TOEPASSEN BRANDVLINDERKLEP COSMO BIJ STRENGERE WRD-EISEN

Schagen, juli 2025

Geachte relatie,

In verband met nieuwe regelgeving en de vragen die wij hierover krijgen, geven wij u hierbij meer informatie over het toepassen van de Brandvlinderklep COSMO uit ons assortiment.

Per **1 juli 2021** gelden nieuwe, strengere eisen met betrekking tot de **(WRD)** weerstand tegen rookdoorgang.

Voor nieuwbouw worden, naast **(WDBDO-eisen)** Weerstand tegen BrandDoorslag en BrandOverslag, ook maximale rookdoorlatendheidseisen - Ra of R200 - gesteld aan scheidingen. Om te voldoen aan de WRD-bepalingen moet elk component getest worden op rooklekkage volgens de methodes bepaald in de **NEN 6075:2020** norm.

Dat geldt ook voor het ventilatiesysteem en haar componenten: wanneer een luchtkanaal door een brand- en/of rookwerende scheiding voert, moeten kleppen voorzien worden die aan de nieuwe geldende eisen voldoen.

Deze nieuwe eisen zijn opgenomen in recente wijzigingen in het Bouwbesluit 2012.

Kort samengevat houdt het over het algemeen in dat de Brandkleppen moeten worden uitgevoerd met motor.

Toepassen SC60-Cosmo

- De brand/rook-vlinderklep van het type SC60-Cosmo heeft een geïntegreerde rookwerende klep, 100% mechanisch en heeft dus geen sturing of voeding nodig, welke ook niet nadien is toe te voegen.
- Op www.airspiralo.com staan alle documenten inzake afmetingen, inbouwinstructies alsook de prestatieverklaring.
- De SC60-Cosmo is op basis van gelijkwaardigheid ook geschikt voor de NEN 6075 (koude rook) hierbij ook ondersteund door de rapporten van Efectis.
- Wij adviseren u vooraf in contact te treden met het bevoegd gezag (gemeente) dat de gelijkwaardigheid van de SC60-Cosmo in overleg met de betreffende veiligheidsregio toetst.
- Verderop vindt u de testrapporten uitgevoerd door Efectis gebaseerd op de NEN-EN 1366-2 die u kunt overleggen bij de eventuele instanties.

Indien u nog vragen heeft, kunt u bellen met ons Customer Service Team op 0224 21 00 62 of mailen naar verkoop@airspiralo.com.

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PRESTATIEVERKLARING

1. Unieke identificatiecode van het producttype:	**SC60-COSMO**
2. Beoogd(e) gebruik(en):	Ronde brand- en rookwerende klep voor gebruik ter hoogte van een scheidingsconstructie voor het behouden van brand- en rookcompartimentering in HVAC-systemen.
3. Fabrikant:	Rf-Technologies NV, Lange Ambachtstraat 40, B-9860 Oosterzele
4. Systeem voor de beoordeling en verificatie van de prestatiebestendigheid:	Systeem 1
5. Geharmoniseerde norm / Europees beoordelingsdocument; aangemelde instantie(s) / Europese technische beoordeling, technische beoordelingsinstantie, aangemelde instantie(s); certificaat van prestatiebestendigheid:	EN 15650:2010, BCCA met identificatienummer 0749; BCCA-0749-CPR-BC1-606-0464-15650.09-25170
6. Aangegeven prestatie(s) volgens EN 15650:2010	(Brandweerstand volgens EN 1366-2 en classificatie volgens EN 13501-3)

Essentiële kenmerken					**Prestaties**
Gamma	**Wandtype**	**Wand**	**Afdichting**	**Installatie**	**Classificatie**
SC60-COSMO Ø 100-200 mm	Massieve wand	Cellenbeton ≥ 100 mm	Mortel	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)
			Geïsoleerd kanaal + mortel	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)
			Gips	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)
			Geïsoleerd kanaal + gips	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)
			Steenwol ≥40 kg/m³ + grafiet kit	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)
			Geïsoleerd kanaal + steenwol ≥40 kg/m³ + grafiet kit	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)
			Gecoate steenwol + coating ≥ 140 kg/m³	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)
			Geïsoleerd kanaal + gecoate steenwol + coating ≥ 140 kg/m³	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)
	Flexibele wand	Metal stud gipsplatenwand Type A (EN 520) ≥ 100 mm	Steenwol ≥40 kg/m³ + grafiet kit	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)
			Geïsoleerd kanaal + steenwol ≥40 kg/m³ + grafiet kit	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)
			Gips	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)
			Geïsoleerd kanaal + gips	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)
			Gecoate steenwol + coating ≥ 140 kg/m³	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)
			Geïsoleerd kanaal + gecoate steenwol + coating ≥ 140 kg/m³	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)
	Asymmetrische flexibele wand	Metal stud gipsplatenwand Type F (EN 520) ≥ 80 mm	Gecoate steenwol + coating ≥ 140 kg/m³	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)
			Geïsoleerd kanaal + gecoate steenwol + coating ≥ 140 kg/m³	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)
	Asymmetrische massieve wand	Cellenbeton ≥ 100 mm	Steenwol ≥40 kg/m³ + grafiet kit	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)
			Geïsoleerd kanaal + steenwol ≥40 kg/m³ + grafiet kit	1	EI 60 (v_e i ↔ o) S - (300Pa) Sa / S200 - (300Pa)

1 Installatiemethode: ingebouwd in kanaal, 0°

0°

Geharmoniseerde norm EN 15650:2010

Nominale activeringscondities/gevoeligheid:	Geslaagd
Reactievertraging (reactietijd): sluitingstijd	Geslaagd
Operationele betrouwbaarheid: cyclische bewegingen	50 cycli
Duurzaamheid van de reactievertraging:	Geslaagd
Duurzaamheid van operationele betrouwbaarheid:	Geslaagd
Bescherming tegen corrosie volgens EN 60068-2-52	NPD (geen prestatie bepaald)
Luchtdichtheid (lekkage over tunnel) volgens EN 1751:	NPD (geen prestatie bepaald)

De prestaties van het hierboven omschreven product zijn conform de aangegeven prestaties. Deze prestatieverklaring wordt in overeenstemming met Verordening (EU) nr. 305/2011 onder de exclusieve verantwoordelijkheid van de hierboven vermelde fabrikant verstrekt.

Ondertekend voor en namens de fabrikant door:
Mathieu Steenland, Technical Manager

Oosterzele, 02/2023

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CLASSIFICATION

CLASSIFICATION OF FIRE RESISTANCE PERFORMANCE IN ACCORDANCE WITH EN 13501-3:2005+A1:2009 OF THE SC60-COSMO FIRE DAMPER

Classification no.	2023-Efectis-R000614[Rev.1]
Sponsor	N.V. RF-Technologies Lange Ambachtstraat 40 9860 OOSTERZELE BELGIUM
Product name	SC60-COSMO
Prepared by	Efectis Nederland BV
Notified body no.	1234
Author(s)	S.D. Nieuwendijk M.Sc. P.W.M. Kortekaas A. Burgstad B.Sc.
Project number	ENL-23-000488
Date of issue	December 2023
Number of pages	15

TABLE OF CONTENTS

1. INTRODUCTION

1.1 GENERAL

This classification report defines the classification assigned to a SC60-COSMO fire damper in accordance with the procedures given in EN 13501-3:2005+A1:2009.

1.2 REVISION INFORMATION

This is a revised version of this classification report. This version supersedes all previous versions of this reports that are hereby withdrawn. Details on the changes can be found in the tables below.

Table 1.1: Revision information

Issue	Date of issue	Report no.
First issue	October of 2023	2023-Efectis-R000614
First revision	December of 2023	2023-Efectis-R000614[Rev.1]

1.2.1 First revision detailed information

Table 1.2: First revision information

Chapter of revision	The full report
Reason of revision	Different layout choices, some minor corrections, other test reports added, some details added and some deleted
Consequences of revision	Field of Direct Application contains more possibilities

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL DESCRIPTION FIRE DAMPER

Damper SC60-COSMO is a combination of an insulated valve damper type SC+, activated by a fusible link, and a swing valve (back draft damper). The fusible link reacts at 72 °C. The fire damper is a circular damper with galvanised steel casing. The inner diameter of the fire damper is 97.3 mm up to 197.3 mm and the outer diameter 98.5 mm up to 198.5 mm. On the casing of the damper are a rubber sealing ring and an intumescent strip. The damper has two semi-circular blades made of calcium silicate board (thickness 6 mm). On the damper housing of galvanised steel a rubber sealing ring and an intumescent strip are placed.

Below is a limited description of specific tests. For details we refer to the test reports mentioned.

Report 2023-Efectis-R000129 dated May 2023:

Aerated concrete wall, soft mineral wool and fire stopping mastic, insulated	
Supporting construction	Aerated concrete wall, thickness 100 mm
Outer diameter of the fire damper	198.5 mm
Inner diameter of the fire damper	197.3 mm
Blade pivot axis	Horizontal

Actuating mechanism	Fusible link SC-D203, 72°C
Location actuating mechanism	Unexposed side
Location of the damper	66 mm away from the unexposed side of the wall
Seal between damper and wall	Mineral wool with density of 40 kg/m³ Used type: Rockwool Sono Finishing: Promaseal AG on the exposed side
Insulation around the duct	Elastomeric foam based on synthetic rubber Used type: Armacell Armaflex EVO Thickness: 13 mm

Aerated concrete wall, rigid mineral wool, insulated	
Supporting construction	Aerated concrete wall, thickness 100 mm
Outer diameter of the fire damper	198.5 mm
Inner diameter of the fire damper	197.3 mm
Blade pivot axis	Horizontal
Actuating mechanism	Fusible link SC-D203, 72°C
Location actuating mechanism	Unexposed side
Location of the damper	66 mm away from the unexposed side of the wall
Seal between damper and wall	Mineral wool boards with ablative coating, density of 140 kg/m³ Used type: Promastop-CC, 2 x 50 mm Finishing: Promaseal-CC coating
Insulation around the duct	Elastomeric foam based on synthetic rubber Used type: Armacell Armaflex EVO Thickness: 13 mm

Report 2023-Efectis-R000131[Rev.1] dated June 2023:

Standard flexible supporting construction, soft mineral wool, insulated	
Supporting construction	Metal stud wall, thickness 100 mm 2 layers of 12.5 mm thick gypsum board on each side Insulated with Rocksono
Outer diameter of the fire damper	198.5 mm
Inner diameter of the fire damper	197.3 mm
Blade pivot axis	Horizontal
Actuating mechanism	Fusible link SC-D203, 72°C
Location actuating mechanism	Unexposed side
Location of the damper	66 mm away from the unexposed side of the wall
Seal between damper and wall	Mineral wool with density of 40 kg/m³ Used type: Rockwool Sono 50 mm Finishing: Promaseal AG
Insulation around the duct	Elastomeric foam based on synthetic rubber Damper A: Armacell Armaflex EVO

	Damper B: Armacell Armaflex PROTECT Thickness: 13 mm

Report 2023-Efectis-R000466 dated June 2023:

Shaft wall, rigid mineral wool, insulated	
Supporting construction	Metal stud shaft wall, thickness 80 mm 2 layers of 15 mm thick gypsum board, type “F”
Outer diameter of the fire damper	198.5 mm
Inner diameter of the fire damper	197.3 mm
Blade pivot axis	Horizontal
Actuating mechanism	Fusible link SC-D203, 72°C
Location actuating mechanism	Unexposed side
Location of the damper	66 mm away from the unexposed side of the wall
Seal between damper and wall	Mineral wool boards with ablative coating, density of 140 kg/m³ Damper A: Promastop-CC, 2 x 50 mm Finishing: Promaseal-CC coating Damper B: Hilti CFS-CT B 1S Finishing: CFS S-ACR
Insulation around the duct	Elastomeric foam based on synthetic rubber Used type: Armacell Armaflex EVO AF Thickness: 13 mm

3. TEST REPORTS AND TEST RESULTS IN SUPPORT OF THE CLASSIFICATION

3.1 TEST REPORTS

Name of Laboratory	Name of applicant	Test report No.	Test method
Efectis Nederland	Rf-Technologies	2023-Efectis-R000129 dated May 2023	EN 1366-2:2015
		2023-Efectis-R000131[Rev.1] dated June 2023	EN 1366-2:2015
		2023-Efectis-R000466 dated June 2023	EN 1366-2:2015
WFRGent nv	Rf-Technologies	20819A dated April 2021	EN 1366-2:2015
WFRGent nv	Rf-Technologies	12818 dated 25 June 2007	EN 1366-2:1999

3.2 TEST RESULTS AND CLASSIFICATION

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

Test report	2023-Efectis-R000129
Supporting construction	Aerated concrete wall
Seal	Rockwool Sono – Promaseal AG
Insulation duct	Armacell Armaflex EVO
Tested outer diameter	198.5 mm
Location actuating mechanism	Unexposed side
Operating pressure	-300 Pa
Time in minutes during which the criterion was fulfilled	
Integrity (E)	91*
Thermal insulation (I)	84
Smoke leakage (S)	87
Classification according to EN 13501-3:2005 + A1:2009	
EI 30 (ve i ← o) S	
EI 60 (ve i ← o) S	

Test report	2023-Efectis-R000129
Supporting construction	Aerated concrete wall
Seal	Promastop CC
Insulation duct	Armacell Armaflex EVO
Tested outer diameter	198.5 mm
Location actuating mechanism	Unexposed side
Operating pressure	-300 Pa
Time in minutes during which the criterion was fulfilled	
Integrity (E)	91*
Thermal insulation (I)	91*
Smoke leakage (S)	91*
Classification according to EN 13501-3:2005 + A1:2009	
EI 30 (ve i ← o) S	
EI 60 (ve i ← o) S	
EI 90 (ve i ← o) S	

Test report	2023-Efectis-R000131[Rev.1]
Supporting construction	Metal stud wall
Seal	Rockwool Sono – Promaseal AG
Insulation duct	Armacell Armaflex EVO
Tested outer diameter	198.5 mm
Location actuating mechanism	Unexposed side
Operating pressure	-300 Pa
Time in minutes during which the criterion was fulfilled	
Integrity (E)	95
Thermal insulation (I)	94
Smoke leakage (S)	95
Classification according to EN 13501-3:2005 + A1:2009	
EI 30 (ve i ← o) S	
EI 60 (ve i ← o) S	
EI 90 (ve i ← o) S	

Test report	2023-Efectis-R000131
Supporting construction	Metal stud wall
Seal	Rockwool Sono – Promaseal AG
Insulation duct	Armacell Armaflex Protect
Tested outer diameter	198.5 mm
Location actuating mechanism	Unexposed side
Operating pressure	-300Pa
Time in minutes during which the criterion was fulfilled	
Integrity (E)	101
Thermal insulation (I)	101
Smoke leakage (S)	100
Classification according to EN 13501-3:2005 + A1:2009	
EI 30 (ve i ← o) S	
EI 60 (ve i ← o) S	
EI 90 (ve i ← o) S	

Test report	2023-Efectis-R000466
Supporting construction	Shaft wall
Seal	Promastop CC
Insulation duct	Armacell Armaflex EVO
Tested outer diameter	198.5 mm
Location actuating mechanism	Unexposed side
Operating pressure	-300 Pa
Time in minutes during which the criterion was fulfilled	
Integrity (E)	80*
Thermal insulation (I)	60
Smoke leakage (S)	80*
Classification according to EN 13501-3:2005 + A1:2009	
EI 30 (ve i ← o) S	
EI 60 (ve i ← o) S	

Test report	2023-Efectis-R000466
Supporting construction	Shaft wall
Seal	Hilti CFS-CT B 1S
Insulation duct	Armacell Armaflex EVO AF
Tested outer diameter	198.5 mm
Location actuating mechanism	Unexposed side
Operating pressure	-300Pa
Time in minutes during which the criterion was fulfilled	
Integrity (E)	80*
Thermal insulation (I)	60
Smoke leakage (S)	80*
Classification according to EN 13501-3:2005 + A1:2009	
EI 30 (ve i ← o) S	
EI 60 (ve i ← o) S	

** no failure*
NOTE EN 13501-3:2005 + A1:2009 gives a limited explanation for the direction of the classification: (o → i) and (i → o). Efectis Nederland uses the following definition: (o → i) the temperature sensing element is located on the unexposed side of the specimen, (i → o) the temperature sensing element is located on the exposed side of the specimen.
NOTE For specimens tested in vertical separations 've' is used, 'ho' for specimens tested in horizontal separations.

4. CLASSIFICATION AND FIELD OF APPLICATION

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

4.1 CLASSIFICATION

The fire damper 'SC60-COSMO has been classified':

EI 60 (v_e i ↔ o) S

For the fire damper SC60-COSMO built into an aerated concrete wall of 100 mm, sealed with mineral wool boards with ablative coating and a density of minimum 140 kg/m³:

EI 90 (v_e i ↔ o) S

For the fire damper SC60-COSMO built into a metal stud wall of 100 mm, sealed with mineral wool boards with ablative coating and a density of minimum 140 kg/m³:

EI 90 (v_e i ↔ o) S

For the fire damper SC60-COSMO built into a metal stud wall of 100 mm, sealed with soft mineral wool with a density of minimum 40 kg/m³:

EI 90 (v_e i ↔ o) S

4.2 FIELD OF DIRECT APPLICATION

4.2.1 Size of fire damper

Since both the smallest and largest size of this fire damper have been tested with regard to leakage, the obtained fire resistance classification applies to this entire range.

4.2.2 Fire dampers installed within structural openings

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

4.2.3 Fire dampers installed onto the face of a wall or a floor

No direct application.

4.2.4 Fire dampers remote from a wall or floor

No direct application.

4.2.5 Fire from above

No direct application.

4.2.6 Separation between fire dampers and between fire dampers and construction elements

A test result obtained for only one fire damper or for two fire dampers with a minimum clear separation of 200 mm is applicable to a minimum separation in practice of:

a) 200 mm between fire dampers installed in separate ducts;
b) 75 mm between fire damper and a construction element (wall/floor) – e.g. for a damper in a wall, this is the distance between the damper casing (largest dimension) mounted in the supporting construction and a wall or floor adjacent to that supporting construction.

4.2.7 Supporting constructions

A test obtained for a fire damper mounted in or on the face of a standard supporting construction is applicable to a supporting construction of the same type with a fire resistance equal to or greater than that of the standard supporting construction used in the test (thicker, denser, more layers of board, as appropriate).

The test result can also apply to cellular or hollow masonry blocks or slabs that have a fire resistance time equal or greater than the fire resistance required for the fire damper installation.

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 (less onerous as per EN 1363-1) – aperture framing shall be used 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 flexible vertical supporting constructions made with steel studs are not applicable to flexible vertical supporting constructions made using timber studs.

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.

If a specific supporting construction different from those described in EN 1366-2:2015 §7.2 is selected, the test results obtained are applicable only to that specific wall, partition or floor having a thickness and/ or density equal or greater than that tested.

4.2.8 Blade pivot axis

No direct application.

5. LIMITATIONS

5.1 RESTRICTIONS

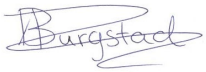
There are no restrictions to the validity of this classification document unless the product changes, the test or classification standard is revised, or the test report is revised or withdrawn.

5.2 WARNING

This European standard does not represent type approval or certification of the product.

SIGNED

S.D. Nieuwendijk, M.Sc.
Project leader Fire Resistance



A. Burgstad B.Sc.
Project leader Fire Resistance

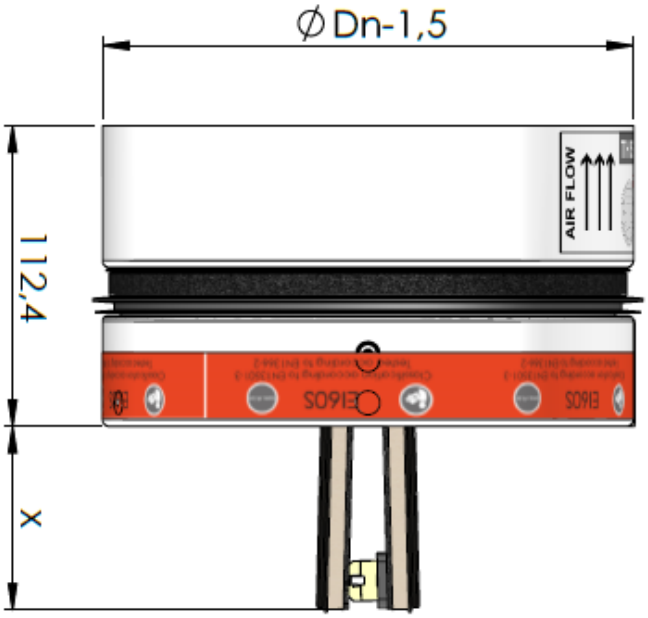
APPROVED

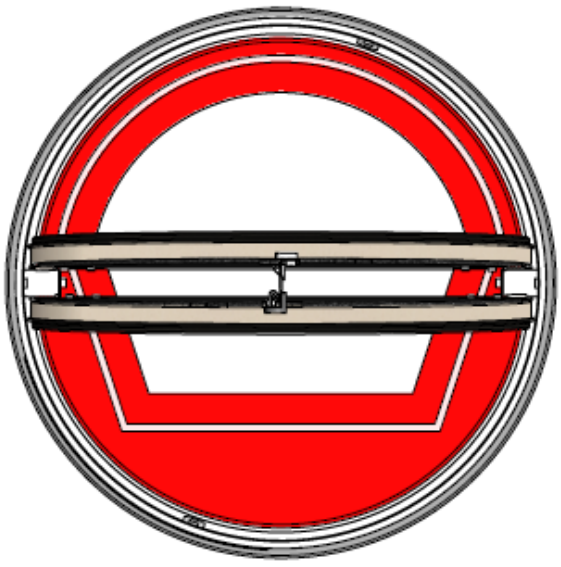
P.W.M. Kortekaas
Project leader Fire Resistance Engineering

6. FIGURES

1. Tunnel in steel
2. Two semi-circular blades
3. Intumescent strip around the tunel
4. Rubber sealing ring
5. Fusible link 72°
6. 2 blocking hooks
7. Backdraft damper

Figure 1: Overview of damper SC-60 Cosmo





Dn / Par	x
100	18
125	31
160	49
200	69

Figure 2: Dimensions of damper SC-60 Cosmo

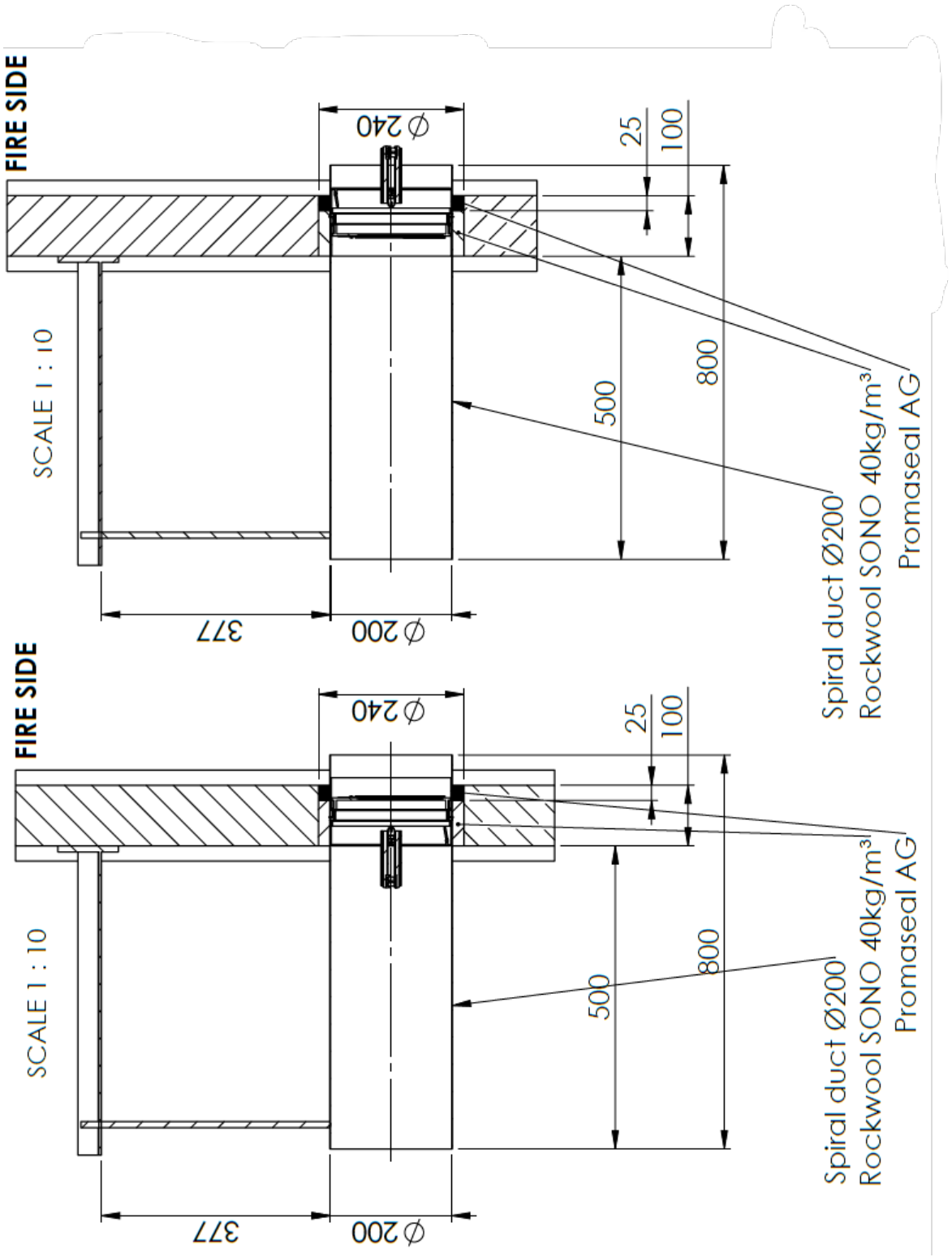


Figure 3: Section over damper C (below) and damper D (above)

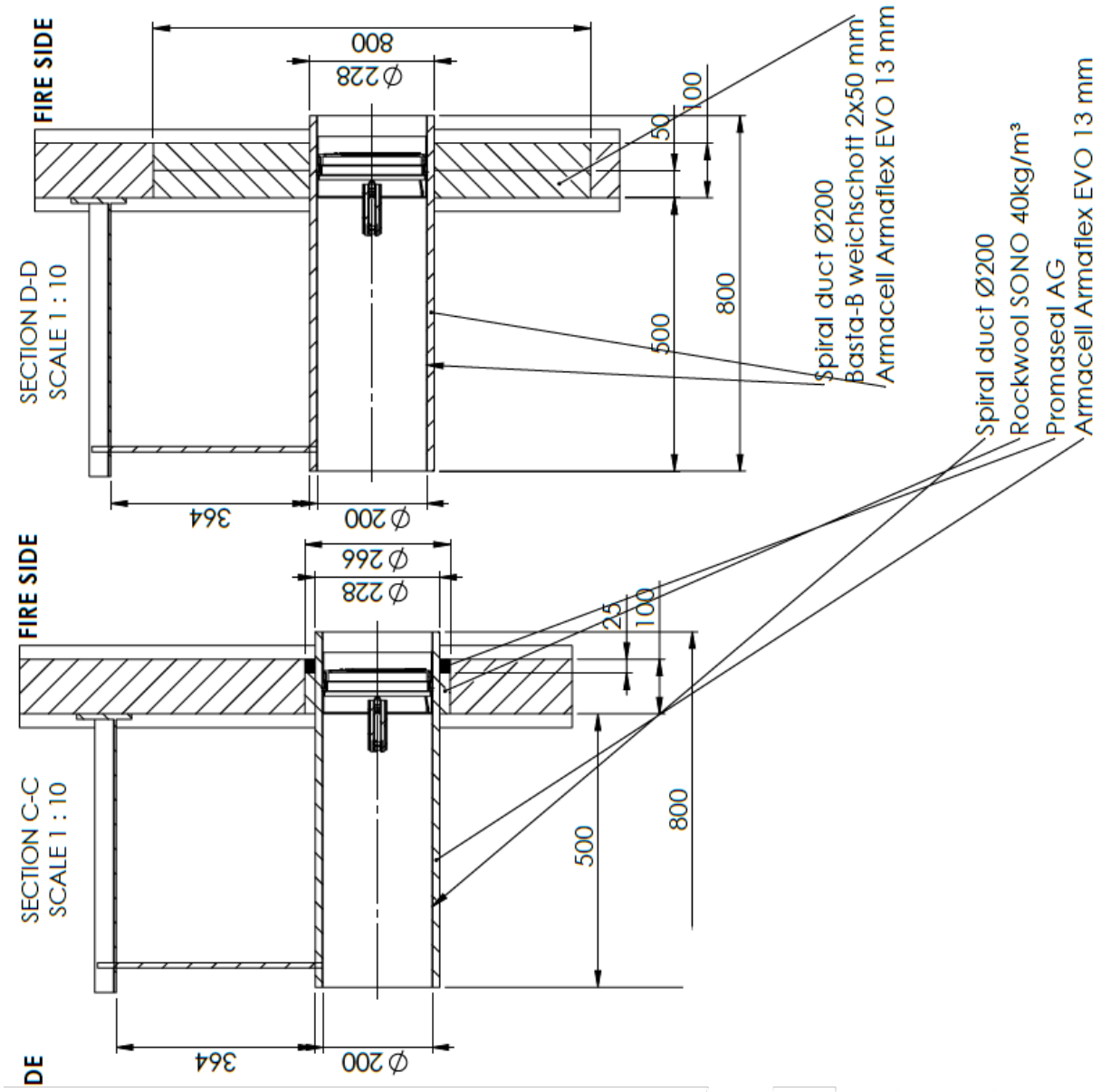


Figure 4: Section over damper A (below) and damper B (above)

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REPORT

Determination of smoke control leakage of a two fire dampers type “SC60-COSMO” manufactured by RF-Technologies NV

Report no.	2023-Efectis-R000883
Sponsor	RF-Technologies NV Lange Ambachtstraat 40 9860 OOSTERZELE BELGIUM
Prepared by	Efectis Nederland BV
Author(s)	G.M. Klijn B.Sc. R.D. Scheepe B.Sc.
Project number	ENL-23-000120
Date of issue	September 2023
Number of pages	22

CONTENTS

1. GENERAL

1.1 REPORT

This report describes the construction method, test conditions and results obtained when the specific construction element described herein was tested. Any significant deviation regarding dimensions, construction details, loads, stresses, edge or end conditions is not covered by this report.

1.2 SUBJECT

Test of two fire damper of type SC60-COSMO manufactured by RF-Technologies NV.

1.3 INVESTIGATION

The valves are tested with a pressure differential of 300 Pa across the valves. This is achieved by connecting a volume flow station to the valves. With this volume flow station, the possible leakage through the valves is also measured.
This leakage is measured at Sa (ambient) and at S200 (medium temperature). The pressure of the smoke box was regulated based on EN 1634-3+C1:2007.

The construction was tested for the criteria Leakage **(S)**.

1.4 SPONSOR AND MANUFACTURER

Table 1.1: Sponsor and manufacturer

Sponsor and manufacturer of fire damper	Rf-Technologies NV

1.5 LOCATION AND DATE REGARDING THE EXAMINATION

The research was conducted at the laboratory of Efectis Nederland BV in Bleiswijk, the Netherlands.

Table 1.2: Date of the examination

Assembly-of the test specimen	27th of March 2023
Smoke control test	28th of March 2023

1.6 APPLIED STANDARDS

Table 1.3: references

European standard	Part
EN 1363-1:2020	Fire resistance tests – Part 1: General requirements
EN 1634-3:2004 + C1:2007	Fire resistance tests for door and shutter assemblies - Part 3: Smoke control doors and shutters
Egolf position paper	006-2019
EN 1366-2:2015	Fire resistance tests for service installations - Part 2: Fire dampers
NEN 6075: 2020	Determination of the resistance to smoke movement between spaces

2. TEST SPECIMEN

2.1 GENERAL

For the dimensions and specifications of the materials and components of the examined construction, also see the figures in chapter 8. Details of the assembly of the construction are given in the paragraphs below.

2.2 TEST SPECIMEN

The test specimens were two fire dampers of type SC60-COSMO with a fusible link manufactured by Rf-Technologies NV and mounted into an associated supporting construction.

2.2.1 Test Frame

The test frame was constructed of hollow steel profiles with an aperture of 3.4 x 3.4 m (w x h) and an insertion width of 100 mm.

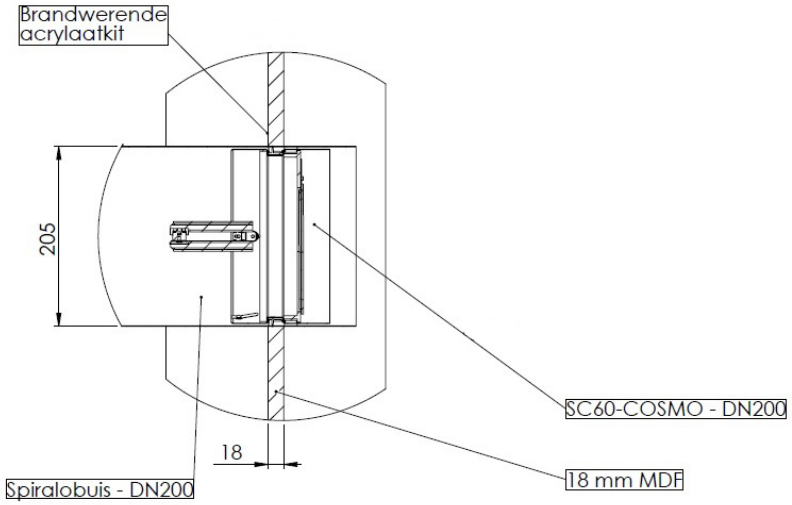
2.2.2 Supporting Construction

The test specimen was built into an associated supporting construction, being an 18 mm plywood partition.

Table 2.1: Specifications supporting construction

Specifications standard associated flexible supporting construction	
Overall dimensions	3600 x 3600 x 100 mm (w x h x t)
Aperture	800 x 800 mm (w x h)
Material	Steel and plywood
Number of layers plywood	One layer of 18 mm plywood
Fixing	Galvanized board screws 4 x 40 mm

2.2.3 Fire dampers

Specifications fire damper	
	
Manufacturer	Rf-Technologies NV
Type	SC60-COSMO
Material	Blade: Calcium silicate Casing: Galvanised steel
Dimensions	For both dampers: Inner dimensions: ø 197.3 mm Outer dimensions: ø 198.5 mm
Blade pivot axis	Horizontal
Sensor	Mounted on the unexposed side
Actuated by	Fusible link, on the unexposed side
Location	66 mm away from the unexposed side of the wall

2.2.4 Connecting ducts

Specifications	
Manufacturer	Lindab
Material	Steel
Dimensions	400 x 1.5 mm (l x t), ø 200 mm

2.2.5 Fusible link

Specifications	
Manufacturer	Rf-Technologies NV
Type	SC-D203
Product name	Connecting plate
Material	Brass
Dimensions	0.3 mm thickness
Location	On the unexposed side
Function	To release (and close) damper in case of fire
Fixing	Clicked into the connecting profile

2.2.6 Location operating mechanism

The operating mechanisms of both fire dampers were located on the exposed side.

2.3 METHOD OF ASSEMBLY

The method of assembly was as follows:
- Mounting the flexible wall;
- Positioning the dampers;
- Filling the gaps between dampers and wall.

3. ASSEMBLY AND MANUFACTURING OF THE CONSTRUCTION

Table 3.1: Assembly and manufacturing of the construction

Efectis Nederland BV	Test frame and support construction
Rf-Technologies NV	Producing and mounting of fire damper

4. RESEARCH METHOD

4.1 VERIFICATION OF THE SPECIMEN

The materials and components used were inspected during assembly on the basis of the supplied drawings and data. Efectis Nederland BV was not involved in the selection or sampling of the materials.

4.2 CONDITIONING OF TEST SPECIMEN

4.2.1 Conditioning

From the moment of assembly until the smoke control test the specimen was stored in the laboratory of Efectis Nederland BV under the following conditions.

Table 4.1: Laboratory conditions during conditioning

Conditions during conditioning	
Ambient temperature:	20 ± 5°C
Relative humidity:	50 ± 10 %

4.3 LEAKAGE TEST

4.3.1 Determination of leakage of connecting duct and measuring station (System leakage)

In accordance with EN 1366-2 prior to the smoke control test the leakage of the connecting ducts and measuring system at 300 Pa was measured.

- The (system) leakage for fire damper (A) type SC60-COSMO was 0.1 m^3/h at 300 Pa.

4.3.2 Determination of leakage at ambient temperature (Cold leakage test)

To meet the S classification this test was carried out prior to the smoke control test.

- The (cold) leakage for fire damper (B) type SC60-COSMO was 0.2 m^3/h at 300 Pa;

4.4 MEASUREMENTS

4.4.1 Laboratory conditions

During the smoke control test, the test conditions in the laboratory were as given below.

Table 4.2: Laboratory conditions during smoke control test

Laboratory conditions	
Ambient temperature:	10 - 40°C
Relative humidity:	50 ± 10 %

4.4.2 Heating curve

The temperature of the smoke control box followed the heating curve as described in 1634 3:2004 + C1:2007. The temperatures inside the smoke control box during the test are given in appendix A.

4.4.3 Pressure

The pressure of the plenums during the test are given in appendix A.

4.4.4 Leakage

During the smoke control test the leakage measured and registered. The leakage of the dampers A and B are given in appendix A.

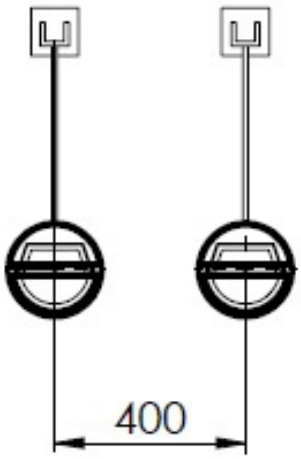
4.4.5 Pressure measuring station

The pressure in the measuring station for damper A and B are given in appendix A

5. RESULTS OF THE SMOKE CONTROLE TEST

5.1 OBSERVATIONS DURING HEATING

Table 5.1: Observations during the smoke control test

Observations

The numbers refer to the time and position of the observation

Time (min)	**Observations**
0	Start of heating
25:04	Damper A closed at 190 °C
25:57	Damper B closed at 190 °C
45	End of heating after consulting with client

5.2 CLOSING TIME DAMPERS

Fire damper A closed 25:57 minutes after the start of the test and fire damper B after 25:04 minutes.

5.3 PHOTOGRAPHS

Photographs taken during the smoke control test and after the smoke control test are shown in appendix B.

5.4 UNCERTAINTY OF MEASUREMENT

Because of the nature of smoke control testing and the consequent difficulty in quantifying the uncertainty of measurement of smoke control, it is not possible to provide a stated degree of accuracy of the result.

6. SUMMARY OF THE TEST RESULTS

6.1 SUMMARY OF TESTED SPECIMEN

The smoke control was determined of two fire dampers of type SC60-COSMO with a fusible link manufactured by Rf-Technologies NV and mounted into an associated supporting construction.

6.2 SUMMARY OF TEST RESULTS

6.2.1 Performances

Table 6.1: Performances backdraft damper A

Performances	***Criteria***	***Time (completed minute)***	***Result***
Leakage at medium temperature	*Maximum leakage rate measured at medium temperature ≤ 200 m^3/ (h m^2)*	*24.5*	*4.8 m^3/ (h m^2)*

Table 6.2: Performances backdraft damper B

Performances	***Criteria***	***Time (completed minute)***	***Result***
Leakage at medium temperature	*Maximum leakage rate measured at medium temperature ≤ 200 m^3/ (h m^2)*	*24.5*	*2.1 m^3/ (h m^2)*

Table 6.3: Performances fire damper A

Performances	***Criteria***	***Time (completed minute)***	***Result***
Leakage at medium temperature	*Maximum leakage rate measured at medium temperature ≤ 200 m^3/ (h m^2)*	*45*	*2.2 m^3/ (h m^2)*

Table 6.4: Performances fire damper B

Performances	***Criteria***	***Time (completed minute)***	***Result***
Leakage at medium temperature	*Maximum leakage rate measured at medium temperature ≤ 200 m^3/ (h m^2)*	*45*	*0.5 m^3/ (h m^2)*

After a heating period of 24.5 minutes both backdraft dampers deformed caused by medium temperature air flow. Within two minutes the fire dampers were activated.

R.D. Scheepe B.Sc.
Manager fire resistance engineering

G.M. Klijn B.Sc.
Project Leader Fire resistance - and Smoke Control

7. DRAWINGS

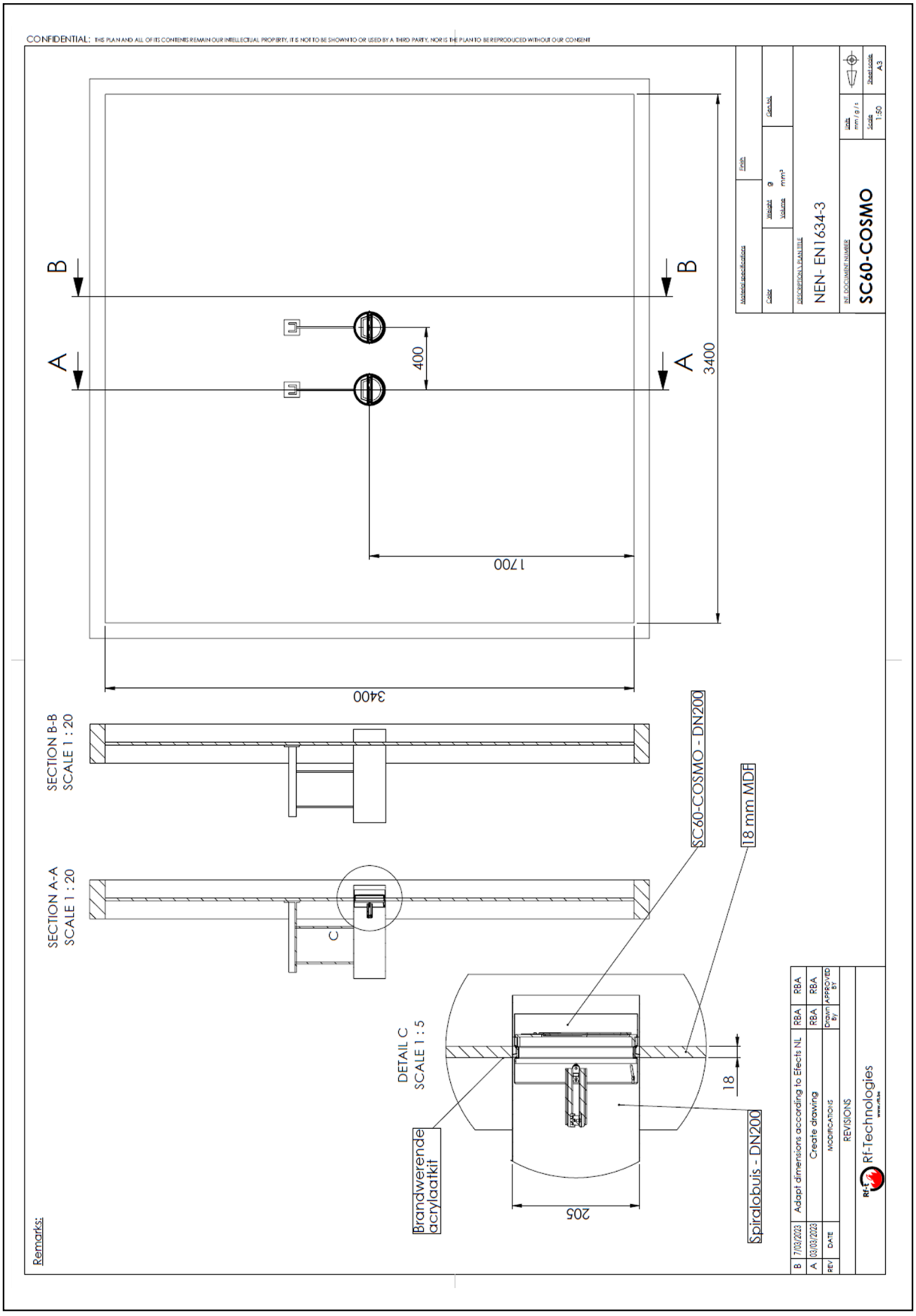
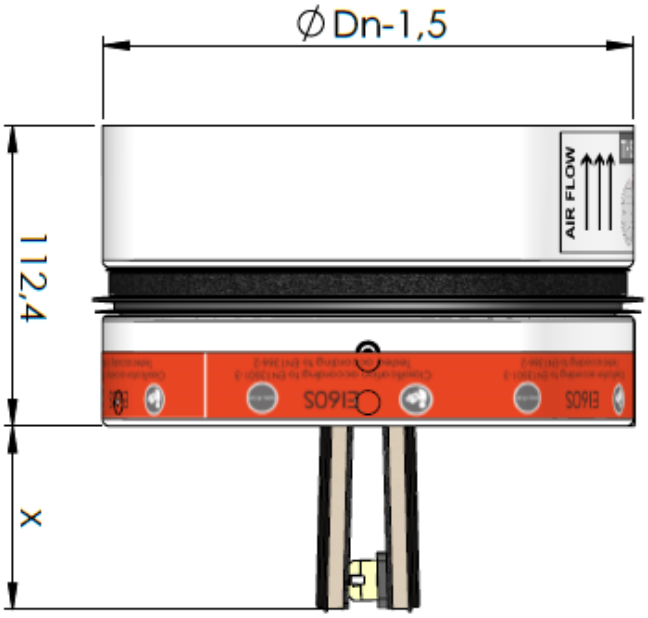
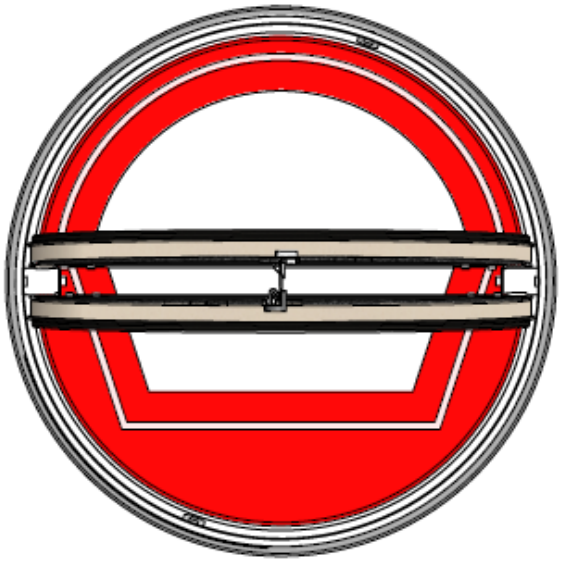


Figure 1: Test setup

1. Tunnel in steel
2. Two semi-circular blades
3. Intumescent strip around the tunel
4. Rubber sealing ring
5. Fusible link 72°
6. 2 blocking hooks
7. Backdraft damper

Figure 2: Overview of damper SC-60 Cosmo





Dn / Par	x
100	18
125	31
160	49
200	69

Figure 3: Dimensions of damper SC-60 Cosmo

APPENDIX A: MEASUREMENT OF TEST CONDITIONS

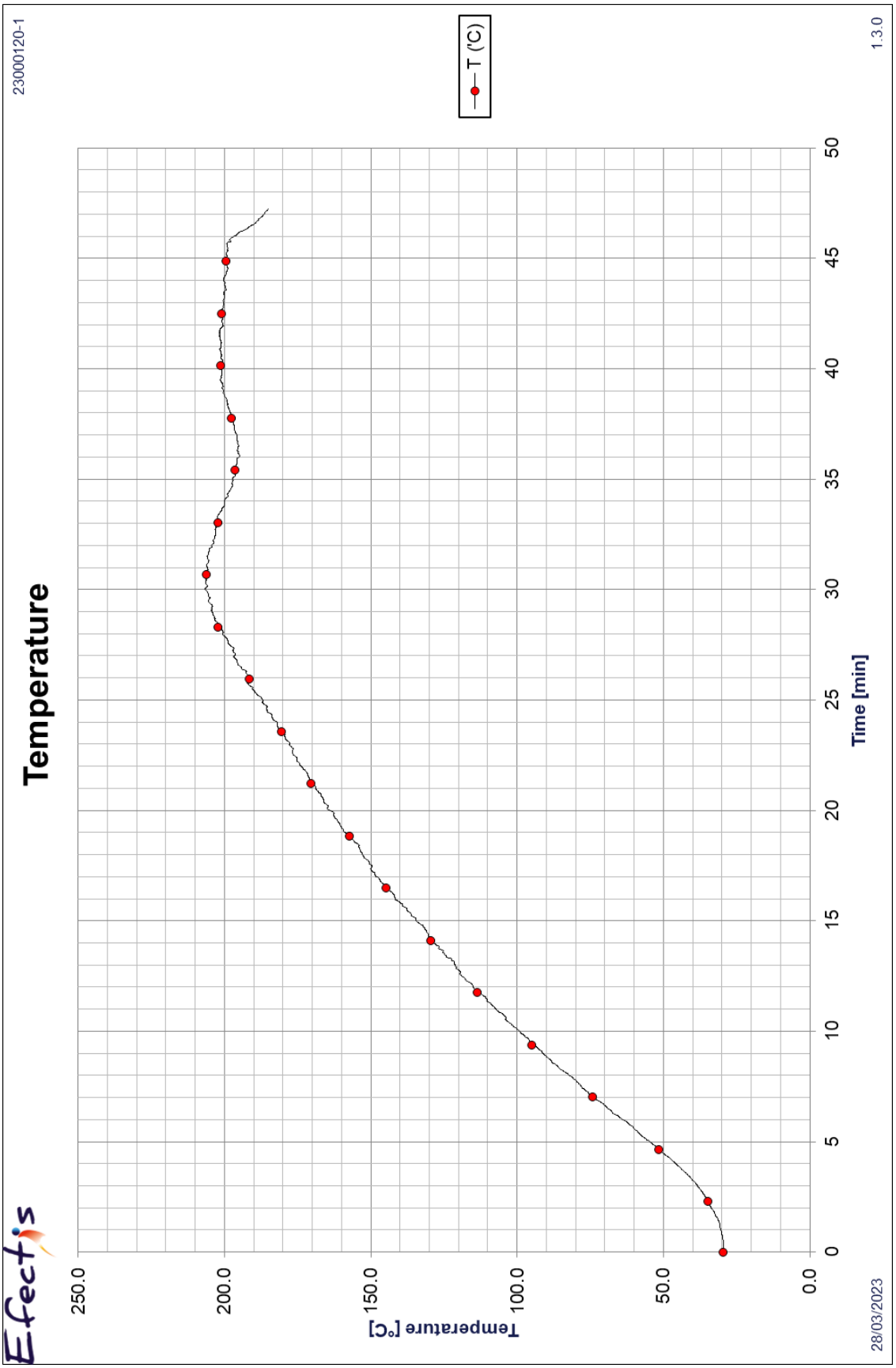


Figure A.1: Smoke control box temperature

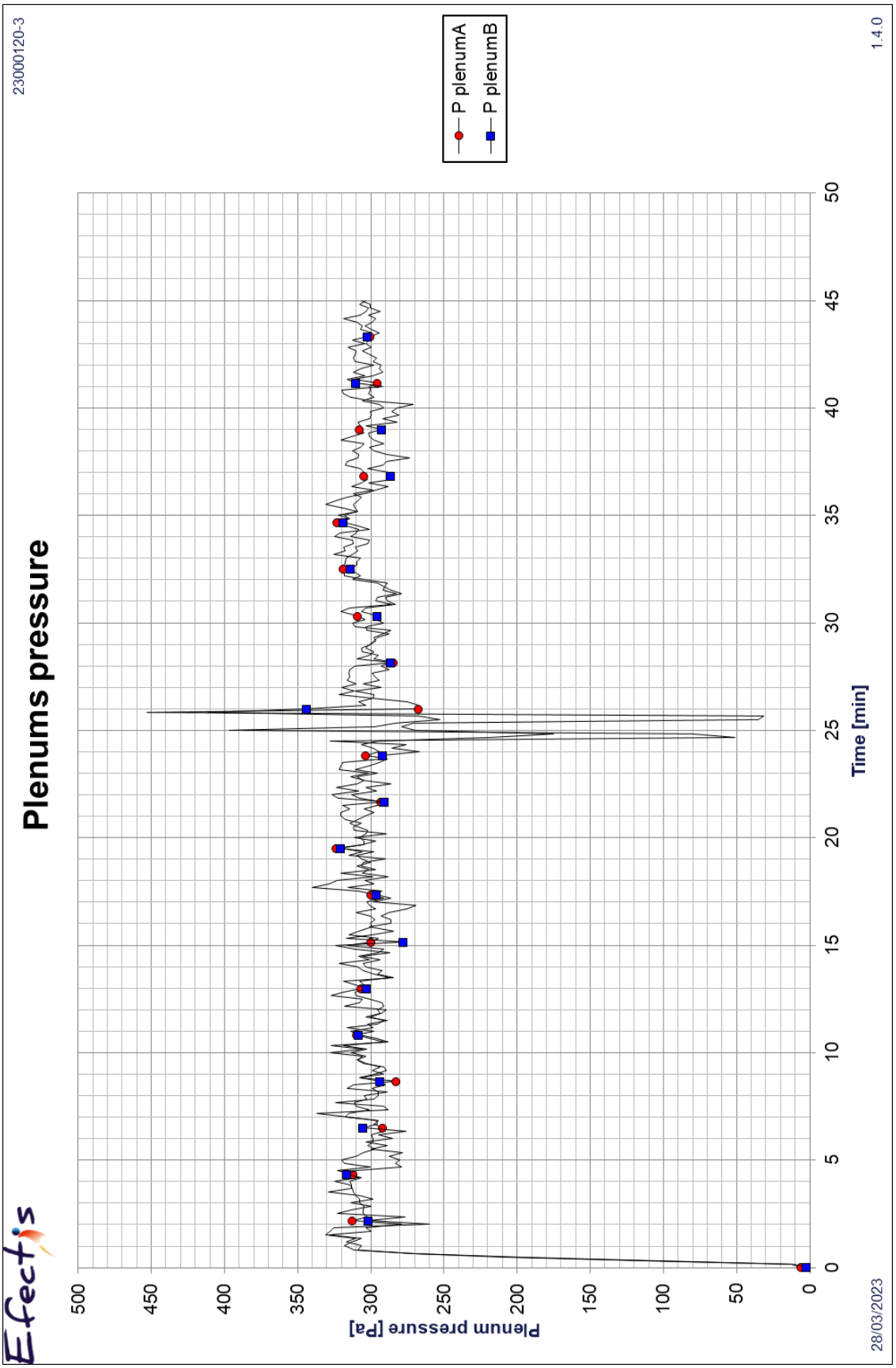


Figure A.2: Plenums pressure

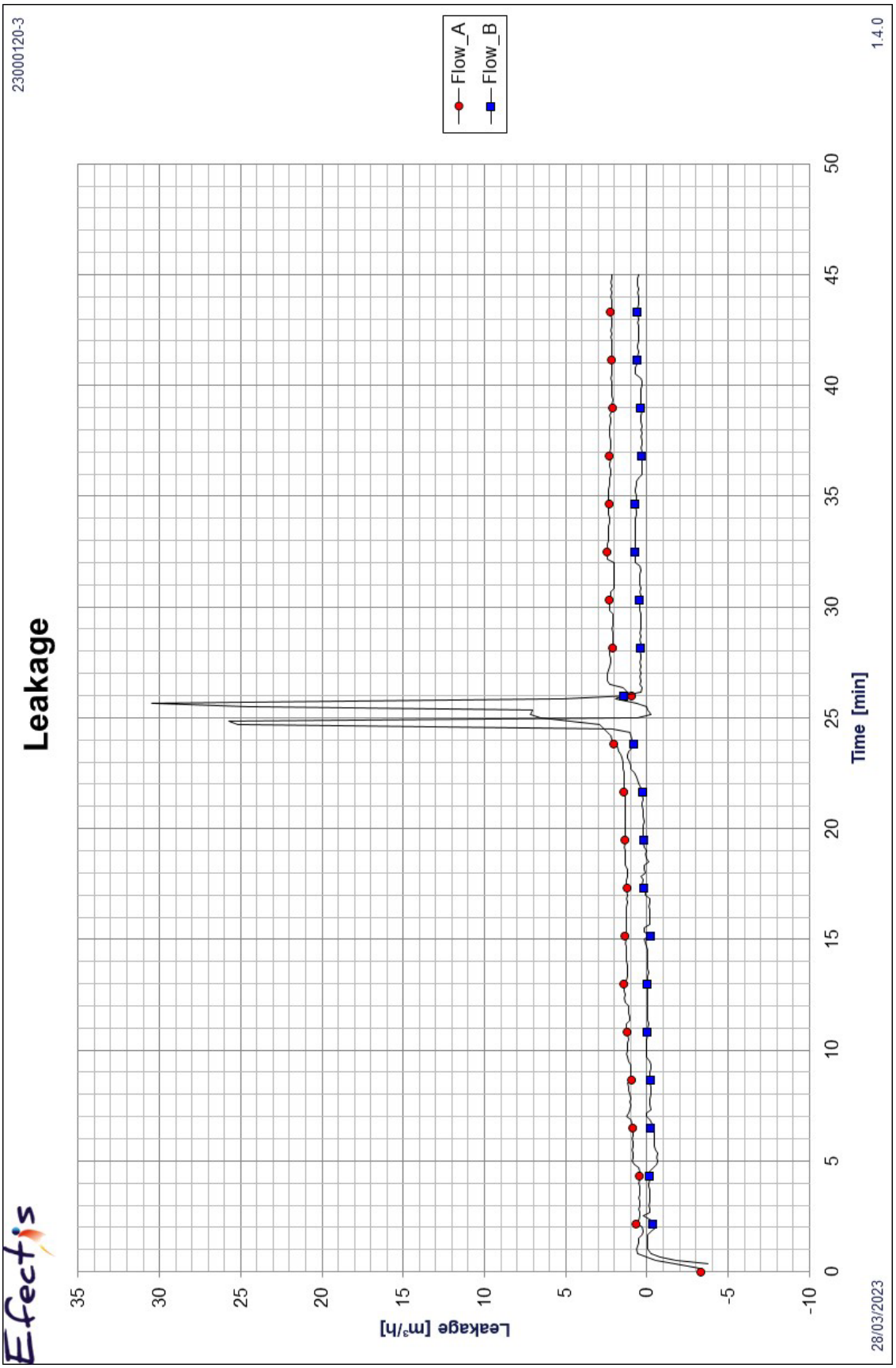


Figure A.3: Leakage damper A and damper B

APPENDIX B: PHOTOGRAPHS

Photo C. 1: Installation of the specimens (SC60-COSMO)

Photo C. 2: Specimen at the exposed side

Photo C. 3: Measurement equipment

Photo C. 4: Measurement equipment

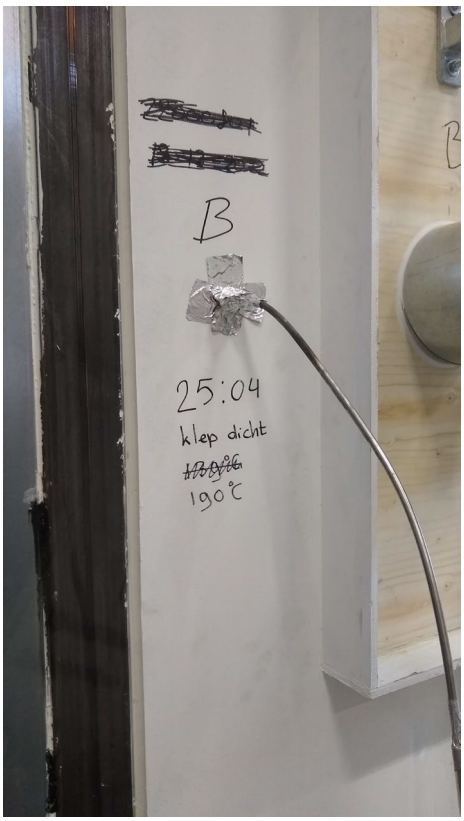


Photo C. 5: Closing time damper B

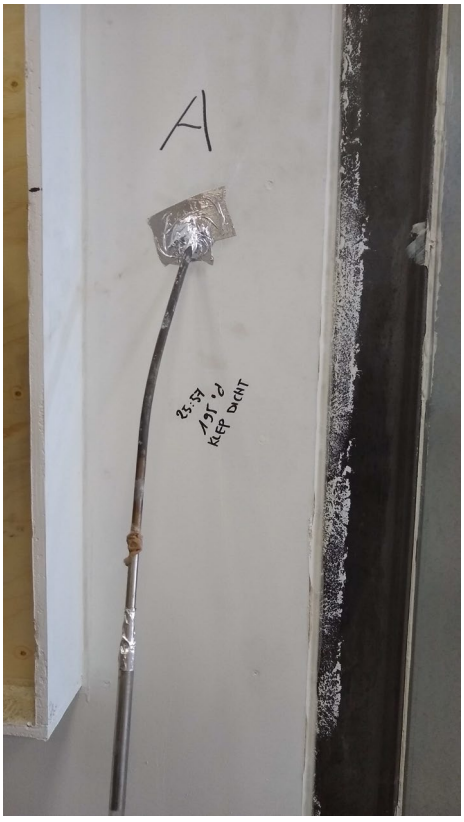


Photo C. 6: Closing time damper B

Photo C. 7: Specimens after test (exposed side)

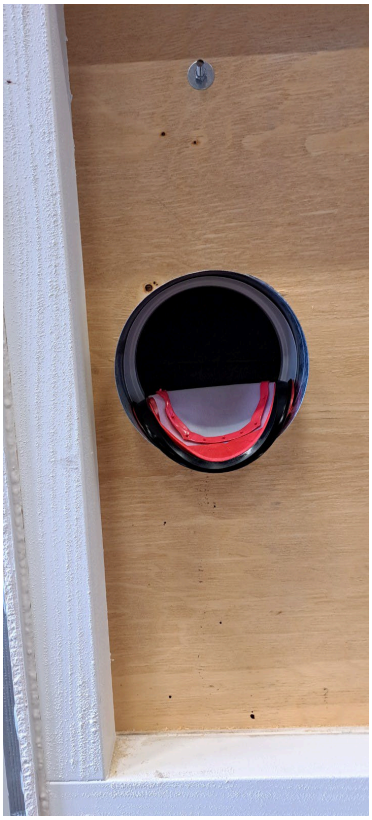


Photo C. 8: Damper B (exposed side)

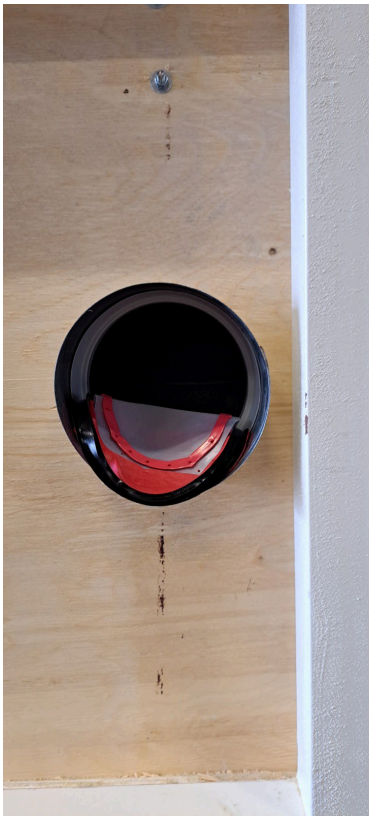


Photo C. 9: Damper A (exposed side)