

FIRE RESISTANCE CLASSIFICATION REPORT No. 12664E

Revision 2

Owner of the classification report

RF-TECHNOLOGIES NV
Lange Ambachtstraat 40
9860 Oosterzele
Belgium

Introduction

This classification report defines the classification assigned to a fire damper, type: SC60+ / SCV60+, in accordance with the procedures given in EN 13501-3:2005+A1 2009: Fire classification of construction products and building elements - Part 3: Classification using data from fire resistance tests on products and elements used in building service installations: fire resisting ducts and fire dampers. This classification report consists of 13 pages and 3 annexes and may only be used or reproduced in its entirety.

1 Details of classified product

1.1 General

The element, type: SC60+ / SCV60+, is defined as a fire damper.

1.2 Description

The element, SC60+ / SCV60+, is described below, in support of this classification. The drawings of the test element are enclosed in the annexes 1 till 3 of this classification report.

The detailed description of the element, SC60+ / SCV60+, is fully described in the test reports.

1.2.1 Composition of the test specimen

The fire damper is asymmetrical and consists of a cylindrical housing, damper blades and an internal energy based mechanism. Fire dampers with nominal diameters D_n of 100 mm and 200 mm have been tested.

1.2.1.1 Damper housing

The damper housing consists of a galvanized sheet steel shaft with a thickness of 0.6 mm and a length of 60 mm. The housing of the fire dampers has an external diameter of $(D_n - 1)$ mm.

The housing has on the exterior a groove holding a U-formed sealing ring, covered on the inside with an intumescent graphite tape. The dampers are mounted so that the sealing ring is at the middle of the wall/floor.

Profiles have been foreseen with a ring to secure the dampers' connecting duct to the wall/ floor.

1.2.1.2 Damper blades

The damper consists of two semi-circular damper blades made of fibre-silicate board with a thickness of 6 mm. The damper blades revolve around an axis. The axis hinges in a galvanised steel support. The support is fixed to the damper blades by means of steel blind rivets.

The damper blades are covered at both sides with a layer of intumescent material stapled to the damper blades. One side is covered with a foam layer glued onto the damper blade. The foam layer is placed at the exposed side or at the unexposed side.

At the height of the damper blades at the interior of the damper housing an intumescent strip is glued. The gap between the damper blades and the damper housing of the fire dampers is between 1 mm and 2.6 mm.

1.2.1.3 Actuating mechanism

Two stainless steel locks holding the damper blades in the closed position, are fastened onto the body by means of steel blind rivets. The axis holds the hinges. The hinges are fixed to the damper housing by means of two steel rivets.

The damper blades are kept open by a fuse held within plastic supports. The supports have been fixed to the damper blades with a rivet.

If the fusible alloy opens, the internal spring puts the damper blades in closed position.

The damper consists of damper blades folding over an axis. The damper opens either in the direction of the current or against the current.

1.2.1.4 Construction in an aerated concrete wall

The fire damper is mounted in an aerated concrete wall according to the standard constructions in table 3 of EN 1366-2:1999 with a thickness of 100 mm in an opening of $(D_n + 70)$ mm. The gap between the damper housing and the wall construction is completely filled with a standard cement mortar over the thickness of the wall (100 mm).

1.2.1.5 Construction in an aerated concrete floor

The fire damper is mounted in an aerated concrete floor construction with a thickness of 150 mm according to the standard constructions in table 5 of EN 1366-2:1999 in an opening of $(D_n + 100)$ mm.

The gap between the damper housing and the floor construction is completely filled with a standard cement mortar over the thickness of the floor construction (100 mm).

1.2.1.6 Construction in a flexible wall (type A or type F boards)

The damper is mounted in a flexible plasterboard wall with a thickness of 100 mm in a rectangular opening of $(D_n + 50) \times (D_n + 50)$ mm.

The wall is mounted with profiles of 50 mm and a double layer of boards with a thickness of 12,5 mm each on both sides. Between the boards and the profiles rock wool of 40 kg/m^3 (NW) is placed.

The opening between the damper housing and the wall construction is being filled with rock wool with a density of 40 kg/m^3 (NW) and finished with a sealing plaster board.

1.2.1.7 Construction in a flexible wall (type A boards)

The damper is mounted in a flexible plasterboard wall with a thickness of 100 mm in a circular opening with a diameter of $(D_n + 40)$ mm.

The wall is mounted with profiles of 50 mm and a double layer of boards with a thickness of 12,5 mm each on both sides. Between the boards and the profiles rock wool of 40 kg/m^3 (NW) is placed.

The opening between the damper housing and the wall construction is being filled with gypsum (brand and type: Knauf Goldband).

- D_n = nominal diameter – varies from 100 mm till 200 mm.

1.2.1.8 Valve

A valve made out of plastic may be placed on the fire damper. This valve is identified by the letter “V” in the name SCV60+.

2 Test reports/EXAP reports and test results in support of the classification

2.1 Test reports/EXAP reports

Name of the laboratory	Report ref. no.	Name of the owner	Date of the test	Method
WFRGENT nv	12663A	RF-TECHNOLOGIES NV	15/03/2007	EN 1366-2:1999
WFRGENT nv	12664B	RF-TECHNOLOGIES NV	13/03/2007	EN 1366-2:1999
EFFECTIS France	13-U-1045*	RF-TECHNOLOGIES NV	18/12/2013	EN 1366-2:1999*
EFFECTIS France	EFR-16-U-002097b	RF-TECHNOLOGIES NV	8/09/2016	EN 1366-2:2015
WFRGENT nv	12664D	RF-TECHNOLOGIES NV	-	prEN 15080-11:2006 EN 15882-2:2015

*Note: test 13-U-1045 was done in order to prove the valve has no effect on the fire resistance of the fire damper. Therefore no underpressure was generated over the fire damper.

Exposure conditions during the fire resistance test:

Temperature/time curve: standard as in EN 1363-1:2012.

Direction of exposure: this concerns an asymmetrical construction which validates the results for one direction only ($i \rightarrow o$). Based on the EXAP report 12664D the classification is valid for both directions ($i \leftrightarrow o$) provided that the fire dampers are mounted in a symmetrical standard construction and a symmetrical sealing between the fire damper housing and the supporting construction.

2.2 Test results

2.2.1 12663A: SC60+ in a flexible wall (type F boards)

Parameters	Results
Operating pressure	-300 Pa
Thermal insulation – I	
$\Delta T_m = 140^\circ\text{C}$	67 minutes
$\Delta T_M = 180^\circ\text{C}$	69 minutes, no failure ⁽¹⁾
Integrity – E	
Leakage rate before fire test = $360 \text{ m}^3/(\text{h.m}^2)$	No failure
Leakage rate during fire test = $360 \text{ m}^3/(\text{h.m}^2)$	69 minutes, no failure ⁽¹⁾
Spontaneous and sustained flaming	69 minutes, no failure ⁽¹⁾
Failure with gap gauge $\varnothing 6 \text{ mm}$	69 minutes, no failure ⁽¹⁾
Failure with gap gauge $\varnothing 25 \text{ mm}$	69 minutes, no failure ⁽¹⁾
Ignition of cotton pad	69 minutes, no failure ⁽¹⁾
Smoke leakage – S	
Leakage rate before fire test = $200 \text{ m}^3/(\text{h.m}^2)$	No failure
Leakage rate during fire test = $200 \text{ m}^3/(\text{h.m}^2)$	69 minutes, no failure ⁽¹⁾
Actuating mechanism	
Any sign of mechanical damage after the opening and closing test of 50 cycli	No damage
Time at which the fully-open fire damper closes (allowed maximum = 2 minutes)	57 seconds

⁽¹⁾ The test was stopped after 69 minutes at the request of the sponsor.

2.2.2 12663A: SC60+ in an aerated concrete wall

Parameters	Results
Operating pressure	-300 Pa
Thermal insulation – I	
$\Delta T_m = 140^\circ\text{C}$	62 minutes
$\Delta T_M = 180^\circ\text{C}$	69 minutes, no failure ⁽¹⁾
Integrity – E	
Leakage rate before fire test = $360 \text{ m}^3/(\text{h.m}^2)$	No failure
Leakage rate during fire test = $360 \text{ m}^3/(\text{h.m}^2)$	69 minutes, no failure ⁽¹⁾
Spontaneous and sustained flaming	69 minutes, no failure ⁽¹⁾
Failure with gap gauge $\varnothing 6 \text{ mm}$	69 minutes, no failure ⁽¹⁾
Failure with gap gauge $\varnothing 25 \text{ mm}$	69 minutes, no failure ⁽¹⁾
Ignition of cotton pad	69 minutes, no failure ⁽¹⁾
Smoke leakage – S	
Leakage rate before fire test = $200 \text{ m}^3/(\text{h.m}^2)$	No failure
Leakage rate during fire test = $200 \text{ m}^3/(\text{h.m}^2)$	69 minutes, no failure ⁽¹⁾
Actuating mechanism	
Any sign of mechanical damage after the opening and closing test of 50 cycli	No damage
Time at which the fully-open fire damper closes (allowed maximum = 2 minutes)	30 seconds

⁽¹⁾ The test was stopped after 69 minutes at the request of the sponsor.

2.2.3 12664B: SC60+ in an aerated concrete floor

Parameters	Results
Operating pressure	-300 Pa
Thermal insulation – I	
$\Delta T_m = 140^\circ\text{C}$	93 minutes
$\Delta T_M = 180^\circ\text{C}$	95 minutes
Integrity – E	
Leakage rate before fire test = $360 \text{ m}^3/(\text{h.m}^2)$	No failure
Leakage rate during fire test = $360 \text{ m}^3/(\text{h.m}^2)$	107 minutes
Spontaneous and sustained flaming	107 minutes, no failure ⁽¹⁾
Failure with gap gauge $\varnothing 6 \text{ mm}$	107 minutes, no failure ⁽¹⁾
Failure with gap gauge $\varnothing 25 \text{ mm}$	107 minutes, no failure ⁽¹⁾
Ignition of cotton pad	107 minutes, no failure ⁽¹⁾
Smoke leakage – S	
Leakage rate before fire test = $200 \text{ m}^3/(\text{h.m}^2)$	No failure
Leakage rate during fire test = $200 \text{ m}^3/(\text{h.m}^2)$	106 minutes
Actuating mechanism	
Any sign of mechanical damage after the opening and closing test of 50 cycli	No damage
Time at which the fully-open fire damper closes (allowed maximum = 2 minutes)	12 seconds

⁽¹⁾ The test was stopped after 107 minutes at the request of the sponsor.

2.2.4 EFR-16-U-002097b: SC60+ in a flexible wall (type A-boards)

Parameters	Results
Operating pressure	-300 Pa
Thermal insulation – I	
$\Delta T_m = 140^\circ\text{C}$	67 minutes, no failure ⁽¹⁾
$\Delta T_M = 180^\circ\text{C}$	62 minutes
Integrity – E	
Leakage rate before fire test = $360 \text{ m}^3/(\text{h.m}^2)$	No failure
Leakage rate during fire test = $360 \text{ m}^3/(\text{h.m}^2)$	65 minutes
Spontaneous and sustained flaming	67 minutes, no failure ⁽¹⁾
Failure with gap gauge $\varnothing 6 \text{ mm}$	67 minutes, no failure ⁽¹⁾
Failure with gap gauge $\varnothing 25 \text{ mm}$	67 minutes, no failure ⁽¹⁾
Ignition of cotton pad	67 minutes, no failure ⁽¹⁾
Smoke leakage – S	
Leakage rate before fire test = $200 \text{ m}^3/(\text{h.m}^2)$	No failure
Leakage rate during fire test = $200 \text{ m}^3/(\text{h.m}^2)$	64 minutes
Actuating mechanism	
Any sign of mechanical damage after the opening and closing test of 50 cycli	No damage
Time at which the fully-open fire damper closes (allowed maximum = 2 minutes)	38 seconds

⁽¹⁾ The test was stopped after 67 minutes at the request of the sponsor.

2.2.5 13-U-1045: SCV60+ in a flexible wall (type A boards)

Parameters	Results
Thermal insulation – I	
$\Delta T_m = 140^\circ\text{C}$	67 minutes, no failure ⁽¹⁾
$\Delta T_M = 180^\circ\text{C}$	67 minutes, no failure ⁽¹⁾
Integrity – E	
Spontaneous and sustained flaming	67 minutes, no failure ⁽¹⁾
Failure with gap gauge \varnothing 6 mm	67 minutes, no failure ⁽¹⁾
Failure with gap gauge \varnothing 25 mm	67 minutes, no failure ⁽¹⁾
Ignition of cotton pad	67 minutes, no failure ⁽¹⁾
Actuating mechanism	
Any sign of mechanical damage after the opening and closing test of 50 cycli	No damage
Time at which the fully-open fire damper closes (allowed maximum = 2 minutes)	22 seconds

⁽¹⁾ The test was stopped after 67 minutes at the request of the sponsor.

3 Classification and field of application

3.1 Reference of classification

This classification has been carried out in accordance with clause 7 of EN 13501-3:2005+A1 2009.

3.2 Classification

The element, type: SC60+ / SCV60+, is classified according to the following combinations of performance parameters and classes as appropriate. No other classifications are permitted.

The classification are valid for both sides of the fire damper. At an operating pressure of -300 Pa.

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3.3 Field of direct application

This classification is valid for the following end use applications according to EN 1366-2:2015.

The results of the fire test are directly applicable to similar constructions where one or more of the changes listed below are made and the construction continues to comply with the appropriate design code for its stiffness and stability:

a) Size of fire damper when smoke leakage (S) is not required:

The classification is applicable to all dampers of the same type provided that the maximum diameter do not exceed 200 mm and that the components remain in the same orientation as those tested.

b) Size of fire damper when smoke leakage (S) is required:

The classification is applicable to the same type of damper provided that the minimum diameter is not less than Ø 100 mm and that the maximum diameter does not exceed Ø 200 mm. The components have to remain in the same orientation as those tested.

c) Fire dampers installed within structural openings:

The classification for a fire damper installed within a structural opening is only applicable to other fire dampers of the same type installed in the same orientation and position in relation to the supporting construction as that tested.

d) Fire from above:

Fire dampers tested horizontally in floors with fire from below are acceptable in installations where fire might come from above.

e) Separation between fire dampers and between fire dampers and construction elements:

The classification is applicable to a minimum separation in practice of 200 mm between fire dampers in separate ducts and of 75 mm between a fire damper and a constructional element.

f) Supporting constructions:

The following supporting constructions are tested:

- Flexible wall construction with a thickness of 100 mm;
- Aerated concrete wall construction with a thickness of 100 mm;
- Aerated concrete floor construction with a thickness of 150 mm.

The following rules apply in regards to the allowed supporting constructions:

Test results obtained with dampers installed in flexible vertical supporting constructions may be applied to rigid supporting constructions of a thickness equal to or greater than that of the element used in the tests, provided that the classified fire resistance of the rigid supporting construction is greater than or equal to the one used for the test. The sealants used shall be the same as those tested. Any fasteners used shall be fire rated to suit the supporting construction that is used.

Test results obtained with dampers installed in insulated flexible vertical supporting constructions may be applied to applications where the same flexible vertical supporting construction is uninsulated. The aperture framing shall be constructed using the same materials as used in the test partition construction, using the same number of boards as was tested.

Test results obtained with dampers installed in aerated concrete are applicable to rigid constructions made from hollow blocks, provided that the holes are filled/closed before the addition of the final penetration seal.

4 Limitations

This classification report does not represent type approval nor certification of the product.

The classification assigned to the product in this report is appropriate to a Declaration of Performance (DoP) of the essential characteristics of the construction product by the manufacturer within the context of System 1 Assessment and Verification of Constancy of Performance (AVCP).

Under the Construction Products Regulation (CPR: EU 305/2011), such a Declaration of Performance (DoP) is a requirement for affixing the CE marking.

The test laboratory has played no part in sampling the product for the test, although it holds appropriate references, supplied by the manufacturer, to provide evidence for the traceability of the samples tested.

Provisions of Regulation (EU) 305/2011, commonly known as the Construction Products Regulation (CPR), prevail over any conflicting provisions in the harmonised standards and technical specifications.

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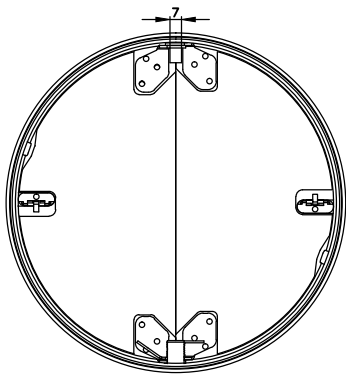
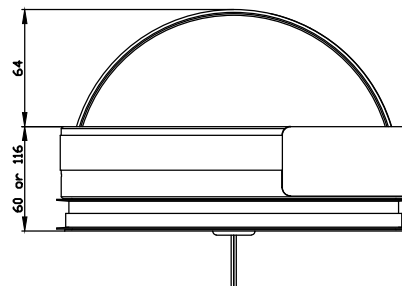
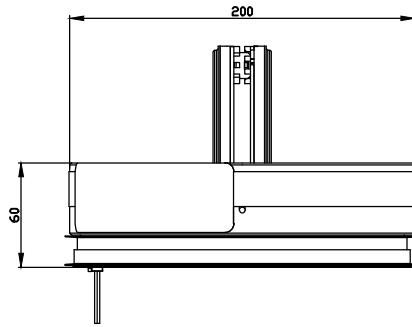
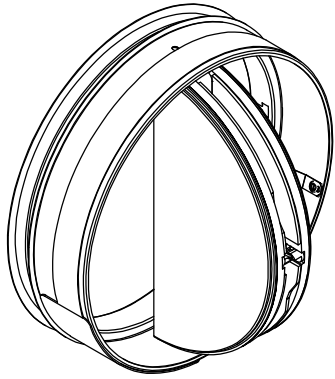
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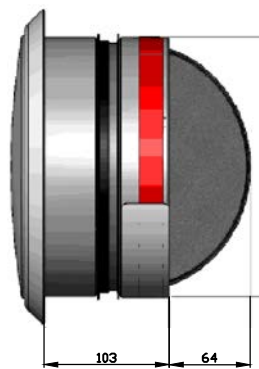
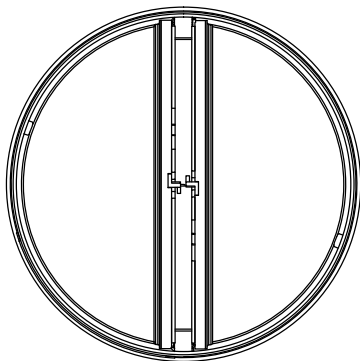
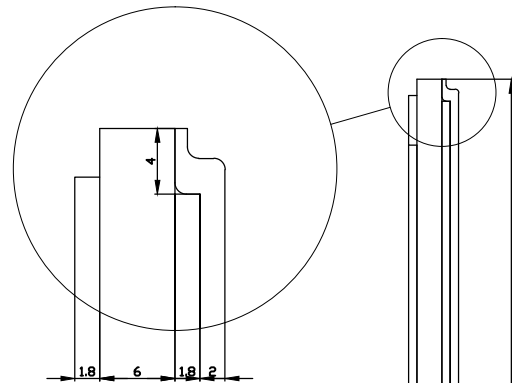
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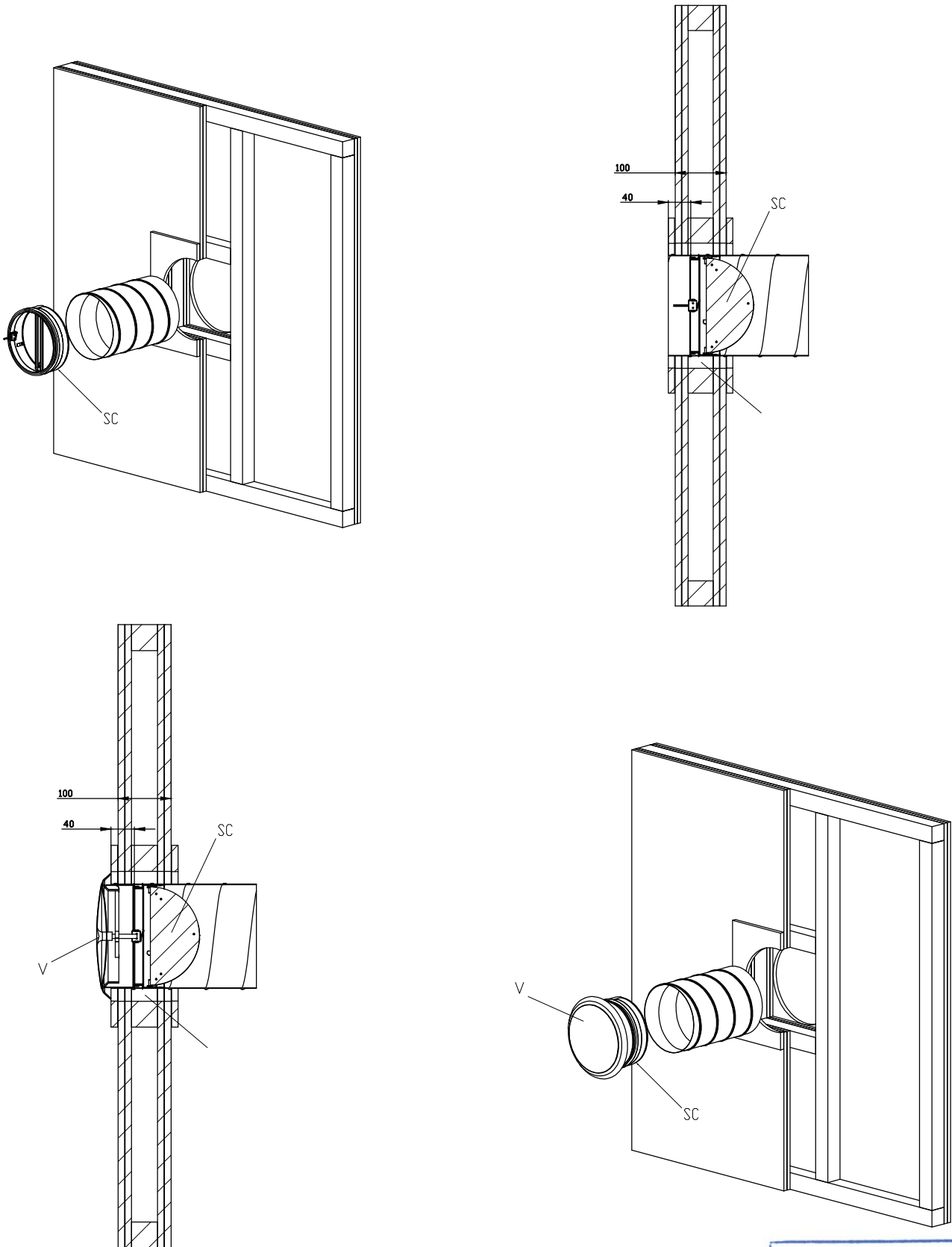
Details of the fire damper SC60+



BACK



SC60+ / SCV60+ in a flexible wall with a rockwool and plasterboard penetration seal



SC60+ / SCV60+ in a flexible wall with a gypsum penetration seal



GKA 60'

