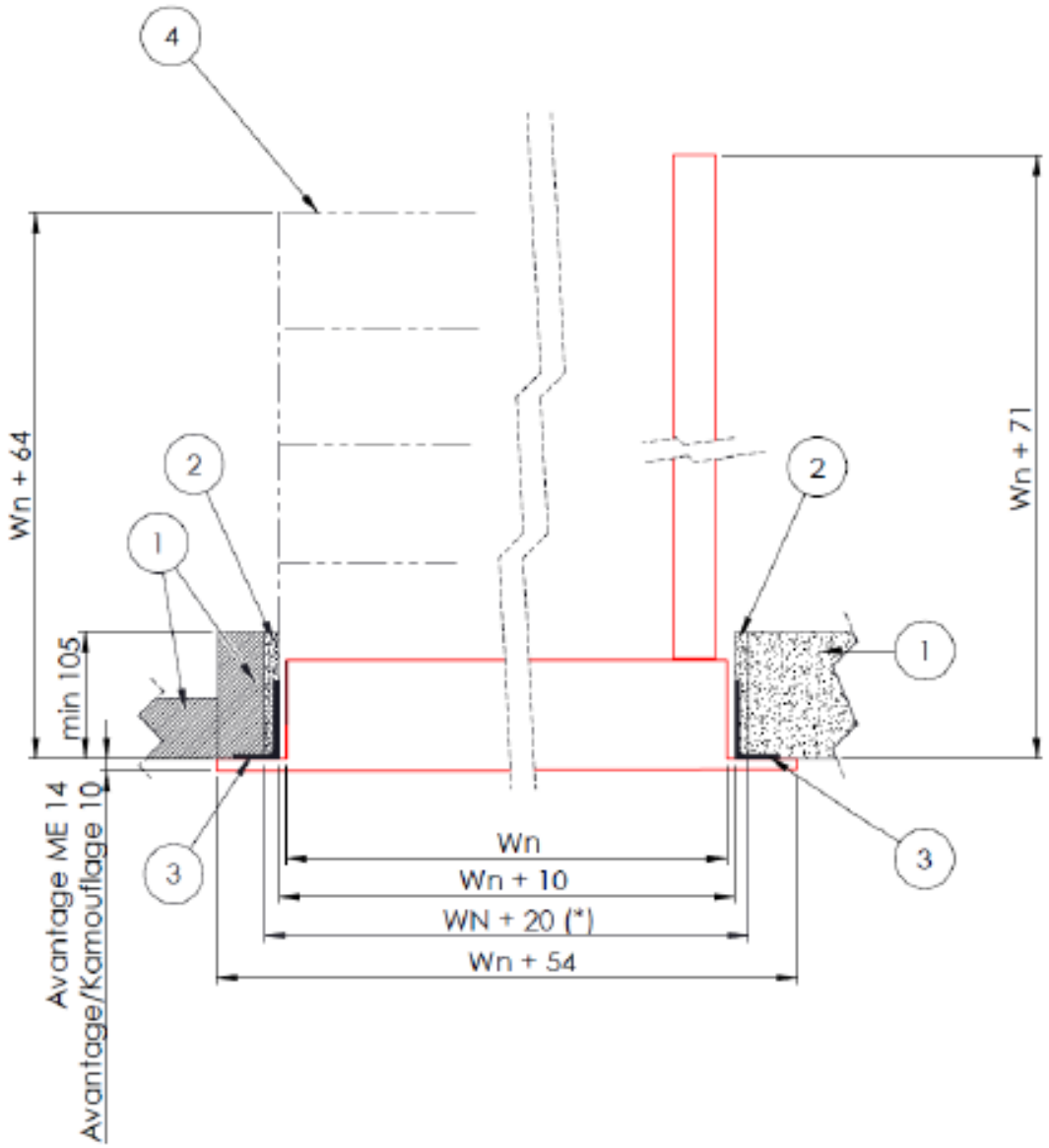
Rf-t www.rf.be

Reference - Subject - Date

KAMOUFLAGE_MP-MP_Mounting_dimensions_22-02-2019

Plate

E 1/1



Presentation left

1/ Refractory material (e.g. Calcium Silicate plate)
2/ Filler
3/ Mounting frame (option)
4/ Safety rack (option on mounting frame)

Presentation right

1/ Concrete
2/ Mortar
3/ Mounting frame (option)

(*) Opening in case of mounting frame

Plan Title:

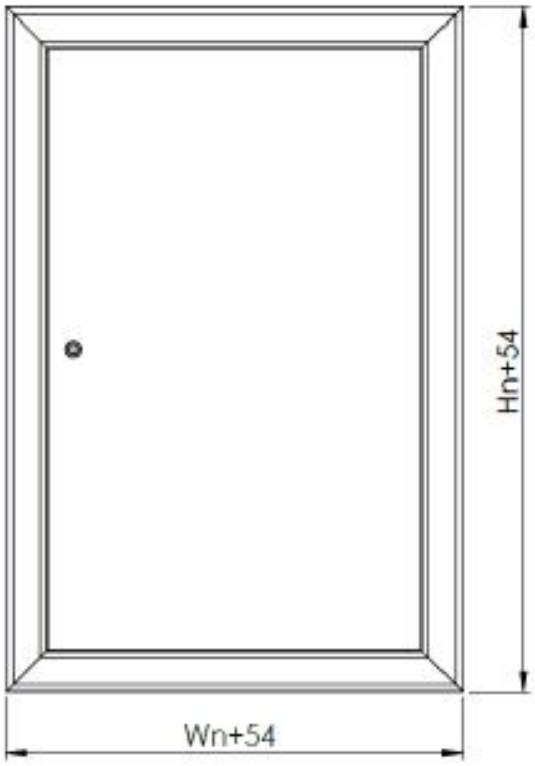
Smoke evacuation shutter

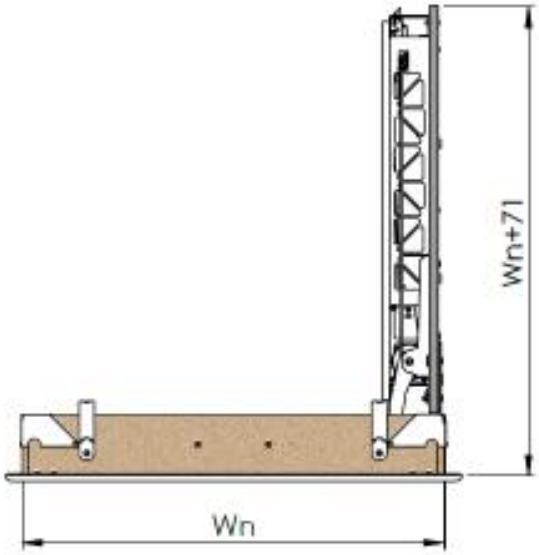
Reference - Subject - Date

KAMOUFLAGE_ME-MP_DIMENSIONS_21-02-2019

Plate

D 1/1

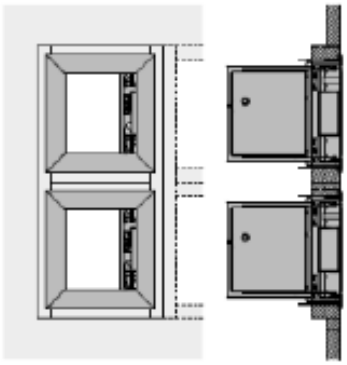




Plan Title:

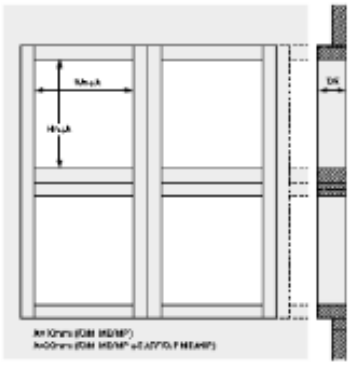
Installation at minimal distances

1



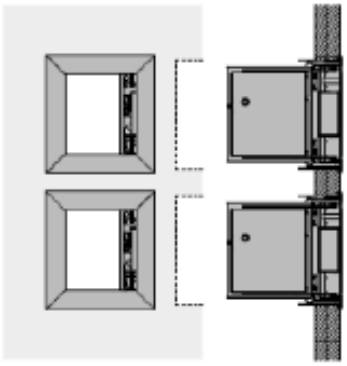
1. The shutters can be installed at minimal distance on top of or next to each other, if they are mounted in separate sleeves made from the shaft material with the required fire resistance. It is advised not to exceed a 4 x 2 configuration (W x H).

2



2. In case several shutters are mounted at a minimal distan the bearing and reinforcement points of the shaft must be adjusted in proportion to the increased weight. The install of the shaft must comply with the classification report delivered by the shaft manufacturer.

3



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

4